

Community Scale Wind Projects

- **Locally Owned, local benefits** – One or more members of the local community have a financial stake in the project, other than through land lease payments, tax revenue, or other payments in lieu of taxes.
- **In Oregon, ≤10 MW** – Larger projects begin to encounter a set of development, financing, design, permitting and construction challenges that closely resemble those encountered by larger, commercial projects.



Increased capital requirement and risk, but can result in greatest pay back

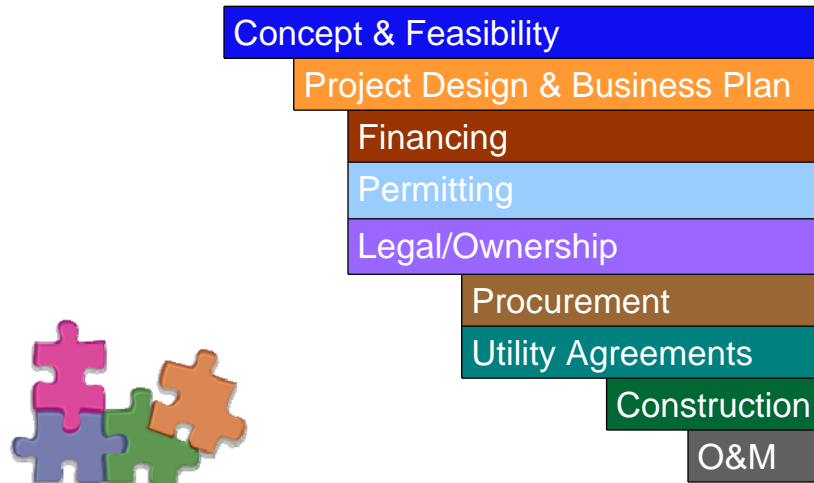


Unique Attributes of Cmty Wind

- Recent study
 - 5 times the impact on local economic benefit
 - Nearly 3.5 times the impact on local job creation
 - http://www.windpoweringamerica.gov/filter_detail.asp?itemid=2260
- Feasible where commercial isn't
- Distributed generation – meet local demand & stabilize the grid
- Launch pad for future expansion on a given site



Project Development Phases



Project Team

- **Owner:** Individual or group with financial stake in the project
- **Project Coordinator:** Conceptualizes the idea and takes the initial steps to pull together the appropriate team for execution
- **Project Manager:** Oversees necessary steps of project development



Conception and Feasibility

- ❑ Wind energy resource review
- ❑ Site inspection
- ❑ Community engagement
 - ❑ Identify potential supporters
 - ❑ Gauge the local community and utility's receptivity to a project
- ❑ Investigation of interconnection opportunities
- ❑ Fatal flaws review - Confirm absence of major obstacles
- ❑ Grant research and application development
- ❑ Investigation of site access

A renewable energy consultant may be helpful here to conduct a fatal flaws review.



Project Design and Business Plan

- ❑ Hire a project manager to assist with design and business plan
 - ❑ Obtain meteorologist recommendations and begin data collection
 - ❑ Identify financial incentives; early-stage pro forma's
 - ❑ Conduct site surveys (pre-permitting)
 - ❑ Design and initiate wildlife surveys
 - ❑ Begin interconnection evaluations
 - ❑ Begin electricity sales discussions



Permitting & Community Engagement

- ❑ Obtain permits
 - ❑ Land use, building, electrical
- ❑ Community engagement
 - ❑ Public comment opportunities
 - ❑ Obtain letters of support from community members
 - ❑ Hold events to educate about technology, energy issues and present plans
 - ❑ Install informative signage along road and public areas (i.e. rest stops, viewing points, etc.)
 - ❑ Create safe and accessible viewing area as part of project



Determine Ownership Models

- Maximize tax incentives or low-cost financing
- 3 common models for Community Wind
 - ❑ Public Ownership
 - ❑ Partnership or LLC
 - ❑ “Flip” Structure or mini-flip
- Different ownership models may become practical in the future



Public Ownership



- Project owned by government entity or non-profit
- Cannot use PTC or MACRs
- Can use lower-cost public financing (CREBs)
- May have lower financial return requirements



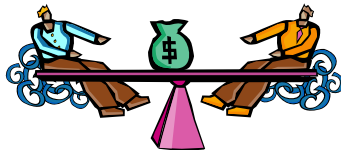
Partnership or LLC

- Landowners and investors join to form partnership or LLC
- Can use tax incentives
 - “tax credit appetite” based on individuals’ tax returns
- Liability stays within LLC so individual risk is lowered



“Flip” Structure

- Local investor partners with corporate equity partner
- Corporate partner owns project for first 10 years to maximize tax incentives
- Ownership “flips” after 10 years to local investor



Secure Project Financing

- Capital Financing
 - Feasibility capital
 - Equity partners
 - Debt financing
 - Incentives
- Ongoing revenue
 - Power purchase agreement
 - Environmental attributes/RECs



Sample Capital Budget

Item	Expense	% of total	\$/kW
Project Design, Feasibility	\$50,000	2%	\$50
Permitting/EA	\$40,000	2%	\$40
Insurance, Legal, financing	\$42,000	2%	\$42
Engineering	\$30,000	1%	\$30
Turbine & tower	\$1,400,000	63%	\$1,400
Construction & Installation	\$325,000	15%	\$325
Interconnection	\$75,000	3%	\$75
Other Soft Costs	\$265,000	12%	\$265
Total	\$2,227,000	\$2,227/kW or \$2.2M/MW	



