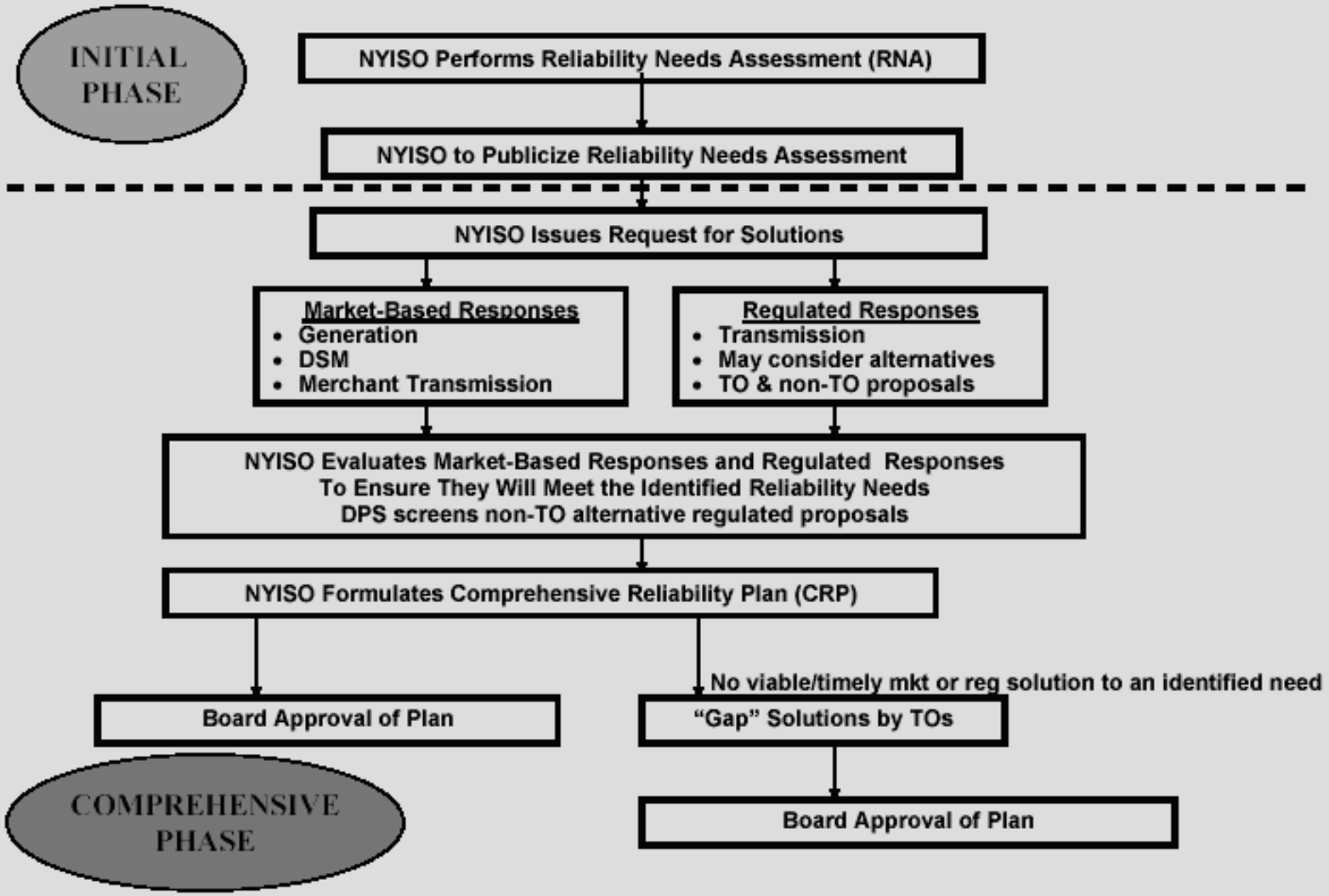
Comprehensive Reliability Planning Process (CRPP) Draft RNA Results

