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Renewing the Budget: Recommendations for Louisiana's Renewable Energy Tax Credit

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INTRODUCTION

In 2007, Louisiana legislators enacted the Wind and Solar Energy Systems Tax Credit (WSES), a Louisiana tax credit that encourages increased investment and usage of renewable energy technologies, including both solar and wind power.[1] Over the past five years, actual costs of the tax credit have exceeded budget projections by more than 18 times.[2] The 2012 Louisiana Tax Exemption Budget states that the purpose of the wind and solar tax exemption will be achieved if operated "in a fiscally effective manner."[3] Critics say that the inflated costs of the tax credit are in no way fiscally effective.[4] On the other hand, proponents believe that higher costs from the tax credit represent more consumers taking advantage of the subsidy, which creates a positive effect on Louisiana's economy.[5]

The underlying purpose of Louisiana's renewable energy tax policy needs to be reexamined. Due to vague drafting of the tax credit and a misguided approach, the WSES is wreaking havoc on the Louisiana state budget. A novel assessment of the policy's goals is necessary to properly recommend a course of action to the Louisiana Legislature in their future attempt to amend the tax credit.[6] This includes examining sources of energy on which to use tax policy, the negative effects of tax policy in general, and how to manage externalities from non-renewable energy sources. When tax policy extends into the energy sector, many considerations arise. Such considerations include the length of time that the subsidy

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1. Act No. 371, 2007 La. Acts 2076, 2077 (codified at LA. REV. STAT. ANN. § 47:6030 (2009)).

2. Melinda Deslatte, *La. Solar Tax Credit Price Tag Far Above Estimates*, BUS. WK. (Aug. 9, 2012), http://www.businessweek.com/ap/2012-08-09/la-dot-solar-tax-credit-price-tag-far-above-estimates.

3. LA. DEP'T OF REVENUE, TAX EXEMPTION BUDGET 2011–2012, at 123 (2011–2012), http://www.revenue.louisiana.gov/forms/publications/TEB%282011%29.pdf.

4. *See* Michelle Millhollon, *Official: Solar Energy Tax Credit Needs Limits*, THE ADVOCATE (Oct. 23, 2012), http://theadvocate.com/news/4213973-123/official-solar-energy-tax-credit.

5. *See id.*

6. Maria Koklanaris, *Louisiana Lawmakers Approve Phaseout of Solar Panel Tax Credit*, 2013 STT 108–18. The Louisiana State Senate approved legislation to sunset the WSES by January 1, 2017.

should remain in effect, how to encourage energy producers to be self-sufficient, and how to manage demand of energy.

To recommend a fresh course of action to the Louisiana Legislature, this Comment will first discuss the pitfalls of subsidizing renewable energy sources and will analyze many alternatives to tax policy that encourage the use of renewable energy sources. These alternatives include renewable portfolio standards, feed-in tariffs, and research grants and loans as tools to incentivize renewable energy use. Additionally, cap-and-trade programs and carbon taxes indirectly incentivize renewable energies by imposing restrictions and costs on non-renewable activities. Each of these alternatives is currently utilized internationally or within the United States. Some alternatives are even present in Louisiana.

Part I of this Comment will explain the current goals of legislators who shape federal renewable energy policy. Part II explains the reasons for using tax policies to promote renewable energy use and explores the negative consequences of using tax policy to achieve these goals. Part II also considers the petroleum industry as a tax policy case study to draw important lessons for how renewable energy tax policy should be structured. Part III examines alternatives to using tax subsidies to encourage the use of renewable energy sources. Part IV introduces the issues with Louisiana's wind and solar energy systems tax credit and analyzes the effectiveness of wind and solar energy compared to other energy sources. Finally, Part V presents an alternative federal policy to encourage renewable energy production, considers proposed amendments to the Louisiana tax credit, and recommends a new course of action for Louisiana's renewable energy system tax credit.

I. BACKGROUND

A. The Importance of Renewable Energy

Renewable energy sources have been a recent topic of debate since the goal of United States energy independence is gaining prominence.[7] One current debate centers on whether the United States should attain energy independence through supporting increased oil and gas drilling and providing tax cuts for domestic oil production[8] or through minimizing the country's oil dependence by

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7. Javier E. David, *US Energy Production Growing by Leaps and Bounds: BP*, CNBC (June 14, 2013, 11:21 AM), http://www.cnbc.com/id/100816544.

8. *See The American Energy Initiative : A Focus on the Outlook for Achieving North American Energy Independence Within the Decade*: *Hearing Before the Energy & Power Subcomm. of the Energy & Commerce Comm.*, 112th Cong. 2

expanding support for clean energy sources (wind, solar, biomass, hydropower, clean coal, natural gas, and nuclear power).[9]

Climate change is another global concern that is driving the development of renewable energy sources.[10] The opinion of a large scientific community is that greenhouse gases affect the world's climate, disrupt agriculture and nations' economies, and cause migration effects.[11] Experts advocate a transformation of energy production, consumption habits, and transportation methods in order to combat the consequences of climate change.[12]

Regardless of which policy is followed, the United States has long maintained a large stake in the advancement of alternative energy sources. In a 1990 report, the General Accounting Office stated that "developing alternative fuels, increasing fuel efficiency in transportation, and continuing development of the Strategic Petroleum Reserve" would be more beneficial than additional oil and gas subsidies towards the goal of increasing energy security.[13] The United States Department of Energy's mission for renewable energy today is to "[c]atalyze the timely, material, and efficient transformation of the nation's energy system and secure U.S. leadership in clean energy technologies."[14]

In order to encourage the development of alternative energy technology,[15] Congress has instituted many federal tax credits.[16] Most states also offer tax incentives and other policies to encourage

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(2012), http://energycommerce.house.gov/sites/republicans.energy-commerce.house .gov/files/Hearings/EP/20120913/HHRG-112-IF03-WState-Weiss D-20120913.pdf (statement of Daniel J. Weiss, Senior Fellow, Ctr. For Am. Progress Action Fund).

9. *See* THE WHITE HOUSE, BLUEPRINT FOR A SECURE ENERGY FUTURE (2011), http://www.whitehouse.gov/sites/default/files/blueprint_secure_energy_future.pdf.

10. *See* Angela Merkel, *Foreword* to GLOBAL SUSTAINABILITY, at ix (Hans Joachim Schellnhuber et al, eds., 2010) ("Climate change threatens both our security and economic development.").

11. ERIC A. POSNER & DAVID WEISBACH, CLIMATE CHANGE JUSTICE 1 (2010).

12. Merkel, *supra* note 10, at ix.

13. U. S. GEN. ACCOUNTING OFFICE, GAO/GGD-90-75, TAX POLICY: ADDITIONAL PETROLEUM PRODUCTION TAX INCENTIVES ARE OF QUESTIONABLE MERIT 4 (1990), http://www.gao.gov/assets/150/149358.pdf.

14. *Mission*, U.S. DEP'T OF ENERGY, http://energy.gov/mission (last visited Oct. 1, 2013).

15. *See generally* 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 (2006).

