Incentivizing Offshore Wind with the Renewable Integration, Firming, and Transmission Infrastructure Credit

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Abstract: The coastal waters of the Northeast United States are a rich source of offshore wind energy. Generating electricity from offshore wind is an expensive undertaking and will require federal support. At the same time, a dramatic increase in the yield of domestic unconventional gas fields has shifted the United States' energy focus toward developing these resources. This Article proposes a mechanism to align wind and gas under a framework of federal and regional cooperation, which if implemented would hopefully be a step toward achieving a national energy policy.

I. Introduction

By global standards, the U.S. is well behind the development curve for offshore wind energy.[2] The cost and politically contentious nature of installing wind turbines in coastal waters has proven to be

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powerfully detrimental. In 2009, federal tax policy became largely supportive of renewable resources, particularly wind and solar. Yet, offshore wind, which is a higher quality (i.e., it blows most consistently when the demand for energy is greatest) and more potent (i.e., the wind is stronger) resource than land-based wind, was largely left out of the discussion. No offshore wind facilities are operational in the United States today. The difficulty in gaining permit approval (both federal and state), siting controversies, and prohibitive capital costs (a large portion of which is associated transmission) associated with offshore wind projects are among the reasons why the United States currently lacks an offshore wind industry.

At the same time, natural gas has risen to the forefront of energy policy, and a transition to a natural gas energy economy seems inevitable, undermining the urgency of renewable resource development. Natural gas in a supporting role to wind, providing power rapidly only when needed, would allow the growth of the offshore wind industry, while mitigating natural gas' effects on wind power and avoiding continued national reliance on fossil fuels.[3]

This Article proposes a Renewable Integration, Firming, and Transmission Infrastructure Credit (RIFTIC) that would make federal support available to both the wind and gas industry to deploy offshore wind projects with a dedicated relationship to natural gas generation. This interrelationship would enable natural gas to serve as a backup energy supply to offshore wind power. By discussing the problems inherent in the current federal subsidy available to wind (i.e., the Production Tax Credit), the current lack of federal support for transmission infrastructure, and the need to create a national energy policy that is forward looking, this Article seeks to encourage a broader conversation in federal energy policy. In alignment with the "all of the above" energy strategy currently espoused by the Obama Administration, this Article argues for a partnership between wind and natural gas, two resources traditionally conceived as competitors.

II. The Renewable Integration, Firming, and Transmission Infrastructure Tax Credit

Natural gas is now a prominent player in the energy policy debate. Exploitation of previously unavailable shale and tight gas plays has created a political environment in which many see the development of these resources as an urgent priority. This "boom" of potential gas[4] threatens to derail the momentum that renewables have achieved in the political and economic realm. In 2011, 32% of

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[2] Europe, by comparison has deployed large amounts of offshore wind. Countries such as Ireland, Spain, Portugal, and several Scandinavian countries are leaders in offshore wind penetration.

[3] JOHN D. PODESTA & TIMOTHY E. WIRTH, CENTER FOR AMERICAN PROGRESS NATURAL GAS: A BRIDGE FUEL FOR THE 21ST CENTURY 5 (2009), http://www.americanprogress.org/issues/green/report/2009/08/10/6513/natural-gas-a-bridge-fuel-for-the-21st-century/ (last visited Sept. 23, 2013). This report highlights not only the potential of some form of a Renewable Integration Credit to incentive utilities in utilization and cost recovery for use of renewable fuel, but also highlights the need for a "robust" transmission infrastructure to augment intermittent resources like wind. Combining the two approaches will go a long way toward achieving lasting impacts toward a zero-carbon energy program.

[4] *See* U.S. ENERGY INFO. ADMIN., DOE/EIA-0383(2012), ANNUAL ENERGY OUTLOOK 2012 58 (2012), *available at* http://www.eia.gov/forecasts/aeo/pdf/0383%282012%29.pdf; J. DAVID HUGHES, POST CARBON INSTITUTE, DRILL BABY DRILL: CAN UNCONVENTIONAL FUELS USHER IN A NEW ERA OF ENERGY ABUNDANCE 33–34 (2013), http://www.postcarbon.org/reports/DBD-report-FINAL.pdf; J. David Hughes, *Energy: A Reality Check on the Shale Revolution*, 494 NATURE 307 (2013).

new U.S. electric generating capacity was wind power.[5] Wind and natural gas together represent the vast majority of gross capacity additions to the U.S electrical grid.[6] These figures are powerful motivation to encourage the sectors to operate in tandem, rather than in opposition. Further, natural gas is an ideal backup fuel to supplement wind power because of its ability to be brought online quickly, potential for pipeline storage, and lower carbon content than other fossil fuels.

The proposed RIFTIC would be a federal tax incentive designed to make large-scale offshore wind generation facilities economically feasible. The RIFTIC would also be a hedge against the detrimental effects a transition to a natural gas energy economy may have on the renewable energy industry, specifically the wind industry. The RIFTIC would draw upon past and existing proposals, literature, and legislation to piece together a federal tax program that provides support for offshore wind production, transmission infrastructure, and natural gas infrastructure used in support of wind power. As discussed in more detail below, past and current tax programs provide the financial underpinnings of the proposed RIFTIC. Literature from the Department of Energy and New England Governor's Association provide the policy rationale, while existing state-level energy policy provides a basis for a similar regional program.

A. Making the Case for a New Federal Tax Incentive

The renewable energy industry, particularly onshore wind, has achieved important advances in levels of penetration, technological developments, and cost reductions. However, these developments are inchoate and fragile. The United States' energy policy is in need of a new direction, and a RIFTIC would offer a new way forward by providing a mechanism to move the United States toward a clean energy future, while providing a hedge against the variability of intermittent resources. Stemming the detrimental effects of anthropogenic climate change requires decisive policy choices focused on renewable energy. Unfortunately, current federal energy policy is not yet sufficient to ensure that offshore wind will succeed in the United States.

Although offshore wind is a massive source of clean, carbon-free energy, and does not involve the same land use and resiliency[7] concerns associated with onshore wind, current national energy policy (tax and otherwise) favors onshore wind resources over offshore resources. The Federal Energy Regulatory Commission (FERC) and interconnection planning bodies are focused toward land-based generation and transmission. These important electricity regulatory and planning bodies, discussed in greater detail below, simply do not consider offshore wind in proportion to its potential contribution of electricity supply. Furthermore, no tax incentive is available to transmission projects, or intentionally targeted at offshore production.[8]

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[5] U.S. DEP'T OF ENERGY, 2011 WIND TECHNOLOGIES MARKET REPORT 4 (2012), *available at* http://www1.eere.energy.gov/wind/pdfs/2011_wind_technologies_market_report.pdf [hereinafter 2011 WIND MARKET REPORT].

[6] *Id*.

[7] The term "resiliency" is used here to refer to electricity and grid stability, reliability, and security.

[8] The main federal mechanisms for funding large scale renewable energy projects (the Production Tax Credit, Investment Tax Credit, and Treasury Grant in lieu of tax Credit) are specifically targeted at the generation of electricity or recouping the capital costs of the generation infrastructure.

As a result of geography, there is a significant downside to this policy of favoring onshore wind power. The most abundant onshore wind is located in the western part of the country, far from the dense load centers along the East Coast, predominantly in the Mid-Atlantic. Large-scale terrestrial transmission projects are needed to carry electricity produced from wind-rich states like Montana and Wyoming thousands of miles eastward to the cities where power is needed most. Transmission of this magnitude has extraordinary cost (above and beyond those associated with ordinary land-based transmission) and faces huge institutional challenges. Offshore wind resources are of higher quality and are less intermittent than even the best onshore resources, and their development would likely render cross-country wind power transmission projects unnecessary[9] Furthermore, above-ground transmission lines spanning hundreds or thousands of miles introduce security and reliability risks that are largely absent in the type of subsurface high voltage direct current (DC) lines involved with offshore to shore transmission.[10] While offshore projects also face institutional challenges, the very nascent nature of the industry is an asset, because the regulatory framework can be constructed to streamline the process.

