

RNA 2006

Results and Review of Inputs

ESPWG 1/03/07

Draft For Discussion Purposes Only

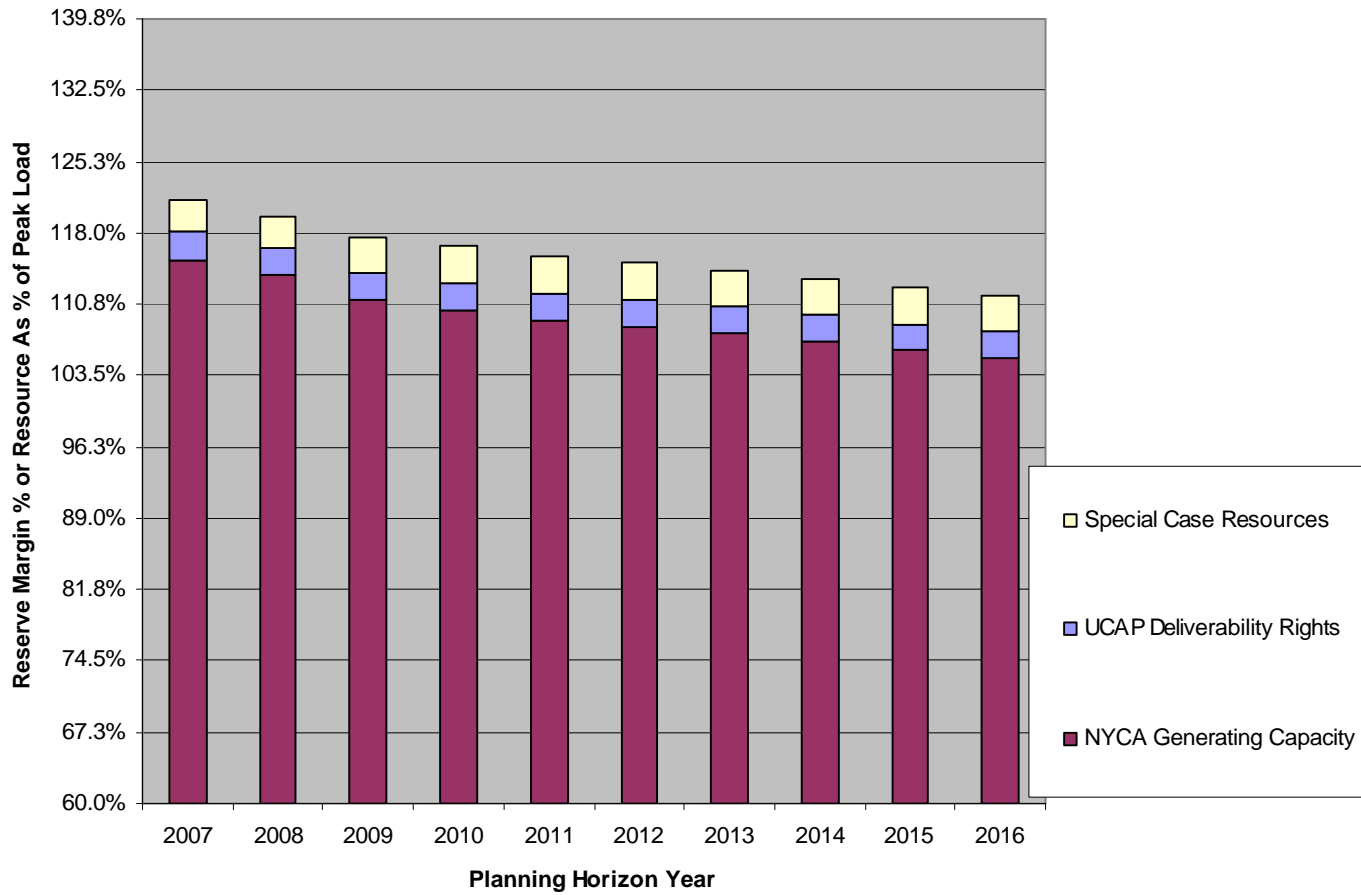
RNA 20006

Base Line Load & Resource Table

RNA 2006 Base-Line Load & Resource Table

| Year | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Peak Load | | | | | | | | | | |
| NYCA | 33,831 | 34,314 | 34,688 | 35,042 | 35,348 | 35,593 | 35,803 | 36,077 | 36,380 | 36,623 |
| Zone J | 11,800 | 11,970 | 12,140 | 12,290 | 12,440 | 12,570 | 12,705 | 12,815 | 12,925 | 13,003 |
| Zone k | 5,549 | 5,628 | 5,738 | 5,840 | 5,936 | 6,037 | 6,141 | 6,249 | 6,372 | 6,511 |
| Resources | | | | | | | | | | |
| NYCA | | | | | | | | | | |
| "-Capacity" | 39,015 | 39,015 | 38,577 | 38,577 | 38,577 | 38,577 | 38,577 | 38,577 | 38,577 | 38,577 |
| "-SCR" | 1080 | 1080 | 1080 | 1080 | 1080 | 1080 | 1080 | 1080 | 1080 | 1080 |
| "-UDR" | 990 | 990 | 990 | 990 | 990 | 990 | 990 | 990 | 990 | 990 |
| Total | 41,085 | 41,085 | 40,647 | 40,647 | 40,647 | 40,647 | 40,647 | 40,647 | 40,647 | 40,647 |
| Zone J | | | | | | | | | | |
| "-Capacity" | 9,996 | 9,996 | 9,108 | 9,108 | 9,108 | 9,108 | 9,108 | 9,108 | 9,108 | 9,108 |
| "-SCR" | 325 | 325 | 325 | 325 | 325 | 325 | 325 | 325 | 325 | 325 |
| "-UDR" | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 10,321 | 10,321 | 9,433 | 9,433 | 9,433 | 9,433 | 9,433 | 9,433 | 9,433 | 9,433 |
| Zone K | | | | | | | | | | |
| "-Capacity" | 5,291 | 5,291 | 5,741 | 5,741 | 5,741 | 5,741 | 5,741 | 5,741 | 5,741 | 5,741 |
| "-SCR" | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 |
| "-UDR" | 990 | 990 | 990 | 990 | 990 | 990 | 990 | 990 | 990 | 990 |
