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FEED-IN TARIFFS: THE SOLUTION TO AMERICA'S RENEWABLE ENERGY SHORTAGE

*Margo Tucker**

I. INTRODUCTION

Feed-in tariffs (“FITs”) are the most widely-used policy mechanism in the world for fostering renewable energy (“RE”) growth.¹ Their ability to galvanize growth in this part of the energy sector is unparalleled. This is evidenced by the fact that, “[in] total, FITs are responsible for approximately 75% of global PV [Photovoltaic materials, which convert sunlight into electricity] and 45% of global wind deployment.”² More than 44 countries have adopted FITs and, in the European Union (“EU”) alone, FITs have directly created 15,000 megawatts of solar power and 55,000 megawatts of wind power between 2000 and 2009.³

A FIT is a program that fosters RE development through long-term purchase agreements.⁴ FITs guarantee participants two things: (1) a predetermined payment over a long-term contract of usually 15-20 years and (2) unfettered access to the grid.⁵ FITs create stability through the long-term duration of these contracts and create equity by guaranteeing access to the grid to a wide variety of technologies and projects. This combination of resources empowers developers of all sizes to take part in the RE industry.

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1. Toby D. Couture et al., *A Policymaker’s Guide to Feed-in Tariff Policy Design*, National Renewable Energy Laboratory (NREL), <http://www.nrel.gov/docs/fy10osti/44849.pdf>.

2. *See Id.* (citing Deutsche Bank, *Global Energy Transfer Feed-in Tariffs for Developing Countries*, DB Climate Change Advisers (May 11, 2010), http://www.dbcca.com/dbcca/EN/_media/GET_FiT_Program.pdf).

3. *See* David Grinlinton & Leroy Paddock, *The role of Feed-In Tariffs in Supporting the Expansion of Solar Energy Production*, 41 U. Tol. L. Rev. 943, 944 (2010); *see also* Couture, *supra* note 1, at 5.

4. *See* Toby Couture & Karlynn Cory, *State Clean Energy Policies Analysis (SCEPA) Project: An Analysis of Renewable Energy Feed-in Tariffs in the United States*, National Renewable Energy Laboratory (NREL) (June 2009), http://www.nrel.gov/tech_deployment/state_local_governments/pdfs/tap_webinar_20091028_45551.pdf; *see also* Couture, *supra* note 1, at 6.

5. Michael Dorsi, *Clean Energy Pricing and Federalism: Legal Obstacles and Options for Feed-In Tariffs*, 35-SPG *Environ. L. & Pol’y* J. 173, 175 (2012).

Europe is proof that FITs can provide countries with many green jobs, economic growth, energy security, and environmental benefits.

More states' adoption of FITs would accomplish numerous economic and public policy goals, and reduce the negative externalities that rampant fossil fuel consumption creates. FITs offer a fair and equitable way for states and municipalities to meet RE goals or comply with preexisting mechanisms like Renewable Portfolio Standards ("RPSs").⁶ With careful tailoring and additional federal guidance, FITs could be the way forward for the RE sector in the U.S.

II. FIT DESIGN

FITs are a RE policy tool that has been underutilized in the U.S. but utilized widely across Europe for more than two decades.⁷ In fact, the name "Feed-in Tariff" originates from a policy that Germany passed in 1990 called *Stromeinspeisungsgesetz* ("StrEG"), which, in English, translates to "Electricity Feed-in Law."⁸ FITs have spread globally, taking on various forms and names. Some of these synonyms include: RE dividend, RE payment, fixed-price policy, CLEAN contract, or advanced renewable tariff.⁹ Along with its many names, the FIT framework has transformed and expanded in various ways.

III. FIT FUNDING

FITs can be funded in a variety of ways. "FIT policies can be funded by incorporating the added incremental costs directly into the rate base (e.g., Germany), using tax revenue (e.g., the Netherlands), through a combination of both (e.g., Spain), or by alternative means, such as carbon auction revenues and utility tax credits."¹⁰ Germany's rate-based model, however, is still the most prevalent. In this model, FIT costs are dispersed among a broad base of ratepayers. As a result, the increase in the overall rate is minimal. Germany's wind power development, for example, costs, on average, \$2.00 per month

6. Couture & Cory, *supra* note 4, at 22.

7. Couture, *supra* note 1, at 5.

8. *Id.* at 7.

9. *Id.*

10. *Id.* at 9.

per household.¹¹ This slight increase pales in comparison to the social and environmental benefits which residents glean from the reduction in fossil fuel consumption.

FIT payments can be calculated in three different ways. First, they can base the FIT payments on the actual cost of RE generation.¹² In this system, FIT policymakers consider the capital necessary to produce the RE and then create a payment plan sufficient to guarantee a profit on the developer's investment.¹³ Second, they can base a FIT payment on a utility's avoided costs.¹⁴ This compensation includes, "the cost that the utility would otherwise pay to obtain power through some other method, such as the construction of a new power plant under utility ownership."¹⁵ Third, they can determine the payment as a fixed price incentive, separate from actual or avoided cost.¹⁶ While the actual cost model is the most common in Europe, the avoided cost model is the most common method of cost evaluation in the U.S.¹⁷ Many believe that the avoided cost model, first established under the Public Utilities Regulatory Policies Act of 1978 ("PURPA"), offers insufficient compensation to RE developers and therefore does little to stimulate industry growth.¹⁸

IV. EUROPEAN FIT CASE STUDIES

A. Germany

Germany has become the global model of FIT success. The German government introduced its first FIT program in 1990 to promote its RE sector.¹⁹ Its Electricity Feed-in Law ("EFL") mandated that German utilities pay wind developers 90% of the average retail electricity price for that year.²⁰ In 2000, Germany passed the Renewable Energy Resource Act ("RERA"), which made several significant developments to their national FIT

11. Brian Jansen, *Community Wind Power: Making More Americans Energy Producers Through Feed-In Tariffs*, 20-SPG Kan. J.L. & Pub. Pol'y 329, 345 (2011).

