NYSRC Area Selection to Remove Generation

Proposal to change methodology used in the calculation of minimum generation requirement for New York State

Outline

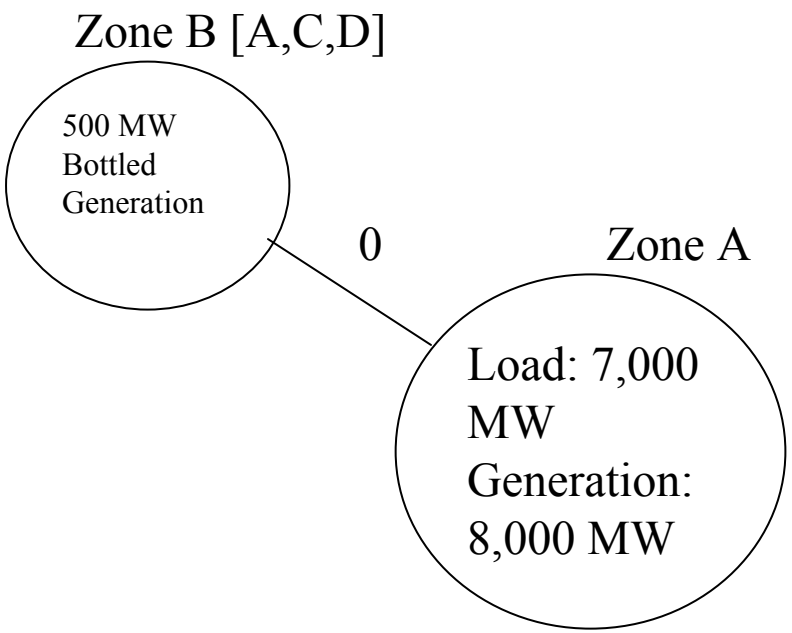
- Background and current methodology
- Illustration of the challenge (three examples)
- Market implications
- Conclusion

Background and Current Methodology

- Remove generation from New York State
  - Reliability calculations perform using MARS
  - Loss of Load Expectation (LOLE) = 1 days/ 10 years = 0.1 days/year
- Where to remove generation (Zones A thru K) is in a Policy 5 procedure
  - Current policy is to remove generation from the excess generation areas until we reach the reliability criteria
    - The removed generation comes from areas that are generally most likely to have transmission constraints between their location and the load centers
  - Start with an LOLE of 0.05 days/year (system is more reliable than a system with an LOLE of 0.1 days/year)

Background and Current Methodology

Example #1: Bold Example



Assumptions

- Total Load=7,000 MW
- Total Generation = 8,500 MW
- LOLE = 0.05 days/year
- No Transmission available

Methodology

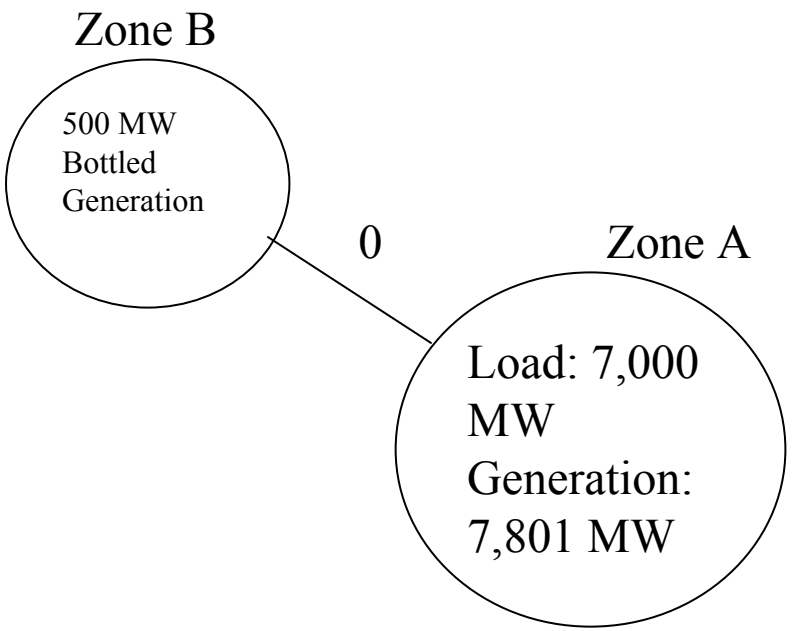
1. Remove 500 MW from Zone B
2. Remove 200 MW from Zone A

Results

- LOLE = 0.1 days/year
- Min Reserve Margin =7800/7000 = 111.4%
- “Excess” Generation = 8500/7800 **= 8.97%**

