



Wind Energy Sector: Key Trends & Outlook

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Summary Opinion

ICRA expects wind based capacity addition during the current FY 2011-12 at about 2800 MW (against actual of 2350 MW in FY 2011), and the same to grow at an annual rate at about 15% going forward, supported by growing demand from Independent Power Producer (IPP) segment. The commencement of trading of Renewable Energy Certificates (REC) on Power Exchanges since March 2011 as well as long-term certainty over the floor/cap pricing mechanism of REC are key positive developments for the renewable energy sector. Further, ICRA believes that the spiralling international cost of conventional energy sources and persistent domestic fuel shortages make wind energy more cost-competitive.

ICRA expects the new wind-based projects/IPPs to prefer the REC route against the preferential tariff route, and within the REC route, many IPPs would prefer to sign their power purchase agreements (PPAs) with discoms at their average power purchase cost (APPC) instead of selling on merchant/short-term basis. This is due to open-access and banking facility constraints and volatility in merchant tariffs, although the merchant option under the REC route is the most remunerative option available. Notwithstanding the favourable long-term demand outlook for wind energy sector aided by regulatory and fiscal support, we see the following key issues which could affect capacity addition:

- Implementation issues in complying with Renewable energy Portfolio Obligation (RPO) norms due to lack of consistency and a wide divergence in RPO norms across states, risk of any amendment in RPO norms by SERC (as observed in few states), no precedence of any enforcement of penalty on obligated entities¹ for shortfall in RPO & absence of regular monitoring of RPO compliance by state agencies.
- In ICRA's view, the counter-party credit risks of state utilities in most of the states having wind energy potential have increased significantly as evident from persisting defaults to wind mills in the state of Tamil Nadu.
- Execution risks associated with strengthening of the intra-state transmission network beyond the inter-connection point remains a challenge for the utilities across the states, also given their weak financial position.
- With respect to tariff regulations, implementation of wind-zone specific tariffs (as devised by CERC in its generic tariff principles) remains uncertain in Maharashtra, which is the first state to adopt such tariffs. On the other hand, preferential tariffs continue to vary across the states, and remain fixed for a longer control period which could impact the returns of new projects commissioned under this tariff regime.

¹ Obligated entities as per the RPO regulations are distribution licensees, group captives and open access customers.

Box 1: Key Snapshot of Regulatory Framework and Incentives Available

National Action Plan for Climate Change (NAPCC): Released in June 2008 by the Government of India, NAPCC suggests a roadmap for increasing the share of renewable energy in the total generation capacity of the country. The Plan has set the minimum renewable energy purchase obligation (RPO) target at 5% of the total energy procurement in 2009-10, with a 1% year-on-year (y-o-y) increase for the next 10 years, that is, 10% by 2014-15 and 15% by 2019-20.

Generation Based Incentive (GBI) Mechanism: In December 2009, the Ministry of New & Renewable Energy (MNRE), Government of India (GoI) announced the GBI incentive mechanism for grid interactive wind power projects commissioned after 17 December 2009 with the main objective of facilitating the entry of large Independent Power Producers (IPPs). The GBI is at Re. 0.50 per unit of electricity fed into the grid with a cap of Rs. 15.5 lakh/MW/year. Companies can avail of either Accelerated Depreciation (AD) tax benefit or GBI but not both. This incentive is for a minimum of four years and a maximum of 10 years. GBI is available for wind turbines commissioned after 17 December 2009 and on or before 31 March 2012, and is governed by the MNRE guidelines. The operating guidelines for GBI implementation have been issued by the MNRE in May 2010.

Accelerated Depreciation (AD) Tax Benefit: This benefit currently stands at 80% and has remained the key growth driver for wind capacity addition by corporate as well as financial/retail investors. The AD benefit is likely to go away, once the Direct Tax Code is implemented by the Government of India.