| Total | 6,431 | 6,431 | 6,881 | 6,881 | 6,881 | 6,881 | 6,881 | 6,881 | 6,881 | 6,881 |
| NYCA Res. Margin % | 121.4% | 119.7% | 117.2% | 116.0% | 115.0% | 114.2% | 113.5% | 112.7% | 111.7% | 111.0% |
| Res Margin w/o UDR | 118.5% | 116.8% | 114.3% | 113.2% | 112.2% | 111.4% | 110.8% | 109.9% | 109.0% | 108.3% |
| Zons J Res/Load/ Ratio | 87.5% | 86.2% | 77.7% | 76.8% | 75.8% | 75.0% | 74.2% | 73.6% | 73.0% | 72.5% |
| Zons K Res/Load Ratio | 115.9% | 114.3% | 119.9% | 117.8% | 115.9% | 114.0% | 112.1% | 110.1% | 108.0% | 105.7% |

**NYCA Resources As Percent of NYCA Peak Load
 RNA 2006 Baseline**



RNA 2006 vs. 2005 Overview

- ◆ **Load Increase** 2011 2015
 768 MW 710 MW
- ◆ **Cap. Increase** 888 MW 888 MW

- ◆ **IRM Inputs 2006 vs. 2005**
 - *2005 5 yr. System Avg. EFORd 6.53*
 - *2006 5 yr. System Avg. EFORd 5.46*
 - *EOP Load Relief Steps Increased by 144 MW*

NYCA Generator Performance vs. NERC

Generator Availability Statistics - NERC and NYCA

| | EFORd | | | EAF | | |
|---------------------|-----------|----------|------|-----------|----------|-------|
| | NERC | NYCA | | NERC | NYCA | |
| | 5 Yr Avg | 5 Yr Avg | 2005 | 5 Yr Avg | 5 Yr Avg | 2005 |
| All Types | not avail | 4.26 | 4.44 | not avail | 85.54 | 86.26 |
| Steam Turbines | 6.13 | 6.35 | 6.63 | 85.05 | 82.27 | 81.60 |
| Combustion Turbines | 9.93 | 2.33 | 2.99 | 89.83 | 86.86 | 85.90 |
| Hydro | 3.49 | 2.74 | 3.52 | 89.04 | 84.40 | 90.50 |
| Internal Combustion | 12.82 | 7.79 | 7.28 | 94.31 | 90.38 | 91.64 |
| Nuclear | 4.77 | 1.88 | 1.69 | 86.86 | 91.80 | 94.08 |
| Combined Cycle | not avail | 3.85 | 6.89 | not avail | 88.09 | 81.18 |

