Project Bonds: Wind

Crédit Agricole CIB, a leader in the global Project Bond market, is authoring a series of articles covering key topics for issuers to consider.

Renewable Energy

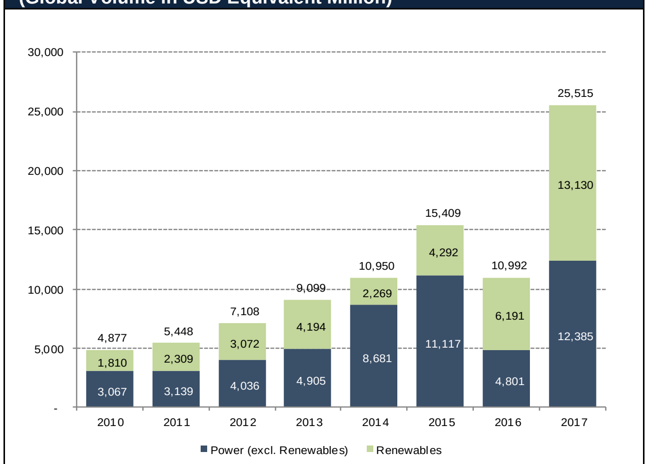
The volume of Project Bonds issued for renewable energy projects has steadily increased in recent years.

The Capital Markets opened its doors to renewable energy projects with a wind Project Bond in 2003 followed by solar Project Bonds a few years later in 2010.

These trail-blazing transactions allowed investors to gain familiarity with the technologies, risks, and contractual arrangements related to renewable assets. They also paved the way for future issuances, as rating agencies started publishing specific methodologies dedicated to this newly accessible asset class.

Renewables have grown to represent more than 50% of power Project Bonds and nearly 21% of total Project Bonds issued in just over a decade. In 2017, renewable energy projects accounted for $13.1BN of Project Bond issuances globally.

Power Project Bonds
(Global Volume in USD Equivalent Million)



Source: PFI, CA CIB

Renewable Project Bonds first gained traction in North America, followed by projects in Europe, Latin America and Asia, demonstrating the increasing comfort and global appetite among investors for renewable assets.

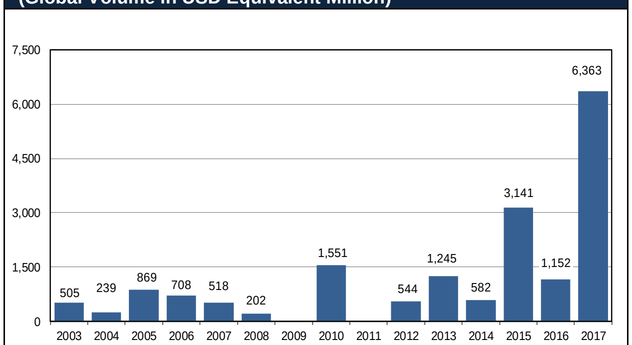
While renewables offerings have gained wider acceptance over time, there are challenges that need to be considered prior to approaching the Capital Markets. Lessons learned from past renewable financings can help ensure future successful executions.

This article provides a review of historical Project Bond issuances for wind assets globally.

Wind Project Bonds

In 2003, the $380MM 144a Project Bond for FPL Energy American Wind, a portfolio with an aggregate capacity of 697MW across 7 projects in 6 US States, marked the opening of the debt Capital Markets for wind projects. Since then, more than $19.2BN has been raised globally through 64 structured transactions backing wind assets. Individual transactions of over $1.0BN have been successfully executed such as the $1.7B issuance to finance the extension of the 659MW Walney Offshore Wind Project in the United Kingdom in 2017.

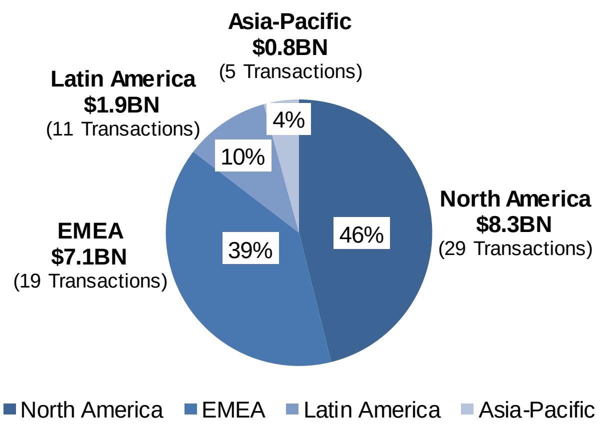
Wind Project Bonds
(Global Volume in USD Equivalent Million)



Source: PFI, CA CIB

The first wind transactions involved US-based assets and the majority of projects financed to-date have been located in North America, with more than 29 transactions out of 64 globally. Europe has seen 19 offerings and local investors continue to show a solid appetite for this asset class, with some of the largest recent wind transactions executed in this region.

