RAP® Energy solutions for a changing world

Securing Resource Adequacy

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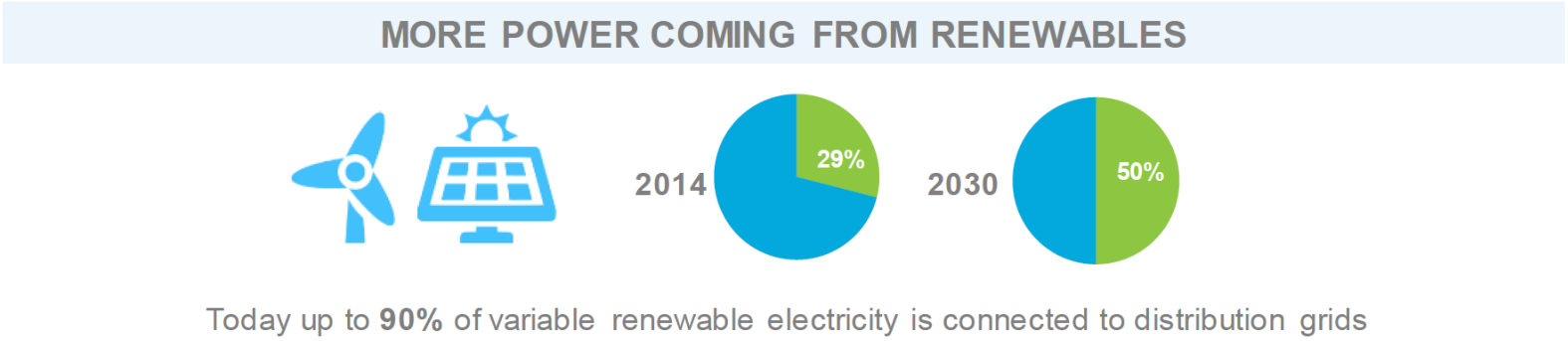
Why has resource adequacy become an issue?



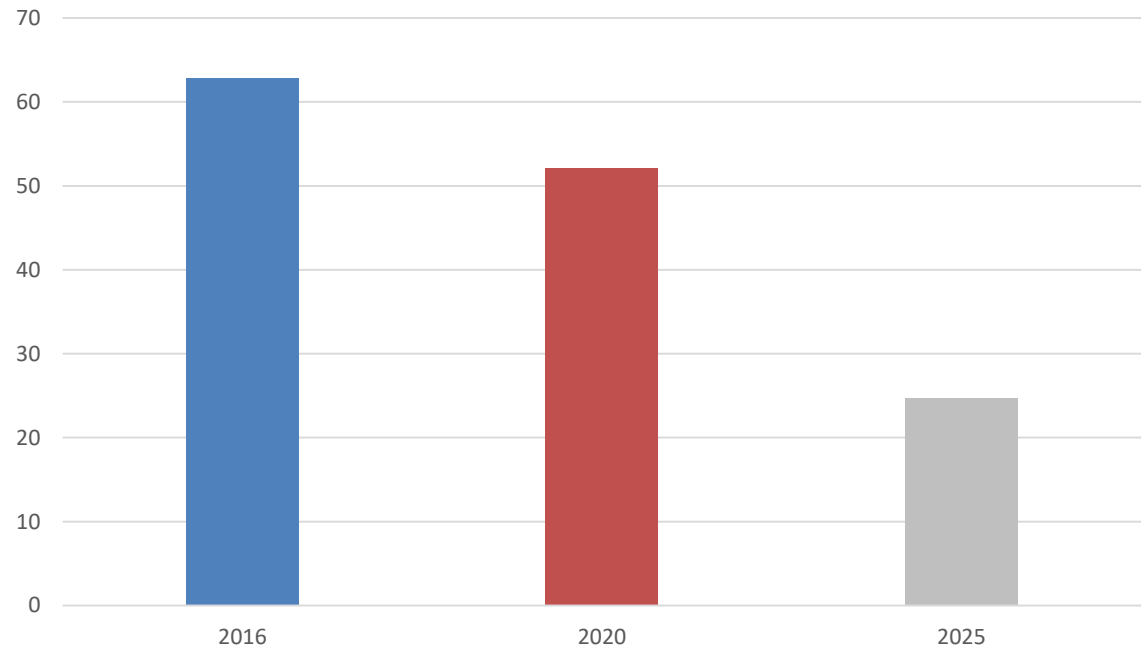
- Rising share of renewable energy is changing the nature of electricity markets
  - More variable less-predictable output increases price and volume risk – not a good investment environment
  - Need for higher capacity margins – more capacity for market to support.
- Need to decommission coal fleet over the next 10-15 years, some of this capacity will need to be replaced

Winter package - proposals

- Energy market reform rather than explicit investment support
  - Markets should reflect the real-time value of energy and adequately reward flexibility
  - Allow demand side to participate, responding to price and other signals to reduce resource requirements
  - Adopt a regional approach to resource adequacy assessment,
    - Extends regionalization seen in market timescales
    - Exploits diversity to reduce overall capacity requirements

Capacity surplus: Europe as a whole (GW)

ENTSO-e 2015 SO&AF data



- Potential to reduce capacity requirements via a regional approach

Resource adequacy assessment

- Starting point - security of supply is a MS accountability (Directive 2005/89/EC)
- MS required to adopt
  - Reliability Standard (Entso-e) against which capacity requirements can be determined
    - defines expected energy not served, based on VoLL and cost of entry
  - Standardized European probabilistic resource adequacy assessment methodology (Entso-e)
    - Contribution from demand response, storage and interconnection

If a capacity deficit is identified

- Identify market/regulatory failures that might be contributing to insufficient levels of investment
- Adopt remedial measures
  - Shortage pricing, removal of price caps, increased interconnection, demand response, storage etc
- If remedial measures are insufficient or time is needed for the measures to be effective, then a capacity mechanism may be justified
  - Compliance with State Aid guidelines
  - Capacity emitting more than 550gm CO2/kWh excluded

Role of Regional Operational Centers

- Entso-e required to establish system operational regions, each with a ROC
- Significant role in resource adequacy assessment & delivery
  - Regional sizing of reserve and balancing requirements
  - System adequacy forecasts
  - Calculate maximum entry capacity for external generation

DG Comp Sector inquiry into Capacity Mechanisms (CM)

- CMs reflect concerns over security of supply
  - ability of ”energy-only” market support investment
- CMs fundamentally change electricity markets
  - Income for availability not energy
  - Different designs impact on energy prices differently
  - Domestic resources favoured, no proper account of interconnection/external resources
- Badly designed CMs often
  - Support incumbents over new entry/technologies
  - Over-procure with unnecessary costs to consumers

DG Comp recommendations

- Market reform before introducing a capacity mechanism
  - Economic reliability standard
  - Prices should reflect value, price caps removed, balancing market reform
  - Encourage demand flexibility
- Where capacity mechanisms can be justified
  - Broadest eligibility including DR
  - Explicit cross-border participation