12. Couture & Cory, *supra* note 4, at 2.

13. *Id.*

14. *Id.*

15. *Id.* at 3.

16. *Id.* at 2.

17. *Id.* at 3.

18. Dorsi, *supra* note 5, at 176.

19. Grinlinton & Paddock, *supra* note 3, at 949.

20. Jansen, *supra* note 11, at 334.

framework.²¹ The Act decoupled FIT prices from electricity prices, invited utilities to participate, gave RE projects priority grid access, payments to wind generators were further differentiated due to the quality of the resource location, and calculated FIT payments based on the cost of generation of each RE source.²²

As a result of the RERA program, the German RE sector took off. By 2007, Germany had generated more than 250,000 green jobs and 34,018 megawatts of RE capacity.²³ The RERA program was achieved at a cost of \$3.82 per month per German household.²⁴ Additionally, greenhouse gas emissions in the German energy sector dropped 27.9% between 1990 and 2015.²⁵ However, even Germany's program has run into problems.

Since its inception, FIT costs have added up, partly because the twenty-year contracts offer a fixed rate that the parties cannot alter in accordance with market forces. As a result, older FIT contracts involve higher costs than more recent contracts.²⁶ For example, “[a] homeowner with a small rooftop solar system who signed a FIT contract in 2009. . . will be paid 43 cents per kilowatt-hour (“kWh”) through 2029. The rate for a similar system installed this past January [2014] fell to 13.7 cents.”²⁷ Under German law, parties cannot alter or abrogate these outdated contracts.²⁸ Residential ratepayers feel the resulting cost overhang the most because they pay the surcharge for the above-cost FIT funding.²⁹ This burden shifting has produced some of the world's highest residential rates.³⁰

In 2013, average residential rates increased to €0.29 per kWh. These rates are approximately twice average U.S. rates and significantly

21. Couture, *supra* note 1, at 10.

22. *Id.*

23. Couture & Cory, *supra* note 4, at 27-28.

24. *Id.* at 28.

25. Krestine Appunn, *Germany's Greenhouse Gas Emissions and Climate Targets*, Clean Energy Wire (Mar. 17, 2016), <https://www.cleanenergywire.org/factsheets/germanys-greenhouse-gas-emissions-and-climate-targets>.

26. Bentham Paulos, *Are the Legacy Costs of Germany's Solar Feed-in Tariff Fixable?*, Greentech Media (July 4, 2014), <http://www.greentechmedia.com/articles/read/germany-moves-to-reform-its-renewable-energy-law>.

27. *Id.*

28. *Id.*

29. *Id.*

30. The Brattle Group, *Solar Energy Support in Germany: A Closer Look*, Solar Energy Industries Association (SEIA) (July 2014), <http://www.seia.org/research-resources/solar-energy-support-germany-closer-look>.

exceed residential rates in the most expensive U.S. states with the exception of Hawaii. They also exceed the rates in most other EU countries with the exception of Denmark, which still has slightly higher residential rates than Germany.³¹

Additionally, electricity retail rates increased by 50% overall between 1995 and 2014.³²

Another problem with the rate surcharge is its allotment. The Act does not spread the surcharge equally across German ratepayers. Policymakers have granted partial exemptions from the surcharge to more than 2,000 companies in electricity and cost-intensive industries.³³ These companies use 25% of the energy but pay only 2% of the surcharge necessary to operate the FIT program.³⁴ While policymakers meant to boost domestic industry and job growth, the program has increased the costs of average homeowners who have shouldered the extra surcharge costs.³⁵ In light of rising costs and unrest surrounding the German FIT program, Parliament members proposed a new model in 2016.

In 2016, both houses of the German parliament passed an amended version of the RESA known as “EEG 2016.”³⁶ This bill represents push-back from the German government against the rising costs of RE generation in the country. EEG 2016 alters the FIT program by discontinuing the current subsidy model.³⁷ In its place, the bill creates a competitive bidding process.³⁸ These competitive auctions will secure 80% of future RE generation in Germany.³⁹ Projects less than 750 kilowatts, however, are exempt from these auctions.⁴⁰ Thus, EEG 2016 may significantly slow the growth of RE generation in the country and unjustly favor larger projects over smaller ones.⁴¹

31. *Id.*

32. *Id.*

33. *See* Bentham Paulos, *supra* note 26.

34. *Id.*

35. *Id.*

36. Jabeen Bhatti, *German Parliament Vote to Slow Renewables Growth*, Bloomberg News (July 10, 2016), <http://www.bna.com/german-parliament-vote-n73014444006/>.

37. *Id.*

38. *Id.*

39. *Id.*

40. *Id.*

41. *Id.*

B. Spain

Spain's original FIT, the Regimen Especial, was passed in 1998, but has been amended multiple times since its inception.⁴² Spain has promoted RE through two price regulation mechanisms: (1) a FIT and (2) a premium bonus that is paid on top of the wholesale price.⁴³ RE developers are also statutorily guaranteed connection and priority access to the grid, at no extra cost. Before approval, however, it must be determined that the grid can sustain the new RE developments.⁴⁴ Spain's FIT program produced impressive results for its domestic solar industry. In 2008, Spain was the top installer of PV in the world, installing more than half of the global total PV capacity for the year.⁴⁵