Wind Project Bonds – Geographies of Assets (2003-2018 YTD, in USD Equivalent)

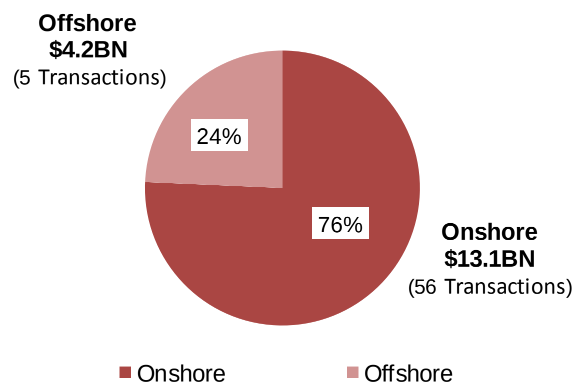


Source: PFI, CA CIB

Wind Project Bonds successfully emerged in additional markets as well. The first wind assets to tap the Capital Markets in Latin America were located in Mexico with the $149MM and $150MM 144a offerings for Oaxaca II and IV, respectively in 2012. In Asia, an Australian wind farm was refinanced in 2015 with a Project Bond which included a $99MM USD tranche and a A$76MM tranche.

Onshore wind projects account for most of the transactions to-date. Since 2015, Capital Markets participants have also welcomed offshore assets and some of the largest recent issuances have been for offshore wind projects.

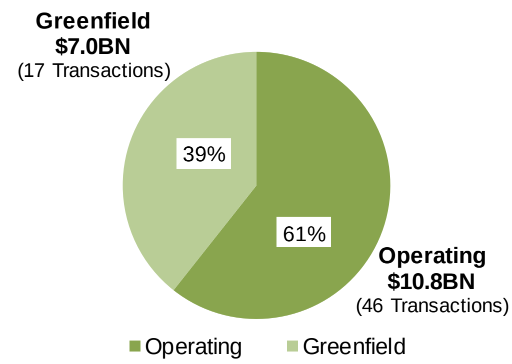
Wind Project Bonds – Asset Type (2003-2018 YTD, in USD Equivalent)



Source: PFI, CA CIB

The majority of transactions have refinanced operating projects, with no need to address construction risk. However, offerings partially exposed to construction risk have also been successfully placed. Project Bonds for 100% greenfield assets have been less frequent and investors typically require some form of credit support to mitigate construction risk.

Wind Project Bonds – Project Status at Closing (2003-2018 YTD, in USD Equivalent)



Source: PFI, CA CIB

Wind assets are mostly contracted through long-term Power Purchase Agreements ("PPAs") with an offtaker such as a utility or a public entity (State, municipality, etc.). Project Bonds have allowed issuers to fully monetize these contracts with amortizing structures over the full tenor of the underlying PPA. Maturities of 20 years or more are the norm for this type of transaction, with average weighted lives above 10 years.

Trends and Highlights

A wide variety of wind assets has been financed through the Project Bond market. Depending on the characteristics of the project, different structures have been successfully placed. The following section discusses some of these trends.

Construction Financing for Wind Assets

Historically, wind projects in the Capital Markets have primarily been operating or brownfield assets. The first transaction with significant construction risk exposure was Alta Wind Holdings in 2010 ($579MM in 144a senior secured notes for a 570MW project in California); however, the construction risk exposure was largely mitigated with a fully wrapped EPC contract.

Rating agencies perceive construction risk for onshore wind projects as relatively low compared with other power plants. The construction period tends to be one to two years and entails limited technological challenges. Provided the project relies on experienced EPC contractors and equipment suppliers, rating agencies note that construction risk is not a limiting factor in itself to achieve an investment-grade rating.

