

FEED-IN TARIFFS:

The Proven Road Not Taken...

Why Not?

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Feed-in tariffs (FIT) are a policy mechanism designed to accelerate investment in renewable energy technologies.

Producers of renewable energy are paid a set rate for the electricity they produce, usually differentiated according to the technology used (wind, solar, biomass, et.al.) and the size of the installation. FITs guarantee that anyone who generates electricity from a renewable energy source—whether they are a homeowner, small business, or large electric utility—is able to sell that electricity into the grid and receive long-term payments for each kilowatt-hour produced.¹

Payments are set at pre-established rates, often higher than market rates, to ensure that developers earn profitable returns and they are decreased at a designed rate over time. The reduction of the compensation rate for newly constructed plants (degression rate) is necessary and possible because the growth of the market is accompanied by a reduction in the costs of producing the systems with which power is generated. The faster the market is growing, the more vigorously the compensation for new plants can be cut. Under the current German Renewable Energy Sources Act, the annual degression rates for solar energy vary from 8 percent to 10 percent a year, depending on the growth of the market.

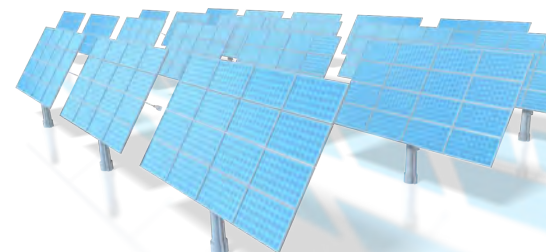
What is decisive is that the degression curve to be applied is not too steep, so that the compensation rates do not fall below the threshold at which a return starts to be earned in later years. Otherwise, investors in new manufacturing facilities would fear for the future of the sales markets they intend to target, which would reduce their readiness to

invest.

Over the past decade, the FIT is credited for the rapid deployment of wind and solar power among world renewable energy leaders

Denmark, Germany and Spain.

Similar policies have since been adopted by many other countries, leading the FIT to become a key tool for promoting renewables. The fact that the payment levels are performance-based puts the incentive on producers to maximize the overall output and efficiency of their project.

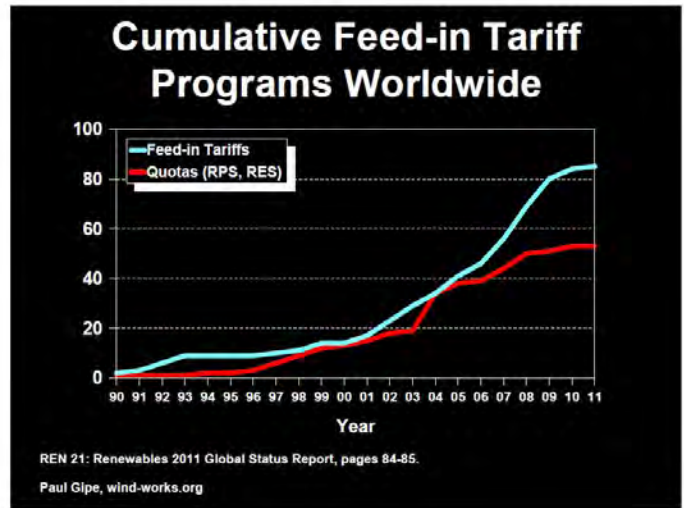


To illustrate the effectiveness of the FIT in Germany, the installed capacity of solar PV in Germany has increased from approximately 1 GW in 2004 (*1 billion watts—the rough equivalent to the output of one nuclear power plant*) to over 24 GW at the end of 2011. While at the same time the price of the FIT has decreased from over .50 to .60 euro's cents per kWh to less than .20 eurocents per kWh, which incidentally, is actually cheaper than the average retail electricity rate in Germany.



