

# RE-POWERING MARKETS

## Designing capacity mechanisms

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# Introduction: capacity markets can support long-term reliability goals

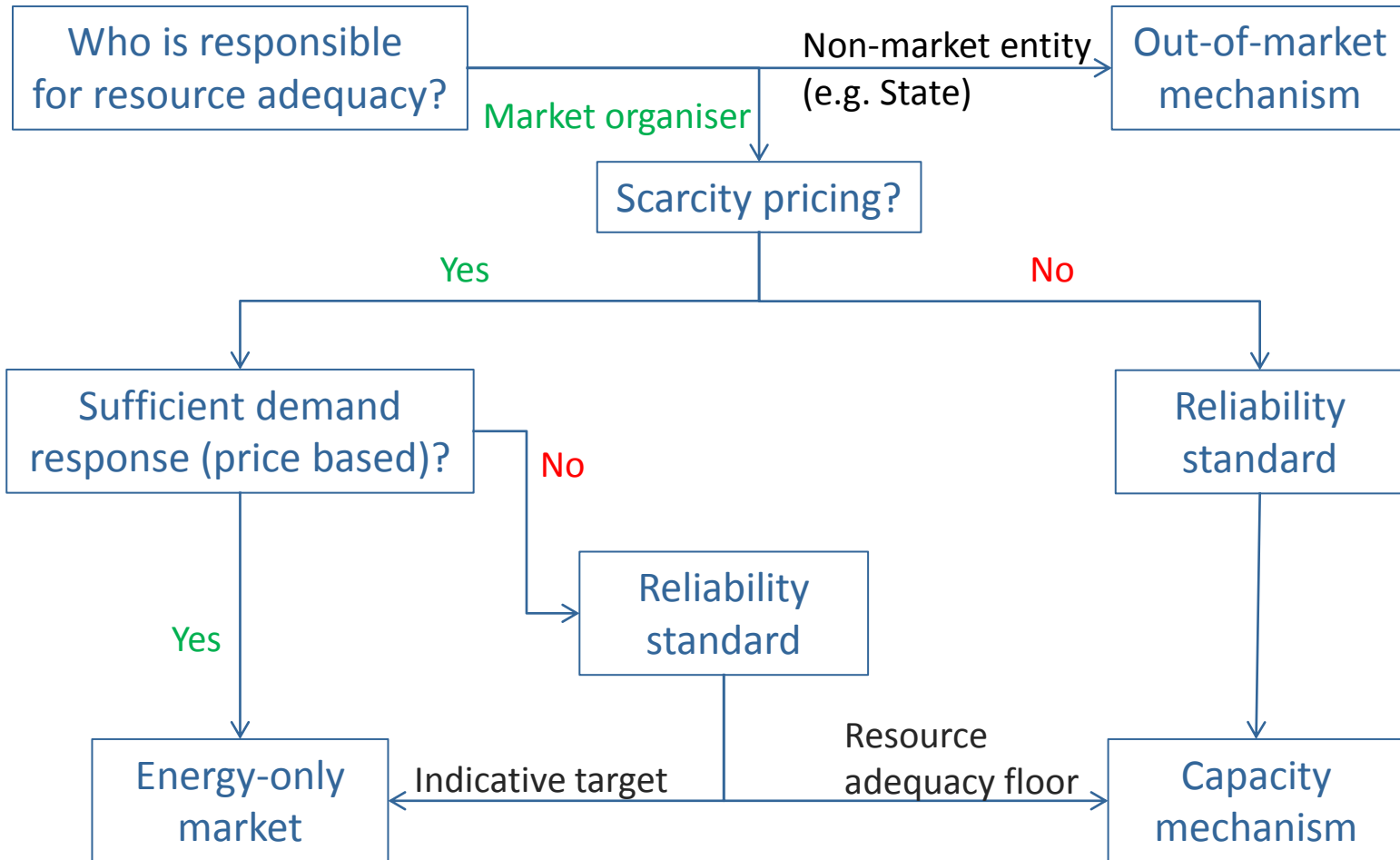


- Capacity mechanisms - or capacity markets - have been introduced with the objective of ensuring reliability needs are met.
- Targeted volume-based capacity mechanisms, such as strategic reserves, are quick to implement and can address short-term electricity security issues.
- Market-wide capacity mechanisms are more complicated to design, but may be better at meeting long-term adequacy needs
- In either case, administrative intervention is required.

