

Large Scale Renewable Off-Taker Agreements

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Margaret (Margie) Schaff
Margaret Schaff and Associates, LLC
margieschaff@comcast.net
303-443-0182

Agreements affecting your project once it's built

- ▶ Purchase Power Agreement
- ▶ Transmission Agreement
- ▶ Financial/Tax Agreements
- ▶ Operation and Maintenance Agreements
- ▶ Agreements for Environmental Attributes
- ▶ ALSO consider the terms in pre-commissioning agreements:
 - Land agreements
 - Turbine supply and warranties
 - Permits
 - Operational agreements
 - EPC (Engineering Procurement and Construction)

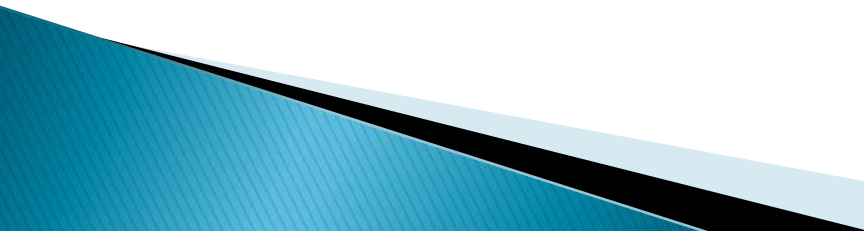
These are *Important* because you can't get financing until all these details are determined.

Who is your market for your renewable energy?

- ▶ Utilities
- ▶ Private Buyers
 - 102 companies from the combined 171 companies in the Fortune 100 and Global 100 have set GHG reduction goals (60 percent)* AND 43% of the Fortune 500 have set climate and/or clean energy targets*
 - They often can't obtain direct delivery SO they use:
 - Renewable Energy Credits
 - Direct Investment in the Resource
 - “Synthetic Power Purchases” (purely a financial transaction)

• *Power Forward: Why the World's Largest Companies are Investing in Renewable Energy, David Gardiner & Assoc. LLC (2012); Power Forward 2.0: How American Companies are Setting Clean Energy Targets and Capturing Greater Business Value, David Gardiner & Assoc. LLC (2014)

Renewable Energy Sales Options

- ▶ PURPA – Independent power producers can develop projects and sell power under longer term contracts. (See next slide)
 - ▶ Wholesale Power Markets – Power sales without long term contracts.
 - ▶ Competitive Utility Procurement – Some utilities purchase power through RFPs.
 - ▶ California – Reverse Auction Mechanism – (Lowest price wins) For Renewable generators under 20MW with standard contracts.
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Size, Location, Partners Matter

- ▶ Public Utility Regulatory Policies Act of 1978 (PURPHA) Qualifying Facilities (QF)
 - Small Power Production Facilities (generally 80 MW or less) primary source is hydro, wind, solar, biomass, waste or geothermal
 - Certain Cogeneration Facilities
 - Most FERC regulated utilities are required to purchase output of QFs at utility's avoided cost
 - Right to purchase utility services (back-up power) at rates just and reasonable.
 - Relief from regulatory burdens (some)

“PPAs” (Purchase Power Agreements)

If in “Interstate Commerce” subject to regulation by the Federal Energy Regulatory Commission.

- ▶ **Seller**: Usually a “special purpose energy” that facilitates non-recourse project financing.
- ▶ **Buyer**: Usually a utility that purchases electricity to meet customer needs, can be a direct customer.

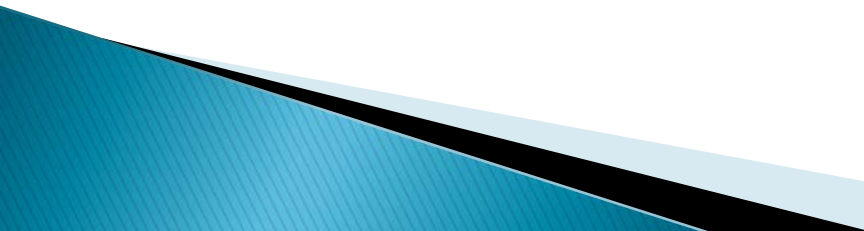
▶ Major Terms and Conditions

- **Credit**: Representations, financial guarantees, insurance
- **Timing**: Effective date, Commercial operation, Preemptive Termination
- **Operation**: Maintenance, metering – responsibility of seller, Force Majeure
- **Sales**: Delivery point, pricing, billing and payments
- **Disputes**: Default protocols, lawsuit protocols
- **Renewal**: What happens at end of term?

