

Valuation Trends in Wind Power Projects

Infocast Wind Power Finance & Investment Summit

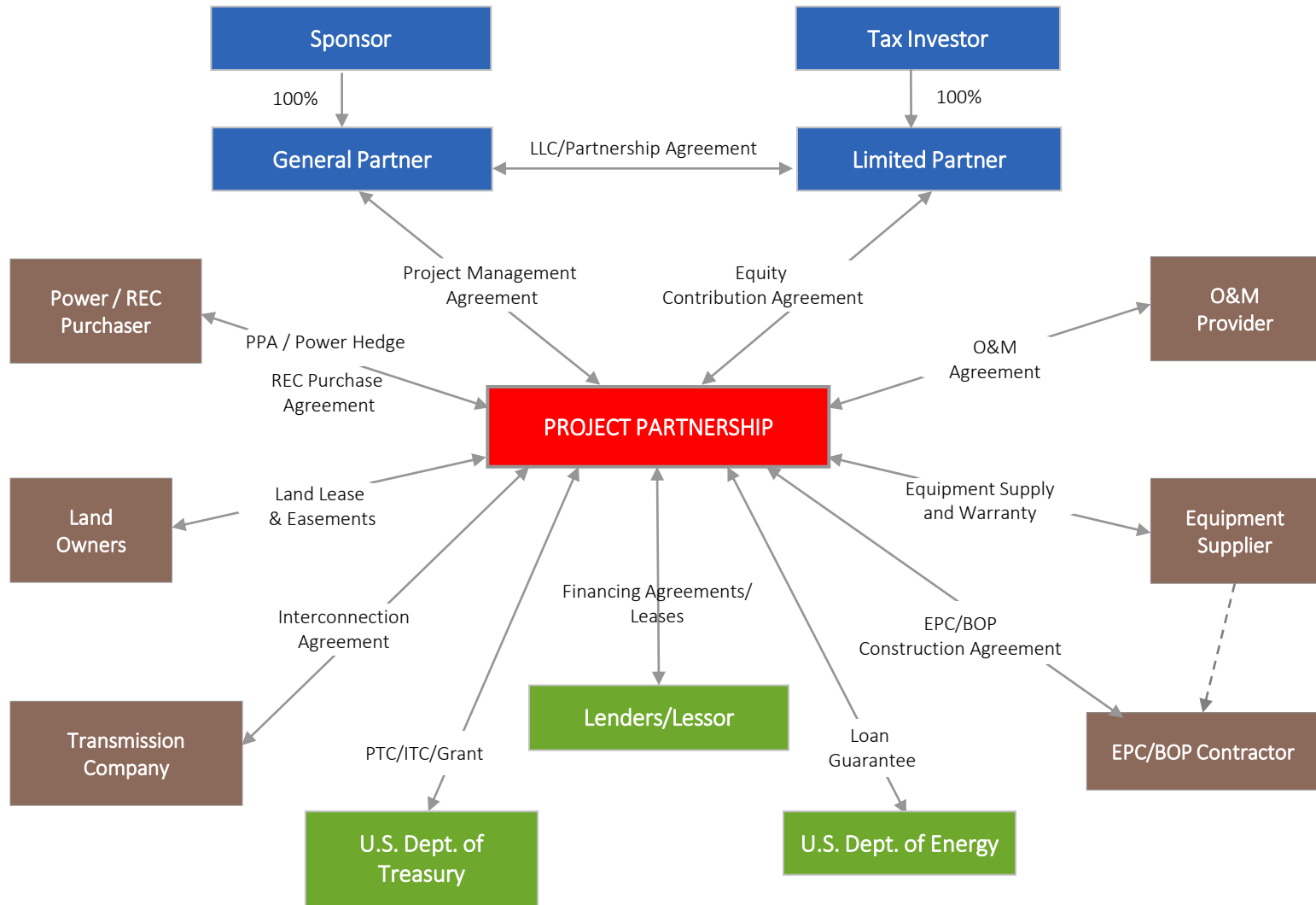
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- **Valuation Methodologies**
- Key Factors
- Trends and Outlook



