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From the Editor's Desk...

Beginning of the end of Hydrocarbons!

For the first time in the history of mankind, the carbon dioxide concentrations in Earth's atmosphere exceeded the threshold limit of 400 parts per million in March 2015, according to a World Meteorological Organization (WMO) statement issued recently. This yet again establishes the fact that the GHG concentrations are caused by human activities resulting in Global Warming.

All this, a result of heavy industrialization over the last 300 odd years in which modern human society has made huge transition from a predominantly agrarian to an industrial society. The journey to machine age has been most miraculous and makes for an amazing story. Energy has been a key element of this story. Beginning with the first coal based steam engine developed in the 17th century, energy has been the prime mover of this evolution. Our civilization was fortunate to stumble upon huge reserves of hydro-carbons across the world, that has fuelled modern civilization in an unprecedented way. One could say that our civilization is built on a hydrocarbon platform, its constituents being coal, oil and gas. Be it transport, industrial, commercial, non-commercial, domestic sectors – As of today, our machines need hydrocarbons to keep the show going.

Though today we still have discovered and undiscovered reserves of hydrocarbons in huge quantities, we stand on crossroads. On the one hand, we have the relentless and massive extraction of these minerals and substances (fossil fuels), that have been formed through millions of years of natural process in Earth's surface, in just about 300 years. On the other hand, we have the Green House Gas (GHG) emissions from burning of Hydrocarbons in Transport, Industry and Power Generation that has created a situation where we are already hitting the roof as far as these emissions are concerned. GHG emissions are causing global warming and if no preventive measures are taken over next 10 years or so, average global temperatures could rise upto 4 deg C in the long term. This implies large-scale climate change resulting in changes in atmospheric and oceanic systems such as monsoons; increased frequency and severity of cyclones, storms, droughts and floods; sea level rise and inundation and loss of millions of square kilometers around the world; melting of glaciers in polar regions resulting in a change in pH of oceans with associated impact on oceanic circulation, currents and marine life and the melting of glaciers in Himalayas with associated impact on the rivers that emanate from Himalayas. Many experts also link Global Warming to earth quakes because the hydrological pressure changes on the surface including oceans as well as possible thermal expansion of Earth's crust. The frequency of these natural calamities – cyclones, tsunamis and earth quakes seems to have actually gone up. The recent big ones are Fukushima and Nepal.

In India, we have seen dramatic changes happening in Himalayan regions. Last year entire valley of Kashmir was converted to a lake, something that has never happened in the known and recorded history. Similarly there have been flash floods in Kedarnath, year before that. According to an estimate,

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(For Internal Circulation Only)

livelihoods of nearly 4.5 billion people living in different countries are linked to rivers that emanate from Himalayan Glaciers. Though many people are sceptical about global warming and its impact, it stands to reason, that if we continue to intervene in natural systems in an unnatural way consistently, the outcomes are going to be unnatural and disastrous.

It is now an established scientific fact that anthropogenic activities are at the root of global warming and even if GHG emissions were neutralized completely, the inertia of the climatic system will result in average global temperatures rising well into the next century. In its latest report, IPCC1 commenting on future risks emanating from Climate Change has said:

Continued emission of greenhouse gases will cause further warming and long-lasting changes in all components of the climate system, increasing the likelihood of severe, pervasive and irreversible impacts for people and ecosystems. Limiting climate change would require substantial and sustained reductions in greenhouse gas emissions which, together with adaptation, can limit climate change risks..

In 2004 burning of fossil fuels in Industry and in general for electricity generation accounted for nearly 45 % of the total emissions2. Moreover, according to an assessment, the electricity requirements are expected to grow by 43% in next 20 years. Electricity generation has grown in most parts of the world, however, maximum growth has taken place in developing and even under developed countries.

In this situation, when the economic development and well being of people across the world depends on access to electricity and at the same time conventional options of energy have become unviable, it is important to make a quick transition towards renewable energy that do not emit these gasses. It seems in India, the government is well on track to significantly enhance renewable energy and in particular wind and solar energy use. However, Global Warming being a global phenomena, requires similar efforts by other countries. We should let the hydrocarbons stay below the ground and instead harness wind energy! Let this be the beginning of the end of Hydrocarbons.

(Endnotes)

1 IPCC AR5 Report http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_LONGERREPORT.pdf

2 http://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch1s1-3.html, accessed on 15 July 2014

From the Chairman's Desk

Dear Friends

In the month of April there were a lot of activities:

1. **Meeting with Energy Secretary, Government of Tamil Nadu on April 04, 2015:** A few of the National Council Members accompanied me to the meeting convened by Energy Secretary(TN) & Tangedco officials. We impressed on him the need to expedite the setting up of the proposed forecasting project expeditiously. Primarily we wanted the TANGEDCO to give their permission for the forecasting project by permitting NIWE. IWPA to collect data required by NIWE for the purpose of forecasting of Wind Energy for the entire State of Tamilnadu. He assured us all the support and has manifested in the start of the project.

2. **Meeting of our NRC Members at New Delhi on April 06, 2015:** A meeting was convened at New Delhi where NRC members were present. The forecasting project by NIWE (which is now underway) was one of the items discussed at the meeting since there are a few of the NRC members who have a substantial stake in Tamilnadu. The members assured their total support for the project. Association thanks the NRC members have sent their contribution. Trial forecasts are planned for 13.5.2015.

3. **Members Meet at the Indian Chamber of Commerce Hall at Coimbatore on April 09, 2015:** More than 100 members from all over India met at Coimbatore wherein issues regarding the forecasting project and the O&M issue with one of the manufacturers were discussed. Members reiterated their support for the forecasting project undertaken by NIWE and financed by the voluntary contributions of members. Regarding the O&M issue faced by a few members it was decided to have another meeting with the owners themselves which is likely to take place in May second week at Coimbatore.

4. **Visit of Director, Advisory Services, Ernst & Young and official from GiZ to our National Office on April 13, 2015GiZ :** official Dr. Indradip Mitra of GiZ (Indo-German Energy Program) accompanied Shri Shuvendu Bose, Director, Ernst & Young visited our National office at Chennai on April 13, 2015. They had discussions with the Secretary General and our members on REMC and personally invited IWPA officials to the two-day Workshop on "Enhanced RE Grid Integration with emphasis on Forecasting, REMC and Balancing capacity" to be held at New Delhi. IWPA Chief Technical Advisor and myself attended the very enlightening workshop at New Delhi.

5. **Workshop at New Delhi on April 22 & 23, 2015:** IWPA Chief Technical Advisor and myself attended the workshop at New Delhi. The workshop was the first in the series of workshops planned to be undertaken by the Indo-German Energy Programme – Green Energy Corridors (IGEN – GEC) Technical Cooperation Project.

This workshop was facilitated by MNRE and GiZ

It had technical experts from Germany who explained and shared the German experience in integrating Wind Energy into the grid. It was interesting to learn how they have systems and procedures in place which enable them to absorb the entire wind energy into their grid. There was also a panel discussion wherein representatives from utility companies from Gujarat, Maharashtra, Karnataka and Tamil Nadu had participated. It was heartening to hear the utility representative from Gujarat who explained that they are successfully accommodating the entire generation of wind energy and also other sources of renewable energy. The members on the panel unanimously opined that to integrate more of renewable energy into the grid, the bandwidth has to be relaxed. All participants applauded the " Project Forecasting" we propose to undertake in Tamil Nadu.

Other topics discussed included

- "Green Energy Corridors"
- "Methodology of Scientific Forecasting of Wind and Solar Generation";
- "Development of Forecasting Regulation in India"
- "Conceptual design of REMC with its components and cost"
- "Balancing methodology practiced in Germany"
- "Assessment and enhancement of the existing balancing capacity of the RE rich States"

6. **Breakfast Meeting with Jt. Secretary, MNRE at New Delhi on April 23, 2015:** National Council Members, Mr.R.Kannan, Mr.T.S. Jayachandran & Mr.K.R Nair,Vice President NRC, the Chief Technical Advisor & 3 officers from Tangedco had joined us in a breakfast meeting with the Joint Secretary, MNRE Ms. Varsha Joshi at Chennai. The main topic for discussion was after NIWE gives the Forecasting data who will take the responsibility of scheduling the power and how best it could be accomplished in full.

7. **Press Meet held at Coimbatore on April 27, 2015 announcing the Fourth Edition of the International Wind Conference & Exhibition WE20 by 2020:** A Press Meet was organized at Coimbatore for announcing the 4thInternational Conference. About 50 press persons attended. There was wide coverage given in the print and television media.

8. **Meeting of our Chairman with Chairman CERC at New Delhi on April, 2015**: Mr.Girish Pradhan,Chairman,CERC was kind enough to agree to inaugurate our 4th International Conference & Exhibition at Coimbatore on 21.6.2015.

9. **Some short comings in Maharashtra:** It appears that MSEDCL is not in favour of procurement of wind energy at MERC proclaimed rates. MSEDCL proposes to limit the purchase to RPO obligation quantum only and have not signed PPAs. PPAs have not been signed by MSEDCL for nearly 500 MW installations commissioned last year. This has led to uncertainty for developers to invest in wind energy. However, we hope that the proposed policy will rectify these anomalies and bring back investors' confidence.

10. **APTEL Order dated April 20, 2015:** APTEL had in order pronounced that the State Commissions are bound by their own regulations and must strictly act in implementing the RPO. It also stated that if the distribution companies are not able to tie up procurement of renewable energy to meet RPO target, it may plan to purchase RECs to meet its RPO target as per the provisions of the Regulations. A gist of the order is published in this Issue.

11. **4th International Wind Conference & Exhibition organized by IWPA and WWEA:-** Members are requested to register for their participation and attend the Exhibition cum Conference and make it a grand success. The Delegate Registration could be done on-line by visiting our web-site www.windpro.org. We also appeal to members to inform National Office of the prospects of getting sponsorship or putting up stalls in the Exhibition.

12. **IWPA Award for best performing wind farms for 2013-14 & 2014-15.** Members are hereby reminded once again to send in their nomination for the best performing wind farm awards given by IWPA during the 4th International Wind Conference & Exhibition on June 22, 2015 at Coimbatore.