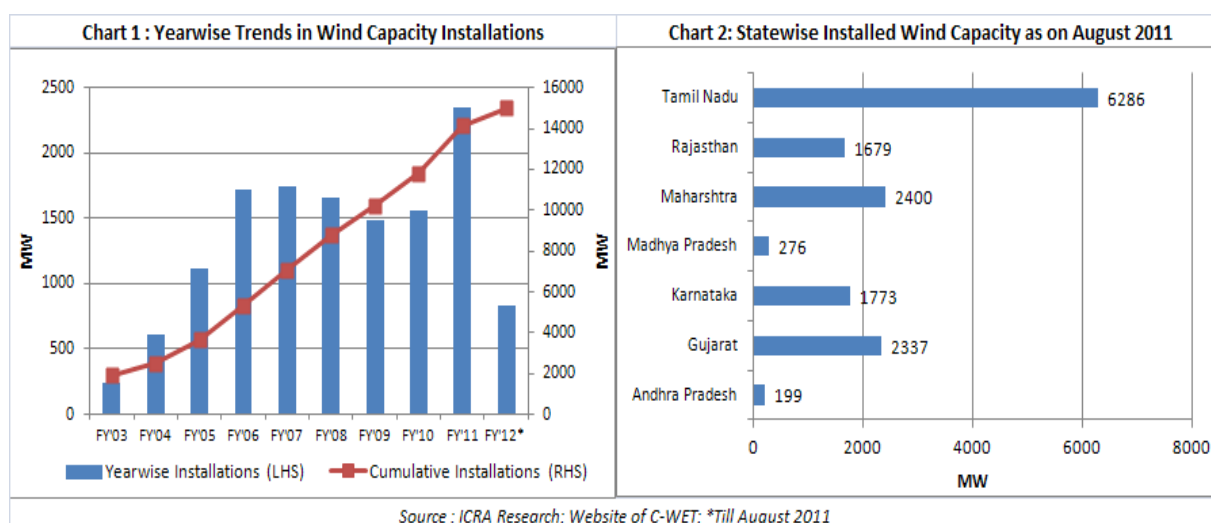
Renewable Energy Purchase Obligation (RPO): State level RPO regulations/norms are put in place by SERCs in most of the states. The RPO regulations are required to be met by obligated entities (that is, distribution licensees, group captives and open access customers) by purchasing renewable energy either by entering into PPAs with renewable energy assets and/or by purchasing renewable energy certificates.

Renewable Energy Certificate (REC) Mechanism: The CERC issued REC regulations in January 2010. The key objective of the REC mechanism is to promote the development of renewable energy and facilitate its inter-state flow; this would enable the obligated entities (distribution utilities and open access customers) across states to meet their RPO targets as recommended by the NAPCC. Under this framework, states that are unable to meet their renewable energy off-take targets can plug the shortfall by purchasing RECs from renewable energy generators in other states. There are two categories of RECs, namely, solar certificates issued to eligible entities for solar-based electricity generation and non-solar certificates issued to eligible entities for generation of electricity based on renewable energy sources other than solar energy. One REC is equivalent to the generation of 1000 units from a renewable energy source. For eligibility under the REC framework, renewable projects: (a) would get accreditation from the state agency as notified by the SERC concerned; (b) will not have any PPA with distribution utilities at a preferential tariff determined by the SERC; and (c) will sell the electricity generated either to the distribution licensee of the area in which the eligible entity is located, at a price not exceeding the average pooled cost of power purchase (APPC) of such distribution licensee, or to any other licensee or to an open access consumer at a mutually agreed price, or through power exchange at the market-determined price. Existing projects for which long-term PPAs are already in place will be allowed to participate in the REC scheme after the expiry of their existing PPAs. Since March 2011, RECs are traded on the power exchange for market-based price discovery, with the floor and cap being set by the CERC.

Preferential Tariffs for Wind Energy by SERCs: Preferential tariffs for sale of wind energy to distribution utilities are set by SERCs and are 'single part' in nature. Tariff estimation is based on normative assumptions with respect to project cost, PLF and so on, with validity over the control period of longer duration ranging from 5 to 10 years. These tariffs also vary from Rs. 3.4/unit to Rs. 4.2/unit across the states due to differing assumptions. In case of adoption of such tariffs, wind energy projects can avail of accelerated depreciation benefit.

Generic Tariff Regulations by CERC: Announced by the CERC in September 2009, were followed by tariff orders by CERC issued in April 2010, as applicable for projects to be commissioned during FY 2010-11 and in November 2010 for FY 2011-12. The key features of tariff regulations are: a) The tariff estimation is based on wind power density (WPD) in the location in accordance with the assessment study of C-WET and normative capital and operating cost parameters; with options open for project-specific tariff for new RE technologies b) single part levelled tariffs that are uniform across the tariff period, c) Fairly remunerative 21% "pre-tax return on equity" over the useful life of 25 years and d) The tax benefit of accelerated depreciation (AD), if accessed by the developer or owner of a wind energy project, would be considered for tariff estimation (so that the tariff in such cases is net of AD benefit) so as to keep the overall pre-tax return on equity from the wind energy assets at an average of 21%. As of now, SERC in Maharashtra (which is a state with high wind energy potential) has issued such generic tariff principles in line with the regulations of the CERC. However, the same is yet to be operationalised.