16. *See id.* at 64–78 (providing examples of federal tax credits).

the development of renewable energy sources that work in conjunction with the federal credits.[17]

II. ECONOMIC BASIS FOR TAX CREDITS AND HISTORICAL EXAMPLES IN THE ENERGY SECTOR

A. The Case for Tax Policy

In order to properly analyze the effectiveness of Louisiana's tax credits, it is important to understand how and why legislators use tax policy to encourage certain activities. Tax theory aims to discover how to most efficiently allocate resources without the negative effects that taxes can cause. One such negative effect is market distortion.[18] Market efficiency can be measured by a number of methods. Tax theorists assume that a perfectly efficient market generates an ideal allocation of resources.[19] This ideal allocation of resources is referred to as the Pareto efficiency.[20] A Pareto efficient market is one where no single participant can increase his own benefits without producing negative effects for another party.[21] The Kaldor-Hicks standard is another method of measuring efficiency, but it adopts a macro-economic view rather than the micro-economic view of the Pareto method. According to the Kaldor-Hicks method, efficiency is achieved when the market participant's change in activity benefits society at large, even though some may be negatively affected.[22] However, these measures of efficiency sometimes fall short. Perfectly efficient markets rarely exist because of externalities. Externalities are positive or negative side effects that result from market activity and distort the true costs or benefits derived from the activity.[23]

In the energy industry, the most prevalent examples of externalities are pollutants. Without market regulation, non-clean energy companies only pay for their own activities (the labor, materials, and indirect costs) while the community bears the social

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17. *See Database of State Incentives for Renewables & Efficiency*, U. S. DEP'T OF ENERGY, http://www.dsireusa.org/ (last visited Oct. 1, 2013).
18. *See* Eric M. Zolt, *The Uneasy Case for Uniform Taxation*, 16 VA. TAX REV. 39, 69 (1996).
19. *Id.*
20. *Id.* at 61.
21. *Id.*
22. *See* Nicholas Kaldor, *Welfare Propositions of Economics and Interpersonal Comparisons of Utility*, 49 ECON. J. 549 (1939).
23. Zolt, *supra* note 18, at 69.

and environmental costs of the resulting pollution.[24] Thus, the market is inefficient because the energy producers are not paying the socially efficient price.[25] For this reason, governments tend to step in and implement either regulation or tax policy. English economist, Arthur Pigou, was the first to suggest the theory of using tax policy to manage externalities.[26] The Coase theorem suggests an alternative to tax policy with a private market solution to the problem of negative externalities.[27] The Coase theorem accepts that market failures exist, so Coase suggests that if a party causes a negative externality on another party who is aware of the cost, without transaction costs, the parties could come to an efficient solution.[28]

Tax policy in the energy sector consists of either taxes or subsidies to accomplish social, economic, environmental, or financial goals by influencing the market.[29] Taxes are used to discourage a certain activity through monetary means; however, subsidies, such as tax credits, are incentives.[30] In the energy sector, tax credits are mainly used to encourage the growth of technology development.[31] The key to finding the most effective use of tax credits is to support subsidies in industries where the initial capital outlay presents the largest barrier of entry into the market.[32]

B. The Negative Effects of Using Tax Policy

While taxes can be useful to disincentivize less desirable activities, the most efficient tax is one that causes the lowest amount of market distortions.[33] There are three effects that distortions cause: (1) the income effect, (2) the substitution effect, and (3) the financial effect.[34]

The income effect, which is created by the imposition of taxes, is measured by the changes in consumer behavior to make up for

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24. *See* DAVID HUNTER ET AL., INTERNATIONAL ENVIRONMENTAL LAW AND POLICY 105–07 (Thomson Reuters/Foundation Press, 4th ed. 2011).
25. *Id.* at 69–70.
26. *See* A.C. PIGOU, THE ECONOMICS OF WELFARE 192–93 (4th ed. 1960).
27. *See* R.H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960).
28. *See id.*
29. SALVATORE LAZZARI, CONG. RESEARCH SERV., RL33578, ENERGY TAX POLICY: HISTORY AND CURRENT ISSUES 1 (2008), http://www.fas.org/sgp/crs/misc/RL33578.pdf.
30. *Id.*
31. *See generally id.*
32. Hymel, *supra* note 15, at 45.
33. Zolt, *supra* note 18, at 63.
34. *Id.*

lost purchasing power.[35] An example of an income effect is a consumer working extra hours to supplement income spent to pay for energy cost increases.

The substitution effect occurs when consumers choose lower-taxed activities or goods instead of similar, higher-taxed activities or goods.[36] For example, if one could hypothetically purchase natural gas and petroleum energy at the same price and a tax on petroleum was imposed, a rational consumer would purchase natural gas over petroleum.

Finally, the financial effect occurs when individuals or corporations change their procedures in order to manipulate the tax treatment of their activities.[37] Energy companies hiring tax consultants to provide the most favorable tax treatment is a financial effect.

Policy-makers aim to minimize market distortion in order to lessen these effects of tax policy that result in a deadweight loss in the market.[38] A deadweight loss is the difference between the free market level of supply and demand and the inefficiencies caused by the income effect, substitution effect, and the financial effect. The amount of deadweight loss is influenced by the price elasticity of the activity being taxed.[39] Price elasticity is the sensitivity of demand to changes in price;[40] greater price elasticity leads to more sensitivity to demand. If a good is more sensitive to demand, the tax policy will cause more distortion due to the influences on consumer behavior.[41] Demand is elastic if the price elasticity index is greater than ±1.[42]

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35. *Id.* The income effect is most commonly observed through two scenarios: (1) when taxes are imposed on a good, which is passed on to the consumer, and (2) when taxes are imposed on the consumer. In the first scenario, a person with unchanged income has less purchasing power to acquire the good. In the second scenario, however, the consumer has less purchasing power when the prices remain constant.

36. *Id.*

37. *Id.*

38. *Id.* Since the goal is finding a tax that minimizes distortions in consumer behavior, a lump sum tax is often discussed. A lump sum tax is fixed and cannot be changed based on consumer behavior. However, lump-sum taxes are often rejected because of problems with equity. Persons with lower income take on the same burden as those with higher income. *Id.* at 64.

39. *Id.*

40. JOHN C.B. COOPER, ORG. OF THE PETROLEUM EXPORTING COS., PRICE ELASTICITY OF DEMAND FOR CRUDE OIL: ESTIMATES FOR 23 COUNTRIES 3 (2003), http://15961.pbworks.com/f/Cooper.2003.OPECReview.PriceElasticityofDemandforCrudeOil.pdf.

41. Zolt, *supra* note 18, at 63.

42. *Economics Basics: Elasticity*, INVESTOPEDIA, http://www.investopedia.com/university/economics/economics4.asp#axzz2BOllExaX (last visited Oct. 1,

Likewise, demand is inelastic if the index of the good is less than ±1.[43] For example, the price elasticity index for crude oil in the United States is –0.061.[44] This means that crude oil is a very inelastic energy source,[45] and deadweight loss would be minimal if tax policies manipulate oil prices. The price elasticity index acts as a multiplier to the market distortions and worsens the situation as the elasticity of the product increases. In other words, consumers will generally continue to buy petroleum products at the same level if a tax is imposed on the product. In comparison, one limited study placed the price elasticity for renewable energy sources at approximately +2.7, which means tax legislators would be more hesitant to subsidize the renewable energy sector.[46]

B. Use of Tax Subsidies in the Oil Industry

Historical examples of tax policy in the energy industry are important because they illustrate potential problems with future policies. Such problems include when to end tax subsidies,[47] whether to extend the duration of tax subsidies until the industry achieves financial independence, and whether the burdens on both federal and state income are ultimately worth it. It is therefore appropriate to examine the oil industry's rise to the United States' primary energy source and the role that tax policy played in that rise. There were three primary reasons for the tax subsidies provided to the oil industry: (1) to encourage petrochemical exploration for reserves during the initial research and development stages of oil

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2013). The more that the elasticity indexes exceeds ±1, the more elastic the item is. Items with high elasticity are often luxuries or have substitutes. *Id.*

43. *Id.*

44. COOPER, *supra* note 40, at 4.

45. Oil is very inelastic because it is a necessary commodity. The number of substitutes is very limited. The long-run price elasticity of crude oil increases to -0.453. The long-run index uses demand numbers that assume more substitutes will become available over time.

