



## Repowering wind farms in India

*An REWS Workshop, Chennai, October 11, 2018*

### 1.0: Background

The first windfarms in India through private sector investments began happening in the early nineties and most of them came up in Tamil Nadu. The early windfarms were set up at locations that were considered to be most windy. Today, these sites are some of the best wind sites in the country. These wind turbines were of 200 – 250 kW capacity and in the second half of the nineties, 500 – 750 kW wind turbines at 50 – 75 m heights were set up. Since then, wind turbine technology has undergone an enormous change. Today the largest wind turbine is of 3 MW capacity, six times larger than the 500 kW wind turbines of the nineties.

Larger wind turbines of today are more efficient, have a higher rotor diameter and are set up on higher towers. Since the wind speeds at higher elevations are higher and less turbulent, correspondingly the power content per unit area of the rotor is also higher. Therefore, at the same site and the same location a large wind turbine operates at a significantly higher Capacity Utilization Factor (CUF), thus generating many times more electricity.

Repowering of wind farms essentially means replacing or supplementing the old wind turbines with the new ones. This becomes a complex task as the entire planning of wind farms set up in the nineties was done for lower capacity wind turbines. The spacing between these wind turbines is much less than what we need for modern wind turbines, power evacuation infrastructure is of a lower capacity and the windfarm sites are divided into smaller ownerships. A **Repowering policy** has been announced by MNRE but its implementation is yet to take off.

Today, across the country, it should be possible to repower 5000 MW of existing capacity, that can transform into roughly 15000 MW. All these sites are proven and offer least risks. However, there are complex issues of ownership, power evacuation, power purchase agreements (PPA) etc.

With a view to resolving these complex issues and to find the way forward, REWS is organizing a workshop in Chennai on October 11, 2018. The workshop will have the participation of the DISCOMs, windfarm owners, lenders, manufacturers and IPPs, funds and investors. A model solution will be proposed and discussed along with many other alternative approaches.

**Renewable Energy Welfare Society (REWS)**

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Key Issues that need to be addressed are:

- Remaining lifetime of the wind turbines to be replaced
- Ownership issues of different windfarms that would have to be combined in Repowering
- Power Purchase Agreement Issues
- Third Party Sale Issues
- Power Evacuation Issues
- Purchase price/ PPA for the Repowered project

## 2.0 Brief Agenda

### INAUGURAL SESSION

- 8:30 – 9:15 Registration
- 9:15 – 9:30 Welcome & Opening Remarks
- 9:30 – 9:50 Inaugural Address
- 9:50 -10:10 Special Address : Utility Considerations in Repowering
- 10:10 – 10:25 Keynote Address
- 10:25 – 10:45 Special Address
- 10:45 – 10:55 Q&A/ Discussion
- **10:55 – 11:10 (Tea/Coffee)**

### REPOWERING STRUCTURES

- 11:10 – 11:50 Panel Discussion : “Alternate Repowering Structures”
- 11:50 – 12:00 Q&A/ Discussion

### TECHNOLOGY SESSION

- 12:00 – 12:45 Panel Discussion : “WTG Technology Suitability”
- 12:45 – 13:00 Q&A / Discussion
- **13:00 – 14:00 Luncheon/Networking**
- 14:00 – 14:45 Panel Discussion : Policy & Regulatory Issues and Considerations
- 14:45 – 15:00 Q&A/ Discussion

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## LENDER'S/INVESTOR'S CONSIDERATIONS

- 15:00 - 15:45 Panel Discussion : Lender's / Investor's Considerations
- 15:45 – 16:00 Q&A/ Discussion
- **16:00 - 16:30** **Tea /Coffee**

## POWER EVACUATION/ GRID ISSUES

- 16:30 – 17:15 Power Evacuation/ Grid Issues
- 17:15 – 17:30 Q&A/ Discussion
- **17:30 – 18:30** **Summing up and Conclusions**

*NOTE : program agenda is subject to change*

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