IRM Study vs. RNA 2006

- ◆ **IRM Overview**
- ◆ **RNA Overview**
- ◆ **Review IRM Assumption Matrix vs. RNA**
 - *See Separate Document AssumptionMatrix*
- ◆ **Review of Transfer Limit Development**
 - *See Separate Documents IntdefT,IntdefV*
- ◆ **Review of Transfer Limit Comparison**
 - *See Separate Document MARSLimitCompare*
- ◆ **Other Discussion**

IRM Overview

- ◆ **Purpose is Develop minimum capacity requirements for capacity procurement**
- ◆ **Looks forward one year**
- ◆ **Deals with excess capacity situation**
- ◆ **Makes assumptions accordingly**
- ◆ **LOLE violation (0.1) achieve through a process of scaling**
- ◆ **Detailed review planned for 2007**

RNA Overview

- ◆ **Purpose is to perform Resource and Transmission Adequacy Assessment**
- ◆ **Looks forward ten years**
- ◆ **Capacity and Load changes as per forecast**
- ◆ **LOLE violations occur as a result of forecast**
- ◆ **Deals with more uncertainty**
- ◆ **For this year, More closely aligned with IRM assumptions than in 2005**
- ◆ **Detailed Procedure Review planned for 2007**

Base Case Modeling Assumptions for 2007-08 NYCA IRM Requirement Study vs 2006 RNA

- ***See Separate Document AssumptionMatrix***
- ***See Separate Document InterDefT,InterDefV***

Review of Transfer Limit Development

- ◆ **Emergency Transfer Limits are Utilized**
 - *As per criteria and procedures*
 - *Developed on a planning horizon*
 - *Differs from Operating Limits*
- ◆ **Developed Independent and Simultaneous**
 - **Translation to MARS limits**
 - Independent limit developed for Sprainbrook-Dunwoodie South based on all facilities in, all facilities utilized
 - Simultaneous limits developed for upstream interfaces such as UPNY/ConEd and UPNY/SENY
- ◆ **Held Constant for Second Five Years**

Review of Transfer Limit Comparison

- ◆ **Compared 2005 RNA, 2006 RNA, 2007 IRM**
- ◆ **Developed Independent and Simultaneous**
 - Independent limit developed for Sprainbrook-Dunwoodie South based on all facilities in, all facilities utilized
 - Simultaneous limits developed for upstream interfaces such as UPNY/ConEd and UPNY/SENY
- ◆ **Highlights from Spreadsheet**
 - *See Separate Document MARSLimitCompare*

LOLE Results

- ◆ Results are presented for the following:
 - *Base Case: Base & High Forecast*
 - *Thermal Transfer Limits: Base & High Forecast*
 - *Free Flowing Transfer Limits: Base & High Forecast*

LOLE Results: Base Case

Base Forecast

| Year | A | B | C | D | E | F | G | H | I | J | K | NYCA |
|------|-------|-------|---|---|-------|---|-------|-------|-------|-------|-------|-------|
| 2007 | | 0.002 | | | 0.001 | | | | 0.002 | 0.002 | | 0.002 |
| 2008 | 0.001 | 0.008 | | | 0.002 | | | | 0.008 | 0.007 | 0.001 | 0.011 |
| 2009 | | 0.027 | | | 0.010 | | 0.001 | | 0.035 | 0.053 | 0.002 | 0.056 |
| 2010 | | 0.042 | | | 0.015 | | 0.003 | | 0.058 | 0.096 | 0.004 | 0.101 |
| 2011 | | 0.058 | | | 0.021 | | 0.003 | | 0.077 | 0.140 | 0.006 | 0.146 |
| 2012 | | 0.088 | | | 0.035 | | 0.004 | | 0.137 | 0.246 | 0.016 | 0.254 |
| 2013 | | 0.096 | | | 0.039 | | 0.005 | | 0.180 | 0.320 | 0.024 | 0.331 |
| 2014 | | 0.132 | | | 0.059 | | 0.007 | | 0.267 | 0.442 | 0.046 | 0.456 |
| 2015 | 0.001 | 0.169 | | | 0.080 | | 0.011 | 0.001 | 0.373 | 0.585 | 0.075 | 0.604 |
| 2016 | | 0.190 | | | 0.102 | | 0.014 | | 0.463 | 0.738 | 0.124 | 0.764 |