46. Erik Johnson, *The Price Elasticity of Supply of Renewable Electricity Generation: Evidence from State Renewable Portfolio Standards* 2 (Ga. Inst. of Tech., Working Paper No. WP2011-001, 2011), https://smartech.gatech.edu/bitstream/handle/1853/44246/WP2011-001EJohnson.pdf?sequence=1.

47. Nick Juliano, *Tax Policy: Building a Bridge to Zero -- Questions Swirl Around Design of Wind Incentive Phaseout*, E&E PUBLISHING, LLC (June 12, 2012), http://www.eenews.net/public/EEDaily/2012/06/12/2 ("Determining a definite endpoint for the [production tax credit] is difficult because a number of variables are at play -- primarily the price of [competing sources], as well as the pace of advancements in . . . technology, the cost of credit for . . . developers and the broader, economywide demand for energy.").

production, (2) to mitigate dangers that arise during the production cycle, and (3) to bridge the gap between the activity costs in the private and public sectors.[48]

The oil industry began when petroleum was discovered to be the optimal alternative to coal.[49] Incentives to boost the amount of reserves and production levels began in 1916 with the expensing[50] of intangible drilling costs[51] (IDCs).[52] Deductible IDCs included labor costs, material costs, overhead, and repairs as expense write-offs.[53] In 1926, Congress implemented the percentage depletion allowance, which allows taxpayers to recuperate a percentage of the costs of mineral investment.[54] Under the percentage depletion allowance, the extraction of oil deposits from a landowner's property is recognized as an expense. The purchase price of the land, exploration costs, and investments are recognized as capital costs, which means that the corresponding costs can be deducted in future tax years.[55] The annual allowed recovery for extraction is based on a fixed percentage of nationwide production, so the recoverable amount can exceed actual investment by the taxpayer.[56]

In the 1970s, the United States began to deplete its proven oil reserves while consumer demand continued to increase.[57] In response, Congress passed two major pieces of legislation to encourage development of unproven oil resources.[58] First, the Crude Oil Windfall Profit Act of 1980 provided a $3.00 tax credit per barrel of oil produced in the United States.[59] Second, the Energy Policy Act of 2005 provided many incentives for the oil and gas industry, as well as the renewable energy industry. The 2005 act

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48. Hymel, *supra* note 15, at 47.
49. *Id.*
50. For accounting treatment, expensing is the deduction of expenses in the current year rather than capitalizing, which allows deductions over the useful life of an asset.
51. Intangible drilling costs are expenditures that have no salvage value.
52. LAZZARI, *supra* note 29, at 2.
53. T.D. 2447, 19 Treas. Dec. Int. Rev. 31 (1917). Expensing refers to the ability to deduct losses from profits in order to lower the amount of taxable income. This way, oil producers could fully deduct the costs of bringing a well into production from income.
54. *See* U.S. GEN. ACCOUNTING OFFICE, PETROLEUM AND ETHANOL FUELS: TAX INCENTIVES AND RELATED GAO WORK 5 (2000), http://www.gao.gov/new.items/rc00301r.pdf.
55. *See* Hymel, *supra* note 15, at 48.
56. *Id.*
57. *Id.* at 47, 49.
58. *See id.* at 50–54. Unproven sources include shale oil, tar sand oil, biomass, liquid and gaseous coal.
59. Crude Oil Windfall Profits Act of 1980, Pub. L. No. 96-223, 94 Stat. 229 (1980) (current version at 26 U.S.C. 45K (2006)).

broadens provisions that allow more taxpayers to qualify for the percentage depletion allowance and increases the maximum amount of barrels that can utilize the allowance.[60] The effect of the 2005 Act is a tax cut of $18.8 billion across the energy industry.[61] According to a 2005 Congressional Budget Office report, the petroleum and natural gas industry have the lowest capital effective tax rate (9.2%) among corporations.[62] Given the United States' continued dependence on petroleum,[63] the severely low effective tax rates on the oil industry, and the recent failed attempts of incentivizing further oil production,[64] a change in petroleum industry tax policy is necessary.

III. COMPARISON OF LOUISIANA'S TAX CREDITS TO OTHER APPROACHES

There are several alternatives to Louisiana's renewable energy tax credit that would encourage renewable energy use and development of renewable energy technology. These alternatives involve regulatory intervention or adaptations of tax policy. Some policies incentivize the desired activity, while others only manage externalities by imposing restrictions on less desirable activities.

A. Incentives for Renewable Energy Markets

1. Renewable Portfolio Standards

Renewable Portfolio Standards (RPS) are state-level policies that require utility companies to allocate a set rate of renewable-

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60. Joint Committee on Taxation, *Description and Technical Explanation of the Conference Agreement of H.R. 6, Title XIII, the "Energy Tax Incentives Act of 2005*" (JCX-60-05), July 28, 2005, http://www.jct.gov/publications.html?func=startdown&id=1555.

61. LAZZARI, *supra* note 29, at 11.

62. PAUL BURNHAM & LARRY OZANNE, CONGRESSIONAL BUDGET OFFICE, TAXING CAPITAL INCOME: EFFECTIVE RATES AND APPROACHES TO REFORM 11 (2005), http://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/67xx/doc6792/10-18-tax.pdf.

63. *See* U.S. ENERGY INFO. ADMIN., DOE/EIA-0383(2012), ANNUAL ENERGY OUTLOOK 2012 WITH PROJECTIONS TO 2035, at 131 (2012), http://www.eia.gov/forecases/aeo/pdf/0383(2012).pdf (noting that projected U.S. consumption of oil and other petroleum sources through 2035 have a projected growth rate of 0.0%).

64. *See* U.S. ENERGY INFO. ADMIN., SR/OIAF/2004-01, ANALYSIS OF FIVE SELECTED TAX PROVISIONS OF THE CONFERENCE ENERGY BILL OF 2003, at 2 (2004), http://www.eia.gov/analysis/requests/archive/2004/ceb/pdf/sroiaf%282004%2901.pdf ("With the exception of Section 29, the provisions considered in this report do not measurably increase domestic oil or gas production over the next 10 years or over the forecast through 2025.").

sourced electricity to consumers.[65] The purpose of RPS policy is to increase the market demand of renewable energy sources.[66] The hope behind this purpose is that renewable energy sources will become competitive alternatives due to cost reductions from economies of scale.[67] Utility companies can comply with RPS mandates in three ways: (1) acquiring a renewable energy generation unit, (2) purchasing bundled renewable electricity from a renewable facility, or (3) purchasing renewable energy certificates.[68] A renewable energy credit is a tradable commodity that represents one megawatt hour (MWh) of electricity produced from a renewable generator.[69] Renewable energy producers may redeem certificates issued by the state's RPS and sell these certificates to utility companies who are mandated to meet RPS standards. The certificates represent compliance with state mandates and theoretically shift the environmental damage payments to the energy producers.