Offshore wind projects are more complex. In particular, they entail more interconnection challenges and a greater number of contractors due to maritime logistics. Despite these additional challenges, Fitch and Standard & Poor's have indicated that investment-grade ratings could be achieved for greenfield offshore wind projects.

Approaching Construction Risk: Case Study

In July 2010, Alta Wind Holdings issued $579MM in 144a senior secured notes for the construction financing of three wind farm locations. Moody's and Standard & Poor's highlight that construction risk was mitigated because the project's turbines were provided by a reliable turbine manufacturer and the project's EPC contractor was well-experienced. Construction risk was further mitigated with a fixed-price, turnkey EPC contract and the EPC contractor's obligations were 100% backed by a performance bond. The rating agencies were able to get comfortable with these mitigants and the transaction was rated "BBB-".

Exposure to Merchant Risk

Even though most offerings were supported by fully contracted revenues some had exposure to merchant risk. It should be noted that while rating agencies may accept certain structures to mitigate merchant risk, it does not necessarily follow that all investors will be receptive to such offerings. Some insurance company investors still have investment criteria that prevent them from investing in renewable projects exposed to merchant risk, no matter how the risk is mitigated.

There have been a few merchant risk exposed projects that have successfully satisfied both rating agency and investor requirements such as $142MM Hatchet Ridge (2010) and €572MM and $439MM WindMW (2015).

Approaching Merchant Risk: Case Study #1

In December 2010, Hatchet Ridge issued $142MM in senior secured pass-through certificates in the 4(a)(2) Private Placement market to refinance the construction facility associated with a 101MW wind project in the US. The 19-year maturity of the certificates extended 4 years beyond the 15-year maturity of the PPA, introducing a merchant tail. This was the first-ever wind Project Bond to achieve an investment grade rating with a merchant tail. The structure included different reserve accounts funded over the life of the transaction to cash collateralize the expected outstanding balance by the PPA maturity date. Given the novelty of the structure, the 4(a)(2) Private Placement format was preferred to allow investors more flexible time to conduct their own due diligence and get comfortable with the merchant tail and reserve mechanism.

Approaching Merchant Risk: Case Study #2

The 2015 WindMW offering (€572MM and $439MM for an offshore wind farm in Germany) was also exposed to merchant risk. For this transaction, the 11.5-year maturity of the notes was co-terminus with the feed-in-tariff period of the project, but investors were exposed to refinancing risk since the structure was not fully amortizing. To reduce exposure to merchant risk, a reserve was structured to partially collateralize the balloon payment at maturity. During the final years of the transaction, the level of funding of the reserve is, in part, indexed to spot and forward energy prices. In essence, if spot prices decrease below certain thresholds, funding of the reserve from project cash flows is required.

New Assets: Offshore Wind

Before 2015, no offshore wind assets had been financed with Project Bonds. Two successful issuances opened the doors for this asset class: In September 2015, Gode Wind 1 €556MM in senior secured HoldCo notes for a greenfield 330MW offshore wind farm in Germany, and in December 2015, WindMW €572MM and $439MM in senior secured notes for a 288MW offshore wind farm in Germany. Of note, both transactions were rated investment-grade.

Since then, about $2.7 billion has been issued to finance over 1.1GW of offshore wind assets demonstrating investor appetite and ample liquidity for the asset class. A total of 4 offshore wind assets have now been financed with Project Bonds, accounting for 24% of wind Project Bonds volumes.

Offshore Wind: Case Study #1

The €556MM HoldCo financing for Gode Wind 1 was a first-of-its-kind transaction in Germany. The transaction fully amortizes over the 10-year feed-in-tariff period and was rated "BBB" by Euler Hermes, a credit insurance company. The project was still under construction and funding was available through delayed draws. Half of the transaction was taken by a single German institutional investor with 19 other German institutional investors filling the book.

Offshore Wind: Case Study #2

The Walney Extension Offshore Wind project is the largest transaction for a greenfield offshore wind farm to-date. The Project Bond consisted of £1,289MM in fully-amortizing senior secured notes available in four draws to finance the third construction phase of the 660MW Walney offshore wind farm in the Irish Sea. The notes have a 15-year maturity which matches the length of the long term purchase price agreement with the UK's grid. The £430MM fixed-rate tranche priced at 3.263% and the coupon of the £859MM index-linked tranche was based on local CPI index. The privately placed notes were rated Baa2 by Moody's and attracted a large range of investors including major institutional investors.

