

A Wind Toolbox

Presented by Christy Brusven

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Overview

- Keys to creating a “financiable” project
- Risks and rewards of owning a wind project

Creating a “Financiable” Project

Development Milestones

- Analyze value of wind resource
- Secure footprint
- Analyze financing options
- Interconnect to the grid or distribution system
- Obtain regulatory approvals
- Finance and develop the project
- Complete construction and secure operational maintenance

Working with a Developer

- Evaluate the business model
- Negotiate a development agreement
- Compare development fees with services provided
- Look at prior experience
- Follow up on references

Analyzing Wind Resource

- 12 months of onsite wind data is usually required to secure debt financing
- Temporary meteorological towers can be installed to collect data
- Many consultants available to analyze wind
- If on-site data is not available, nearby towers can be used to estimate wind resource
- Small variations in wind resource can have major impact on financial performance of wind farm

Land Lease and Easement Agreement

Terms of particular concern to project owner:

- Compensation
- Right and flexibility to operate the wind farm
- Right to assign owner's rights
- Right to terminate at owner's option
- Confidentiality clause
- Financing / SNDAs

Land Lease and Easement Agreement

What is Market-Rate Compensation?

- Confidentiality clauses limit the market-rate payment information available
- Windustry Wind Energy Easements and Leases: Compensation Packages (September 2005), available at:
<http://www.windustry.com/sites/windustry.org/files/LandECompPackages.pdf>
- Speak with industry professionals (attorneys, consultants, etc.) about current trends

Interconnection Options

- Conduct engineering analysis of available interconnection options
- Interconnecting to MISO is a long, potentially expensive process
- Interconnection to distribution system is simple, but must work on the utility's system

