Feed-in Tariff Policy Design: Innovations, Lessons Learned and Future Direction

Clean Energy States Alliance and RPS Collaborative webinar

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Presentation Overview

- NARUC – DOE Solar Partnership
- Feed-in Tariff (FIT) Policy Overview (EU and US)
- FIT Policy Design Options
- Implications of FERC July 2010 Order
FIT Task Goals: State utility commissions/staff asked NREL for technical assistance to understand:

1. State-federal jurisdictional issues (Jan 2010)
2. Cost and payment methodology (fall 2010)
3. Interconnection policy best practices (fall 2010) and
4. State-specific FIT policy design options (ongoing)

(technical assistance to participating states – CO, HI, MI, WA)
Feed-in Tariff* definition

**Feed-in Tariff***: A renewable energy policy that typically includes three key provisions:

1. **Payments** to project owners for total kWh of renewable electricity produced;
2. **Access to the grid**; and
3. **Stable, long-term contracts** (15-20 years)

* Also called standard offer contract, fixed-price policies, minimum price policies, feed laws, renewable energy payments, renewable energy dividends or advanced renewable tariffs.
FIT Policy: Application in Europe

Source: Wilson Rickerson, Meister Consultants Group
Jan 2010
FIT Policies and Proposals in the U.S.

- **3 states enacted FIT policies based on RE project cost**
  - (VT, HI, ME (but with a payment level cap))
  - (*Date passed*)
- **1 state enacted FIT policies based on avoided cost**
  - (CA - subsequently updated in 2008, 2009)
  - (*Date passed*)
- **10 states proposed FIT legislation based on RE project cost**
  - (CA, FL, IL, IN, MI, MN, NY, RI, WA, WI)
  - (*Year last proposed*)
- **Solar FIT policies approved by municipal utilities**
  - (*Date introduced*)

**Sources**: Adapted from DSIRE 2010, Gipe 2010, Oregon PUC 2010.

As of June 2010

- Sacramento (July 2009)
- Sept. 2006
- Rhode Island (2008)
- May 2009
- Sarasota (July 2009)
- Sept. 2009
- Gainesville (March 2009)
- San Antonio (June 2010)
- Sept. 2009
- 2010
New NREL Report (July 2010):

What is a FIT?
What are the **payment** design options?
What are the implementation options?
How to control FIT policy costs?

➡ Lessons applicable to other RE policies
**Long-term policy stability**
- Predictability vs. pre-determined payment levels
- Capital markets and manufacturers prefer degree of predictability

(1) **Differentiation**
Primary: technology, project size, project location, and sometimes resource quality
Secondary: Degression (pre-determined or responsive), inflation adjustment, front-end loading, time of delivery

(2) **Bonus payments**: target “smart grid” principles and optimization
- High-efficiency systems; specific fuel streams; repowering existing facilities; specific ownership structures (*e.g.* community owned); innovative technologies (*e.g.* advanced grid integration, emerging tech); installation vintage

(3) **Distinction between fixed payment vs. premium payment**
- Fixed-payment
- Premium-payment
  - Constant (premium over spot market)
  - Sliding (to react to market prices/conditions; can be bounded)
(4) Implementation Options

- Eligibility Criteria
- Contract elements
- Forecast obligation
- Purchase Obligations
- Policy adjustments
- Transmission & Interconnect
- Non-utility purchases
- Caps (program size, project size, program cost)

(5) Controlling costs

- If FIT policies are unbounded, FIT costs may be higher than expected
- To limit overall costs, some policy design enhancements can help:
  - Caps on program size, individual project size, program budget or caps specifically for costlier technologies
  - More frequent adjustments to payment levels (capacity based, or more than once a year)
  - Auction-based mechanisms to determine payment levels (experimentation)

(6) Funding a FIT policy

- Ratepayer funded, taxpayer funded, supplementary funds
- Inter-utility cost sharing
FIT Policy Challenges

Up-front capital need: Does not directly offset the need for substantial capital to pay for up-front project costs
  – But L-T contracts investor confidence

Setting payment level is challenging:
  if set too low, little new RE development;
  if too high, surplus profits to developers

Policy design challenge: Tracking technological improvement and cost reduction accurately over time

Complexity: Usually many levels of differentiation

Cost: supporting emerging and higher-cost technologies can lead to upward pressure on electricity costs (and rates)
  – Can be designed to limit support for such technologies

Jurisdiction issues: is it possible for states to structure SOC/FIT payments so that they are not in conflict with FERC’s jurisdiction over wholesale rates, or PURPA requirements?
http://www.nrel.gov/docs/fy09osti/45549.pdf

http://www.nrel.gov/docs/fy09osti/45551.pdf

“A Policy Makers Guide to Feed-in Tariff Policy Design” NREL, July 2010
http://www.nrel.gov/docs/fy10osti/44849.pdf
An Update on FERC Activities....
**State – Federal Jurisdiction Issues**

**Question:** How can states use the law to implement FITs?

1. **No subsequent approvals by FERC required (FPA doesn’t apply):**
   - Municipal utilities
   - Electrical islands (Alaska, Hawaii, TX/ERCOT)

2. **Under PURPA**
   - QFs can receive: avoided cost + (RECs, SBC funds, state tax credits)
   - Issue: Utilities can apply for exemption from PURPA (EPAct 05)

3. **Under state law (contracts subject to FERC FPA)**
   - FERC must approve (1) every contract or (2) suppliers w/o market power
   - Q: Are supplements (RECs, SBC) also outside of FERC jurisdiction under FPA as well?? Unclear in law and regulations.
Other possible paths forward:

1. FERC investigation and rulemaking/declaratory order
   - At FERC’s initiative, or as requested by outside party
     a) Change FPA precedent so QFs <20 MW are exempt from avoided cost limit
     b) Establish “safe harbors” or guidance for “price caps” for purchase prices for specific technologies, projects, or regions

2. Congress could take action
   - Draft language in Waxman/Markey is a start – needs clarity

Thank you for your attention!

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FITs and RPS: complementary policies

- **RPS**: sets the goal vs. **FIT**: supply procurement
- **FITs** replace/complement **RFPs**, NOT RPS policies (e.g. EU countries use FITs to achieve goals)

**Options for implementation**

1. **FITs** for distributed generation (only)
   - RFPs left to target utility-scale systems
   - DG often not winners/participants in RFPs
   - Allow wider variety of project owners (than just IPPs)

2. **FITs** used for utility-scale projects
   - Legal issues under investigation (described later)
   - Used *between* infrequent competitive solicitations
   - May *replace* utility RFPs
FITs and REC markets – why both?

Not all RPS policies target solar and/or DG
  – FITs can fill a gap for solar, emerging tech. and DG
  – Other options: set-asides or multipliers

Are all end-users able to participate in REC markets?
  – If not, on-site generation may not be economic for small cust.
  – FITs allow all end-users to have on-site generation – alternatively, could open up REC markets to small end-users

Most RECs transacted through bilateral contracts or RFPs
  – Without an active spot REC market (with price transparency) it is challenging for end-users to participate
(1) Fixed Price Payment
(can include escalation)

Most countries use fixed-price FIT payments

(2a) Premium Payment
(above spot market)

EX: Vermont

EX: Spain (before 2007)
FIT Payment Structure - 2

(3) Spot Market Gap Model (above spot market)

EX: Switzerland

If the retail price rises high enough, the FIT payment goes to zero.