Renewable certificate transactions between renewable energy producers and the utility companies illustrate application of the Coase theorem.[70] According to the theorem, if the cost to compensate the harmed party is less than the costs required to prevent the harm, the party causing the harm would rather reach a bargain with the affected parties than pay the price of prevention.[71] The compensatory payments become factored into the activity's cost of production when the "winner" pays the harmed party.[72] In applying this illustration to RPS, the system assumes that it is more cost effective for the utilities to purchase certificates than to prevent the harm by completely eliminating non-clean energy sources or creating renewable sources.

Louisiana is currently exploring the implementation of RPS.[73] In 2010, the Louisiana Public Service Commission (LPSC) approved a

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65. *Renewable Portfolio Standards*, U.S. ENVTL. PROT. AGENCY, http://www.epa.gov/agstar/tools/funding/renewable.html (last updated Sept. 27, 2012).

66. *Id.*

67. OLE LANGNISS & RYAN WISER, ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY, THE RENEWABLES PORTFOLIO STANDARD IN TEXAS 14 (2001), http://eande.lbl.gov/sites/all/files/publications/report-lbnl-49107.pdf; *see also* Alan McDonald & Leo Schrattenholzer, *Learning Rates for Energy Technologies*, 29 ENERGY POL'Y 255, 255 (2001) (noting that economies of scale occur when unit costs decrease with increased experience and expertise).

68. *Renewable Portfolio Standards*, *supra* note 65.

69. *Id.*

70. *See* Coase, *supra* note 27.

71. *See generally id.*

72. *Id.* at 11.

73. *See* Re-study of a Renewable Portfolio Standard for the State of Louisiana, Docket No. R-28271 Subdocket B (La. Pub. Serv. Comm'n August 21,

RPS pilot program.[74] The program remains in the experimental stage of implementation to verify that utility costs do not significantly increase from companies passing on the costs to customers.[75] The pilot program contains two major components: the research component and the Request for Proposal (RFP) component.[76] The research component requires investor-owned utility companies to develop at least three projects that provide data about renewable energy resources.[77] Companies either may construct their own renewable energy generators or must create a pricing arrangement with renewable energy producers to purchase energy; these projects must be in full operation by the end of 2013.[78] The RFP component applies to all utilities in Louisiana and requires each company to submit proposals for development of long-term (ten to twenty years) renewable energy resources.[79] However, the Re-Study docket does not specify location requirements for either the research or the RFP projects.[80] Therefore, the utilities could potentially farm their renewable production outside of Louisiana while the non-renewable activity continues at the same level within the state.

2. Feed-in Tariffs

Feed-in tariffs are fast growing market incentives that were first implemented in Europe twenty years ago.[81] Feed-in tariffs mandate that utility companies enter into long-term (10–20 year) supply contracts with renewable energy producers at fixed rates.[82] The rates are often set at the renewable energy producer's cost of production or, in some cases, a premium is added to the market price of electricity.[83] Generally, the rates are differentiated between types of

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2013), *available at* http://lpscstar.louisiana.gov/star/ViewFile.aspx?Id=e81d68d0-0101-4c38-8b8a-8e2f0814d321.

74. Re-study of a Renewable Portfolio Standard for the State of Louisiana, Docket No. R-28271 Subdocket B (La. Pub. Serv. Comm'n June 23, 2010), *available at* http://lpscstar.louisiana.gov/star/ViewFile.aspx?Id=d1389c71-c14f-46e1-8fa9-4d429cc0431b.

75. *Id.* at 4.

76. *Id.* at 3–5.

77. *Id.* at 4.

78. *Id.* at 5.

79. *Id.*

80. *See id.*

81. Wilson H. Rickerson, et. al., *If the Shoe FITs: Using Feed-in Tariffs to Meet U.S. Renewable Electricity Targets*, 20 ELECTRICITY J. 73, 73 (2007).

82. *Id.*

83. *Id.*

renewable energy to allow the producer to recover the initial investment of production and to possibly increase capacity.[84] In addition to incentivizing the production of renewable energy, a major benefit of feed-in tariffs is the reduced strain on the power grid.[85]

In Europe, the predecessor to feed-in tariffs began in 1991 with the *Stromeinspeisungsgesetz* (Electricity Feed Act), which established the price for German utilities purchasing renewable energy at 90% of the market electricity rate.[86] This market-guided approach ultimately failed when German energy prices decreased below a profitable level for renewable producers. Germany subsequently enacted the *Erneuerbare-Energien-Gesetz* (EEG or Renewable Energy Act), which fixed prices by an independent index.[87] The EEG provided fixed price contracts for twenty years, with rates decreasing per year to adjust for economies of scale.[88] The initiative has, to date, been rather successful, as Germany has increased its renewable energy production from 6.3% of national energy consumption in 2000[89] to 20.8% in 2011.[90] With the support provided by EEG incentives for renewable generators, Germany has developed the greatest capacity of solar energy production in the world.[91] Denmark and Spain followed Germany's example by introducing similar incentives through feed-in tariffs. These three nations now supply 53% of the world's wind production.[92]

In 2001, a debate between proponents of feed-in tariffs and proponents of renewable portfolio standards occurred in the European Union when the European Parliament Directive recommended renewable energy goals for each member nation but did not specify how the goals should be attained.[93] Poland, the United Kingdom, Sweden, Italy, and Romania chose renewable portfolio standards; the remaining countries in the European Union

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84. Carolyn Fischer & Louis Preonas, *Combining Policies for Renewable Energy: Is the Whole Less than the Sum of its Parts?* 5 (Res. for the Future, Discussion Paper No. 10-19, 2010), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1569634.
85. *See* Ricardo Rüther & Roberto Zilles, *Making the Case for Grid-Connected Photovoltaics in Brazil*, 39 ENERGY POL'Y 1027 (2011).
86. Rickerson, *supra* note 81, at 74.
87. Rickerson*, supra* note 81, at 74.
88. *Id.*
89. *Id.* at 75.
90. *Crossing the 20 Percent Mark: Green Energy Use Jumps in Germany*, SPIEGEL ONLINE (Aug. 30, 2011, 1:04 PM), http://www.spiegel.de/international/crossing-the-20-percent-mark-green-energy-use-jumps-in-germany-a-783314.html.
91. Rickerson, *supra* note 81, at 74.
92. *Id.*
93. *Id.* at 75.

decided to implement feed-in tariffs.[94] The main difference between feed-in tariffs and renewable portfolio standards is that renewable portfolio standards use quantity-based regulation in the energy market while feed-in tariffs are a price-based regulation.[95] In other words, quantity-based policies control the amount of energy production allowed in the market. Alternatively, rice-based mechanisms focus solely on manipulating the price of an energy source. In order to study the effectiveness of these two energy strategies, the European Commission created a report in 2005.[96] Most countries aiming to improve renewable energy portfolio performance adopted a feed-in tariff system:[97] the fact that most countries moved to feed-in tariffs indicates that feed-in tariffs are more effective at encouraging renewable energy production than renewable portfolio standards in the wind and biomass industries. Additionally, the study found that price stability from the long-term contracts led to increased consumer confidence compared to the portfolio standards that were not as insulated from price risks.[98]

While renewable portfolio standards and feed-in tariffs are viewed as separate policies in Europe, several states in the U.S. weave the two policies into one comprehensive program.[99] Major elements of feed-in tariffs are included in the previously mentioned Louisiana Public Service Commission general order to re-evaluate renewable portfolio standards.[100] Also, tariff options are available in the research component of the Louisiana pilot program for renewable energies.[101] The tariff pricing agreements have pricing terms of three years and should be fully operational by the end of 2013.[102] The pricing structure is the value of the utility's avoided cost of purchasing renewable energy rather than producing it, plus a

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94. *Id.*

95. Mary Jean Bürer & Rolf Wüstenhagen, *Which Renewable Energy Policy is a Venture Capitalist's Best Friend? Empirical Evidence from a Survey of International Cleantech Investors*, 37 ENERGY POL'Y 4997, 4999 (2009).