# Are capacity mechanisms necessary?

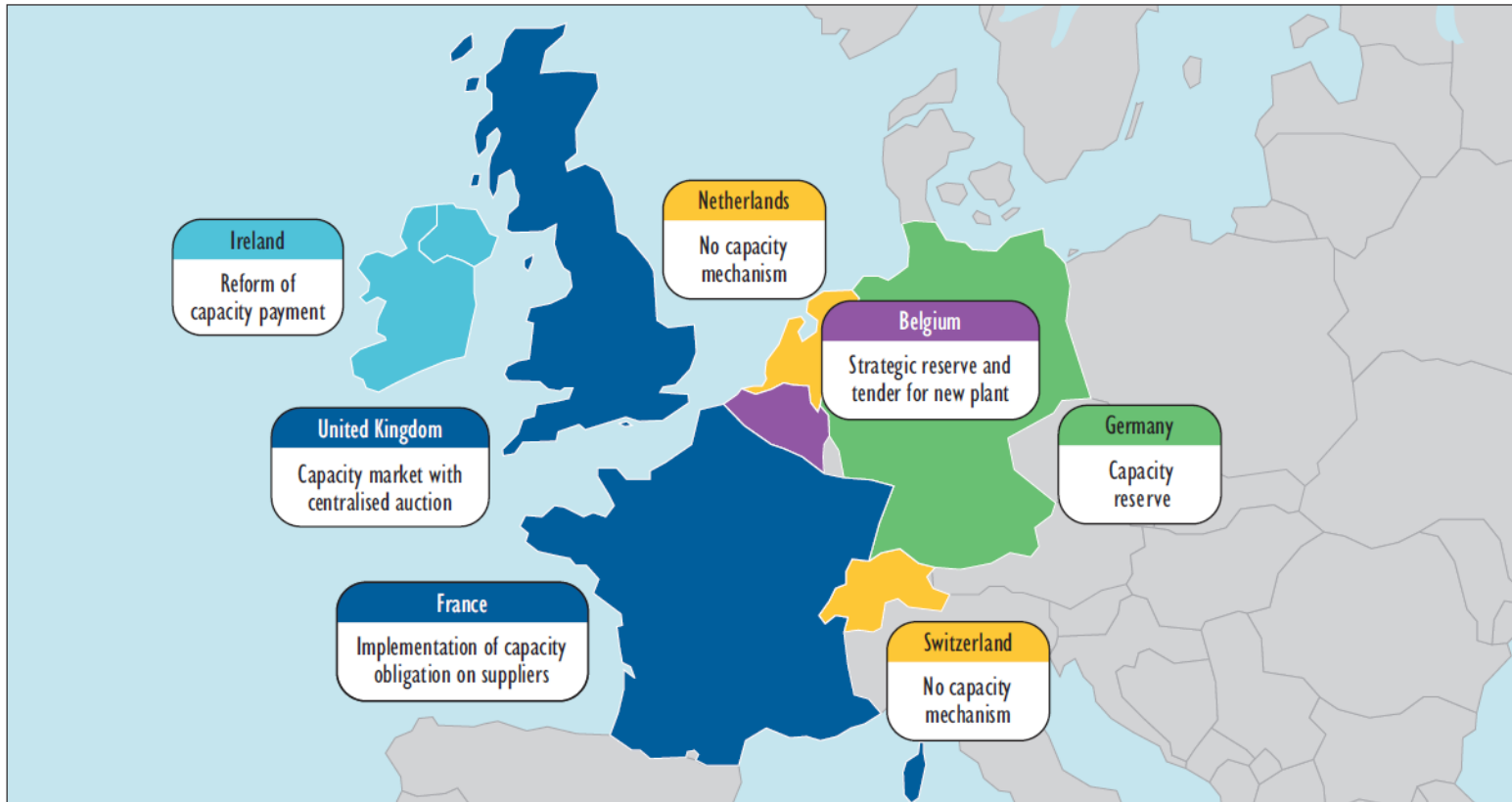


## A guide for decision makers



# Europe: differing national paths conflict with EU harmonisation

## Capacity mechanisms in Europe (select countries)

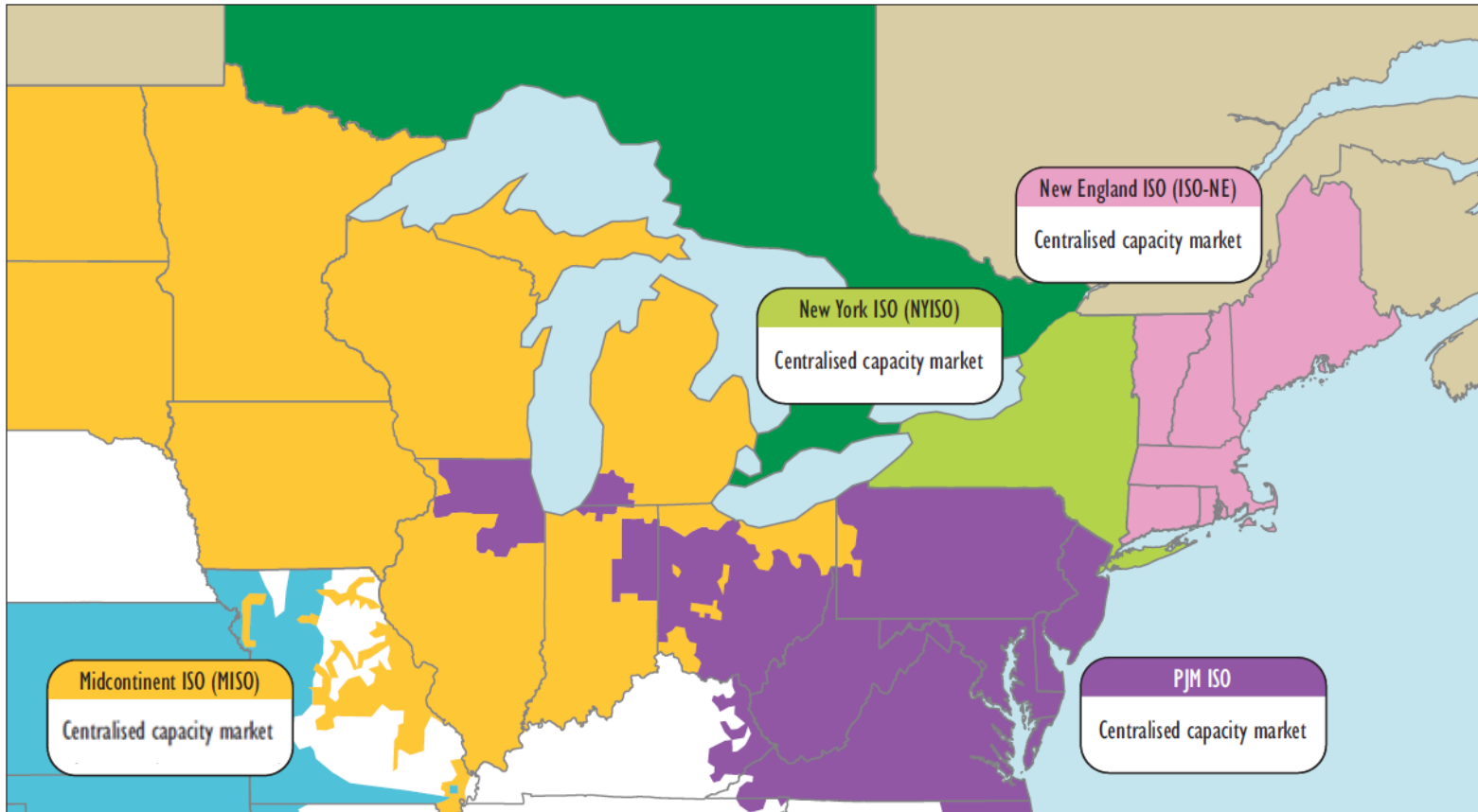


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***Europe has harmonised wholesale market design, but implementing capacity mechanisms remains a national decision, leading to market fragmentation.***