Wind Project Bonds in New Geographies

Wind financings in the Capital Markets are continuing to expand their reach as they access new geographies. While the majority of issuances have historically come out of North America and EMEA, a number of transactions are coming from emerging markets and some were issued in local currencies.

The Oaxaca II Wind Farm and Oaxaca IV Wind Farm transactions ($150MM and $149MM in 144a senior secured notes for two similar 102MW projects in Mexico) were the first Latin America transactions to tap the international Capital Markets in August 2012. Since this time, Energia Eolica $204MM in 144a senior secured notes for a 114MW wind farm in Peru issued in December 2014 and Demex Oaxaca 1 MXN 2,100MM in senior secured notes for a 90MW wind farm in Mexico issued in January 2016 have also successfully been placed in the Capital Markets.

Local Issuances for Wind Financings: Case Study

Demex Oaxaca 1 issued MXN 2,100MM in senior secured notes in Mexico's local Capital Markets in January 2016 for an operating 90MW wind farm in Mexico. The transaction was rated locally by Standard & Poor's (AA) and HR Ratings (AA), a Mexican rating agency. The transaction was entirely placed with the Mexican Afores. The fact that the issuance was in MXN and locally rated demonstrates that there is the local expertise necessary for Capital Markets transactions.

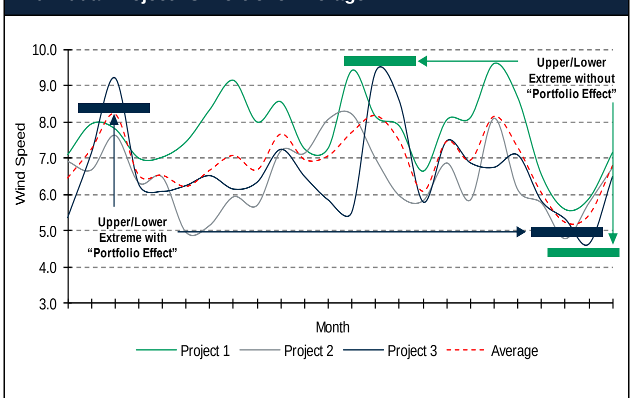
Portfolio Financing Benefits

There are two key advantages to portfolio financing: (i) Portfolio Effect, and (ii) increased liquidity.

Portfolio financings can benefit from a "Portfolio Effect", that would allow a portfolio of assets to support a larger debt amount than if each project was financed individually.

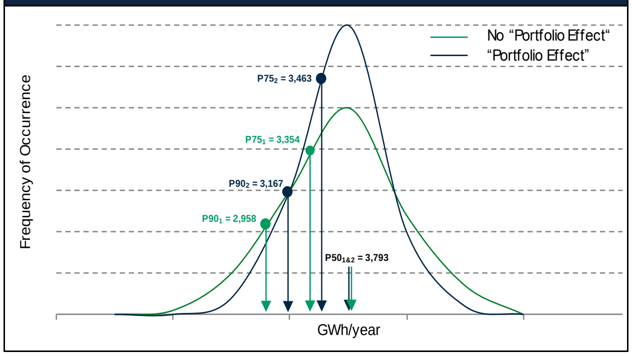
In essence, for different wind regimes evaluated as a portfolio, extreme wind conditions are balanced on average, as presented on the diagram below.

Individual Project vs. Portfolio Average



Utilizing this averaging effect through the reduction in wind variability allows for an increased overall P90 energy production output, which in turn allows for increased leverage.

Individual Project vs. Portfolio P-values



In the graphs above, while the value of P50 energy production is the same, P75 and P90 levels in the "Portfolio Effect" case are higher.

Portfolio financing is also interesting when combining small projects that may not be financed on a stand-alone basis. A portfolio financing provides economies of scale and reduces transaction costs. In addition, during the marketing period, small offerings tend to attract fewer investors. Some of them may be reluctant to review an investment opportunity if they fear their final allocation will be small or below their minimum investment thresholds. Combining assets allows for larger, more visible transactions, with increased liquidity for investors.

