

Resource Adequacy in the Provision of Electricity

Ensuring Adequate Energy Supplies in a Volatile Environment

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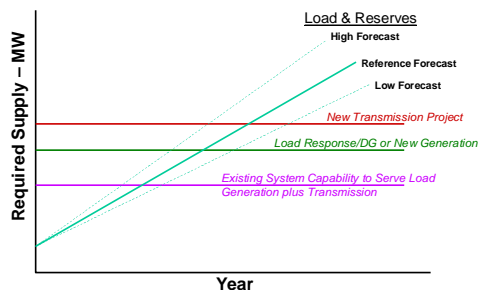


Resource Adequacy

- Adequate resources to meet system loads
- Resources include transmission, generation, demand response, and energy efficiency
- NERC planning standard: involuntary loss of load not more than “one day in ten years”
- Price signals for investments



Planning Options

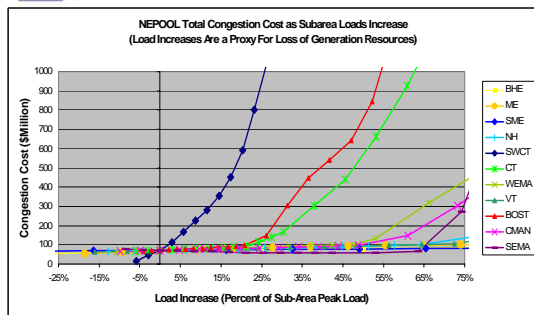


Regional Planning Process

- Annual evaluation of existing system
- Forecast future system over multiple time horizons (5y, 10y, 15y)
- Estimate load growth
- Estimates of new resource additions
- Estimate transmission upgrades/expansions
- Estimates congestion costs/savings
- Integrated and iterative process



ISO RTEP Process

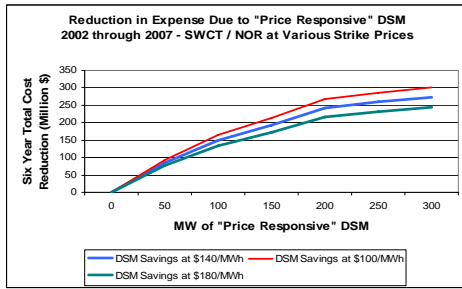


Special Factors

- Demand response programs
- Targeted energy efficiency programs
- Distributed generation programs
- Merchant transmission projects
- Short-term interim RFPs
- RMR agreements to retain resources



Demand Response Example



SWCT Gap RFP

- Issued in November 2003
 - 34 proposals, some with multiple resources
 - Over 1000 MW of resources bid (300 MW goal)
- April 2004 awards at around \$10/kW/month
 - 2004: 125 MW
 - 2005: 218 MW
 - 2006: 250 MW
 - 2007: 256 MW
- Emergency generation 80-60%
- Demand reductions 20-30%
- Energy efficiency 1-2%



Incentives for New Resources

- Energy Markets with Locational Marginal Pricing (LMP) and Single Clearing Price (SCP) bidding
- Locational Forward Reserve Market (LFRM)
- Capacity Markets (ICAP, LICAP, RPM)
- Uncapped Energy Markets

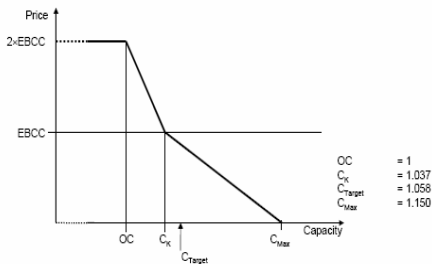


Capacity Markets

- Single regional market
 - Traditional approach used in many regions
- Locational (sub-regional) markets
 - Target capacity price signals to specific zones
- Demand curves
 - NY ISO implemented in 2003 (LICAP)
 - ISO-NE proposed in 2004 (modified LICAP)
 - PJM proposed in 2005 (RPM)
 - Under consideration by CA ISO



ISO-NE Demand Curve



Demand Curve Issues

- Setting the capacity goal
- Setting the benchmark proxy
- Setting the maximum purchase
- Setting the maximum cap
- Setting the capacity target
- Revenue adjustments
- Penalties for non-performance
- Time horizon and supplemental bidding