Additionally, the intermittent nature of wind power is at times exacerbated by an inverse relationship between production and demand. In certain parts of the country, or at certain times during the year when the wind blows most consistently, demand is lowest. Thankfully for offshore wind, the inverse relationship between demand and production potential (actual generation) that tends to plague onshore resources is *reversed*.[11] Furthermore, while capacity factors[12] of modern turbines have improved significantly since the early days of wind power, the capacity factor for offshore wind can reach up to 40%[13] to 50%[14] (or more) depending on the region. This provides offshore wind with a significant advantage over onshore wind.[15] As a result, East Coast and Mid-Atlantic offshore wind resources must be seriously considered as the prime opportunity to achieve significant market penetration for wind energy.

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[9] U.S. DEP'T OF ENERGY, A NATIONAL OFFSHORE WIND STRATEGY: CREATING AN OFFSHORE WIND INDUSTRY IN THE UNITED STATES 6 (2011) [hereinafter NATIONAL OFFSHORE WIND STRATEGY].

[10] Traditional above ground high voltage transmission lines are subject to electricity losses over distance. The longer the line, the greater probability of "line loss" occurring. Furthermore, during hot days or catastrophic weather events, the possibilities of line losses or disruptions in the transmission system are greater. Catastrophic weather threats mirrors man-made security threats to the transmission system. The security and resiliency of the electricity grid is not enhanced by building cross-country transmission lines. The sub-terranean and submerged high voltage direct current (HVDC) lines that offshore developers will use are more stable and secure, and therefore should be viewed as preferable.

[11] NATIONAL OFFSHORE WIND STRATEGY, *supra* note 9, at 6. *See also* NYISO, NYISO WIND GENERATION STUDY FINAL DRAFT viii, 76 (2010), which indicates that the correlation of offshore wind production is stronger to daily load demand.

[12] Capacity factor is the amount of energy output from a particular generating source in relation to the generating potential, otherwise known as nameplate capacity. For example, if a single turbine has the potential to generate 1 MW of power, but is only running at 50% output for only half the day, the capacity factor of the turbine would be 25%.

[13] NYISO, *supra* note 11, at 93.

[14] *See Transparent Cost Database*, OPENEI, http://en.openei.org/apps/TCDB/. This data set relies on numbers generated by the U.S. Department of Energy and the National Renewable Energy Laboratory. *See also,* Zachary Sahan, *Wind Turbine Net Capacity Factor — 50% the New Normal?,* CLEANTECHNICA (July 27, 2012), http://cleantechnica.com/2012/07/27/wind-turbine-net-capacity-factor-50-the-new-normal/#lgkKZuYoLDCz35RL.99 (last visited Sept. 23, 2013).

[15] *See id.*

Despite this, wide-scale reliance on the variable renewable resources (wind in particular) presents reliability concerns. Specifically, such reliance creates problems for base load plants, which are difficult and expensive to bring offline or reduce their output (called "ramping") in order to bring wind turbines online. A base load plant is designed to provide the bare minimum of power its customers need to operate (i.e., the grid's base load) and ensure bottom line reliability of the system.[16] When additional power is needed, such as during hot summer days when more air conditioners are running, supplementary power must be brought "online" to serve this demand. Power plants that are designed to service "peak" demand when needed, are referred to as "peakers." Peaker power plants have traditionally been fueled by natural gas, because it has great quick start potential and is easily dispatchable. In general, wind energy can provide neither base load nor peaking power, because the wind does not blow constantly or strongly on schedule. Power plants located in the Mid-Atlantic region and along the East Coast, however, could be reliably fueled by offshore wind if natural gas was used to supply supplemental power. The RIFTIC, therefore, is designed to target and address transmission and reliability concerns associated with offshore wind, by encouraging a partnership between renewable and non-renewable sources..

A key component to establishing a national offshore wind industry is intergovernmental cooperation, which includes federal, state, and local governments. Because offshore facilities will likely serve regions rather than individual states, it is essential that a coherent policy framework be developed to facilitate planning and implementation. While a RIFTIC alone cannot achieve a comprehensive policy framework, it could incentivize or lay the foundation to begin the development of such a policy. A comprehensive subsidy that addresses the major issues facing the offshore wind industry would be an integral part of a forward-thinking and comprehensive national and regional energy policy initiative. A long-term and stable funding mechanism would make renewable energy policy objectives and investment strategies more attainable.

B. RIFTIC in Context

Fossil fuels have historically benefitted from a larger national investment through federal subsidies than have renewable resources. In fact, from 1916 to 1970, "energy tax policy focused almost exclusively on increasing domestic oil and gas reserves and production. There were no tax incentives promoting renewable energy or energy efficiency."[17] As a result of the many years of operating without competition from renewables in the marketplace or tax policy arena, the fossil fuel industry is now robust and mature with a financial advantage over renewables. Even as recently as the 2000's, U.S. energy policy was dominated by fossil fuel subsidy and tax credits, with some measures aimed at efficiency and alternative fuels (such as alcohol and bio-fuels) in the mix.[18]

Modern political and economic pressures will not allow the renewable industry to operate under the same cloak of preferential federal protection. As an example the Production Tax Credit (PTC), available only to wind and closed loop biomass systems, has recently become politically contentious. It was first

[16] Demand is the amount of power that is needed at a certain time, and may also be referred to as load.
[17] MOLLY F. SHERLOCK, CONG. RESEARCH SERV., R41227, ENERGY TAX POLICY: HISTORICAL PERSPECTIVES ON AND CURRENT STATUS OF ENERGY TAX EXPENDITURES 2 (2011).
[18] *Id*. at 6-8.

enacted in 1992 as part of the Energy Policy Act of 1992. The Energy Policy Act of 2005 created a substantially enlarged federal energy subsidy program, and while the amount of federal spending on renewables increased significantly as a result of EPAct '05, the Act also incentivized a significant increase of domestic fossil fuel production.

More recently, however, in response to more recent economic pressures and social awareness regarding the need to achieve more carbon emission mitigation, federal subsidy for fossil fuels have ceded some ground to renewables and "[t]he 2008 and 2009 stimulus bills expanded and extended energy tax incentives for renewables and efficiency."[19] Additionally, the American Recovery and Reinvestment Act of 2009 (ARRA) extended and modified a number of preexisting energy subsidies, notably creating the ARRA Section 1603 cash grant in lieu of an Investment Tax Credit. From 2008 to 2012, the PTC and Section 1603 cash grant resulted in a huge increase in the amount of wind generation in the United States.[20] Although the trend in energy tax policy is moving away from subsidies for traditional fuels, more support is needed to enable the renewable industry to become as robust and mature as the fossil fuel industry.

Total electricity consumption is projected to increase by .3% per year until 2035, even as average electricity use per person and per dollar of GDP decreases. The largest growth is anticipated in the industrial and commercial sector.[21] In an ideal world, the private sector would be able to meet the country's energy needs without governmental support. The world, however, is not ideal and federal investment is necessary. Prudent energy policy should focus spending of limited federal dollars on renewables rather than fossil fuels, with less political focus on subsidy independence.

Wind stands to gain a larger toehold in the energy market by offsetting coal's share, due to coal plant retirement resulting from stricter greenhouse gas and carbon regulations. The wind industry should be aided in its efforts to compete with fossil fuels by a federal subsidy that would allow the wide-scale deployment of offshore infrastructure. A RIFTIC, by incentivizing access to an abundant and clean source of renewable fuel located close to major load centers, would help move the U.S. energy market toward an economic scenario dominated less by fossil fuels.

Just as a national energy policy cannot succeed through dependence on any one resource, no single funding mechanism will be able to achieve the penetration of renewable resources to meaningfully offset reliance on fossil fuels. It is therefore important that the United States, in cooperation with federations of regional governments, embrace all possible funding mechanisms for renewable energy. Key mechanisms include the Production Tax Credit, Investment Tax Credit, and the Department of Treasury's cash grant in lieu of credit, discussed in more detail in the next section.