Portfolio Effect Benefits: Case Study

In 2013, Continental Wind issued $613MM in 144a senior secured notes to refinance a portfolio of 13 operating wind projects with an aggregate capacity of 667MW spread across 6 states. The Continental Wind Portfolio had technology, offtaker, and wind resource diversity. Investors had exposure to five different wind regimes and five different turbine manufacturers. In addition, the transaction was rated by three rating agencies: Moody's, Standard & Poor's, and Fitch; each of which agreed that the portfolio diversity helped to mitigate the collective wind resource volatility and gave credit to the Portfolio Effect. The independent engineer for the transaction estimated this Portfolio Effect to be 5.3% due to the geographical and technological diversity of the portfolio.

Rating Agencies

Rating agencies approach wind financing by applying their generic project finance criteria complemented by wind-focused methodologies and commentary articles.

Rating agencies regularly update their methodologies as they rate new asset types and structures. For example, the development of offshore wind has led to the publication of articles and research reports from most agencies to specifically address the risks associated with such assets. Their criteria also evolved based on the performance of rated transactions.

The table below presents the main sizing criteria and reserves associated with investment-grade ratings for Moody's, Standard & Poor's, Fitch, DBRS and Kroll. Investment-grade offerings usually share the following main characteristics: PPA with investment-grade counterparties, fully amortizing profile over the PPA tenor, no or mitigated construction risk, experienced parties and proven technology. Items that may constrain the rating to below-investment grade include unproven technology of turbines, exposure to merchant risk, sub-investment-grade counterparties, wind resource unreliability, and country risk. These particular aspects of the transaction do not necessarily prevent successful offerings but may require additional liquidity and credit enhancement.

Conclusion

The Capital Markets have been a reliable and proven source of financings and refinancings for wind assets globally. We have seen, overtime, investors and rating agencies get more comfortable with greenfield risk exposure, merchant risk exposure, and emerging market country risk exposure. We have also seen the emergence, most recently, of a new wind asset class: offshore wind.

CRÉDIT AGRICOLE SECURITIES

Rating Criteria for Investment-Grade Wind Offerings

	Fitch	Standard & Poor's	Moody's	DBRS	Kroll
Applicable Methodologies and Select Research	▪ "Rating Criteria for Infrastructure and Project Finance" (Aug 2017) ▪ "Renew able Energy Project Rating Criteria" (Feb 2018) ▪ "Offshore Wind Projects" (Apr 2016)	▪ "Project Finance Framew ork Methodology" (Sep 2014) ▪ "Key Rating Factors for Pow er Project Financings" (Sep 2014) ▪ "Offshore Wind Projects Take Off As Technology Improves And Costs Fall" (Jun 2017)	▪ "Generic Project Finance Methodology" (Apr 2018) ▪ "Pow er Generation Projects" (May 2017)	▪ "Rating Project Finance" (Feb 2018) ▪ "Rating Wind Pow er Projects" (Feb 2018)	▪ "Global Project Finance Rating Methodology" (Nov 2017)
DSCR Indication for Investment Grade Rating	▪ P90 (1-year) generation ▪ Additional specific adjustments to cash flows ▪ Min DSCR ≥ 1.30x for adjusted contracted cash flow s ▪ Min DSCR ≥ 2.00x for adjusted merchant cash flow s	▪ P90 (1-year) generation ▪ Min DSCR ≥ 1.40x for contracted cash flows ▪ Min DSCR ≥ 2.00x for merchant cash flows	▪ P90 (1-year) or P95 (1-year) generation ▪ Min DSCR ≥ 1.40x for contracted cash flows ▪ Min DSCR ≥ 3.50x for merchant cash flows	▪ P90 (1-year) generation ▪ Min DSCR ≥ 1.35x for contracted cash flows ▪ No exposure to merchant revenues	▪ Generation assumption not specified ▪ Min DSCR ≥ 1.30x for contracted cash flows
Base Case Assumptions and Adjustments	▪ Energy production haircut: 0% to 10% ▪ Grid curtailment adjustment (as informed by a third-party assessment) ▪ Availability: 92% to 97% ▪ O&M costs: increase of up to 20% over base case expenses ▪ Other adjustments may be applied on a case by case basis	▪ Inflation rate: 2% ▪ Degradation: 0.50% ▪ Availability: 94% to 98.5% ▪ O&M cost: increase of 5% to 10% over pro forma costs ▪ Other adjustments may be applied on a case by case basis	▪ No specific adjustments / assumptions specified for Base Case scenario ▪ Adjustments may be applied on a case by case basis	▪ No specific adjustments / assumptions specified for Base Case scenario ▪ Adjustments may be applied on a case by case basis	▪ No specific adjustments / assumptions specified for Base Case scenario ▪ Adjustments may be applied on a case by case basis
Other Structural Considerations	▪ 6-month Debt Service Reserve Account ▪ 6-month Operation & Maintenance Account ▪ Distribution Test	▪ 6-month Debt Service Reserve Account ▪ 6-month Operation & Maintenance Account ▪ Distribution Test	▪ 6-month Debt Service Reserve Account ▪ 6-month Operation & Maintenance Account ▪ Distribution Test	▪ 6 to 12-month Debt Service Reserve Account ▪ 6-month Operation & Maintenance Account ▪ Distribution Test ▪ 6 to 12-month tail on PPA tenor	▪ 6 to 12-month Debt Service Reserve Account ▪ 6 to 12-month Operation & Maintenance Account ▪ Distribution Test

