

COPP: 105% Installed Capacity

A method to limit wind farm capability?

**Gate 3 Liaison Group Meeting
28 August 2012**

Overview

- The issue of installing capacity above MEC is borne out by the fact that the grid application and planning application processes are not aligned.
- All developers will endeavour to attain planning permission for the most efficient plant at any given site.
- If the processes were aligned – as in Northern Ireland for example – then all developers would apply for an MEC = Installed Capacity when turbine technology is chosen.

Wind Farm Efficiency

- Site factors
 - Wind Speed
 - Location
 - Elevation
 - Topography
 - Forestry
- Turbines-
 - Hub height
 - Blade diameter
 - Technology type
 - Number of units

Increasing Yields

1. Hub height increase

- 10m increase
- Definite Capacity Factor improvement
- Approx 1% increase in CF based on MEC.
*Site dependent
- **Not limited by COPP**

Increasing Yields

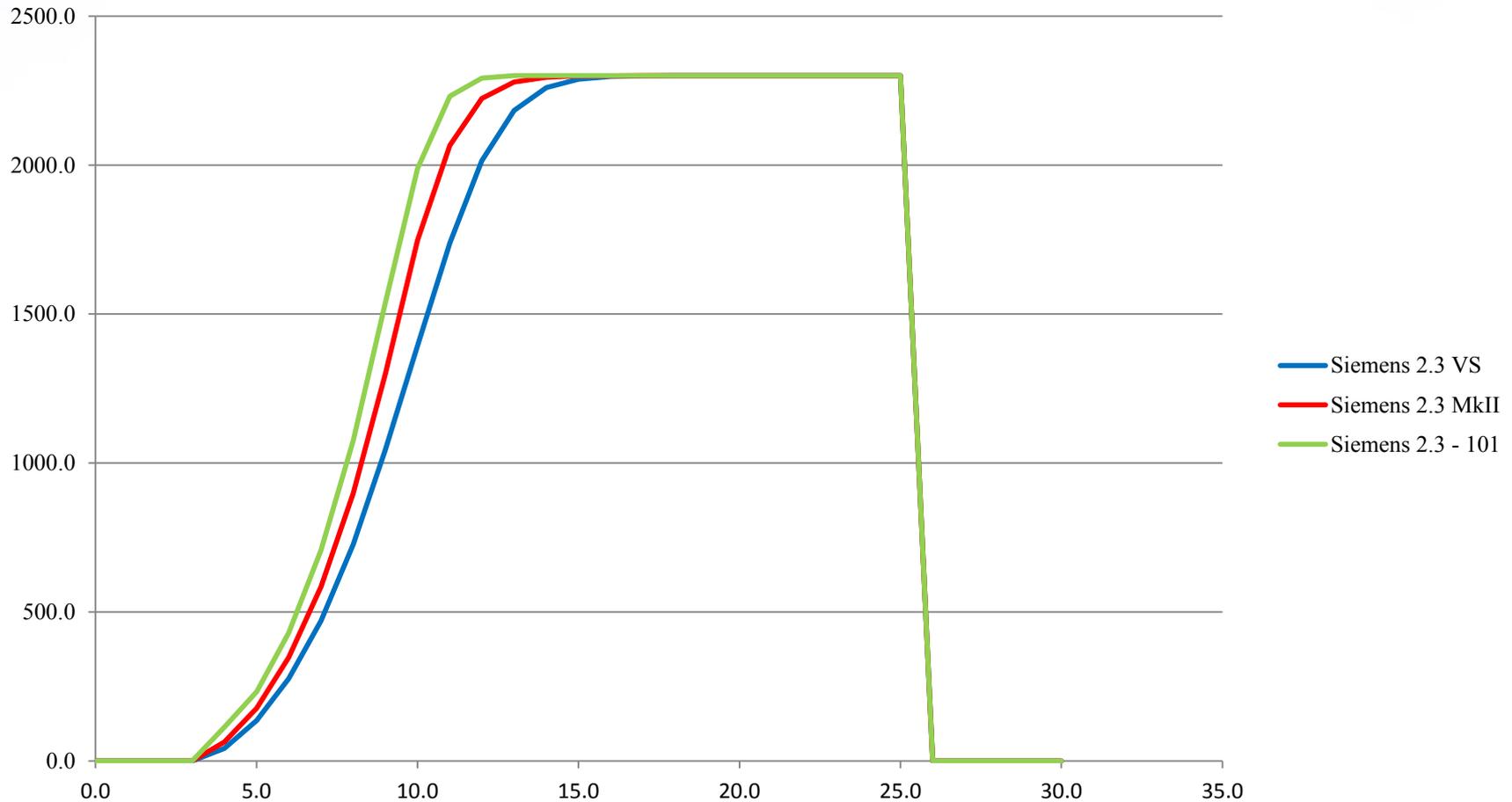
2. Blade diameter (swept area is key to energy output)
 - For an 80m rotor diameter and Increase in blade length of 2m can increase yield by 5%.
 - An increase of 5m can increase yield by 13%
 - Definite Capacity factor improvement

- Not limited by COPP

Increasing Yields

3. Separation distance between turbines
 - Decrease in wake losses
 - Definite Capacity Factor increase
- Not limited by COPP

Example: Siemens 2.3MW Turbines



Increasing Yields

4. Choosing the best turbine - Installed capacity above MEC
 - Potential capacity factor increase
 - Some sites will reduce CF
 - Limited to 105% by COPP
 - As can be seen. COPP does not limit output it merely frustrates some developers by not allowing the best fit turbine

The Need for A Cap

- EirGrid argue that a cap is required to Ensure Optimum Reinforcement of the system
 - Network is designed for MEC
 - Some optimisation may be based on probabilistic flows. Small percentage increases in annual production will not have a material impact.
 - Wind Farms have never been asked for Capacity Factors
 - Connection agreements do not have a capacity factor limitation

Implications for Existing Queue

- All developers who took the time to read and respond to initial COPP paper did not support the 105% limit
- Limiting site capability to ensure there is another Gate required does not make any sense. This will increase the cost of wind.
- Wind industry does support further Gates but not at the cost of developing less efficient wind farms.

Impact on Other System Users

- *...So's remain of the view that on average over installing capacity will result in greater output across the system...borne out by some high level analysis over installing has the capacity to impact on other users...*
- EirGrid present figures to demonstrate the impact of 5% and 10% increase in installed capacity on all wind connected – not just Gate 3. - **This is not a credible scenario.** And should be considered by the CER on such an important issue.
- If there are any system impacts these should be proven by detailed and specific modelling in conjunction with input based on real experience from the wind industry.
- Industry believe there are no material impacts to the existing or future wind sites which will be alleviated by trying to regulate capacity factors

Key Points

- Not all projects will have an opportunity to increase installed capacity over MEC.
- Many projects will install less than MEC.
- There is an Economic limitation to number of turbines a developer could consider
- The Rule does not limit site capacity
- We all collectively have to work to achieving our 2020 **energy** targets in the most efficient way
- Connection agreements do not have a capacity factor limitation
- Output and revenue is limited in many uncontrollable and volatile ways - TLAf; TUOS; curtailment due to SOs or conventional plant - min gen, timing of deep reinforcements etc.
- TLAfs have wiped %s off the metered gen of all wind farms. This is a tough reality the Industry has to respond to. The only way to respond to try to build better sites more resilient to revenue impacts - i.e. sites with improved energy yields
- Industry have 1 chance to install the correct turbines on any given site
- **Industry must be free to design the most efficient wind power plant it can**
- **Ultimately the customer will benefit if more wind energy can be produced with less infrastructure**