# Review of 2020 Regional Load Growth Factors


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# Evaluation of Forecast Growth Rates

- The Load Forecast Manual specifies that the NYISO will evaluate Regional Load Growth Factors (RLGF) in the current year for each Transmission District are evaluated based upon three criteria:
  - Historic Peak Demand Growth: Bandwidth based only on the historic growth of weather-adjusted peaks;
  - Ratio of Peak Demand to Economic Growth: Projection based on next year's economic growth, using a regression of historic peaks, historic economic data and projected economic growth; and
  - Ratio of Summer Energy to Economic Growth: A third criteria which is a projection based on regression of historic summer energy, historic economic data and projected economic growth.
- If at least two of the three criteria are satisfied, then the load growth factor for the Transmission District is accepted.

# Criterion 1 – Historical Peak Growth

- Calculate annual growth in weather normalized peaks over the past five years, using Transmission Owner's weather normalized peaks.
- Select the 2nd highest annual growth rate of weather-normalized peaks as the upper bound on growth and the 2nd lowest annual growth rate of weather normalized peaks as the lower bound on growth, with a minimum of a 1% difference between the two.

# Criterion 2 – Ratio of Peak to Economic Growth

- Uses daily weather, peak and economic data from 2005 to 2019.
- Regression model based on top ten Transmission District peak load days from each summer.
- Regress daily peak MW against daily weather, annual macroeconomic variable(s), energy efficiency trend variable, and binary variables to determine 2020 predicted peak load.
- Calculate a +/-25% confidence interval for the 2020 predicted peak load based on the standard error of the regression to obtain the upper and lower bounds for the RLGF.

# Criterion 3 – Energy Growth

- Regress summer energy against summer CTHI (Cumulative Temperature-Humidity Index), macroeconomic variable(s) if significant, and energy efficiency trend variable to determine 2020 predicted summer energy.
- Calculate a +/-25% confidence interval for the 2020 predicted summer energy based on the standard error of the regression to obtain the upper and lower bounds for the RLGF.
- Criterion 3 is independent of Criteria 1 and 2.

# Criteria 1, 2 & 3 Summary

| T.O. | Type | Lower Bound | 2020 RLGF | Upper Bound | Test | 2019 RLGF |
|---|---|---|---|---|---|---|
| Con Edison | Criterion 1 - Peak Growth | 0.9891 | 0.9998 | 0.9992 | 0 | 1.0038 |
| Con Edison | Criterion 2 - Economics | 0.9834 | 0.9998 | 1.0045 | 1 | 1.0038 |
| Con Edison | Criterion 3 - Energy Growth | 0.9853 | 0.9998 | 1.0017 | 1 | 1.0038 |
| Central Hudson | Criterion 1 - Peak Growth | 0.9989 | 0.9910 | 1.0183 | 0 | 0.9950 |
| Central Hudson | Criterion 2 - Economics | 0.9711 | 0.9910 | 1.0027 | 1 | 0.9950 |
| Central Hudson | Criterion 3 - Energy Growth | 0.9750 | 0.9910 | 0.9964 | 1 | 0.9950 |
| LIPA | Criterion 1 - Peak Growth | 0.9865 | 0.9856 | 0.9965 | 0 | 0.9861 |
| LIPA | Criterion 2 - Economics | 0.9814 | 0.9856 | 1.0107 | 1 | 0.9861 |
| LIPA | Criterion 3 - Energy Growth | 0.9856 | 0.9856 | 1.0009 | 1 | 0.9861 |
| National Grid | Criterion 1 - Peak Growth | 0.9745 | 1.0000 | 1.0073 | 1 | 0.9920 |
| National Grid | Criterion 2 - Economics | 0.9801 | 1.0000 | 1.0032 | 1 | 0.9920 |
| National Grid | Criterion 3 - Energy Growth | 0.9871 | 1.0000 | 0.9989 | 0 | 0.9920 |
| NYSEG | Criterion 1 - Peak Growth | 0.9942 | 0.9956 | 1.0097 | 1 | 0.9968 |
| NYSEG | Criterion 2 - Economics | 0.9915 | 0.9956 | 1.0146 | 1 | 0.9968 |
| NYSEG | Criterion 3 - Energy Growth | 0.9935 | 0.9956 | 1.0061 | 1 | 0.9968 |
| O&R | Criterion 1 - Peak Growth | 0.9701 | 1.0080 | 1.0080 | 1 | 0.9822 |
| O&R | Criterion 2 - Economics | 0.9811 | 1.0080 | 1.0139 | 1 | 0.9822 |
| O&R | Criterion 3 - Energy Growth | 0.9874 | 1.0080 | 0.9997 | 0 | 0.9822 |
| RG&E | Criterion 1 - Peak Growth | 0.9992 | 0.9940 | 1.0180 | 0 | 0.9940 |
| RG&E | Criterion 2 - Economics | 0.9774 | 0.9940 | 1.0072 | 1 | 0.9940 |
| RG&E | Criterion 3 - Energy Growth | 0.9881 | 0.9940 | 1.0002 | 1 | 0.9940 |

Load Growth Criteria

A '1' in the column labeled 'Test' indicates that the RLGF is between the upper and lower bandwidths.

