

Paris Session 2022



Power system planning and flexibility considerations

C4

Challenges and Advances in Power System Dynamics

Question 18

Heesung Moon, South Korea

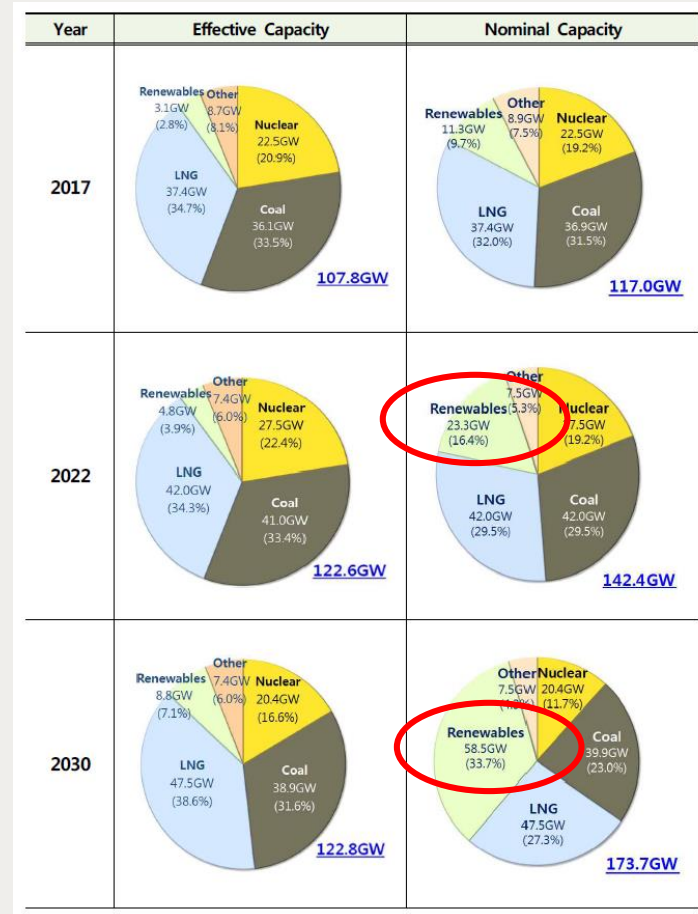


PEL Power & Energy
Laboratory

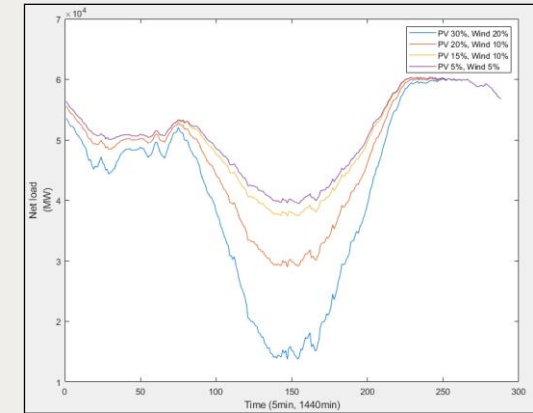
고려대학교 차세대전력망 연구실

Increase future DER ratios

- *Distributed energy sources are mostly weather-dependent power sources*
- *The net load of the grid also fluctuates when distributed power sources with high variable are penetrate the grid*



Generation Mix Outlook in Korea



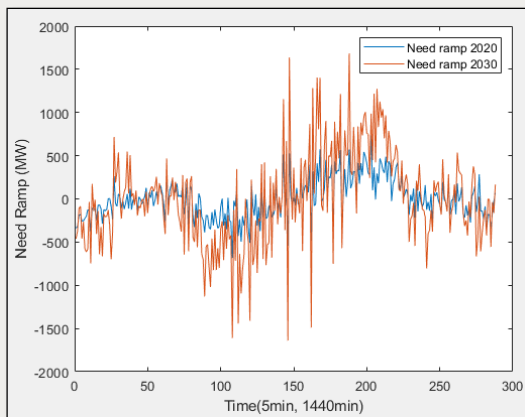
Expected net load according to different renewable energy output

	The year of 2020	The year of 2030
Number of generators turned on	62	22

Synchronous generator counts turned on at off-peak

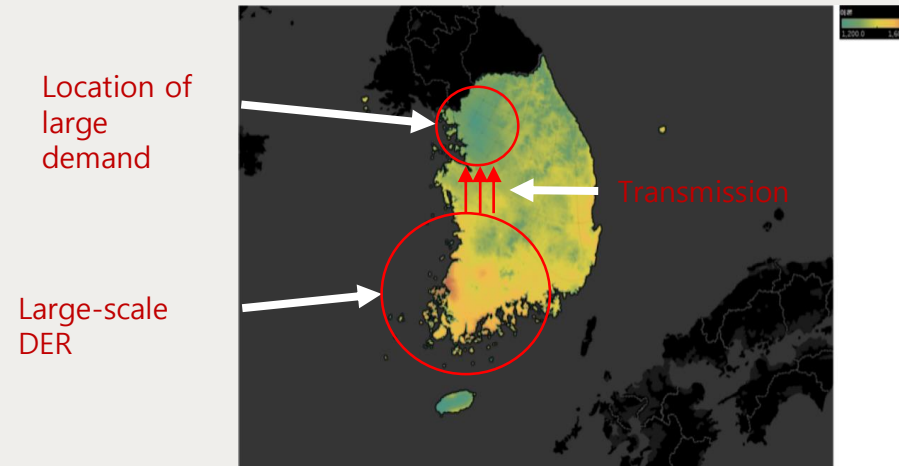
The instability of large-scale renewable energy (simulation experience)

- More DERs are entered, more ramp rate is required compared to if there is no DER
- Solar energy resources map indicates the best environment for the furthest from demand
- Identify how severe the overload is on the tracks depending on the renewable energy output level

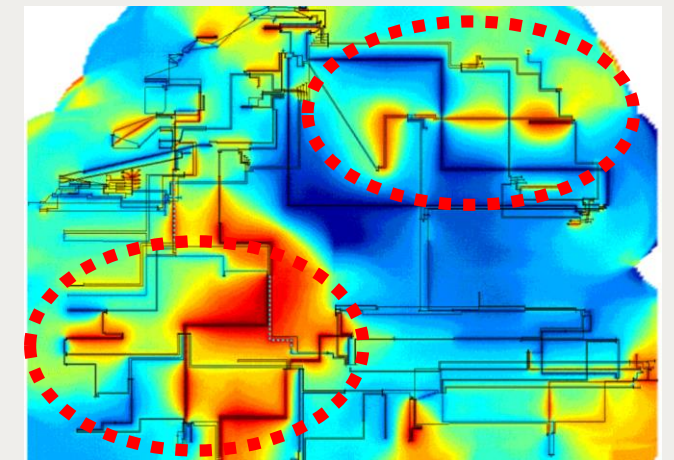


Power system net load ramp

Group Discussion Meeting



Solar Energy Resources Map



Line overload by renewable energy output level