13. **Membership Information Sheet (MIS):** We are yet to receive the MIS from majority of the members. Members are hereby requested to arrange to fill up the Members Data Sheet available at www.windpro.org and send to our National Office at your earliest convenience. (Page No: 19).

Prof. Dr. K Kasthurirangaian
Chairman

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Request for recommendation of Industry sponsored project to be undertaken by NIWE - Wind Energy Forecasting Project for Entire Tamil Nadu by NIWE

April 2, 2015

Shri Upendra Tripathy, IAS
Secretary, Ministry for New & Renewable Energy
New Delhi -110003

Respect Sir

We thank the Hon'ble Minister Shri Piyush Goyal for his visit to Chennai on March 07, 2015 and his persuasion to Tamil Nadu Electricity Board to evacuate wind energy in full. Thanks also to the follow-up visit to Chennai of the Joint Secretary, MNRE, Ms. Varsha Joshi who had several rounds of discussions and convince the TNEB officials. These visits coupled with the continuous interactions of the wind power producers with TANGEDCO, the CMD TNEB has now been pleased to give his consent to the proposal for NIWE to undertake the project of Forecasting wind generation for the whole of Tamil Nadu from all the 104 wind pooling sub stations on the lines of the Micro Pilot for one sub-station AYYANARUTHU near Tirunelveli sanctioned by MNRE.

Since the high wind season is round the corner, we, the representatives of the industry would like to sponsor the following installation of forecasting hardware at the sub-station level:

1. 100% of the cost of installation of the necessary metering arrangements with appropriate communicating modems at all the 104 wind sub-stations in Tamil Nadu.
2. 50% of the cost of forecasting (undertaken by NIWE estimated around Rs. 50 lakhs) for the first year including incidentals with a matching contribution from MNRE. The cost of forecasting for subsequent years could be met out of NCEF.

As wind season is likely to begin early May 2015 and time is of the essence. We will be grateful for your expeditious recommendation to NIWE to immediately undertake extend the scope of the installing forecasting for the entire State of Tamilnadu. This will not only avoid evacuation loss of around 3 billion units in a year but would also go a long way in enabling meeting of MNRE's projected target of 60,000 MW of wind installation by the year 2022.

Copy of the detailed project report is enclosed. Awaiting your favorable orders.

With best wishes and regards

For Indian Wind Power Association

Prof. Dr. K Kasthurirangaian
Chairman

Prof. Dr. K Kasthurirangaian
Chairman

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Way forward in Managing Wind Evacuation in 2015

April 3, 2015

Shri. Rajesh Lakhoni, IAS
Secretary – Energy Department, Government of Tamil Nadu, Chennai – 600 009

Dear Sir,

As the wind season is fast approaching, there is a need to absorb this natural energy and make use of it. In this regard, we request the following from your goodself,

1. Lifting of R & C measures during the windy season (June to October 2015)
2. Planning annual maintenance of Thermal power stations during the windy season
3. Reduce thermal generators to the technical minimum level and conserve coal **(Note ##)**
4. Interstate sale of excess energy to be initiated. A suitable senior officer under CE – NCES has to be designated to coordinate and manage sale of power
5. To facilitate forecasting by NIWE, orders to be given to NIWE to enable metering of pooling sub stations with ABT meters and communicating modems to be completed before start of the wind season in May 2015.Equipment installed will become property of TNEB but maintained by NIWE during period of forecasting.
6. Permission to gather data may please be accorded to NIWE for collection of past historic generation data from all pooling sub stations and the data regarding WEGs installed on various feeders like location, make and capacity.

Enclosed are:

7. Manikaran Power Report on a) Data Gathering b) Forecasting c) Interstate sale of Power
8. PRDC final report on Corridor availability a) in Tamil Nadu and b) Inter state sale
9. Nimble Wireless report on metering
10. To translate report in to actions in field, we request a Task Force consisting of Decision making Officers of TNEB, professionals like Manikaran and Nimble Wireless and IWPA for co-ordination be constituted and pressed in to action

We will be thankful for your earliest orders to enable the above.

Thanking you,

With best wishes and regards.

For: Indian Wind Power Association

Prof. Dr. K Kasthurirangaian
Chairman

Encl: As above

(Note ##) : We are informed that officials of thermal generating stations are provided incentives for monitoring high PLF's. In order to safe guard their interests, stepping down of the load of thermal generating during high wind season may be considered as deemed generation for the purpose of the said incentives.

Copy to: Director Generation, TANGEDCO, Chennai

Prof. Dr. K Kasthurirangaian
Chairman

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Enabling Full Evacuation of Wind Energy

April 06, 2015

Shri Piyush Goyal
Hon'ble Minister for Power, Coal & New and Renewable Energy
Government of India, New Delhi 110 0033

Respected Sir

IWPA (Indian Wind Power Association) is a 1,300 member strong Association of Investors, Generators and Consumers of wind energy who have put up 11,670 MW of wind energy installations in India.

We bring to your kind attention the following issues that need to be attended to; so that not only we can avoid the wastage of cheap, clean wind energy but also enable an atmosphere to motivate investors to choose to invest in RE and ensure the achievement of the targets set for RE by 2022 :

1. **Sanction of Industry sponsored project for forecasting of Wind Energy to be undertaken by NIWE:** Sir, as you are already aware, Tamil Nadu has been losing 3 billion units of clean energy annually due to non-evacuation of wind energy in the last couple of years. As a follow-up of your visit and your concern to avoid this evacuation loss, NIWE has been sanctioned one Micro Pilot project by MNRE to undertake the installation of forecasting mechanism in one sub-station only in Tamil Nadu. NIWE being a Government entity, TNEB has agreed to cooperate in this venture. IWPA has submitted a proposal to MNRE offering to sponsor 100% of the project cost to expand the scope of this Micro Pilot project to all the 104 Wind Sub Stations to cover Tamil Nadu (copy of proposal is enclosed). NIWE is agreeable to implement this project with cooperation from TNEB. We request you to exhort MNRE to give its approval expeditiously.

2. **Accelerate the process of installing REMC:** As per the 12th Plan PGCIL is supposed to be installing REMC in 2017. We request it to be preponed so as to complete the installation by 2015 which will help avoid evacuation losses in 2015-16.

3. **Waiving of charges for Inter-State Transmission of wind energy on the lines prevailing for Solar Energy:** The Honorable Minister had announced at the REINVEST Conference, that interstate transmission charges would be waived as prevailing for solar energy. We humbly request the Honorable Minister to arrange to pass the necessary orders.

4. **Amendment of Electricity Act to include the following:**

   a. **Banking:** Banking of wind energy is being permitted in Tamil Nadu. This scheme has facilitated the growth

of industries in having access to cheap power and thus they are able to compete internationally with Chinese who offer products cheap. Banking of seasonal wind energy if implemented throughout India will give Indian industries a competitive edge by way of access to cheap power and would give a fillip to the Make in India movement.

b. **Cross subsidy surcharges to be waived for RE:**

c. **Consumption of electricity generated from RE to be exempted from levy of tax:**

d. **Uniform RPO for all the States:** Implementing uniform RPO rate will help balance among all States. Such uniformity will encourage non-RE States to invest in RE rich States.

The Honorable Minister may kindly instruct MNRE and MoP to initiate necessary action to include the above points in the amendment to the Electricity Act.

Thanking you

Yours faithfully

For Indian Wind Power Association

Prof. Dr. K Kasthurirangaian

Chairman

Encl: as above

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Forecasting of wind energy for the whole state of Tamil Nadu from now on in 2015 – including NIWE installing communicative ABT meters in all thewind pooling stations with modems and server in Chennai to enable TN SLDC grid managers to view real-time wind generation on the monitor placed before him along with forecasting by NIWE as an industry sponsored project

April 9, 2015

Dr. S Gomathinayagam
National Institute of Wind Energy
Velachery – Tambaram Main Road, Pallikaranai, Chennai - 600 100

Dear Sir

From the discussions we had with you, MNRE and TANGEDCO we understand NIWE has trained its engineers in Spain and has the software capable of undertaking forecasting.

On behalf of all the wind generators in Tamil Nadu, IWPA is desirous of requesting you to undertake an industry sponsored project of doing the wind forecasting well before June 1, 2015 when winds are expected to give full generation.

Possibly this requires installing wind energy communicating ABT meters in all wind pooling substations (around 104/134) installing modems and server at Chennai with the ability to display on the computer monitor in front of the Tamil Nadu SLDC grid manager the real-time wind generation along with forecasting by NIWE.

We understand from MNRE and TANGEDCO that TANGEDCO is willing to permit NIWE to do their forecasting to enable scheduling of wind energy by TANGEDCO with a view to use wind energy better and sell surplus if any outside the state.

We request you to write immediately to TANGEDCO and obtain their written permission to undertake forecasting and installation of infrastructure to measure the real-time generation of wind energy.

IWPA intends to mobilise the required expenditure from wind power generators to meet the cost of the project. We are with you.

We look forward to your immediate action so that things fall in place well in time.

Awaiting your early feedback.

Thanking you

Yours faithfully

For Indian Wind Power Association

Prof. Dr. K Kasthurirangaian
Chairman

Copy for information to Ms. Varsha Joshi, IAS, JS, MNRE with a request to enable NIWE to get past generation data from TANGEDCO.

Prof. Dr. K Kasthurirangaian
Chairman

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Thank you for Agreeing to provide Historic Data for Wind Forecasting to NIWE.

April 13, 2015

Mr. Ramesh Kymal
Chairman & Managing Director, Gamesa Wind Turbines
Sholinganallur, Chennai - 600119

Dear Mr. Ramesh Kymal,

Please accept my grateful thanks for your spontaneous decision during CII National Council meet at Delhi on 6.4.2015 to make available historic data of wind generation from all your 10 (1) wind energy pooling stations to M/s NIWE (National Institute of Wind Energy) to enable them to train their software to be compatible for Tamil Nadu conditions. NIWE is willing to sign a non-disclosure MOU (memorandum of understanding) with your company.

As I was discussing with you, NIWE is agreeable to undertake wind forecasting for the whole state of Tamil Nadu as advised by MNRE and sponsoring by IWPA on behalf of all wind generators in Tamil Nadu.