Loss of 199 MW in Zone A

Example #2:



Assumptions

- Total Load=7,000 MW
- Retired 199 MW of generation
- Total Generation = 8,301 MW
- **LOLE = 0.099 days/year**

Methodology

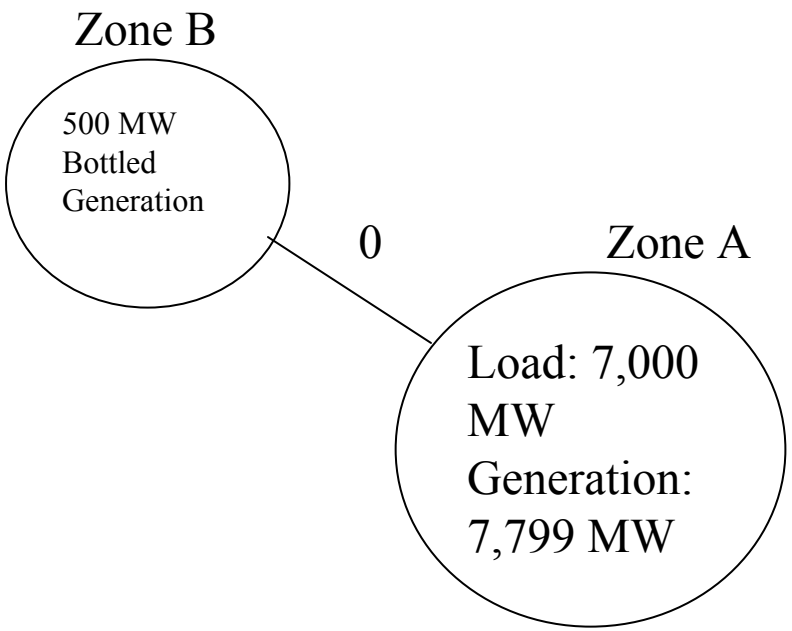
1. Remove 500 MW from Zone B
2. Remove 1 MW from Zone A

Results

- LOLE = 0.1 days/year
- Min Reserve Margin =7800/7000 = 111.4%
- Excess Generation = 8301/7800 **=6.4%**

Loss of 201 MW in Zone A

Example #3:



Assumptions

- Total Load=7,000 MW
- Retired 201 MW of generation
- Total Generation = 8,299 MW
- **LOLE = 0.101 days/year**

Methodology

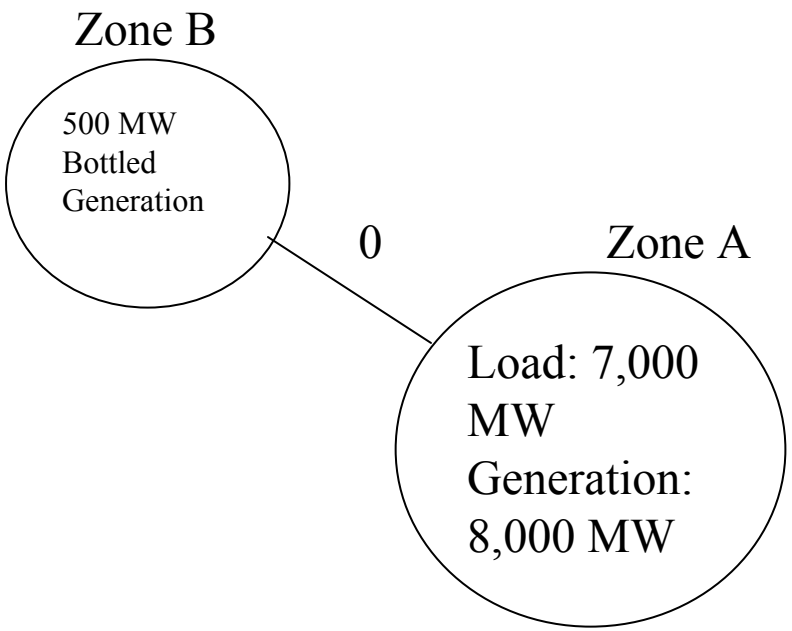
1. Could Remove 500 MW from Zone B, no difference
2. Add 1 MW to Zone A. **Reliability criteria cannot be met need 1 MW in Zone A**

Results

- LOLE = 0.100 days/year
- Min Reserve Margin =7800/7000= 111.4% or 8300/7000 =118.6%
- Excess Generation = 8299/8300 = **~0%** or 8299/7800 **= 6.4%?**

Proportional Removal of Capacity

Example #4:



Assumptions

- Total Load=7,000 MW
- Total Generation = 8,500 MW
- LOLE = 0.05 days/year

Methodology

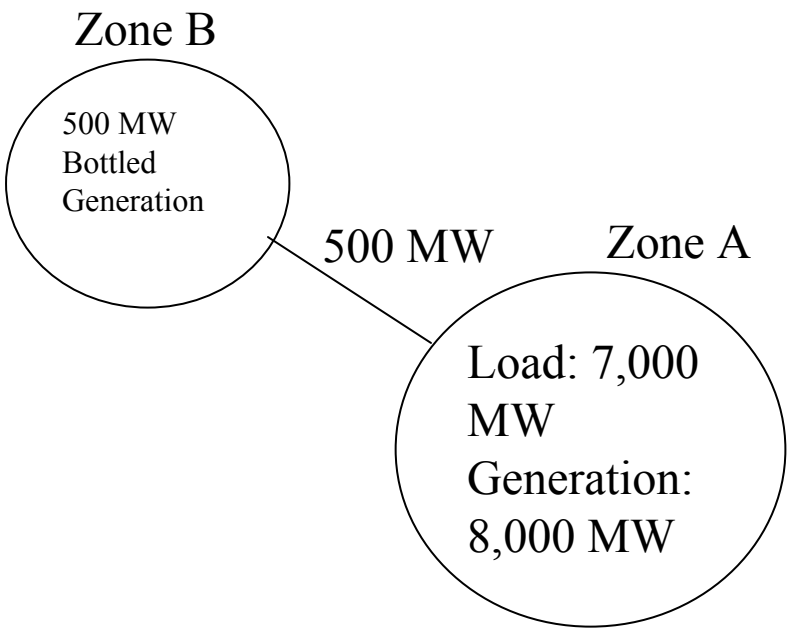
1. Remove 12.5 MW from Zone B
2. Remove 200 MW from Zone A

Results

- LOLE = 0.1 days/year
- Reserve Margin = 8287.5/7000 = 118.4%
- Excess Generation = 8500/8287.5 **= 2.56%**

Proportional Removal of Capacity No Binding Transmission Limit

Example #5:



Assumptions

- Total Load=7,000 MW
- Total Generation = 8,500 MW
- LOLE = 0.05 days/year

Methodology

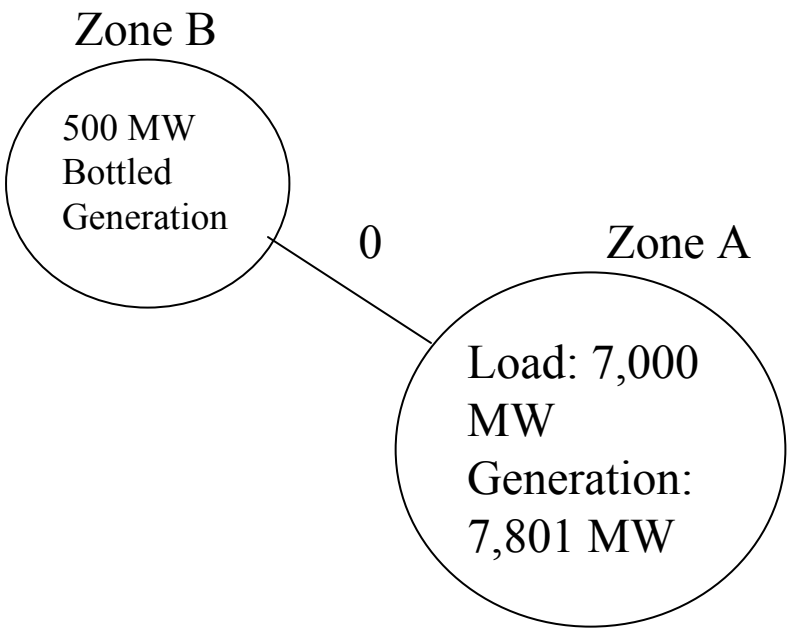
1. Remove 141 MW from Zone B
2. Remove 659 MW from Zone A

Results

- LOLE = 0.1 days/year
- Reserve Margin = 7800/7000 = 111.4%
- Excess Generation = 8500/7800 **=8.97%**

Proportional Shifting Of Capacity Loss of 199 MW in Zone A

Example #6:



Assumptions

- Total Load=7,000 MW
- Retired 199 MW of Generation
- Total Generation = 8,301 MW
- LOLE = 0.099 days/year