Wind Power Project Structure



Valuation Approach

- Wind project characteristics do not support generalized revenue or operating margin based valuation metric
 - Limited life – no perpetual growth
 - Highly tax sensitive
- Projects are based on established contractual structures and conventions
 - Modeling friendly – clarity of input/output factors
 - Established asset life
 - Generally accepted probability-based (P50 –P99) wind production methodology
 - Thus, the Discounted Cash Flow (DCF) analysis is often the best valuation approach



Discounted Cash Flow (DCF) Defined

- Estimated economic value of a project based on the discounted “present value” of its future periodic cash flow

Initial Investment	\$100	Annual Cash Flow	\$12	Discount Rate	8%
Project Life	20 Yrs	Terminal Value	\$2		

Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Initial Investment	(\$100)																					
Annual Cash Flow		\$12	\$12	\$12	\$12	\$12	\$12	\$12	\$12	\$12	\$12	\$12	\$12	\$12	\$12	\$12	\$12	\$12	\$12	\$12	\$12	\$12
Terminal Value																						\$2
Annual Net Cash Flow	(\$100)	\$12	\$12	\$12	\$12	\$12	\$12	\$12	\$12	\$12	\$12	\$12	\$12	\$12	\$12	\$12	\$12	\$12	\$12	\$12	\$12	\$14

NPV @ 8%	\$17
IRR	10%



Discount Rate vs. Internal Rate of Return

- Discount Rate - the cost of capital of the investor
 - Weighted Average Cost of Capital

$$WACC = \frac{E}{V} * Re + \frac{D}{V} * Rd * (1 - Tc)$$

Re = cost of equity
Rd = cost of debt
E = value of the equity

D = market value debt
V = E + D
Tc = corporate tax rate

- Internal Rate of Return (IRR) - the return on the investment
 - IRR is the rate of return at which NPV = 0
- The positive difference between the Yield (IRR) of the investment and the cost of the money (discount rate) results in value created by the investment
- Required Rate of Return varies by investment structure:

	Unlevered	Levered
Baseline Project IRR	9 - 10%	14 - 15%
Tax Equity IRR	7 - 8%	12 - 13%
Sponsor IRR	15%+	20%+



Project Example

General Assumptions

Technology	Wind
Project Size	100 MW
Capacity Factor	37%
Project Cost	\$164 MM \$1,644/kW
Annual Mgt. Fee	\$120,000
PPA Price (inflated 2%)	\$42/MWh
EBITDA (Year 1) \$MM	\$10 MM
Flip Occurs	Year 10

Equity Contributions	\$MM	%
Tax Investor	29.4	95.0%
Sponsor	1.5	5.0%
Total Equity	30.9	100.0%

Allocations	Pre Flip		Post Flip	
	Inc./Loss	Cash	Inc./Loss	Cash
Sponsor	5.0%	5.0%	95.0%	70.0%
Tax Investor	95.0%	95.0%	5.0%	30.0%



Project Example

Sources	\$MM	%
Debt	87.1	53.0%
Cash Grant	46.4	28.2%
Tax Investor Equity	29.4	17.9%
Sponsor Equity	1.5	0.9%
Total	164.4	100.0%

Debt Terms	
Tenor	16 Years, with 9 year avg. life
Pricing	5.2% average
DSCR	1.35x minimum / 1.45x average
DSR Reserve	\$5 MM (6 month DS)

Uses	\$MM	%
Tot Hard Cost	141.3	86.0%
Dev Cost	2.3	1.4%
Fin. Cost (inc IDC/DSR Res)	10.8	6.6%
Dev Fee	10.0	6.1%
Total	164.3	100.0%

Equity Returns	10 Year	20 Year
Tax Investor	13.6%	14.2%
Sponsor*	10.6%	26.1%

NPV	@ Disc Rate:	6%	7%	8%
Tax Investor (\$MM)		13.8	11.6	9.6
Sponsor* (\$MM)		11.3	9.6	8.2