Tangedco is being persuaded by MNRE, NIWE & IWPA to agree for the proposal. When they agree, NIWE would do the forecasting for 2015 season and install equipment for real time measurement of wind generation with communicative energy ABT meters in all wind energy pooling stations with server at Chennai to enable Tamil Nadu SLDC grid manager to view in his computer monitor a consolidated real time wind generation in the state along with forecasting by NIWE. This will provide the needed visibility to SLDC grid manager helping him to schedule wind energy and thus avoid evacuation losses.

We have provided TANGEDCO & TN government reports from PRDC that enough corridor capacity is available for transmission of wind energy inside Tamil Nadu and corridor outside for sale, if any, of surplus energy. Manikaran Power, the reputed power trader on power exchange has given a report to IWPA forwarded to TANGEDCO that remunerative sale of any surplus power during June to September is quite feasible.

We hope & wish that other 10(1) substation operators may please also help with historic data to NIWE to make this effort a success. All the machine manufacturers have to realise that all these efforts are in their direction of helping them to make better business in Tamil Nadu.

I request you to put in a word to them wherever & whenever you can. I enclose a email received from NIWE with a format on this subject and the need for meteo data also to NIWE. For any clarifications your people can directly contact NIWE.

Thank you once again for all your generosity and helpful attitude.

Thanking you,

With best wishes and regards.

For Indian Wind Power Association

Prof. Dr. K Kasthurirangaian
Chairman

Enclosure: Email dated 10th April 2015 from NIWE

Copy to: Dr. S. Gomathinayagam, DG, NIWE & Ms. Varsha Joshi, JS, MNRE

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PRESS RELEASE

April 18, 2015

WE20 by 2020
4th INTERNATIONAL WIND CONFERENCE & EXHIBITION

IWPA (Indian Wind Power Association) is a 1,300 investor member strong Association representing an installed capacity of more than 11,000 MW and is dedicated to the promotion and development of wind power in India. Since its inception, IWPA has worked consistently towards removing barriers to wind power development and creation of an enabling regulatory and policy environment for investments in this sector.

IWPA is a Pan India Association of stakeholders such as wind power generators, wind turbine manufacturers, component manufacturers like gear boxes, nacelle, tower, wind turbine blades, wind power conditioning systems, wind monitoring masts, logistic providers, consultants, wind forecasting companies, wind farm maintenance companies, generator rewinding companies, manufacturers of wind sensors and data loggers, wind turbine erection companies etc.

IWPA is organizing the 4th International Wind Conference and Exhibition (4th WE20 by 2020) at the CODISSIA Trade Fair Complex, Coimbatore from June 21st to 23rd, 2015. The Theme and Objective of this Conference and Exhibition will be to discuss and prepare the roadmap of what India should do to have 20% grid penetration by year 2020, to be in line with the 60GW target set by MNRE by 2022.

The Conference shall bring together all the stakeholders and aims to create a platform for discussing the issues that this sector has to grapple with and to agree on the actions that needs to be initiated. The deliberations would lead to actionable agenda and serve as a starting point for various initiatives to be undertaken to achieve the said Government of India targets. This Conference and Exhibition would also serve as the launching pad for discussing the relevance of a National Wind Energy Mission in an effort to provide a boost to the domestic industry – "MAKE IN INDIA" to make the cost of delivered wind generated electricity (LCOE - Levelised Cost of Energy) and its integration into the grid infrastructure more economical and commercially viable.

Besides, the conference would offer opportunities for wind industry stakeholders to display their products and services to potential investors and stakeholders from a wide section of the industry.

Wind power projects are spread over 7 States with an installed capacity of 22GW and has a potential in excess of 102GW at 80 m hub height. The virgin off-shore potential is yet to be realized. Renewable technologies are growing as global industries, and if India wants to be in the forefront, we need to compete on a global scale in the renewable power areas. For wind power to achieve its full potential, Governments need to act quickly to address various issues. India today stands among the top five countries of the world in terms of wind energy installed capacity. Wind power is going to play a major role in our energy future.

For on-line registration or stall booking please log on to www.windpro.org. Contact Nos. +91 44 45504281 / 45504036. +91-9840400024 / +91-8939399151; E-mail id: secretary.general@windpro.org ; iwpahq@windpro.org

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April 27, 2015

To

Owners / In-charge of 10(1) SubStation

Dear Sir

TANGEDCO has permitted NIWE (National Institute of Wind Energy) to forecast wind power for the entire state of Tamil Nadu. To enable forecast, live generation data has to be sent to NIWE/TANGEDCO for forecasting and scheduling of wind power.

IWPA has offered to sponsor the project of NIWE and Nimble Wireless, Chennai to carry out fixing of meters, modem, to collect data and pool the data in a dedicated server to be located at SLDC Chennai.

Hence IWPA requests that Nimble Wireless be permitted to access all 10 (1) substations for fixing ABT meter/modem (supplied by IWPA) in Group Control Breaker Panel to transmit the live generation data.

Shri A D Thirumoorthy, Chief Technical Advisor (Mobile No. 9965549894) will be coordinating on behalf of IWPA. Request that one person in each substation could be nominated as the contact person(Name, Mobile No, Email id) at your site for coordinating the forecasting project.

Thanks and regards

Yours faithfully

For: Indian Wind Power Association

Prof. Dr. K Kasthurirangaian
Chairman

Copy forwarded for information to:

Dr. S Gomathinayagam, Director General, NIWE
Shri Boopathy
CE (NCES)

Choice of Smart Investors – Evergreen Solar

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Customers are welcome to visit our site to witness the performance and quality of construction

Advantages:

- 25 Years Lifetime
- Avail REC Benefits
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- Low Maintenance Cost due to solid state construction
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- Single Axis Tracking contributes upto 25% increased generation
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Our Solar Modules are certified for:

- IEC 61215:2005 Ed. 2–Design Qualification & Type Approval.
- IEC 61730-1 & 2 Safety Class II
- IEC 61701: Salt Mist Corrosion Testing
- Mechanical Load & Heavy Snow Load @ 5400 Pascal.

Our Company is certified for:
ISO 9001:2008
ISO 14001:2004
OHSAS 18001:2007

MNRE Channel Partner

300KW Solar Rooftop Project Done On Asbestos Roof

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Prof. Dr. K Kasthurirangaian
Chairman

603 'C' Block, Pioneer Complex, 1075, Avinashi Road
Coimbatore - 641 108 INDIA
Phone : 91-422-6585908, 6586908
Fax : 91-422-2248408
E-mail : office@rsmautokast.com

Clarifications on NIWE's Draft Agreement for "Forecasting"

April 27, 2015

Dr. S Gomathinayagam
Director General, National Institute of Wind Energy
Pallikaranai, Chennai – 600100

Dear Sir

In the draft of your project proposal for forecasting we like to have clarifications and incorporation of the following:

Sustained good velocity South Westerly winds are expected by first of June 2015. The scope of the project should incorporate that NIWE will be all ready to forecast wind power for the whole State of Tamil Nadu by May 31, 2015.

TANGEDCO expects nowcast of real time wind generation data along with forecast for one hour, three hours, next day, three days and six days in advance which can be updated 8 / 16 times a day that is within NIWE's scope.

Earlier you had mentioned the cost of forecasting as Rs. 80,000 to 1,00,000 per wind substation per year and later; NIWE has come down by 30%. So the final rates should be Rs. 54,000 to Rs.70,000per Sub-station per year. Can we take the lower figure? Please confirm.

Terms of payment: 50% in advance and balance 50% on completion.

Kindly consult us before NIWE finalizes the format in which the forecasting data is submitted to TANGEDCO.

Along with the Pilot Project at Ayyanaruthu, we suggest that all the 10(1) Sub-stations be also taken along with in the first phase to be completed by May 15, 2015 for which necessary data will be supplied by us. Thereafter, all the 134 Sub-stations be taken in the final phase by May 31, 2015.

We also take this opportunity to bring to your kind notice that according to the latest CERC draft guidelines, the expectations stands at +/- 12%

Thanks and regards

Yours faithfully

For Indian Wind Power Association

Prof. Dr. K Kasthurirangaian
Chairman

cc: IWPA Tamil Nadu Taskforce

INDIAN WIND POWER ASSOCIATION

Member Information Sheet

1. Name of the Company :

2. Address for Correspondence :

3. Office Phone No. :

4. Person nominated as representative with designation (Should be an employee of the Company)

   Name :

   Designation :

   Phone No. (Office) : Mobile :

   Email :

5. Category of Members : ☐ Generating / Manufacturing (Machine/ Ancillaries)
   (Please Tick the appropriate box)
   ☐ Service Providers (Including consultants)
   ☐ Educational & Research Institutions & other promotional bodies /
   ☐ Financial Institutions / Honorary
   ☐ Small Wind (Manufacturers/owners)

6. Brief Description about your Wind Electric Generator: (For Generating Members)

Sl. No.	Location	(A) No. of Wind Mills	(B) Rated Capacity in MW	Total {(A)x(B)} in MW	Make	Connected Substation	Located in STATE
1.							
2.							
3.							
	Total						

7. Whether units generated are: ☐ Sale to Board ☐ Adjusted in Factory

Indian Wind Power Association
Door No. E, 6th Floor, Tower -1, Shakti Towers, No. 766, Anna Salai, Chennai 600 002
Ph : 044 4550 4036 | Fax : 044 4550 4281 | E-mail : iwpahq@windpro.org / secretary.general@windpro.org | Website : www.windpro.org

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APTEL Order on Compliance of Renewable Purchase Obligation

Background

The Central Commission has notified Renewable Energy Certificate (REC) Regulations, 2010 for promotion of renewable energy generation. The obligated entities who are unable to procure renewable energy can utilise REC to meet their RPO obligation. However, it is seen that despite the availability of RECs, distribution licensees are not procuring RECs and the State Commissions in such cases have been allowing carry forward of the RPO. This has adversely affected the renewable energy generators who have opted for REC.

The MNRE had undertaken an in-house study to examine RPO compliance level. The analysis revealed that on all India basis, the distribution companies have made a provision only upto 75% of RPO requirement for the year 2012-13. For the year 2013-14, the provision was made for meeting upto 51% of the RPO requirement. Due to the failure of various utilities and captive consumers to fulfill the RPOs as per the Regulations of the State Commission, the petitioners have been compelled to file the petition under Section 121 of the Electricity Act, 2003.

