



Control Number: 40000



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August 29, 2012

Public Utility Commission
1701 North Congress Street
Austin TX 78711 – 3326
RE: Project 40000

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Enclosure: Power point file, “Beyond Capacity Markets: Ensuring Reliability in ERCOT’s Competitive Wholesale Power Market Under the New Resource Paradigm” by Mike Hogan and Rich Sedano, Regulatory Assistance Project, dated August 28, 2012.

Chairman Nelson and Commissioners:

These comments are offered in response to the Notice of Workshop (Item 272) in Project 40000, a Proceeding to Ensure Resource Adequacy in Texas.

The Regulatory Assistance Project is a global non-profit company based in Montpelier, Vermont providing policy development and technical assistance services to governments involved in power sector regulation. Senior RAP personnel are former government energy regulators. RAP is supported by grants from foundations and government and represents no private interests.

RAP is providing comments to the Public Utility Commission of Texas on alternative concepts to wholesale market rules that are specifically adapted to a market that has a significant portion of energy coming from variable resources, as Texas has.

RAP is suggesting that in a wholesale market with the variable resources on hand that Texas has, finding ways to adjust market rules to value flexibility will drive investment and deliver value and reliability. We offer two ways to make those adjustments, one consistent with an energy only market that introduces forward and enhanced ancillary markets, and second that would introduce a differentiated capacity market that pays more for more valuable resources. These are not mutually exclusive. We think these changes, driven by functionality and value and applying to supply and demand side resources, would motivate investment and minimize the reserve margin needed to assure reliability, delivering reliability at lower cost than other market designs would, offering a purpose-built wholesale power market for Texas circumstances. RAP has examined the report to the Commission from the Brattle Group. RAP views its comments as extending the scope of alternatives covered by Brattle’s good work, placing emphasis on flexibility and market design driven by value and function be address specific circumstances in Texas.

RAP’s comments under this cover letter are in the form of a power point presentation made to Texas stakeholders earlier in August 2012. At the conclusion of the power point



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and also here is a URL linking to a report that explains further the ideas covered here.
<http://www.raponline.org/document/download/id/6041>

RAP is interested in supporting and assisting the Public Utility Commission of Texas on the challenging issues in this docket, as it is interested in assisting the PUCs around the nation and submits these comments in that context to stimulate discussion. RAP is unable to be present at the September 6 workshop, but stands ready to participate in subsequent workshops and forums on wholesale market rules organized by the Commission or others in Texas, or to engage with the commission in other ways as it sees fit.

Thank you for your consideration.

Yours, respectfully,

A handwritten signature in black ink, appearing to read "Richard Sedano". The signature is fluid and cursive, with a large initial "R" and "S".

Richard Sedano
Principal, Director US Programs
Regulatory Assistance Project



Beyond Capacity Markets

Ensuring Reliability in ERCOT's Competitive Wholesale Power Market Under the New Resource Paradigm

Presented by
Mike Hogan and Rich Sedano

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An old debate heats up again

From Texas (Project 40000) to the UK (Electricity Market Reform) to Germany (Energiewende), it's a hot topic:
"Das Stichwort...heißt Kapazitätsmärkte"
("The key word...is capacity markets")
Chancellor Angela Merkel, 23 May 2012

How to design markets to ensure reliability at least cost:

- without undermining competitive markets?
- without locking in all the "wrong" resources?
- without prohibitively high resource integration costs?

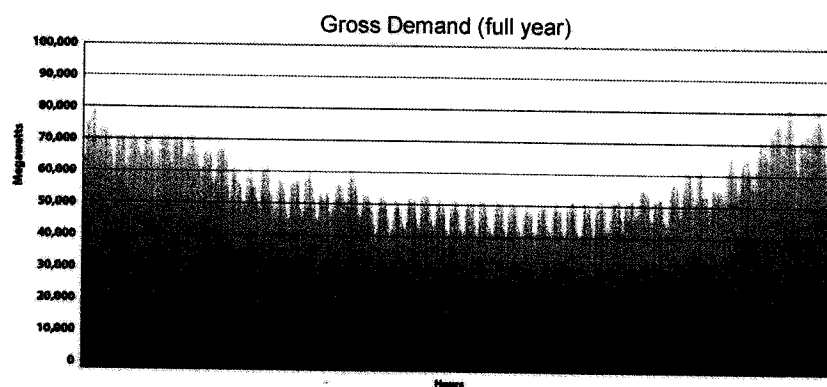
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Capacity markets: the temptation of the familiar

- Reliability has always had two dimensions:
 - *Resource adequacy* – are there enough *firm resources* to meet system peak demand?
 - *System security* – are the *right resources* deployed to balance supply and demand at least cost?
- These always functioned at different timescales – resource adequacy at investment timescales, system security at operational timescales
- Capacity markets were investment incentives designed for that world, i.e., a world where investment problems = resource adequacy problems