This is exactly what a well-designed FIT should do, and it has obviously been shown to work as planned in Germany, a country with half the solar insolation—exposure to the sun's rays—of the US.²

More than 80 jurisdictions around the world now use or have used FITs to pay for new renewable generation.³



*In fact, FITs now dominate policy for renewable energy worldwide, with 60 percent more jurisdictions—states, provinces and entire countries—using FITs than are now using quota systems such as Renewable Portfolio Standards or Renewable Energy Standards.*⁴



The US needs a nationwide FIT to kick-start the renewable energy industry, restore US leadership in this space, and accelerate expansion of the renewable industry worldwide.

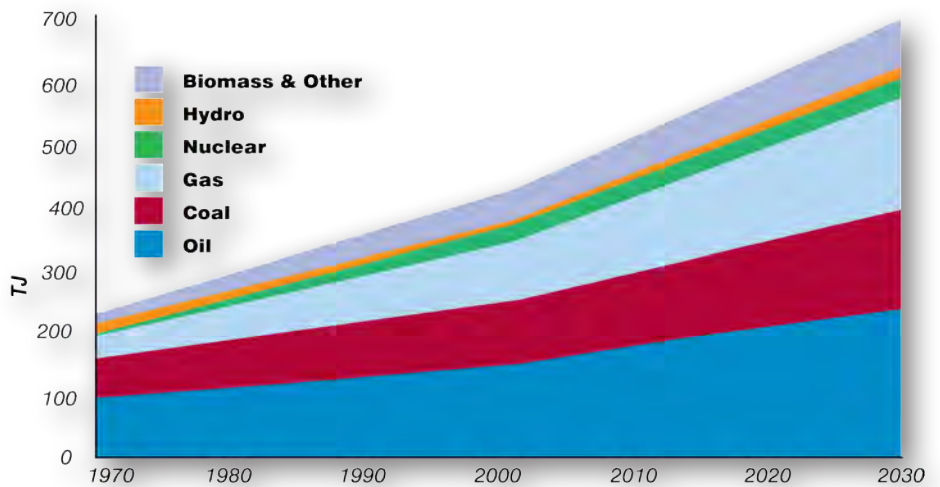
The rapid expansion of the renewable energy industry is a win-win for the entire world, for future generations and a critical component to the long-term survival of humanity.

WHY IS A FIT CRITICAL?

The world is running out of cheap fossil fuels.

No other replacement source of energy abundant enough to sustain energy needs for more than 40 or 50 years currently exists. If the US were not running out of “cheap” fossil fuels there would be no drilling for oil through 20,000 feet of water and then 10,000 feet of ocean bedrock to reach an oil field—an expensive, technically complex, dangerous and, overall, risky investment that is fraught with a number of uncontrollable variables.

Overall, world energy demand is expected to increase by more than 50 percent by 2030.



Source: OECD/IEA World Energy Outlook 2004



Any attempt to understand or forecast global energy requirements must take account of population growth. At the beginning of the twentieth century, world population was about 1.5 billion. Today it is over seven billion and growing at the rate of 90 million a year. By the year 2025 world population is expected to reach 8 billion.⁶

Current world energy consumption rate is approximately 16 TW (a terra watt is a trillion watts of power) per year. The amount of direct solar energy that arrives on Earth during an average four-week period, roughly 1,853 TW/yr., is greater than the total remaining reserves (1,755TW/yr.) of all fossil fuels.⁷

Clearly, the only current technically feasible, long-term solution today is renewable energy.

Going forward, the strategy should be to accelerate the worldwide development of renewable’s as quickly as possible. **The only proven means to accomplish this is by establishing a nationwide FIT.**

KEY BENEFITS OF FIT

The most significant benefits of FIT include:

- **IT IS PROVEN**—Germany, a country that receives half the average insolation that the US receives, set a 2010 target of 12.5 percent share of renewable energy in electric generation in 2000. In 2007, they surpassed that goal with 15.1 percent, 20 percent better and two years ahead of schedule. Since Germany has launched their FIT program, approximately 35 to 40 countries have followed suit and implemented their own FIT program.
- **PAYS FOR ITSELF IN LESS THAN A YEAR**—In 2008, Germany's additional cost for their national FIT was \$3.2 billion euros. The return for the cost of the FIT calculated by the German Federal Ministry for the Environment was:
 - » \$7.8 billion euros from reduced amounts of fossil and nuclear fuels purchased
 - » \$9.2 billion euros saved from the avoidance of external costs.⁸