It is evident that the obligated entities are ignoring the requirement of RPO compliance since there is no indication of enforcement of penal provisions. This is resulting in slow growth of renewable energy generation.

The Petition

An individual petition was filed by Indian Wind Energy Association and Indian Wind Manufacturers Association, WIPPA, Mytrah, Vaayu India and Himalaya Power Producers Association seeking certain directions from the Tribunal under Section 121 of the Electricity Act, 2003 regarding compliance of Renewable Purchase Obligations ("RPO") by the distribution licensees and other obligated entities as specified by the State Electricity Regulatory Commissions and Joint Electricity Regulatory Commissions.

MNRE has supported the prayer of the petitioners and requested this Tribunal to direct the State Commissions to ensure compliance of RPO through timely monitoring and invoking of penal provisions for non-compliance and also direct them not to permit carry forward and waiver of RPO in the event of availability of RECs in the market.

Concerns Raised by SERCs

One of the concern raised by the State Commissions is that the REC Regulations has provided windfall gain to renewable energy generators due to which they are not willing to supply energy to distribution licensees at preferential tariff. The REC Regulations of Central Commission permit a RE generator selling power to any person through open access at market determined rate and is still entitled to REC. Similarly, captive generators are also entitled to REC. In this way, the renewable energy generators selling energy to consumers at normal tariff get additional premium in terms of REC and are making undue profits as compared to selling electricity to the Distribution Licensee at preferential tariff. Thus, the renewable energy generators are not willing to sell electricity to the Distribution Licensees at preferential tariff causing shortfall in fulfillment of RPO of the distribution licensees.

However, the Applicants argue that they are not making any windfall profit under REC mechanism. There is market risk in REC mechanism which is undertaken by them. They are also facing difficulties as large number of RECs have remain unsold and for past many months non-Solar RECs are being traded at the floor price. Even at the floor price there are only a few takers and the ratio of buy bid to sell bid volume of non-Solar REC has remained very low.

APTEL Views

The development of renewable energy is of great importance to the country for energy security, achieving low carbon growth and for safeguarding the health of the people. If we hesitate to pay proper price for the growth of renewable energy, the future generation may have to pay a heavier price due to environmental degradation. It should, therefore, the endeavour of the State Commission that REC mechanism is encouraged and it is not

allowed to be extinguished. The Central Commission has stated that the renewable energy generators are facing difficulties as their RECs are not being purchased particularly by the State Utilities. We discussed this issue during the proceedings in this Tribunal.

Gist of APTEL's Order dated April 20, 2015

In view of above discussions, we deem it appropriate to give directions to the State/Joint Commissions with regard to implementation of Renewable Energy Regulations in their respective States. The Tribunal after considering the contentions of the petitioners and the State/Joint Commissions, Central Commission and MNRE gives the following directions to the State/Joint Commissions under Section 121 of the Act:-

i. The State Commission shall decide the RPO targets before the commencement of the Multi Year Tariff period to give adequate time to the distribution licensees to plan and arrange procurement of renewable energy sources and enter into PPAs with the renewable energy project developers. The Preferential Tariff for procurement of renewable energy by the Distribution Licensee for a financial year should also be in place before the commencement of the financial year and no vacuum should be left between the end of control period for the previous tariff and the beginning of control period of the new tariff.

ii. The State Commissions shall obtain proposal with supporting documents for renewable energy procurement by the distribution licensee as part of the tariff petition for the ensuing year/Annual Performance Review for the current year as per the RPO Regulations. Suggestion and objections of public shall be invited on the above petition. The State Commission may give necessary directions with regard to RPO after considering the suggestions and objections of the stakeholders. If the distribution licensee is not able to tie up procurement of renewable energy to meet the RPO target, it may plan to purchase RECs to meet its RPO target as per the provisions of the Regulations. Advance planning of REC purchase will give opportunity to the distribution licensees/other obligated entities to purchase REC when the market conditions are more favourable to them.

iii. The monitoring of compliance of the RPO should be carried out periodically as provided for in the Regulations. After the completion of the financial year the State Commission may review the performance of the distribution licensees in respect of RPO and give directions as per the Regulations. Suggestions and objections of the public shall be invited in the review proceedings and decisions taken after considering the suggestions/objections, as per law.

iv. The State Commission shall give directions regarding, carry forward/review in RPO and consequential order for default of the distribution licensees/other obligated entities as per the RPO Regulations. If the Regulations recognise REC mechanism as a valid instrument to fulfill the RPO, the carry forward/review should be allowed strictly as per the provisions of the Regulations keeping in view of availability of REC. In this regard the findings of this Tribunal in Appeal no. 258 of 2013 and 21 of 2014 may be referred to which have been given with regard to RE Regulations of Gujarat Commission but the principles would apply in rem. In case of default in fulfilling of RPO by obligated entity, the penal provision as provided for in the Regulations should be exercised.

v. The State Commissions are bound by their own Regulations and they must act strictly in terms of their Regulations.

vi. The provisions in Regulations like power to relax and power to remove difficulty should be exercised judiciously under the exceptional circumstances, as per law and should not be used routinely to defeat the object and purpose of the Regulations.

With the above directions, the above petitions are disposed of. The Registry is directed to send a copy of this Order to all the Central and State/Joint Commissions, Secretary, Ministry of Power, Government of India and Secretary, Ministry of New and Renewable Energy, Government of India. However, the above directions will not be applicable to the issues where stay has been granted by the High Court or Hon'ble Supreme Court in the proceedings pending before such courts.

Pronounced in the open court on this 20th day of April, 2015.

(Justice Surendra Kumar)
Judicial Member

(Rakesh Nath)
Technical Member

(Justice Ranjana P. Desai)
Chairperson

Tamil Nadu Wind Power Management & Forecasting - Nimble Wireless - Apr 2014

Wind Power across India – Facts*

Sl. No.	States	As of March31, 2013 (MW)	Capacity Addition in 2013-14 (Till January 31, 2014)	Achievement in MW (Upto January31, 2014)	%Share (as of January 2014)
1	Tamil Nadu	7,162	89	7,251	35.85%
2	Maharashtra	3,175	297	3,472	17.17%
3	Gujarat	3,022	362	3,384	16.73%
4	Rajasthan	2,685	49	2,734	13.52%
5	Karnataka	2,135	177	2,312	11.42%
6	Andhra Pradesh	448	200	648	3.20%
7	Madhya Pradesh	386	-----	386	1.91%
8	Kerala	35	------	35	**0.18%**
9	Others	4	-----	4	**0.02%**
	Total	**19,052**	**1,174**	**20,226**	**100.00%**

* - Source: Indian Wind Power Association

India Wind Power Industry Challenges

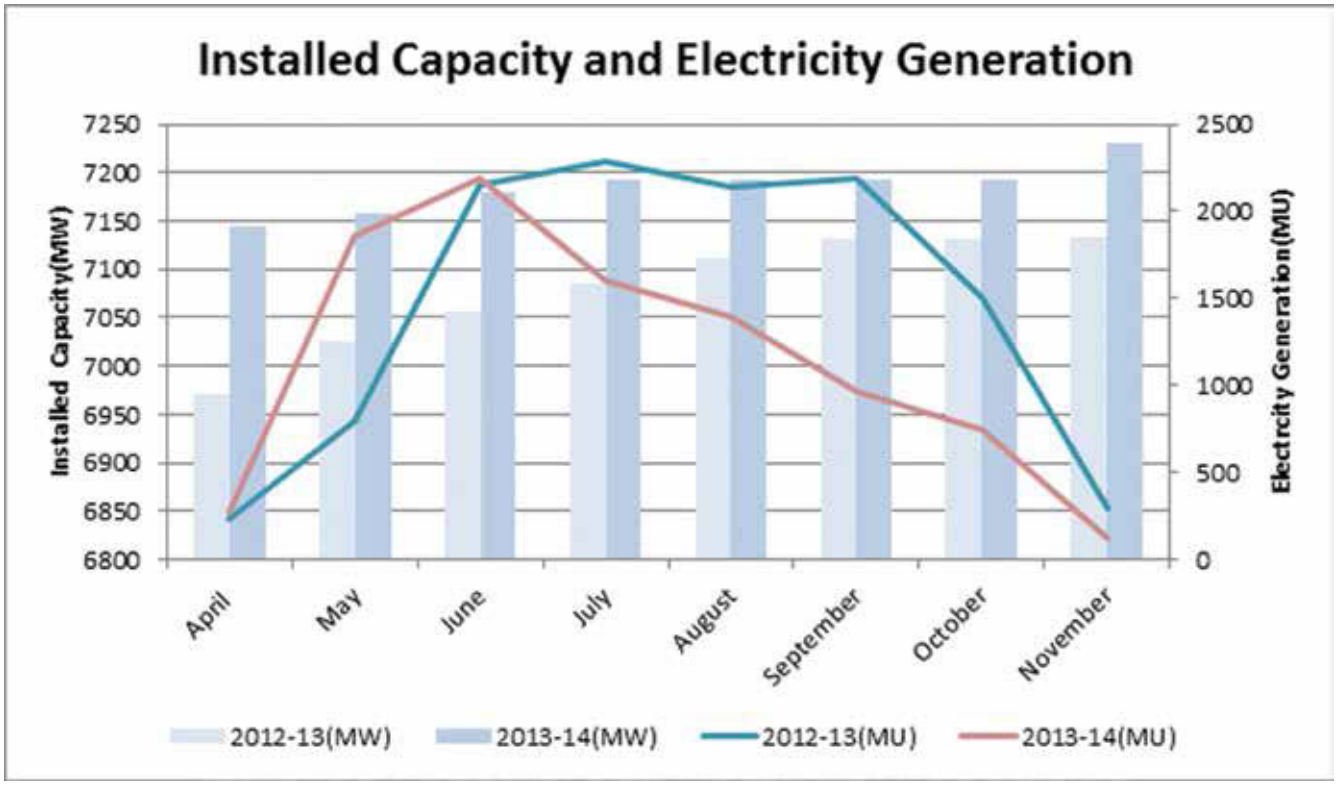
- Withdrawal of Accelerated Depreciation
- Withdrawal of Generation Based Incentive (re-instated recently)
- Delayed Payments to producers in some states
- Non-evacuation of wind Energy
- "Must Run" status not provided
- UI & Scheduling / In-accurate Forecasting