Cost sourcing was the most problematic aspect of the Spanish FIT model. Spain forbids its utilities from passing along the increase in cost from RE to ratepayers.⁴⁶ This FIT aspect forced many Spanish utilities to rapidly accrue debt because they had to pay RE producers above-market prices without recovering costs through rates.⁴⁷ The situation became so dire in 2009 that the Spanish government had to back the debt.⁴⁸ This debt, which was described as "something akin to the apocalypse," reached \$34 billion in 2013.⁴⁹

To deal with this deficit, the country had to make serious cuts to RE aid programs, including its FIT program. Spain limited the hours of electricity generation that could be compensated for at above-market rates⁵⁰ and halted new FIT contracts altogether in 2013.⁵¹ The entire Spanish RE community felt the effect of this suspension. The FIT freeze put on hold, "4,500 megawatts of pending wind capacity and 550 megawatts of pending solar

42. *Special Regime for The Production of Electricity from RES (Royal Decree 2818/1998)*, International Energy Agency (2004), <https://www.iea.org/policiesandmeasures/pams/spain/name-22445-en.php>.

43. Dr. Moira Jimeno, *Spain: Summary*, RES Legal Europe (Jan. 7, 2016), <http://www.res-legal.eu/search-by-country/spain/summary/c/spain/s/res-e/sum/196/lpid/195/>.

44. *Id.*

45. Grinlinton & Paddock, *supra* note 3, at 952.

46. *Spain Halts Feed-in-Tariffs for Renewable Energy*, Institute for Energy (Apr. 9, 2012), <http://instituteforenergyresearch.org/analysis/spain-halts-feed-in-tariffs-for-renewable-energy/> [hereinafter Institute for Energy Research].

47. *Id.*

48. *Id.*

49. William Pentland, *No End in Sight for Spain's Escalating Solar Crisis*, Forbes (Aug. 16, 2013), <http://www.forbes.com/sites/williampentland/2013/08/16/no-end-in-sight-for-spains-escalating-solar-crisis/#26644138627c>.

50. *Id.*

51. Institute for Energy Research, *supra* note 46.

capacity.”⁵² The RE sector sued, citing the harmful effects that FIT cuts would have on industry investment.⁵³ So far, the courts have been in favor of the Spanish government’s position.⁵⁴ In 2015, Spain approved a new national FIT called “Real Decreto 900/2015”. This new and improved FIT program attempted to rectify Spain’s past mistakes.⁵⁵ The new program aimed to balance the old model by levying a charge on certain generators.⁵⁶ Spain created this “generation charge” to help contribute to overall system costs and lessen the burden on utilities. Generators of fewer than 10 kilowatts, however, are categorically exempted from the new charge.⁵⁷

Some policy analysts believe that the fatal flaw with the Spanish FIT was rate recovery. The problem in Spain was not its solar and wind industries, but the inability of its utilities to recover the true costs of the FIT program through rates. Spain did not ensure that a credible, long-term payment mechanism was put in place to guarantee cost recovery to utilities over time. As one analyst put it, “it is not the policy that is the problem, nor is it the desire to transition to a more sustainable and lower carbon energy system: it is attempting to accomplish this without introducing credible mechanisms to ensure that these investments will be paid for in time.”⁵⁸

V. UNITED STATES RENEWABLE ENERGY LANDSCAPE

RE technology in the U.S. has faced trouble. Although the federal government has created several programs to encourage RE growth, green energy accounted for only 10% of the U.S.’ total energy consumption in 2016.⁵⁹ This rate stands in stark contrast to those of European countries like Germany, who satisfied 32.5% of its domestic power consumption needs from green sources in 2015.⁶⁰ Economic initiatives the U.S. currently uses to

52. *Id.*

53. Tom Kenning, *First International lawsuit ruling in favour of Spain’s feed-in tariff cuts*, PV-Tech (Jan. 28, 2016), <http://www.pv-tech.org/news/first-international-lawsuit-ruling-in-favour-of-spains-feed-in-tariff-cuts>.

54. *Id.*

55. Jimeno, *supra* note 43.

56. *Id.*

57. *Id.*

58. Toby Couture, *The Lesson in Renewable Energy Development from Spain*, Renewable Energy World (July 30, 2013), <http://www.renewableenergyworld.com/articles/2013/07/a-lesson-in-renewable-energy-development-from-spain.html>.

59. *Frequently Asked Questions*, Energy Information Administration (EIA) (Mar. 31, 2015), <http://www.eia.gov/tools/faqs/faq.cfm?id=92&t=4>.

60. Appunn, *supra* note 25.

aid its green energy sector include: tax credits, production incentives, federal grants, and loan guarantees.⁶¹ Although legislators passed these initiatives with the right intent, these tools are too weak and ephemeral to produce RE growth on the scale European countries have reached. This is partly because when these initiatives expire, they interject the RE industry with uncertainty, and subsequently, a loss of political, social, and economic support.