Management Committee Meeting

Con Edison, NYC

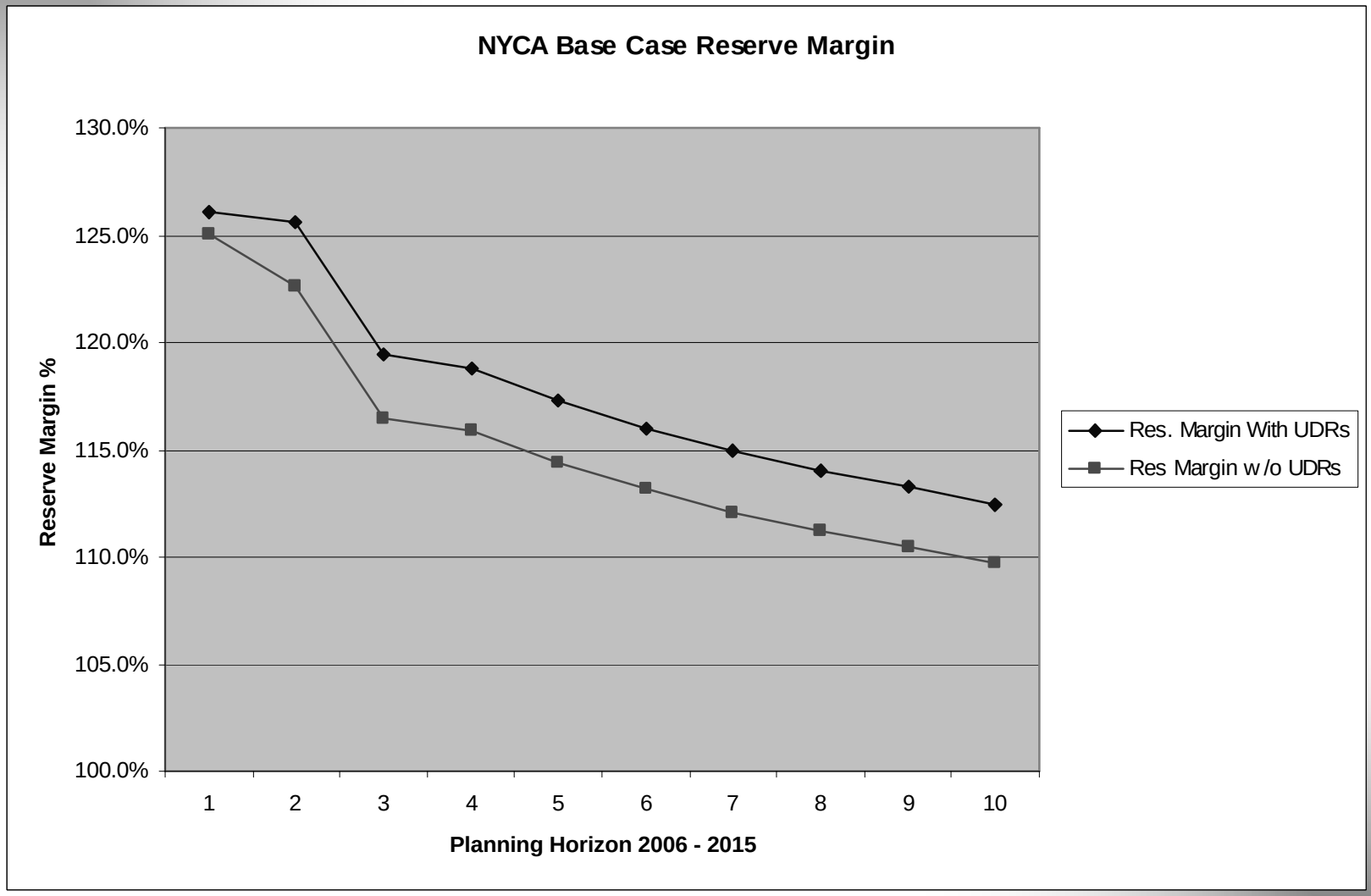
11/9/2005

NYISO Reliability Planning Process

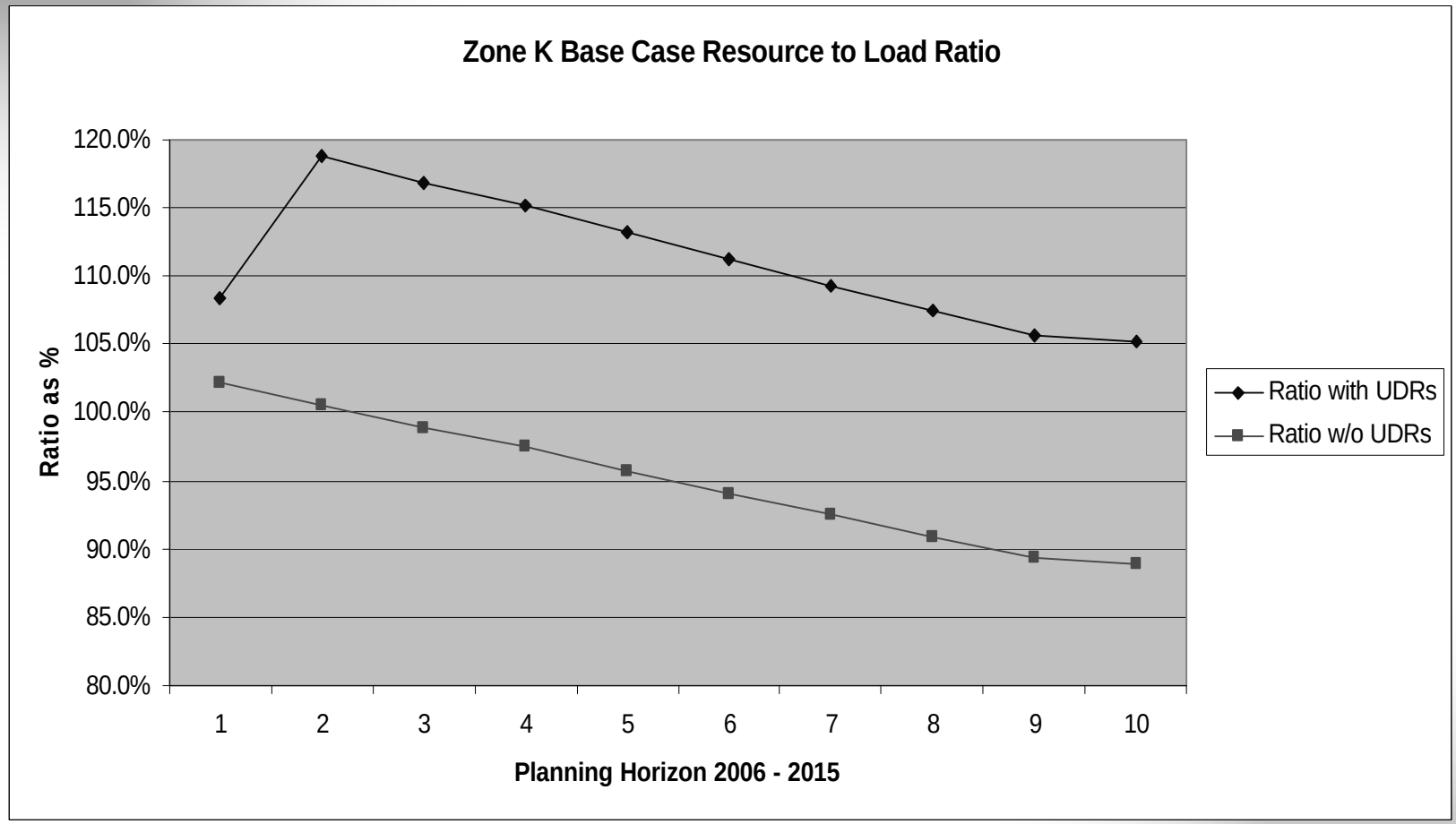


NYISO CRPP: Background & Base Case

- **From 1994 through 2004 load growth for the NYCA averaged approx. 1.2%.**
- **However, load growth in SENY (G-K) has averaged approx. 2.8% while UPNY (A-F) has experienced neg. load growth.**
- **Load growth in SENY through 2004 totals close to 5,000 MW while the net capacity additions for SENY total approx. 1250 MWs.**
- **The CRP base case has statewide load growth which averages about 1.2% with modest growth in UPNY and slightly less than 2% in SENY**
- **The CRP base case installed resources increase through 2007 but decline thereafter**
- **Resources are approximately at 2004 levels by 2008.**
- **Neptune LI-PJM Tie included in base case**


NYCA Base Case Reserve Margin
130.0%
125.0%
120.0%
115.0%
110.0%
105.0%
100.0%
Reserve Margin %
1
2
3
4
5
6
7
8
9
10
Planning Horizon 2006 - 2015
Res. Margin With UDRs
Res Margin w/o UDRs


Zone J Base Case Resource to Load Ratio
95.0%
90.0%
85.0%
80.0%
75.0%
70.0%
65.0%
60.0%
55.0%
50.0%
Ratio as %
1
2
3
4
5
6
7
8
9
10
Planning Horizon 2006 - 2015
Ratio


Zone K Base Case Resource to Load Ratio
120.0%
115.0%
110.0%
105.0%
100.0%
95.0%
90.0%
85.0%
80.0%
Ratio as %
1
2
3
4
5
6
7
8
9
10
Planning Horizon 2006 - 2015
Ratio with UDRs
Ratio w/o UDRs

Primary Analysis Tools

- **GE Multi-Area Reliability Simulation (MARS) model to evaluate resource adequacy – the 1 in 10 criteria**
- **PSS/E used to conduct power flow analysis to evaluate the security of the transmission system based on thermal, voltage, and stability criteria and to determine transfer limits.**
