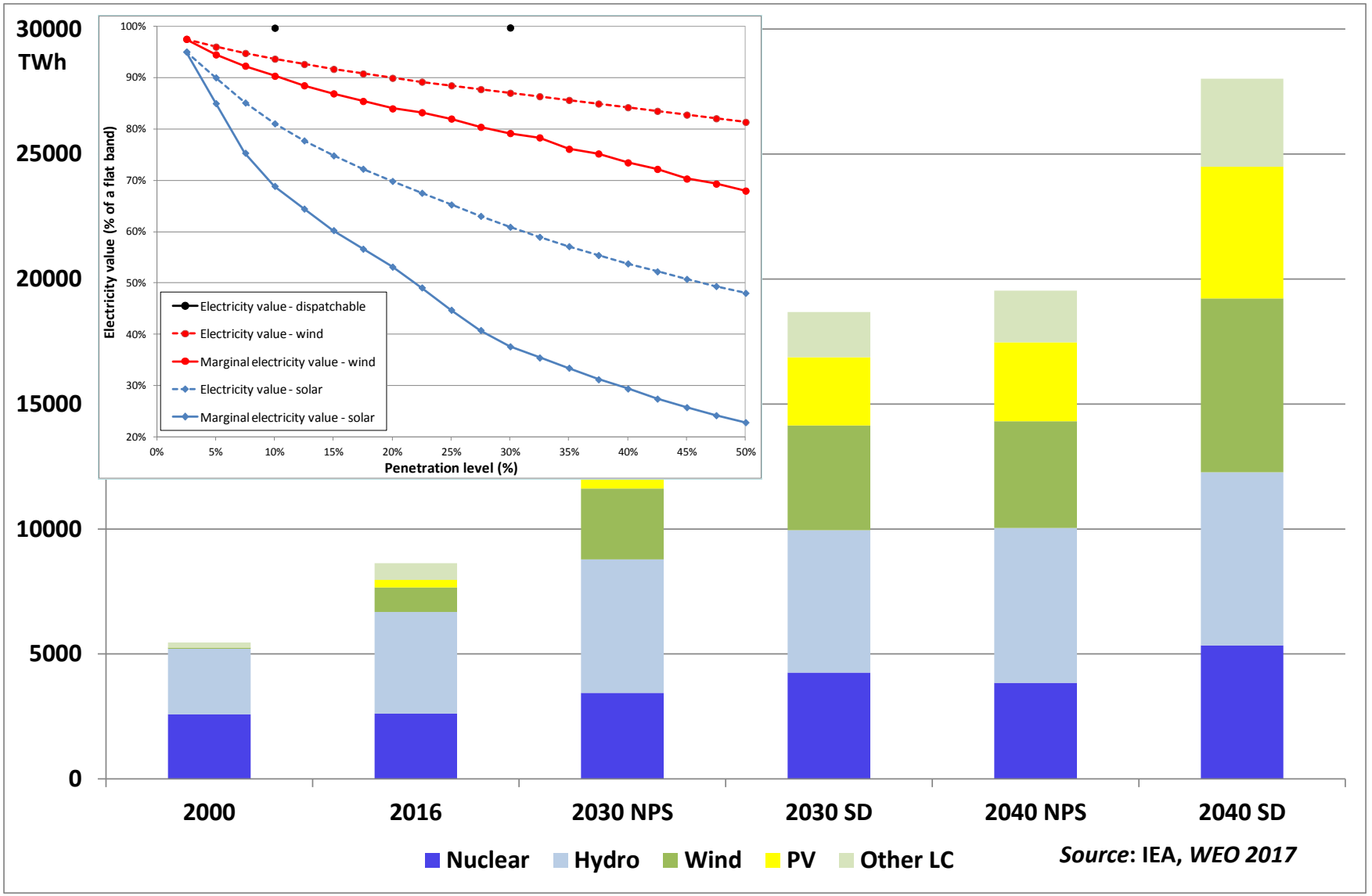
The Role of Nuclear Power in Ensuring Electricity Security