U.S. states and utilities with feed-in tariffs or similar programs

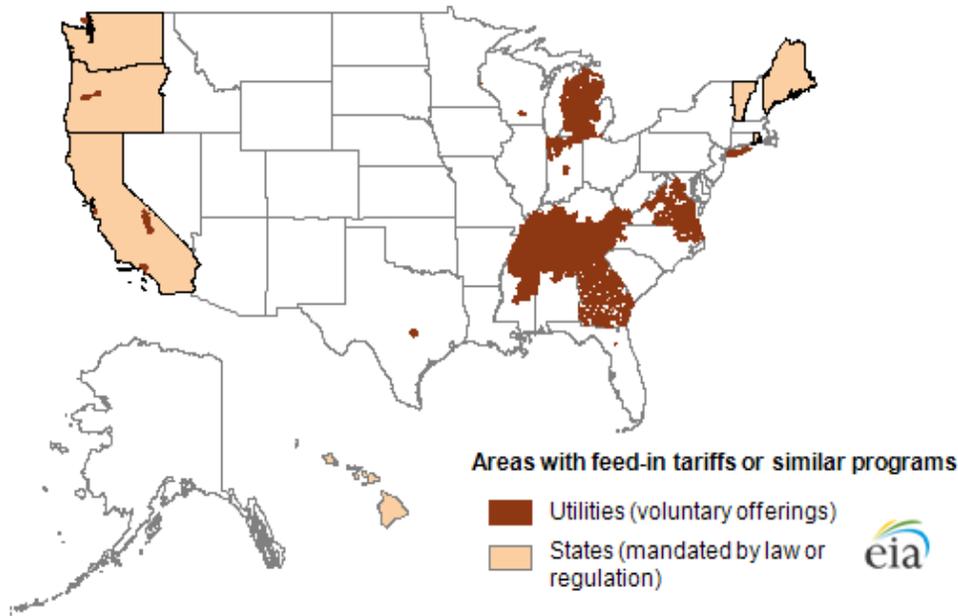


Table 1: Energy Information Administration⁶²

Congress, for example, has allowed the federal RE production tax credit (“PTC”) to expire multiple times.⁶³ The PTC is “. . .an inflation-adjusted per-kWh tax credit for electricity generated by qualified energy resources and sold by the taxpayer to an unrelated person during the taxable year.”⁶⁴ Failure to consistently renew the PTC created a start-and-stop system that threw

61. Richard P. Manczak & Jeffrey D. Moss, “Green” Tax Incentives: A Guide to Federal and Michigan Incentives for Clean Energy and Energy Efficiency, 90-JAN Mich. B.J. 27, 28 (2011).

62. *Feed-in tariff: A policy tool encouraging deployment of renewable electricity technologies*, Energy Information Administration (EIA) (May 30, 2013), <https://www.eia.gov/todayinenergy/detail.php?id=11471> [hereinafter EIA].

63. Jansen, *supra* note 11, at 334.

64. *Renewable Electricity Production Tax Credit (PTC)*, U.S. Department of Energy (DOE), <http://energy.gov/savings/renewable-electricity-production-tax-credit-ptc> [hereinafter DOE].

the RE sector into a state of flux. Federal policy mechanisms like the PTC create a boom and bust cycle of development. RE projects spike right before the PTC deadline and then fall drastically when Congress fails to renew the credit.⁶⁵ For instance, when Congress declined to renew the PTC for the first time in 1991, wind development in the U.S. dropped by 93%.⁶⁶ Luckily, Congress chose to renew the PTC in 2015. Nevertheless, the risk still exists that a less supportive Congress will discontinue the PTC in the future.⁶⁷

Fleeting tax credits that are not consistently renewed cannot compete with the permanent subsidies and loopholes which the fossil fuel industry enjoys. A study estimated that oil and gas subsidies are more than thirteen times the size of subsidies for renewable sources.⁶⁸ This history of bias towards fossil fuel development in the U.S. has created a grossly unequal market for energy developers. If the U.S. would like to see growth and expansion in its RE sector, it must promulgate policy measures that will ensure long-term, sustained growth. Policy mechanisms like FITs can help level the playing field.

Another issue with current U.S. RE subsidies is in the process of their allotment. A specific example of a RE initiative gone awry is the Solyndra scandal. The Solyndra Solar Panel Company received a federal loan guarantee of \$535 million to support its operations.⁶⁹ The intention of this loan was to stimulate expansion of the U.S. solar industry and create thousands of green jobs.⁷⁰ Shortly after receiving this grant, however, Solyndra declared bankruptcy.⁷¹ Rather than stimulating the economy, Solyndra laid off 1,100 workers and cost taxpayers more than half a billion dollars.⁷² Whether the Solyndra failure was a product of rising silicon prices abroad or fraud within company ranks, the result was the same:⁷³ U.S. taxpayers suffered. U.S. citizens paid the price of an RE venture from which they gleaned no direct benefit. This scenario would have played out differently if a FIT framework were involved.

65. Jansen, *supra* note 11, at 337.

66. *Id.* at 338.

67. DOE, *supra* note 64.

68. Melissa Powers, *Sustainable Energy Subsidies*, 43 *Env'tl. L.* 211, 220 (2013).

69. Eric Lipton & John M. Broder, *In Rush to Assist a Solar Company, U.S. Missed Signs*, *NY Times* (Sept. 22, 2011), http://www.nytimes.com/2011/09/23/us/politics/in-rush-to-assist-solyndra-united-states-missed-warning-signs.html?_r=0.

70. *Id.*

71. *Id.*

72. *Id.*

73. *Id.*

In the scheme of RE initiatives, FITs are considered a production-based incentive because they compensate generators for the amount of RE actually produced. This is where FITs and federal loan guarantees diverge. Unlike loan guarantees, FITs pay for the energy that's actually delivered, so a failure like Solyndra would not have led to the high losses in public funds and confidence in RE.⁷⁴ In this manner, companies must fulfill their promise and deliver RE before reaping the benefits of financial assistance. By granting Solyndra a FIT contract rather than a loan guarantee, the U.S. could have avoided a substantial loss of taxpayer dollars and a scandal that cast the American RE industry in a negative light. The federal government had the right intention, but used the wrong RE policy mechanism.

VI. UNITED STATES FITS

While Europe has employed FITs for decades, the programs have recently started to take root in the U.S. Today, only six states have adopted FIT programs in one form or another: California, Hawaii, Maine, Oregon, Washington, and Vermont.⁷⁵ Additionally, some utilities have independently chosen to engage in their own, voluntary FIT programs.

