Resource Adequacy Assurance Mechanism

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Objectives

- Ensure adequate capacity resources for reliability
- Moderate “boom and bust” cycle
- Resolve market power problems
- Promote forward markets

Traditional Resource Adequacy Requirement

- Relies on minimum reserve margin, set to satisfy 1-day-in-10-years standard.
- Impact on regulated utilities:
  - If a utility forecast a shortage, it adds capacity to stay above the minimum reserve margin.
  - Fixed costs of the investment are added to ratebase for recovery over 40 years, even if the new plant increases capacity somewhat above the minimum reserve margin.
- Utilities and regulators recognize that capacity above minimum reserve margins have value in improved reliability and lower energy costs.

Impact on Competitive Resource Market

- High deficiency charges are imposed to induce LSEs to purchase at least the minimum level of resources.

- Benefits of additional reserves are socialized:

  - LSEs with higher reserve margins get no energy price hedges or curtailment priority.
  - Currently impractical to curtail load based on individual LSE reserves.
  - Additional capacity lowers market price for energy to all LSEs.

- Market price fails to reflect value of resources above minimum reserve margins.

- Reserves above the minimum level cause the market price to collapse to near $0 (reflecting the very low short-run costs of existing capacity).

Deficiency Charge Fails To Avert Deficiencies

- Retail competition encourages LSEs to purchase the minimum required reserves.
- Low prices despite impending shortages discourage new resources and may fail to retain existing capacity.
- Low resource prices persist even as the level of reserves drifts down toward the minimum required.
- Drift will continue until some event (retirement, outage, load growth) triggers an actual deficiency and the imposition of a deficiency charge.
- Since an actual deficiency will also cause repeated spikes in energy prices, the simultaneous imposition of a resource deficiency charge will aggravate the severe customer impacts from shortages.

Deficiency Charge May Fail to Stimulate New Resources Even when Imposed

- Because of their extreme volatility, deficiency charges are severely discounted by lending agencies, and thus are ineffective in financing new investment:
  - A one-year auction can only provide a single year's worth of financing.
  - Even a small amount of new capacity could eliminate the deficiency and send the resource price back down to low levels.
- Extremely high deficiency charges could impose enormous costs on LSEs, leading to potential bankruptcies and abandonment of customers.
- An individual LSE could not protect itself by financing new capacity, because the benefits would be socialized and the LSE would end up subsidizing its competitors.

Deficiency Charge Is Susceptible to Market Power Abuse

- Market price will be either near zero or near the deficiency charge, leading to extreme volatility and a great potential for abuse of market power.

- If capacity reserves are barely adequate, existing suppliers have a huge financial incentive to withhold capacity and create a shortage.

- At such times, existing suppliers also have a great incentive to oppose new entry by others.

- Minimum resource requirement and deficiency charge fail to provide a workably competitive resource market.

Resource Adequacy Assurance Mechanism

- Centralized spot market, open to all parties
- Gradually sloped Resource Demand Curve, replacing Deficiency Charge.
- Forward Markets.
- Deliverability Requirements.
- Procedures for adjusting the Resource Demand Curve to ensure that a reasonable amount of resources is provided.
- Procedures for dealing with deficiencies, in case the market fails to deliver.

Centralized Spot Market

- ITP would operate a resource spot market, either monthly or annually.
- ITP would enter demand curve (quantity and price) for all load, determined and posted in advance.
- ITP would accept supply offers from market participants, including qualified resources (generators or demand-side resources) and any LSEs or marketers that have signed bilateral resource contracts with qualified resources.
- ITP would determine the market-clearing price and quantity, and all suppliers would receive the market-clearing price.
- ITP would calculate the cost of capacity and charge LSEs based on their share of peak capacity (similar to how current LSE capacity obligations are set).

Resource Demand Curve

- Value of capacity resources decreases gradually with quantity supplied.
- ITP's demand bids should provide prices that decrease gradually with quantity, yielding downward-sloping demand curves.
- Demand curves should have sufficiently shallow slopes to limit price volatility and mitigate market power.
- Demand curves should not incorporate exorbitant deficiency charges that are far above the long-run cost of capacity.
- Demand curves should not be so flat as to potentially purchase excessive capacity at unreasonably high prices.

Forward Markets

- ITP operates forward markets in advance of the spot markets, to provide visible forward prices.

- ITP could require LSEs to purchase some percentage (less than 100%) of resource requirements in advance, to jump-start forward markets.