TN Wind Power Industry Challenges

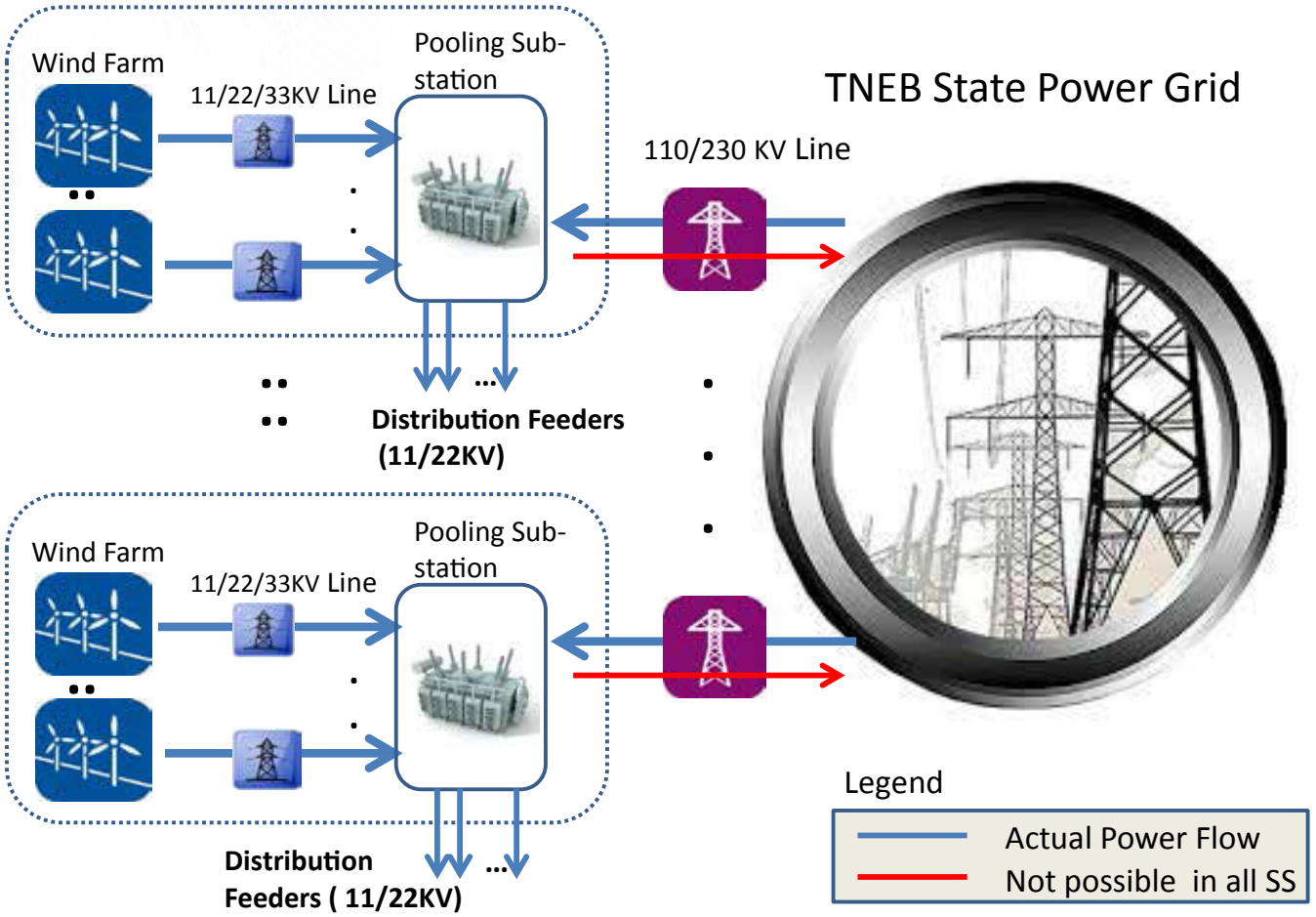
- **Market Share decline from 50% in 2006-07 to 35%** today
- TN capacity addition in 2013-14 **declined to 89 MW** as against 297 MW for Maharashtra and 320 MW for Gujarat for the same period.
- **500-1000 Crore** Revenue loss for Producers
- Key challenges specific to TN
  - "Infirm" power notion
  - Inadequate evacuation
  - Scheduling & Forecasting

TN wind power – Evacuation Issues

- Evacuation has not kept pace with wind power generation capacity growth due to lack of real time monitoring and prediction/forecasting/scheduling
- **40% of energy lost** during peak wind season



Wind Power Integration into Power Grid



Evacuation Improvement Remedies

➢ **Long term Remedy:** Evacuation Infrastructure Improvement Withdrawal of Generation Based Incentive (re-instated recently)

- Transmission Grid up-gradation (Smart Grid/HVDC)
- Power Trading/Sharing agreement between states/centre

➢ **Near term Remedy:** Scheduling & Forecasting

- Wind Energy generation "real-time" monitoring
- Generation/Demand planning/scheduling
- Wind Energy generation Forecasting

Wind Power termed "Infirm" due to below issues

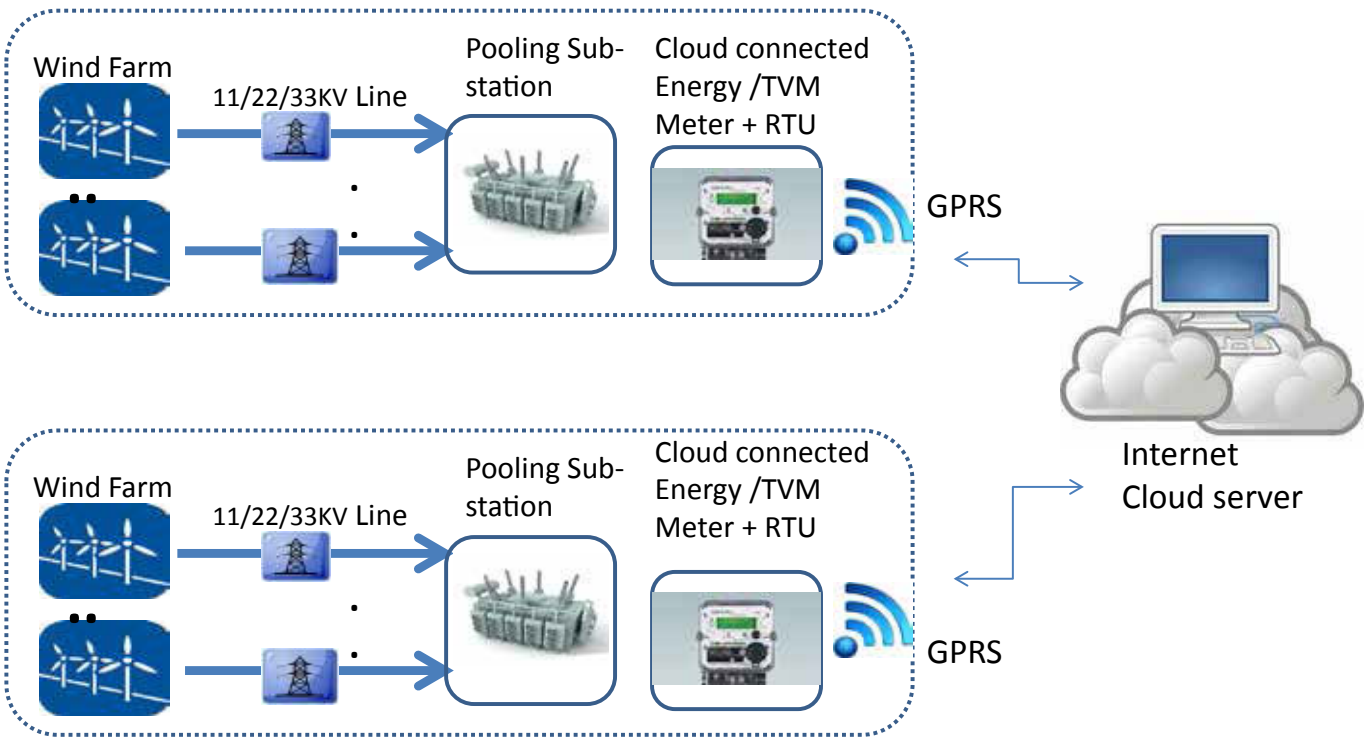
➢ **Current Metering:**

- At the WTG only
- Assessed monthly for Tariff generation
- **No live reporting of WTG energy generated**
- **None of pooled SS have live monitoring**

