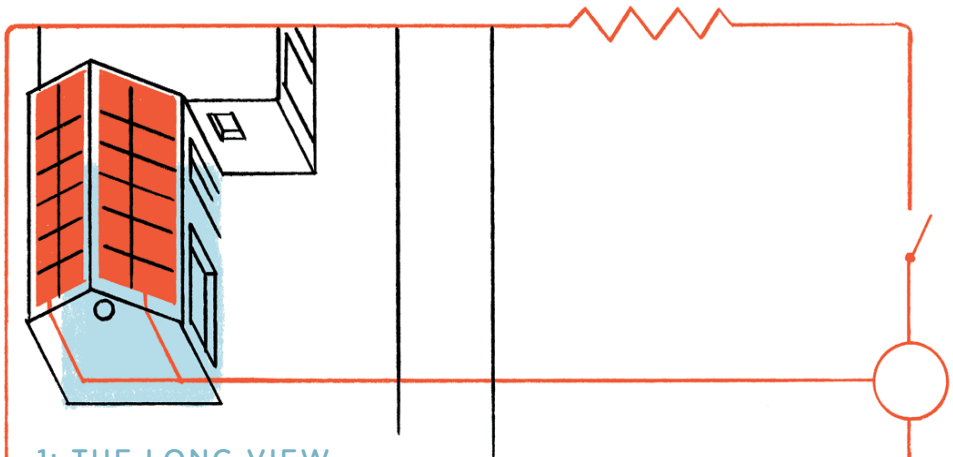
Feed-in Tariffs: How They Work

With the threat of drastic climate change looming large, the world needs to shift away from oil and coal as quickly as possible. But doing so will require mobilizing the private sector to invest heavily in alternatives—solar, wind, geothermal, and the like—most of which are still in their infancy. A feed-in tariff does just that: Utilities pay government-mandated rates for renewable power over a guaranteed period of time, making clean energy a sound investment that lures in big lenders, while convincing homeowners, farmers, and communities that they, too, can install solar panels or wind turbines and turn a tidy profit. Here's an overview of how the law works.

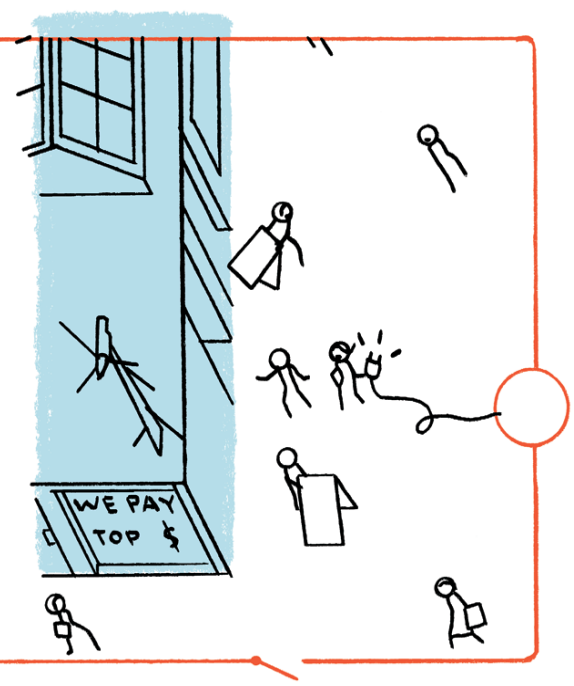


1: THE LONG VIEW

Any producer of renewable energy—be it a small wind farm, a home with rooftop solar panels, or a large biogas plant—is allowed to sell electricity to the grid. The utility is required to negotiate a long-term contract with the producer, typically for a period of 15 to 20 years; to guarantee priority connection to the grid; and to pay for any necessary grid upgrades—if, for instance, the producer later decides to install even more wind turbines and sell even more electricity.