# US: capacity mechanisms aligned with wholesale market organisation

## Capacity mechanisms in US (regional wholesale markets)



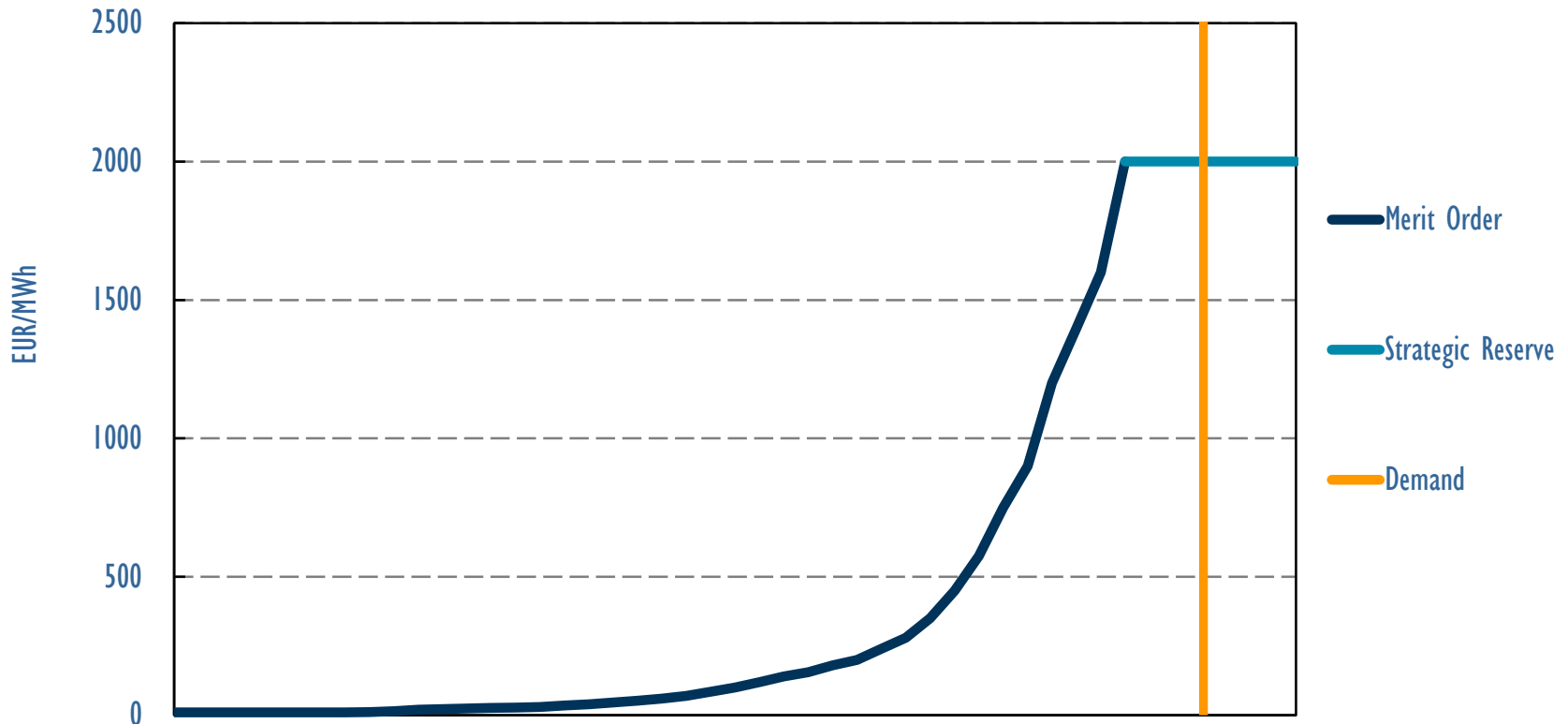
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***Restructured markets in the United States have tended to implement market-wide mechanisms, though there are significant differences in implementation***