*Excluding Fees; Assuming full utilization of tax benefits allocated



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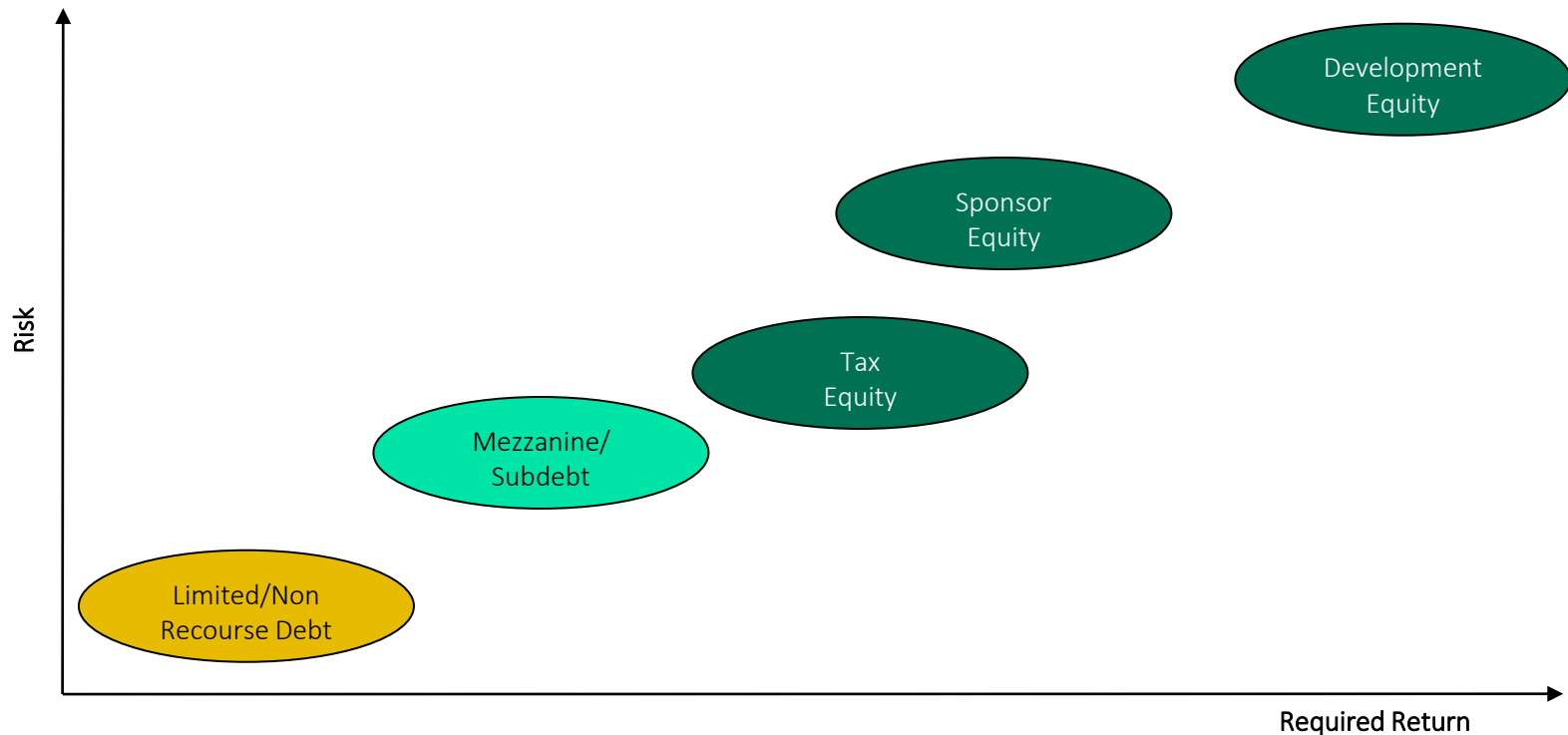
Key Factors Affecting Wind Power Valuations

- Cost of Capital/Financing Structure
- Life Cycle Stage of the Project
- Offtake/Merchant Risk
- Wind Resources
- Technology
- Regulatory



Cost of Capital/Financing Structure

- Different types of capital are selected to balance the project's risks and returns
 - Limited/Non-Recourse debt
 - Mezzanine/Subdebt
 - Tax Equity
 - Sponsor Equity