Example Wind PPA:

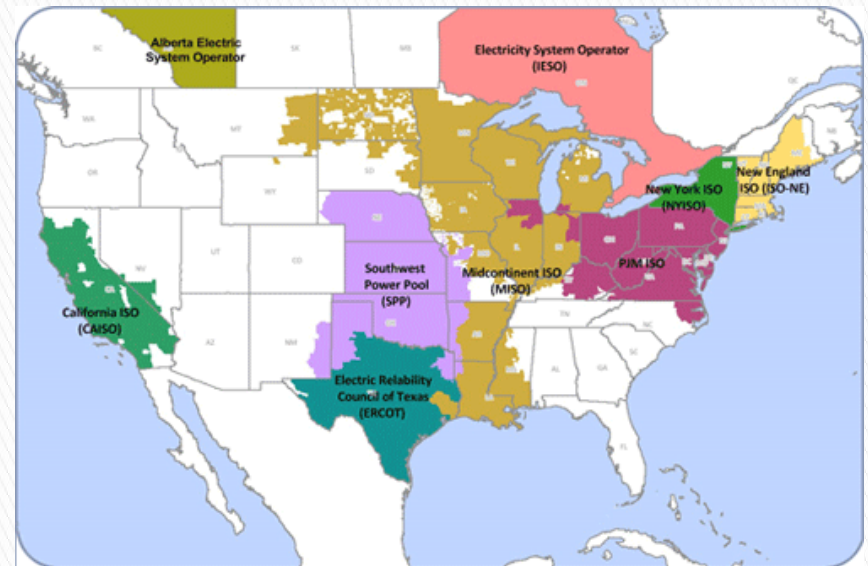
http://www.bpa.gov/power/pgc/wind/EX_C_PPA_2.pdf

“PPAs” (Continued)

- ▶ Seller generally obligated to finance and construct the project, operate it and deliver energy.
 - ▶ Minimum outputs likely required.
 - ▶ Buyer has the obligation to take the power and pay for it.
 - ▶ Addresses risk between the parties.
 - ▶ Tax ownership issues are clarified.
 - ▶ Changes in law.
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Generator Transmission Interconnection Process and Agreement

- ▶ Governed by ISO or Utility Tariffs approved by the FERC, or State Commission
- ▶ Interconnection Study paid for by applicant and completed by transmission provider is required.
- ▶ Once technical study complete, complete Application process and enter the “Queue”.



California Independent System Operator Interconnection Process:

<http://www.caiso.com/planning/Pages/GeneratorInterconnection/Default.aspx>

Financial/Tax Agreements

- ▶ Models take advantage of the Incentives
 - Investment based
 - Capacity based
 - Production based
 - Investment tax credits
 - Production tax credits
 - Depreciation
- ▶ Examples:
 - Direct finance
 - Bonds (tax exempt or taxable)
 - RUS or other low interest loans
 - Private Investor “Flip”
 - New Market Tax Credits
 - Community Renewables
 - Sale/Leaseback
- ▶ **COMBINATION**