C. The Role of the Production Tax Credit and Investment Tax Credit in the Offshore Wind Industry

Wind energy, since it is commercial deployment, is financed primarily through private investment and the Renewable Energy Production Tax Credit (PTC), a federal subsidy that allows owners of wind

[19] *Id*. at 9.
[20] *See* U.S. DEP'T OF ENERGY, *supra* note 5. "In 2011, wind power was again (for the sixth time in seven years) the second-largest new resource added to the U.S. electrical grid in terms of gross capacity additions, behind the 10,500 MW of new natural gas capacity." *Id*. This represents 32% of new electric generating capacity for 2011.
[21] ANNUAL ENERGY OUTLOOK 2012, *supra* note 4,at 75.

generation capacity to receive a 2.2-cent credit per kilowatt-hour of electricity produced from qualified facilities.[22] The PTC became politically contentious during the 2012 Presidential Election, and is symptomatic of the fractured conception and implementation of U.S. energy policy. The PTC has expired and been renewed five times since its inception in the Energy Policy Act of 1992. The latest extension (for one year) approved only days before the expected sunset of the preceding legislation, is emblematic of the politically cyclical nature of renewable energy funding. The effects of the PTC on the wind industry highlight the need to move away from a subsidy that encourages dependence on federal money to a more comprehensive approach to energy policy planning.

The PTC has succeeded in that there has been a significant addition of generation capacity in the most recent decade. However, the current federal subsidy approach to wind is politically cyclical and does not motivate innovation or stabilize the industry.[23] As noted above, the PTC for qualified wind energy projects has expired and been renewed five times since 1992. Each time the credit is allowed to expire—or, as in 2012-2013 taken to the brink of expiration before extension[24]—the industry, specifically turbine manufacturing, experienced significant contraction. Manufacturers and developers cite the recent political uncertainty of the PTC as a primary weakness in current renewable energy policy.[25] This "boom and bust cycle" limits or eliminates lead-time and capital flexibility needed for project development.[26] "The intermittent and haphazard nature of U.S. energy policy also wreaks havoc with the business confidence necessary for the long-term investments required" to continually improve the product and to make choices geared toward beyond the life of the tax credit on which the emerging industry is reliant.[27]

Under the provisions adopted in 2009 through the ARRA, a qualified small wind energy facility can elect to take the renewable energy investment tax credit (ITC) instead of the PTC, for new installations.[28] The ITC "is equal to 30% of expenditures, with no maximum credit for small wind turbines placed in service after December 31, 2008."[29] Only investment in new property is eligible for

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[22] 26 U.S.C. § 45(a).

[23] *See* JESSE JENKINS ET. AL., BEYOND BOOM & BUST: PUTTING CLEAN TECH ON A PATH TO SUBSIDY INDEPENDENCE 5 (2012), *available at* http://thebreakthrough.org/blog/Beyond_Boom_and_Bust.pdf. While the PTC is indexed to inflation, and thus the level of subsidy does increase each year, the real dollar amount is constant, as the amount of the PTC has not increased since the credit was first enacted in 1992. Thus, there is "no clear incentive for continual cost declines or pathway to eventual subsidy independence." *Id.* at 37.

[24] The PTC was extended for one year as part of the "Fiscal Cliff" deal that the U.S. Congress passed on January 1, 2013. K. Kaufmann, *Wind Energy Tax-credit Extension part of "Cliff" Deal*, THE DESERT SUN (Palm Springs, CA), Jan 2, 2013, *available at* http://www.usatoday.com/story/news/nation/2013/01/02/fiscal-cliff-wind-energy-extension/1804447/.

[25] *See generally* INTERNATIONAL ECONOMIC DEVELOPMENT COUNCIL, UNDERSTANDING RENEWABLE ENERGY BUSINESSES: ALIGNING RENEWABLE ENERGY FIRMS + ECONOMIC DEVELOPERS (2013), *available at* http://www.iedconline.org/clientuploads/Downloads/edrp/IEDC_Renewable_Energy_Businesses.pdf.

[26] *See generally* Jenkins, *supra* note 23.

[27] *Id.* at 37; *see also* DEUTSCHE BANK CLIMATE CHANGE ADVISORS, INVESTING IN CLIMATE CHANGE 2011: THE MEGA-TREND CONTINUES - EXPLORING RISK & RETURN 60 (2011) (discussing the shortcomings of U.S. renewables policies with respect to three essential attributes of a successful subsidy—transparency, longevity and certainty.).

[28] *See* 26 U.S.C. § 48; see *also Business Energy Investment Tax Credit*, DSIRE (DATABASE OF STATE INCENTIVES FOR RENEWABLE ENERGY, http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=US02F (last visited Aug. 20, 2013).

[29] *Business Energy Investment Tax Credit, supra* note 28.

the ITC, and the credit vests fully over a five-year period.[30] These types of investment tax credits can be highly valuable to investors seeking to recoup capital costs after a project is placed in service.

The third option, the ARRA Section 1603 Treasury Cash Grant, is a variation of the ITC. Pursuant to Section 1603, the U.S. Treasury "makes payments to eligible persons who place in service specified energy property and apply for such payments."[31] Basically, this provision allows eligible taxpayers to receive cash grants in lieu of the PTC or ITC. The Section 1603 Treasury Cash Grant was available to wind projects placed in service after 2010 but before January 01, 2013.[32] Similar to the ITC formula, payments are generally equal to 30% of the value of the property.[33] The Treasury Cash Grant, however, is somewhat more generous in important respects than the ITC. For example, the costs of roads to transport equipment to and from a wind farm are eligible for Treasury cash payments, but are not for the ITC.[34] Also, there are no limitations on receiving the Cash Grant based on the income of the recipient.[35]

A RIFTIC program should build on the positive attributes of the Treasury Cash Grant program, including allowing ancillary projects (like interconnection facilities) to benefit. Also, because regional cooperation and partial governmental ownership may be necessary or highly beneficial in the case of large-scale transmission projects (like a transmission "back bone" in the Mid-Atlantic and East Coast), the absence of this limitation on ownership would be essential to the success of a RIFTIC. By allowing project developers to recover up to 30% of eligible capital cost expenditures, the risk involved in capital-intensive projects, such as transmission of offshore wind, is mitigated to a large degree.

Indeed, while any transmission project is capital cost intensive, because capital cost is one of the largest hurdles for the continued market penetration of wind, a cash grant in lieu of an investment tax credit would be more useful than a credit based on production. This is supported by the popularity of the Section 1603 program. In the case of offshore wind projects and transmission infrastructure, an investment tax credit makes more sense. While traditional generation and transmission infrastructure is heavy on capital expenditure, offshore generation is particularly capital intensive because of the unique nature of the physical environment in which the infrastructure is located. Engineering, design and resiliency issues add to these complications. Further, subterranean and oceanic installation of transmission lines presents novel challenges. These related capital costs represent a large portion of the overall project cost for wind, and a hurdle for developing a robust offshore wind industry and achieving market penetration. Explicitly addressing these costs is key to the success of an energy tax scheme targeted at realization of a U.S. offshore wind industry. If the United States is to achieve significant gains in renewable generation levels, up to 20%[36] - 80%[37] of total installed capacity, wind penetration

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[30] Edwin F. Feo & Simon Friedman, *Tax Equity Financing for Wind Projects*, *in* ENERGY AND ENVIRONMENTAL PROJECT FINANCE LAW AND TAXATION: NEW INVESTMENT TECHNIQUES 703, 712 (Andrea S. Kramer & Peter C. Fusaro eds., 2010).
[31] U.S. DEP'T OF TREASURY, PAYMENTS FOR SPECIFIED ENERGY PROPERTY IN LIEU OF TAX CREDITS UNDER THE AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009, at 2 (rev. 2011), *available at* http://www.treasury.gov/initiatives/recovery/Documents/GUIDANCE.pdf [hereinafter Section 1603 Guidance].
[32] Feo & Friedman, *supra* note 30.
[33] *Id.*
[34] *Id.* at 727–28.
[35] *Id*.
[36] *See generally* U.S DEP'T OF ENERGY, 20% WIND ENERGY BY 2030: INCREASING WIND ENERGY'S CONTRIBUTION TO THE U.S. ELECTRICITY SUPPLY 1 (2008); 2011 WIND MARKET REPORT, *supra* note 5.

levels must be elevated significantly. The PTC alone is ill suited to achieve the dual objective of increased generation capacity and decreased intermittency.

