PERSPECTIVE FROM THE FIELD

The Economic Power of Feed-in Tariffs: A Note for Policy Makers

David Contrada

Feed-in tariffs require by law that electric utility companies purchase renewable electric energy and capacity, and purchase these at specified prices. The pricing of feed-in tariffs has three essential characteristics. First, the utility is required to guarantee a renewable energy generator a higher price than what the utility pays for fossil fuels (Metcalf and Weisbach, 2009, pp. 554–556). Second, each source of renewable energy (e.g., solar, wind, biomass) is assigned a unique rate that is determined by the capital costs of investing in that specific renewable, traditionally a 10- to 20-year maturity term, and specific internal rates of return (Lythgoe, 2009, pp. 315–321). Third, the individual prices the utility must pay reduce over time so that, for example, a solar generator that locks into a feed-in rate in 2011 will receive a lower rate than a solar generator from 2010 (Rickerson, Bennhold, and Bradbury, 2009, p. 2). The structure of feed-in tariffs offers a reliable, stable monetary incentive for investment in renewable energy sources. Investors considering financing new renewable energy projects under feed-in regulations remain confident because the rate of return is guaranteed and therefore the financial risk is low and predictable.

A number of political-economic regulations are currently being proposed to integrate more renewable energy into the electric grid, such as tax credits, renewable portfolio standards, and renewable energy permitting and trading schemes. Although these regulations have many promising aspects to them and can be used in conjunction with feed-in tariffs, they do not offer the safe, reliable investment framework that feed-ins do. The incentive-based structure of feed-in tariffs is especially powerful, and must be included within other regulations, because feed-in tariffs affect an increase in *both* the utility's usage of renewable energy *and* private investment in, and development of, new clean energy technologies. This means that the current electricity sector is not the lone beneficiary—indeed, many areas of the economy stand to benefit from the new growth that feed-in tariffs will produce, including the scientific, technological, manufacturing, and employment sectors.

Germany offers an outstanding case in study. Through the Electricity Feed-in Law of 1990 (*Stromeinspeisungsgesetz*), Germany introduced a mere one-page bill geared at assisting small hydroelectric generators entering the electric market (Mendonça, 2007, pp. 26–28). The original bill, though modified and extended to other renewables, still remains the core of current feed-in tariff principles and has proven to be a tremendous success (pp. 25–39). Specifically, renewable energy companies in Germany generated 21.6 billion euros (€) in 2006, up from €16.4 billion in 2005. In 2007, the German renewable energy sector employed 214,000 people, more than nuclear energy, hard coal, and brown coal combined (p. 44). Employment and investment numbers are projected to grow, and investments in German renewables are expected to total €200 billion by 2020 (pp. 44–45). Moreover, the economic and social explosion of the renewable sector prevented the emission of 83 million tonnes of carbon dioxide in 2005 (p. 44). In short, the German renewable energy industry, which is first and foremost based on feed-in tariffs, has exploded and shows no signs of slowing down.

With so many benefits and such strong evidence on so many fronts, why has the United States not enthusiastically adopted feed-in tariffs? The reason is actually quite simple: many decision makers incorrectly believe that feed-in tariffs offer exactly the same remedy as the Public Utility Regulatory Policies Act (PURPA) of 1978. It is true that PURPA can be seen as a primitive feed-in tariff system because PURPA was designed to encourage both the use of renewable energy and the growth of small power producers by guaranteeing a certain price paid by utilities to producers (Department of Energy and Energy Information Agency, 2000, p. 32). Nevertheless, the way the PURPA price was guaranteed is very different from a feed-in tariff. Under PURPA, the prices paid for renewables were determined by a utility's *avoided cost*, which is the cost that the utility would have had to spend to meet the energy provided by the renewable source, should that renewable source not have been there (Hinman, 2009, pp. 49–50). Under the avoided-cost structure of PURPA, the price recovered by the renewable was, importantly, unfixed and unpredictable because the price return was subject to the whims of the changing fossil fuel market (p. 50). For example, if the market price of coal were to drop, the price of energy generated by coal would also drop. Consequently, this would mean that the avoided cost would drop and that therefore a renewable energy source operating under PURPA would receive a lower price for its production of energy. Further, as certainty and rates dropped under the PURPA plan, so too did investment in renewables drop. The structure of avoided costs under PURPA, therefore, did not guarantee an appealing rate of return to investors, and the financial risk under PURPA was much higher and less predictable than the security offered by feed-in tariffs.

With Germany as a powerful example of what can be done, and with feed-in tariffs as the regulatory linchpin, the United States can grow its economy, create new jobs, enhance security, and reduce greenhouse gas emissions, thus making our nation

doi:10.1017/S1466046611000214

and our planet a healthier place to live. Such results are unsurprising because the inherent structure of feed-in tariffs will generate the development of new capital investments, which in turn will stimulate new technologies, manufacturing, and installation—all while generating an abundance of clean electric energy.

References

Department of Energy (DOE) and Energy Information Agency (EIA). 2000. *The Changing Structure of the Electric Power Industry 2000: An Update*. EIA, Washington, DC, 166 pp. Available at http://www.eia.gov/cneaf/electricity/chg_stru_update/update2000.html (accessed July 8, 2011).

Hinman, J.S. 2009. The Green Economic Recovery: Wind Energy Tax Policy after Financial Crisis and the American Recovery and Reinvestment Tax Act of 2009. *Journal of Environmental Law and Litigation* 24(1):35–74. [Discussing the National Energy Act of 1978.]

Lythgoe, M. 2009. Renewable Generation in Argentina: Past Failures and a Plan for Future Success. *Houston Journal of International Law* 31(2):263–342. [Discussing renewable regulation in Germany.]

Mendonça, M. 2007. *Feed-in Tariffs: Accelerating the Deployment of Renewable Energy*. Earthscan, Oxford, UK, 176 pp.

Metcalf, G.E., and D. Weisbach. 2009. The Design of a Carbon Tax. *Harvard Environmental Law Review* 33(2):499–556. [Discussing feed-in tariffs and renewable portfolio standards.]

Rickerson, W., F. Bennhold, and J. Bradbury. 2008. *Feed-in Tariffs and Renewable Energy in the USA: A Policy Update*. HighBeam Research, 26 pp. Available at http://www.wind-works.org/FeedLaws/USA/Feed-in_Tariffs_and_Renewable_Energy_in_the_USA_-_a_Policy_Update.pdf (accessed July 18, 2011).

Address correspondence to: David Contrada, The Clark Group LLC, 107 State Street, Montpelier, VT 05602; (phone) 202-480-2883; (e-mail) dcontrada@clarkgroupllc.com.