Source: Rating Agencies, CA CIB

CRÉDIT AGRICOLE SECURITIES

Wind Project Bond Global Issuance To-Date

Issuer	Sponsor(s)	Capacity (MW)	Type	Project Status	Country	Geography	Currency	Size (MM)	Tenor (Years)	WAL (Years)	Coupon	Credit Ratings (Moody's / S&P / Fitch)	Closing Date
Mesa La Paz Wind Farm	AES	306	Onshore	Greenfield	Mexico	Latin America	USD	304	26	15	--	NAIC -2	Apr-18
Arise's Wind Portfolio	Arise	135	Onshore	Operating	Sweden	EMEA	SEK	650	3	--	--	--	Mar-18
Neoen's International Renewable Portfolio *	Neoen	1600	Onshore	Greenfield	France	EMEA	EUR, USD & AUD	245	20	--	--	Private	Dec-17
Borkum Riffgrund 2	Talanx	450	Offshore	Greenfield	Germany	EMEA	EUR	832	10	--	--	Private	Dec-17
Palouse Wind Farm	Novatus	105	Onshore	Operating	United States	North America	USD	150	--	--	--	Private	Dec-17
Walney Extension Offshore Wind Project	Orsted, PKA, PFA	659	Offshore	Greenfield	United Kingdom	EMEA	GBP	430	15	8	3.26%	Private	Nov-17
Walney Extension Offshore Wind Project	Orsted, PKA, PFA	659	Offshore	Greenfield	United Kingdom	EMEA	GBP	859	16	9	--	Private	Nov-17
Avangrid *	--	262	Onshore	Operating	United States	North America	USD	600	7	Bullet	3.15%	Private	Nov-17
SER Wind	Glennmont Partners	245	Onshore	Operating	Italy	EMEA	EUR	190	8	--	2.01%	Private	Oct-17
Inversiones Latin America Power Limitada	--	231	Onshore	Operating	Chile	Latin America	USD	412	16	11	5.35%	-- / BBB- / --	Oct-17
Kent Hills	--	17	Onshore	Greenfield	Canada	North America	CAD	260	16	Amortizing	4.45%	Private	Oct-17
GP Wind	--	92	Onshore	Operating	India	Asia-Pacific	INR	3,000	15	--	9.25%	Private	Sep-17
Campo Palomas	Invenergy	70	Onshore	Operating	Uruguay	Latin America	USD	136	20	12	5.20%	Baa3 / -- / --	Aug-17
Ventos de Santo Estevao	--	358	Onshore	Greenfield	Brazil	Latin America	BRL	71	2	--	--	Private	May-17
Kype Muir Onshore Wind	Banks Renewables	151	Onshore	Greenfield	United Kingdom	EMEA	GBP	140	15	--	Fixed and CPI Index-linked	Private	Mar-17
Neerg Energy *	RG	500	--	Brownfield	India	Asia-Pacific	USD	475	5	Bullet	6.00%	-- / B+ / --	Feb-17
Texoma Wind LLC	Duke Energy Renewables	710	Onshore	Greenfield	United States	North America	USD	587	17	6.4	4.12%	BBB- (Kroll)	Feb-17
Balko Wind	DE Shaw Renewable Investments (DESRI)	300	Onshore	Operating	United States	North America	USD	--	--	--	--	Private	Feb-17
Ventos de Sao Jorge Holding	Casa dos Ventos Energias Renováveis Ltda.	130	Onshore	Greenfield	Brazil	Latin America	BRL	45	11	6.85	IPCA + 9.00%	-- / -- / AA (bra)	Feb-17
Broadview & Armow Wind Projects	Pattern Energy Group	504	Onshore	Brownfield	United States	North America	USD	350	7	--	5.90%	Private	Jan-17
New Richmond Wind	TransAlta Renewables	68	Onshore	Operating	Canada	North America	CAD	153	16	--	3.96%	Private	Dec-16
Grand Prairie Wind Farm	BHE Renewables	400	Onshore	Operating	United States	North America	USD	485	20	--	--	Private	Dec-16
Tellenes Wind	BlackRock	160	Onshore	Greenfield	Norway	EMEA	--	--	--	--	--	Private	Jun-16
Fosen Vind	Statkraft & Nordic Wind Power Consortium	1000	Onshore	Operating	Norway	EMEA	EUR	228	20	--	Floating Rate	Private	Mar-16
Renewable Power *	--	--	--	--	United States	North America	USD	150	19	7.9	4.11%	BBB (Kroll)	Mar-16
Sao Miguel	Voltalia	108	Onshore	Operating	Brazil	Latin America	BRL	57	13	7.9	IPCA + 8.19%	brA+	Mar-16
Demex Oaxaca 1	Renovalia Energy	90	Onshore	Operating	Mexico	Latin America	MXP	2,100	15	7	8.85%	AA local (S&P) / AA local	Jan-16