Growth in capacity addition expected at 15% going forward; IPP segment to remain a key driver



Fresh, wind-based capacity installations in domestic market stood at 2349 MW in FY 2011, which was significantly higher than that witnessed in any other previous year. The increase could be attributed to higher demand from the IPP segment, which in turn was driven by improving regulatory clarity in the sector with the introduction of renewable portfolio obligation (RPO) and renewable energy certificate (REC) regulations. The share of the IPP segment in the overall installations remained muted in the past but improved to about 20% in FY 2011. ICRA expects the share to increase to about 40~50% over the period of next three year period. This is also because accelerated depreciation (AD) benefit, which is the key growth driver for financial (retail/corporate) investors, is likely to go away with the proposed introduction of Direct Tax Code by the Government of India. The IPPs have announced large-sized projects, with the trend towards higher average size per project (ranging above 50 MW) at a single location.

Box 2 : Investment Plans by IPP segment in Wind Energy Sector	
Name of IPP	Announced Plans
Mytrah Energy Ltd	Capacity addition plans of 5000 MW by FY 2017
CLP Power India Ltd	Operational capacity of 362 MW as on March 2011; investment plans of about 300 MW every year
Orient Green Power Ltd	Operational capacity of 180 MW as on June 2011; proposed capacity addition of 180 MW during FY 2012 and about 300 MW during FY 2013
Techno Electric & Engineering Co. Ltd	Operational capacity of 95 MW as on March 2011; expected capacity addition of 200 MW every year
Re New Power Ltd	Expected capacity addition of 200 MW every year
ILFS Renewable Energy Ltd	Proposed capacity addition of about 800 MW over the next 2-3 year period
Green Infra Wind Energy Ltd	Operational capacity of 165 MW as on March 2011; expected capacity addition of 200 MW every year

Source : ICRA Research

Box 2 herewith provides further information on the capacity addition plans by select IPPs. In addition, private IPPs in the conventional energy segment such as Reliance Power Ltd, TATA Power Ltd and KSK Energy Ventures Ltd invested in large projects focussed on renewable energy. ICRA expects wind capacity addition in FY 2012 to remain at about 2800 MW (against 2350 MW in FY 2011) and further grow at the annual growth rate of about 15%. This is expected to lead to total wind energy capacity of 52,000 MW by FY 2020. However, it would still fall short by around 38,000 MW vis-à-vis the required level if estimated in line with RPO recommendation of 15% by 2020 the National Action Plan for Climate Change (NAPCC), based on ICRA’s estimates (assuming for share of wind as a source to remain at 70% of overall RE capacity). Presently, the actual generation based on the installed renewable energy capacity for FY 2011 stood at about 3% of overall energy demand on an all-India basis, as compared to the recommended RPO level of 6%.

RE sources become more cost-competitive, given the spiralling prices of conventional energy sources

	Rs./Unit
Cost of Generation - Imported Coal	4.1
Cost of Generation - Gas (60%) & R-LNG (40%)	4.4
Cost of Generation - Domestic Coal (50%) & Imported Coal (50%)	3.8
Wind (CERC based ; @ 23% PLF) : Maharashtra	4.7
Wind tariff - Tamil Nadu	3.4
Wind tariff - Andhra Pradesh	3.5
Wind tariff - Gujarat	3.6
Wind tariff - Karnataka	3.7
Wind tariff - Rajasthan	4.2

Source : ICRA Estimates

With a sharp increase in prices of fossil fuels (i.e. coal and R-LNG) internationally and domestic fuel shortages expected to continue at least over the medium term leading to reliance on imported coal & R-LNG for the power sector, there has been an upward pressure on the overall cost of generation of power using fossil fuels. As a result, preferential tariffs offered to wind power plants in several states such as Tamil Nadu, Gujarat and Karnataka are competitive with the tariffs of new conventional power plants.

Commencement of REC trading & long-term certainty for floor/cap pricing of REC; key positives

Trading of RECs (Non-solar) commenced in March 2011 on the Power Exchange of India Ltd as well as the Indian Energy Exchange Limited. Both the traded volumes/price of RECs (combined for both the power exchanges) have improved significantly to 105,000 (@ Rs. 2.9/Unit) in November 2011 from 150 (@ Rs. 1.5/Unit) in March 2011, which further signify a growing demand to meet RPO requirements from the obligated entities and the quarterly compliance requirements as stated in RPO regulations by SERCs in some states.