Most U.S. FIT contracts are for terms of 10 to 20 years.⁷⁶ The price paid for FIT projects varies depending on the size of the project and the type of technology involved.⁷⁷ For example, smaller projects and expensive technologies, like PV, are often given high rates under FIT contracts.⁷⁸ While states generally award FITs to PV sources across the country, the type of technologies included in FIT programs vary depending on current jurisdictional policy mechanisms. States often use FITs in conjunction with other RE tools such as rebates for purchasing RE equipment, RPS, net metering, and tax incentives.⁷⁹

States often tailor FITs to target certain sectors of the population. Some FITs are used solely for residential RE development, while others focus

74. Dorsi, *supra* note 5, at 181.

75. *Feed-In Tariffs*, National Renewable Energy Laboratory (NREL), <https://www.nrel.gov/technical-assistance/basics-tariffs.html> (last visited Apr. 8, 2018).

76. EIA, *supra* note 62.

77. *Id.*

78. *Id.*

79. *Id.*

entirely on utility participation.⁸⁰ To keep costs in check, many U.S. FIT programs impose ceilings on their entire program, as well as the size of individual projects. For example, the New Dominion Virginia Power Solar Purchase Program caps residential solar at 20 kilowatts and commercial systems at 50 kilowatts.⁸¹ Once a certain cumulative threshold of kilowatt hours are reached, most jurisdictions stop awarding FIT contracts for that year or project cycle. This strategy ensures costs of RE development remain manageable.

A. FIT Programs in California

Some of the first FIT programs were pioneered in the U.S. under PURPA.⁸² California was one of these pioneers. After the state implemented its first FIT policy in 1984, it experienced impressive growth in wind power.⁸³ From 1985 to 1992, 16,000 wind turbines were installed. These wind turbines annually produce 2,750 GWh of electricity; enough to power 450,000 homes.⁸⁴ Additionally, more than 50% of the wind turbines installed during this time were manufactured in California.⁸⁵ This initial FIT program led to significant growth in RE development and green jobs within the state. The state passed a stricter FIT in 2007.⁸⁶ It required California's three investor-owned utilities and public utilities with 75,000 customers or more to purchase RE from a set of eligible facilities.⁸⁷ The program required participants to offer qualifying RE generators a contract for at least ten years.⁸⁸

While California's program is a great start to FIT development in the U.S., it is not nearly as strong as FIT programs found in Europe. Because of mandatory compliance with PURPA and the Federal Power Act ("FPA"), California's FIT model lacks certain qualities that have brought European FITs widespread success. The three primary differences between the California FIT and those found in Europe are:

- (1) California's payment levels are determined according to avoided costs rather than the cost of

80. *Id.*

81. *Id.*

82. Couture & Cory, *supra* note 4, at 9-10.

83. *Id.* at 26.

84. *Id.*

85. *Id.* at 27.

86. *Id.* at 11.

87. *Feed-In Tariffs and Similar Programs*, Energy Information Administration (EIA) (June 4, 2013), http://www.eia.gov/electricity/policies/provider_programs.cfm.

88. *Id.*

generation; (2) for most utilities in the state, the FIT payments are only available to water and waste-water facilities, significantly limiting potential growth in RE deployment; (3) California has a cap on both project and program size, hindering the developers' ability to harness economies of scale. These size caps also limit the ability of the FIT to drive large-scale RE deployment in the state of California.⁸⁹

The California FIT is highly limited in its scope and power. Significant changes will need to be made if Californians desire to reap the full benefits of the FIT policy mechanism. As of 2010, Hawaii, Vermont, and Gainesville Regional Utilities in Florida are the only entities in the U.S. that have based their FITs on the cost of generation.⁹⁰

B. Obstacles to FIT Implementation in the United States

FIT participants in Germany do not face the same legal barriers and uncertainty as those in the U.S. On the federal level, there is currently no nation-wide FIT program nor an explicit authorization for states to institute their own.⁹¹ This oversight stems from a lack of clarification from the federal government. Congress passed the FPA in 1938 to establish the basic energy regulatory structure for the U.S.⁹² This long-standing legislation created federal and state jurisdictions in energy regulation.⁹³ The FPA entrusted the Federal Energy Regulatory Commission ("FERC") with regulating interstate and wholesale energy transactions.⁹⁴ The FPA authorized states to regulate intrastate retail transactions.⁹⁵ This division of power has created ambiguity surrounding which entities have the right to establish a FIT program.

Absent federal guidance in clearing up this issue, several states have not established FITs out of fear of a FPA federal preemption lawsuit.⁹⁶ Going forward, the federal government will need to provide more clarification and reassurance to state and local governments regarding their ability to establish FIT programs.

89. Couture & Cory, *supra* note 4, at 12.

90. Couture, *supra* note 1, at 16.

91. Dorsi, *supra* note 5, at 183.

92. Grinlinton & Paddock, *supra* note 3, at 960.

93. Dorsi, *supra* note 5, at 176.

94. *Id.*

95. *Id.*

96. *Id.*

While states have some limited paths to adopt feed-in tariffs under existing Federal law, widespread use of this approach to encourage renewable energy generation likely relies on clarification of FERC precedents and new administrative decisions or rule makings by FERC or on the passage of new Federal legislation.⁹⁷

Some consider PURPA the first federal FIT program in the U.S. because certain aspects of PURPA resemble European FIT programs. For instance, §210 of PURPA lays out a requirement for utilities to purchase electricity from certain RE generators, called non-utility qualifying facilities (“QFs”), at the price of avoided cost.⁹⁸ A QF is a small power production or cogeneration facility.⁹⁹ A small power production facility is defined as, “a generating facility of 80 megawatts or less whose primary energy source is renewable (hydro, wind or solar), biomass, waste, or geothermal resources.”¹⁰⁰ PURPA allows states to decide the amount of compensation that constitutes “avoided cost.”