Life Cycle Stage of the Project

■ Development Stage Projects

- Limited appetite
- Very difficult to “price” development risk
- Probability-weighted cash flow approach
- Earn-out payments

■ Construction-Ready Projects

- Construction contracts
- Construction financing

■ Operating Projects

- Overall credit profile – quality of the project cash flow
- Historical wind speed and WTG performance
- Term financing – structure, tenor, pricing

Weighted Probability Distribution - Development Pipeline

Project A	Land	Permitting	Interconn.	Offtake	Other	Total
Weight	10%	20%	10%	50%	10%	100%
Prob of Success	100%	100%	85%	50%	100%	
Weighted Probability	10.0%	20.0%	8.5%	25.0%	10.0%	73.5%

Project B	Land	Permitting	Interconn.	Offtake	Other	Total
Weight	10%	20%	25%	25%	10%	100%
Prob of Success	100%	50%	50%	30%	30%	
Weighted Probability	10.0%	10.0%	12.5%	7.5%	3.0%	43.0%

Project C	Land	Permitting	Interconn.	Offtake	Other	Total
Weight	10%	20%	10%	50%	10%	100%
Prob of Success	60%	50%	50%	50%	60%	
Weighted Probability	6.0%	10.0%	5.0%	25.0%	6.0%	52.0%



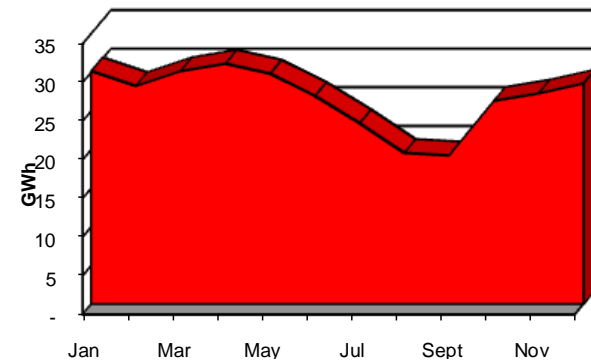
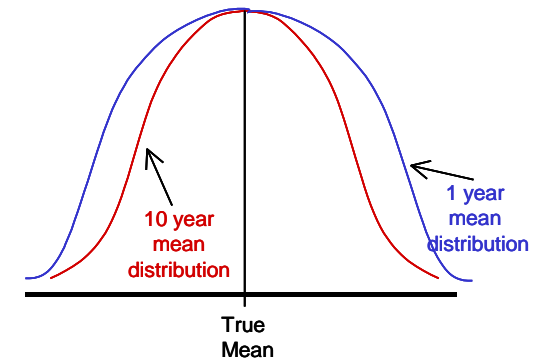
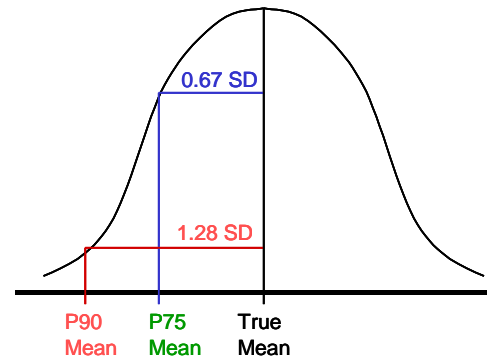
Offtake/Merchant Risk

- Counterparty Credit
 - Rating
 - Outlook
- Counterparty Type/Quality
 - Regulated utility
 - Trading company
 - Rate-based PPA
- Offtake Terms
 - Fixed price PPA vs. Merchant
 - Tenor of PPA vs. loan term
 - Minimum take
 - Minimum threshold vs. P50 – P99
 - Replacement cost of power & RECs – Simulations based on price/volume projections and ACPs
 - Reserves?
 - Curtailment
 - Grid related
 - Force majeure
 - Congestion study
 - Reserves?