- In the spot markets, ITP would enter demand curves instead of deficiency bids; the demand curves would provide more stable and predictable prices in the spot markets, which would in turn provide guidance and stability to prices in the forward markets.

- ITP should not enter demand bids in both the forward markets and the spot markets: Suppliers would have an incentive to withhold from the forward market, driving up the forward market price, since they could sell the remainder in the spot market.

Setting and Adjusting the Resource Demand Curves

- Demand Curves should be set high enough to ensure reasonable amounts of resources are supplied in the long run.

- In the vicinity of the minimum reserve levels, demand curves should reflect the long-run cost of capacity.

- The annual cost of a new combustion turbine provides an upper bound on the long-run cost of capacity reserves; costs would be offset by revenues from energy and ancillary services. Other resources, including demand-side resources and older, inefficient generation, have the potential to provide installed capacity at lower cost.

- The ITP should review the Demand Curves annually in conjunction with its long-term planning functions. Demand Curves should not be changed frequently; changes should only be made to address long-term imbalances, and with input from all parties.

Dealing with Deficiencies

- The Resource Demand Curves are intended to provide reasonably stable long-term price signals to the market that will encourage the market to provide adequate reserves.

- If the ITP projects a resource deficiency in future years, the preferred approach is for the ITP to adjust the demand curves sufficiently far in advance to allow the market to provide the additional resources needed at least cost.

- If the market fails to provide the needed capacity, either statewide or in the localities, then the ITP may have to take emergency action outside the spot market in order to ensure reliability. This may take the form of purchases of new capacity under contracts or other measures, the costs of which would be allocated to the appropriate LSEs (*e.g.* LSEs who had purchased less than the minimum requirement). Since such emergency actions are likely to be more expensive than purchases via the market, they should not set spot market prices.

Deliverability Requirements

- Resources must be deliverable to qualify in the market. In NY, deliverability is insured through separate locality requirements for NYC and LI, and limits on the amount of imports. For example, NYISO currently requires NYC load to purchase quantities of at least 80% of peak load from in-City suppliers.

- ITP would enter demand bids for localities as well as the entire region, determined and posted in advance, with possibly higher prices reflecting higher supply costs in the localities than in the rest of the region.

- ITP would accept supply bids from local resources and any marketers or LSEs that had signed bilateral contracts with local resources.

- ITP would determine the market-clearing prices and quantities for the localities as well as the rest of the region, pay all suppliers their respective market prices, and charge LSEs based on their share of respective local and rest-of-region peak loads.

Example 1

- Suppose LSE has a peak load of 100 MW, and can buy capacity under a multi-year contract for $30 per kW-year. Suppose also that the ITP set the Resource Demand Curve to $50 per kW-year at a quantity equal to 118%, gradually declining to $40 at 120%, $30 at 122%, etc.

- LSE contracts for 118 MW at $30 per kW-year. In the resource spot market, LSE offers its 118 MW towards its resource requirement. ITP adds this to all other resource (supply) offers to come up with a supply curve, and compares this to its Resource Demand Curve.

- Suppose the spot market clears (*i.e.* supply and demand curves cross) at a price of $40 per kW-year and quantity of 120% of peak load. Then LSE is allocated a resource requirement of 120 MW.

- Since LSE supplied 118 MW, LSE is charged for an additional 2 MW at the spot price of $40 per kW-year.

Example 2

- Same LSE as in Example 1 contracts for 122 MW at $30 per kW-year. In the resource spot market, LSE offers its 122 MW towards its resource requirement. ITP adds this to all other resource (supply) offers to come up with a supply curve, and compares this to its Resource Demand Curve.

- Suppose the spot market clears (*i.e.* supply and demand curves cross) at the same price of $40 per kW-year and quantity of 120% of peak load. (This would be the case if LSE's bilateral contract had no effect on total supply.) In this case LSE is allocated the same resource requirement as before, 120 MW.

- Since LSE supplied 122 MW, LSE is credited with a net sale in the spot market of 2 MW, at the spot price of $40 per kW-year.