RE developers assert that paying avoided cost payments to FIT participants is insufficient to make RE projects truly feasible in the U.S.¹⁰¹ Therefore, PURPA cannot foster RE growth on the same scale as the European FIT model, which often compensates its RE generators for an amount above avoided cost.¹⁰² Additionally, states are still unsure of their degree of authority in establishing FIT programs.

Legislators tried in 2009 to clarify FIT status in the U.S. They drafted the American Clean Energy and Security Act (“ACES”) to clarify FIT program uncertainties and stimulate RE growth. ACES included language that elaborated upon and clarified the states’ permission to establish FITs. In 2009, the House passed ACES but the Senate bill died. Section 102 of ACES would have amended §210 of PURPA by adding the following:

97. Grinlinton & Paddock, *supra* note 3, at 972.

98. *Id.* at 960.

99. *Id.*

100. *Id.*

101. Couture, *supra* note 1, at 17.

102. *Id.*

[A] State legislature or regulatory authority may set the rates for a sale of electric energy by a facility generating electric energy from renewable energy sources pursuant to a State-approved production incentive program under which the facility voluntarily sells electric energy. For purposes of this subsection, “State-approved production incentive program” means a requirement imposed pursuant to State law, or by a State regulatory authority acting within its authority under State law, that an electric utility purchase renewable energy (as defined in section 609 of this Act) at a specified rate.¹⁰³

While the language clearly attempts to strengthen state power and involvement, some still doubt whether it would have allowed states to pass FITs with impunity.¹⁰⁴ It is still uncertain whether states would be able to regulate wholesale rates without federal approval from FERC.¹⁰⁵ All doubts aside, ACES represented a step in the right direction, regardless of whether states would have been bold enough to act under its direction. Going forward, the U.S. could eliminate much doubt surrounding FITs by passing clarifying legislation like ACES.

A FERC rulemaking or administrative decision could clarify states’ power.¹⁰⁶ The National Renewable Energy Laboratory (“NREL”) has proposed three different paths that the U.S. could take to achieve this goal: (1) states could offer FIT participants extra funding in the form of incentives or subsidies to account for the difference between avoided cost and the price needed to make RE production feasible; (2) states could establish a tariff program under state law and then incorporate it into the utilities’ rate base; or (3) FERC could establish safe harbors or other guidance that would indicate that state FITs are acceptable under the FPA.¹⁰⁷

103. Grinlinton & Paddock, *supra* note 3, at 967.

104. *Id.*

105. *Id.*

106. *Id.* at 972.

107. *Id.* at 962.

VII. POTENTIAL DRAWBACKS OF FEED-IN TARIFF PROGRAMS

When it comes to FIT implementation, opponents worry about “inefficiency, costs passed on to other parties, and loss of their position in the energy sector.”¹⁰⁸ Utilities and many private businesses take issue with FITs because they dislike processes that allow government to choose winners in a competitive energy market.¹⁰⁹ Additionally, utilities stand to gain more from generating RE themselves.

Utilities also receive a return on equity if they generate RE through a utility-owned operation.¹¹⁰ Thus, FITs can threaten utilities’ marketability because they have the potential to “put near-term, upward pressure” on electricity prices for ratepayers.¹¹¹ In states that offer retail choice electricity, utilities compete against one another for customers. This system is highly cost-competitive and could put utilities that adopt FITs at a disadvantage. For this reason, FITs traditionally do better in a monopoly system or in a state-mandated program than in a retail choice system.¹¹²

Another obstacle that FITs present to utilities is the cost of grid connection and upgrades. Guaranteed grid connection for FIT participants can lead to siting of RE projects in undesirable areas.¹¹³ RE projects located in impoverished areas could require costly grid upgrades for the utilities and an increase in transmission costs.¹¹⁴ In some instances, utilities are forced to deny contracts altogether where grid connection for projects is technologically and economically unfeasible.¹¹⁵

The RE developers can also face problems under FITs. Unlike rebates or capacity-based incentives, FITs compensate only for the amount of RE produced. This attribute is beneficial for ratepayers, but can be a curse for developers. In situations like Solyndra, the public is protected from losing billions of dollars, but RE project developers must develop massive projects with little to no assistance. This policy forces developers to fund projects and

108. Dorsi, *supra* note 5, at 181.

109. *Id.*

110. *Id.* at 182.

111. Couture & Cory, *supra* note 4, at 4.

112. Dorsi, *supra* note 5, at 183.

113. Couture & Cory, *supra* note 4, at 5.

114. *Id.*

115. *Id.*

then amortize costs over a long period of time, which is risky.¹¹⁶ When FITs are the only support mechanism for developers, this absence of upfront support can be an intimidating obstacle.

Ratepayers can also suffer under FIT programs. FITs can put upward pressure on electricity rates, especially if the program excessively uses expensive technologies. As displayed in Germany, a FIT program that sources funding from ratepayers, without adjusting program costs over time, can lead to detrimentally high rates for citizens. When costs remain high, without adjustment, they can create a cost overhang that unduly burdens ratepayers. The twenty-year FIT contract can offer financial security to developers, but can cause retail rates to escalate over time. Accurately adjusting project costs over time is a significant and complex challenge for governments overseeing these programs. Changing FIT payment levels frequently can create investor uncertainty in the RE industry. However, infrequent price adjustment can cause the cost of FIT programs to skyrocket.¹¹⁷

VIII. BENEFITS OF FIT PROGRAMS

FITs offer a stable, predictable energy market for both investors and developers.¹¹⁸ Consistency is invaluable in leveling the playing field with fossil fuels and giving renewables a fighting chance. Stability eliminates the boom-and-bust cycle surrounding initiatives like federal tax credits and ensures long-term, sustained growth. The fact that FITs are funded through utility rates, rather than tax dollars, shields developers and investors against changes in the economy or political administration.¹¹⁹ While data on FIT program impacts on U.S. industry are scarce, European countries like Germany have reported significant job growth since their FIT implementation. The FITs have also increased energy security, self-sufficiency, and public support for the RE sector. The U.S. could decrease reliance on foreign fossil fuels, like oil, while cultivating the RE industry. Diversifying the U.S. energy sector with more renewables would make the economy more resilient against fluctuations in fossil fuel prices and supply.