Wind Resource

- Data
 - Length of data and adequacy of met towers
 - Quality of data
 - Reference data and correlation
- Production Estimates
 - P50 vs. P99 -- Base Case vs. Break Even
- Seasonality
 - Cash flow impact
 - Working Capital adjustment
 - Minimum cash requirement before distribution

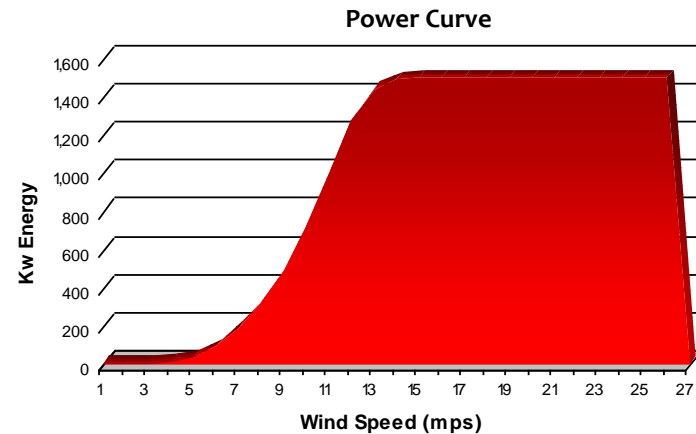


Technology

- Manufacturer
 - Credit, strength and track record
 - IP issues
- WTG
 - New or experienced?
 - Deployment history
 - Known issues – implemented solutions
 - Site suitability of WTG
 - Coverage for serial defects - > [20]% threshold
- Performance warranty
 - Term
 - Availability vs. power curve
 - Lost revenue / PTC

IEC Class Parameters

Site Parameters	Class I	Class II	Class III
Annual mean wind speed (mps)	10	8.5	7.5
Extreme 50-year wind speed 3 sec. gust (mps)	70	59.5	52.5
Average turbulence intensity (%)	18/16	18/16	18/16
Maximum temperature (Degree C)	50	50	50
Minimum temperature (Degree C)	-20	-20	-20
Maximum slope (Degree)	8	8	8
Annual average air density (kg/m3)	1.25	1.25	1.25



Regulatory Issues

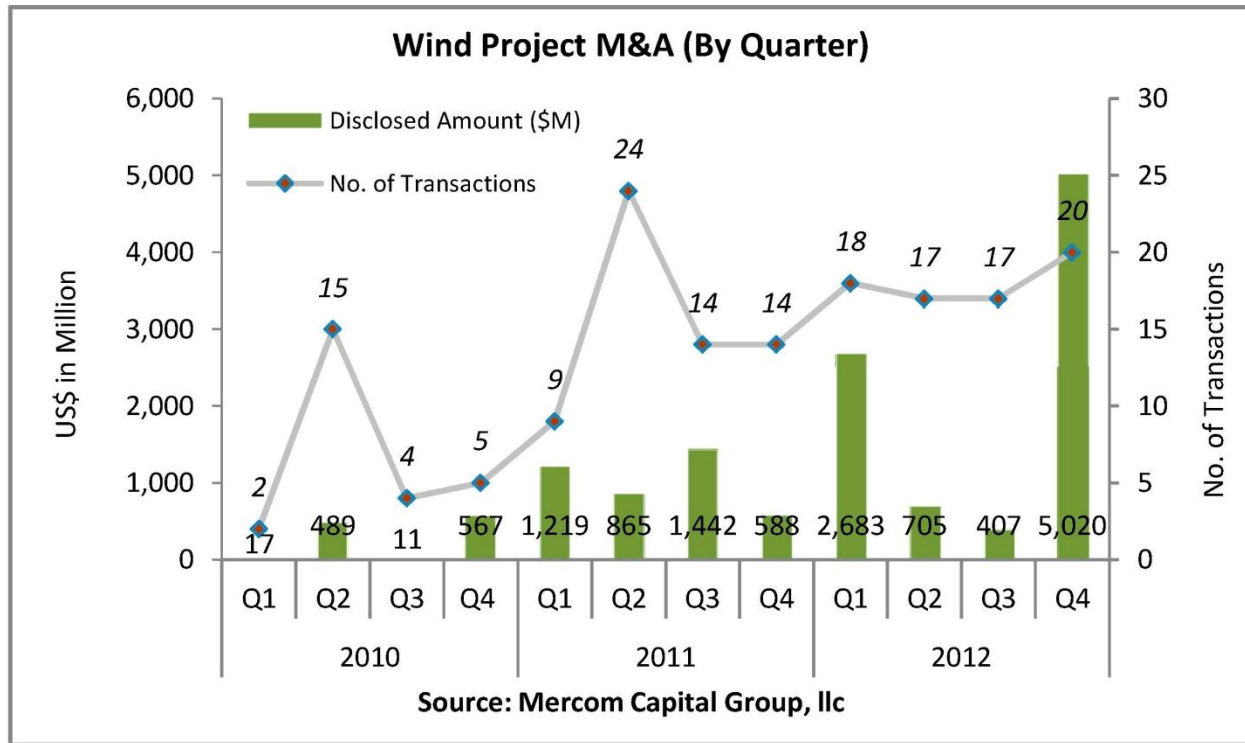
- Expected COD vs. PTC/ITC deadline
 - Becomes an issue in a “terminal” year for PTC/ITC
 - Banks need adequate time margin / structural safeguards
 - EPC LDs may cover this, but runs into LD threshold
- Ongoing validity of PTC
 - Classic change-in-law risk
 - In a ITC or Cash Grant transactions, this becomes irrelevant to lenders soon after the project is financed
 - If PTC is monetized, tax investors will indemnify lenders, but share the risk with Sponsor at the partnership level



