THEMATIC SESSION 4 – POWER SYSTEM FLEXIBILITY

Speaker : *Alan Gooding*, *Smarter Grid Solutions*

Introduction

Managing tie line flows to other states is critical to regional grid stability

TNEB are incurring costs because of tie-line deviations. This is a result of:

- Limited flexibility (ability to ramp, stop and start) from thermal plant
- 'Must Run' status of renewable generation which locally fluctuates
- Renewable forecast error (which impacts the quality of the dispatch schedule for thermal plant)
- Manual implementation of wind blocking actions (which results in a lag to implement blocking and a lag to release again)

IPPs are suffering excessive curtailment ('blocking')

- They don't have visibility of the blocking actions
- The lack confidence in the fairness of the decision to block and how blocking is implemented

Context

IDEAL:

- TNEB gets perfect RE forecasts
- TNEB reduces margins for RE intermittency to get the most from thermal ramp rates and technical minimums
- TNEB has direct and second by second visibility and control of all RE production and tie-line status
- Transparent rules with auditable implementation

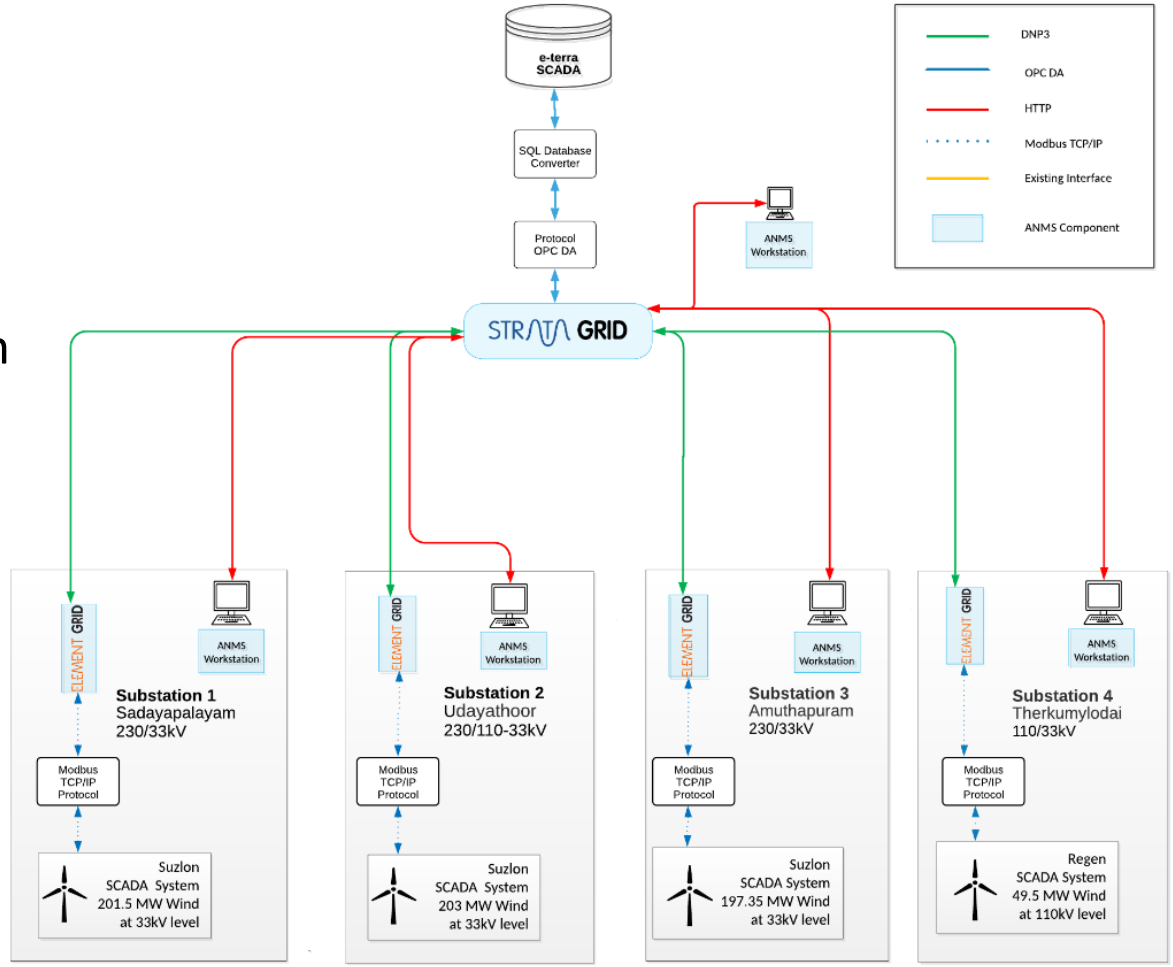
Context

REALITY:

- Dispatch based on experience of the quality of the RE forecast in comparison with what thermal plant / load ramp rates might be
- Dispatch process is confidential as it reflects the merit order and price of different generators
- As commercial rules to block / curtail wind were not ‘allowed’ communications and automation were not specified into connection agreements
- To maintain stability and tie line commitments, TNEB implemented a manual process using the only assets they can (the pooling station breakers)

Pilot Project

- 4 substations with an RE capacity of 652 MW
- Grid measurement data (frequency, tie line power flows, substation flows) received from existing SCADA system
- Strata Grid calculates and dispatches minimum curtailment necessary in real-time using automated and manual modes releasing blocking as soon as possible
- Curtailment / blocking rotated around trial participants to ensure fair distribution
- All actions logged and auditable
- Enzen Global Solutions are the local delivery partner



Presentation on the Topic

Commenced January 2021

Completed

- Design Specification
- Build
- Configuration

Next Steps

- March: Functional Testing
- April: Hardware delivery and site installation
- May: Interface and site testing
- June: Go Live and training

Key Takeaways

- The conventional tools (commercial and technical) do not support a net zero energy system
- New forms of flexibility are required throughout the voltage levels to mitigate the cost impact of net zero transition
- TNEB is implementing a real-world example of RE providing flexibility to the power system

Thank You

For discussions/suggestions/queries email: www.indiasmartgrid.org
www.isgw.in
Links/References (If any)

India Smart Grid Forum
CBIP Building, Malcha Marg,
Chanakyapuri,
Delhi-110021
Website: www.indiasmartgrid.org