On The Evaluation Criteria For Capacity Construct Alternatives

PJM CAPACITY CONSTRUCT PUBLIC POLICY SENIOR TASK FORCE
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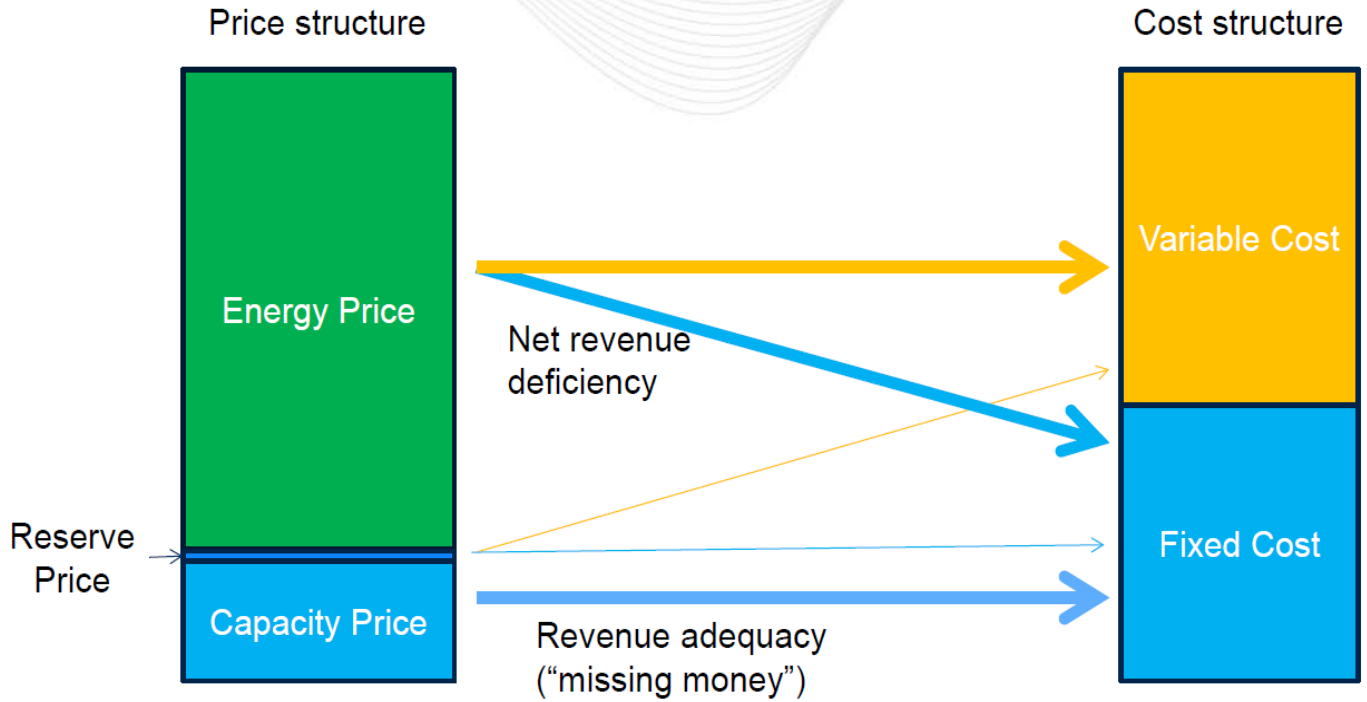
Scope of review

- The focus of this presentation is on the first work activity in the Issue Charge:
  - Identify the objectives and characteristics of a well-functioning capacity construct
- The Problem/Opportunity Statement focuses on the Reliability Pricing Model, with many observations
  - RPM has continually evolved in reaction to unforeseen events
  - RPM has continually evolved as part of design improvements
  - Complaints have been filed, relief has been requested
  - Actions have circumvented the PJM stakeholder process: litigation at FERC (and courts)
  - States actions can affect RPM, for environmental, political and policy objectives
  - This stakeholder "process needs to … ensure potential state public policy initiatives and RPM objectives are not at odds."
- All of this begs the question, is this task force constrained to operate under the assumption that PJM retains the basic construct of RPM?
  - What if the RPM construct itself is fundamentally at odds with state policy objectives?