- **Transfer limits are used in the MARS model which uses a linear programming transportation model to simulate delivery of capacity via the transmission system to meet resource adequacy requirements.**
- **MARS is a probabilistic model which uses Monte Carlo simulation and does not use a network model.**

Base Case Findings

- **This reliability needs assessment for the baseline system for the first Five Year period indicates that the forecasted system does not meet reliability criteria. Therefore, because of continued load growth and no resource additions, the second Five Year period does not meet reliability criteria.**
- **The demands that are increasingly being placed on the transmission system in conjunction with other system changes have resulted in voltage criteria violations at much lower transfer levels than had been previously observed.**
- **The result is that transfers into SENY are being limited by voltage constraints rather than thermal constraints.**

Reliability Needs:
Base Case: Voltage Constrained Transfer Limits

- **First year of need would be 2008.**

- **Compensatory MW to meet NYCA LOLE criteria of 1750 MW required by 2010.**

- **Reduced transfer limits result in higher NYCA LOLE and increase in the compensatory MW downstream of the transmission constraint.**

Reliability Needs (Cont.):
Thermally Constrained Transfer Limits As Sensitivity Analysis

- **First year of need would be 2009 with I – J at 3425.**

- **Compensatory MW of approx. 1250 MW required by 2010**

Conclusions and Recommendations

- **Compensatory MW are indicative of potential needs to solve reliability criteria violations.**

- **The type of solutions and their location and resultant transfer levels will determine the overall needs necessary to meet reliability criteria.**

- **The NYISO is recommending that the MC approve the draft RNA**