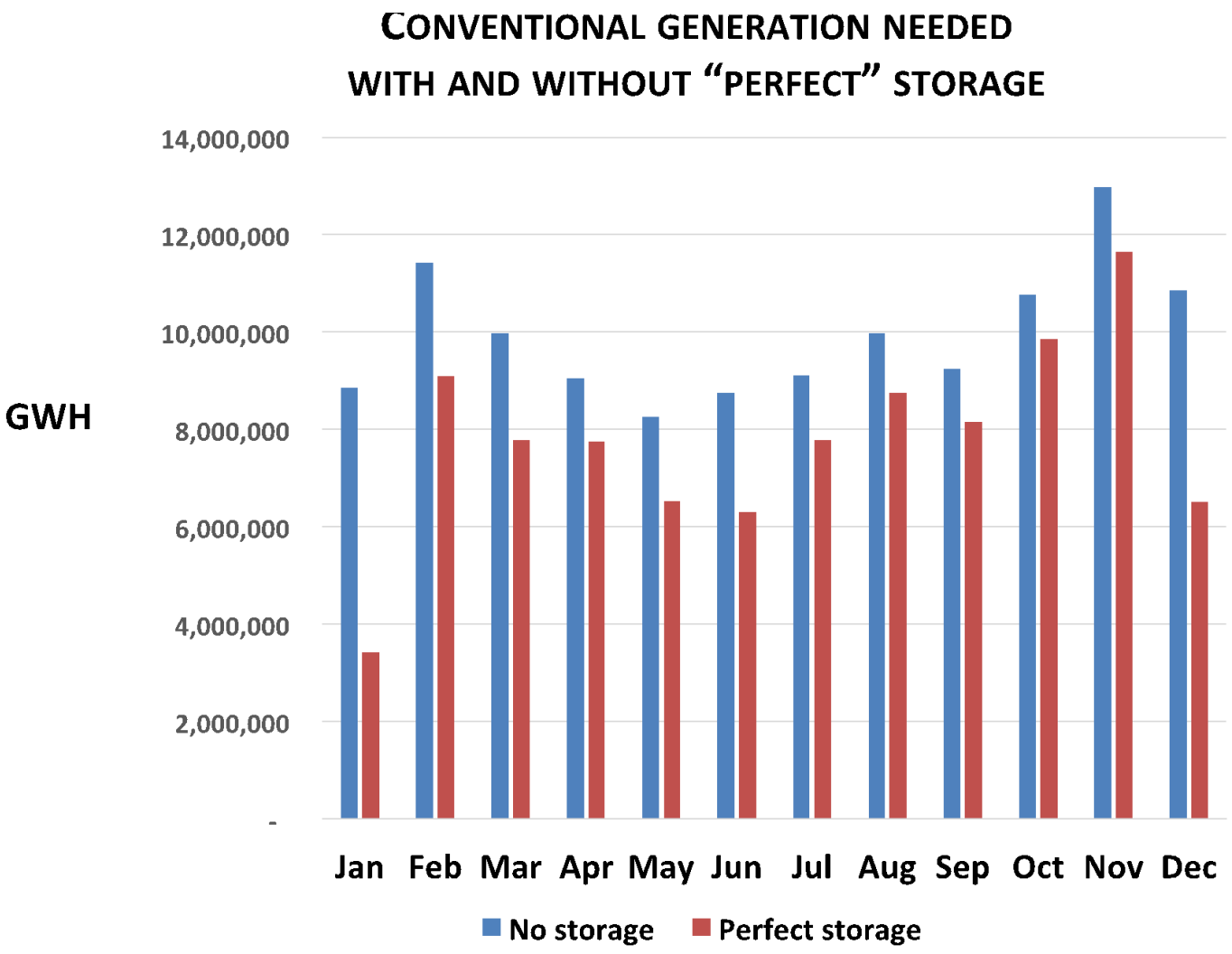
Jan Horst Keppler
Senior Economic Advisor
OECD Nuclear Energy Agency

ESAP Workshop VIII New Policies for Ensuring Electricity Security, Tokyo, 15 June 2018

Low Carbon Technologies on the Rise
Yet Share of Dispatchable Sources Set to Decline