Further, long-term certainty over the pricing range (floor/cap) for REC as per the order issued in August 2011 by CERC is a positive development. The floor price remains unchanged and the same along-with average power purchase cost (APPC) is likely to ensure the economic viability of wind assets in key states with high wind potential under the normative assumptions of the CERC. However, REC market is still evolving with the overall

CERC Order Dated	June 1, 2010	August 23, 2011
Validity of Control Period	till March 31, 2012	April 1, 2012 - March 31, 2017
Cap (Rs./Unit)	3.9	3.3
Floor (Rs./Unit)	1.5	1.5

Source : CERC Orders

REC traded volumes corresponding to about 1% of the overall RE requirements in the country. ICRA hence believes the significant demand potential for RECs to continue in the long term, given the RPO requirements of obligated entities across

states (particularly from those that do not have wind/other renewable energy potential and open access /captive consumers. Even with a conservative assumption of RE requirement at 6% of energy demand (on an all-India basis) by FY 2017, and the preference for RECs for new wind-based capacities (assuming about 50% of such capacities adopt the REC route), REC supply (from wind energy alone) by FY 2017 is expected to increase upto ~15 Million (i.e. estimated market size of Rs. 3600 Cr., assuming average REC price of 2.4 Rs/Unit).

Increasing preference for the REC route as against the preferential tariff route by new wind projects/IPPs

State	APPC for FY 2011-12 (CERC's Estimates)	Preferential Tariff Route	Renewable Energy Certificate (REC) Route	
		SERC Preferential Tariff + GBI	APPC + Mean REC + GBI	Short Term Tariff + Mean REC
Tamil Nadu	3.38	3.9	6.3	5.9
Andhra Pradesh	2.5	4.0	5.4	5.9
Karnataka	2.66	4.2	5.6	5.9
Gujarat	2.98	4.1	5.9	5.9
Maharashtra	2.62	5.1*	5.5	5.9
Rajasthan	2.60	4.7	5.5	5.9
Madhya Pradesh	2.09	4.9	5.0	5.9

Source : CERC Orders; ICRA Estimates; * Interim Tariff by SERC ; Note : Mean REC at Rs 2.4/Unit (i.e. average of floor & cap) ; Figures in Rs./Unit

In the current regulatory framework, wind energy participants operating in the Indian market have two options for tariff determination 1) long-term PPA at SERC-determined preferential tariffs with discoms and 2) the REC route. In the REC route, there are two options available for selling electricity component 1) at APPC to the discoms (in the location where the project is located) or 2) to any third-party at mutually negotiated

tariff or power exchange. ICRA expects an increasing preference by the new projects/IPP segment for the REC route, given that the overall realisation levels through the REC route are likely to remain higher than in the case of preferential tariffs as determined by SERCs in most of the states. The overall capacity registered for REC by the National Load Dispatch Centre (NLDC²) stood at 1643 MW³ as on 30 November 2011.

APPC (Maharashtra Discom) : 1st Year	Rs./Unit	2.62	
Mean REC (average of floor & cap)	Rs./Unit	2.4	
Short Term (ST) Tariff : 1st Year	Rs./Unit	3.5	
APPC and Short Term Tariff are assumed to increase by 5% (YoY) till 5th year and thereafter, are kept constant			
GBI	Rs./Unit	0.5	
Project IRR (Post-Tax)			
PLF	APPC + Mean REC	APPC + Mean REC +GBI	ST Tariff+ Mean REC
21%	12.0%	13.2%	15.0%
23%	13.6%	14.9%	16.7%
25%	15.0%	16.5%	18.4%
27%	16.5%	18.0%	20.0%
<i>Source : ICRA Estimates</i>			

In the REC route, given that an upward pressure on APPC of utilities is likely to continue due to increasing coal prices & dependence on short term traded power, ICRA expects the new wind projects⁴ to prefer to sell electricity at APPC (in which case, GBI benefit⁵ can also be availed), which offers more certainty of tariffs. This is

also due to open-access and banking facility constraints and volatility in merchant tariffs, although the merchant option under the REC route is the most remunerative option available.