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Wind Project M&A Snapshot



Trends in Project Valuation

Period	Debt Market	Tax Equity Market	PPA Market	Project Valuations
2006 - 2007	Active, Low rates (L+1.5%), Long Tenors	Active; Rates as low as 6% unlev	Strong PPA demand. \$60 - \$80/Mwh in most markets	Historically high asset prices; Bragawatts reach \$100K/MW
2008 - 2009	Fin market meltdown; No liquidity; Low lending capacity; Historically high rates (L+3.5%) and mostly miniperm tenors	Only about 6 investors active; Cherry-picked deals; Historically high rates (10-12% unlev)	Moderate PPA demand. Some price pressure, as nat gas prices starts sliding	Acquisition demand falters after mid-2008; Market correction worsened by poor performance of Bragawatts sold in 2006-2008; Busted Wind IPP IPOs
2010 - H1/2011	Tremendous recovery; Libor margins declined to 2-2.50%; Tenors are stretching towards 15-17 yrs	Gradually recovered; Up to 14 investors; Google entered; Moderate rates (8-9% unlev)	Historically low gas prices, with soft economy and power market growth, impacts PPA markets strongly.	Essentially no demand for development projects; High prices for construction-ready projects, driven by Cash Grant
H2/2011 - H1/2012	Euro bank crisis; 1/3 European banks exit wind; DOE guarantee and 144a debt deals help stabilize	Fewer more investors; Rates decline to around 7.5% (unlev) under pressure from cash grant	Nat gas reaches \$2.5 by H1/2012; PPA prices \$30/MWh in the Midwest; Utilities in CA focus on solar PV	Consolidation/liquidation of small development portfolios; Strategics with Balance Sheet hungry for buildable MWs, pushing construction-ready project valuations
H2/2012 +	Relatively stable supply, with few new US bank entrants; Japanese and Canadian banks very active.	Active, with over 20 investors; rates settling around 7.5-8.0% (unlev).	PPA markets continue to be tight; some recovery in the Northeast and California	Majority of transactions driven by strategic realignments and refinancing of portfolio; Surge of foreign buyers