# Strategic reserves procure only capacity needed to meet RA needs



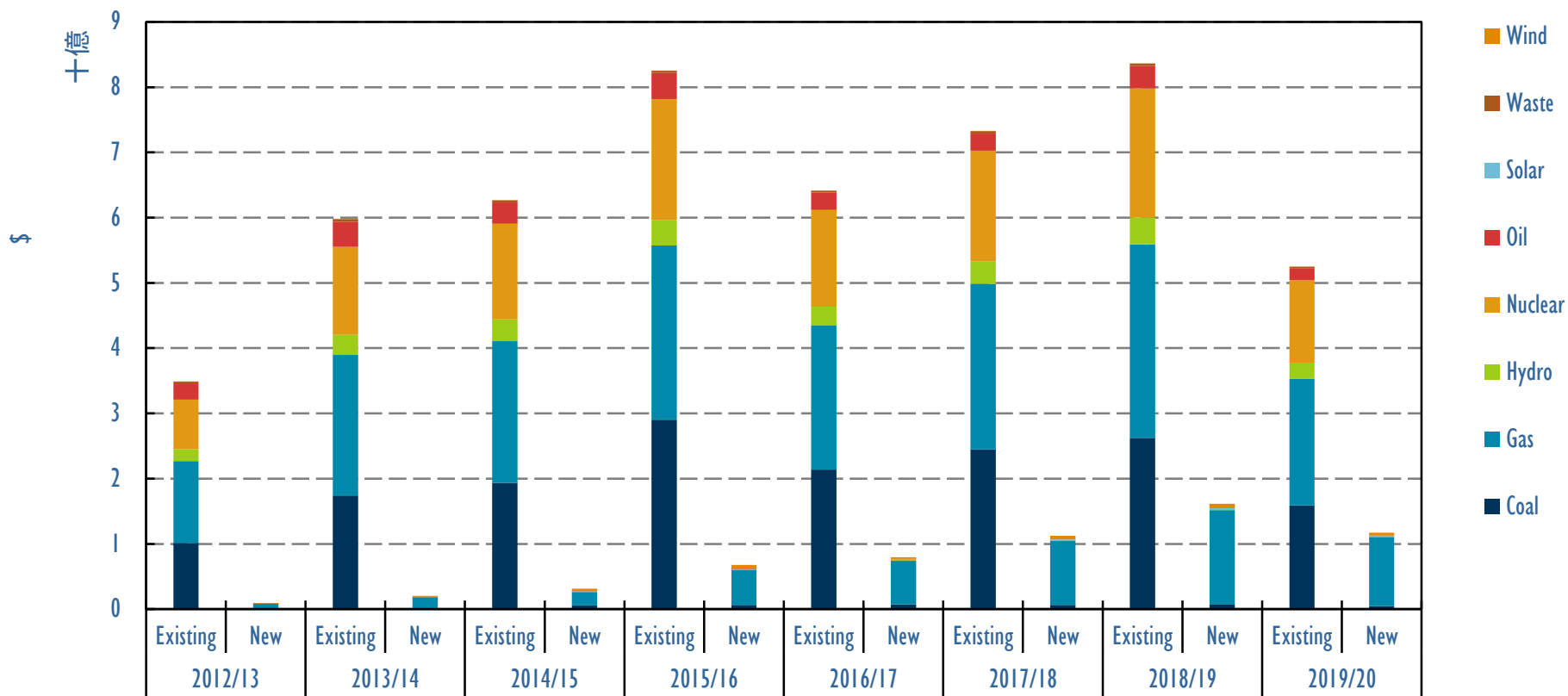
## Role of strategic reserve during scarcity conditions



***A strategic reserve can help meet short-term reliability needs while avoiding wholesale market distortions. Over the long-term, however, they may distort investment incentives.***