Key Challenges for Wind Energy Sector:

Increased concerns over counter-party credit risks pertaining to state discoms

In ICRA's view, the counter-party credit risks of state utilities in most of the states having wind energy potential have increased significantly as evident in case of states such as in Tamil Nadu. Among all the states with high wind energy potential, Tamil Nadu-based IPPs are the worst affected, given the significant deterioration in the financial position of state utility⁶, which in turn caused delays in payments of wind energy participants (as for other power producers and traders as well) for more than 10-12 month period. This in turn have had an adverse impact on the financials of most of the wind asset owners in the state which would result in restructuring of loans availed by such wind asset owners as well as re-negotiation of PPA terms, if the delays by the utility in Tamil Nadu continue further in the near term. Despite the event of default of procurers, third party sale through open access was not made available for wind mills in Tamil Nadu largely due to constraints in grid evacuation availability, thus resulting in stranded capacities. While Tamil Nadu maintains a dominant position in the domestic wind energy sector with about 43% of the country's wind-based installed capacity, ICRA expects the future growth in wind capacity installations to be severely hampered in the state unless the financial position of the distribution utility of Tamil Nadu shows a significant improvement.

All the seven states (except for Gujarat) with wind energy potential continued to record cash losses since FY 2008, with cumulative cash losses of Rs. 20, 653 Cr⁷ in FY 2010 and the same has deteriorated further in FY 2011. This could be attributed to a mix of factors such as a) shortfalls in meeting distribution loss level targets as set by SERCs, which result in disallowance of power purchase cost (which forms about 80% of the cost of supply of power for any distribution utility) b) higher operating overheads than allowed c) inadequacy of tariff subsidy booked c) absence or inadequacy of tariff revision by SERCs and d) under-recovery of fuel and power purchase cost adjustment (FPPCA). While ICRA takes note of Appellate Tribunal's suggestion of suo-moto tariff

² NLDC is Central Agency (as appointed by CERC) which issues REC as per the operating procedures

³ Of which wind energy constitutes a significant share i.e. 45% of renewable energy sources, followed by bio-fuel co-generation and biomass-based energy sources. The registration of wind-based capacities is concentrated in the three states of Maharashtra, Tamil Nadu and Gujarat, which are among the seven, wind-energy rich states.

⁴ For the existing projects who have long-term PPAs at preferential tariffs and may aim to switch to the REC route, the CERC has kept the provision of a three-year term after termination for being eligible under the REC frame work (unless it is with mutual consent) with the intention that it would act as a deterrent to the existing RE Generators for such early termination of PPA, also given that the major objective of REC mechanism is to encourage new capacity addition in the RE segment.

⁵ In case of GBI v/s AD, if a wind project were to adopt AD instead of GBI, project IRR is still expected to remain higher by 1.5~2% as per our estimates, as highlighted in ICRA's note dated September 2010. While GBI benefit is designed to promote the investments by IPP segment as AD benefit is not relevant due to off-setting nature of tax holiday and absence of taxable profits, adequacy of GBI benefit (in lieu of AD benefit) remains crucial, going forward.

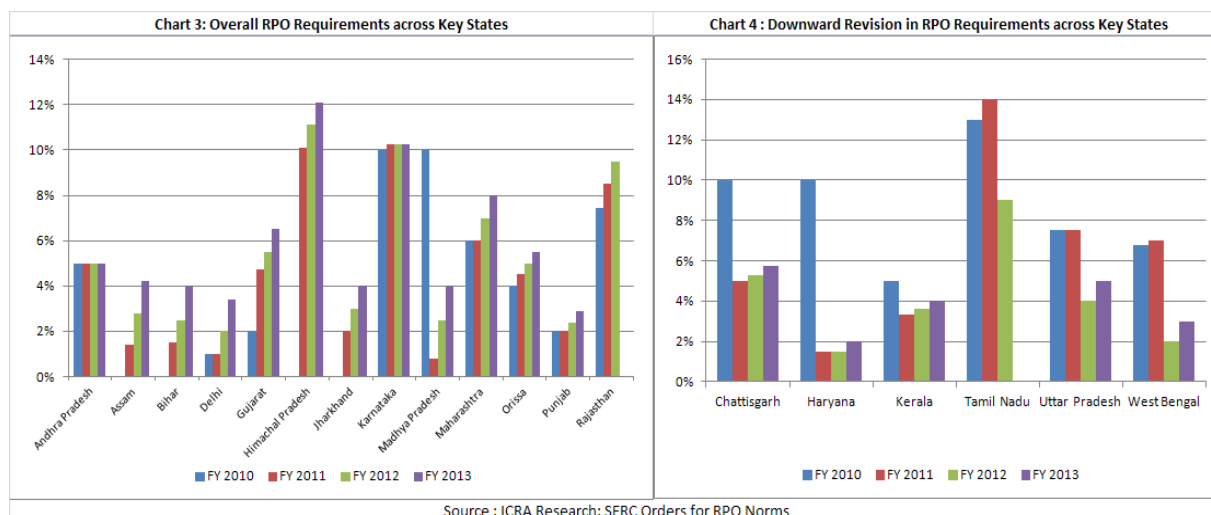
⁶ Tamil Nadu State Electricity Board (TNEB)/ Tamil Nadu Generation & Distribution Company (TANGEDCO)

