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Renewable Energy Pre-Project Fundamentals

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Agenda

- Scoping a Successful Project
- Understanding the Big Picture
- Pre-Planning the Contract
- Economic Evaluation
- Did You Pass the Test
- How to Finance it
- Nellis Case Study

Scoping a Successful Project

- First steps are critical
- Get the “big picture” and communicate it to your team
- Learn the details regarding incentives
- On to funding!

The First Steps are Critical

- What is the resource?
- Who “owns” it?
- How do you expect to execute?
 - Contracting mechanism
 - Land access mechanism
 - Source of funds for repayment
- Who is your “team?”
 - Contracting, legal, real estate officer, environmental staff, technical advisors, FEMP hand-holders,

Resource Evaluation

- Initial screening
- EERE resource maps
- Discussions with on-site staff about possible sites (e.g., roofs for solar, hot springs for geothermal, ridge lines for wind, nearby forests for biomass)
- Discussions with firms actively developing resources of interest. What do they think?
- FEMP can help with more detailed assessments
 - Loaning met towers for wind assessments
 - Providing limited Lab funding for site surveys
- FEMP and DLA can provide advice and support on contracting mechanisms

Economic Evaluation

- What are long run power costs going to be?
 - Neither EIA nor the local utility provides site specific rate forecasts for the 20-30 year period needed
 - EIA and utilities may have resources you can use to “build” your own forecast, but you will need to defend it.
 - Some states have proxy forecasts that can be used, typically to provide a cost escalation rate
- Life cycle costing is “mandatory”
- Do you value other attributes, if so, how will you pay for them?
 - GHG targets
 - Energy security
- Don’t forget new utility charges and interconnection costs