Methodology

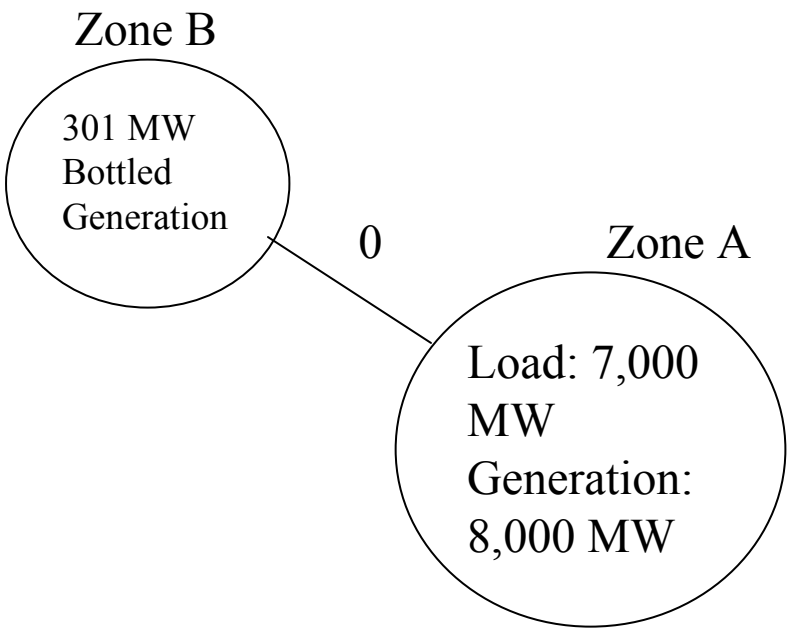
1. Remove 0.06 MW from Zone B
2. Remove 1 MW from Zone A

Results

- LOLE = 0.1 days/year
- Reserve Margin = 8299.94/7000 = 118.6%
- Excess Generation = 8301/8299.94 **= 0%**

Proportional Shifting Of Capacity Loss of 199 MW in Zone B

Example #7: With 199 MW retired and prop. methodology



Assumptions

- Total Load=7,600 MW
- Total Generation = 8,500 MW
- Retired 199 MW of generation from Zone B
- LOLE = 0.05 days/year

Methodology

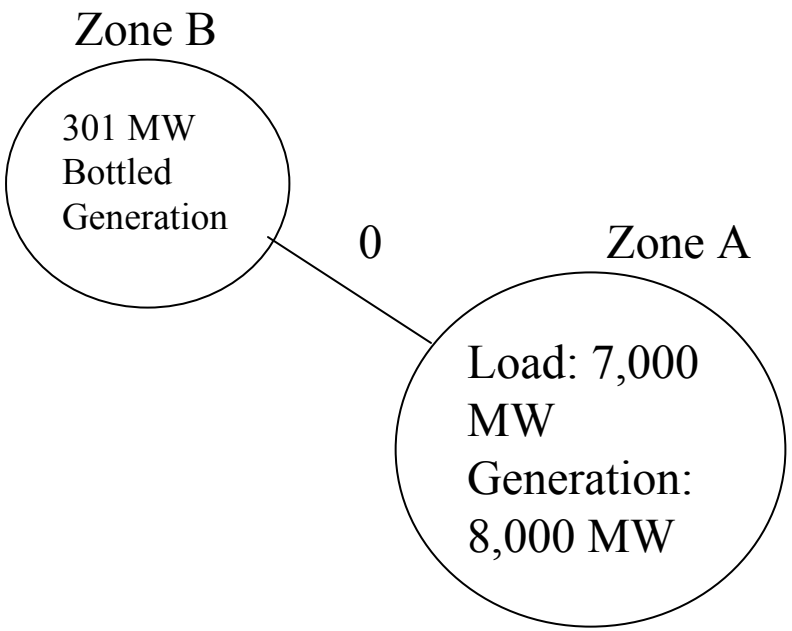
1. Remove 7.5 MW from Zone B
2. Remove 200 MW from Zone A

Results

- LOLE = 0.1 days/year
- Reserve Margin = 8093.5/7000 = 115.6%
- Excess Generation = 8301/8093.5 **= 2.56% remains the same as the case with 500 MW in Zone B**

Current Shifting Methodology Loss of 199 MW in Zone B

Example #8:



Assumptions

- Total Load=7,000 MW
- Retired 199 MW of generation
- Total Generation = 8,301 MW
- LOLE = 0.05 days/year