Overview of Recent Wind Valuations

Country	Seller	Buyer	MW	\$MM	Description	Year
USA	EDF	TAQA (Abu Dhabi)	205.5		50% lessee interest in the 205.5 MW Lakefield project in MN, which reached COD in 2011 and has a long-term PPA with IPL.	2013
USA + Canada	Invenergy	Caisse de Depot	1,500.0	500	A minority interest in a 1.5 GW portfolio of 13 operating wind projects in the US and Canada.	2013
USA	CPV	NextEra	165.0		100% interest in the 165 MW Cimarron project in KS that reached COD in Q4 2012. Includes a long-term PPA with TVA.	2012
USA	E.ON	Pension Denmark	433.0		50% interest in 3 operating projects in TX and PA, each with long-term PPAs.	2012
USA	EDF	Marubeni	205.5		50% lessee interest in the 205.5 MW Lakefield project in MN, which reached COD in 2011 and has a long-term PPA with IPL.	2012
USA	EDP	Borealis	599.0	230	49% equity interest in 599 MW portfolio of 4 operating projects located in MN, IL, TX and OR. The projects reached COD in 2007-2008 and has long-term PPAs.	2012
Canada	EDP	Enbridge	150.0	170	50% equity interest in a 170 MW project in Quebec, to reach COD in Dec 2012. Long-term PPA with HQ. \$2.27 MM implied EV/MW.	2012
Canada	Finavera	Pattern	300.0	40	300 MW portfolio of 4 advanced development stage projects, each with a long-term PPA awarded by BC Hydro. Pattern will own all projects, except a 10% interest retained by seller in the 105 MW Cloosh Valley Wind Project. \$11 MM paid at closing and remaining paid as projects enter construction.	2012
USA	Gamesa	Algonquin	400.0	238	60% equity interest in the 400 MW portfolio of operating projects in TX, IL and PA. Gamesa retains the remaining 40% interest and the tax equity is provided by JPM and MS. Energy hedge provided by JPM.	2012
Canada	GDF SUEZ	Mitsui, Fiera	680.0		60% interest in a 660 MW wind and 20 MW solar portfolio including 363 MW operating and 317 MW in advanced development/construction. All projects have offtake agreements in place.	2012
USA	Goldwind	Algonquin	109.5	149	100% equity interest in the 109.5 MW operating project (Dec 2012 COD) with long-term offtake contract with ComEd.	2012
USA	Ridgeline	Atlantic Power		88	Acquisition of 100% interest in Ridgeline Energy, including 20% (additional) interest in 80 MW Rockland (operating/contracted), 12.5% interest in 125 MW N Goshen (operating/contracted) and 100% interest in 125 MW Meadow Creek (in construction/contracted) and a >1 GW development portfolio.	2012
Canada	Shear Wind	Sprott Power		84	Acquisition of 100% interest in Shear Wind (TSX:SWX), including 50% interest in the 62.1 MW Glen Dhu operating project and a 680 MW development portfolio. Consideration includes \$33.2 MM in cash and assumption of \$50.69 MM debt.	2012

Source: Alyra, Power Intelligence, Mercom Capital



Recent Pricing Ranges

Investment Type/Stage	Pricing Range	Note	Active buyers
Mature development project with PPA executed or near execution	\$130 - \$150 K/MW	Generally a Dev Fee, subject to milestones	Established developers/IPPs
Mature development project, construction ready with all contracts, PPA and permits	\$250 - \$350 K/MW	Generally a Dev Fee, subject to milestones	Strategics/Utility
Cash Equity in a constructed project, @ or near COD	\$300 - \$350 K/MW	Cash equity tranche	Infrastructure/Mezzanine Funds
Fully constructed project @ or near COD	\$1.8 - 2.3 MM/MW	Enterprise value	Foreign Strategics



Where Are We Headed?

- **Tax Equity Market:** With the ITC Grant expiry, need for tax equity capacity is now much higher for the same number of MWs. This could push tax equity returns...
 - More consolidation by strategics who have own tax capacity??
 - Entry of new investors?
- **PTC Extension:** Good for wind, but how about solar?
 - Divide and conquer - good for both?
- **Equipment Price:** Continued reduction in WTG prices, coupled with higher productivity of WTGs in low wind?
 - Slowly by surely some new WTG vendors have successfully deployed in the US
 - Competition will continue to intensify on the supply side
 - May help attain lower PPA price points
- **PPA prices:** Sustained low natural gas price levels (very likely) putting continued pressure on power prices
 - Depends on the market/region
 - What does history tell us?