⁷ Source : Report by Power Finance Corporation on the performance of State Utilities till FY 2009-10; Seven States with wind energy potential are Andhra Pradesh, Gujarat, Maharashtra, Karnataka, Madhya Pradesh, Rajasthan and Tamil Nadu.

hikes by SERCs and also a slew of tariff hikes obtained/sought by state utilities in few states in last 8-10 month period which will help to reduce their losses to some extent, adequate & timely tariff revisions along with the serious efforts towards reduction in the distribution loss levels remains extremely important for improvement in the commercial viability of the distribution utilities in many states.

Target RPO levels vary across states; not in line with the recommendations of the NAPCC; RPO compliance and penalty framework remain extremely crucial

As illustrated in Chart 6, target RPO levels vary widely from 1% to 11%, as set by SERCs across states for FY 2012, and are not in line with the recommended level of 7% suggested by the National Action Plan for Climate Change (NAPCC), 2008⁸. In fact, it is observed that SERCs in a few states such as Chhattisgarh, Haryana, Kerala, Tamil Nadu, Uttar Pradesh and West Bengal (as shown in Chart 7) have revised their target RPO levels significantly downwards (varying between 27% and 85%) for FY 2012 from the earlier levels set in FY 2010, given that the earlier target levels were quite aggressive in some of these states. The SERC revised the RPO requirements of the state of Tamil Nadu (despite being rich in wind energy) to 9% in FY 2012 from 14% in FY 2011. The regulations of SERC were also amended, bringing more obligated entities (that is, open access customers and captive power plants) instead of only distribution licensees.



Further, trajectory of RPO levels set by SERCs varies across the states ranging from one to five year period. Thus, significant deviations in RPO norms across states along with risks of any downward revisions in RPO levels by SERCs remain the key areas of concern for the sector. In addition, RPO compliance by the obligated entities and strict enforcement mechanism for ensuring the same by SERCs remain crucial for effective implementation of the REC framework, given that there has been no such instances of imposing any penalty/RPO regulatory charges⁹ on the distribution licensees and other obligated entities for not meeting target RPO levels. The Maharashtra State Electricity Regulatory Commission (MERC)¹⁰ has relaxed the provisions of RPO requirement for FY 2011 for all the distribution licensees in the state of Maharashtra vide order dated October 2010 on the grounds of lack of sufficient availability of RE power mainly for distribution licensees other than Maharashtra State Electricity Distribution Company Ltd (MSEDCL) and absence of an REC market. This is also in view of the fact that discoms in only a few states such as Gujarat (2.5%, actual), Tamil Nadu (13.8%, actual) and Karnataka (11 %, actual) have been able to meet their respective RPO targets for FY 2009-10. Despite RPO regulations issued by SERCs in most of the states stating the requirement of quarterly compliance monitoring by the State Energy Development Agencies (as appointed by SERCs) and disclosure of the same on their websites, it is yet to

⁸The NAPCC, released in June 2008 by the GoI, suggests a roadmap for increasing the share of renewable energy in the total generation capacity of the country. It has set the minimum renewable energy procurement target at 5% of the total procurement in FY 2009-10, with a 1% year-on-year (y-o-y) increase for the next 10 years.