96. *The Support of Electricity from Renewable Energy Sources* (Comm'n of the Eur. Cmtys., Working Paper No., 2008), *available at* http://ec.europa.eu/energy/climate_actions/doc/2008_res_working_document_en.pdf.

97. *Id.* at 6–7. The fact that most countries moved to feed-in tariffs indicates that feed-in tariffs are more effective at encouraging renewable energy production than renewable portfolio standards in the wind and biomass industries.

98. Rickerson, *supra* note 81, at 76.

99. *Id.* at 74.

100. Re-study of a Renewable Portfolio Standard for the State of Louisiana, Docket No. R-28271 Subdocket B (La. Pub. Serv. Comm'n June 23, 2010), *available at* http://lpscstar.louisiana.gov/star/ViewFile.aspx?Id=d1389c71-c14f-46e1-8fa9-4d429cc0431b.

101. The option requires the utilities to develop a tariff and contracts to purchase renewable energy from a new renewable energy source. *Id.* at 3–4.

102. *Id.* at 4.

$30 per MWh premium.[103] As mentioned above, the main benefit of feed-in tariff policy is long-term price stability and consumer confidence; the benefits are negated when the policy provides for short-term contracts instead.[104] The Louisiana renewable energy pilot program may not produce accurate results, however, because new producers of renewable energy will be less inclined to enter the market without a long-term financing commitment.

3. Research and Development Support

Research grants, loans, and subsidies are incentives for renewable energy production provided at the federal or state level. In Europe, these incentives have mostly been replaced by feed-in tariff and renewable portfolio standards.[105] Under the American Reinvestment and Recovery Act of 2009,[106] renewable energy ventures are eligible for a 30% cash grant in lieu of the federal investment tax credit[107] or production tax credit.[108] Also available for renewable energy producers is the Section 1603 grant program.[109] The program is more valuable than the investment tax credit when taxpayers do not have sufficient tax liability[110] and "has been heavily used by the wind and geothermal energy sectors: as of March 1, 2010, 64% of all 2009 large wind power capacity . . . had elected . . . the grant rather than the PTC (production tax credit)."[111]

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103. *Id.*

104. Rickerson, *supra* note 81, at 73.

105. Fischer & Preonas, *supra* note 84, at 5.

106. American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 115 (current version at 26 U.S.C. § 48 (2006 & Supp. 2012)).

107. This provides a tax credit from the production and sale of renewable energy to an unrelated party, which amounts to 2.2 cents per kWh for wind, closed-loop biomass, and geothermal production and 1.1 cents for other renewable energy sources. KPMG INTERNATIONAL, TAXES AND INCENTIVES FOR RENEWABLE ENERGY 45 (2012), *available at* http://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/Documents/taxes-incentives-renewable-energy-2012.pdf.

108. The production tax credit is a tax credit for energy property that is put into service during the tax year. The credit amount is 30% of fuel cell, solar, and small wind property costs, with 10% for combined heat and power, micro-turbine property and geothermal heat pumps. *Id.*; Roberta F. Mann, *Back to the Future: Recommendations and Predictions for Greener Tax Policy*, 88 OR. L. REV. 355, 386 (2010).

109. Mark Bolinger, et al., *Preliminary Evaluation of the Section 1603 Treasury Grant Program for Renewable Power Projects in the United States*, 38 ENERGY POL'Y 6804, 6814 (2010).

110. *Id.*

111. *Id.* at 6807 (The benefit of the grant is that "cash is highly fungible and very easy to use.").

There are a couple criticisms of research grants. These criticisms include free riding and utility companies that focus on targeting investment rather than results of the research.[112] A grant-targeting investment (rather than results-targeting) is the main disadvantage of grants when compared to production tax credits. While a well-designed production tax credit will offer a higher tax credit for more effective research, a research grant provides fixed amounts. Although research grants do not discourage researchers from striving for more effective results, they also do not directly encourage this effort like production tax credits do.[113] The benefits derived from research grants could also flow to foreign nations through free riding. In this free riding problem, a state or federal grant program would pay researchers to invest in renewable energy technology and foreign research communities could benefit from the domestic investment without bearing the research costs.[114]

B. Disincentives for Non-Renewable Sources

1. Cap-and-Trade

Cap-and-trade is the practice of creating maximum emissions levels in an industry with undesirable impacts, issuing allowances within the industry, and providing a trade market for the allowances to be transferred.[115] In essence, the government creates a system where industries must pay to pollute.[116] Experts argue that cap-and-trade programs are better environmental policies than taxes for two reasons. First, the maximum emissions level creates a cap on the amount of pollution while taxes can only reduce pollution by using price controls to discourage emissions.[117] Second, cap-and-trade mechanisms are more effective at distributing the non-compliance consequences because a government chooses how to distribute the permits that non-renewable producers must buy.[118] The cap-and-trade method is another example of managing the problem introduced by the Coase theorem. The costs of preventing carbon emissions are greater than the costs of compensating the harmed parties that arise out of cap-and-trade programs.[119] Thus, the carbon

112. *Id.* at 6815–17.
113. *Id.* at 6815.
114. *See* HUNTER, *supra* note 24, at 107.
115. *See* Fischer & Preonas, *supra* note 84, at 4.
116. POSNER & WEISBACH, *supra* note 11, at 42.
117. *Id.* at 42.
118. *Id.* at 48–49. For example, the government could issue the allowances to citizens of cities where pollution most impacts their health.
119. *See generally* Coase, *supra* note 27.

emissions are negative externalities on the market that distort the efficient level of non-clean energy production. The purpose of the cap allowances is to impose the cost of societal damage from the carbon emissions onto the producers of those emissions so the parties will negotiate an efficient solution.