A '0' in the column labeled 'Test' indicates that the RLGF is not between the upper and lower bandwidths.

Each RLGF must fall within 2 of the 3 criteria.

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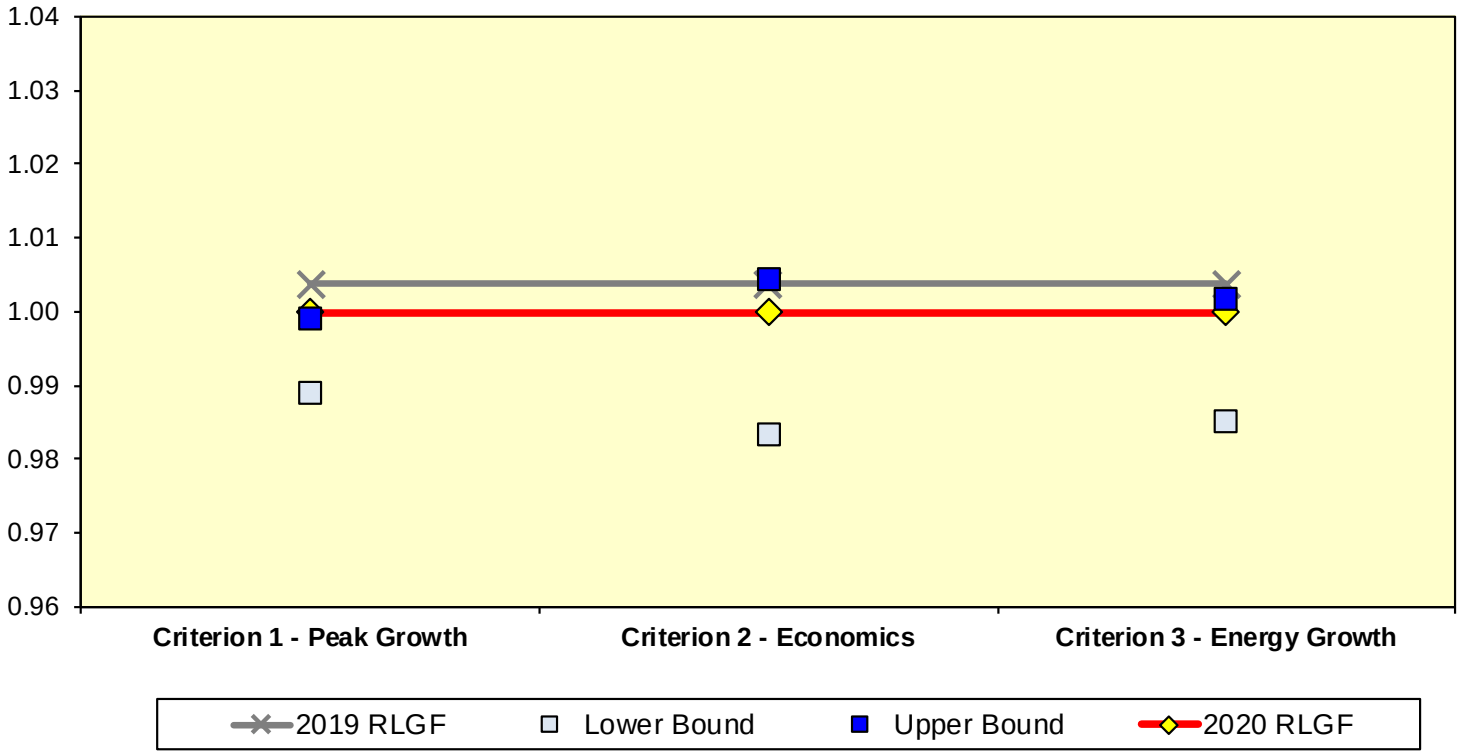
# Consolidated Edison RLGF Review

