

Summary of Operable Capacity Results

Purpose of the Operable Capacity Assessment in Scenario Analysis

- Operable Capacity Analysis (OCA) examines the ability to operate the system under peak load conditions
- Similar to RSP06, evaluate fuel diversity by simulating the ***hypothetical and temporary loss*** of operable capacity due to loss of various fuel types.
 - Loss the entire fleet of a particular type of generation due to the ***hypothetical and temporary loss*** of its fuel during seasonal peak load is unrealistic
 - The results serve to identify the minimum amount of generation from various fuel types that needs to be operational to meet system demand.
- Results serve to identify the amount of dual-fuel capability, external emergency purchases, etc. needed to mitigate possible fuel contingencies.

Operable Capacity Assessment for Scenario Analysis - Calculation Methodology

Operable Capacity Situation:

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- 1) Load Forecast
 - 2) Operating Reserves
 - 3) Total Requirement (1) + (2)

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- 4) Installed Capacity
 - 5) Net Purchases/Sales
 - 6) Assumed Forced & Planned Outages
 - 7) Assumed Fuel Unavailability
 - 8) Total Net Capacity (4) + (5) - (6) - (7)

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- 9) Operable Capacity Margin (8) – (3) (+ surplus / - deficiency)

Operable Capacity Assessment for Scenario Analysis - Capacity Loss Due to Assumed Unavailability of Fuel

Simulate the “*hypothetical and temporary*” loss of various types of capacity due to fuel unavailability: (summer scenarios)

- 1) Systemwide dependence on existing and new gas-fired capacity (includes gas-only, dual fuel-gas primary, NGCC, and fuel cell generators) is assumed to be temporarily unavailable
 - A total of 19,800 MW OOS = 12,500 MW existing + 7,300 MW new
 - Resultant OPCap Margin = - 18,600 MW in Advanced NGCC Scenario

- 2) Systemwide dependence on existing and new nuclear capacity is assumed to be temporarily unavailable
 - A total of 9,800 MW OOS = 4,400 MW existing + 5,400 MW new
 - Resultant OPCap Margin = - 9,000 MW in Nuclear Scenario

Note: While some assessments portray extreme scenarios on capacity loss, these assessment help gauge the corresponding amount of replacement capacity or imported energy required to maintain system reliability.

Operable Capacity Assessment for Scenario Analysis - Capacity Loss Due to Assumed Unavailability of Fuel

Simulate the “*hypothetical and temporary*” loss of various types of capacity due to fuel unavailability: (cont'd)

- 3) Systemwide dependence on existing and new coal-fired capacity is assumed to be temporarily unavailable
 - A total of 8,500 MW OOS = 2,800 MW existing + 5,700 MW new
 - Resultant OPCap Margin = - 8,100 MW in Clean Coal Scenario

- 4) Systemwide dependence on existing oil-fired capacity and 10% of new combustion turbine capacity is assumed to be temporarily unavailable
 - A total of 7,900 MW OOS = 7,400 MW existing + 500 MW new
 - Resultant OPCap Margin = - 7,500 MW in Queue Scenario

Note: While some assessments portray extreme scenarios on capacity loss, these assessment help gauge the corresponding amount of replacement capacity or imported energy required to maintain system reliability.

Major Results - Operable Capacity Analysis

- Summer is the most the critical season
- The Operable Capacity shortfall for natural gas-fired generation during Winter is 11,000 MW
- Results show that natural gas-fired generation is the largest source of capacity across all scenarios and all seasons
- This suggests a continued need for
 - Alternate sources of capacity and energy
 - Firm natural gas contracts and enhanced natural gas and Liquefied Natural Gas (LNG) infrastructure
 - Dual-fuel capability of natural gas units