The Future of Capacity Markets: Taking stock and looking to the future

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Michael Hogan
Senior Advisor
What’s the objective...really?

• Ensure investment is sufficient to meet resource adequacy standards...
  
  • At the lowest reasonable cost...

  • In a power system increasingly reliant on variable energy resources.
What has gone well

• Reserve margins have remained healthy (very healthy)
  • Introduced at a time of surplus and “at risk” investments
  • Replacement rates & resource additions have delivered the MWs
• Rolling limited-term commitments are working
  • A safety net and a reliable indicator of future market conditions, not a substitute for well-functioning energy & services markets
  • Adaptability is valuable in a period of rapid & uncertain change
• Demand-side has outperformed on several dimensions
  • More quantity than originally predicted
  • “Merit order effect”
  • Very reliable
What hasn’t gone so well

• Firm capacity ≠ cost-effective resource adequacy
  • Reliability issues despite healthy reserve margins (and costs)
  • Constant revision, growing complexity, liquidity constraints
  • Has not replaced need to make energy market work as intended

• Regions w/CMs consistently over-procure by design
  • Over-values generation relative to other, larger reliability issues
  • Compounds energy market distortion by locking in surplus
  • Regions w/out CMs may be delivering better value for money

• “Missing money” still goes missing...for different reasons
  • Perception of “windfall profits”, “double payments” persists
  • Claims of “price gouging”, “market manipulation” do not go away
  • Finding ways to pay for needed resource capabilities only compounds risk of missing money, double payment or both
Patterns of investment (& over-investment)

avg annual new-build as % of 2014 peak

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<th>Region</th>
<th>ERCOT</th>
<th>NYISO</th>
<th>PJM</th>
<th>ISO-NE</th>
<th>NEM</th>
<th>SWIS</th>
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<td>Peak</td>
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ratio of actual to target reserve margins (2015)

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<th>Region</th>
<th>North America</th>
<th>Australia</th>
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<tr>
<td>Ratio</td>
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<td>3.0</td>
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Patterns of investment (& over-investment)

Strength of intervention

Energy solutions for a changing world
Changing value of resource capabilities

Capabilities vs. capacity

On Track Scenario: Key Trends

- Conv plant cap factor (all)
- Excl back-up reserve
- Firm cap reserve margin
- Grid utilisation rate

Gross vs. Net trends from 2010 to 2030.
Order 745: winning the last war

2016 PJM RPM auction results
Manifesting the value of flexibility

Prices in Energy Only Markets (Left) and Markets with a Reliability Requirement (Right)

Sources and Notes:
Weekly average prices from Ventyx (2012); Weekly average prices for Australia are at the North Hub; Australia prices are at the Eastern Hub; and ISO-NE prices are at the System Hub.

Energy solutions for a changing world
Evolution away from binary model

Market driven, time varying

Rudimentary ‘EOM’

Ancillary svcs market reforms

Energy market improvements

Reserve shortage pricing intervention

Growing consumer empowerment

Time

Administrative, fixed

Fixed single-product CMs

Ltd. segmentation (e.g., DR)

Single-product with major ‘scarcity event’ risk/reward

Phase out capacity market

Evolving definitions of adequacy

Energy solutions for a changing world
Know what you’re hunting for
About RAP

The Regulatory Assistance Project (RAP) is a global, non-profit team of experts that focuses on the long-term economic and environmental sustainability of the power and natural gas sectors. RAP has deep expertise in regulatory and market policies that:

- Promote economic efficiency
- Protect the environment
- Ensure system reliability
- Allocate system benefits fairly among all consumers

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Michael Hogan: mhogan@raponline.org