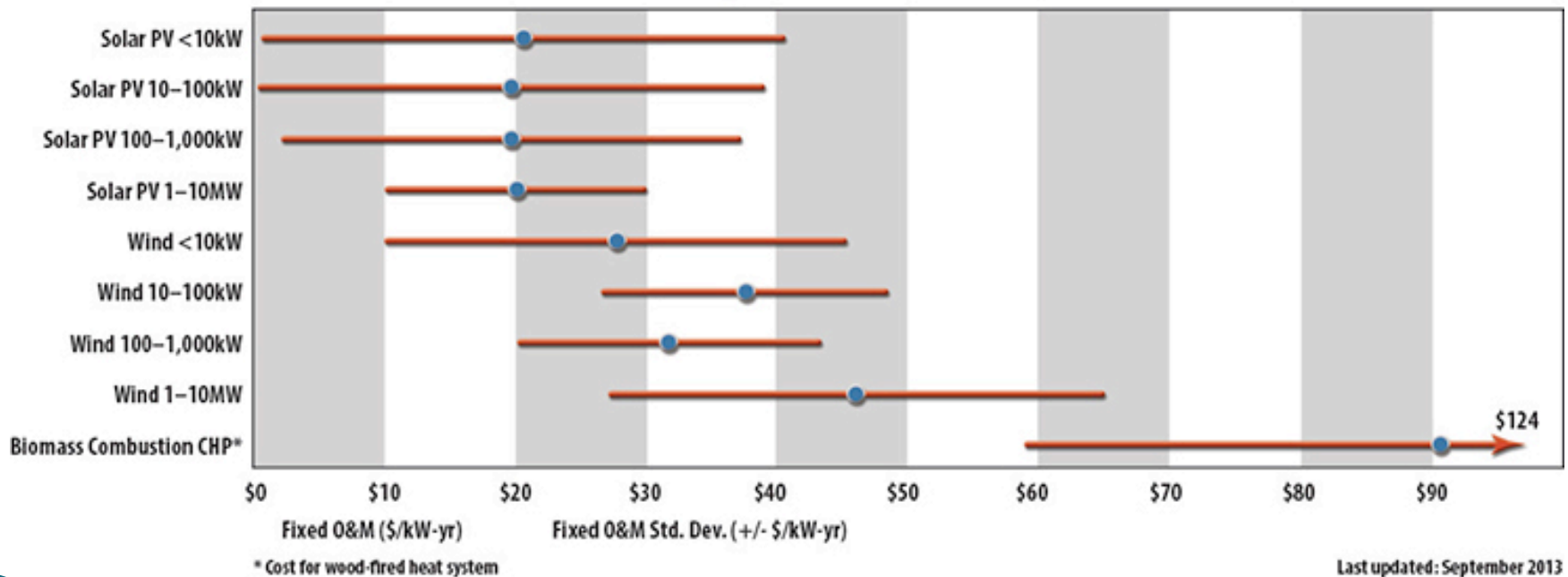
NREL's System Advisor
Model

<https://sam.nrel.gov/>

Operations and Maintenance Agreements

- ▶ For a 10 MW solar project @ \$20/kW/year = \$200,000/year

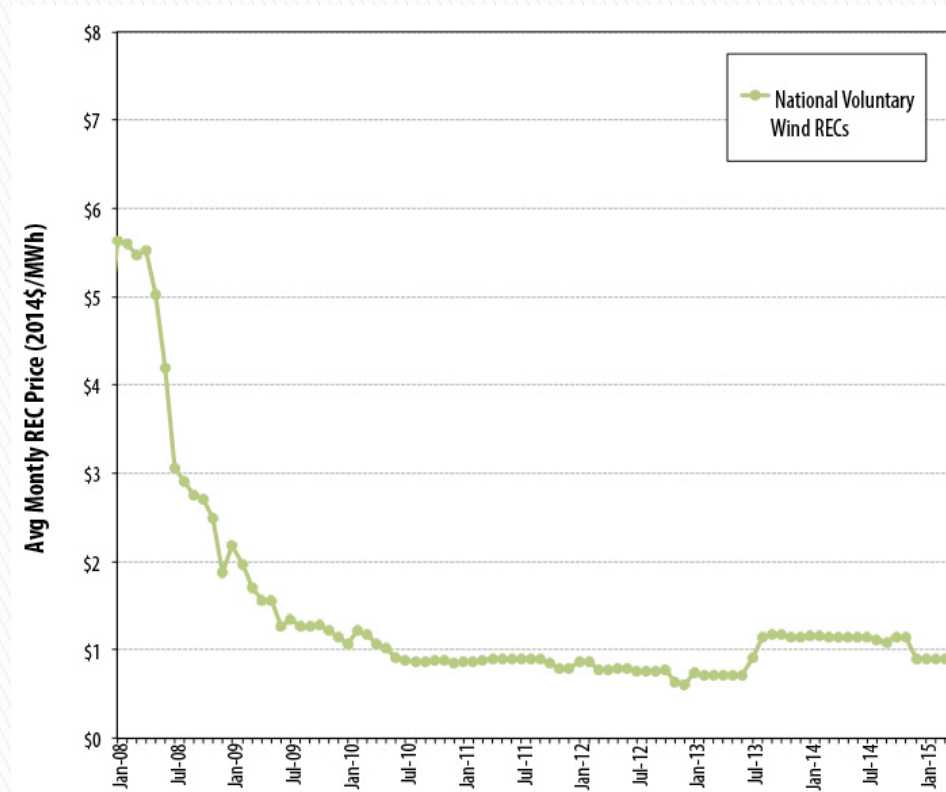
Fixed Operations and Maintenance Costs



http://www.nrel.gov/analysis/tech_costs_om_dg.html

Environmental Attributes

- ▶ Renewable Energy Credits (or Certificates)
 - AKA: Green Tags, Tradable Renewable Certificates
- ▶ Sold, traded or bartered as “proof” that an entity has “purchased” renewable energy.
- ▶ Compliance with Renewable Energy Portfolio Standard *OR*
- ▶ Voluntary “Carbon neutral” status.



RECs:

<http://apps3.eere.energy.gov/greenpower/markets/certificates.shtml?page=5>

▶ Questions?



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