# Market-wide mechanisms remunerate all resources

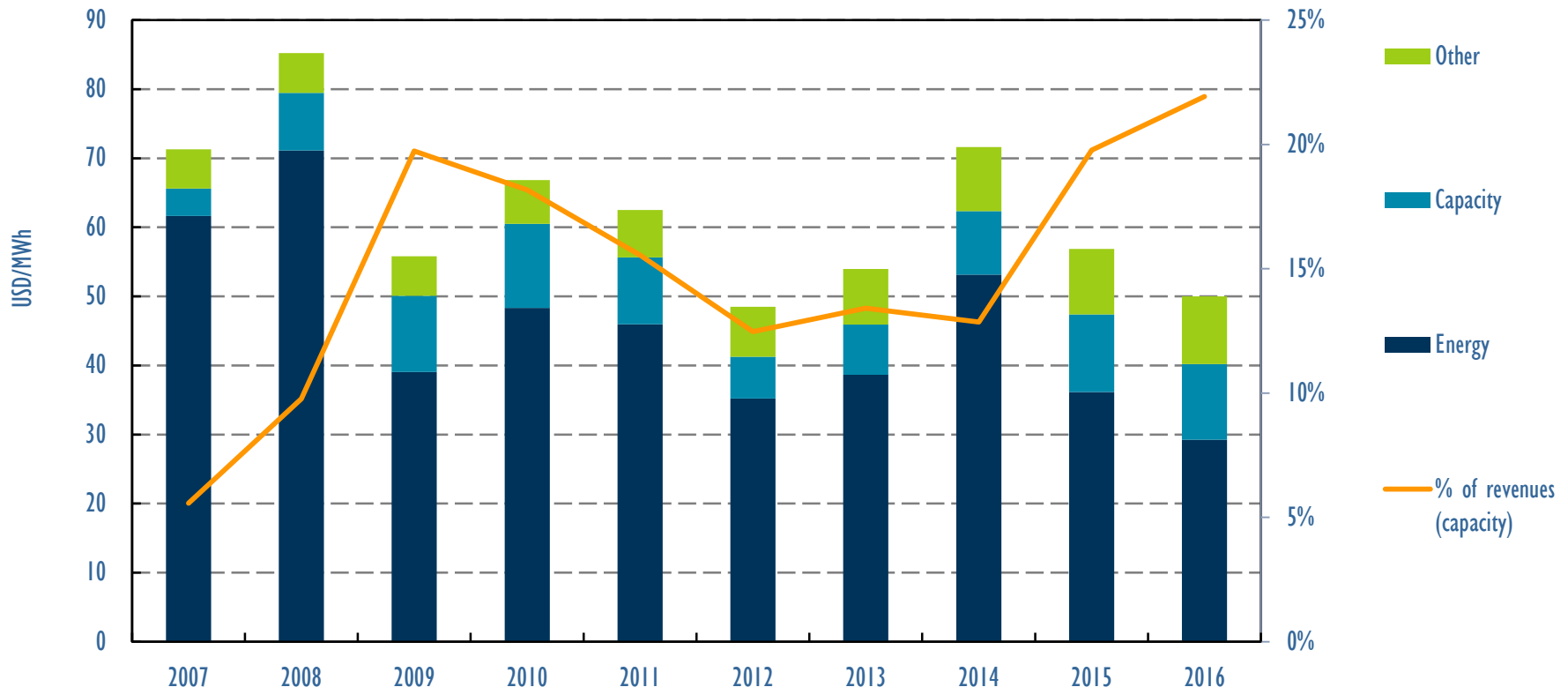
## Capacity market revenues by resource type in PJM



**Baseload technologies like nuclear, coal and natural gas perform well in capacity markets because of their high availability.**