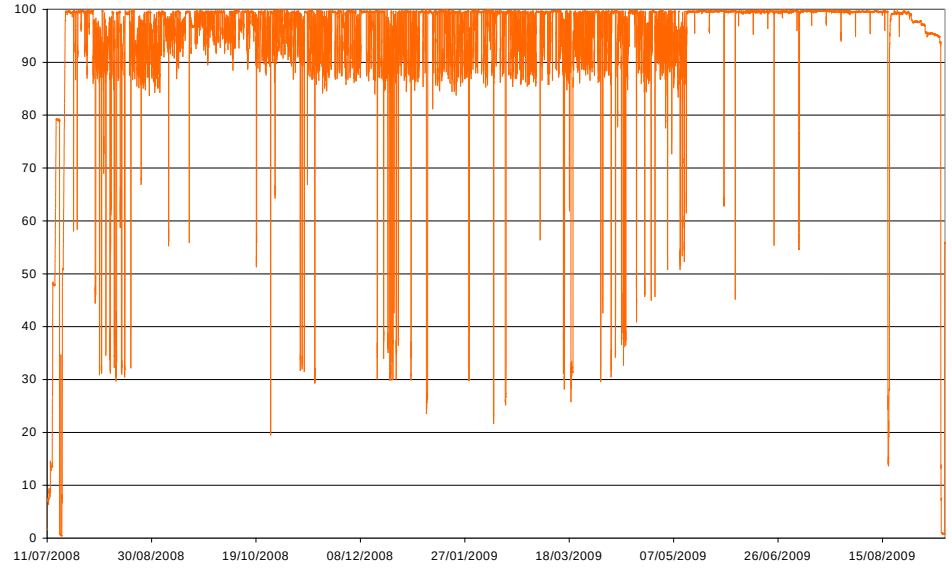
Nuclear Contributes to Balancing Demand and Supply over the Year



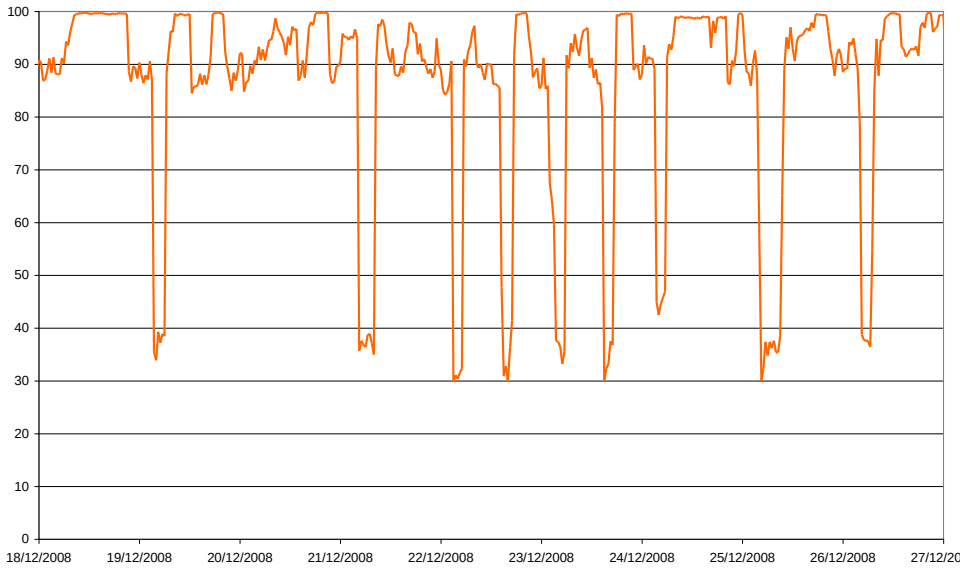
Source: A. Cohen Clean Air Task Force, (2015).

