Performance Incentive Issues in RA and Capacity Markets

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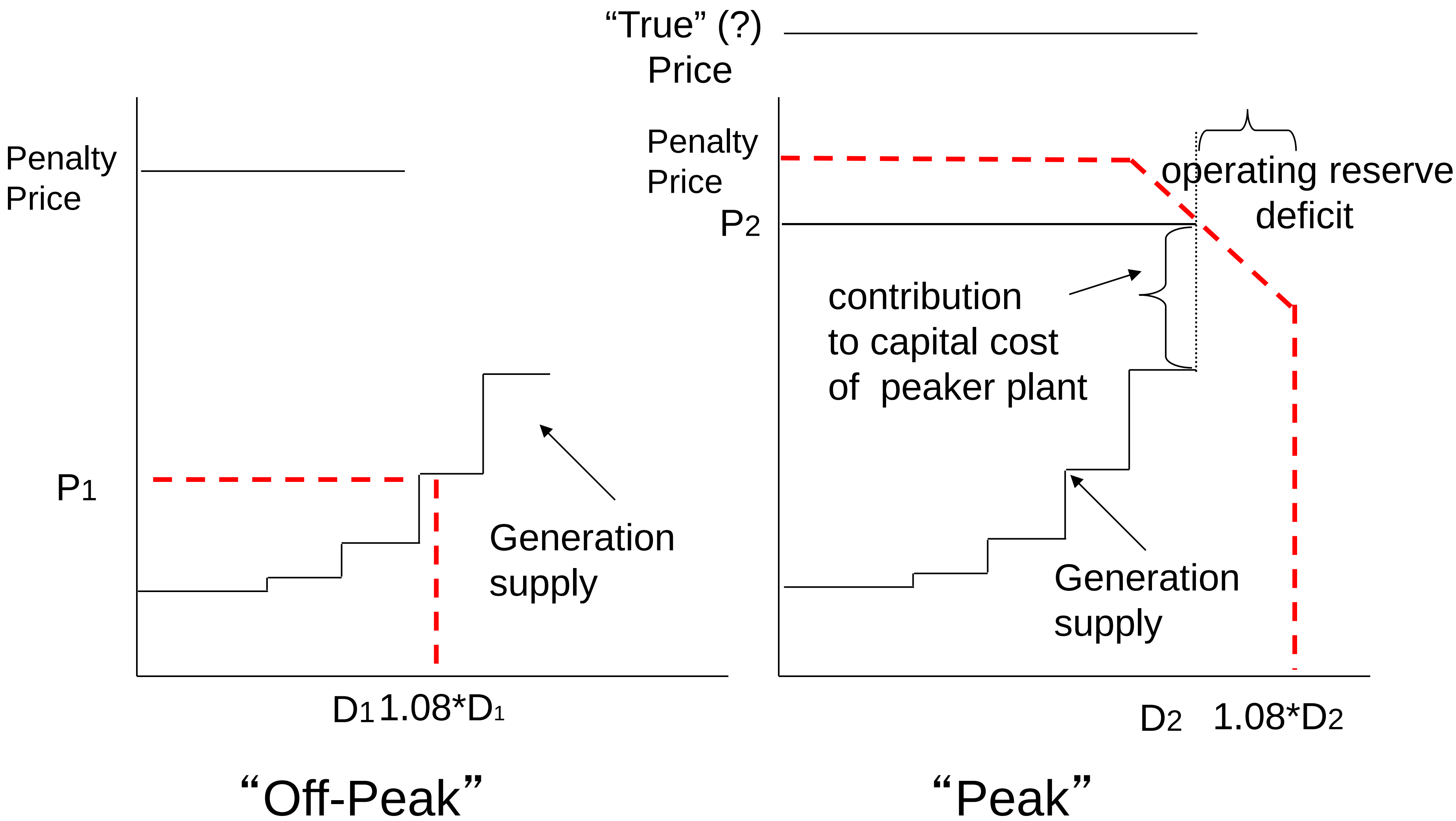
Note: These slides are for expositional purposes and do not reflect any recommendations or endorsements of specific solutions.