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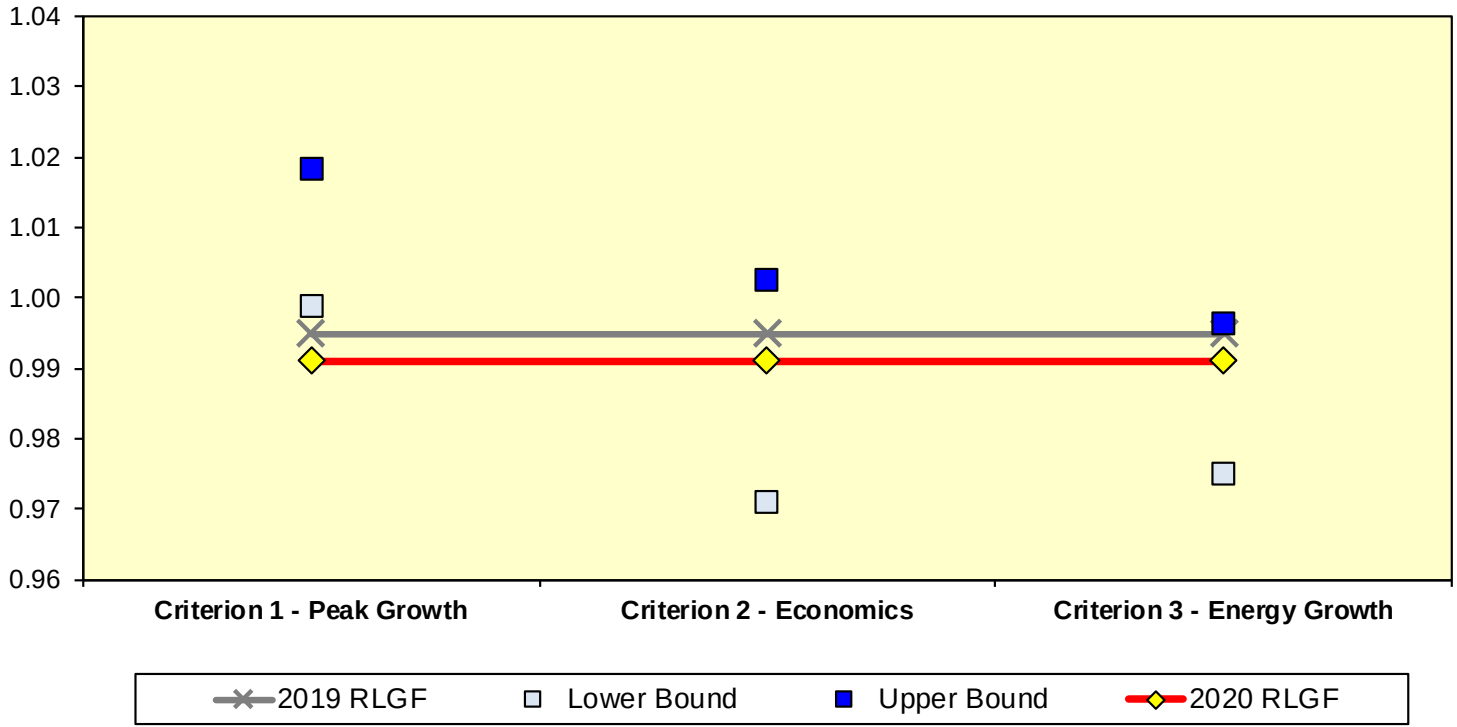
# Central Hudson RLGF Review