Nuclear Contributes to Balancing Demand and Supply over the Day and Week

Power history of a French PWR reactor



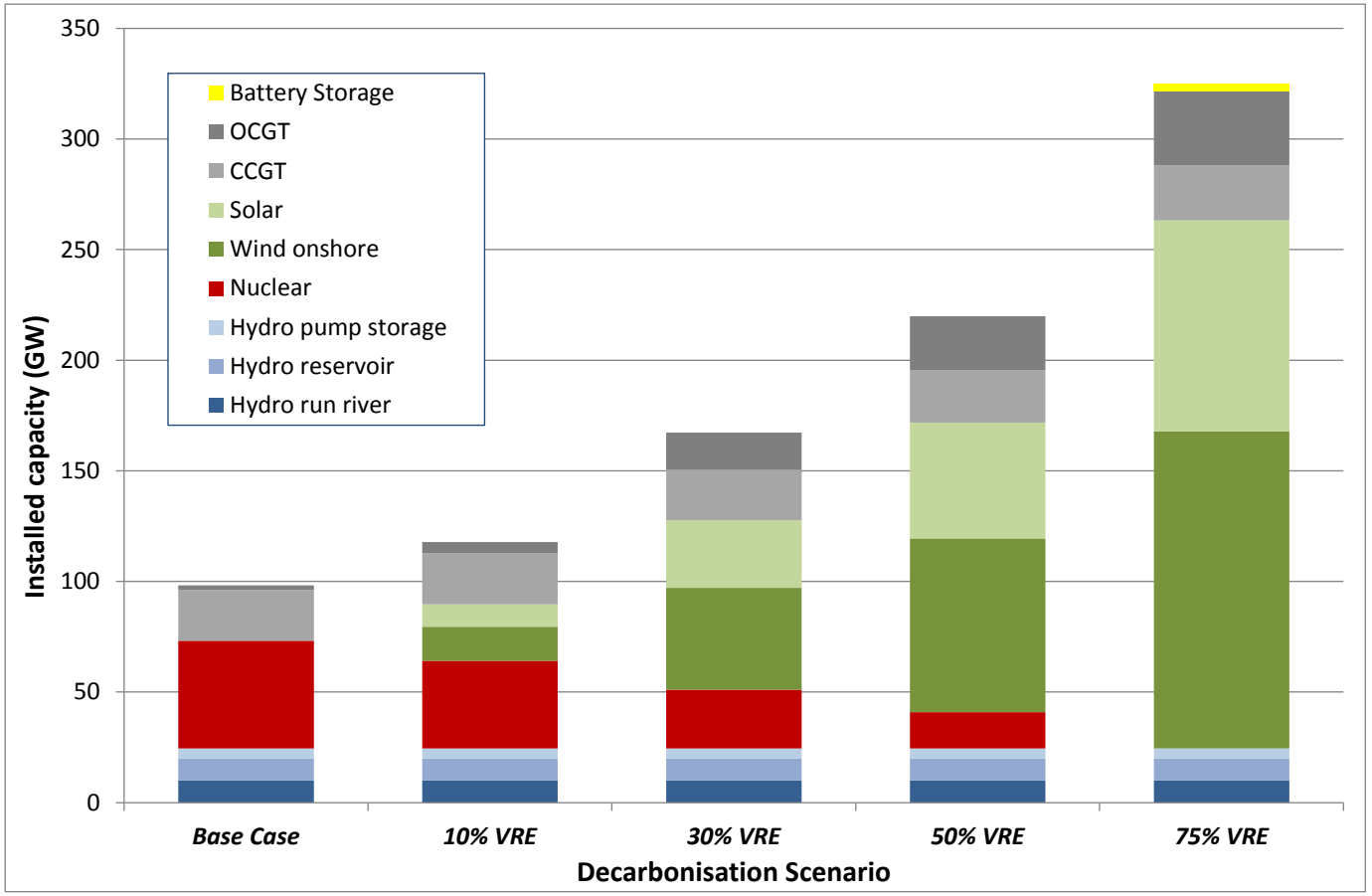
Whole cycle



10-day period around Christmas

- For 2/3 of the cycle the load fluctuates between 85% and 100%, while in the last third of the cycle the plant is operated in a base load mode.
- Daily load following, with power reductions up to 35%-40% of nominal power.
- “Stretch” can be observed in the last few days of operation