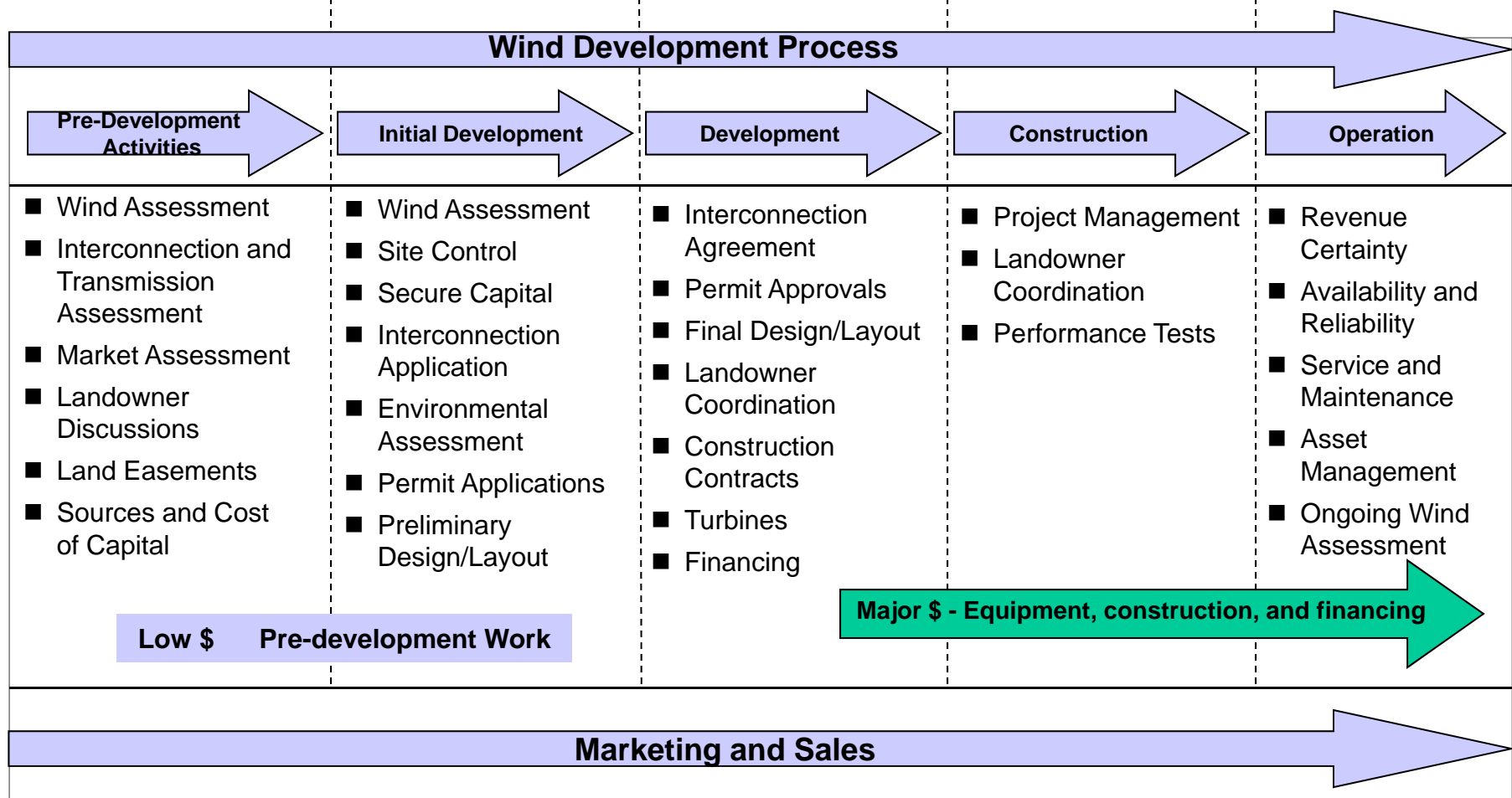
Secure Regulatory Approvals

- Projects with >25 MW on each collector line does not need approval from IUB
- County CUP often required
- Permit conditions vary by county
- NEPA requirements may apply if federal funds are utilized

Financing Options

- Tax exempt/municipal bonds
- CREBs or other special debt options
- Pre-paid PPA
- PPA with option to purchase

Risk Management Begins in Development Stage



Risk/Reward Analysis

Risk	Description	Comparison of Risk	
		Utility-owned	PPA
Technology Risk	Risk that wind turbine technology does not perform as expected, resulting in lower MWh production	Utility bears the risk that project produces less energy but costs are same or higher than expected	Developer bears the risk of underperformance and utility pays only for energy produced. PPAs often obligate Developer to maintain at least minimum level of availability.
O&M Cost Risk	Similar to technology risk. Turbines underperform and costs for O&M exceed budget	Utility bears risk and must commit additional resources to ensure wind farm is operational.	Developer bears risk of additional O&M costs. PPA rate usually stays fixed regardless of increases in Developer costs.
Wind Availability Risk	Wind resource is less than projected, resulting in fewer MWh produced.	Utility bears risk of underperformance and must still cover debt and other fixed costs while producing less energy.	Developer bears risk of underperformance. Utility pays only for energy produced.
Transmission Curtailment Risk	Transmission system is curtailed by transmission provider.	Utility bears risk that of underperformance due to curtailments.	Utility may be obligated to pay Developer under certain curtailment situations, even if energy is not delivered. Payments may include gross up for lost PTCs.
Construction Cost Risk	Cost overruns during construction result in higher than expected capital costs.	Utility bears risk and must commit additional resources to complete the project.	Developer bears risk of higher construction costs. PPA price is typically determined prior to COD.
Construction Schedule Risk	Construction is delayed and COD date is pushed back.	Utility bears risk that project is not completed on time. May negotiate penalty provisions in agreement with contractor to mitigate this risk.	Developer bears risk of delays in construction schedule. PPAs usually include milestone dates and liquidated damages payable to utility if Developer fails to meet schedule.

Conclusion

- Determine risk/reward preferences of your utility
- Add value by creating a financiable project

Contact Information



- **Christy Brusven**, Attorney at Law
Fredrikson & Byron, P.A.
Minneapolis, Minnesota
 - cbrusven@fredlaw.com
 - 612-492-7412