⁹As stated in RPO Regulations by MERC: “ If the Obligated Entity fails to comply with the RPO target as provided during any year and fails to purchase the required quantum of RECs, the State Commission may direct the Obligated Entity to deposit into a separate fund, to be created and maintained by such Obligated Entity, such amount as the Commission may determine on the basis of the shortfall in units of RPO, RPO Regulatory Charges and the Forbearance Price decided by the Central Commission; separately in respect of solar and non-solar RPO: Provided that RPO Regulatory Charges shall be equivalent to the highest applicable preferential tariff during the year for solar or non-solar RE generating sources, as the case may be, or any other rate as may be stipulated by the State Commission; provided further that the fund so created shall be utilised, as may be directed by the State Commission “

¹⁰ Provision of ‘Power to Relax’ in RPO Regulations by MERC: The commission may by general or special order, for reasons to be recorded in writing, and after giving an opportunity of hearing to the parties likely to be affected, may relax or waive any of the provisions of these Regulations on its own motion or on an application made before it by an interested person

be followed in many of the states. In addition, there are no incentives in the existing framework, especially for utilities in wind-energy rich states, to adopt RPOs higher than the levels suggested by the NAPCC.

Inconsistency in tariff norms across the states; Operationalisation of wind-zone based tariffs, as put forward by the CERC, is yet to be implemented

While the wind-zone based generic tariff regulations issued in September 2009 by CERC provide a guiding benchmark for SERCs to follow for their respective tariff regulations, SERCs in only a few states (that is, Maharashtra, Punjab and Haryana) have so far issued regulations in line with CERC norms. In Maharashtra, which is the first state to adopt such wind-zone specific tariffs, the operationalisation of such a tariff mechanism is still pending. This was because of delays in the announcement of procedures for classification of wind projects under appropriate wind speed zone by the Maharashtra Energy Development Agency (MEDA¹¹, State Agency as appointed by the MERC). Meanwhile, the MERC has approved the interim tariff at Rs. 4.67/Unit (that is, specific to Wind Zone II with the option available for over/under recovery, depending upon final classification of zone) for the projects to be commissioned in FY 2011-12. The classification procedures for wind zones have now been put in place by MEDA in Maharashtra in September 2011. However, the implementation of the same could face further delays because of a) lack of clarity over the wind power density map prepared by C-WET (which is based on wind resource assessment at 50 M height) and b) the complex and time-consuming process associated with the estimation of project-specific WPD¹². Further, MNRE vide its circular¹³ dated 1 August 2011 removed the minimum requirement of WPD of 200 Watt/m² at 50 m hub height for wind energy project development, given the suitability of such sites to harness wind potential using technologically efficient wind turbines. However, the CERC is yet to notify tariff norms for wind zones with WPD lower than 200 W/M². Therefore, uncertainty over the implementation of WPD-based tariff framework would continue.

SERCs in states that have not followed the norms of CERC, especially those with a high wind energy potential, continue with preferential tariff regulations whereby tariffs are single part & based on normative assumptions with respect to project cost, PLF and so on, with validity over the control period of longer duration ranging from 5 to 10 years¹⁴. The prevailing preferential tariffs across the states with high wind energy potential (except for Maharashtra) do not incorporate the impact of inflation/indexation on the cost structure during the control period for the new projects to be commissioned. In ICRA's view, the annual revision of such tariffs remains very crucial. Also, the AD benefit, if availed by wind projects, is in addition to the normative returns assumed in case of preferential tariffs set by SERCs, which is in contrast to the norms of the CERC. ICRA thus notes that the overall consistency in tariff norms across the states (as they vary widely and not being in line with guiding principles of CERC's norms) is required for sustained investments in the sector.

Inadequacies in grid evacuation network and execution risks

As we had commented in our last note (dated 20 September 2011), the transmission network building measures by the wind-energy rich states remains extremely crucial for the sustained development of the sector. Given the growing capacity addition expected in the wind energy sector, it remains important for the utilities to take a proactive approach in strengthening the intra-state transmission network beyond the inter-connection point. However, the weakening of the financial position of state discoms, essentially due to inadequacy of tariffs, as observed across most of the states with high wind energy potential, besides lack of serious approach and delays in execution of planned investments continue to remain key areas of concern. Given that wind energy is concentrated in seven select states and the nature of renewable power is in-firm and variable, the issues of grid stability and responsibility and the responsibility of intra-state transmission infrastructure development remain with such wind-energy rich states. Hence, some form of compensation (which could be by way of grant from the proceeds raised by the National Clean Energy Fund, as suggested by many industry participants) to the utilities in such states could incentivise them to become more proactive in implementing such projects and also ensure higher RPO norms than suggested by the NAPCC. The windy season

11 MEDA has recently finalised the procedures for classification of wind zone in September 2011.

12 For WTG installed in regions with complex terrains and if the altitude difference is higher/below than 60m with respect to mean sea level of the reference mast for more than 50% of the turbines installed

13 MNRE Circular dated 01.08.2011: "This Ministry vide its circular dated 27.06.2002 had issued a guideline to consider Wind Power Density (WPD) of 200 watt/m² at 50 m. hub height as the minimum requirement for suitability of wind power project development. After detailed discussions with Wind Power experts and policy makers, it has been observed that this provision did not hold relevance any longer and with change in wind turbine technology and better efficiency, even the lower wind regimes have become exploitable. It has been decided that hereafter, no restriction will exist for Wind Power Density criteria as far the development of wind power project is concerned."

