

Pricing: Best Practices and Evaluation Strategies

Tools and Incentives



Tools



FEMP ECM Pricing Review Tools

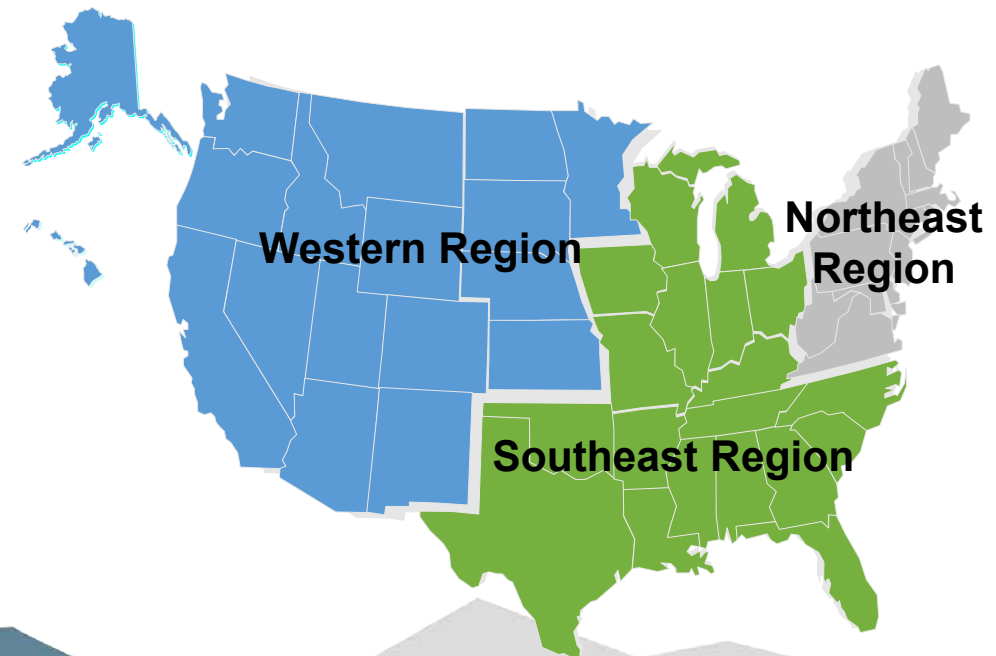
- [ECM Price Benchmark](#) - lighting, chillers, VFDs, GSHPs, water
- ECM Locator
- [eProject Builder](#) - generates price/sq. ft. for a few ECMs
- Contact ORNL or a Federal Project Executives for details and assistance
- Also see [Federal Energy Decision System](#) and other audit tools

Federal Project Executives (FPEs)

Scott Wolf – FPE Western Region
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202-256-5986 / thomas.hattery@ee.doe.gov