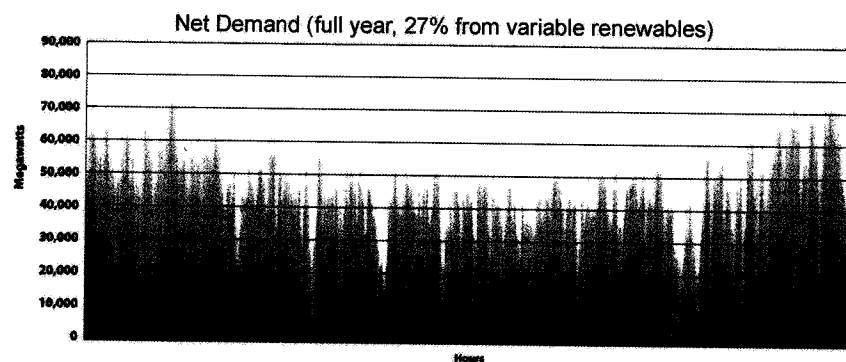
A traditional view of the resource challenge



Capacity markets: the “fax machine” of the power industry

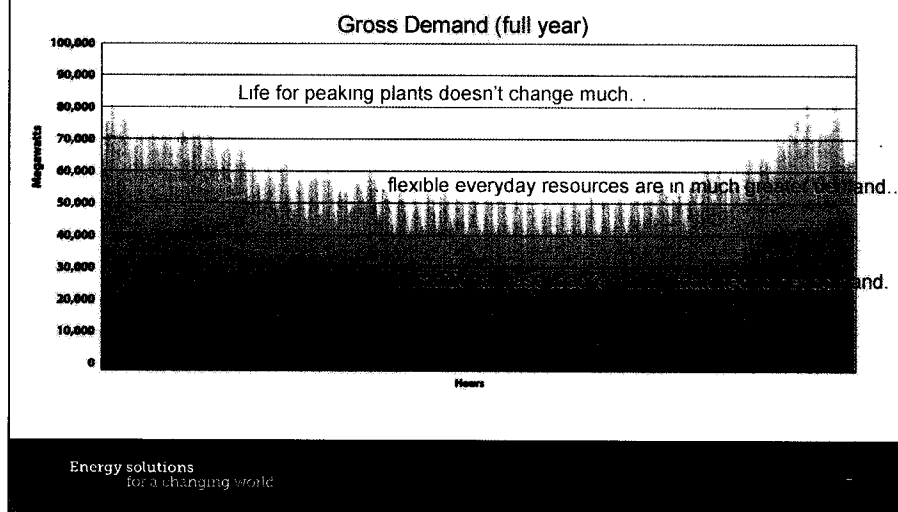
- That world is disappearing, faster in some places than in others, and in some places it’s already gone
- Variable, low-marginal-cost renewable production now represents a significant share of production in ERCOT
- This has transformative implications for least-cost reliability planning
- The essence of the shift is revealed through forecasts of *net demand*: gross demand minus demand effectively served by low-marginal-cost, uncontrollable supply

Net demand presents a fundamentally different picture



- Managing reliability at least cost becomes a round-the-clock, year-round issue
- Calls for a different, more flexible (i.e. cycling, ramping) mix of resources
- Greater value of resource flexibility needs to be reflected in investment choices

Where you stand depends on where you sit



Capacity markets: the “fax machine” of the power industry

- *Capacity* markets worked in some regions for awhile; now, as renewables have grown, it’s become apparent that protecting the *quantity* of firm resources is no longer enough
 - As early as 2005 PJM tried to address the need for resource *capabilities*, not just *capacity*
 - Now ISO-NE is facing reliability issues *despite* surplus capacity and is proposing to do just that
- The rise of low-marginal-cost variable resources poses a different investment challenge:
 - The right quantity of capacity is now a contingent metric - *how much* depends on *what kind*

Fixing one problem...making the other one worse

- Capacity markets actually work at cross purposes with the need to increase system flexibility
 - Long-term value of capacity is highlighted, implicitly devaluing other resource attributes
 - Capacity is a more visible, tangible commodity
 - They favor least cost (i.e., least flexible) firm capacity
- Energy-only markets may also militate against resource flexibility by systemically undervaluing it
- If we don't expand flexibility consumers will pay the price – in higher operating costs, unnecessary investment in back-up generation (i.e., higher reserve margins), and ultimately reduced reliability

What lies “beyond capacity markets”?