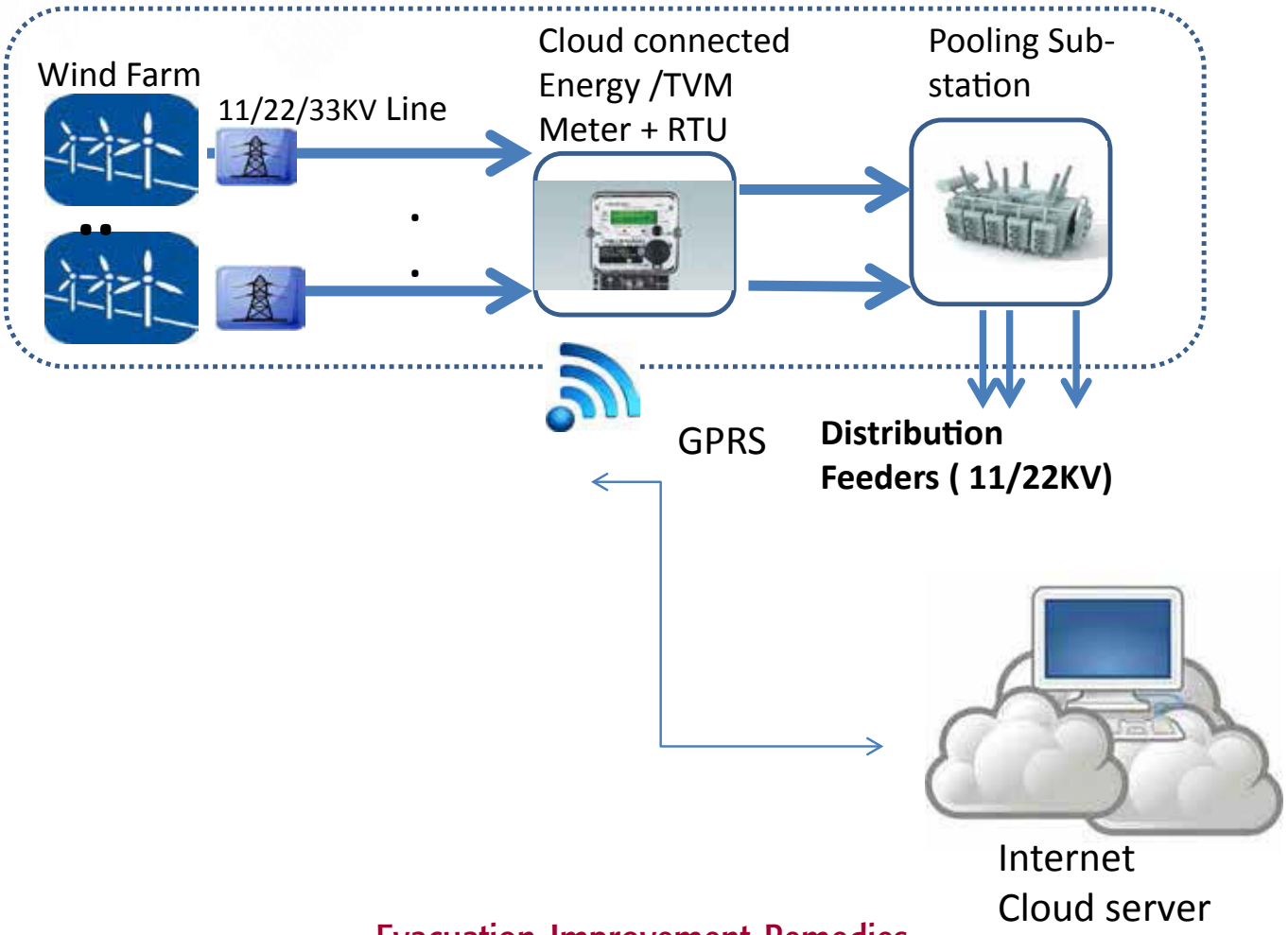
➢ **Current Challenges/Issues:**

- **No live data** on Wind Energy generated per pooling SS
- Scheduling is manual and error prone
- Forecasting models not integrated with historical data
- Leads to **in-adequate evacuation**

Nimble Wind Energy Monitoring & Forecasting
Case 1: Generation only Sub-stations



Nimble Wind Energy Monitoring & Forecasting
Case 2: Generation + Dist Sub-station



Evacuation Improvement Remedies

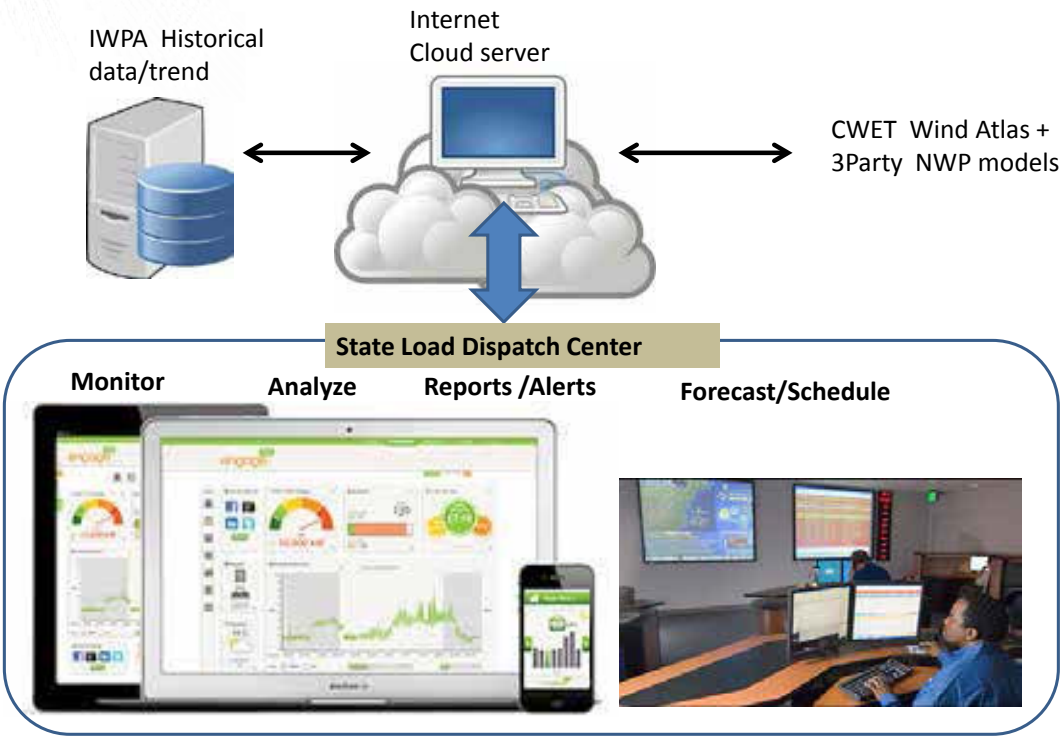
➢ **Energy Monitoring features**

- 24x7 live monitoring at 10/15 minutes/seconds intervals
- Pooling SS wise energy generation break up dashboard
- **Historical Reports (current day/month/last year/month) & export/email summary**
- **Alerts based on exceptions/trends**

➢ **Now-casting/Forecasting/Scheduling features**

- NWP/Wind Atlas data integration with Historical data
- **Integration of Schedule upload and prediction**
- **Email/SMS Alerts for deviation over +/-10/15%**

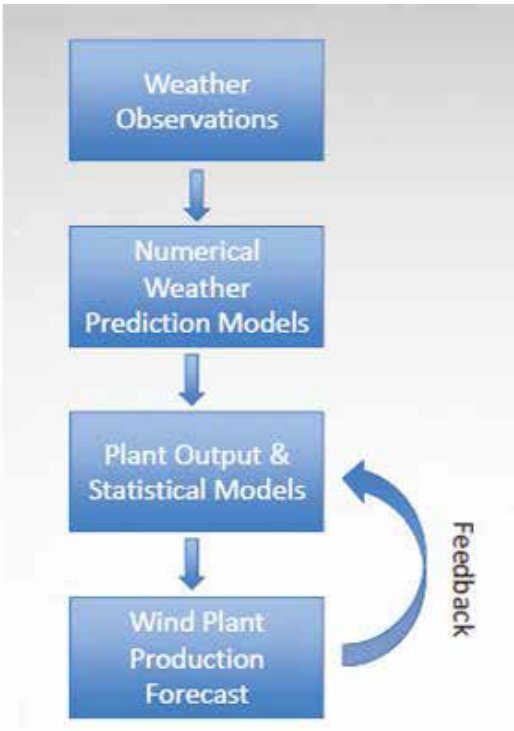
Energy Monitoring Application



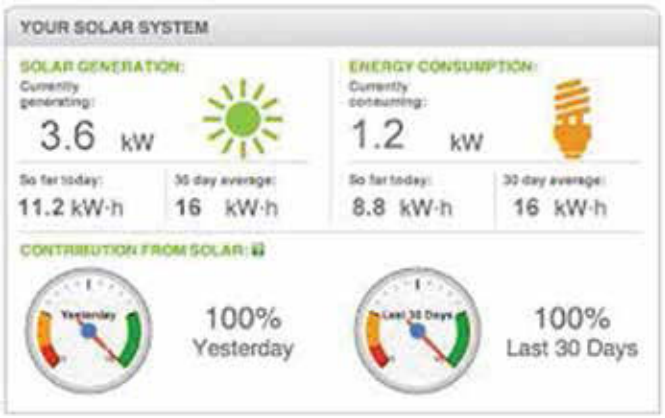
Wind Energy Forecasting/Prediction

Forecasting Systems

- Weather observations set the initial conditions – but there is never enough data
- Numerical weather prediction (NWP) models forecast evolution of weather systems
- Statistical models convert wind to power output and correct for systematic biases and error patterns
- Actual plant production data provide feedback to improve the statistical models
- Forecast providers use these components in many different ways



Sample Screen Shots



Conclusion

- Nimble has the right technology to implement this wind energy monitoring/forecasting solution
- Located in Chennai and exporting products to US
- Goal is to get the "Firm Power" status for Wind Energy
- Flexible & Opting to work with TNEB closely and implement the project per their SLDC / Operations requirements
- 24x7 support and technical customization offered
- Long term technology partnership

Project Details

1. Background

Tamil Nadu has been losing close to 3 billion units of wind energy which could be avoided if a forecasting system is in place. The loss is not only to the investor and the utility but other costs are increased like carbon footprint, climate change and a host of related issues including health. If no remedial steps are taken then this wind –rich State will not attract further investments in wind energy which will inhibit the achievement of the ambitious targets set by the Government i.e. 60 GW by 2022.

A large number of industries provide large scale employment and exports especially the textile industry and export-oriented foundry industries is dependent on cheap wind energy. Due to lack of a forecasting mechanism, wind mills are forcibly backed down causing severe repercussions to investors, industry and consumers.

2. Project Technical Overview

The project involves collecting "live" energy data from all pooling sub-stations in Tamil Nadu and providing consolidated "real time wind energy dashboard". In addition the real time data will be fed into NIWE's forecasting system that can be used for scheduling and forecasting. A technical block diagram of the system and dashboard are presented in Appendix A.