Distributed Energy—Publicly Available Tools

- Gauge initial potential, optimize system sizing & refine project economics

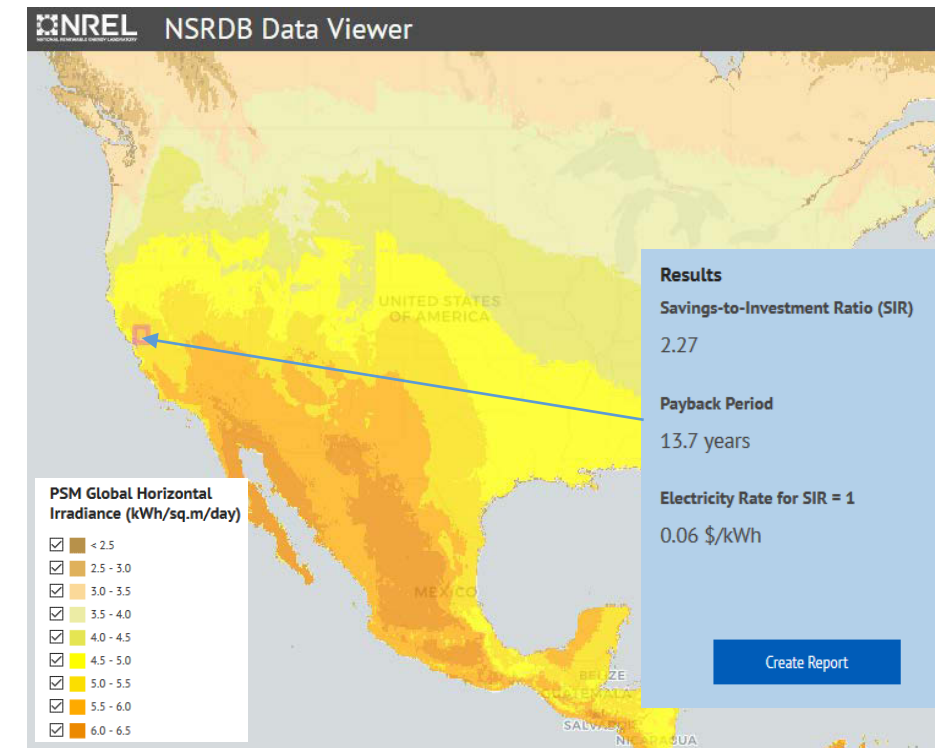
	Expertise and Effort needed	Required Inputs	Key Outputs
FEMP Screening Map	Low	<ul style="list-style-type: none"> • Location 	<ul style="list-style-type: none"> • Map interface with geospatial layers • High-level economics
PVWatts Calculator	Low	<ul style="list-style-type: none"> • Location • System configuration 	<ul style="list-style-type: none"> • PV energy generation • No economics
REopt Lite Web Tool	Medium	<ul style="list-style-type: none"> • Location • Energy Consumption • Rate tariff 	<ul style="list-style-type: none"> • Optimized system size and dispatch • High-level economics
System Advisor Model (SAM)	High	<ul style="list-style-type: none"> • Energy Consumption • Rate tariff • Detailed system configuration • Financing inputs 	<ul style="list-style-type: none"> • Detailed technology performance • Detailed economic modeling



FEMP Screening Map

- Leverages interactive resource maps (PV, wind, SHW and SVP) and data layers
- User clicks on map for high-level metrics including:
 - Savings to investment ratio (SIR)
 - Payback period
 - Electricity rate required for an SIR of 1
- Generates summary report

<https://maps.nrel.gov/femp/>



PVWatts

- Enter location and PV system size
- Estimates PV system energy production (annual and hourly) using solar resource data and energy production models

<http://pvwatts.nrel.gov/>

RESULTS **76,392 kWh per Year***

System output may range from 70,961 to 78,646 kWh per year near this location. Click [HERE](#) for more information.

Month	Solar Radiation (kWh / m ² / day)	AC Energy (kWh)	Energy Value (\$)
January	3.67	4,666	516
February	4.21	4,881	539
March	5.61	7,108	785
April	6.15	7,342	811
May	6.46	7,791	861
June	6.74	7,671	848
July	6.60	7,578	837
August	6.44	7,397	817
September	5.99	6,791	750
October	4.99	6,044	668
November	3.80	4,692	518
December	3.38	4,431	490
Annual	5.33	76,392	\$ 8,440



REopt Lite Web Tool

- No-cost subset of NREL's more comprehensive REopt model
- **Financial mode:** Optimizes PV, wind and battery system sizes, as well as battery dispatch strategy to minimize life cycle cost of energy
- **Resilience mode:** Optimizes PV and battery system sizes to sustain critical load during grid outages

<https://reopt.nrel.gov/tool>

The screenshot displays the REopt Lite web tool interface. At the top right is the REopt Lite logo. The interface is divided into three main steps:

- Step 1: Choose Your Focus**: A question asks "Do you want to optimize for financial savings or energy resilience?". Two buttons are shown: "\$ Financial" (selected) and "Resilience".
- Step 2: Enter Your Data**: A section titled "Site and Utility (required)" contains:
 - "Site location" dropdown menu set to "San Diego County, CA, USA" with a "Use sample site" link.
 - "Electricity rate" dropdown menu set to "San Diego Gas & Electric Co. AL-TOU Secondary".
 - Links for "URDS Rate Details", "Show more inputs", and "Reset to default values".Below this are expandable sections for "Load Profile (required)" and "Financial".
- Step 3: Select Your Technology**: A question asks "Do you want to evaluate PV, battery, or both?". Three buttons are shown: "PV" (selected), "Battery", and "Both". Below are expandable sections for "PV" and "Battery".