- I believe that a mandatory, centralized, uniform-product auction-based market such as RPM is inherently incapable of efficiently providing system reliability and supporting other policy goals. In short, it is fundamentally incapable of providing the electricity service we want at the lowest cost.

“Economics Behind Capacity Construct”
March 6 presentation of Hung-po Chao
PJM Chief Economist and Senior Director Economics - Markets

How market prices recover resource costs



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Conclusions From PJM's "Economics" Presentation With Commentary

Conclusion

- Capacity market was created to achieve resource adequacy ~~and revenue sufficiency~~ *(revenue sufficiency is inherent in achieving adequacy)*
- Revenues from energy and capacity markets are essential to support resource investments*, and from other sources, and isn't this obvious?*
- State actions present a challenge to market price formation *currently*
- Resilient market construct built on sound economics could better support efficient price formation in the long run
  - *This seems to suggest a move toward a construct based on sound economics*
  - *Must be resilient, efficient, better—in the real world*

The Current RPM Construct Has Faced Fundamental Challenges From The Beginning

- A forced uniform product, when capacity can have different attributes
- Inherent problem of relying on a one year product where there are virtually no suppliers with a one-year marginal cost
- A set forward window (3 year) had different consequences for different technologies and issues
- In small-market areas, the potential for price collapse following entry creates problems for investors
- Demand curve is administrative goal-seeking, not reflective of consumer preferences
- Entry and exit cannot be coordinated
- Forced single clearing price magnifies market power problems
- Performance incentives are problematic
- Entry decisions are not reasonably based on a single-year price signal

No supplier has a marginal cost for a one-year product

- Decisions to enter or exit for a generator are made on the basis of multi-year expectations
- Generators not clearing the market typically stay in operation

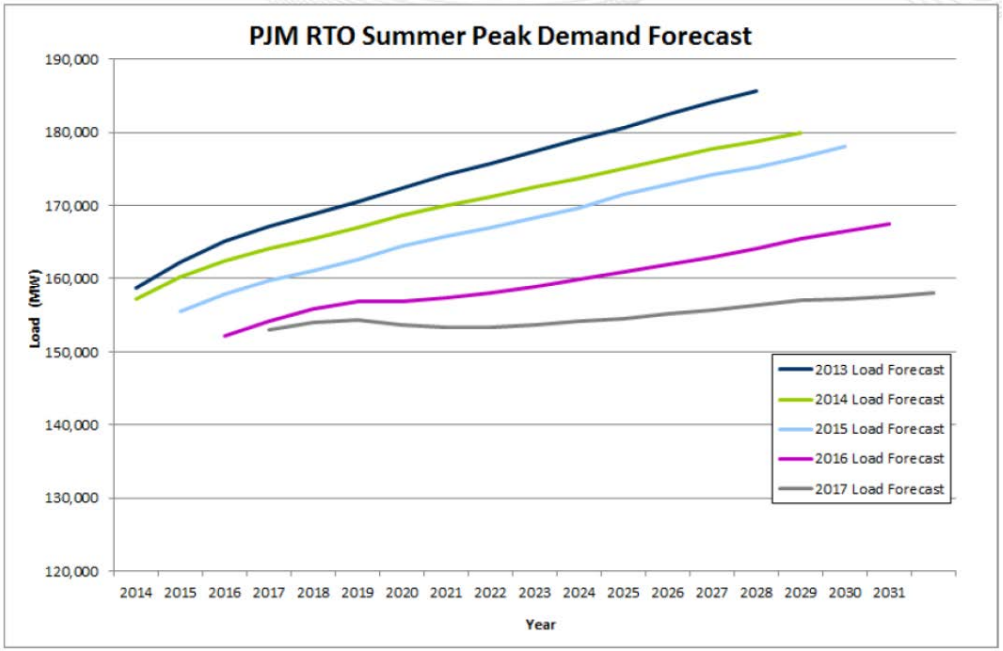
Market power is a problem

- Lots of must offer and delist market rules to address supply side market power
- Minimum offer price rule (MOPR) to address buy side market power
- Market power problems are rampant and inherent