D. Production Tax Credit Long-Term Extension

Under the RIFTIC paradigm proposed in this Article, Congress would enact a long-term PTC extension. Despite the politically contentious nature of the PTC, the potential economic benefits of enacting a long-term extension should outweigh the political risk of subsidizing the renewable energy industry through financial instruments that are more permanent and reliable. As such, Congress should enact a long-term extension of the PTC. The RIFTIC could be a tool to harness all of the available mechanisms to achieve a healthy and robust offshore wind industry and integrate it into the energy market. This approach mirrors the Obama Administration's "all of the above" approach to energy policy, which the President discussed most recently in a June 25, 2013 speech at Georgetown University, which outlined his comprehensive energy plan, focused on combatting climate change.[38] Furthermore, during the contentious period prior to the reauthorization of the PTC for 2013-2014, the American Wind Energy Association (AWEA) issued a compromise proposal outlining a PTC "phase out." According to the advocacy group, assuming industry was able to meet technology improvement goals,

> Analytical results indicate that a PTC beginning with 2.2 cents per kilowatt-hour, or 100% of the current level for projects that begin construction in 2013, followed by 90%, 80%, 70%, 60%, and then 60% of the current level for projects that are placed in service in years 2014 through 2018, with no PTC in 2019 or afterwards, would sustain a minimally viable industry, able to continue achieving cost reductions.[39]

A "phase out" approach, however, may not yield superior economic benefits over extending the PTC. While subsidy independence is certainly ideal, forcing the technology-dependent renewable energy industry that is still—relative to the fossil industry—nascent to compete with a mature and fully scaled industry is unfair and uneconomical. Nor is it immediately necessary that the renewable sector achieve subsidy independence. A long-term PTC extension would stabilize the industry, allowing it to recover from the most recent downturn (included lost jobs and cancelled projects) and would incentivize continued production. Furthermore, a long-term extension would likely lead to increased research and development to improve turbine capacity factors and efficiency. Therefore, a long-term extension achieves desirable results for the wind industry and the retail and wholesale electricity market.

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[37] NATIONAL RENEWABLE ENERGY LABORATORY, RENEWABLE ELECTRICITY FUTURES STUDY—EXECUTIVE SUMMARY 14 (2012), *available at* http://www.nrel.gov/docs/fy13osti/52409-ES.pdf.

[38] President Obama's Climate Action Plan is available at http://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf.

[39] Letter from Denise Bode, CEO, Wind Energy Association, to Senator Max Baucus et al. (Dec. 12, 2012), *available at* http://www.eenews.net/assets/2012/12/13/document_daily_01.pdf. The AWEA suggested this phase out approach in the event Congressional leaders were not able to come to an agreement during the very tense budget negotiations at the end of 2012. The AWEA claimed this approach would allow the industry to stay minimally viable, in the absence of federal dollars.

Legislation proposed in the 112th Congress, if enacted today, is insufficient to achieve the desired results of a long-term PTC.[40] While a contraction of the industry may make the industry more economically independent, it does not add to a meaningful carbon mitigation national energy policy. Because the industry suffered from the uncertainty preceding the most recent one-year extension, a mere one- or two-year extension is not enough to provide the stability to sustain a project from concept to installation. Furthermore, because of the long lead-time associated with wind projects, a mere one-year extension will not mitigate (let alone reverse) all of the previous damage. Finally, the same uncertainty looms as the current one-year extension approaches its sunset deadline. Instituting a long-term extension of the PTC and introducing an investment-targeted incentive specifically aimed at capital costs would incentivize both the installation and production of wind power, creating a financial environment conducive to offshore projects. Because the PTC has survived the most recent threat of extinction, the debate now needs to move to the heart of the matter; establishing a sustainable and forward-thinking trajectory for United States energy tax policy that mirrors the President's call for an "all of the above" strategy.

III. Natural Gas and Wind: Redefining the Relationship

Natural gas can counteract the variability of intermittent renewables because of the quick start nature of gas plants and its dispatchability and pipeline storage potential. The problem of intermittency is one of the largest impediments to the widespread adoption of wind power in the United States. While capacity factors of wind turbines have improved dramatically over the last decade and the resource profile for offshore wind is favorable, offshore wind's potential maximum capacity factor of 50% is still quite low when compared to natural gas or coal.[41] This lower capacity factor provides political ammunition to attack wind energy resources as inferior to natural gas.

The price of natural gas in relation to wind and the inherent intermittency of wind are closely related in the context of the proposed RIFTIC. Both issues represent stumbling blocks to the wide-scale deployment and political and social acceptance of a robust offshore wind industry. A RIFTIC would seek to address and mitigate both of these stumbling blocks. Because of the economics of the competitive electricity marketplace, natural gas has emerged as a competitor to renewable energy, specifically wind.[42] Based on price per kilowatt-hour of electricity produced, wind power competes with natural gas, but this is a result of the PTC. Without the PTC, natural gas would be economically superior. Additionally, intermittency concerns could be allayed with the use of natural gas as a firming fuel (augmenting wind energy facilities when the wind does not blow). However, promotion of natural gas

[40] *See* American Renewable Energy Production Tax Credit Extension Act of 2011 (H.R. 3307) (proposing a four-year extension, sunsetting in 2017); American Energy and Job Promotion Act (S. 2201) (proposing a two-year extension sunsetting in 2015).

[41] The average capacity factor for a natural gas combined cycle turbine is roughly 85.60%, with a 93% maximum. The capacity factor for coal facilities ranges between 80-90%. *Transparent Cost Database*, *supra* note 14.

[42] Kevin Doran & Adam Reed, *Natural Gas and its Role in the U.S. Energy End Game*, YALE ENVIRONMENT 360 (Aug. 13, 2012), http://e360.yale.edu/feature/natural_gas_role_in_us_energy_endgame/2561/ (last visited Sept. 23, 2013).

as a bridge fuel should not be used to justify a switch to, or reliance on, natural gas without an accompanying vision for a transition to a more renewable energy-based resource mix.[43]

A. The Natural Gas Debate

The huge growth in previously unavailable unconventional gas resources (shale and tight gas accessed via hydraulic fracturing and horizontal drilling) has affected a sea change in the national energy debate. After almost a decade of real technological, political, and social advances in wind energy production and use, a domestic natural gas "boom" threatens, or has already begun to derail this progress. Although the natural gas industry has historically been subject to a high degree of price volatility,[44] currently natural gas is the cheapest it has ever been (or nearly so), and supply is at an all time high.[45] Exploitation of these domestic resources is considered an urgent priority.[46] Political motivation to fully commit the United States to natural gas as a plentiful and cheap domestic resource is strong;[47] while support for renewable energy is not as robust as it was at the beginning of President Obama's first term. President Obama, former Secretary of Energy Stephen Chu, and current Secretary of Energy Dr. Ernest Moniz all endorse what has become known as an "all of the above" energy policy that includes exploitation of the newly accessible unconventional shale gas resources. Secretary Chu, while touring the National Renewable Energy laboratory, stated that "[a]s President Obama made clear … we need an all-out, all of the above strategy that develops every available source of American energy."[48] Wind energy is disproportionately affected by the rise in domestic unconventional natural gas production and its corresponding low cost.

There is mounting evidence that the "gas boom" is merely a bubble. The uncertainty surrounding the future of domestic gas reserves and price stability in the long term is supported by research recently published by the Post Carbon Institute.[49] This report challenges the popular premise that domestic unconventional drilling will greatly expedite U.S. energy independence.[50] Enhanced reliance on natural

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[43] *See generally* Patrick Parenteau & Abigail Barnes, *A Bridge Too Far: Building Off-Ramps on the Shale Gas Superhighway*, 49 IDAHO L. REV. 325 (2013).

[44] *See* ERIN MASTRANGELO, U.S. ENERGY INFORMATION ADMINISTRATION, AN ANALYSIS OF PRICE VOLATILITY IN NATURAL GAS MARKETS (2007), http://www.eia.gov/pub/oil_gas/natural_gas/feature_articles/2007/ngprivolatility/ngprivolatility.pdf.

[45] Doran & Reed, *supra* note 42.

[46] *See generally* Keith Schneider, *U.S. Fossil Fuel Dims Glow of Clean Energy,* YALE ENVIRONMENT 360, Mar. 29, 2012, http://e360.yale.edu/content/print.msp?id=2511 (last visited Sept. 23, 2013); MICHAEL WEBER, CENTER FOR CLIMATE AND ENERGY SOLUTIONS, THE LOOMING NATURAL GAS TRANSITION IN THE UNITED STATES (2012), *available at* http://www.c2es.org/docUploads/natural-gas-transition-us.pdf; Doran & Reed, *supra* note 42.