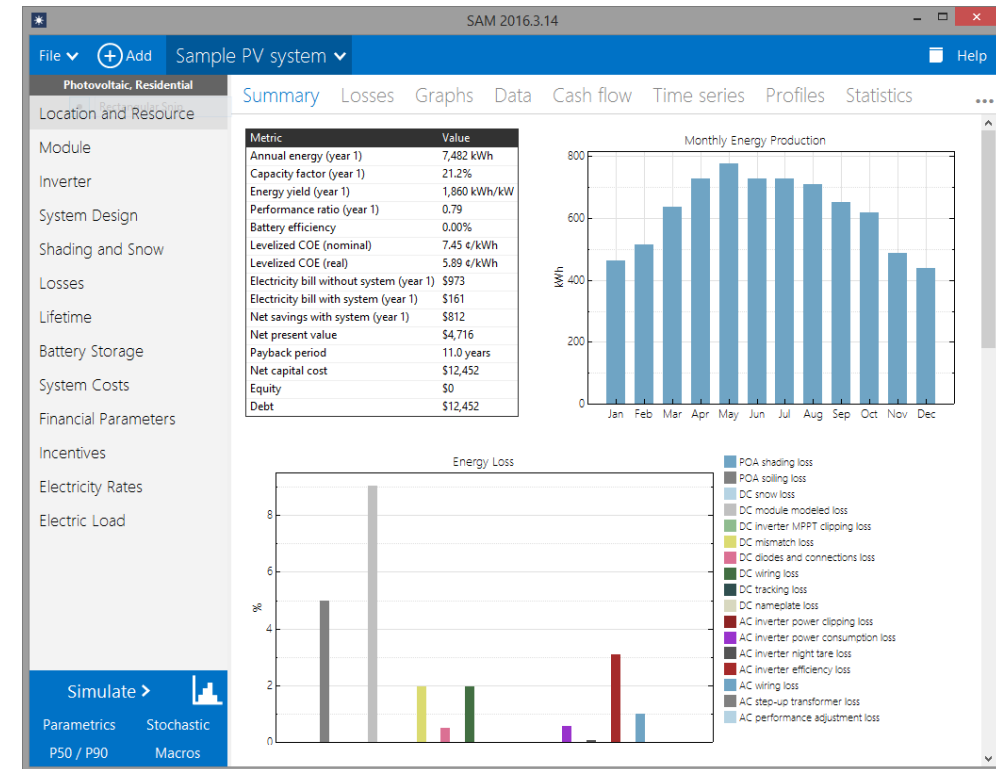
At the bottom right, there is a "Reset to default values" link and a blue "Get Results" button.



System Advisor Model (SAM)

<http://sam.nrel.gov/download>

- Techno-economic model that combines detailed performance and financial models to estimate cost of energy
- Energy performance for renewables (PV, wind, geothermal, biomass, solar hot water) and storage
- Financials for a variety of arrangements including power purchase agreements