The U.S. Acid Rain Program[120] is a prominent example of a cap-and-trade program in the United States that creates a ceiling on the amount of sulfur dioxide that energy plants can emit.[121] At the state level, the Regional Greenhouse Gas Initiative is a mandatory joint program among nine East Coast states that plan to reduce carbon dioxide emissions.[122] The initiative states auction off the allowances to utility companies and invest the proceeds into renewable energy technologies.[123]

Another state cap-and-trade program is California's AB-32, Global Warming Solutions Act, which has a 2020 deadline for achieving the greenhouse gas emissions cap.[124] AB-32 has a significant enforcement structure and serves as a model for a federal cap-and-trade program. The enforcement structure includes oversight of the certificate auction process to protect against price manipulation.[125] The California Air Resources Board will also host a centralized tracking system of the carbon allowances.[126] The oversight of the auction process will be provided by an independent monitoring organization.[127]

2. Carbon Tax

The goal of carbon taxes is to manage the externalities of carbon emissions, which are mainly environmental effects, while providing a low amount of administrative costs from collections and oversight.[128] An effective carbon tax rate, according to Pigovian theory, is one that is equal to the marginal public damages of producing an

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120. *See* 42 U.S.C. § 7651(b) (2012).
121. *See* Fischer & Preonas, *supra* note 84, at 4.
122. REGIONAL GREENHOUSE GAS INITIATIVE, http://www.rggi.org/rggi (last visited Oct. 6, 2013).
123. *CO2 Auctions*, REGIONAL GREENHOUSE GAS INITIATIVE, http://www.rggi.org/market/co2_auctions (last visited Oct. 2, 2013).
124. CAL. HEALTH & SAFETY CODE § 38561(a) (West 2013).
125. CAL. ENVTL. PROT. AGENCY, CAP AND TRADE: MARKET OVERSIGHT AND ENFORCEMENT 1 (2011), http://www.arb.ca.gov/cc/capandtrade/market_oversight.pdf.
126. *Id.*
127. *Id.*
128. Gilbert E. Metcalf & David Weisbach, *The Design of a Carbon Tax*, 33 HARV. ENVTL. L. REV. 499, 503 (2009).

additional unit of greenhouse gas.[129] Because carbon emissions are such a large externality of energy production, a Pigovian tax supports free trade by correcting the production to the true price where externalities are internalized.[130] Finland was the first country to introduce a carbon tax in 1990.[131]

Australia is in the process of implementing a $23 per ton carbon tax on about 300 of Australia's largest producers of carbon emissions from the past year.[132] An interesting aspect of the Australian carbon tax, and one that will surely increase the chances of its implementation, is the monetary benefits to consumers. Under the direction of Australia's Future Tax System Review, the increased revenues of the carbon tax will increase the tax-free threshold to exclude one million people from having to file an income tax return in the 2013 tax year.[133]

A Canadian working study indicates that British Columbia's carbon tax was more effective in reducing demand for carbon producing fuels than the impact associated with gasoline price increases caused by the tax.[134] Carbon taxes are effective because they are easy to implement, compared to setting up trading systems or more comprehensive policies.[135] However, carbon tax policies would be difficult to enforce in international transactions. In a recent example, the U.S. Senate blocked European Union efforts to enforce their emissions trading program standards on U.S. airlines.[136]

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129. *Id.* at 511.
130. *Id.* at 540–43.
131. Ann Vourc'h & Miguel Jiminez, *Enhancing Environmentally Sustainable Growth in Finland* 5 (Org. for Econ. Coop. & Dev., Working Paper No. 229, 2000), *available at* http://www.oecd-ilibrary.org/docserver/download/5lgsjhvj82s6.pdf?expires=1380756114&id=id&accname=guest&checksum=88AF2B4CC3B4D411CC0AFC8404194AF3.
132. Australia's Carbon Abatement Imports Target Revealed, The Sydney Morning Herald (Nov. 1, 2012), http://www.smh.com.au/environment/climate-change/australias-carbon-abatement-imports-target-revealed-20121101-28l8f.html.
133. *Modernising and Improving the Personal Tax System*, A TAX PLAN FOR OUR FUTURE (last visited Oct. 23, 2013), http://www.futuretax.gov.au/content/Content.aspx?doc=FactSheets/personal_tax_system.htm..
134. *See* Nicholas Rivers & Brandon Schaufele, *Carbon Tax Salience and Gasoline Demand* (Univ. of Ottawa Dep't of Econ., Working Paper No. 1211E, 2012).
135. *See* Metcalf & Weisbach, *supra* note 130, at 502 n.11.
136. Valerie Volcovici, *Senate Votes to Shield U.S. Airlines From EU's Carbon Scheme*, REUTERS (Sept. 22, 2012, 4:27 PM), http://www.reuters.com/article/2012/09/22/us-usa-carbon-airlines-idUSBRE88L06C20120922.

IV. THE LOUISIANA APPROACH: THE WIND AND SOLAR ENERGY SYSTEMS TAX CREDIT

A. Background

This section focuses on the impact of Louisiana's largest renewable energy tax credit: the Wind and Solar Energy Systems Tax Credit (WSES).[137] The WSES tax credit is a corporate or individual income tax credit.[138] The credit is provided to three different categories of taxpayers who install wind or solar energy systems: (1) a taxpayer who owns his residence, (2) a taxpayer who owns a residential rental apartment project, or (3) any taxpayer, regardless of property rights, who buys and installs a wind or solar energy system at a Louisiana residence or residential rental apartment project.[139] The credit amount is 50% of the cost of each wind or solar energy system, including installation costs.[140] The maximum amount of the credit per system is $12,500, which is refundable and can be used in combination with federal tax credits.[141] When the WSES was enacted in 2007, the estimated annual lost tax revenue was $500,000 per year.[142] However, estimates place the corporate and individual tax revenue lost over a five-year period at $49 million,[143] nearly twenty times higher than expected.

B. The Result of Vague Drafting

The WSES tax credit is too vague to accomplish its goal and remain fiscally responsible. Prior to 2009, only a "resident individual at his residence" or "the owner of a residential rental apartment project" could claim the tax credit for a solar or wind energy system.[144] The legislators added another possible category of claimants defined as "a taxpayer who purchases and installs such a system in a residence or a residential rental apartment project which is located in Louisiana."[145] This newly added claimant category departs from the original language that involved real property

137. LA. REV. STAT. ANN. § 47:6030 (2013).
138. *Id.*
139. *Id.*
140. *Id.*
141. *Id.*
142. LA. DEP'T OF REVENUE, TAX EXEMPTION BUDGET 2007–2008, at 114 (2008).
143. LA. DEP'T OF REVENUE, *supra* note 3, at 20, 33.
144. La. Act 467, 2009 La. Acts 2929.
145. *Id.*

ownership; the purchaser (who is the installer) of the renewable energy system does not need to have a property interest in the residence. This language was added because some homeowners wanted to install solar energy systems, but they could not afford the initial investment—which was not subsidized by the state and federal credits.

Rather than requiring the consumer to obtain a loan from a financial institution to pay the unsubsidized portion, this change created a leasing structure that has led to substantial increases in the credit usage. This leasing structure proved to be lucrative for both residential consumers and solar panel installers alike. After the tax credit was extended to installers of solar panels, the credit amount jumped from $1.4 million in the 2009 fiscal year to $7 million in the 2010 fiscal year.[146] The initial installation and equipment costs are completely financed by a leasing company.[147] Then, solar panel companies receive the Louisiana per system 50% credit and the federal 30% grant,[148] and the customer repays the remaining 20% in installments to the leasing company.[149] The leasing companies are typically set up as separate entities of the solar panel installers but are owned by the same individuals.[150]

Although the leasing company and the solar panel installers are related entities, there are no regulations to govern the relationship.[151] This lack of regulation creates problems when the installation entity "sells" the equipment to the leasing company at an increased cost, who then leases it out to the customers.[152] The statute allows a tax credit "per system" although "system" is not defined in the statute.[153] The related entities can take advantage of this by marking up their product when it is sold to the leasing agent, and claim an arbitrary number of systems in order to cover their installation and production costs. For example, a panel that has a production cost of $20,000 can be marked up to $50,000 when sold to the leasing entity. The leasing entity can then file for two systems under the wind and solar energy tax credits. The credit provides a 50% credit of costs up to $25,000 per system, so the leasing entity is recovering $25,000 when its initial costs were only $20,000. While this may seem like fraudulent behavior from the solar panel installer and the

146. LA. DEP'T OF REVENUE, *supra* note 3, at 33.
147. Interview with Brandon Lagarde, CPA, Director, Postlethwaite & Netterville, in Baton Rouge, La. (Oct. 8, 2012).
148. 26 U.S.C.A. § 25(D) (2013).
149. *Id.*
150. *Id.*
151. *Id.*
152. *Id.*
153. LA. ADMIN. CODE, tit. 61, pt. 1, § 1907 (2013).

leasing company, it is technically allowed under the current legislation because "system" is not defined.