High Forecast

| Year | A | B | C | D | E | F | G | H | I | J | K | NYCA |
|------|-------|-------|---|---|-------|-------|-------|-------|-------|-------|-------|-------|
| 2007 | | 0.003 | | | 0.001 | | | | 0.004 | 0.003 | 0.001 | 0.004 |
| 2008 | 0.001 | 0.012 | | | 0.004 | | 0.001 | | 0.013 | 0.012 | 0.003 | 0.017 |
| 2009 | | 0.045 | | | 0.016 | | 0.002 | | 0.059 | 0.091 | 0.004 | 0.096 |
| 2010 | | 0.081 | | | 0.031 | | 0.006 | | 0.111 | 0.163 | 0.009 | 0.169 |
| 2011 | | 0.109 | | | 0.044 | 0.001 | 0.006 | | 0.142 | 0.254 | 0.014 | 0.264 |
| 2012 | | 0.174 | | | 0.008 | | 0.009 | | 0.270 | 0.448 | 0.037 | 0.461 |
| 2013 | | 0.204 | | | 0.102 | | 0.011 | | 0.367 | 0.643 | 0.056 | 0.665 |
| 2014 | | 0.303 | | | 0.160 | 0.001 | 0.024 | | 0.573 | 0.914 | 0.111 | 0.944 |
| 2015 | 0.001 | 0.432 | | | 0.257 | 0.001 | 0.034 | 0.001 | 0.832 | 1.292 | 0.201 | 1.336 |
| 2016 | | 0.569 | | | 0.368 | 0.002 | 0.053 | 0.001 | 1.203 | 1.833 | 0.410 | 1.912 |

LOLE Results: Thermal Transfer Limits

Base Forecast

| Year | A | B | C | D | E | F | G | H | I | J | K | NYCA |
|------|-------|-------|---|---|-------|-------|-------|-------|-------|-------|-------|-------|
| 2007 | | 0.002 | | | 0.001 | | | | 0.002 | 0.002 | | 0.003 |
| 2008 | 0.001 | 0.008 | | | 0.002 | | | | 0.008 | 0.007 | 0.001 | 0.010 |
| 2009 | | 0.027 | | | 0.010 | | 0.002 | | 0.035 | 0.043 | 0.003 | 0.045 |
| 2010 | | 0.041 | | | 0.015 | | 0.004 | | 0.058 | 0.069 | 0.005 | 0.074 |
| 2011 | | 0.058 | | | 0.022 | | 0.005 | | 0.078 | 0.097 | 0.009 | 0.102 |
| 2012 | | 0.089 | | | 0.035 | | 0.008 | | 0.139 | 0.181 | 0.022 | 0.191 |
| 2013 | | 0.097 | | | 0.040 | | 0.008 | | 0.184 | 0.218 | 0.034 | 0.231 |
| 2014 | | 0.134 | | | 0.059 | | 0.015 | | 0.272 | 0.334 | 0.063 | 0.349 |
| 2015 | 0.001 | 0.171 | | | 0.082 | | 0.022 | 0.001 | 0.383 | 0.455 | 0.096 | 0.477 |
| 2016 | | 0.192 | | | 0.103 | 0.001 | 0.030 | | 0.473 | 0.569 | 0.168 | 0.598 |