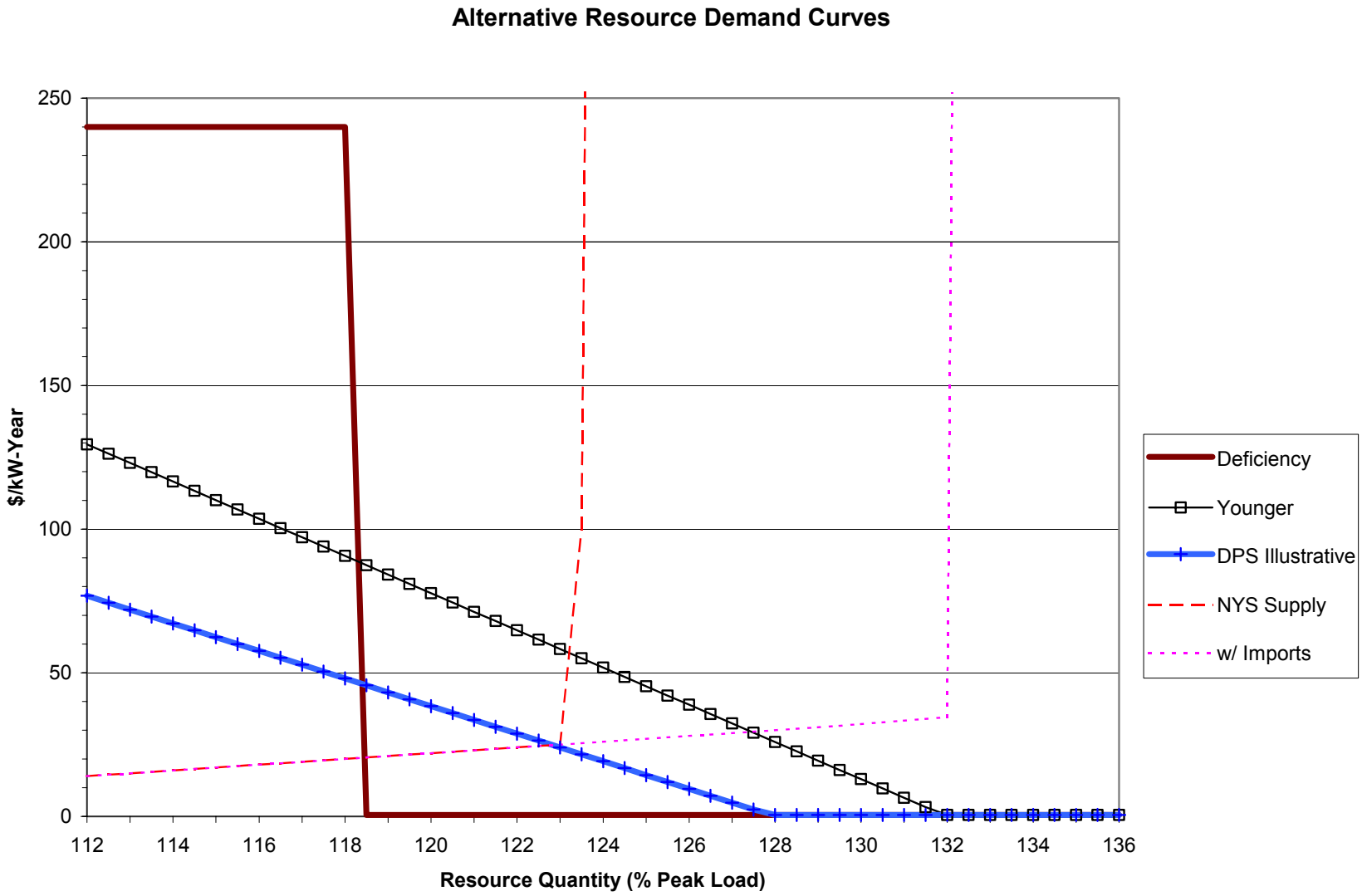
- LSE still owns 122 MW under its long-term contract; it has simply been paid the market price in the spot market for providing an extra 2 MW of resources.

Imports

- Imports are subject to deliverability requirements, including transmission to the border.
- NYISO currently allows up to 2755 MW of imports to qualify for capacity resources.
- Increases in resource prices in one region will tend to attract imports from neighboring regions.
- Resource prices will tend to equalize across neighboring regions, subject to import limits and costs of transmission rights.

Alternative Resource Demand Curves ($ per kW-year)

Resource Quantity (% of Peak Load)	Deficiency Charge (NYISO Proposed)	DPS "Illustrative"	Younger
117.99%	240.00	48.00	90.66
120%	0.00	38.40	77.71
123% (NY Only)	0.00	23.00	58.28
126%	0.00	9.60	38.86
129%	0.00	0.00	19.43
132% (max imports)	0.00	0.00	0.00


Alternative Resource Demand Curves
250
200
150
100
50
0
$/kW-Year
112
114
116
118
120
122
124
126
128
130
132
134
136
Resource Quantity (% Peak Load)
Deficiency
Younger
DPS Illustrative
NYS Supply
w/ Imports