Opinion: Entry (and exit) decisions are not based on the prices that come out of a stable market structure, but based on judgments of the regulatory support for prices into the future

And Then There Are The So-Called New Issues

- Operational resilience
- Environmental policies
- Fuel diversity/portfolio
- Carbon free resources (including nuclear)
- Jobs and employment
- Federal tax incentives
- No load growth
- Distributed generation
- Ramping issues (future) with increased renewable generation
- Responsive generation (batteries, etc.)
- Business platform (long-term planning)



Insight:

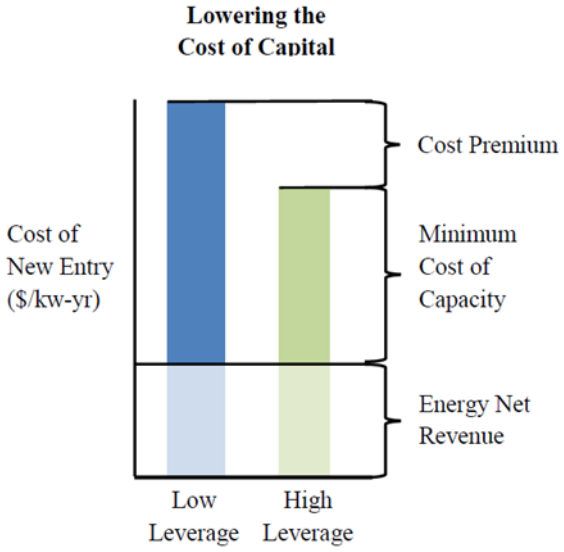
It has taken 130 years of industry evolution to reach the point where clear problems with obvious solutions—can’t be solved

There Are No Out-Of-Market Payments

- When capacity auctions were started, there used to be debates over whether they were “markets”, or some non-market administrative process
  - That debate is largely over
  - I conclude virtually any system of paying for goods/services is a market
- Now, we debate market/non-market payments, which is an equally ambiguous distinction
  - Again, any payment for goods/services is a market
- What is being debated are centralized v. non-centralized, but in fact we’ve had both for many years
  - Tax incentives
  - Renewable standards
  - Demand side
  - Different access to financing

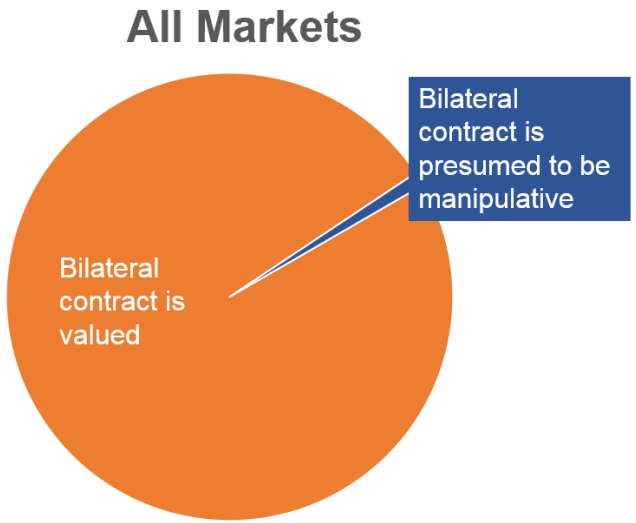
Competition Is Critical, But Not Limited To Centralized, Mandatory Annual Auctions

- RPM involves competition, but requires a product definition that is highly constrained and limited to a one-year duration resulting in inherent price volatility and uncertainty
- Bilateral markets can also be competitive—with vast flexibility to address product needs and the ability to lower costs by buying only what is needed
  - Longer durations can lower costs
  - Matching needed attributes can lower costs
- Market power issues need to be resolved in all cases



Fiction Over Bilateral Contracting

- Bilateral contracts seem to be viewed as an invasive species, somehow unnatural and only begrudgingly considered as part of the competitive landscape
- A contract between buyers and sellers, with flexibility to buy what they need and sell what is available, has been around since the advent of markets
- Opposition to bilateral contracting is what is unusual
- Market entry is seen as a solution to sell-side market power at FERC, DOJ and FTC, yet here is problematic
- Virtually all of the issues that are so complicated with respect to the centralized, mandatory capacity construct are relatively straightforward and manageable with bilateral contracts