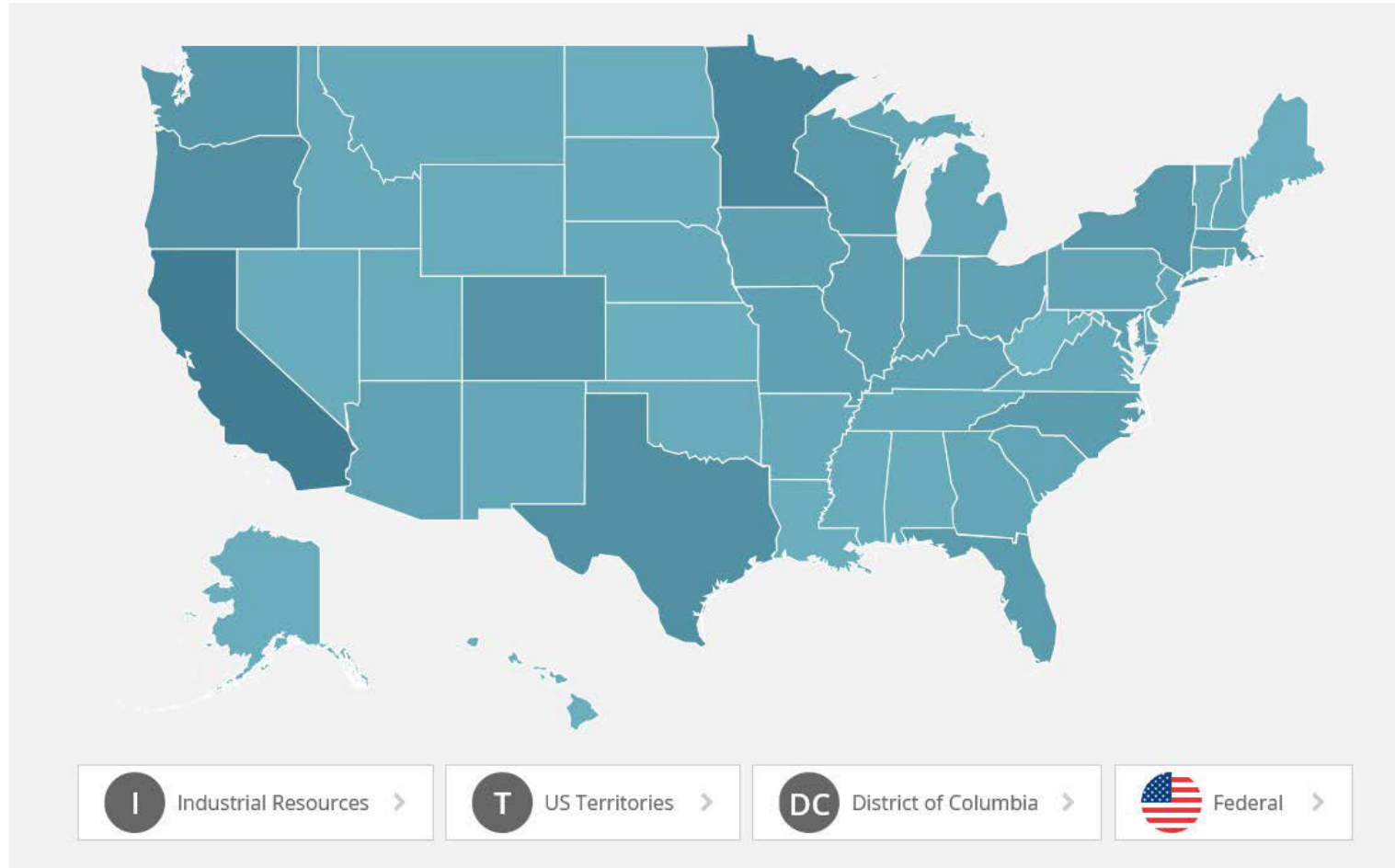
Incentives



Database of State Incentives for Renewables & Efficiency (DSIRE)

- Comprehensive database of incentives and policy information
- Click on state and/or box below map for list of applicable incentives
- Summary maps
- Summary tables

<https://www.dsireusa.org/>



Filter Options

Excluding SIR Programs ✕

State/Territory: Colorado ✕

Search...