High Forecast

| Year | A | B | C | D | E | F | G | H | I | J | K | NYCA |
|------|-------|-------|---|---|-------|-------|-------|-------|-------|-------|-------|-------|
| 2007 | | 0.003 | | | 0.001 | | | | 0.004 | 0.003 | 0.001 | 0.004 |
| 2008 | | 0.012 | | | 0.004 | | 0.001 | | 0.014 | 0.011 | 0.003 | 0.016 |
| 2009 | | 0.045 | | | 0.016 | | 0.002 | | 0.058 | 0.071 | 0.004 | 0.076 |
| 2010 | | 0.081 | | | 0.031 | | 0.007 | | 0.111 | 0.133 | 0.012 | 0.140 |
| 2011 | | 0.110 | | | 0.044 | 0.001 | 0.010 | | 0.144 | 0.181 | 0.020 | 0.192 |
| 2012 | | 0.177 | | | 0.082 | 0.001 | 0.018 | | 0.277 | 0.350 | 0.050 | 0.365 |
| 2013 | | 0.207 | | | 0.104 | 0.001 | 0.021 | | 0.378 | 0.468 | 0.075 | 0.492 |
| 2014 | | 0.307 | | | 0.162 | 0.001 | 0.039 | | 0.589 | 0.729 | 0.149 | 0.763 |
| 2015 | 0.001 | 0.434 | | | 0.262 | 0.002 | 0.061 | 0.001 | 0.848 | 1.027 | 0.276 | 1.076 |
| 2016 | | 0.578 | | | 0.374 | 0.004 | 0.095 | 0.001 | 1.218 | 1.455 | 0.526 | 1.540 |

LOLE Results: Free Flowing Transfer Limits

Base Forecast

| Year | A | B | C | D | E | F | G | H | I | J | K | NYCA |
|------|---|-------|---|---|-------|-------|-------|---|-------|-------|-------|-------|
| 2007 | | 0.002 | | | 0.001 | | | | 0.002 | 0.002 | | 0.002 |
| 2008 | | 0.007 | | | 0.002 | | | | 0.008 | 0.006 | | 0.009 |
| 2009 | | 0.029 | | | 0.010 | | 0.001 | | 0.030 | 0.033 | 0.001 | 0.034 |
| 2010 | | 0.044 | | | 0.015 | | 0.003 | | 0.047 | 0.052 | 0.002 | 0.054 |
| 2011 | | 0.063 | | | 0.022 | 0.001 | 0.005 | | 0.066 | 0.072 | 0.006 | 0.076 |
| 2012 | | 0.103 | | | 0.038 | 0.001 | 0.008 | | 0.111 | 0.121 | 0.013 | 0.123 |
| 2013 | | 0.120 | | | 0.044 | 0.001 | 0.009 | | 0.131 | 0.143 | 0.019 | 0.147 |
| 2014 | | 0.174 | | | 0.068 | 0.001 | 0.014 | | 0.186 | 0.208 | 0.031 | 0.213 |
| 2015 | | 0.236 | | | 0.099 | 0.001 | 0.022 | | 0.257 | 0.285 | 0.054 | 0.295 |
| 2016 | | 0.293 | | | 0.128 | 0.002 | 0.029 | | 0.316 | 0.357 | 0.088 | 0.367 |

High Forecast

| Year | A | B | C | D | E | F | G | H | I | J | K | NYCA |
|------|---|-------|---|---|-------|-------|-------|-------|-------|-------|-------|-------|
| 2007 | | 0.003 | | | 0.001 | | | | 0.004 | 0.003 | | 0.004 |
| 2008 | | 0.012 | | | 0.004 | | 0.001 | | 0.013 | 0.011 | 0.001 | 0.014 |
| 2009 | | 0.047 | | | 0.017 | | 0.002 | | 0.050 | 0.055 | 0.002 | 0.058 |
| 2010 | | 0.087 | | | 0.031 | | 0.007 | | 0.093 | 0.103 | 0.006 | 0.106 |
| 2011 | | 0.117 | | | 0.045 | 0.002 | 0.011 | | 0.124 | 0.136 | 0.014 | 0.143 |
| 2012 | | 0.206 | | | 0.088 | 0.002 | 0.020 | | 0.225 | 0.244 | 0.035 | 0.252 |
| 2013 | | 0.264 | | | 0.117 | 0.002 | 0.024 | | 0.285 | 0.313 | 0.055 | 0.326 |
| 2014 | | 0.410 | | | 0.188 | 0.004 | 0.046 | | 0.447 | 0.490 | 0.108 | 0.509 |
| 2015 | | 0.570 | | | 0.309 | 0.005 | 0.076 | 0.001 | 0.631 | 0.682 | 0.213 | 0.712 |
| 2016 | | 0.771 | | | 0.449 | 0.009 | 0.113 | 0.001 | 0.877 | 0.925 | 0.406 | 0.971 |