[47] *See generally* Schneider, *supra* note 46; Ned Haluzan, *Wind Energy vs. Natural Gas – U.S. Perspective*, RENEWABLE ENERGY ARTICLES, May 17, 2011; Bruce Smith, *Fracking, Economy Slow Developing SC Offshore Wind*, BLOOMBERGBUSINESSWEEK, Sept. 13, 2012, http://www.businessweek.com/ap/2012-09-13/fracking-economy-slow-developing-sc-offshore-wind (last visited Sept. 23, 2013).

[48] Press Release, U.S. Dep't of Energy, Chu in Pittsburgh: "We need an All-Out, All-of-the-Above Strategy that Develops Every Available Source of American Energy," Feb. 9, 2012, http://energy.gov/articles/chu-pittsburgh-we-need-all-out-all-above-strategy-develops-every-avaialable-source-american.

[49] Hughes, *Drill, Baby, Drill*, *supra* note 4, at 50.

[50] *Id*. at 59.

gas with an unproved future is therefore unwise.[51] This research, viewed in light of growing concern over a domestic market exhibiting signs of a steep rise in price, coupled with looming Liquefied Natural Gas (LNG) export applications pending at the Department of Energy that may reduce domestic supply[52] supports the case for a re-evaluation of prioritizing natural gas as the primary fuel for electricity production in the future.

As J. David Hughes notes, high-yield unconventional gas wells are not common, and the top three producing wells are responsible for 66% of total output, and the top six producing wells are responsible for 88% of total output.[53] Also, most wells decline from peak production after about 36 months. At the current rate of production, the U.S. has an estimated supply of 24 years' worth of economically recoverable gas.[54] These development and production projections do not take into account possible federal regulation of hydraulic fracturing based on environmental impacts or costs that could influence (most likely slow) the rate of extraction.[55]

B. Natural Gas as a Bridge Fuel and as a Firming Resource for Wind Power

Reliance on natural gas alone as a fully viable alternative to coal is unwise. Developing natural gas as a bridge fuel to a carbon-free clean energy economy will be a "bridge to nowhere," unless federal energy policy also embraces technological developments in the renewable energy industry and the policy mechanisms that support them. Natural gas resources should not be developed independently, nor at the exclusion of renewable energy resources. A bridge must link one finite point to another. Here, the far side of the bridge is a robust offshore wind industry. Natural gas resources can be used as a way to transition the United States away from fossil fuels to renewable energy resources. Complete reliance on natural gas will not enable the United States to achieve its clean energy goals. Massive renewable use requires significant financial, societal, and political support, but holds promise that complete reliance on natural gas does not. A federal energy policy is needed that aligns the two resources to not only buttress one another, but to also place the country on a path toward less dependence of fossil fuels. The proposed RIFTIC is a potential mechanism to harness the effective use of natural gas as a bridge fuel while avoiding complete reliance on natural gas and enabling a comprehensive national wind policy to emerge.

In order to create a financial environment that provides the most value to the U.S. energy consumers, a RIFTIC should be available only to transmission projects for both renewable electricity and natural gas that serves a wind power facility. The natural gas credit should not be available to stand-alone transmission infrastructure, but rather available only when linked to wind resources for firming capabilities. For example, the construction of natural gas pipelines with a demonstrated firming contract or relationship to a wind project should be eligible for a federal subsidy under a RIFTIC program. Transmission projects to support offshore turbines should also be eligible for subsidies. These

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[51] *Id*.
[52] *See* NERA ECONOMIC CONSULTING, MACROECONOMIC IMPACTS OF LNG EXPORTS FROM THE UNITED STATES 1 (2013), *available at* http://www.nera.com/67_8081.htm.
[53] Hughes, *Drill, Baby, Drill*, *supra* note 4, at 52.
[54] *Id*. at 75.
[55] *Id*. at 77.

types of subsidies are preferable because the transmission infrastructure, while geared toward the support and delivery of electricity produced from offshore wind power, would still be subject to the open access transmission tariff and requirement of non-discrimination imposed by the Federal Energy Regulatory Commission (FERC). As such, even though a company may pay for the construction of transmission infrastructure, it is not allowed to charge itself preferential rates. Allowing for an upfront cost recovery, in conjunction with the PTC, would hopefully mitigate these FERC requirements while ensuring that wind power remains properly incentivized.

"Firming" is a secondary resource, available as quick start generation capacity to supplement intermittent generation when the intermittent resource is not able to produce enough electricity to meet current load demand. Wind installations have a large capacity, but less potential generation contribution to the grid.[56] As mentioned above, the capacity factor for wind turbines is now roughly 50%. Further, when demand is at its peak, wind is typically not able to generate enough power to service this demand. Energy facilities generating electricity from wind, in order to enhance the security and stability of their operations, should supplement their production with other sources of energy.

In 2011, the Interstate Natural Gas Association of America (INGAA) sponsored a study conducted by ICF International on this topic.[57] The study looked specifically at the costs of natural gas transportation infrastructure needed to firm wind generation. "[T]he need for reliable backup for renewable generation will require development of some form of electricity storage or gas-fired generation and its supporting infrastructure."[58] The INGAA report highlighted two main considerations of firming generation: the ability for the firming transmission to respond on short notice and the importance of a cost recovery mechanism for such transmission.[59] "As a result, the costs … may need to be directly associated with the cost of the wind generation itself."[60] A RIFTIC would be directly in line with this recommendation. By uniting wind generation and natural gas transport under a single financing mechanism, cost allocation and recovery becomes more certain.

Further, natural gas as part of the "mix" may help lead to eventual renewable subsidy independence. By stimulating deployment of renewables and reliance on offshore wind, the industry may be able to achieve scalable supply chains, installation mechanisms, and other cost saving opportunities. Moreover, as the amount of wind generation (and Combined Cycle Gas Turbine generation) grows and offsets the amount of coal generation in the U.S., gas producers will have a stable market in which to sell. Through the RIFTIC, pipeline owners would be able to recoup some of the costs of building the necessary infrastructure to support these market developments.

Eventually, the mechanism by which natural gas provides the firming capability for wind energy facilities would need to be further defined to effectively implement a RIFTIC. For purposes of this Article, it is not essential to fully investigate the possibilities but it is helpful to understand how gas is usually traded. Traditionally, a gas utility offers a bid into the day-ahead market. The generation owner

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[56] ANNUAL ENERGY OUTLOOK 2012, *supra* note 4, at 90.
[57] THE INGAA FOUNDATION, INC., FIRMING RENEWABLE ELECTRIC POWER GENERATORS: OPPORTUNITIES AND CHALLENGES FOR NATURAL GAS PIPELINES (2011), *available at* http://www.ingaa.org/Foundation/Foundation-Reports/Studies/13417/12751.aspx.
[58] *Id.* at 70.
[59] *Id.* at 73.
[60] *Id.*

is able to make any bid it wants as long as it fulfills its obligation to bid into the day-ahead market. Once the bid is *not* selected, the generator's duty is fulfilled, and it need only make its best effort to be available if needed; there is no affirmative obligation to supply power unless contractually obligated to do so. Under a RIFTIC regime, the gas utility or generator *would* have an affirmative obligation to provide service. To effectuate this, the offshore project developer and owners would have to contract with gas companies and transmission owners to provide firming capabilities. Whether this is done through a forward contract,[61] a power purchase agreement (PPA), or bought in blocks on the spot market remains to be explored. What is important is that the RIFTIC should not be available to a stand-alone natural gas project and wind developers must demonstrate a firming "plan" to be eligible.

Gas is useful as a firming mechanism and "stop-gap" on the way to a carbon-free future. Linking gas to the offshore wind industry will mitigate its adverse impact on a still fledgling industry. Encouraging wind will discourage over-reliance on gas.

IV. Realignment of Regulatory and Policy Mechanisms to Incentivize Offshore Wind

A. FERC Measures and National Transmission Policy

The Federal Energy Regulatory Commission (FERC), the federal agency responsible for the planning and interconnection into the grid, has made incremental advances to incentivize and ease the way for the development and use of renewable resources. It has not yet gone far enough, however. FERC is largely silent regarding planning for or incentivizing offshore wind.