# Putting capacity revenues in context

## Components of the PJM Wholesale Price



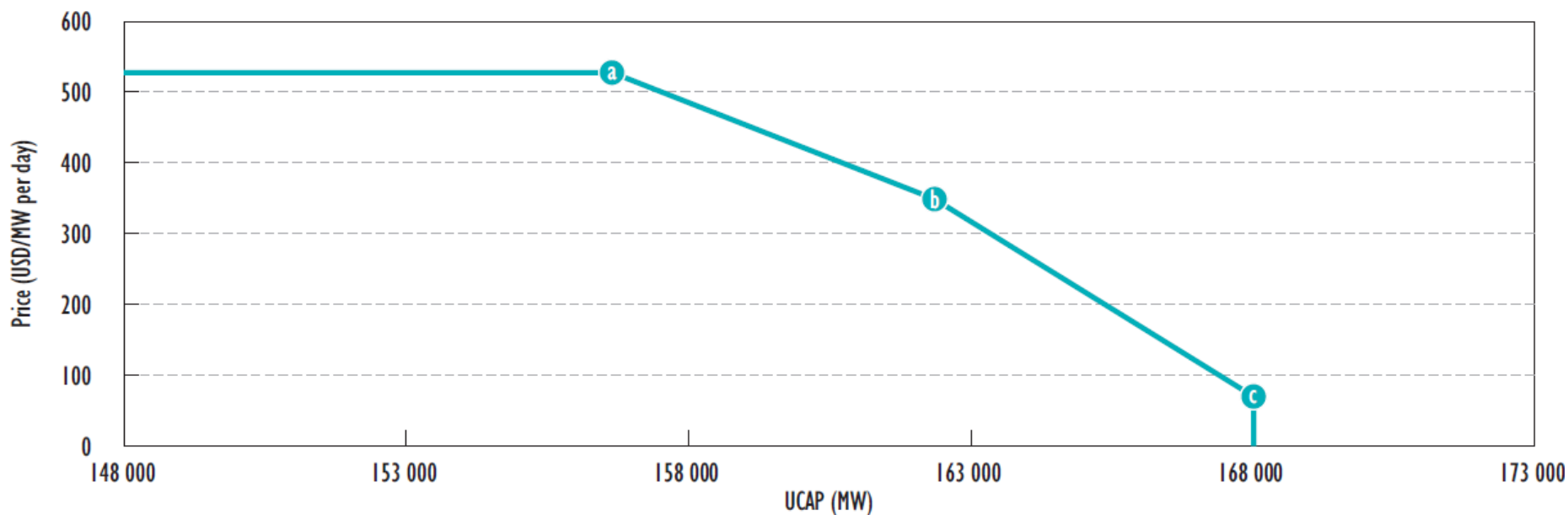
Source: Monitoring Analytics, 2015.

***Capacity payments can become a significant revenue source. Careful consideration of capacity needs is important to avoid distortions.***



# Developing the demand curve

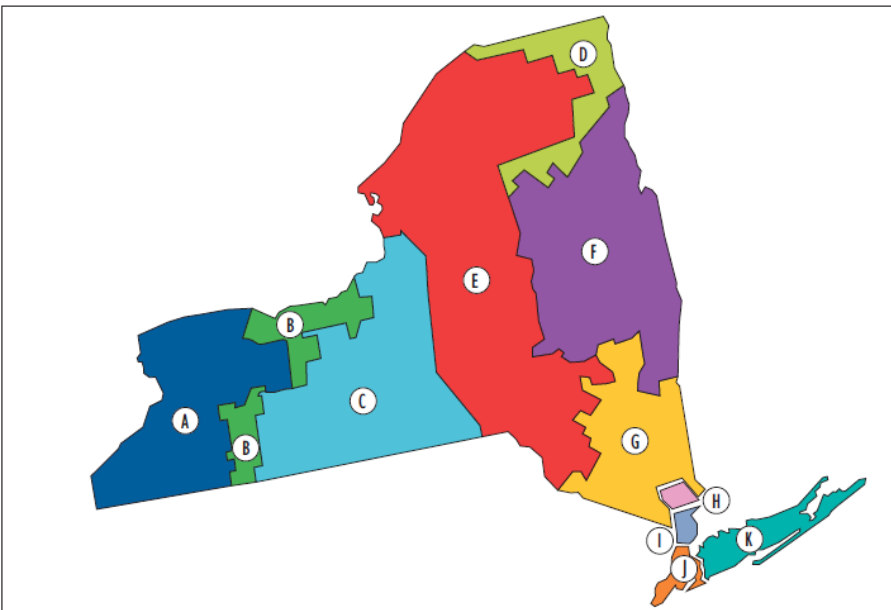
## PJM variable resource requirement (VRR) curve for 2017/18



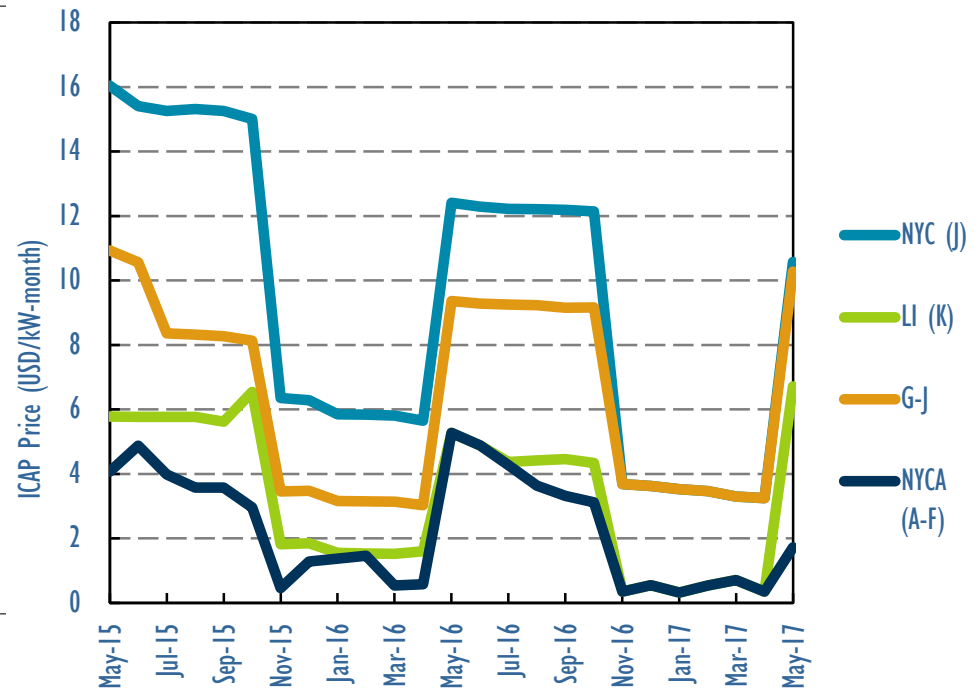
***The demand for capacity must be determined administratively.  
The price of capacity is determined through an auction process.***