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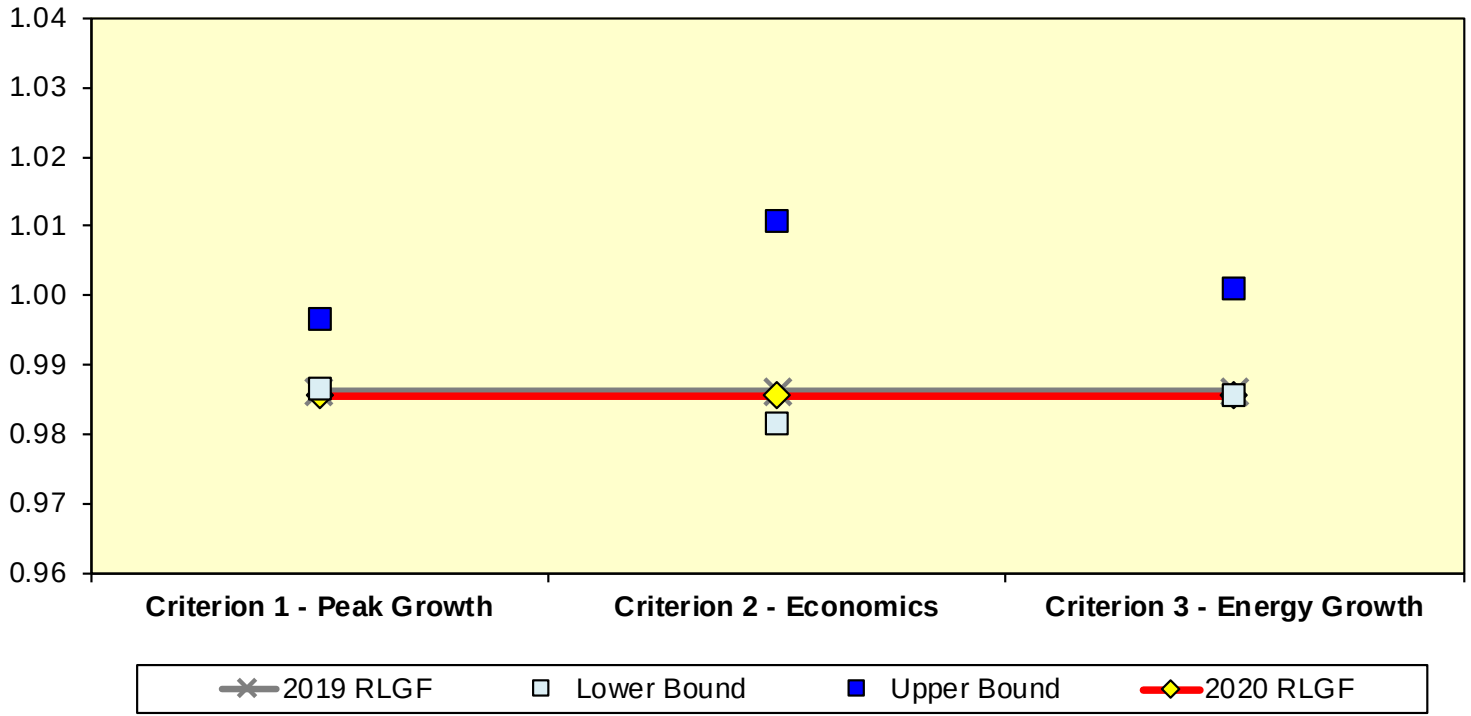
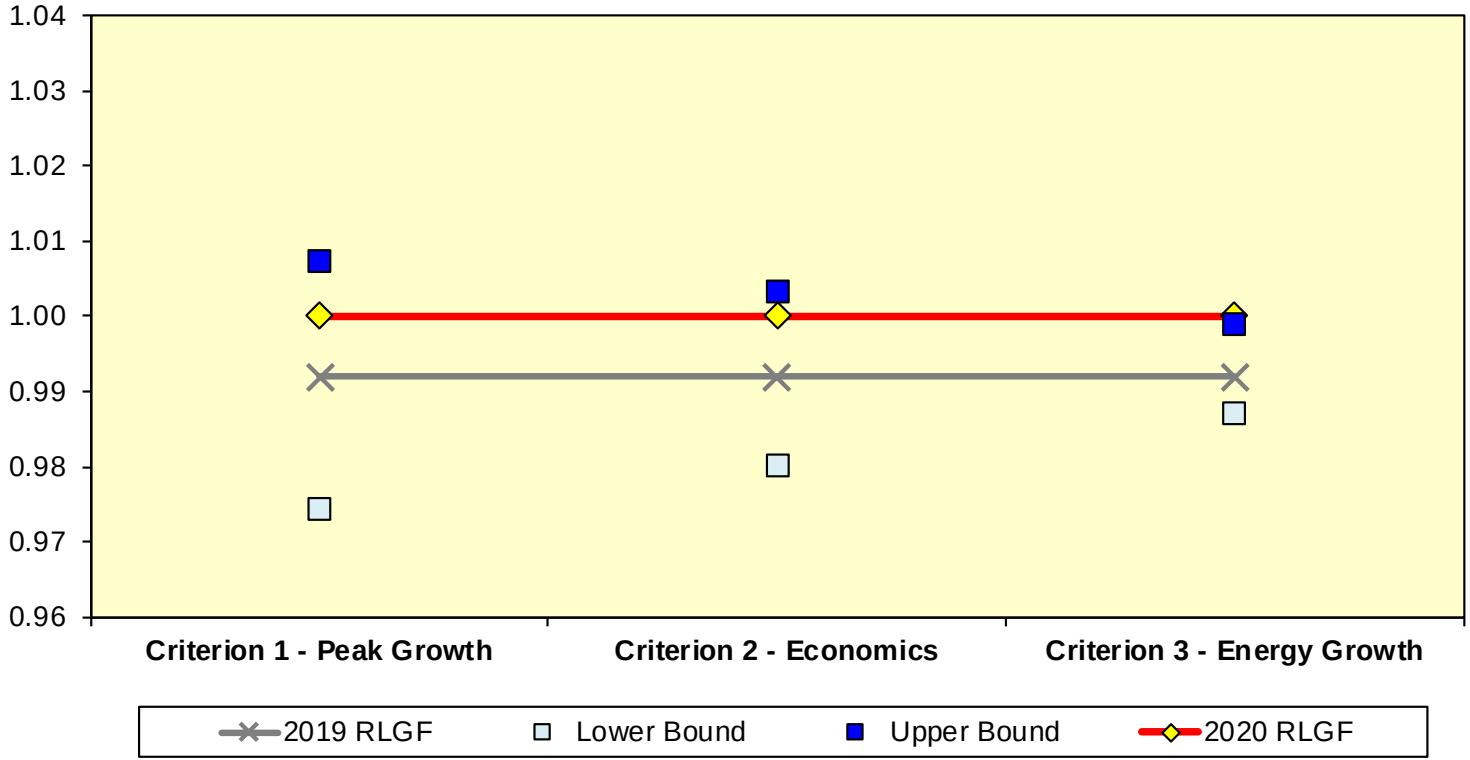
# LIPA RLGF Review



