

Introduction to Solar Photovoltaic Energy Policies

PHYS 4400, Principles and Varieties of Solar Energy
Prof. Randy Ellingson

Concepts and terminology:

Renewable Portfolio Standard (RPS)

Feed-in Tariff (FIT)

Solar Renewable Energy Credits (SREC)

Solar Alternative Compliance Payment (SACP)

Assigned reading:

1. Renewable portfolio standard: http://en.wikipedia.org/wiki/Renewable_Portfolio_Standard
2. Feed-in tariff: http://en.wikipedia.org/wiki/Feed-in_tariffs
3. About SRECs and SACPs: <http://www.sretrade.com/background.php>
4. Ohio's SREC market: http://www.sretrade.com/ohio_srec.php
5. New Jersey's SREC market: http://www.sretrade.com/new_jersey_srec.php
6. Indiana's Solar Energy information page: <http://www.in.gov/oed/2412.htm>

Renewable Portfolio Standard (RPS)

Many states have adopted a Renewable Portfolio Standard (RPS) policy, which establishes target electricity production from renewable energy sources. The RPS defines what qualifies as renewable electricity, and often specifies “carve-outs” which mean, e.g., that for solar electricity production, the state must produce at least x% from photovoltaics.

The target renewable electricity production levels typically ramp over time, so that annual production levels are cumulative – i.e., so that new capacity is added over time, sometimes at an accelerating rate.

The RPS provisions may apply only to specific utilities, for example investor-owned utilities (IOU's). States typically establish steep (expensive) cash penalties for IOU's that fail to meet RPS requirements.

States (through IOU's) are in many cases able to benefit from residential customer PV installations through the purchase of SRECs (discussed later in this presentation), which allow the utility to pay cash for “credits” that are tied to a specific level of PV electrical energy production.

Resources and tools for assessing PV energy production and economic value

DSIRE: Database of State Incentives for Renewables and Efficiency:
<http://www.dsireusa.org/>

In My Backyard: <http://maps.nrel.gov/imby>

Location-specific PV system energy production and estimated payback time calculator.

PVWatts: <http://www.nrel.gov/rredc/pvwatts/>

Location-specific PV system energy and savings calculator.

Team project: Residential PV System Policies

Each of the teams will research and prepare an assessment of the policies and economic incentives which influence the financing and installation of PV systems* in the assigned state.

* Focus only on PV system/production policies and incentives for this presentation.

Each team's presentation should fit within a 15 minute timeslot, but should also use the allotted time efficiently, presenting as much relevant, useful information in a well-organized manner. Projects will be presented April 23rd in R1 room 2000N to a joint class with Prof. Heben's students.

Teams: Team P: (McElvany, Schide, Timmons) – Ohio
Team V: (Deitz, Boya, Davis, Weirwille) – Indiana

Team project: Residential PV System Policies (cont.)

- The Team chooses the format and organization of your presentation, but assume it is being delivered to an audience familiar with the terminology* but unfamiliar with your state's programs.
* Be prepared to explain any terminology/concepts if asked.
- Include an overview of the state's policies and incentives (RPS including solar carve-out, tax credits, feed-in tariffs, etc.); discuss what is state-wide, and which incentives are offered by specific utilities -- in some cases a specific energy utility offers incentives not offered elsewhere (consider the significance as you decide what to include and omit). Each team should include any federal incentives.
- Include a brief history or timeline of when policy changes were implemented – find as much relevant information as you can, but don't allot too much time to the history. Similarly, include any significant legislation being considered (i.e., somewhat prominent in the state's news on renewables) which may come to fruition in the near future.
- Include one example of a residential PV system (8 kW_p or less). Include the system's specific location, system rated power (and how this is arrived at, including the significance of derating, tilt angle of PV modules, the azimuthal angle, etc.), local electricity rate (\$/kW-hr), estimated up-front costs broken down by modules, inverter, installation, and other costs), and an assessment of the payback period for the system.
- Spend ~2/3 of the time on the policies and incentives, and discuss your opinion of the attractiveness of them, and about ~1/3 of the time on the example PV system.