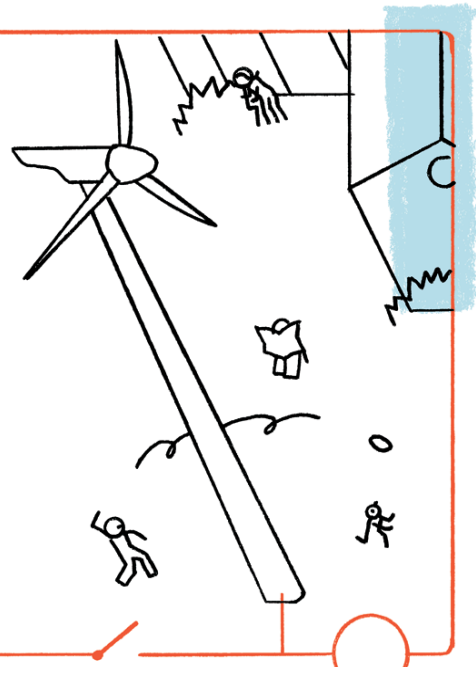
2: A FAIR PRICE

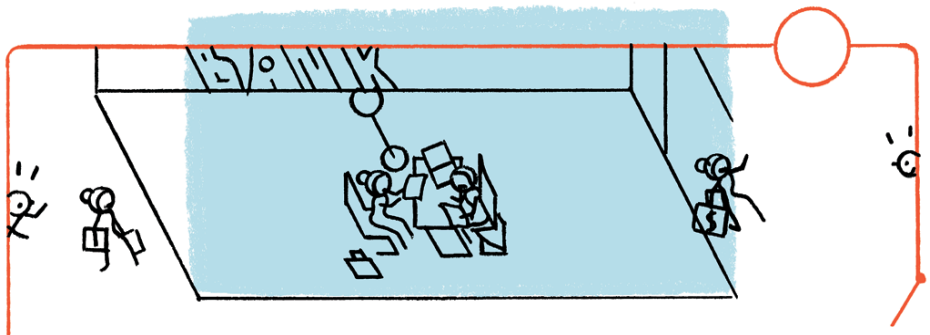
The governing body—say, the state utility commission—sets the price the utility will pay for the renewable power. The rates are typically high enough to ensure that the producers recoup their costs and earn "reasonable" rates of return; rates tend to vary so that the payoff time is roughly the same no matter what technology is used. So, for instance, a 150-kilowatt biomass plant might be able to sell electricity to the grid for 15 cents per kilowatt-hour, while a building with mounted solar panels might get 50 cents per kilowatt-hour, because the latter costs more upfront to install.



3: GOING LOCAL

Tariff rates can be structured to favor small and local producers. A farmer setting up just a handful of wind turbines on his fields, for example, might get a higher rate than a large commercial wind farm. This encourages local ownership, giving individuals and communities incentives to set up their own turbines, and prevents large corporations from reaping excessive profits. (More than half of all German wind projects are locally owned.) Decentralized power can help minimize transmission losses and improve the grid's stability.





4: TAKING IT TO THE BANK

These guaranteed contracts make it easier for individuals to invest in renewable power. After talking with the utility, a homeowner can go to a bank and apply for a loan to install, say, solar panels. Because the tariff contract provides a guaranteed income stream, the bank can be more confident the loan will be repaid and thus offer lower interest rates, creating a relatively stable investment opportunity even during economic slumps. (Some German banks specialize in solar- and wind-power loans, which work much like mortgages—with the panels and roof space offered as collateral.) The homeowner then installs the panels and, rather than using them to power his own home, sells the electricity back to the grid, earning enough to pay down the loan and eventually turn a profit.

5: SHARING THE LOAD

The state regulator then levies a "user charge" on all electricity customers in the state, to pay for the premiums offered by the renewable contracts and cover the cost of grid upgrades. This spreads out the cost and ensures that utilities buying large amounts of clean energy aren't unfairly punished. By most estimates a feed-in tariff will raise the average electricity bill by six percent or less. In Germany this has meant a $4 increase on the average monthly bill. While state legislatures may be reluctant to raise prices during a recession, this is still cheaper than most other policies that promote clean energy, and can save customers money over the long haul, since they're better shielded from fluctuations in the price of coal and gas.

6: FINE-TUNING

Meanwhile, regulators monitor and frequently adjust tariff rates for new contracts to make sure producers aren't receiving excessive profits and customers aren't being unduly burdened. So, for example, the rates offered for solar power might decline each year to give photovoltaic manufacturers constant incentive to improve the efficiency of their panels. And if, say, the cost of wind turbines jumps one year—because materials get pricier—then tariffs for wind projects can be increased accordingly. The government can also tweak rates to promote technologies that are still being developed.