In June 2012, FERC finalized an amendment to the pro forma Open Access Transmission Tariff (OATT).[62] FERC Order No. 764, Integration of Variable Energy Resources, requires that all public utility transmission providers allow for intra-hourly transmission scheduling and requires generating facilities and public transmission utilities to communicate certain data to facilitate power production forecasting.[63] This is designed to facilitate the development and use of renewable energy resources and to eliminate built-in tariff advantages for scheduling of base-load resources, such as coal. Before this change, under the OATT, transmission customers utilizing variable energy resources (VERs) had no ability to mitigate "imbalance charges" by updating transmission schedules within the hour to reflect actual generation output.[64] By contrast non-VERs, like coal, have little need for 15-minute scheduling.

More importantly, the most significant measure FERC has taken since to specifically influence energy transmission infrastructure planning in the United States is FERC Order No. 1000.[65] Order 1000 mandates that interregional planning commissions and operating entities (such as Regional Transmission Organizations (RTOs & Independent System Operators (ISOs)) consider public policy

[61] A forward contract is a mechanism to provide a commodity at a contractually agreed upon price. The commodity is not necessarily delivered when the contract is executed, but rather at a date specified in the agreement. Forward contracts can be useful tools to hedge against price uncertainty or volatility.
[62] Federal Energy Regulatory Commission, Integration of Variable Energy Resources Final Rule, 139 FERC ¶ 61,246, 18 CFR Part 245 (June 22, 2012).
[63] *Id*.
[64] *Id*.
[65] FERC Order No. 1000, 136 FERC ¶ 61051, 2011 WL 2956837 (July 21, 2011).

when making transmission planning and expansion decisions.[66] Order 1000 seeks to rectify inefficiencies in transmission market operations and transactions, caused by an earlier FERC order, which did not require transmission providers to consider regional transmission needs in the context of public policy requirements.[67] Further, Order 1000 aims to incentivize cost allocation methods for interregional transmission facilities.[68] This public policy planning requirement, however, is "biased toward building cross-country transmission 'superhighways' that would connect remote onshore wind to areas with untapped—and more efficient— coastal and offshore wind resources."[69]

This type of inter-regional transmission planning will most likely lead to conversations about cross-country energy transport. This is apparent when looking at recent studies and the lack of meaningful consideration of offshore resources by the regional transmission operator, PJM (Pennsylvania-New Jersey-Maryland), a membership based organization whose members own transmission infrastructure and cede market and asset operational control to the non-profit organization.[70] For example, a 2012 PJM wind integration study discusses offshore resources as such: "More research and development is needed on offshore meteorology as input for offshore wind forecasting. Fewer measurements of current wind conditions, surface temperatures and other meteorological factors over water are available to tune forecast models."[71] A notable exception to this lack of consideration is the Eastern Interconnection Planning Collaborative (EIPC), which issued a report modeling regional implementation of a national renewable portfolio standard (RPS) enabling 30% wind penetration resulting from offshore installation.[72] However, even the EIPC does not give meaningful consideration to offshore wind as a probable resource. Public policy consideration in regional transmission goals is essential to offshore wind transmission siting. Yet, current federal policy alone is insufficient to promote offshore wind development. Therefore, a RIFTIC program is needed to specifically target offshore wind resources.

A RIFTIC would eliminate the need for cross-country transmission projects, which are currently necessary to integrate western wind power into mid-western and eastern states, and move wind electricity generation near load centers on the East Coast. Because the purpose of the RIFTIC would be to develop alternatives to cross-country transmission projects, wind developers in the west seeking to transmit electricity to the load centers of the east should not be eligible for the credit. Such long distance transmission does little to enhance the stability or security of the grid and does nothing to

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[66] *Id*.

[67] FERC Order No. 890, 72 Fed. Reg. 12,266 (Mar. 15, 2007).

[68] FERC Order No. 1000, *supra* note 65.

[69] Emily E. Steinhilber & Jonathan R. Voegele, *Taxation and Electricity Transmission: Bringing Wind Energy onto the Grid* 166, *in* CRITICAL ISSUES IN ENVIRONMENTAL TAXATION VOLUME XII GREEN TAXATION AND ENVIRONMENTAL SUSTAINABILITY (Larry Kreiser et al. eds., 2012).

[70] *See* EXETER ASSOCIATES, INC. & GE ENERGY, PJM INTEGRATION STUDY: REVIEW OF INDUSTRY PRACTICE AND EXPERIENCE IN THE INTEGRATION OF WIND AND SOLAR GENERATION (2012). PJM is a regional transmission organization (RTO). The organization is responsible for operating a large portion of the electricity market and transmission infrastructure in the eastern interconnection.

[71] *Id*. at 115.

[72] EASTERN INTERCONNECT PLANNING COLLABORATIVE, PHASE 1 REPORT: FORMATION OF STAKEHOLDER PROCESS, REGIONAL PLAN, INTEGRATION AND MACROECONOMIC ANALYSIS (2011). The EIPC is a coalition of eastern energy stakeholders formed in 2010 organized to identify and analyze policy-planning options. This report is an inter-ISO transmission planning tool for the Eastern Interconnect.

mitigate the intermittency concerns inherent in wind power. Relaying power across such large spans will lead to increased line loss of electricity and economic losses. To this end, tying offshore wind resources with onshore firming capabilities will allow the resource to develop as part of a holistic resource mix rather than an independent resource competing on an uneven playing field.

National transmission policy should be strategic, aligning availability with need. This incentive will enable energy providers to deal with important regional questions while removing the need to transport power literally across the country.[73]

B. Regional Renewable Portfolio Standard and Renewable Electricity Credits

Individual states' Renewable Portfolio Standards (RPS) are responsible for the majority of onshore wind generation in the last decade and remain the primary driver of renewable energy installation.[74] Currently twenty-nine states plus the District of Columbia have mandatory RPS programs.[75] New Jersey has an RPS that specifically sets a target of 20.38% renewables by 2021, which specifically includes 1100 MW of offshore wind.[76] This individualized paradigm alone, however, is insufficient to incentivize significant offshore generation.

While a federal renewable portfolio standard would likely expedite offshore wind generation, such a standard is currently politically unworkable.[77] However, there is hope for a regional RPS. Regional cooperation on energy policy holds much promise for offshore wind. A regional RPS would be supported by, and complimentary to, the concept of regional energy policy and regulatory cooperation. The nature of the resource and the infrastructure needed (including a potential transmission "backbone" such as proposed by the Atlantic Wind Connection) to support it favors regional cooperation. A regional procurement standard would be in line with these objectives. In fact, according to the EIPC, the only way an offshore industry is economically viable in light of onshore wind is in the context of a regional or federal RPS-type program.[78]

RPS programs create a market for Renewable Energy/Electricity Credits (REC). A REC equates to the "renewableness" of the power a particular generator creates. Generally, an owner of one MWh of electricity produced from a qualified renewable resource owns one REC. This credit or certificate can then be sold in a national market. Often, utilities will buy RECs from other jurisdictions to help satisfy their domestic RPS requirements. When an REC is sold, however, the generator of the MWh can no

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[73] Steinhilber & Voegele, *supra* note 69, at 165.

[74] PHILLIP BROWN, CONG. RESEARCH SERV., R42576, U.S. RENEWABLE ELECTRICITY: HOW DOES THE PRODUCTION TAX CREDIT (PTC) IMPACT WIND MARKETS*?* 8 (2012).

[75] *Id*. at 7-8. A comprehensive list of current state RPS programs, including voluntary programs, is available from the Database of State Incentives for Renewables & Efficiency (DSIRE) program, a collaboration between the Dept. of Energy, Interstate Renewable Energy Council and North Carolina Solar Center. *See* DSIRE, Renewable Portfolio Energy Standards, *available at* http://www.dsireusa.org/documents/summarymaps/RPS_map.pdf.

[76] *See New Jersey Renewables Portfolio Standard,* DSIRE, http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=NJ05R&re=0&ee=0 (last visited Aug. 20, 2013).

[77] *See* FRED SISSINE, CONG. RESEARCH. SERV., RL34116, RENEWABLE ENERGY PORTFOLIO STANDARD (RPS): BACKGROUND AND DEBATE OVER A NATIONAL REQUIREMENT (2007).