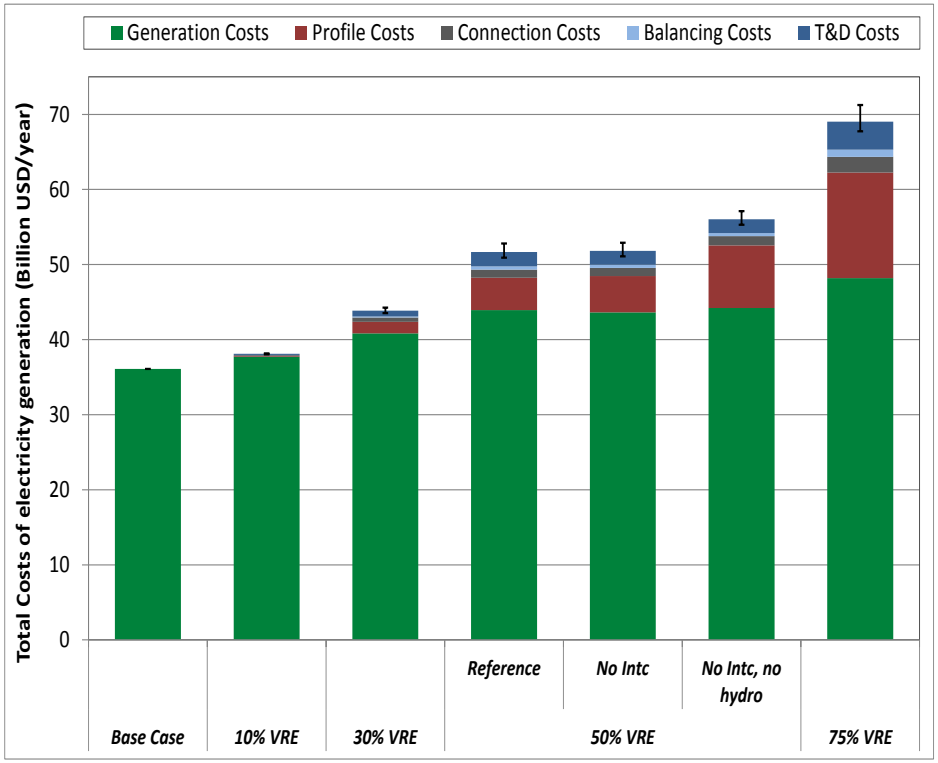
Systems of Nuclear and Renewables for 50g/kWh Can Look Very Differently…