# Market resolution: capacity markets should reflect system constraints

## New York price zones and ICAP market prices (2015-2017)



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**Capacity markets should include a locational component, so that investments are targeted where they are needed most**

# Who should be compensated?



## ■ Two concerns for market-wide mechanisms:

### 1. How to treat existing resources?

- ◆ Cost advantage because fixed costs are already recovered?

### 2. How to treat “subsidized” resources?

- ◆ “Double payment” problem: subsidy + capacity payment
- ◆ Price suppression effect: subsidized resources bid low, depress prices

## 1. Existing resources

- Is capacity provision a system service?

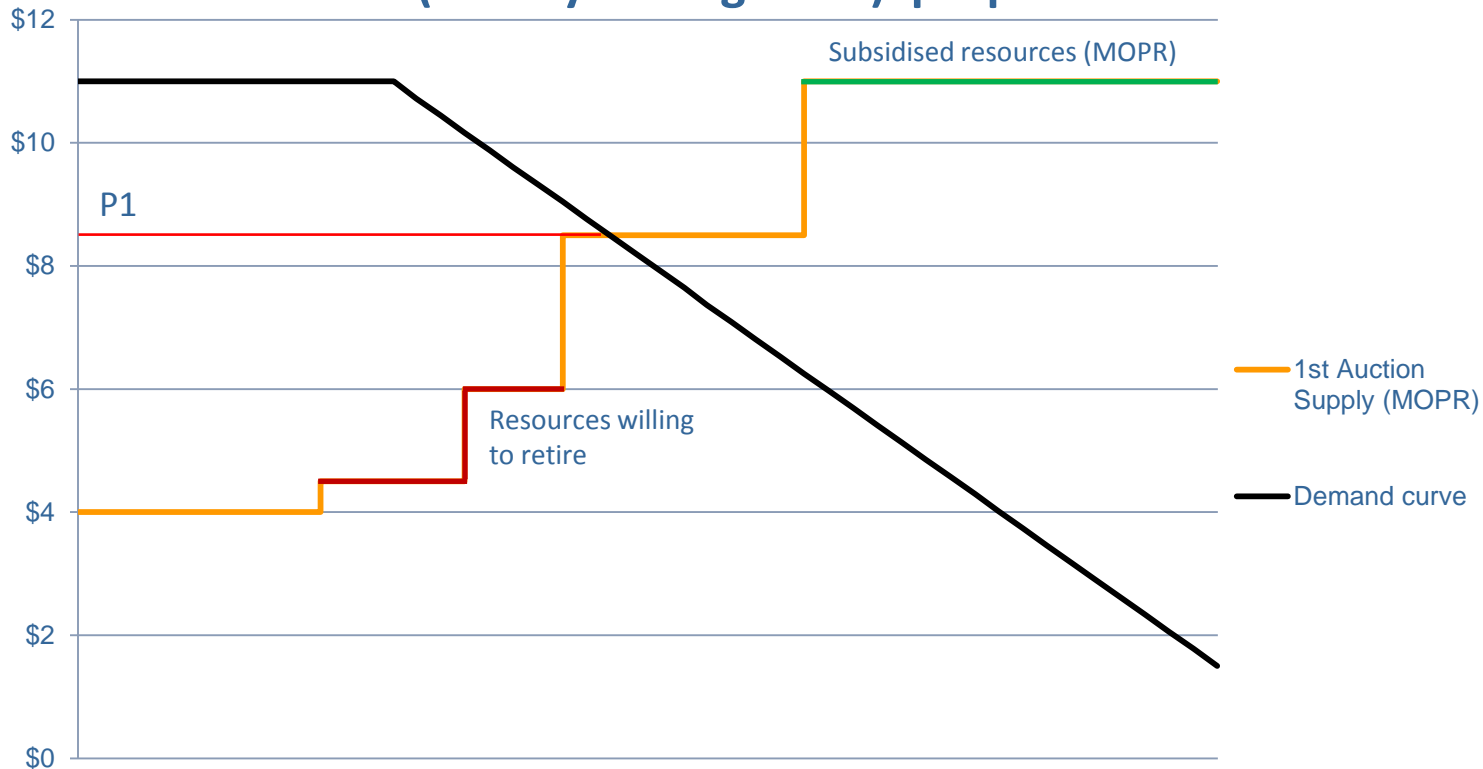
## 2. “Subsidized” resources

- Minimum Offer Price Rule (MOPR): required to bid at administratively determined price
- Tension between price suppression and “paying twice”