3. Proposed Project Cost Summary

Capital Expenses (One time)		Remarks
ABT Meters with RS485 communication and 0.2S accuracy	67,00,000.00	Total 134 meters @ INR 50,000 per meter (max)
GPRS / Communication equipment for ABT meters and WEG data collection	19,17,300.00	Total 154 units @ INR 12,450 per unit
Installation Costs	2,60,000.00	104 SS at INR 2500 per SS
Server/Cloud connectivity/Software Development	20,45,000.00	Server Hardware and Software development
Travel & Incidentals	10,40,000.00	104 SS @ INR10,000 per SS installation
Total Capital Expenses	**1,19,62,300.00**	
Recurring Expenses (yearly)		
Software maintenance	4,49,000.00	Yearly maintenance
Hardware maintenance	1,95,908.00	134 units @ INR 1462 per unit
GPRS SIM Card charges	1,60,800.00	134 units @ INR 100 per unit/month
24x7 Call Center/ Hotline	9,60,000.00	2 Personnel 24x7 , 365 days
Total Recurring charges	**17,65,708.00**	

4. Why it is required

Forecasting provides visibility to the Grid Operator and hence optimal use of wind energy and other sources of energy mix bringing in efficiency and cost reduction to Discoms.

5. Benefits of the Project

An expeditious approval in the coming weeks will ensure optimal evacuation of wind energy from the current wind season itself.

6. Why NIWE has been chosen:

- NIWE is already been sanctioned approval for undertaking the Micro Pilot project forecasting for

one substation. It is only a matter of replicating this across 104 substations.

- Being a Government organization, TNEB has readily accorded all the support.
- NIWE has already entered into a MoU and has trained seven of its scientists in Forecasting in Spain.

7. Defining the scope of NIWE's role in implementing the project:

- Collection of historical data for the last two years from TANGEDCO to be used for training the software i.e. synthesizing with real time and meteorological data to improving the accuracy of the forecast.
- Signing a tri-partite agreement (i.e. Nimble Wireless, IWPA and NIWE) regarding the scope of work in the early implementation of the project.

8. Assumptions

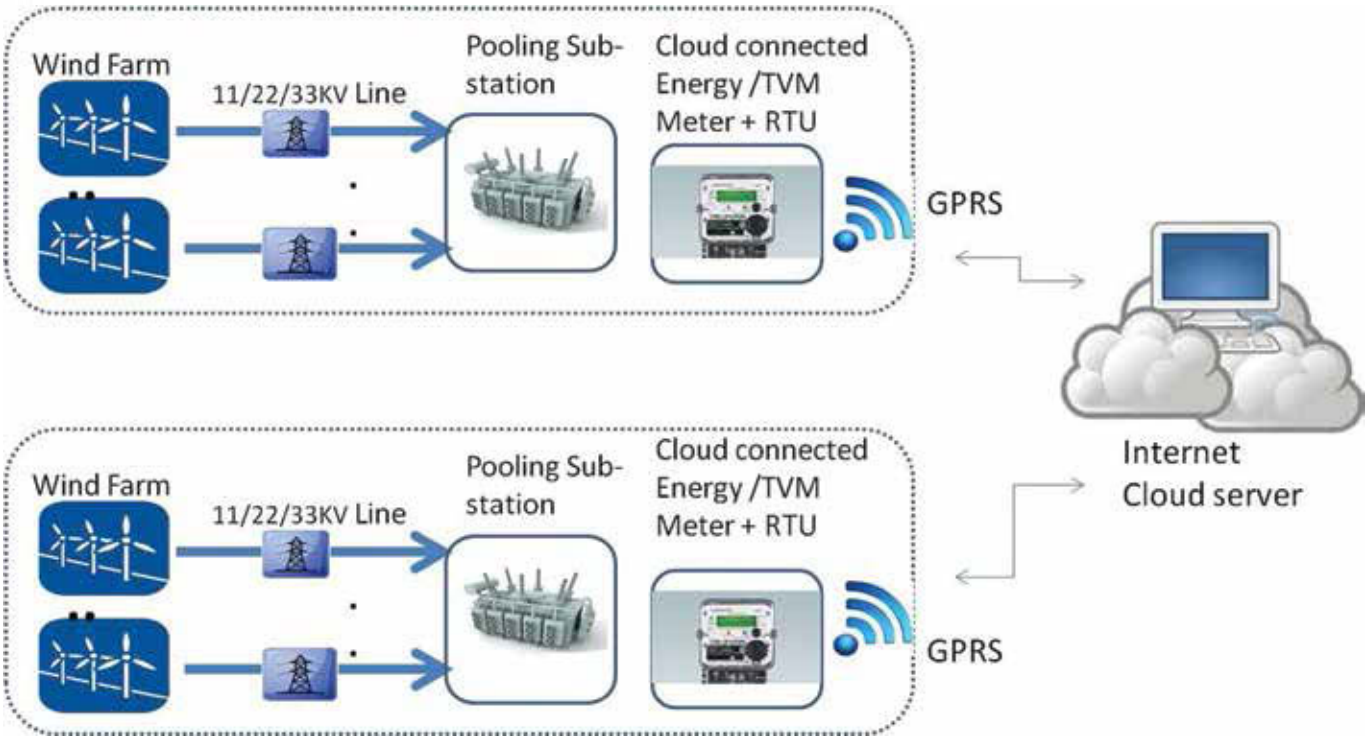
- Nimble wireless would supply and install the device in the substations assuming necessary clearances/ approvals from TNEB/NIWE/IWPA are received.
- A cloud based application will consolidate the data from substations and provide a live dashboard of energy generated and historical data as per NIWE's requirements.
- The consolidated data will be provided to NIWE or its partner's forecasting application as per their formatting requirements.
- If pooling sub-stations already have ABT meters with communication interface, then the ABT meter charges will be reduced appropriately.

9. Schedule, Terms & Conditions

- Nimble Wireless will commence the work as soon as a formal Purchase order is received and advance payment equal to 50% of total Nimble charges paid. Advance amount to be increased to cover the cost of ABT meters if Nimble has to procure the ABT meters. Balance 50% of Nimble charges should be paid within 30 days of delivery.
- All VAT, Central excise taxes/duties will be charged as per norms and are not included in the above amount.
- Nimble wireless would supply and install the devices in the substations within 30 days after necessary clearances/approvals from TNEB/NIWE are received to install the devices at the sub-stations.
- SIM card charges can be paid directly by IWPA/NIWE if desired on a monthly basis.
- Proposal commercials are valid until April 30th 2015.

Appendix A

System Block Diagram



Wind Energy Forecasting/Prediction

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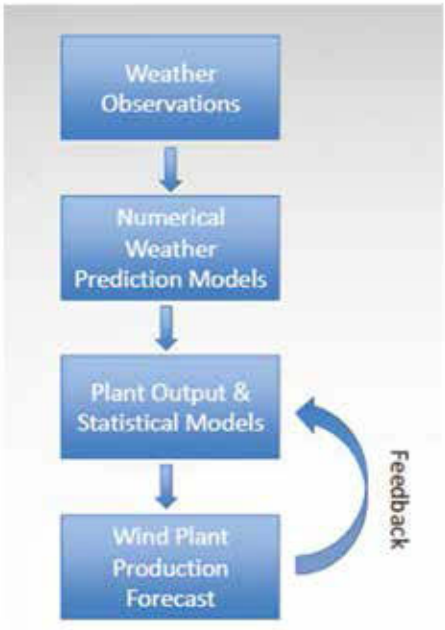

Live Dashboard

Press Meet at Coimbatore on 27.04.2015 regarding Announcement of 4th International Wind Conference & Exhibition

Renewable Energy News Digest

Wind Power Installations up Marginally in 2014-15

April 8, 2015

India's wind power capacity increased in 2014-15 by 2,297 MW, marginally higher than 2146 MW in the previous year.

These numbers are lower than what the industry had hoped at the beginning of the year. However, Madhusudhan Khemka, Chairman of the Indian Wind Turbine Manufacturers' Association, said the industry "missed around 400 MW" because of delays in signing power purchase agreements in a few States, notably Maharashtra and Rajasthan.

State-wise break-up

	(in MW)
Andhra Pradesh	255
Karnataka	315
Tamil Nadu	181
Maharashtra	373
Rajasthan	525
Madhya Pradesh	453
Gujarat	195
Total	**2,297**

Kymal, former President of the association, said policy framework and implementation were key to India breaking out of the 2,500-3,000 MW level. He noted that issues such as long-term policy framework, assured supply of debt, enforcement of the mandatory green power purchases by the 'obligated entities' need to be addressed.

Source: Business Line

Predicting Wind Power now a possibility

April 20, 2015

Chennai: Wind power forecast may soon become a reality in Tamil Nadu with Tangedco allowing National Institute of Wind Energy to take up forecasting in a wind farm in Kayathar in Tirunelveli district on a pilot basis. Forecast wind power generation will help Tangedco exploit wind potential to the maximum while reducing evacuation loss due to backing down of windmills.

According to a senior Tangedco official, National Institute of Wind Energy (NIWE), an autonomous research and development institution of the ministry of new and renewable energy, would be doing wind power forecasting on a pilot basis in the state. The Chennai-based R&D institute has tied up with Spain-based forecaster Vortex Technologies to help forecast generation in 62 MW wind farm connected to a pooling sub-station in Kayathar. "We want the pilot forecast to begin this wind season starting June. Forecasting will be extended to other wind farms in the state after seeing the success of the pilot project," said Indian Wind Power Association (IWPA) sources.

"We have given the go-ahead for wind energy generator to forecast and schedule wind power on sub-station basis to facilitate better evacuation," said a senior Tangedco official. The official said the forecast should be made on day ahead basis with a minimum of 36 hours with 70 to 80 per cent accuracy. To facilitate forecasting and scheduling by grid managers, IWPA will instal communication ABT energy meters in all the 134 Tangedco's wind energy pooling sub-stations. A modem and centralised server would also be installed in Chennai which would consolidate and play real-time wind generation data in the monitor before the grid managers in SLDC and the forecaster, the NIWE.

The forecaster will simultaneously make forecasting appear on the grid manager's monitor. "This visibility of real-time wind generation for the whole of Tamil Nadu along with forecasting will enable grid managers at SLDC to better schedule wind energy like energy from other conventional sources. This will help better evacuation of more wind energy," IWPA source said, adding that it will cost less than Rs 5 crore.

"Our aim is to begin forecasting in this wind season itself. To verify accuracy of forecast, we need to monitor real-time wind generation at sub-station-level for which we need to instal ABT meters. If we do forecast for one or two years and finetune our model based on real-time generation, our accuracy level will improve," said an NIWE official. He said wind forecasting could be provided from 15 minutes to one day, two days and up to six days ahead.