C. The Effectiveness of Wind and Solar Energies

1. Wind

The wind energy industry is in a difficult stage because it is competing directly with other developing types of energy harvesting. Hydraulic fracturing has lessened the appeal of wind energy: it has led to an abundant source of relatively cleaner energy than petroleum and is less expensive than wind energy. While $2.93 MWh to $3.52 MWh has been the price of natural gas in past years,[154] natural gas has traded at $1.09 MWh.[155] In comparison, the unsubsidized cost of wind energy is $60 to $90 per MWh.[156] If the federal subsidies are included in the calculation along with allowable tax depreciation, the cost of wind energy becomes $33 to $65 per MWh.[157] The Intergovernmental Panel on Climate Change expects costs to decrease 10–30% between 2015 and 2020 from increased technology and economies of scale.[158]

2. Solar

The solar industry directly competes with retail utility companies that supply energy to residential users. When utility customers supplement or replace their utility energy usage with solar power, these utilities lose business. To properly examine the usefulness of solar energy, it must be compared to utility prices. Residential solar panels cost $213 to $345 per MWh hour, and

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154. Juliano, *supra* note 47. The original value calculated in MMBtu was translated to MWh using a conversion calculator, which can be found at http://www.convert-measurement-units.com/conversion-calculator.php?type=energy (last visited Oct. 3, 2013).

155. *Natural Gas*, U.S. ENERGY INFO. ADMIN., http://www.eia.gov/naturalgas/weekly/ (last visited Oct. 6, 2013). The original value (Chicago Spot Prices) calculated in MMBtu was translated to MWh using a conversion calculator, which can be found at http://www.convert-measurement-units.com/conversion-calculator.php?type=energy (last visited Oct. 3, 2013).

156. RYAN WISER ET AL., RECENT DEVELOPMENTS IN THE LEVELIZED COST OF ENERGY FROM U.S. WIND POWER PROJECTS 36 (2012), http://eetd.lbl.gov/sites/all/files/publications/wind-energy-costs-2-2012.pdf.

157. *Id.*

158. INTERGOVERNMENTAL PANEL FOR CLIMATE CHANGE, IPCC SPECIAL REPORT ON RENEWABLE ENERGY SOURCES & CLIMATE CHANGE MITIGATION 101, at 11 (Ottmar Edenhofer et al., eds., 2011), http://www.uncclearn.org/sites/www.uncclearn.org/files/inventory/ipcc15.pdf.

commercial panels can cost as little as $178 per MWh hour.[159] Meanwhile, the average electricity cost for Louisiana in May 2012 was $85.70 per MWh hour for residential customers and $77.40 per MWh hour for commercial customers.[160]

V. PROPOSALS AND SOLUTIONS

A. Federal Scope

As discussed above,[161] the costs of solar and wind energy are not competitive with non-renewable alternatives. If the overarching goal of the federal incentives for renewable energy is to encourage clean energy production, the policies should be created with both sustainability and control of negative externalities as benchmarks. A plan that makes renewable energy sources more competitive while remaining fiscally responsible should include the abandonment of existing non-renewable incentives, increased federal standards for utilities, and a commitment to publicly funded research.

Also discussed above, tax policy is useful for addressing the problem of externalities and encouraging certain activities.[162] Unfortunately, the efforts of lobbyists and inconsistencies in drafting tax legislation tend to distort the benefits of tax policy.[163] For this reason, it is best to abandon tax incentives in the energy sector entirely and take a competitive market approach in conjunction with federal standards. Since it is highly unlikely that legislators would ever abandon tax policy in the energy market as a whole, legislators should instead focus on winding down incentives for non-renewable resources. Incentives for the petroleum industry further exacerbate the deadweight loss created from the social costs of burning fossil fuels. The market price of petroleum is not fully representative of the cost of the activity, and petroleum companies are also rewarded through tax incentives. Often, these incentives are pieced together in an inconsistent, quilt-like fashion. For example, Louisiana offers severance tax exemptions for drilling existing, deep wells and

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159. ALEX THEMBATH & JESSE JENKINS, BREAKTHROUGH INSTITUTE, GAS BOOM POSES CHALLENGES FOR RENEWABLES & NUCLEAR 7 (2012), http://thebreakthrough.org/blog/Gas_Boom_Challenges_Renewables_Nuclear.pdf.

160. *Louisiana State Profile and Energy Estimates*, U.S. ENERGY INFO. ADMIN.,http://www.eia.gov/state/state-energy-profiles-data.cfm?sid=LA#Prices (last visited Oct. 4, 2013).

161. *See supra* Part IV.C.

162. *See supra* Part II.A.

163. *See* Brian Richter, et al., *Lobbying and Taxes,* 53 AM. J. POL. SCI. 893 (2009).

rejuvenating old wells.[164] At the same time, suspension of tax liability is allowed on newly drilled wells until the estimated payout is met.[165] One can see that the purpose behind the exemptions is to discourage unnecessary drilling and avoid waste, but the suspension of tax liability works against the purpose by incentivizing new drilling.

Along with the ideal goal of eliminating subsidies in the energy industry, the federal government should develop standards to increase the use of clean energy sources. The Clean Energy Standard Act of 2012 (CES) drafted by New Mexico Senator Jeff Bingaman proposed a market-based set of standards that govern the activities of major utilities.[166] The CES would begin regulating the largest utilities in 2015 by requiring 24% of electric energy sold to consumers to come from clean sources.[167] The requirement can be met by acquiring clean energy certificates through self-production or through the certificate trading market compliance payments of $0.03 per kilowatt hour, or a combination of compliance payments and certificates.[168] The CES is a combination of renewable portfolio standards and feed-in tariffs because the policy has components that control both the quantity and the price of clean energy.[169] The major distinction between the CES and renewable energy portfolio standards is that the CES allows the quota to be supplied by "clean energy sources," rather than only "renewable energy sources." Clean energy is defined as renewable energy, qualified renewable biomass, natural gas, hydropower, nuclear power, or qualified waste-to-energy.[170] Therefore, utilities can choose the most competitively priced source of clean energy.[171]

One major reason for providing incentives to renewable energy sources is that increasing the use of the energy technology will cause it to be more efficient and cost-effective over time through

164. Mark J. Kaiser & Yunke Yu, *A Severance Tax Revenue Forecast Model for Louisiana*, 21 NAT. RESOURCES RES. 245, 253 (2012).
165. *Id.*
166. Clean Energy Standard Act of 2012, S. 2146, 112th Cong. (2012), *available at* http://www.energy.senate.gov/public/index.cfm/2012/5/s-2146-the-clean-energy-standard-act-of-2012.
167. *Id.*
168. *Id.*
169. *See* Mary Jean Bürer & Rolf Wustenhagen, *Which Renewable Energy Policy is a Venture Capitalist's Best Friend? Empirical Evidence From a Survey of International Cleantech Investors*, 37 ENERGY POL'Y 4997, 4999 (2009).
170. S. 2146.
171. However, competitive market systems do negate the benefits of feed-in tariff policies (price stability and consumer confidence) because long-term pricing contracts are not made between the energy producer and the utility. *See infra* Part III.A.2.