Subscribe 

Show entries

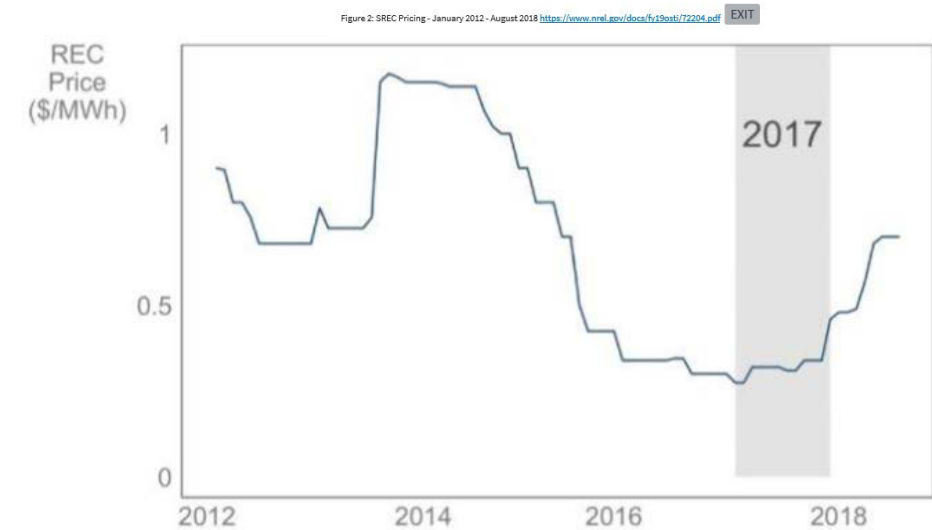
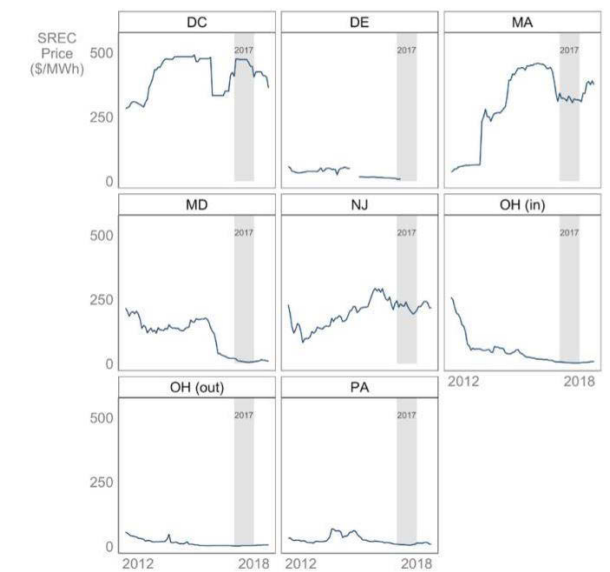
Apply Filter 

Name	State/Territory	Category	Policy/Incentive Type	Created	Last Updated
Colorado Springs Utilities - Renewable Energy Rebate Program	CO	Financial Incentive	Rebate Program	01/16/2006	06/25/2019
EZ Investment Tax Credit Refund for Renewable Energy Projects	CO	Financial Incentive	Corporate Tax Credit	10/30/2015	06/04/2019
Xcel Energy - Solar*Rewards Program	CO	Financial Incentive	Performance-Based Incentive	12/06/2005	05/23/2019
Black Hills Energy (Gas) - Commercial Energy Efficiency Program	CO	Financial Incentive	Rebate Program	09/16/2009	05/23/2019
Black Hills Energy (Electric) - Commercial Energy Efficiency Program	CO	Financial Incentive	Rebate Program	08/04/2010	05/23/2019
Black Hills Energy (Electric) - Residential Energy Efficiency Program	CO	Financial Incentive	Rebate Program	08/05/2010	05/22/2019
Black Hills Energy (Gas) - Residential Energy Efficiency Program	CO	Financial Incentive	Rebate Program	09/16/2009	05/22/2019



Renewable Energy Certificates

- RECs: environmental attributes of renewable energy projects; sold separately from electricity
- REC prices vary considerably depending upon technology and market
- Project RECs can be sold if valuable (ideally by private project owner) and cheaper replacement RECs purchased
- <https://www.epa.gov/greenpower/green-power-pricing#one>



Federal Investment Tax Credit (ITC) and other Tax Incentives

- ITC is available for certain renewable & other technologies; varying ITC amounts
- Solar project ITC will decline from 30% to 10% by 2022
- ITC amount is based on the “commence construction” year
- See [IRS Notice](#) for more information
- [FEMP solar ITC fact sheet](#)
- Other tax incentives include modified accelerated cost recovery system (MACRS) depreciation and state/local tax incentives such as sales and property tax exemptions
- Only available to entities with a tax appetite – requires private vs. federal ownership (PPA, ESPC Energy Sales Agreement, other)



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NREL/PR-7A40-74716

This work was authored by the National Renewable Energy Laboratory, operated by Alliance for Sustainable Energy, LLC, for the U.S. Department of Energy (DOE) under Contract No. DE-AC36-08GO28308. Funding provided by the U.S. Department of Energy Office of Energy Efficiency and Renewable Energy Federal Energy Management Program. The views expressed in the article do not necessarily represent the views of the DOE or the U.S. Government. The U.S. Government retains and the publisher, by accepting the article for publication, acknowledges that the U.S. Government retains a nonexclusive, paid-up, irrevocable, worldwide license to publish or reproduce the published form of this work, or allow others to do so, for U.S. Government purposes.