

Synchrophasors & Renewables

Renewables Integration

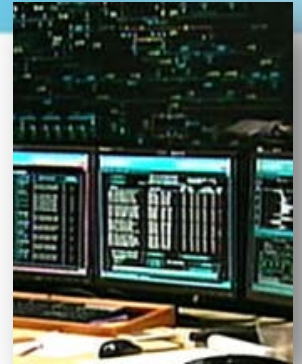
Transmission Connections

Distribution Connections

Network Stability Impact

PhasorPoint:

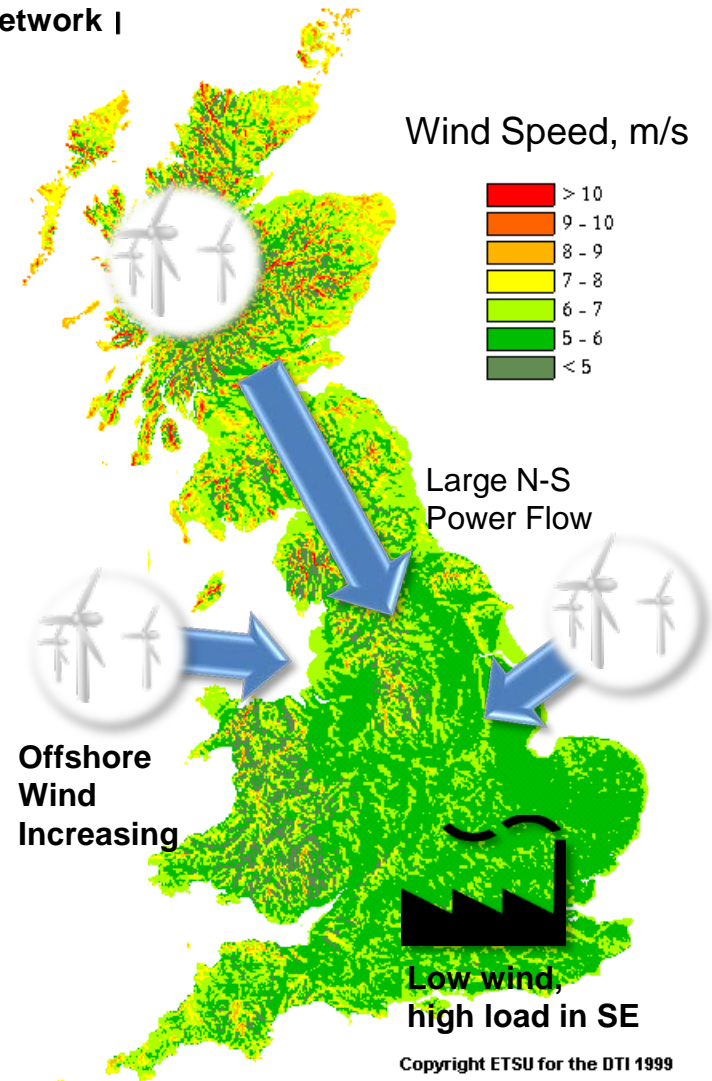
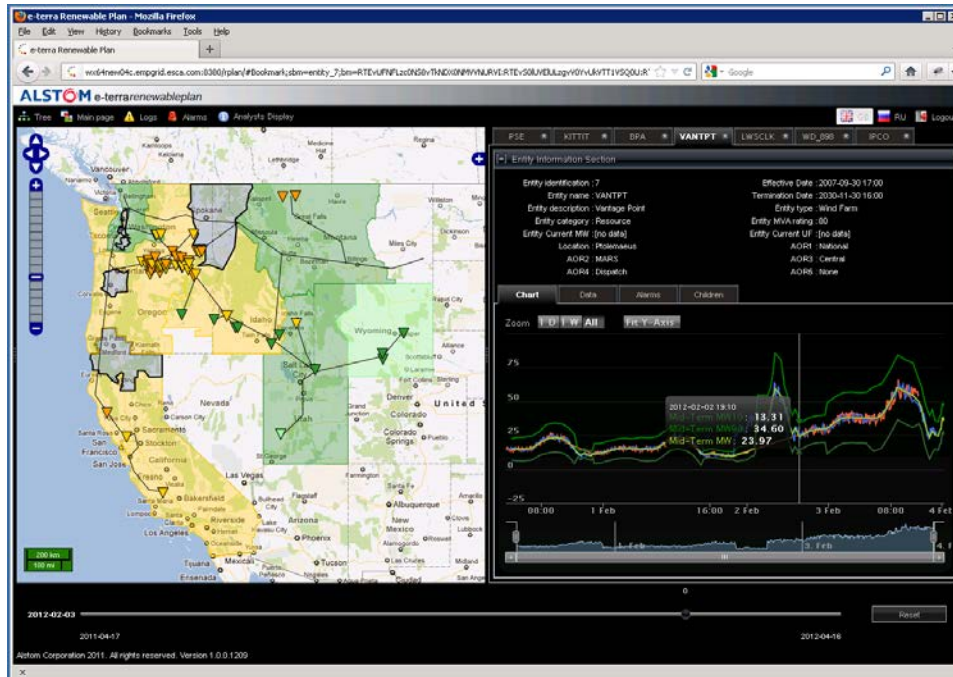
- **Controller (Angle Constraint Active Management)**
- **Angle & Dynamics baselining and trending**
- **Wide area event analysis**