Traditional RA Paradigm: Preventing Scarcity



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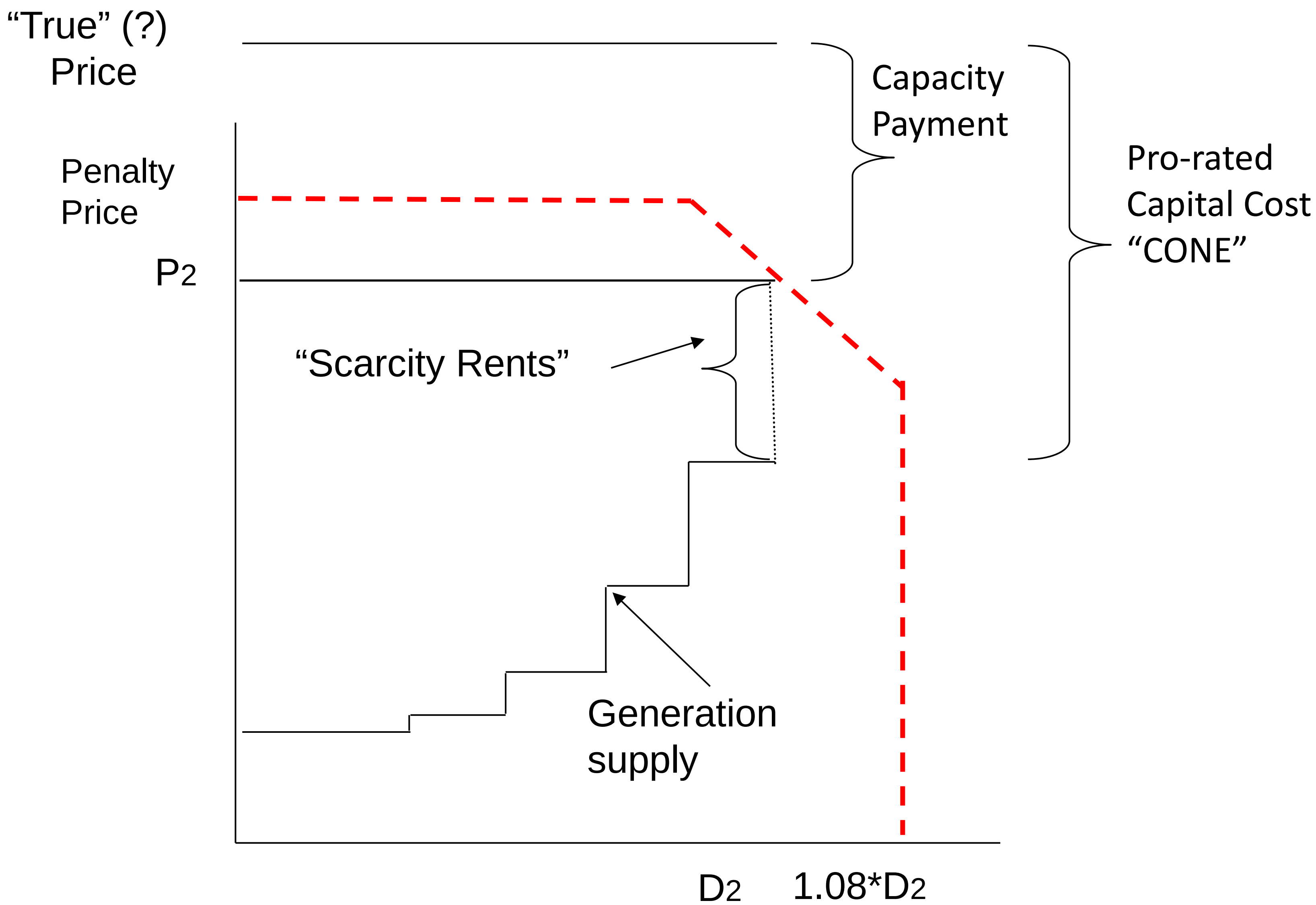
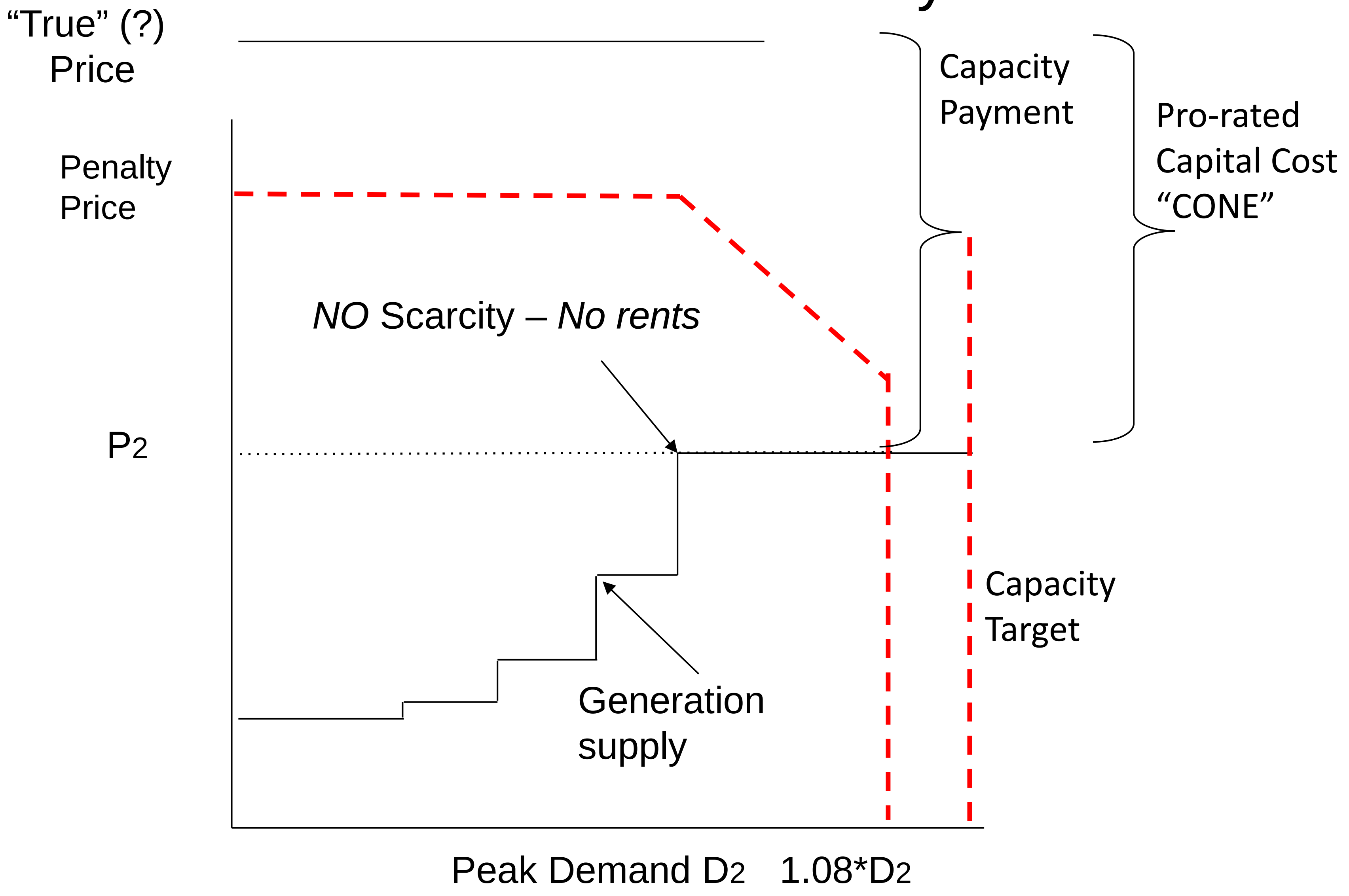
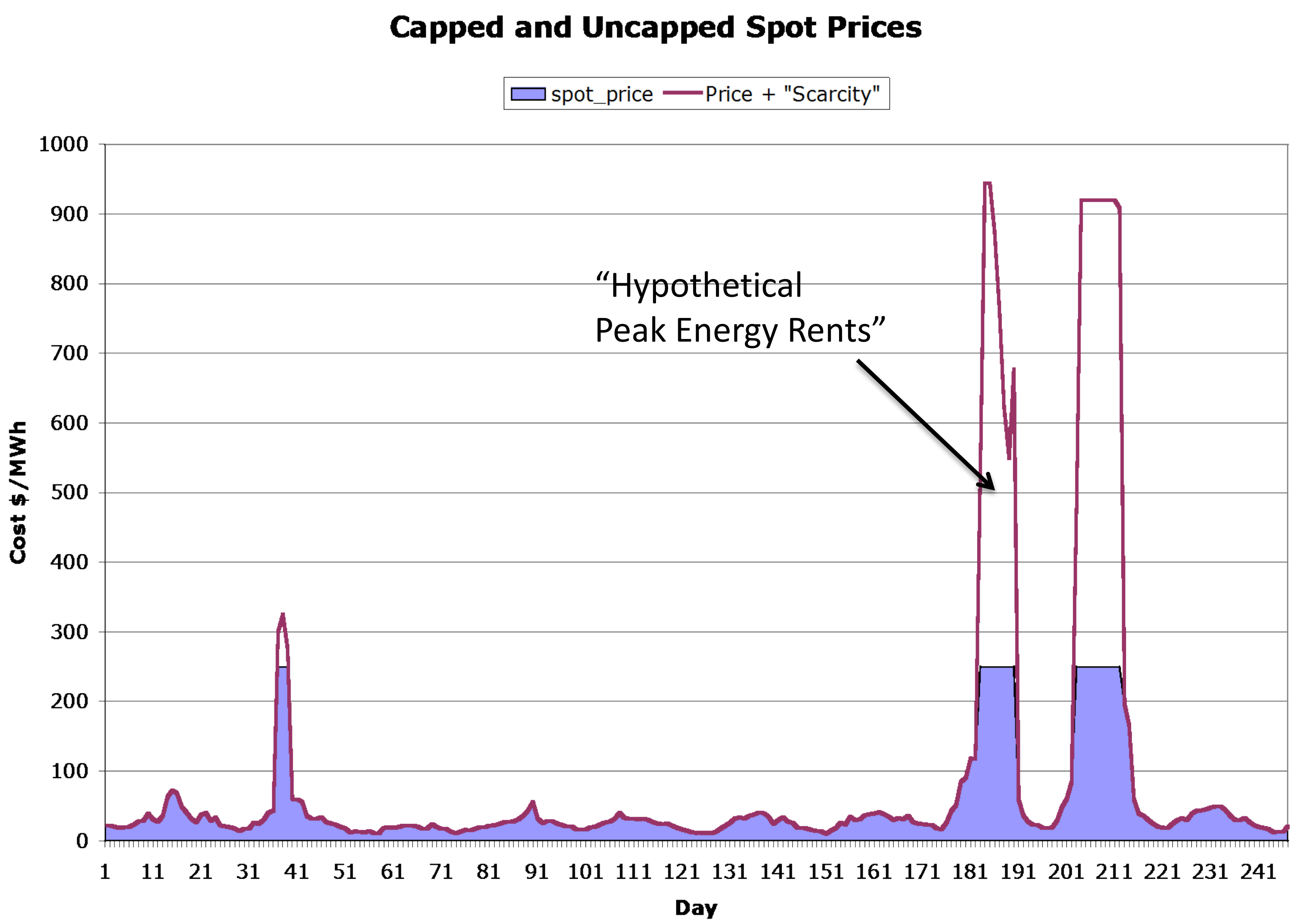