# National Grid RLGF Review

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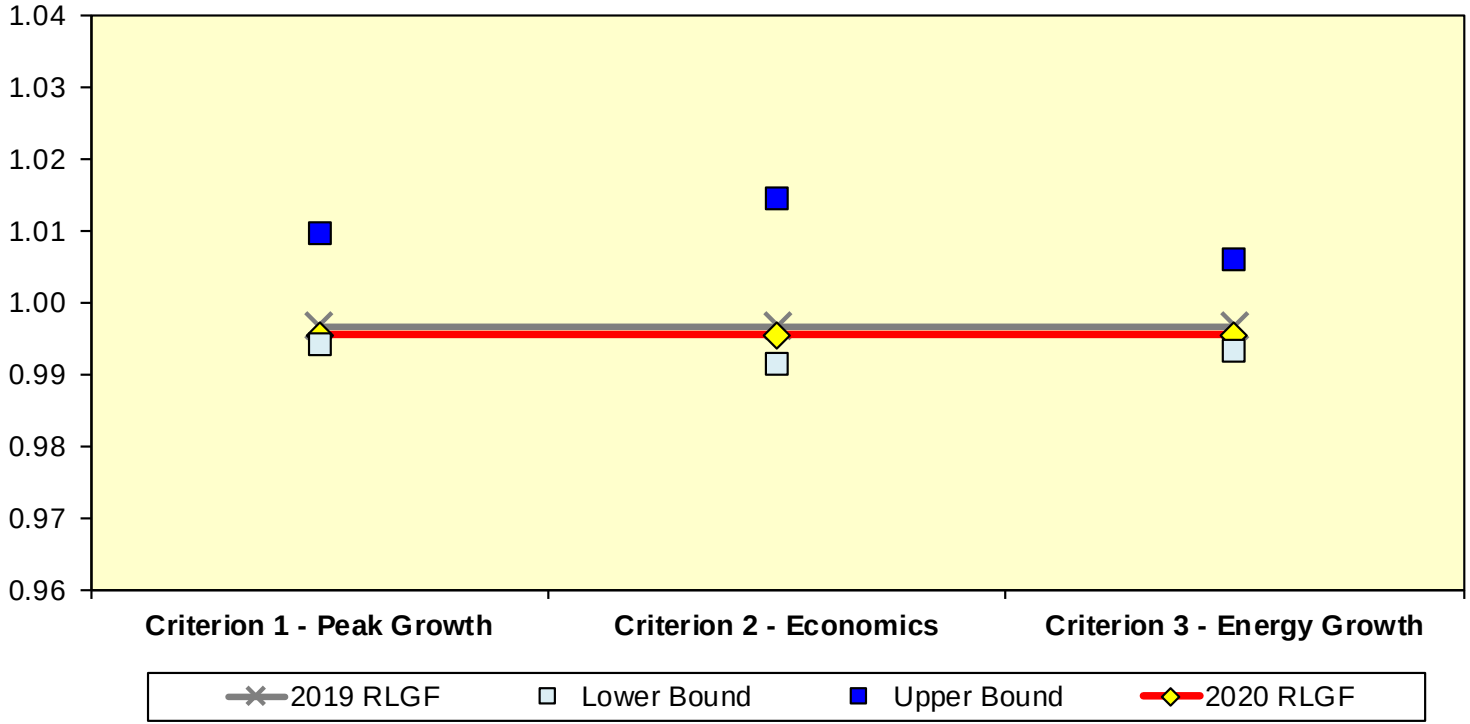
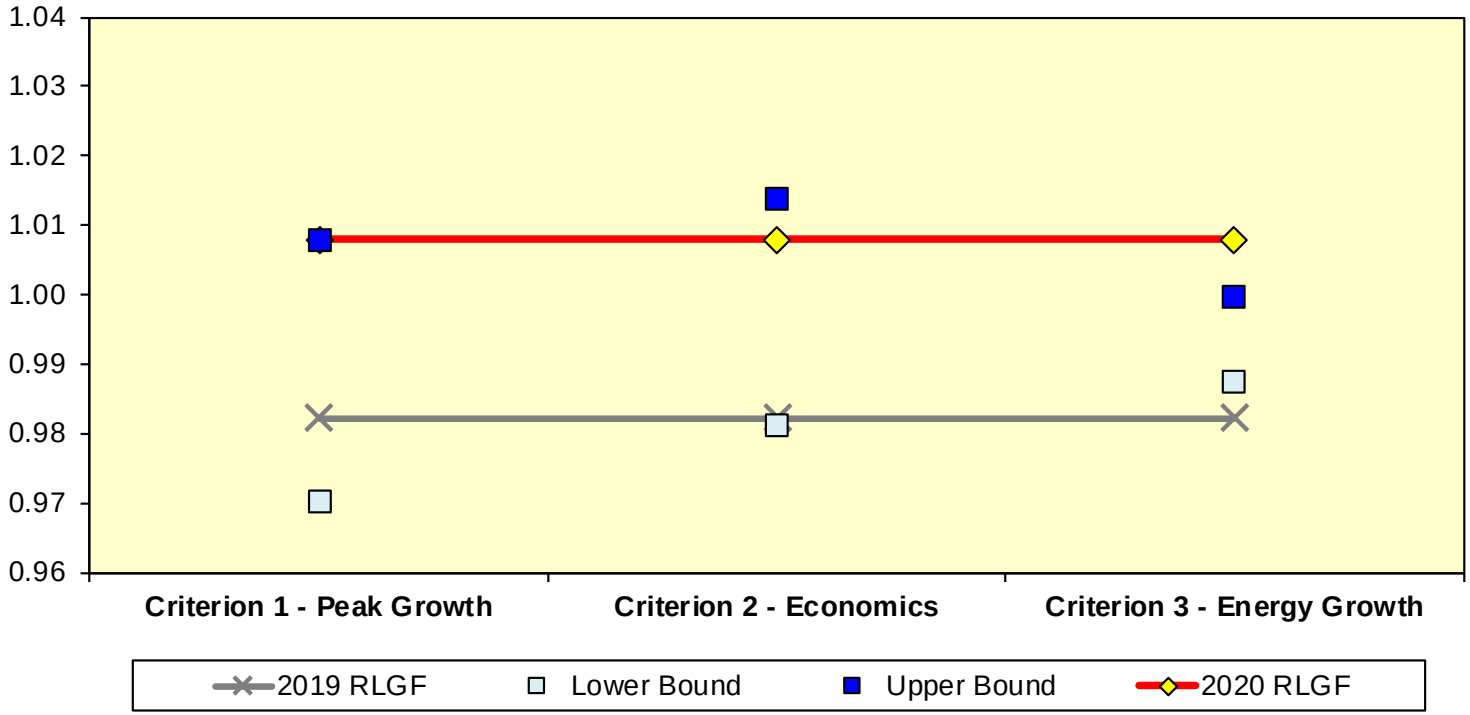
# NYSEG RLGF Review