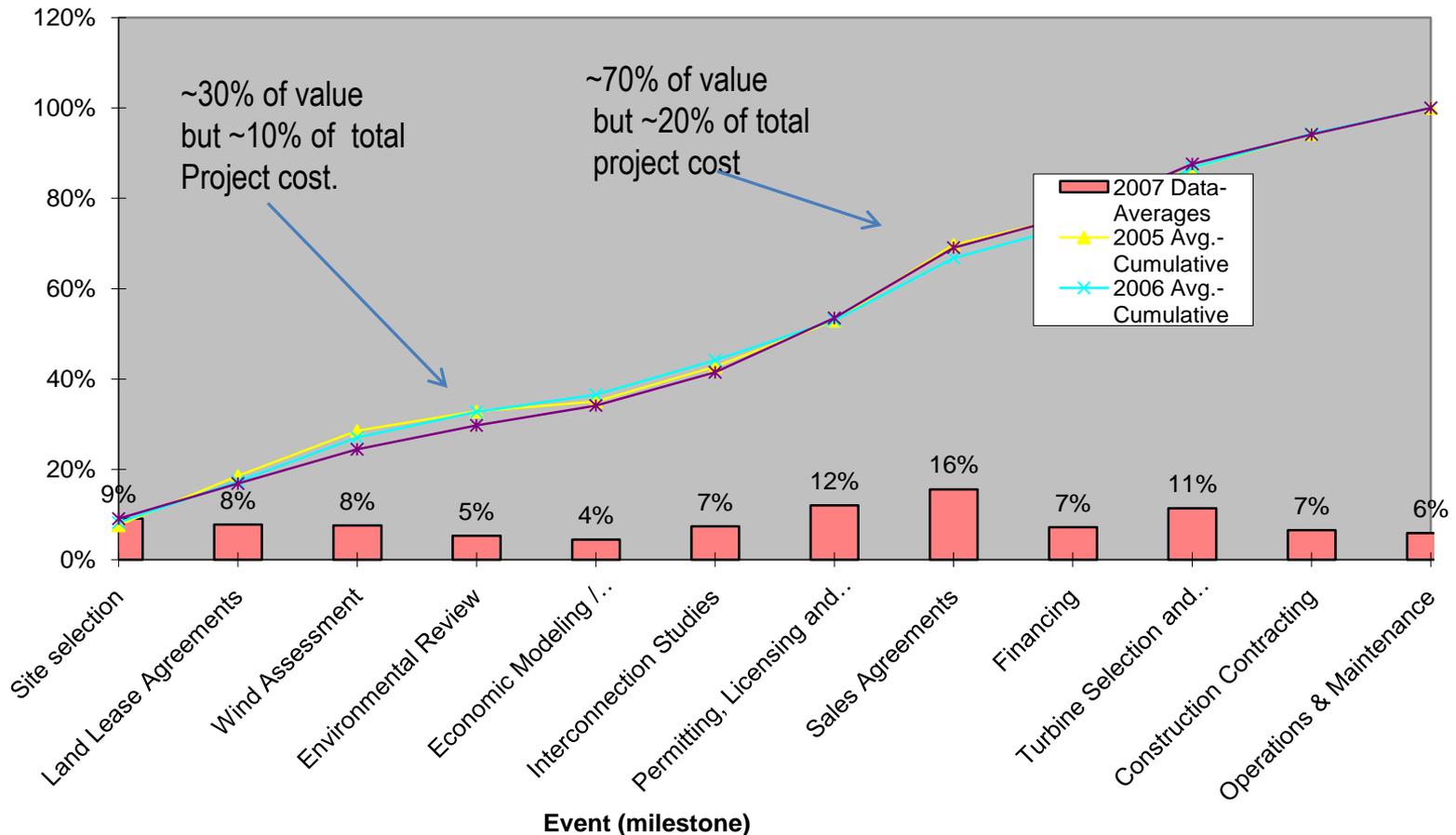
Scenarios and Trade offs

- Is an on-site project cheaper than a purchase from off-site?
- Is a “REC swap” beneficial?
- Does a purchase of RECs make more sense?
- How does project size affect costs (cents/kWh)?
- Do state and local incentives dictate project size (limit how large a project can be)?
- What is a realistic development time line? It will vary by resource type and project size.

Understanding the Big Picture – The Project

Slide (not text) courtesy of Anthony Edwards

2005 vs. 2006 vs. 2007 Perception of Value Created Through Each Step of the Wind Development Process



Understanding the “Big Picture” The Contract

- What vendors want
 - Assured payment for expected level of output/investment
 - Revenues for REC sales/tax incentives if a PPA project
 - Secure access to the project in case of default by the government or other parties to the deal
 - Protection from Termination for Convenience
- What the government wants
 - Expected output and price
 - Ability to terminate and/or reduce purchase if site demand changes
- Both must be reflected in the contract!

Incentives can be Complicated!

- Tax-based incentives (Federal, State, and local)
 - Tax credits (investment and production based)
 - Cash grants in lieu of ITC/PTC
 - Depreciation
 - Exemption from sales and property taxes
- Utility incentives/programs
 - Feed-in tariffs
 - Net metering
 - Utility owned/sponsored projects on your site

Incentive Rules are VERY Important

- Tax-based incentives have very specific requirements about project ownership (can't be the government) and duration (typically 5 to 10 years).
- Third party owned projects are often designed with multiple “owners” some of whom take the tax benefits, complicating contracting.
- Utility programs often have rules about project size, production of “excess” power, rate paid for power produced, consumption thresholds (minimum amount of power you have to purchase from the utility).

Did You Pass the Test?

- Do you have good resource? It is better than one off-site or than purchasing RECs?
- Do you have an Acquisition Plan, including NEPA, and a team with appropriate representation?
- Do you know your future power costs with an appropriate level of confidence?
- Do you understand the available incentives and utility programs and interconnection rules? Are those reflected in the project specification you would use in your RFP/contract?
- Do you know where to go for help with contracting or technical assistance (Hint: FEMP)?
- If so, it is time to look at funding options in detail...

PPA Option

- PPA is a power purchase/utility service contract, not an asset acquisition/construction contract.
- Power comes from on-site project, ~ self-generation.
- Basis of the contract is sale of power to the site to displace utility power purchase.
- Agency doesn't get anything (asset-wise) at the end of the contract.

Why PPA is Different

- All of the details regarding land use, environmental protection, construction, de-construction, output expectations, payment expectation, etc. must be spelled out in either the lease or the contract.
 - Lease should cover site access issues
 - Contract should cover performance/payment issues
- Therefore, “required” elements must be in the RFP and it needs to anticipate the needs of the vendor (acceptable commercial terms) as well as those of the installation (required contract clauses, etc.).

PPA - Pros

- Project development and ownership by an “expert” firm, not the government.
- Maximum use of *incentives*, tax-based and otherwise can reduce project costs ~ 50%
- Long term? (for DOD and WAPA customers and cooperative utilities).
- Price assurance
- Energy security benefits (in some cases)
- Can be used in “non-utility” applications such as displacement of diesel generation.
- RFP process can be fairly simple (selection and award negotiations not so much)

PPA - Cons

- Much more complicated to execute because agency staff need to tend to real estate and environmental issues beforehand and procurement process needs to accommodate complex financial structures implicit in PPA financing and use of tax-based incentives. Creates large financial liability for the agency if contract terminated prematurely.
- Works best for larger project sizes and agencies with long-term power needs and contracting options (e.g. DOD).

The Nellis AFB PPA Example

- 15 MW Solar PV system on land leased from Nellis AFB
 - Solar RECs sold to the local utility
 - Power sold to Nellis for less than prevailing utility price
 - Project costs reduced through third-party developer's use of tax incentives, REC sale, and 20-year power sale.
- Utility developing a second project currently. This time, it is utility owned and it gets the RECs but the site is still getting the power.

The Nellis AFB “Deal”

- Utility required to purchase fraction of power (RECs) from solar projects or pay a large penalty.
 - Example of how state RPS rules create opportunity
- RE developer wanted to sell to the utility but needed a site.
 - Example of how private party could bundle tax incentives and value of RECs into a project that was profitable for them.
- AF had land and wanted lower cost power in exchange for its use.
 - Example of how government assets (land and purchase contract) used to facilitate a “deal.”

Questions and Answers

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