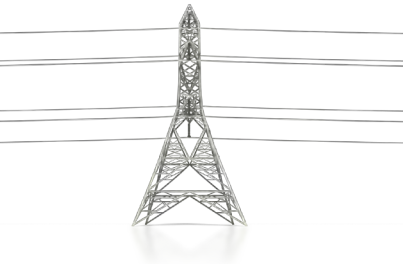


A TOTAL of \$17 BILLION in SAVINGS
for \$3.2 billion in additional costs is clearly a
superior return.

- **THE RETURN INDEPENDENT OF TAXPAYER FUNDS**—a FIT is not a subsidy and no new public debt is needed to fund such a program, making it a stable and self-sustaining proposition in any economic and political environment
- **DECREASES PRODUCTION COSTS** and cost per watt installed
- **ENCOURAGES PRIVATE INVESTMENT, CREATES JOBS, EXPANDS MANUFACTURING** and increases private sector research and development
- **DRAMATICALLY REDUCES GOVERNMENT BUREAUCRACY** and red tape associated with a typical power purchase agreement by magnitudes
- **ENHANCES NATIONAL SECURITY** by lessening US dependence on foreign oil, while helping to decrease the massive associated cash drain



OPPOSITION TO FITS—*Opposition is Talk, FITs are Fact*



The number one opponent to FITs is the local electric utility.

These utilities argue that FITs work contrary to the market, but most utilities are not driven by the “market”—they are monopolies, and monopolies, by definition, do not respond to market forces. Positive results in a developed country like Germany show that FITs are far more market-oriented than monopolies.

Furthermore, powerful contributors, such as utilities and fossil fuel companies, do not want infringement on their businesses, and will oppose efforts to kick-start an industry that will compete against them. But, there is no economically valid opposition to FITs if the primary consideration is the welfare of the country and the long-term health of the planet.

Why is FIT working in Germany but not in the US?



The primary reason FITs are working in Germany—and not in the US—is the respective mindsets in each country, evidenced in the following quotes:

“We decided we will reduce the CO2 until 2020, 40 percent, (and by) 2050 by 80 percent and then we debated the instruments that could make this possible and decided on Feed-in Tariffs.

I hear arguments (spoken in 2009) we discussed in Germany 10 or 15 years ago. It’s the same debate. In Germany, we made a decision; we made a law...the renewable Energy Resources Act (FITs). It worked. You can see the results.”

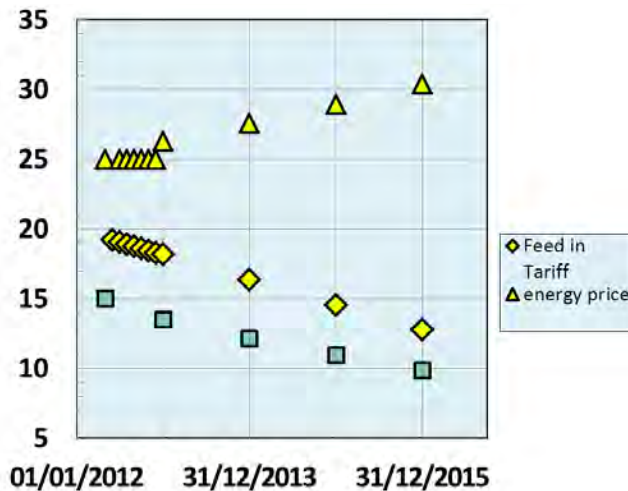
—Willi Voigt, former minister of the German state of Schleswig-Holstein, one of the early adopters of FITs.⁹

The Germans made a decision to benefit all their citizens and then followed through with it. The US has not been able to make this kind of decision, despite the fact that every US President since Richard Nixon has recognized the country’s unsustainable energy path and has vowed to move toward less dependence on oil. In that time, the country’s oil dependency has more than doubled.