[78] EIPC, *supra* note 72.

longer claim the green attribute of the power. When a generator (or a purchaser) wants to retain the "green" attributes of the renewable power, the REC must be retired, and no longer traded on the REC market.

Tying transmission and firming capabilities to renewable development as eligibility requirements, especially if done within a regional RPS (of which RECs are a part), would achieve two beneficial economic consequences. First, it would create a market for both the power generated and the REC's. Second, it would create certainty and stability within these markets that would in turn encourage investors and developers. Independent Service Operator–New England already requires that "renewable energy imported from outside the RTO needs to have firm transmission capacity. This requirement has kept REC prices high in New England and substantiates the need for additional transmission capacity…"[79] In New England,

> RECs, each of which receives a unique tracking identification number, represent the renewable attributes of electricity generated from a qualified renewable power facility… RECs can potentially provide an additional revenue source for wind projects, although the value of RECs can vary depending on the supply/demand balance within certain markets.[80]

A RIFTIC program would necessitate a continued REC market. However, this market should be based on a regional RPS rather than on individual state RPS programs. The mechanisms and certainty of this market based on a regional standard is unclear, however. But it *is* clear that a RIFTIC subsidy should include bundled transmission-firming capabilities rather than merely relying on compliance credits for state RPS. Although state RPS programs have traditionally driven, and will continue to drive, the installation of wind capacity, once the state RPS portfolio is satisfied, there will no longer be any major market incentives to push toward more wind power installation (or renewable installation generally), or to continue innovation of more efficient and technologically advanced turbines. States are unlikely to continuously raise RPS requirements to affect a transition to reliance on offshore wind.

Individually neither a regional RPS, a REC market, nor the PTC alone is sufficient to affect a transition to greater reliance on offshore wind. These three incentives, however, working strategically together in the context of a federal financing initiative could have a significant penetration impact. It is therefore preferable to incentivize regional planning through a federal subsidy that will encourage significant market penetration and eventual subsidy independence.[81]

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[79] EDWARD N. KRAPELS ET. AL., MEETING NEW ENGLAND'S RENEWABLE ENERGY TARGETS: A PRACTICAL THREE-STEP PLAN 9 n. 5 (2010).

[80] Brown, *supra* note 74, at 8 (2012).

[81] As an aside, a state or local regulatory analysis is beyond the scope of this Article. The intention of this Article is to keep a wide lens and broadly focus on the issues. More refined details are not necessary to conceptualize how the credit would work on the macro level.

V. The Framework of a New Subsidy

A. Proposed Legislation

Both the House and the Senate have proposed legislation that deals with the creation and implementation of a "renewable integration credit." Basically, the proposed integration credit in its various forms seeks to incentivize utilities to procure renewable energy and subsidize its use. The 111th and the 112th Congress each proposed legislation that sought to encourage the use of ethanol or biofuel and to provide payment to utilities that purchased wind or solar power.[82] S. 559 (111th Congress) has language that if passed would enact a "renewable integration credit" and go one step further by also creating a "renewable fuel" pipeline loan guarantee for up to 80% of the total project cost.[83] However, the renewable fuel pipeline provision is not directed to or targeted at encouraging firming infrastructure or even electricity transmission projects. Subsection (e) of Title II of the bill, entitled "Rapid Deployment of Renewable Fuel" calls for the "[i]nstallation of sufficient infrastructure to allow for the cost-effective deployment of clean energy technologies appropriate to each region of the United States…."[84] The pipeline credit is targeted specifically and exclusively at advanced bio-fuel, such as ethanol, biodiesel, and cellulosic biomass fuels. The use of the term "renewable fuel" per the Clean Air Act definitions contained in Section 211(0)(1) is far more limiting and less preferable than the use of the term "electricity." It is also less preferable to explicitly carve out transmission costs of electricity produced from wind and solar, or natural gas pipelines used for firming intermittent electricity. If the credit were adopted as currently written, infrastructure needed for the transmission of electricity produced from offshore wind would not qualify for the credit.

Despite this, the RIC could prove useful as a model or starting point. A truly effective tax subsidy, however, should be targeted at transmission infrastructure for the delivery of competitive renewable energy commercially deployable on a large scale. No federal program has been proposed for such a credit. Admittedly, tying natural gas to a tax credit that rewards installation of infrastructure introduces the hazard of subsidizing the gas industry while it is doing well and arguably does not need a subsidy. However, using the model of the RIC, but targeting *transmission* and providing the subsidy to utility/generator *and* transmission owners (transmission and production of gas must be functionally unbundled), would avoid this problem.[85]

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[82] In the 111th Congress, see H.R. 4149: A bill to amend the Internal Revenue Code of 1986 to provide a renewable electricity integration credit for a utility that purchases or produces renewable power (H.R. 4149) and Securing America's Future with Energy and Sustainable Technologies Act (S. 3576). In the 112th Congress, see Renewable Energy for a Brighter Future Act (H.R. 2391); Securing America's Future with Energy and Sustainable Technologies Act (S. 559); and A bill to amend the Internal Revenue Code of 1986 to provide a renewable electricity integration credit for a utility that purchases or produces renewable power (S. 1291). Note that S. 1291 contains only language for the renewable integration credit. S. 559 is a broader energy bill that includes a renewable integration credit as one of many provisions.

[83] S. 559, Title II—Production and use of renewable fuel, Section 201—Loan Guarantees for Projects to Construct renewable Fuel Pipelines.

[84] *Id*.

[85] While some may argue that actual unbundling is necessary to prevent discrimination, the operators will still be subject to the OATT and demonstrate a service commitment to renewable resources, and specifically offshore wind. Actual unbundling seems unnecessary in this regard.

Furthermore, in the case of the renewable Electricity Integration Credit, utilities are the beneficiaries, rather than producers or generation owners.[86] This credit is limited to wind and solar facilities.[87] The legislation proposed in the 112th Congress (H.R. 2391) mirrors legislation proposed in the 111th Congress (H.R. 4149) in all critical respects including a continuation of a payment in lieu of tax credit provision.[88] However, the integration credit is still geared toward the *production* of renewable electricity, in that the credit is based on the amount of electricity produced and sold to retail customers. In fact, the credit specifically is limited to the sale of electricity to retail customers. The credit does encourage utilities to purchase intermittent sources of power, which does create demand for renewable energy—a definite positive element of the RIC. But, the RIC does not seek to mitigate the intermittency problems of VERs, nor does it facilitate the transmission or connection issues attendant in actually integrating the renewable resources into the grid.

Indeed, the ARRA Section § 1603 Treasury Grant program in its current form (which would likely be popular in the future based on its initial success and percentage of projects opting for the cash grant[89]) specifically disqualifies costs incurred "by the producer of the electricity for interconnection facilities, distribution upgrades" or other transmission infrastructure projects.[90] While a RIFTIC program would not be designed to allow a utility or generator to claim costs that should be included in their rate base, certain initial interconnection costs should be eligible for subsidization. The purpose of this tax program would be to expedite and facilitate a rapid transition to a renewable-based energy economy. Ensuring that certain necessary technologies will be eligible for an offset will likely lead to a more enthusiastic push toward installation. Federal money for this technology would aid in combating the variability of connecting large amounts of intermittent resources into grid. The proposed House and Senate legislation may prove useful as a framework or starting point to begin construction of a new energy tax mechanism that is more comprehensive and addresses the major impediments to the large-scale installation of intermittent resources.