# Orange & Rockland RLGF Review

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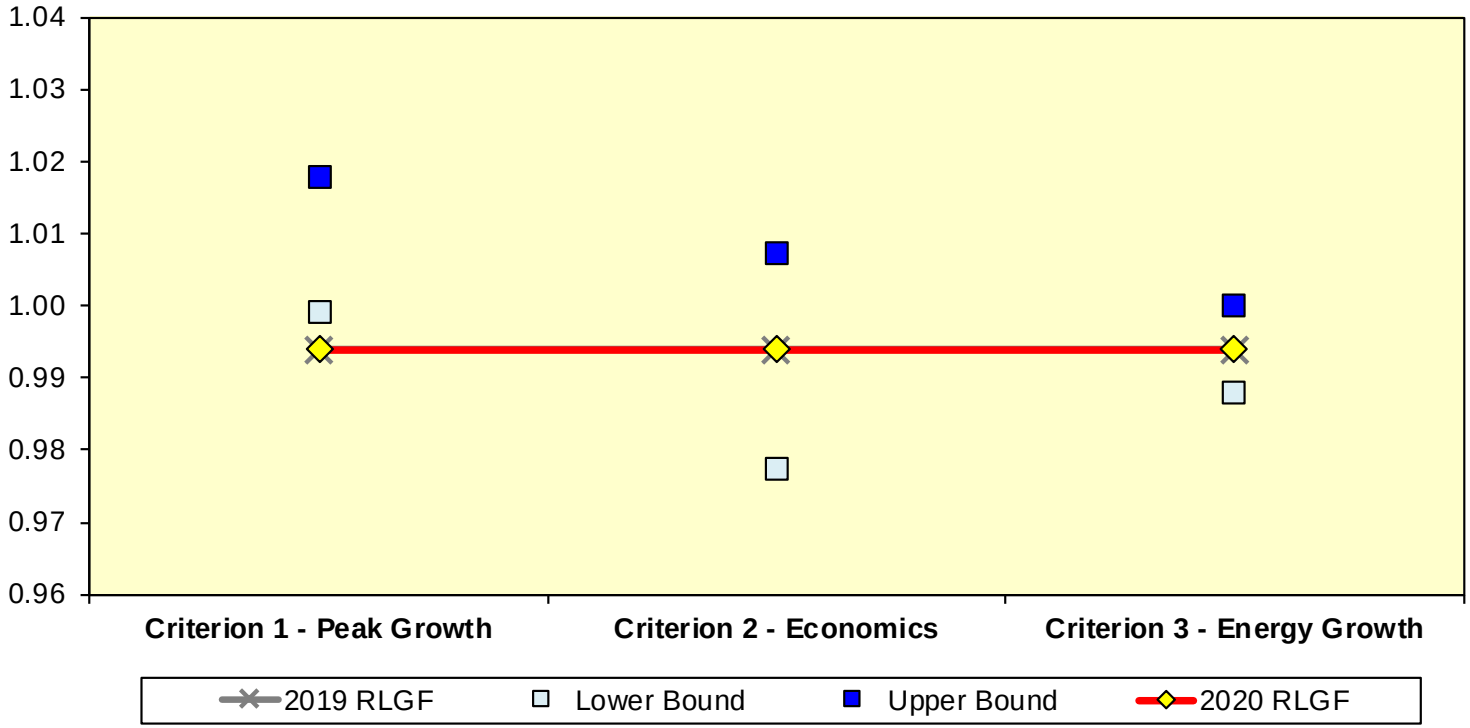
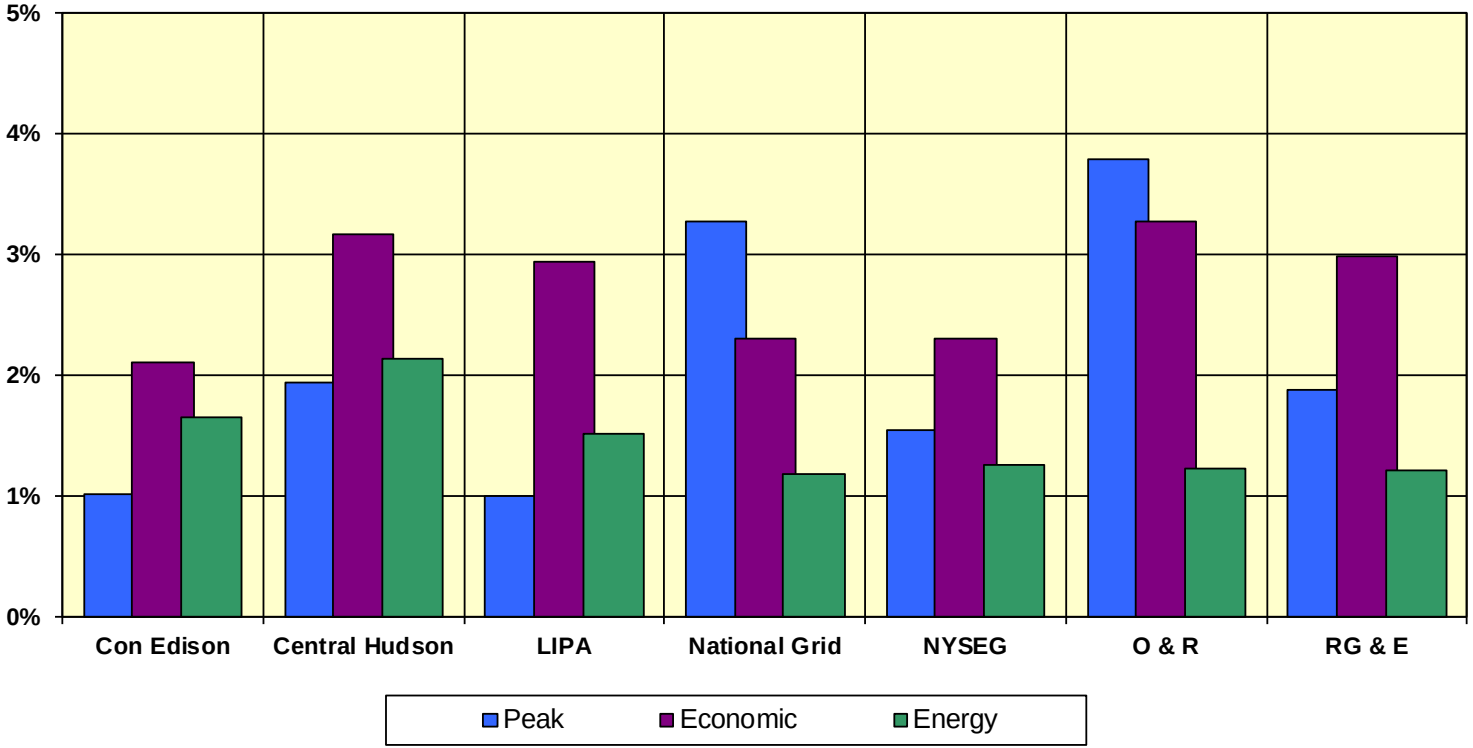
# Rochester Gas & Electric RLGF Review



# Summary of Overall Bandwdiths (Low to High)

Shows the Range of Variation for the Three Criteria

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# Summary of Economic Data (1 of 2)