Unlike other countries, America has taken a reactive stance in terms of energy, but the current, catastrophic trajectory of energy consumption demands a proven, proactive solution. Opponents of renewable energy, the fossil fuel industries and their congressional cohorts have strived to obscure the energy crisis through the media and keep a critical and obvious solution—FITs—from reaching the American people.

What would German installation costs mean for the US solar market, where sunshine is more abundant?

Americans could buy solar on long-term contracts—with no subsidies—for 18.6 cents per kWh in Minneapolis, and just 15.4 cents in Los Angeles. Factor in the federal 30 percent solar tax credit and Minneapolitans could get solar for 14.3 cents per kWh, Los Angelenos for 11.8 cents.¹⁰



Feed-in Tariff Law in Germany, Cost to buy electricity and levelized cost of energy over the lifetime through 2015 (Source: Werner Bergholz, Jacobs University)

2006

IT IS INTERESTING TO NOTE that in 2006 China avoided implementing a FIT, taking the view that FITs triggered too rapid market growth.

2011

In 2011, however, the Chinese implemented a FIT program, and their **DOMESTIC MARKET IS NOW BOOMING**, with Chinese solar manufacturing having scaled up to the point where it can address this huge new market without reliance on imports.

FITS ARE NOT THEORIES.

They have been demonstrated and proven.

They do not need further research, development or testing. In other words, they are not the next Solyndra.

In fact, FITs are currently operating programs that have been developed and honed in highly industrialized countries, and they have been in successful operation for more than 10 years.

Given all of the benefits, no economically valid opposition exists.

The US can learn from the FIT in Germany, a country that was quick to recognize the transparency and effectiveness of a FIT.



A FIT program is **THE MOST EFFECTIVE** way to *spark rapid development* of the massive amount of renewable energy required to keep the US going strong.

Renewable energy projects in the US have often met resistance from wary investors, but the FIT policy removes uncertainty by ensuring that anyone with access to sun and wind can receive funding for a set period of time.¹¹

The US needs to stop the current politically distorted debate and start with real action.



FIT's are the obvious solution
to a problem and they are totally proven.

THE TIME FOR TALK IS OVER
—*the time for FIT's is now.*



About the Authors



J. PETER LYNCH

J. Peter Lynch is a pioneer in the renewable energy sector of the investment banking industry and regarded as an expert in renewable energy.

Peter brings a wealth of knowledge from his 35 years as a Wall Street security analyst, independent security analyst and private investor in small, emerging technology firms. He has raised over \$500MM in every sector of the industry, including photovoltaics, solar thermal, wind and biomass.

Peter has served as a financial/technology consultant to a number of renewable energy companies, and currently spearheads the development of commercial-scale solar projects in the Northeast U.S. In addition, Peter works with a number of scientific advisors and associates focused solely on identifying the next generation of renewable technologies.

While serving as contributing editor for the *Photovoltaic Insider Report* for 17 years, Peter provided thought-leadership on a global basis to major energy companies, utilities and governments, bringing to light leading-edge technologies in the energy industry.

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END NOTES

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2. Deutsche Bank Group; DB Climate Change Advisors; 2011.
3. Gipe, Paul; Snapshot of Feed-in Tariffs around the World in 2011; Renewable Energy World; October 6, 2011; <http://www.renewableenergyworld.com/rea/news/article/2011/10/snapshot-of-feed-in-tariffs-around-the-world-in-2011>; accessed August 7, 2012.
4. Gipe; October 6, 2011.
5. World Nuclear Association; Uranium, Electricity and Climate Change; <http://www.world-nuclear.org/education/ueg.htm>; accessed August 7, 2012.
6. World Nuclear Association
7. BP Statistical Review of World Energy 2008. Note: The direct sunlight number is from only land masses and is discounted 65 percent due to losses through the atmosphere and clouds.
8. Germany calculates the avoidance of costs related to using renewable energy vs. fossil fuels, such as: damage to climate, impact of air pollution and toxic wastes on health, and cost of cleaning rivers and other bodies of water. The US does not include such costs in project or technology analysis, which will result in enormous long-term negative impacts, as well as a significant additional burden on US taxpayers.
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11. World Watch Institute.