Project Financing Assistance

- Renewable Energy Feasibility Fund (REF)
 - OR Econ & Community Dev. Dept./Muni's
- Community Renewable Energy Feasibility Fund (CREF)
 - ODOE, open to all public & private.
- USDA Rural Energy Programs
 - Value Added Producer Grant (VAPG)
 - REAP (feasibility, grant, guaranteed loans)
 - ETO will cost-share grant writing expenses



Project Financing Assistance

- OR Business Energy Tax Credit (BETC)
 - Up to 50% tax credit; Pass-Through Option in exchange for lump sum payment
- OR State Energy Loan Program
 - \$20k to \$20M; low-fixed rates; can be used for construction loans
- Energy Trust of Oregon
 - Anemometer loan program
 - Customer incentives for Cwind; above mkt costs
- Clean Renewable Energy Bonds (CREBs)
 - 0% interest rate bonds issued by electric co-ops, governments, or certain lenders
 - Bondholders receive tax credits rather than interest
- MACRS (Accelerated Depreciation), 50% bonus – 2009



Production Incentives

- Production Tax Credit (PTC)
 - Tax incentive, 2.1¢/kWh
 - Recently extended through 2012
- Investment Tax Credit (ITC)
 - In service by 2009-2012
 - Alternate to PTC, 30% ITC in lieu of PTC
 - ITC may also be converted to a cash grant – 30% of cost basis
- Renewable Energy Credits (RECs)
 - Can be sold separately from electricity



Key Financing Factors

- Capital Costs: turbine price is the key driver in the capital budget
- Debt-equity ratio: lowering the debt payments through increased equity (such as grants or other low-cost/no-cost financing) will significantly alter the cash flow projections
- Power purchase agreement: price, length of contract, other terms
- Renewable energy credits: price, length of contract, other terms
- Ongoing expenses: wind integration costs (these were not accounted for in the model and can be quite significant)

Other benefits associated with locally-owned wind projects, such as the social and environmental returns or other sustainability indicators may contribute positively to the “triple bottom” line and should be evaluated further.



Utility Agreements

- Finalize interconnection agreement
- Negotiate Power Purchase Agreement
 - PURPA Contract for 10MW or less
 - Standard contracts, no negotiation needed
 - Published rates – utilities avoided cost rate
 - OR Schedule 37 (Pcorp)
<http://www.pacificpower.net/Article/Article62237.html>
 - OR Schedule 201 (PGE)
http://www.portlandgeneral.com/about_pge/regulatory_affairs/tariffs/rate_schedules.aspx#Small%20power%20production



Procurement

- Turbine & tower supply
 - Get bids, turbine availability can be an issue!
 - Require a deposit ~25% & guarantee for balance
- Balance of Plant (BOP)
 - Equipment for interconnection/transmission
 - Foundation design/build
 - Construction
- Refurbished Turbines
 - Advantage reduced initial cost
 - Risk: Higher O&M costs, shorter warranty period, possible shortage of parts, possible equipment won't qualify for subsidies



Construction Management

Common Construction tasks

- Completion of site preparation tasks
- Grading and road improvements/construction
- Trenching, cable-laying, and transformer installation
- Foundation and crane pad construction
- Fencing and erosion-control projects
- Substation construction/improvements and testing
- Equipment transportation
- Equipment installation
- Interconnection
- Commissioning
- Site restoration
- Inspections completion



Operations

Operations and Maintenance

- Scheduled and preventative maintenance
- Maintenance contract with the manufacturer or a qualified firm
- Operating costs also include warranties, administrative fees, insurance, property taxes, land-lease payments and a contingency fund for unforeseen problems.

Replacement Parts Availability

- Designed for 20 year life, parts avail. post warranty
- Spare parts inventory, reserve fund

Decommissioning

- Permit may require a decommissioning plan (and funds set aside)



Understanding Risk Factors

- Energy Production Factors
 - Wind resource, equipment, O&M, force majeure
- Other Revenue Factors
 - Value of energy (utility's perspective), tax benefit allocations, intermittent subsidies, transmission
- Other Project "Make or Break" Factors
 - Enviro. Impacts, public acceptance, site control: too early/too late, construction delays

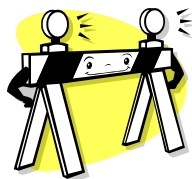


Seek Professional Assistance

- Construction Management
 - Important to hire construction manager with experience
- Micro-siting Assistance
 - Consult Meteorologist to determine best site for turbines (often required for funding and grants)
- Foundation Design
 - Civil engineer to conduct soil tests and recommend foundation design
- Interconnection Design
 - Engineer independent of utility
- Legal Assistance
 - Attorney can help with contracts, permitting and environmental compliance
- Environmental Study
 - Professional biologist to assist conduct field survey and gather data for permitting and community support



Barriers...



- Economics: Low production volume, upfront costs, & historical lack of public funding = high cost per energy produced. Varies by technology. Typically smaller = more costly
- Community efforts often upstaged by utility-scale projects (larger projects with private benefits)
- Zoning, permitting, interconnection requirements, and public opinion



Finding the Right Fit

- Determine level of community involvement & interest – what is the end goal?
- Determine available \$\$\$\$
- Consider what has been done
- Define technology fit (resource availability, interest, acceptance, scale, environmental issues)
- Find a strong project champion!



Community Wind Resources

- Northwest SEED: www.nwseed.org & www.nwcommunityenergy.org
- OR Community Wind Guidebook: <http://www.nwseed.org/publications/default.asp>
- Energy Trust of Oregon: www.energytrust.org
- Windustry: www.windustry.org
- American Wind Energy Association: www.awea.org
- DOE – Wind Powering America: <http://www.windpoweringamerica.gov/>
- National Renewable Energy Lab: <http://www.nrel.gov/wind/>