116. *Id.* at 4.

117. *Id.*

118. Couture, *supra* note 1, at 11.

119. Couture & Cory, *supra* note 4, at 17.

Unlike some highly selective policy mechanisms, FITs welcome a wide range of generators into the RE market. By differentiating the payment levels according to different project variables, including project size, FIT policies allow RE investments to be profitable for citizens, small business owners, and large commercial-scale developers.¹²⁰ Providing an avenue for smaller projects like community solar and rural wind operations opens the door to sectors of society originally shut out. Many RE developers struggle to find a purchaser.¹²¹ Since FITs guarantee both a purchaser and a grid connection, they remove this formidable barrier.

Access is further solidified through guaranteed grid connection. Oftentimes, utilities are required to accept energy from RE providers, often in priority to non-renewable sources.¹²² This access is crucial for wide-scale RE development in the U.S. because it invites a wide range of players to the table. Homeowners, small businesses, nonprofits, and farmers can all become RE generators under FITs because the program guarantees them access to the grid regardless of their current infrastructure capabilities. Eligibility for FITs is extended to anyone with the ability to invest. This aspect is important for communities and small businesses that want to harness a resource like wind, but do not qualify for federal wind tax credits and cannot afford grid upgrades. Since finding a power purchaser is one of the biggest obstacles that small communities interested in RE generation face, FITs have the potential to aid in the expansion of small-scale, rural, and community-based RE projects.¹²³ If this growth happens, it will be accompanied by economic benefits for communities, as well as an increase in public support for renewables.

Europe has already experienced this social transformation. 45% of German wind projects and 83% of Danish wind projects are community owned.¹²⁴ This inclusivity brings with it social change and diversification. For this reason, farmers and small-scale developers played a highly-active role in lobbying for FIT development in Germany and Denmark.¹²⁵ In an industry dominated by large-scale RE corporations and wealthy investors, FITs can offer small communities and farmers a chance to profit. As in Europe, this paradigm shift will transform the way U.S. citizens feel about

120. *Id.* at 4.

121. Jansen, *supra* note 11, at 330.

122. Grinlinton & Paddock, *supra* note 3, at 944-45.

123. Jansen, *supra* note 11, at 330.

124. *Id.* at 329-30.

125. *Id.* at 339.

RE. Citizens will undoubtedly be more receptive towards an energy resource directly benefiting them and thus want to capitalize on this opportunity.

Another benefit of FITs is that they are extremely flexible. Slight adjustments to the FIT framework can address many of the concerns that FIT opponents cite.¹²⁶ One of these concerns is project size. A megawatt ceiling for all renewable projects can keep them viable. In regards to concerns over project siting, entities can create and enforce an incentive for siting FIT projects near load centers or require developers to bear a portion of the connection cost for siting projects in remote locations.¹²⁷ Ontario, Canada successfully adopted both of these tactics.¹²⁸ Ontario imposed a 10 megawatt ceiling on hydro, wind, PV, and biogas projects and adopted siting restrictions for its projects depending on grid accessibility.¹²⁹ The Ontario program created a color-coded grid system with different restrictions on the level of development in each zone based upon grid restraints.¹³⁰ Ontario, among others, has taken the FIT concept and successfully tailored it to fit its unique needs.

FIT critics also fear the impact that FITs can have on ratepayers. One way to combat these fears is to prevent rates from climbing by placing an overall cost cap on the annual capacity of expensive RE technologies, like solar PV, and removing caps from more cost-efficient options, like wind.¹³¹ Utilities and grid operators, in particular, fear that FITs will produce an unpredictable energy output. When it comes to the issue of forecasting, policymakers can tailor FITs to ensure predictability.¹³² They can place forecasting obligations on big RE developers to prevent the grid from being flooded with unexpected variable output.¹³³ Spain put into effect both the cost cap and forecasting strategies. Spain imposed a cap on the additions of costlier technologies like PV in order to minimize impact to ratepayers, and it requires that generators of more than 10 megawatts of RE file daily supply forecasts to regional operators.¹³⁴ This adjustment ensures predictability for grid operators and increases their overall willingness to support FITs.

126. Couture, *supra* note 1, at 80.

127. *Id.* at 82.

128. *Id.*

129. *Id.*

130. *Id.* at 68.

131. *Id.* at 83.

132. *Id.* at 85.

133. *Id.*

134. *Id.* at 9.

Another benefit of FITs is the ability of all levels of government to implement them and use them in tandem with other RE policy initiatives to improve the overall outcome. Countries, states, cities, or individual utilities can adopt FITs. Utilities can use FITs to meet goals such as portfolio diversification, meet an RPS, or increase distributed generation.¹³⁵ Wisconsin and Oregon host utility-specific FITs such as this.¹³⁶ State-wide FITs, on the other hand, require all utilities operating within state borders to purchase a certain amount of electricity from RE generators.¹³⁷ State-wide FITs can reap similar benefits, helping states meet RPSs, boost job growth, and reduce state greenhouse gas emissions.¹³⁸ However, regardless of who implements a FIT, utilities will always play a vital role in the process. They serve as both the purchasers of the renewable power and the providers of the grid connection. Countries have relied upon the utilities for these essential services.