Appendix: Major Debt Terms Summary

	Bank Market	Institutional Market
Max Amount	Based on 1.0x DSCR in P99 Case	Based on 1.0x DSCR in P99 Case
Maturity	5 - 17 years [mostly shorter term mini-perm deals in the current market]	20+ years
Interest	LIBOR plus [2.25% - 2.50%] with periodic step-ups of 0.125% - 0.25%	US Treasury + [4% - 5%] fixed
Fees	2.00%-2.25% upfront [25-50 bps less for Grant Bridge Loan] 0.5% on undrawn amounts \$50-100 K annual admin fee	Lower than bank market
Amortization	Semi-annual schedule commencing six months from Financial Close; sculpted to attain Base Case DSCR	Semi-annual schedule commencing six months from Financial Close; sculpted to attain Base Case DSCR
Target DSCR	1.30x Min / 1.40x Average	1.30x Min / 1.40x Average
Reserve Accounts	<ul style="list-style-type: none"> ▪ 6 month Debt Service Reserve ▪ 6 month O&M Reserve ▪ Non-Routine Expenditure Reserve (subject to IE review) ▪ Distribution Reserve (subject to 1.20x min DSCR) 	Similar to bank market
Customary Covenants	<ul style="list-style-type: none"> ▪ All project cash goes to “lock box” account and distributed subject to lender approval and agreed payments waterfall ▪ PPA “Tail” 1-2 years after debt maturity ▪ EPC/BOP with acceptable credit support ▪ 2-5 years performance guarantee with acceptable credit support ▪ Full security package ▪ LIBOR Swaps 	<ul style="list-style-type: none"> ▪ All project cash goes to “lock box” account and distributed subject to lender approval and agreed payments waterfall ▪ May not need PPA “Tail” – may take some residual risk ▪ EPC/BOP with acceptable credit support ▪ 5 years performance guarantee with acceptable credit support ▪ Full security package ▪ Prepayment penalty



Alyra Renewable Energy Finance, LLC

A firm imbued with a singular focus and rich experience in renewable energy, Alyra provides financial advisory services exclusively to the renewable energy sector. The firm specializes in acquisitions, joint ventures, structured tax equity and project finance transactions and typically represents strategic investors in such transactions. Clients include the leading energy companies and institutional investors in North America and Europe.

As of December 2012, Alyra has advised on over \$5.8 billion and closed \$530 million renewable energy M&A transactions, along with an additional \$208 million in pending transactions.

Alyra was founded in January 2004 by Mohammed Alam, following his energy banking career with Fortis Capital Corp. where he led a range of origination, structuring and restructuring of renewable and conventional power transactions. Before Fortis he worked at GE Capital Markets Group, GE's internal investment banking group, performing investment structuring and financial advisory in Latin American energy and infrastructure transactions. Earlier, he began his finance career at Brown Brothers Harriman, focusing on emerging markets research.

Mr. Alam is involved in supporting clean energy growth through his roles in the public bodies and advocacy. In December 2010, Mr. Alam was appointed by U.S. Commerce Secretary Gary Locke as a member of the Renewable Energy and Energy Efficiency Advisory Committee, to advise the U.S. Commerce Secretary on issues related to the global competitiveness of the U.S. renewable energy industry. In March 2011 Mr. Alam was part of the Antarctic Renewable Energy Expedition, led by polar explorer Robert Swan, OBE, and his environmental advocacy organization, 2041.

Mr. Alam holds a Master's degree in Public and Private Management from the Yale School of Management where he was one of three recipients in his class for the Scholastic Excellence Award. He also holds a Bachelor's of Science degree, summa cum laude, from the University of Massachusetts, with various scholastic and leadership honors and distinctions, including the valedictorian nomination. Mr. Alam frequently speaks at major international energy conferences and is an author of published articles for leading energy publications.

RECENT ENGAGEMENT HIGHLIGHTS

- Exclusive Advisor to ARRCO Wind regarding the sale of 550 MW wind power portfolio.
- Advisor to Duke Energy regarding the acquisition of Catamount Energy.
- Exclusive Advisor to Duke Energy regarding the acquisition of 1 GW wind power development assets of Tierra Energy.
- Advisor to NRG Energy regarding the acquisition of a 109 MW operating wind power project.
- Exclusive Advisor to Spinnaker Energy regarding the buyout of a 707 MW wind and solar power development portfolio from Martifer Renewables.
- Exclusive Advisor to Project Resources Corp. regarding a strategic transaction to fund wind power development portfolio in the Midwest.

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