Providing Capital Cost Recovery in the absence of Scarcity



Two General Philosophies
(implications if capacity market is in equilibrium)

- Pay (ISO's or firms' estimate of) *net* CONE up front
  - Allow firms to keep all short-term revenues
  - Penalize observed non-performance
    - De-rating of capacity that can be sold in the future
    - Criticized as too weak in many contexts (like California)
      - Implicitly treats all hours as having same capacity value
  - Monetary penalties tied to failures shortage periods.
- Pay CONE of a peaking unit up front
  - Require firms to refund hour-by-hour ex-post difference between net CONE and peak plant revenues.
    - Non-performance results in partial repayment of capacity payment.
  - Refunds based upon hourly differences between potential revenues and costs of a representative marginal producer.
    - Supplier exposure to high market prices through refund rather than spot revenues.



Capped and Uncapped Spot Prices
spot_price
Price + "Scarcity"
"Hypothetical
Peak Energy Rents"
Cost $/MWh
1000
900
800
700
600
500
400
300
200
100
0
1
11
21
31
41
51
61
71
81
91
101
111
121
131
141
151
161
171
181
191
201
211
221
231
241
Day

Pay for Performance Implementation Challenges

- What is the right marginal (benchmark) technology?
- What is the right metric for its revenues?
  - RT or DA market? Ancillary Services?
- What if market prices are suppressed by price caps, other actions, or simply over-capacity?
  - Refund payments may not reflect true scarcity values and will be small.
  - little risk to offering unreliable capacity.
  - Apply additional performance penalty?
    - When and What?

Adapting PER concept to flexibility

- Current CAISO approach divides flexibility into broad categories
  - each of which may have a different capacity price.
- Appeal to in using ex-post market outcomes to determine relative value of contributions of different technologies.
  - One capacity price, but *net* capacity revenues differ based upon performance and capability
  - Harder to identify these differences ex-ante and work into a net CONE style estimate.
- What is the right marginal (benchmark) technology?
  - The analog to the CT in a capacity paradigm?
  - Based upon *least* profitable (e.g. marginal) of the future desirable technologies.
  - Other technologies earn infra-marginal rents above that of the marginal technology.
- What is the right metric for its revenues?
  - 5 minute or 15 minute energy prices? (RT or DA?)
  - Ancillary services payments?