B. Department of Energy Offshore Wind Strategy and Permitting Issues

In 2011, the U.S. Department of Energy released "A National Offshore Wind Strategy: Creating an Offshore Wind Energy Industry in the United States (Strategy Report).[91] This report is a comprehensive approach outlining the steps the nation might take toward achieving a robust and fully functioning offshore wind energy industry. The Strategy Report identified offshore wind farm installation permitting issues as unduly duplicative and burdensome as a result of the nascent and untested nature

[86] *See* H.R. 4149 and H.R. 2391 defining "eligible taxpayer" as an electric utility.
[87] *See id*. (defining renewable electricity as wind and solar, respectively).
[88] *Id.* Sec. 6433(a) Renewable Electricity Integration Payments. The payment is tied to the number or kilowatt hours of renewable electricity (wind or solar) produced or sold to retail customers.
[89] PHILLIP BROWN & MOLLY SHERLOCK, CONG. RESEARCH SERV., R41635, ARRA SECTION 1603 GRANTS IN LIEU OF TAX CREDITS FOR RENEWABLE ENERGY: OVERVIEW, ANALYSIS, AND POLICY OPTIONS (2011).
[90] H.R. 4149 and H.R. 2391, Sec. 6433(d)(2) ("[C]harges intended to recover integration costs do not include amounts paid by the producer of the electricity for interconnection facilities, distribution upgrades, network upgrades....")
[91] *See* NATIONAL OFFSHORE WIND STRATEGY, *supra* note 9.

of the process.[92] Now that the Mineral Management Service is no longer in existence, the Bureau of Ocean Energy Management (BOEM) is in charge of offshore wind permitting decisions.[93] The restructuring provides the opportunity to engage in streamlining the permitting process of offshore facilities. A streamlined permitting process built into the responsibilities of the BOEM, combined with a priority status for "backbone" projects funded with tax subsidy dollars would effectively answer the DOE's call for a major hurdle to be significantly lessened.

Additionally, the federal permitting dashboard initiative implemented as a result of President Obama's call to streamline the permitting process for key federal projects can play an important role in "coordinated and concurrent project review processes."[94] The executive order created an online database and listing status that works to ensure that projects key to the national well-being—from energy to highway and bridge construction—benefit from diligent agency cooperation and public access to information. These projects are often environmentally challenging and permit intensive. The federal permitting dashboard could be used as a mechanism to deploy the streamlined permitting process that the DOE has determined to be a necessary and central component of creating a robust offshore wind energy industry in the United States.[95] Listing offshore wind projects on the federal dashboard will help address this need.[96]

C. 2009 New England Governors' Renewable Energy Blueprint

New England's "Renewable Scenario Development Analysis" (RSDA) developed by ISO-New England, identifies key potential for the New England states, through coordinated and targeted regional panning and regulatory cooperation, to develop regional renewable resources (primarily wind) goals.[97] Included in the RSDA are "[a] number of potential transmission projects … that would allow for the reliable transfer of power from offshore and onshore wind resource regions to load across New England, and for export to [neighboring states and regions]."[98] Additionally, the New England Governors' Renewable Energy Blueprint calls for a "commonality of purpose" across the region in achieving low-cost, low-carbon energy goals through regulatory mechanisms such as power procurement contracts, allocation of RECs and siting authority.[99] The report calls for increased interstate cooperation, especially regarding siting for transmission projects.[100] Finally, the report identifies key areas where federal and state cooperation should be improved to better facilitate

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[92] *Id*. at 10.

[93] ADAM VANN, CONG. RESEARCH SERV., R40175, WIND ENERGY: OFFSHORE PERMITTING 5-6 (2012).

[94] *See* Executive Order 13,604, Improving Performance of Federal Permitting and Review of Infrastructure Projects, 77 Fed. Reg. 18,887 (Mar. 28, 2012). Indeed, this has already begun to happen for onshore wind projects. Two are currently slated to be listed: the Chokecherry/Sierra Madre Wind Energy Project in Wyoming (3,000 MW) and the Mohave Wind Energy Project in Arizona (425 MW).

[95] NATIONAL OFFSHORE WIND STRATEGY, *supra* note 9.

[96] *Initial High Priority Projects*, FEDERAL INFRASTRUCTURE PROJECTS PERMITTING DASHBOARD, http://permits.performance.gov/projects/High%20Priority (last visited Sept. 23, 2013).

[97] THE NEW ENGLAND GOVERNORS' CONFERENCE, NEW ENGLAND GOVERNORS' RENEWABLE ENERGY BLUEPRINT 5 (2009), *available at* http://nescoe.com/uploads/September_Blueprint_9.14.09_for_release.pdf.

[98] *Id*. at 6.

[99] *Id*. at 7.

[100] *Id*. at 9.

regional renewable goals. These include giving priority to "renewable resources identified in regional planning processes" and expediting permitting processes through coordinated review of projects located in both state and federal waters.

While the regional planning perspective is addressed most recently in FERC Order 1000, it does not incentivize regional goals for renewable projects, nor does it ensure that such projects will be identified as priorities for purposes of federal funding. "Together, the states' mutual authority, [compatible] competitive solicitation processes, and universal focus on cost to consumers provides the foundation for a multi-state or regionally synchronized approach to support those renewable resources able to serve New England consumers most cost effectively."[101]

Energy growth in New England and the Mid-Atlantic will require new transmission. Despite modest demand-growth forecasts, the region has inadequate infrastructure to support significant new generation capacity. Further informing this need is the combination of the desire to develop generation from renewables rather than fossil fuels and the unique, intermittent nature of wind and solar, plus the impending retirement of coal-fired power plants due to imminent EPA carbon emission regulation.[102] The New England Governors' Conference report identifies areas in the siting review processes, including statutory flexibility (such as statutorily condoned regional planning compacts, initiatives, or joint hearings) and timeline review processes, that present opportunities to engage in simultaneous review and possible approval of interstate transmission facility siting decisions. Finally, the report urges state and federal coordination, specifically that federal funding decisions include consideration of regional planning analysis.

FERC order 1000 speaks to this on a cursory level but does not address the federal funding question, nor does it make regional planning mandatory or incentivize, to the degree necessary, reliance on regional planning for interstate siting decisions. Because states maintain near-exclusive jurisdiction over siting decisions within their borders, and the federal government may not legitimately make these decisions absent extenuating circumstances, a robust federal policy aimed at regional initiatives would make such planning collaborative more decisive. Again, priority status for important projects is key to streamlining the permitting processes. Regional coordination will also aid this objective. A federal tax incentive that specifically targets regional initiatives and is designed with these kinds of regional projects in mind will help incentivize federal and state project coordination.

D. Offshore Wind and Firming Must Gain a "Social License to Operate"

To borrow a term from the International Energy Agency, offshore wind must gain a "social license to operate."[103] The political motivation to extract domestic oil and gas must be harnessed to develop the political motivation to develop domestic wind. Tying the two resources together represents the best hope of moving a wind policy forward. Fundamentally, the political impetus behind the natural gas

[101] *Id.* at 25.
[102] *Id.* at 15.
[103] INTERNATIONAL ENERGY AGENCY, GOLDEN RULES FOR A GOLDEN AGE OF GAS: WORLD ENERGY OUTLOOK SPECIAL REPORT ON UNCONVENTIONAL GAS 10 (2011). This term as used by the International Energy Agency applies to exploitation of unconventional gas resources. It is appropriate in this context as well, considering the often-staunch political and social opposition to wind farms, especially offshore.

revolution is energy security and freedom from foreign oil. Importantly, while wind power is not risk-free (e.g., there are intermittency concerns and weather-related interruptions), it does address issues of national security and energy independence. These questions of political motivation and societal acceptance are aptly characterized by the International Energy Agency as the "social license to operate." In order for a resource to be integrated fully into the energy lexicon, it is important that the communities adopting the change be knowledgeable and aware of the characteristics of the resource, and the costs and benefits associated with its use, as well as the costs and benefits associated with choosing existing resources over alternatives.

Social acceptance of an offshore wind industry will be predicated on identifying and addressing key issues facing the consuming public. Policy makers will be unable to move a reform-oriented program such as the proposed RIFTIC forward without the corresponding political and social will. The public must not only be aware of the problems facing the national energy landscape and have all of the available information regarding available choices, but must be actively convinced that accepting a new way forward is the right thing to do. The social license premise operates for both offshore wind and natural gas firming projects. The new federal tax incentive focused on regional cooperation will go a long way toward facilitating the social license to operate and moving the conversation from contentious stalemate to purposeful cooperation.

VI. Conclusion

Without significant investments in transmission infrastructure, the full realization of domestic offshore resources remains unlikely. Tying the offshore wind resources with onshore firming capabilities—from the beginning—will allow the resource to develop as part of a holistic energy mix rather than an independent resources competing on an uneven playing field. Congress should act to affect a long-term extension of the PTC as a component of a more comprehensive energy subsidy aimed at addressing the long term carbon mitigation, transmission, and reliability goals that must play central roles in a national energy policy.