*Includes Solar Assets

Wind Project Bond Global Issuance To-Date (Continued)

Issuer	Sponsor(s)	Capacity (MW)	Type	Project Status	Country	Geography	Currency	Size (MM)	Tenor (Years)	WAL (Years)	Coupon	Credit Ratings (Moody's / S&P / Fitch)	Closing Date
WindMW	Blackstone & Windland Energieerzeugungs	288	Offshore	Operating	Germany	EMEA	EUR & USD	901	6.0 & 12.0	3.0 & 9.0	2.13%, 3.59%, 5.02%	Baa3 / BBB- / BBB-	Dec-15
Armenia Mtn. Wind	AES	101	Onshore	Operating	United States	North America	USD	85	9	5	3.26%	NAIC-2 (BBB)	Oct-15
Dufferin Wind	China Longyuan Power Group	91	Onshore	Operating	Canada	North America	CAD	200	18	10	4.32%	NAIC-2 (BBB DBRS)	Oct-15
CLP Wind Farms India	--	1,000	Onshore	Operating	India	Asia-Pacific	INR	6,000	3.0 to 5.0	--	9.15%	AA- (Local)	Sep-15
Gode Wind 1	DONG Energy & GIP	330	Offshore	Greenfield	Germany	EMEA	EUR	556	10	--	--	--	Sep-15
Melancthon Wolfe	TransAlta Renewables	397	Onshore	Operating	Canada	North America	CAD	442	13	6.7	3.83%	BBB (DBRS)	Sep-15
Coram California	RET Capital	102	Onshore	Operating	United States	North America	USD	105	17	13.5	4.52%	NAIC-2 (BBB- Kroll)	Sep-15
Meikle Wind Energy LP	Pattern Energy	180	Onshore	Greenfield	Canada	North America	CAD	393	--	--	--	--	Jul-15
Ecotricity Renewable Portfolio *	Ecotricity	60	--	Brownfield	United Kingdom	EMEA	GBP	70	--	--	--	Private	Apr-15
Hallett 2 Wind	Infrastructure Capital Group (ICG)	71	Onshore	Operating	Australia	Asia-Pacific	USD	99	12	10	3.78%	NAIC-2 (BBB)	Mar-15
Hallett 2 Wind	Infrastructure Capital Group (ICG)	71	Onshore	Operating	Australia	Asia-Pacific	AUD	76	12	10	4.88%	NAIC-2 (BBB)	Mar-15
Junco 1 & Junco 2	Usina Eolica Junco	61	Onshore	Greenfield	Brazil	Latin America	BRL	126	1	Bullet	BZDI + 214bps	Private	Feb-15
Energia Eolica	ContourGlobal	114	Onshore	Operating	Peru	Latin America	USD	204	20	12.5	6.00%	BBB-	Dec-14
Arise AB	Arise Windpower	135	Onshore	Operating	Sweden	EMEA	SEK	1,100	5	NA	STIBOR + 300bps	BB-	Apr-14
Trillium Windpower	NextEra	147	Onshore	Operating	Canada	North America	CAD	315	20	10.7	5.80%	BBB (DBRS)	Jan-14
Continental Wind LLC	Exelon	667	Onshore	Operating	United States	North America	USD	613	20	10.3	6.00%	Baa3 / BBB- / BBB-	Sep-13
Elevate Wind	E.ON	430	Onshore	Operating	United States	North America	USD	285	20	10	5.35%	NAIC-2 (Baa3/BBB-)	Apr-13
Comber Wind Financial	Brookfield	166	Onshore	Operating	Canada	North America	CAD	450	18	9.8	5.13%	BBB (DBRS)	Feb-13
EverPower Wind Holdings	Everpower	150	Onshore	Operating	United States	North America	USD	245	23	13.6	5.15%	NAIC-2 (Baa3/BBB-)	Aug-12
Oaxaca II	Acciona	102	Onshore	Operating	Mexico	Latin America	USD	149	20	13	7.25%	BBB-/BBB-	Aug-12
Oaxaca IV	Acciona	102	Onshore	Operating	Mexico	Latin America	USD	150	20	13	7.25%	BBB-/BBB-	Aug-12
Caithness Shepherds Flat LLC	Caithness Energy	845	Onshore	Greenfield	United States	North America	USD	525	22	NA	4.97%	80% AAA / 20% BBB-	Dec-10
Hatchet Ridge Pass-Through Trust	Pattern Energy	101	Onshore	Operating	United States	North America	USD	142	19	10	5.95%	BBB-	Dec-10
Alta Wind Holdings, LLC	Terra-Gen Power	570	Onshore	Greenfield	United States	North America	USD	579	24	13	7.00%	BBB-/BBB-	Jun-10
NextEra Mountain Prairie Wind	NextEra	273	Onshore	Operating	United States	North America	USD	305	20	NA	6.56%	BBB-	Mar-10
[Confidential]	[Confidential]	643	Onshore	Operating	--	North America	USD	202	Conf.	Conf.	Conf.	BBB-	Dec-08
Breeze Finance S.A.	Theolia	350	Onshore	Brownfield	--	EMEA	EUR	455	20	10	5.42%	Aaa/AAA/AAA	Apr-07