- Two basic forms of market-based long-term investment incentives are appropriate to the new supply paradigm:
 - Apportioned forward capacity mechanism
 - Enhanced forward services mechanisms
- Based on net demand forecasts and analysis of the incremental value of critical services to ERCOT
- By shifting investment to flexibility and assessing demand for and paying for flexibility on a system basis these designs expedite the integration of variable renewables into the balancing market

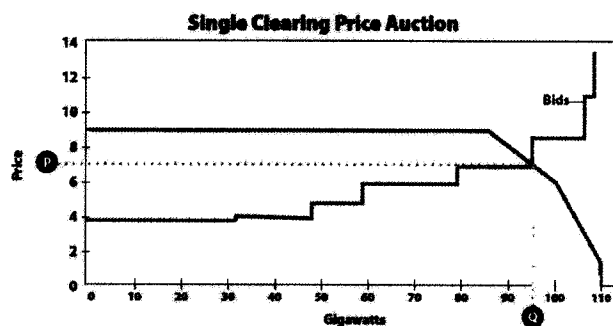
Enhanced forward services markets

- Long-term auctions for selected non-energy services; a representative example:
 - 10-minute spinning reserves
 - 10-minute non-spinning reserves
 - 30 minute operating reserves
 - non-reserve ramping capability
 - frequent short-cycling capability
- Energy storage service can be incorporated
- Demand-side competes wherever qualified
- Adaptable to energy-only markets by stabilizing revenues for reliability-critical system services

Apportioned forward capacity markets

- Subdivide capacity market into tranches based on resource capabilities (supply- *and* demand-side)
- Sequence procurement – most flexible (short-cycling) resources first (incl. storage), flexible (ramping) resources next, inflexible resources last
- Incentives to invest in traditional balancing services (e.g., operating reserves) can be part of capacity mechanism or auctioned separately
- Pays all firm resources for market value of firm capacity...*but pays more for resources that possess other reliability attributes, less for those that don't*

Example: current forward capacity market

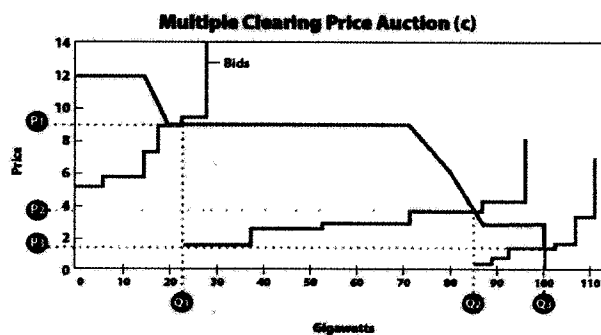


- Example of an undifferentiated forward capacity auction – target is 100 GW at a value of 6
- All firm resources clear the market at 7 regardless of what other operational attributes they do or do not possess
- In this case only 95 GW of resources clear the market

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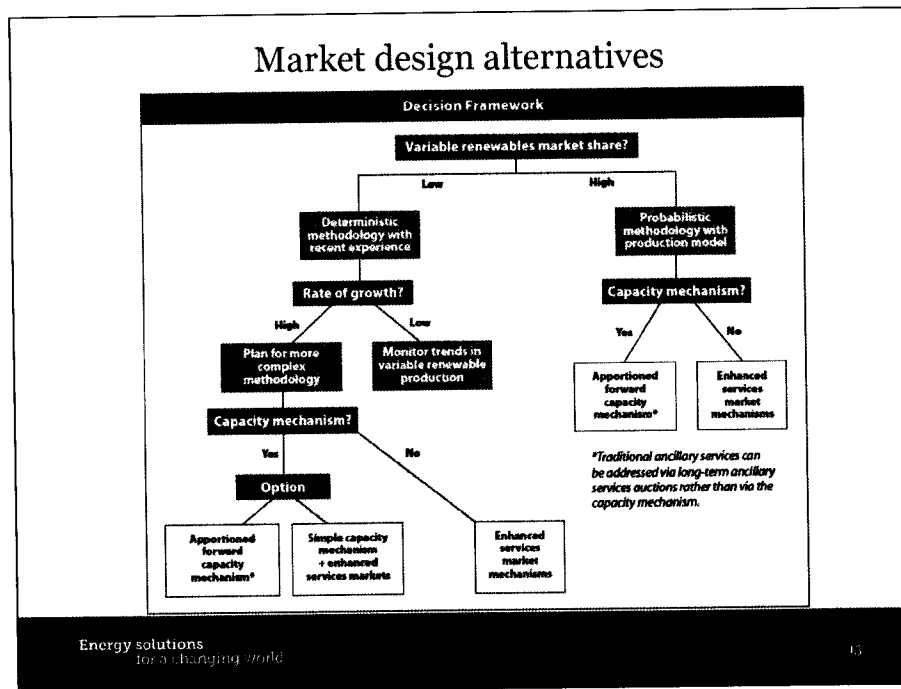
Example: apportioned forward capacity markets




- Example of an apportioned forward capacity auction – three tranches, sequenced in order of resource capabilities. 1st tranche target 20 GW, 2nd tranche 60 GW, third tranche target is the remaining 20 GW
- In this case, first two tranches clear at above target quantities (23 and 63 GW), last tranche is compressed (15) to fill out remaining resource requirement

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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

Learn more about RAP at www.raponline.org
 And download the paper at <http://www.raponline.org/document/download/id/6041>

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