14 The state of Tamil Nadu last issued tariff norms for procurement of wind energy in March 2009. The norms were due for revision in March 2011 but the NERC extended their validity until December 2011.

is from July to September of every year during which energy demand may be lower due to availability of hydel power in the monsoon season. Hence, any surplus power from wind during such time zone can be sold to other deficit zones in case adequate transmission capacity is made available.

Restrictions in intra-state open access & banking facility

Express Feeder (Open Access) at 33 kV		HT Industrial	HT Commercial
System Loss (Wheeling + Transmission)		10.56%	10.56%
Wheeling Charges	Rs./Unit	0.04	0.04
CSS (25% of normal charges)	Rs./Unit	0.15	0.84
Base Rate (Assumption)	Rs./Unit	3.5	3.5
Effective Rate for HT Consumer	Rs./Unit	4.11	4.80
MSEDCL Tariff / Billing Rate	Rs./Unit	5.43	8.59
Savings		24%	44%

Source : ICRA Estimates; Order by MERC on Cross-Subsidy Surcharge for MSEDCL dated 11 September 2011

In the state of Maharashtra, if a wind IPP were to sell electricity component of wind power generated to high tension (HT) consumers through mutually negotiated tariffs, the economics of availing wind power remains favourable as against the prevailing grid tariff, under the assumptions of the applicable open access charges and that of base electricity tariff at Rs. 3.5/unit. While such wind assets selling power through open access to third parties are eligible for REC, disallowance of banking

provision by MSEDCL, as per recent circular¹⁵ dated September 2011, remains negative for such wind-based projects. On the other hand, group captives based on wind power would be in a more favourable position because of no applicability of cross-subsidy surcharge. However, their eligibility for REC registration would remain subject to banking facility being restricted as per the norms of the CERC¹⁶. Further, the operationalisation of the intra-state open access across many states continues to be limited and also remains restricted on the grounds of technical constraints as cited by distribution utilities¹⁷. There have also been cases of conflict of interests, where consent for open access has not been granted by the State Load Dispatch Centre (SLDC), which is operated by the State Transmission Utilities.

15 If energy is supplied in excess of consumption for every 15 minute time-block, such energy will lapse (will not be allowed to be banked) and if energy is consumed in excess of supply for every 15 minute time-block, the applicable tariff will be that of a Temporary Power connection. Tariff applicable for temporary connection is as high as Rs. 10/Unit. The facility of banking will be applicable in case of self use only; if permissible as per GOM policy/ MERC Order/Regulations.

16 As stated in CERC regulations for REC (First Amendment), CPP will be in-eligible for REC if banking facility as a benefit is availed; CERC has clarified the expression 'banking' in REC regulations to include only such banking facility as a benefit, whereby the generator gets the benefit of utilising the banked energy at any time (including peak hours) even when it has injected into grid during off-peak hours. The banking facility wherein the CPP is entitled to draw power from the utility based on and corresponding to the time period (peak or off-peak period) of injection of power by such CPP, shall not be considered as concessional / promotional benefit for the purpose of this regulation.

17 Excerpt from MERC Order dated Sept 11, 2011 for approval of Cross-subsidy Surcharge: "The Commission in the recent past has been receiving various petitions/grievance from the aggrieved renewable generators of not getting co-operation of MSEDCL for Open Access related matters. It has been observed that MSEDCL has been delaying grant of Open Access to many eligible generators and delaying in providing Credit Notes for the third party sale units though the energy is being injected to the MSEDCL network. Energy is generated and fed into the grid; it is sold and appropriate revenue is realized by MSEDCL. However, Credit Notes for the third party sale are inordinately withheld/delayed by MSEDCL. These actions need to be deprecated. **MSEDCL is directed to provide hassle free non-discriminatory Open Access to the RE generators.**"

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