Objectives:

The potential for bilateral contracting should not be evaluated on the basis of its effect on the centralized, mandatory auction (RPM), but for its effects on market efficiency and reliability

Breaking Down The Objectives

- I think the objectives can be grouped into three categories
  1. Meet adequacy objectives
  2. Support the rest of the market and policy goals
  3. Promote competition to lower costs

- Each of these three has different perspectives
  1. The construct has to be effective and provide for adequate supply
  2. The capacity construct supports policy goals, not the other way around; policy goals are established by appropriate agencies, both within and outside of PJM
  3. To the extent 1 and 2 are requirements, the best construct is one that meets those objectives most efficiently

Mapping PJM's RPM Objectives To #1, 2, 3

RPM Objectives

Ensure resource adequacy 1	• Meet RTO & LDA Reliability Requirements through competitive procurement 1 3 • Provide revenue sufficiency ("missing money") 1
Provide transparent price signals ?	• Forward for actionable response 1 • Locational to incent investment where needed 1 • Year-over-year stability to reduce investment risk and cost 3
Provide fair competition between resource alternatives 1, 2, 3	• Planned and existing resources • Generation, DR, EE, & QTU • Market Power Mitigation/MOPR
Provide adequate incentives for resource performance 1	• Delivery Year performance assessments & related charges • Charges for non-performance if failure to perform when needed by PJM • Non-performance charge strict enough to incent investment in resource to improve availability

The Practical Implications of Market Efficiency

- With ongoing investments needed and provided competitively, prices reflect revenue sufficiency
- Demand is largely inelastic, for a given market design
  - Demand targets are set through reliability analyses
  - Different capacity constructs may lead to different levels of equilibrium supply (driven, in part, by the levels of capacity that are in operation but are not sold)
- The market efficiency paradigm translates to providing for reliability at the lowest overall cost to consumers

What about the alleged tension between “other objectives” and a capacity construct?

- There is already debate whether RPM is a well-functioning market, and these new “other objectives” clearly increase the challenges.
- How do we navigate choices among imperfect options between supporting state objectives and tradeoffs in capacity construct options?
  - The first step is to determine whether these objectives are based on appropriate public policy/business considerations; this is usually easy to establish and often involves issues beyond PJM/FERC mandates
  - Cost alone is not a ready criteria, as some “other objectives” may increase costs (e.g., offshore wind), some might lower them (long term contracts) and some may be inherently unknowable (risk management)
- This task force deals with the capacity construct, and thus should look to accommodate other policy goals as much as reasonably possible

Other Objectives—At What Cost?

- Price transparency—Can be very helpful, but at what cost and relative to what alternatives?
- Uniform products—Ease the capacity construct, but complicate other issues; not all capacity provides the same service
- PJM control—PJM has clear responsibility for reliability and operations, but clearly does not have responsibility for other policy issues; control should match it's responsibility but not impede others
- Risks—There are risks in any approach that need to be considered
- Oversight of policy-driven costs—An underlying issue in the capacity construct evaluation is concerned with perceptions of the value of relying on FERC to oversee wholesale markets and state's to oversee resource portfolio objectives

Market Power Considerations Appropriately Reflected In Cost Expectations

- Sell side
  - Currently heavy restrictions on capacity offers
  - To the extent non-clearing reflects tactical decision to be a non-committed resource that can perform during near-shortage hours, PJM should include such expectations in its resource requirements
- Buy side
  - Simply because actions depress prices does not mean anticompetitive and improper
  - We don't protect from economic obsolescence or technological obsolescence why protect from preference obsolescence (e.g., carbon emissions)?
  - Opinion: the concerns of buy-side subsidized entry should only start when the quantity of MWs supplied exceeds the sell-side economic withholding (not-clearing) of capacity
- Note that mandatory, centralized auctions greatly inflate the incremental price effects of anti-competitive behavior

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