economies of scale. For example, wind turbine costs have been found to decrease by 14% every time the total number in operation doubles.[172] The technology involved in developing renewable sources would not advance at the same rate if incentives were abandoned. An effective way to encourage more efficient means of harvesting energy sources is to commit to publicly-funded research. The Advanced Research Projects Agency-Energy (ARPA-E) was started in 2007 to research and develop high-risk, high-reward technology to increase energy efficiency and lower U.S. dependence on imported energy.[173] The SunShot Initiative shares the same purpose as the ARPA-E, but focuses on reducing the cost of solar energy production.[174] The SunShot Initiative provides loans and grants to private companies, laboratories, and academic institutions that promise research into solar energy storage and production.[175] It is important to have a combination of purely governmental research work and private research that is publicly funded. Purely governmental research should fund projects that private groups are not willing to pursue because of a low chance of a payoff. At the same time, private researchers could focus on refining and redesigning the way energy sources are utilized. These programs could receive funding from revenue generated by ending tax subsidies to the energy industries.

B. State Level

1. Proposed Amendments to the Wind and Solar Energy Systems Credit

The Louisiana Department of Revenue has responded to the inflated costs of the tax credit and has proposed an amendment to WSES that limits the credit to one per residence or apartment instead of one credit per wind or solar energy system.[176] The proposal also eliminates many of the system installation costs that

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172. Press Release from Bloomberg New Energy Finance, Onshore Wind Energy to Reach Parity with Fossil-Fuel Electricity by 2016 (Nov. 10, 2011), *available at* http://bnef.com/PressReleases/view/172.

173. ARPA-E, Fiscal Year 2013 Congressional Justification (2013) at 401, http://arpa-e.energy.gov/sites/default/files/ARPA-E%20FY13%20Budget%20 Request.pdf.

174. *SunShot Initiative: About*, DEP'T. OF ENERGY, https://www1.eere.energy .gov/solar/sunshot/about.html (last visited Oct. 4, 2013).

175. *Id.*

176. LA. ADMIN. CODE, tit. 61, pt. I., §1907 (2013). Previously, the credit could be applied to multiple systems used in one residence or apartment.

can currently be credited.[177] The Department of Revenue estimates that if the amendment had been in place for the 2011 to 2012 fiscal year, the credits that qualified for the WSES would have been cut by 40%.[178] The estimated budget impact from the restrictions on the WSES is about $62.7 million in savings over the next three years.[179] However, the legislative intent behind the credit remains the same. A comment to the proposed amendment indicates that the effects of the amendment will be measured and monitored as a safeguard to decreases in solar energy usage.[180]

2. Proposals

Tailoring the language of the WSES tax credit to increase solar and wind energy production could reduce the large amount of tax revenue lost per year. First, the statute should define the term "system." Under the current statute, "each residence or apartment project in the state is eligible for tax credits for the number of separate complete . . . systems necessary to ensure that the residence is supplied with all of its energy needs."[181] As previously discussed, the vague wording of "system" allows claimants to obtain an unlimited number of systems credits and therefore recover 50% of all solar installation costs.[182] The proposed amendment states that "regardless of the number of system components installed on each qualifying residence or residential apartment complex, such components shall constitute a single system for each residence or dwelling unit in a residential rental apartment complex for purposes of the tax credit."[183] The change clearly reflects the Legislature's intent to limit lost income from this loophole going forward, but the limitation seems to stray from the purpose of providing residences with affordable solar and wind energy. For example, an apartment complex would clearly need a larger solar panel capacity than a small single family home. Legislators should define "system" in terms of usage, such as square footage or occupancy rather than limiting the credit to one system per residence. This way the credit is

177. *Id.* ("Including certain capitalized expenditures, solar pool heating, certain housing surrounding non-rooftop systems, labor costs including but not limited to tree trimming or removal, cooling HVAC systems, certain attic fans or ventilation systems, solar powered lights, air-conditioning/heating units, day lighting apparatuses, pool pumps and all other stand-alone wind or solar devices.").
178. *Id.*
179. *Id.*
180. *Id.*
181. *Id.*
182. *Supra* Part IV.A.
183. LA. ADMIN. CODE, tit. 61, pt. I., §1907.

equitable with energy consumption levels and would indicate true costs of equipment.

Second, the credit should be based on a measurement of production. Louisiana is one of two states that provides a 50% tax credit for wind and solar energy systems. Oregon, the other state that does so, allows a $2.10 credit per watt of the installed capacity.[184] A per-watt credit would reward the installation of high capacity systems. Tying the credit to a wattage standard would also curb any possibility of leasing companies installing lower capacity, lower cost systems and applying for the tax credit after the price has been marked up between the related parties. A kilowatt hour maximum could serve as an alternative to the tax credit limit and reduce the installation of unnecessary equipment that exceeds the amount of possible energy usage.

Third, the credit should not apply solely to residential buildings. If the purpose of the WSES credit is to increase the use of renewable energy sources and reduce non-renewable sources, it is counter-intuitive to disallow the tax credit for commercial buildings. Commercial buildings are typically larger than residential structures and would have more square footage of available roof space to install large solar panel arrays. If the reason for only offering the subsidy to consumer buildings is to limit lost tax revenue, the previous recommendations would reduce the costs enough to keep lost revenue at the same level or less.

CONCLUSION

In conclusion, wind and solar energies are not yet sustainable on their own merits when viewed next to alternatives. With recent developments in hydraulic fracturing, natural gas is abundant and is a cleaner alternative to traditional energy sources,[185] though it is still non-renewable. It would be most beneficial to end tax subsidies on non-renewable energy sources and focus predominately on cleaner and less expensive non-renewable alternatives until renewable sources are capable of competing in a free market setting. This can be accomplished by mandating renewable energy use through increased federal standards and government-funded research at the private and public levels.

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184. OR. DEP'T. OF ENERGY, RESIDENTIAL ENERGY TAX CREDIT (RETC) RULES 16 (2011), http://www.oregon.gov/energy/CONS/RES/tax/docs/oar-retc.pdf.

185. *Electricity from Natural Gas*, ENVTL. PROTECTION AGENCY, http://www.epa.gov/cleanenergy/energy-and-you/affect/natural-gas.html (last updated Sept. 25, 2013) ("Compared to the average air emissions from coal-fired generation, natural gas produces half as much carbon dioxide, less than a third as much nitrogen oxides, and one percent as much sulfur oxides at the power plant.").

The recent Louisiana state budget crisis created in part by the WSES and CVAF subsidies indicates that the absence of specificity when drafting statutes leads to expensive and unforeseen results. When considering the WSES tax credit, the state must first decide whether cutting current costs are worth the decrease in renewable energy use, jobs, and disposable income from consumers. Second, the drafters must create enforcement mechanisms to dissuade abuses of the tax credit. A per-energy unit standard for the solar panels or a defined measurement of what a system is would be beneficial to consumers who want to legitimately maximize their solar panel usage, but they cannot due to the proposed one tax credit per system cap. Third, and most importantly, Louisiana should examine what their primary purpose behind enacting the WSES and then extend it in situations that fit the purpose such as commercial buildings.

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