*Includes Solar Assets

CRÉDIT AGRICOLE SECURITIES

Wind Project Bond Global Issuance To-Date (Continued)

Issuer	Sponsor(s)	Capacity (MW)	Type	Project Status	Country	Geography	Currency	Size (MM)	Tenor (Years)	WAL (Years)	Coupon	Credit Ratings (Moody's / S&P / Fitch)	Closing Date
FPL Energy Bison Wind	FPL Energy	200	Onshore	Operating	--	North America	USD	206	20	NA	6.66%	BBB-	Jun-06
Alte Liebe 1 Ltd.	Plambeck	142	Onshore	Operating	--	EMEA	EUR	102	19	NA	4.70%	BBB-	May-06
Breeze Two	CRC Breeze Finance	330	Onshore	Greenfield	Germany	EMEA	EUR	300	20	6.55	5.29% and 6.11%	-- / BBB / BB+	Apr-06
CRC Breeze Finance S.A.	Theolia	330	Onshore	Brownfield	--	EMEA	EUR	355	20	NA	5.29%	86% BBB / 14% BB+	May-05
FPL National Wind Portfolio	FPL Energy	534	Onshore	Operating	--	North America	USD	100	14	7	6.12%	Ba2/BB-/BB	Mar-05
FPL National Wind	FPL Energy	534	Onshore	Operating	--	North America	USD	365	19	9	5.61%	Baa3/BBB-/BBB	Feb-05
Breeze One	CRC Breeze Finance	81	Onshore	Operating	Germany	EMEA	EUR	123	--	--	--	-- / BBB- / --	Sep-04
Max Two Ltd.	Energiekontor	81	Onshore	Brownfield	--	EMEA	EUR	100	20	NA	5.70%	BBB-	Sep-04
FPL Energy Wind Funding	FPL Energy	697	Onshore	Operating	United States	North America	USD	125	14	7	6.88%	Ba2/BB-	Dec-03
FPL Energy American Wind	FPL Energy	697	Onshore	Brownfield	United States	North America	USD	380	20	9	6.63%	Baa3/BBB-	Jun-03

*Includes Solar Assets

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