Backing down of windmills during the peak wind season from June to September was a bone of contention between wind generators and Tangedco in 2013-14 and 2014-15. The wind generators alleged evacuation loss of 3 billion units annually in Tamil Nadu, which has a total wind generation installed capacity of 7,373 MW. Last year, Tangedco recorded highest generation of 4,318 MW.

Source: Deccan Chronicle

Coimbatore college wins patent for innovative windmill blade design

Apr 27, 2015

COIMBATORE: Students and staff of Park College of Engineering and Technology here in the city have been awarded patent by the Indian Patent Office for designing a low-speed windmill blade. The design has the potential to produce power at 3m/sec wind velocity and stands out from the ones already available in the windmill industry.

AP Haran, K Prasanna, P Mani Bharathi and Karthik V were awarded the patent last week for designing the windmill blade. While Haran and Prasanna are faculty members of the aeronautical engineering department, Mani Bharathi and Karthik are alumni of the institution, who worked on the project for almost three years.

Mani Bharathi and Karthik, who belong to the 2008-2012 batch of BE aeronautical engineering, were keen on doing something in the field of renewable energy. "There were long power cuts during the period, and everyone was looking for alternative sources for power. Solar and wind energy started gaining importance at that time," said Karthik. This was the motivation for the duo to suggest an idea to AP Haran, the dean of mechanical sciences.

The students along with Prasanna K, an assistant professor with the aeronautical engineering department, studied some designs made by Indian windmill companies, and some designs from China and Japan, too.

"We found that windmills had difficulty producing power at low wind velocity and this was the challenge we took up for our design," said Bharathi. The team then identified parameters like weight, material and aerodynamics of the blade.

Initially, the team had designed a blade with glass fibre composites and it weighed 4.7kg. "This was the first challenge we faced. So, we replaced a section of the blade with an 'I' section. This reduced the weight to 2.4kg, giving us a huge boost in the design," said Prasanna. Further, the team introduced 25 cross sections in the blade, and improved the resin used in the material.

Dean Haran said that they attempted to sell the blade design to some windmill companies, but had a better offer waiting for them. "At least two companies from the state approached us to buy the design. While we were deliberating the idea to consider the proposal, we received a letter from the Union ministry of new and renewable energy," Haran said. The ministry wanted the team to work with an electrical company in Bengaluru on improving the design to make a high-power generating windmill.

Source: The Times of India

Coimbatore to host Wind Power Conference

April 27, 2015

The Indian Wind Power Association (IWPA) is planning to organise a series of conferences this year. In line with this decision the association has scheduled the 4th International Wind Conference – WE20 by 2020 – on June 22 and 23 at the Codissia Trade Fair Centre in Coimbatore.

IWPA Chairman K Kasthurirangaian told presspersons here this morning that the members would discuss and prepare a roadmap for India to have 20 per cent grid penetration by 2020.

"This would be in line with the 60 GW target set by the Ministry of New and Renewable Energy (MNRE) by 2022. The deliberations with the industry stakeholders would be the starting point for various initiatives, which we propose to undertake to achieve the target (of 60 GW) set by the Government of India."

"The conference and the expo – scheduled to begin a day earlier on June 21 –{+ }would serve as the launch pad for discussion on the relevance of the National Wind Energy Mission," the IWPA Chairman said.

With wind power projects spread across seven states with a capacity of 22 GW and potential in excess of 102 GW at 80 m hub height, there is still huge off-shore potential, estimated at over 3000 MW. But to achieve this potential, the Government – both at the Centre and the State – will need to act quickly to address the various issues.

At present, a project promoter will need to get clearances from 18 agencies such as the navy, coast guard, ocean environment, the State Electricity Board for cable-laying, and so on. If India

has to surpass Germany and Spain in wind energy installation, the industry's issues will have to be addressed without delay, Kasthurirangaian told this correspondent ahead of the meet.

Source: The Hindu Business Line

Ratan Tata-funded Altaeros set to deploy airborne turbines to catch high altitude wind

Company leveraging aerospace technology to lift BAT into higher altitude winds

Altaeros Energies, a wind energy company founded by graduates from the Massachusetts institute of Technology, has a clear mission: to deploy the world's first commercial airborne wind turbine.

The project funded by Alaska Energy Authority's Emerging Energy Technology Fund, has private investment from Ratan Tata, Chairman Emeritus of Tata Sons, aims to provide rapidly deployable power solutions.

The aim is to produce clean energy at a low cost, according to an industry expert, who point out that renewable energy research is alive and well, and that investments in airborne wind energy research were on the rise.

The funding was from RNT Associates' International Pvt Ltd, a company owned and controlled by Ratan Tata. The personal investment by Tata marks a major fillip to the global need for clean and safe energy production.

Tata Power, a Tata Group subsidiary, is also one of the leading developers of wind energy projects in the country.

High investments

Private equity investments in companies innovating in grid related technologies and clean energy have surged over the past year. The Tata-backed Altaeros Energies has raised additional funding from the California Energy Commission, the National Science Foundation, and the ConocoPhillips Energy Prize.

Altaeros has a buoyant airborne turbine (BAT) that is leveraging proven aerospace technology to life the BAT into strong, consistent high altitude winds beyond the reach of traditional wind towers. Operating up to 2,000 feet above ground, the Altaeros BAT reportedly generates over twice the energy of similarly sized tower-mounted wind turbines.

Energy to power 10 houses

The expert said several clean energy companies that are developing these air borne technologies would be able to generate anywhere from 30 kilowatts to 200 kilowatts of energy, enough to power 10 houses.

Most wind turbine manufacturers tend to build taller turbines to harness powerful winds at 500 feet above the ground. Altaeros has gone much higher with its novel BAT, which can reach 2,000 feet.

As the expert said, wind speeds are faster at this altitude, and have five to eight times grater power density.

Altaeros aims to install its airborne wind turbines in remote locations including military and deep water offshore wind sites. The company is also targeting off-grid areas, including island communities and disaster relief zones.

Tesla challengers jostle to solve riddle of energy storage

They are using everything from vats of molten salt to rooftop tanks filled with ice

There's a crowded field of companies jostling Elon Musk for the most innovative breakthrough solution to his challenge to fundamentally change the way the world uses energy.

While the chairman of Tesla Motors Inc re-purposes the lithium-ion batteries that power his cars for use in homes and businesses, others are working on more radical approaches to the riddle of energy storage - using everything from vats of molten salt to rooftop tanks filled with ice.

Meeting the need for energy on demand is not just a way to cut your power bill, it's also vital to expanded use of solar and wind, intermittent resources that require back-up. Traditionally electricity has had to be used when it's created.

"We're at the very beginning of this quickly developing market," said Mike Hopkins, chief executive officer of Ice Energy Holdings Inc, a Santa Barbara, California-based company that's pioneering a storage method using rooftop ice.

"If there's really going to be continued progress on the integration of renewables, it's absolutely essential that energy storage steps up". His company's refrigerator sized Ice Bear Units are installed on the roofs of commercial buildings and connected to air-contiditioning systems. They freeze water at night when power rates are low, and provide cooling during the day.

When they're switched on, the building's electricity consumption is reduced, freeing up capacity for the local utility.

Ice storage

Ice Energy is one of five companies that signed deals with Edison International's Southern California Edison in November to provide a total of 261 megawatts of storage capacity. The utility will use the storage to help meet a state-wide goal of getting half of its electricity from renewable sources by 2030.

Two years ago, California regulators asked the state's three biggest utilities to add 1,33 gigawatts of energy storage capacity by 2020 - about 20 per cent more than currently exists in the world, excluding pumped hydropower systems.

Ice Energy will install 1,800 Ice Bears across the region, adding about 25.6 megawatts of storage capacity for Edison.

Competitive market

Storage has a big role to play in our market, said Colin Cushnie, the utility's vice president for energy procurement and management. "We were pleasantly surprised that energy storage was more cost-comepetitive that we thought".

Existing batteries suck, Musk said on Thursday at the rollout of his equipment for homes, businesses and utilities. "They're expensive, they're unreliable".

California standards

If the storage breakthrough is coming, it seems obvious it whould happen in California, which has longled the US in supporting alternative energy. The state has the most demanding fuel-efficiency standards for cars, as well as incentives that have made it the biggest market for solar power in the US.

"California is often a lab for the rest of the country," said Brain Warshay, an analyst at Bloomberg New Energy Finance. "It will continue to be so on the sotrage front."

Older methods of trying to store power have existed for decades, including pumped hydropower facilities in which water is sent to higher elevation reservoirs and released through lower turbines to produce electricity when demand is high.

Another storage effort that's getting revived interest is compressed air. Dresser Rand Group Inc, which built one of the world's two operating commercial systems using the technology, is working on projects in Texas that would force air undergroud into caverns until it's released and heated to power a turbine.

Molten salt

Spain's Abengoa SA is developing a solar-thermal project in California that will incorporate power storage. Arrays of mirrors will focus sunlight on a central tower, where a boilder will drive a turbine to produce electricity.

Vats of molten salt will retain some of that heat so the plant will run after sundown.

Batteries have been used for years at a smaller level to balance grid needs. With added renewables on the sytem, batteries have been getting bigger to help utilities handle the influx of intermitent resources.

They make up the bulk of Southern California Edison's storage agreements.

AES Corp is planning a 100 megawatt battery array in Long Beach, California, that will be one of the biggest in the world.

The batteries will function much like a peaking natural gas plant, standing by until demand spikes and then immediately dumping more electricity onto the grid, said Praveen Kathpal, a vice president with the Arlington, Virginia-based company's AES Energy Storage unit.

New scale

AES will receive a flat monthly fee for the system to be available, plus a variable amount depending on how much energy is used.

It represents a new scale at which energy storage resources are being contemplated, said Kathpal. A hundred megawatts is the tip of the iceberg.

All the storage projects will reshape the ways electricity mush be produced and delivered, Edison's Cushnie said. Storing power for later is more effiencient and reduces the need for new power plants.

People are still figuring out the business models, said BNEF's Warshay. "They can see the business models, but they can's believe they will make money".

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