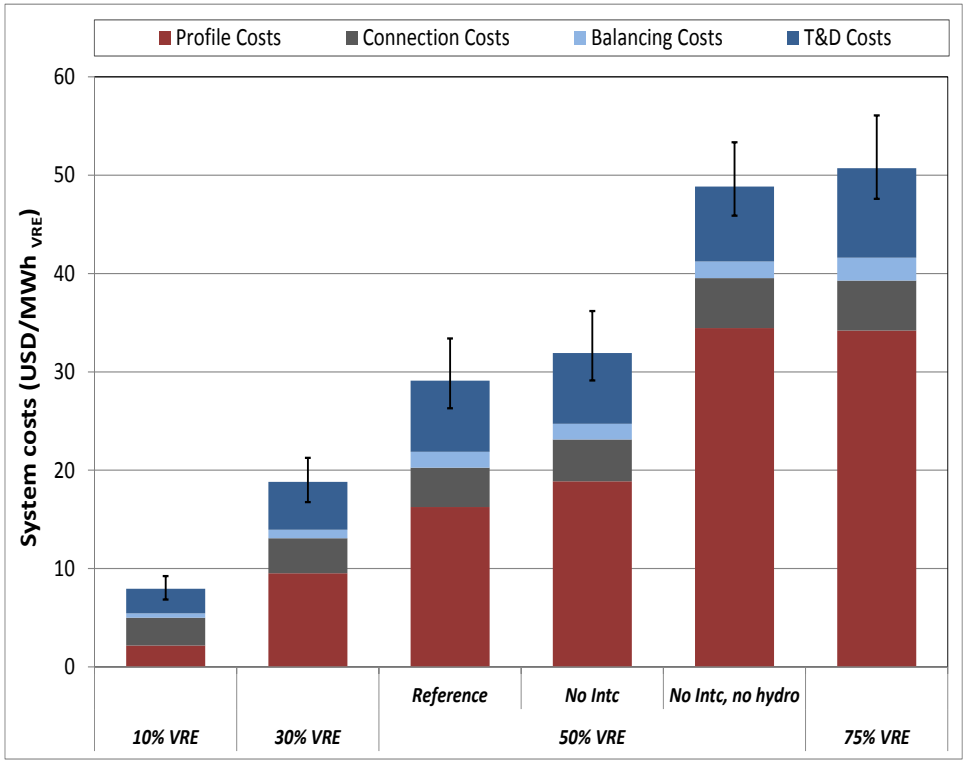
***Source*: NEA (2018e)**

… and Will Have Very Different Costs

Total cost of electricity provision



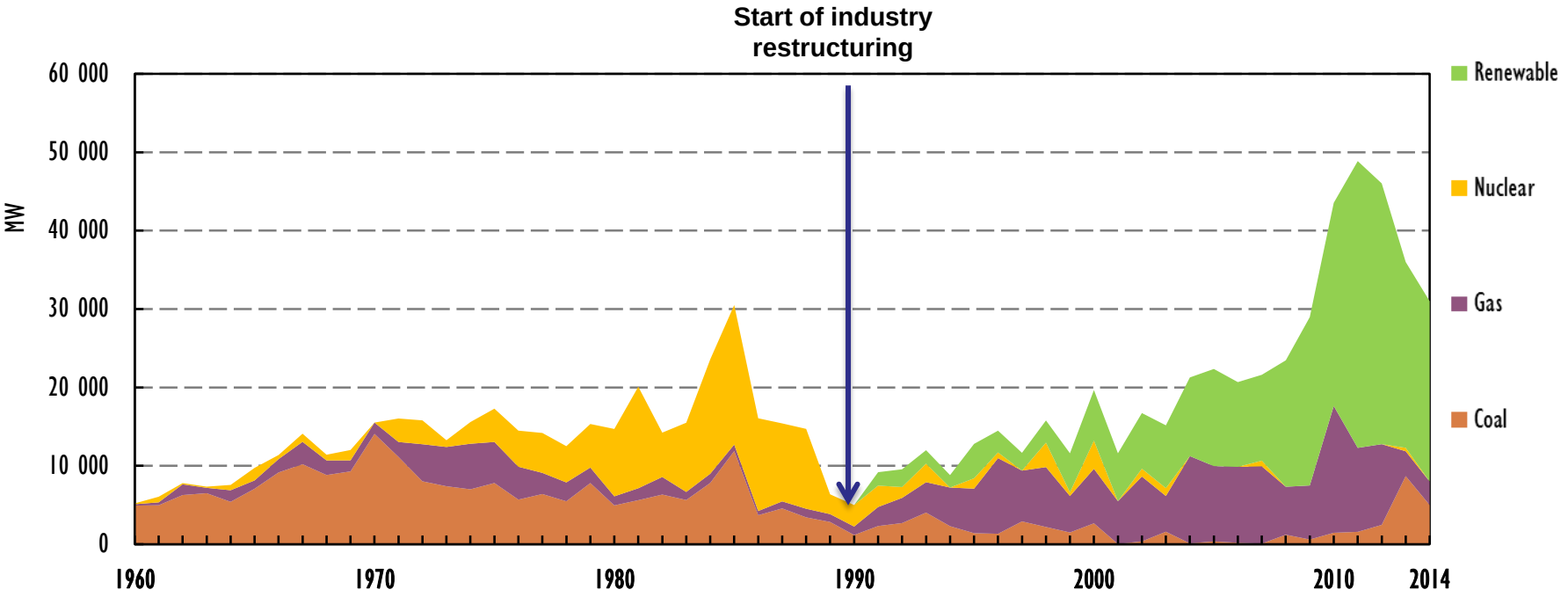
Total system costs of VRE



***Source*: NEA (2018e)**

The Challenge is Finding the Right Market Framework

Market Liberalisation and Nuclear New Build: Capacity additions in OECD Europe by technology, 1960-2014



***Source*: IEA**

Deregulated electricity markets with volatile prices pose a challenge for low carbon technologies with high fixed costs such nuclear and renewables.

Low carbon technologies require predictable long-term frameworks with stable revenues.