Transmission Connections

- Network constraints across transmission zone boundaries
- Angle difference – a simple measure of stress between zones
 - Related to power flow
 - Related to corridor strength
- Angles useful for
 - Operator awareness / response
 - Constraint definition
 - Control for flexible constraint management

High wind, low load, weak network I

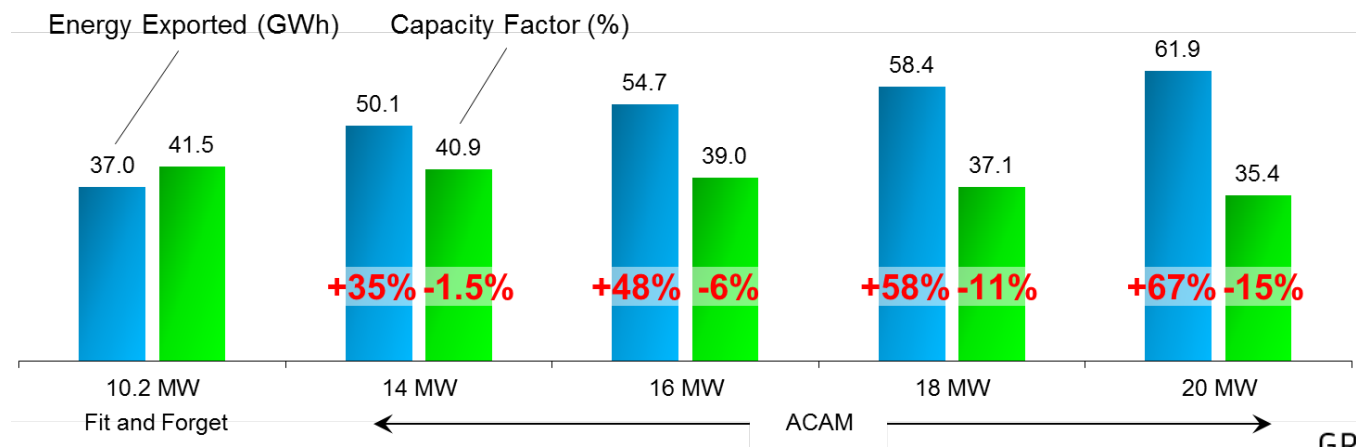
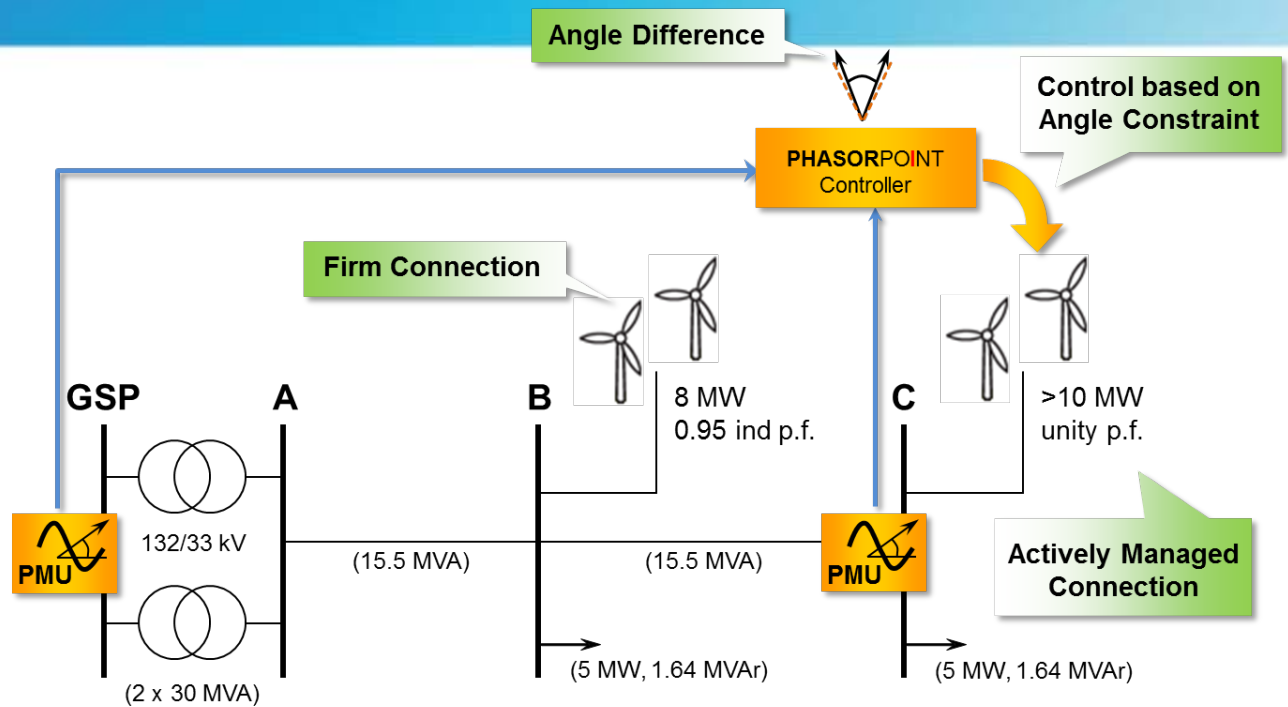


Distribution Connections

Increase capacity by **constraining by angle**:

- Manages multiple constraints
- Simple control logic
- Minimal comms requirements
- Generalized 'connect & manage' solution

Installation also applicable to **Loss-of-Mains** solution



Marginal reduction of capacity factor

- ➔ More capacity
- ➔ More energy