Cost of Renewable Energy Spreadsheet Tool (CREST) Webinar: NREL’s Finance Team

Clean Energy States Alliance Webinar

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February 25, 2011
NREL Finance Team Activities, by Activity Type

Data/Information
- Renewable Energy Finance Tracking Initiative (REFTI)
  - CA/SPA, PV, Geo

Policy Analysis
Policy Impact on RE Financing
- RE Policies
  - PV, Geo, CA/SPA, Int'l
- Incentives
  - PV, CA/SPA

Tools
- System Advisor Model/SAM project financing
  - CSP, PV, Geo
- Cost of Renewable Energy
  - Spreadsheet Tool/CREST
  - CA/SPA, PV, Geo

Markets and Financial Analysis
Impact on RE Financing
- Technology-specific
  - PV, CSP, Geo, Wind
- Financing structure-specific
  - PV, Geo

Visualization
- WebView
  - PV, CA/SPA, Geo
- WebView Financing Tool
  - PV, Geo

- VIBE
  - Virtual Information Bridge for EERE
- Clean Energy Economy Registry
MACRS depreciation applied in roughly half of projects reported (32 participants responding)
3 states enacted FIT policies based on RE project cost (VT, HI, ME (but with a rigid payment level cap))

1 state/1 federal agency enacted FIT policies based on avoided cost (CA, Tennessee Valley Authority)

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

Source: Adapted from Gipe 2010, Oregon PUC 2010.
Tools - System Advisor Model

Climate
Locations DAGGETT, CA
Lat: 34.9 Long: -116.3

System Summary
∑

Financing
Analyst: 30 years

Tax Credit Incentives
Fed, ITC

Payment Incentives

Annual Performance
Degradation: 0%
Availability: 94%

Trough System Costs
Total $ 790,021,110-03

Solar Field

SCA/HCE

Power Block

Thermal Storage

Parasitics

User Variables

LCOE (Base Case)

Monthly Output (Base Case)

After Tax Cashflow (Base Case)

Annual Energy Flow (Base Case)
Sale Leaseback

Structure Details:

- Developer constructs project and sells 100% to Tax Investor.
- Developer (Lessee) leases the project back from Tax Investor (Lessor).
- Lessee operates the project and pays Lessor an annual lease payment. Lease payment sized to provide Lessor with target return.
- Lessee retains free cash flow after lease payments and operating costs.
- Lessor receives annual lease payment from Lessee, and tax incentives and depreciation from ownership of project assets.
- Each party to the transaction has a separate taxable income (project taxable income is not shared as in the Partnership Flip Structures).
Welcome

The Renewable Energy Project Finance community is your guide to project financing, market issues, and policies.

This site features:

- A comprehensive Resource Database filled with reports, presentations, and tools on financing topics
- Featured case studies and analysis on the current state of the market
- A weekly blog highlighting analysis from NREL
- An upcoming events listing from a variety of conference and Webcast organizers.

Directly below this text, you will find the portal to our Resource Database, which is navigated by selecting the filters or typing keywords that interest you.

PPA Checklist for State and Local Governments

This fact sheet provides information and guidance on the solar photovoltaic (PV) power purchase agreement (PPA), which is a financing mechanism that state and local government entities can use to acquire renewable energy.
### Capital Cost Inputs

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost, incl. tower, SCADA, cold weather, commission</th>
<th>% Eligible for ITC</th>
<th>A</th>
<th>B</th>
<th>C</th>
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</thead>
<tbody>
<tr>
<td>Turbine Equipment Costs</td>
<td>$1,000</td>
<td>95</td>
<td>90</td>
<td>5</td>
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<td>Tower</td>
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<td>Clear &amp; Grub</td>
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<td>Total Project Capital Cost/Weighted Average</td>
<td>$23,000</td>
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<td>90</td>
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### Total Project Costs Using Worksheets

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost, incl. tower, SCADA, cold weather, commission</th>
<th>% Eligible for ITC</th>
<th>A</th>
<th>B</th>
<th>C</th>
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<td>Total</td>
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</table>

### Weighted Average

- **Total Project Capital Cost/Weighted Average**: $60,312
  - A: 95%
  - B: 90%
  - C: 5%

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**Borne from DOE – NARUC Partnership:** Saw need for simple yet robust tool