Several countries use a FIT policy purchase obligation that requires utilities, load-serving entities (LSEs) or transmission system operators (TSOs) to purchase the entire output from eligible projects (Klein et al. 2008). In addition, jurisdictions often require utilities or TSOs to offer guaranteed grid connection, which guarantees eligible project owners that they will be able to interconnect their projects to the grid.¹³⁹

These two components, the promise to purchase and the promise of grid connection, are what make this policy such a success.

Lastly, FITs can work in tandem with other policy mechanisms, such as the RPSs mentioned above, to help facilities meet their RE goals.¹⁴⁰ So far, twenty-nine states and the District of Columbia have enacted mandatory RPS policies, making them the most popular form of RE initiative in the U.S. today.¹⁴¹ RPSs are similar to FITs but they focus on quantity rather than price. Instead of setting a price for RE and letting the market determine the quantity, as FITs do, RPSs set a quantity of RE to be attained by a certain time and lets the market determine the price.¹⁴² The most common method used to meet

135. Couture & Cory, *supra* note 4, at 7.

136. *Id.*

137. *Id.*

138. *Id.* at 19-20.

139. Couture, *supra* note 1, at 5.

140. Couture & Cory, *supra* note 4, at 19.

141. Couture, *supra* note 1, at 14.

142. Jansen, *supra* note 11, at 346.

RPS mandates in the U.S. is a competitive solicitation process.¹⁴³ This process satisfies RPS RE requirements by awarding contracts to the highest bidder.

A downside to this process is that it encourages a domination by economies of scale over smaller operations, thereby limiting the program's inclusiveness. Rather than go through a competitive solicitation process, most European RPSs utilize FITs to meet their RPS goals.¹⁴⁴ The U.S. can do the same. RPSs and FITs can complement each other in three significant ways.

First, the FIT could be an alternative to the current method for awarding contracts, which is based on competitive solicitations. Alternatively, a FIT could provide opportunities to ensure that RE development continues between competitive solicitation cycles. A third option would be to have the two policies acting in parallel, with FITs targeting specific technology types, ownership models, or project sizes. For example, FIT policies could be offered to smaller scale projects while leaving the basic competitive solicitation mechanism for utility-scale projects.¹⁴⁵

The third option has successfully been employed in Oregon, the state of Washington, and California.¹⁴⁶ Interweaving FITs with RPSs in the U.S. offers a valuable way of expanding FIT implementation and improving the expansion of RE generation on all levels.

IX. BEST PRACTICES AND RECOMMENDATIONS FOR FIT PROGRAMS

Going forward, entities implementing a FIT should abide by certain best practices. These requirements can be broken down into seven key elements: (1) offering a stable policy for five years or more, (2) offering a long-term contract 15-20 years in length, (3) basing payments on the cost of RE generation, (4) assigning annual tariff degression to certain projects, (5) differentiating FIT payments based on project type, size, and quality, (6)

143. *Id.* at 347.

144. Couture & Cory, *supra* note 4, at 22.

145. *Id.*

146. *Id.*

dispersing FIT costs across a rate base, and (7) streamlining the participation process.¹⁴⁷

Offering stable FIT policies and long-term contracts brings financial security into the U.S. RE market that has been absent. FITs increase investor confidence and allow developers to reach their potential. Additionally, sourcing costs from the rate base adds stability to the FIT system. A downturn in the economy or the tide of politics does not jeopardize FIT progress because a FIT does not require Congressional renewal as federal tax credits do.

Another key element that can streamline FIT costs is an annual tariff depression. Certain projects, especially economies of scale, will experience marked cost-savings over time.¹⁴⁸ Therefore, FITs can take efficiency into account and incrementally decrease payments over time.¹⁴⁹ Annual tariff depression keeps FITs efficient because it, “creates an incentive for rapid deployment, furthers cost-reductions, and improves efficiencies in the future.”¹⁵⁰ This monitoring mechanism can help the U.S. avoid mistakes like those Germany and Spain made and keep costs under control.

Differentiating payments according to program size, type, and quality is another tool that is key to optimizing FIT payments.¹⁵¹ Tailoring payments to fit a specific project size and type ensures diversity in the RE market. Finally, the participation process must remain accessible to all sectors of society. Small generators should have a seat at the table and be encouraged to develop RE in their communities. FIT inclusiveness will ensure that the benefits of RE generation are dispersed equitably throughout society.

X. CONCLUSION

A properly executed FIT can be the gateway to large-scale, sustained RE expansion in the U.S. FITs can be used in tandem with policy mechanisms like RPSs to help states, municipalities, and/or utilities meet RE goals in a socially equitable manner. While many barriers complicate the implementation of FITs on the federal level, FERC can take great strides to

147. Couture & Cory, *supra* note 4, at 17-18.

148. *Id.*

149. Jansen, *supra* note 11, at 346.

150. Couture & Cory, *supra* note 4, at 18.

151. Jansen, *supra* note 11, at 346.

encourage development of FIT programs on the state and local level. Clarification of FERC precedents, administrative decisions, rulemakings, or the passage of new federal legislation will aid in achieving this goal.¹⁵²

The benefits that RE can offer to our society, the economy, and our environment have been well established. FITs can create an equitable and inclusive RE sector. Big businesses, small businesses, farmers, utilities, and communities all stand to gain from FIT implementation. The entire country stands to gain from cleaner natural resources, more green jobs, and increased energy security.

While the U.S. has taken strides towards promoting RE development through a variety of policy mechanisms, it has failed to produce the reliable support needed for domestic RE industry to blossom. The U.S. should adopt the most successful mechanism for galvanizing RE expansion: FITs. When wielded correctly, this policy mechanism can create a viable, thriving, RE economy that benefits the country.

152. Grinlinton & Paddock, *supra* note 3, at 972.