# Alternative method for addressing “subsidized” resources (1/2)



## ISO-NE Competitive Auctions with Subsidized Policy Resources (Mainly through RPS) proposal

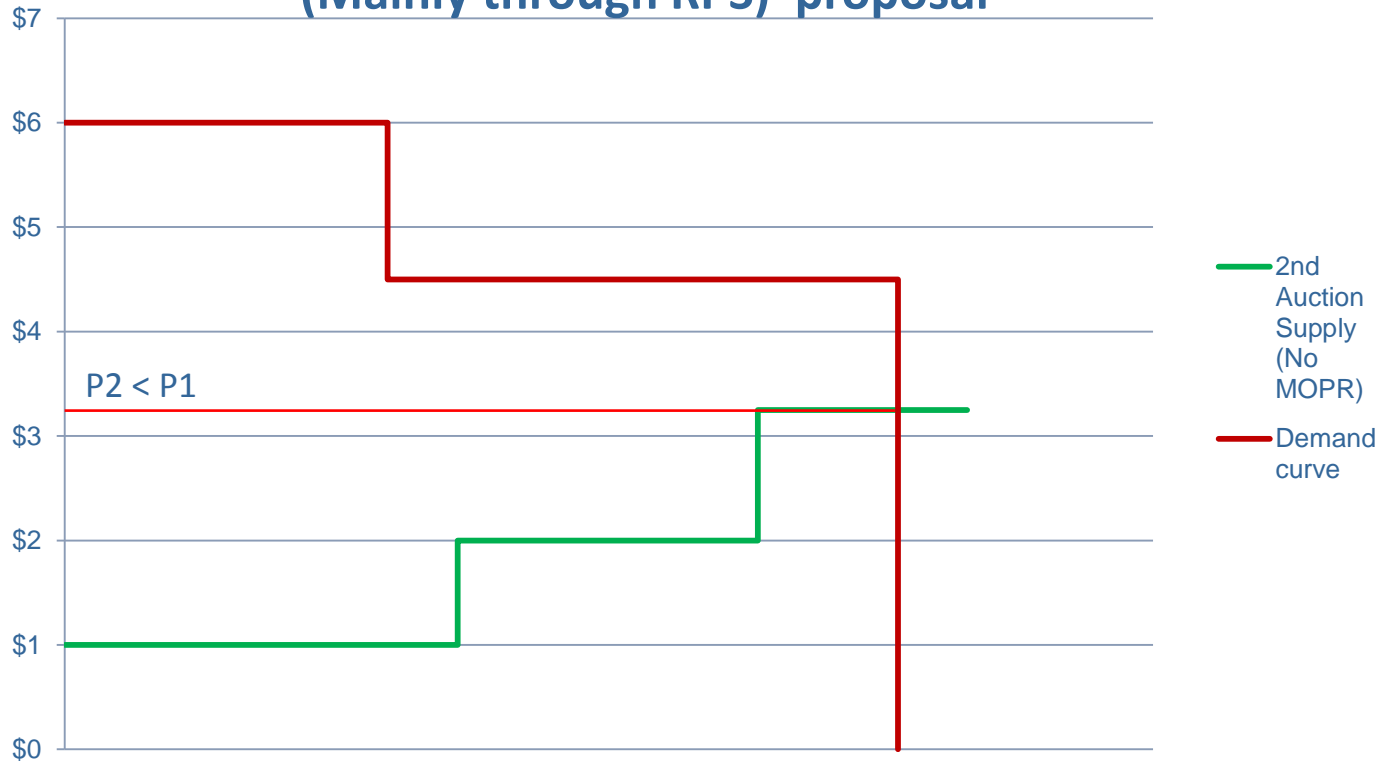


**The CASPR proposal is a two stage auction process. The first stage operates in the same manner as the current process, determining the market-clearing price.**

# Alternative method for addressing “subsidized” resources (2/2)



## ISO-NE Competitive Auctions with Subsidized Policy Resources (Mainly through RPS) proposal



***In the second stage, supply is restricted to subsidized resources that did not clear, and demand is made up of resources willing to retire.***

# Conclusion



- Capacity mechanisms are an effective tool for meeting short- or long-term resource adequacy needs, but must be carefully designed to prevent market distortions
- Capacity mechanisms are not a replacement for getting wholesale market price signals right in the first place
  - They are instead a safety net to meet policy driven reliability goals
- Strategic reserves can address short-term electricity security issues, but do not ensure that the energy market delivers adequate long-run investment.
- Market-wide capacity mechanisms should be technology neutral, should include both supply- and demand-side resources, and should be forward looking.
  - Sound penalties can ensure the availability of contracted capacity
- To allow cross-border participation, clear and transparent rules for contracting of neighbouring generation and short-term cross-border flows are essential

# Thank you



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