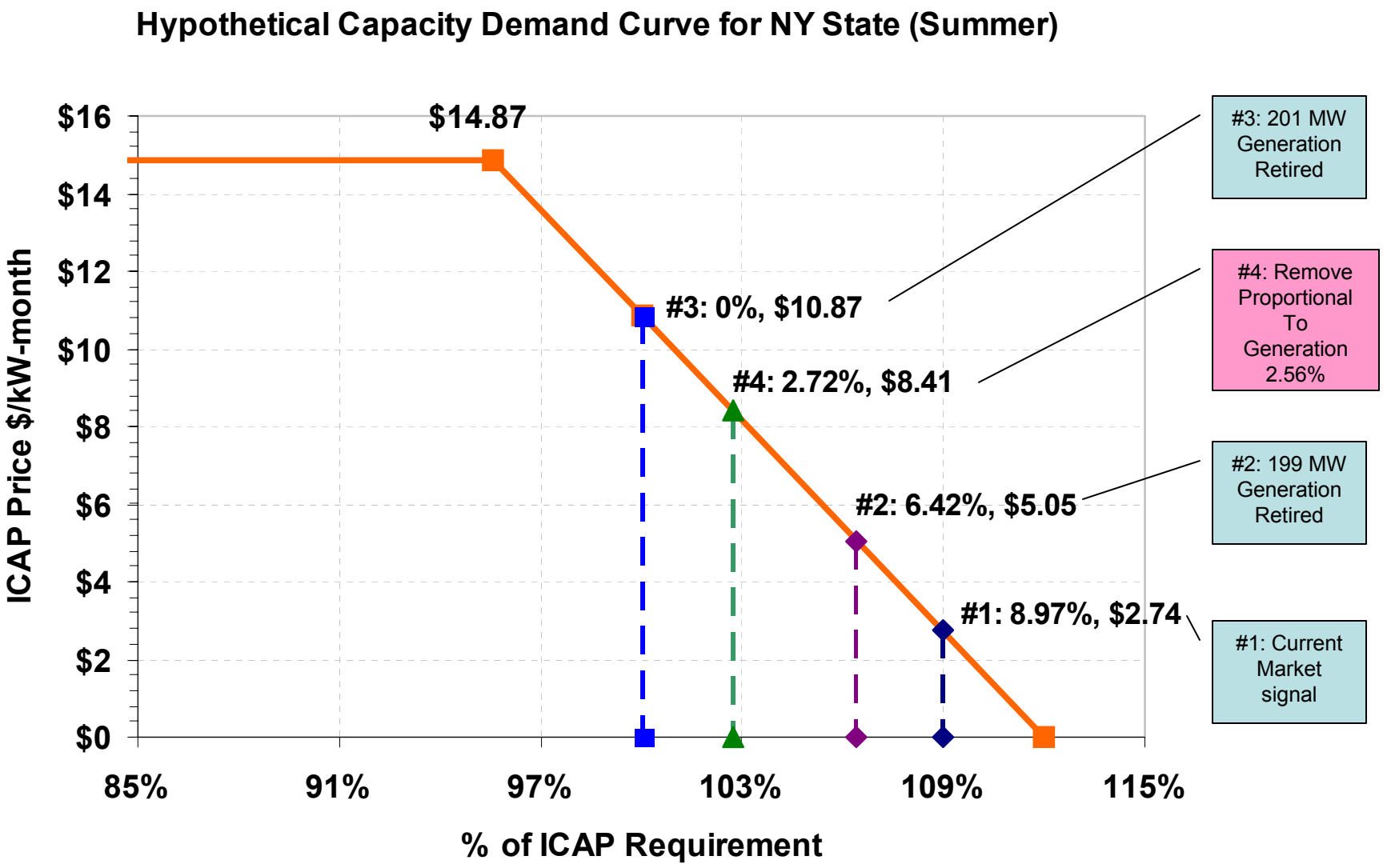
Methodology

1. Remove 301 MW from Zone B
2. Remove 200 MW from Zone A

Results

- LOLE = 0.1 days/year
- Min Reserve Margin =7800/7000 = 111.4%
- Excess Generation = 8301/7800 **=6.4%**

Market Implications



Conclusion

- Existing Policy 5 methodology calculates the “Minimum Requirement” implicitly incorporating the assumption that we can choose which capacity to eliminate
  - We do not have the ability to choose which generators retire
  - Because we cannot chose which units would retire, it does not send accurate signals about the tightness of the reliability conditions
- Current methodology provides least cost solution but compromising long term system reliability
- In certain cases the existing methodology can signal that there is substantial excess capacity when we are close to not meeting the minimum reliability requirements
- The proportional shifting methodology provides a more stable signal of the need for capacity across a wide range of varying generation assumptions
  - In all cases the proportional shifting methodology provided a more accurate representation of how much capacity could be lost before failing to meet the minimum reliability requirements.