| Variable & TD | Unit | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Con-Ed_Employment | 1,000 | 4,208 | 4,306 | 4,395 | 4,513 | 4,657 | 4,773 | 4,856 | 4,933 | 5,010 | 5,058 | 5,061 | 5,065 |
| Con-Ed_GDP | $ Millions | 711,853 | 733,529 | 760,094 | 764,458 | 783,337 | 797,297 | 813,347 | 830,207 | 849,704 | 863,982 | 873,879 | 890,739 |
| Con-Ed_Households | 1,000 | 3,491 | 3,539 | 3,576 | 3,612 | 3,644 | 3,673 | 3,684 | 3,689 | 3,702 | 3,719 | 3,736 | 3,751 |
| Con-Ed_Income-Real | $ Millions | 535,781 | 558,709 | 571,703 | 583,761 | 608,492 | 629,738 | 651,617 | 685,522 | 701,756 | 700,953 | 704,055 | 713,744 |
| Con-Ed_Population | 1,000 | 9,180 | 9,268 | 9,336 | 9,384 | 9,421 | 9,446 | 9,433 | 9,386 | 9,360 | 9,362 | 9,371 | 9,383 |
| Cen-Hud_Employment | 1,000 | 190 | 190 | 190 | 191 | 192 | 194 | 195 | 197 | 199 | 201 | 202 | 202 |
| Cen-Hud_GDP | $ Millions | 22,364 | 22,345 | 22,635 | 22,606 | 22,626 | 22,684 | 22,776 | 23,232 | 23,951 | 24,392 | 24,653 | 25,249 |
| Cen-Hud_Households | 1,000 | 200 | 200 | 200 | 201 | 201 | 202 | 202 | 203 | 204 | 204 | 205 | 205 |
| Cen-Hud_Income-Real | $ Millions | 22,448 | 22,824 | 22,966 | 22,995 | 23,696 | 24,341 | 24,896 | 25,606 | 25,744 | 25,876 | 26,042 | 26,341 |
| Cen-Hud_Population | 1,000 | 530 | 529 | 526 | 524 | 523 | 520 | 519 | 520 | 519 | 518 | 517 | 516 |
| LIPA_Employment | 1,000 | 1,238 | 1,254 | 1,273 | 1,289 | 1,302 | 1,320 | 1,338 | 1,346 | 1,351 | 1,359 | 1,361 | 1,363 |
| LIPA_GDP | $ Millions | 164,725 | 166,482 | 169,085 | 169,704 | 173,761 | 175,130 | 175,179 | 176,184 | 177,990 | 180,153 | 182,509 | 186,285 |
| LIPA_Households | 1,000 | 954 | 959 | 962 | 966 | 969 | 972 | 973 | 975 | 979 | 984 | 988 | 991 |
| LIPA_Income-Real | $ Millions | 173,552 | 179,524 | 182,646 | 181,681 | 188,676 | 194,100 | 198,389 | 202,955 | 203,352 | 203,696 | 203,186 | 204,141 |
| LIPA_Population | 1,000 | 2,841 | 2,846 | 2,848 | 2,851 | 2,850 | 2,846 | 2,842 | 2,840 | 2,839 | 2,838 | 2,837 | 2,836 |
| N-Grid_Employment | 1,000 | 1,781 | 1,798 | 1,810 | 1,819 | 1,825 | 1,839 | 1,855 | 1,866 | 1,879 | 1,889 | 1,888 | 1,890 |
| N-Grid_GDP | $ Millions | 222,297 | 223,662 | 225,144 | 225,590 | 230,584 | 232,480 | 233,737 | 236,642 | 242,135 | 245,396 | 247,224 | 252,104 |
| N-Grid_Households | 1,000 | 1,627 | 1,635 | 1,641 | 1,648 | 1,652 | 1,655 | 1,659 | 1,663 | 1,667 | 1,672 | 1,676 | 1,680 |
| N-Grid_Income-Real | $ Millions | 163,505 | 165,381 | 166,389 | 167,070 | 171,675 | 175,125 | 177,058 | 181,079 | 181,642 | 181,701 | 181,995 | 183,394 |
| N-Grid_Population | 1,000 | 4,012 | 4,011 | 4,009 | 4,005 | 3,995 | 3,979 | 3,968 | 3,964 | 3,957 | 3,946 | 3,937 | 3,929 |

Data is from Moody's Analytics, August 2019.

# Summary of Economic Data (2 of 2)

| Variable & TD | Unit | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NYPA_Employment | 1,000 | 32 | 33 | 33 | 34 | 33 | 33 | 34 | 35 | 35 | 35 | 35 | 35 |
| NYPA_GDP | $ Millions | 4,117 | 3,812 | 3,697 | 3,729 | 3,694 | 3,720 | 3,797 | 3,880 | 3,995 | 4,031 | 4,045 | 4,092 |
| NYPA_Households | 1,000 | 32 | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 33 | 33 | 33 | 33 |
| NYPA_Income-Real | $ Millions | 3,015 | 2,986 | 3,022 | 3,030 | 3,128 | 3,194 | 3,204 | 3,279 | 3,275 | 3,280 | 3,294 | 3,316 |
| NYPA_Population | 1,000 | 82 | 82 | 82 | 82 | 81 | 81 | 81 | 81 | 81 | 80 | 80 | 80 |
| NYSEG_Employment | 1,000 | 411 | 417 | 419 | 420 | 417 | 417 | 420 | 422 | 426 | 428 | 428 | 428 |
| NYSEG_GDP | $ Millions | 48,939 | 48,853 | 49,052 | 48,870 | 48,744 | 48,539 | 48,616 | 49,250 | 50,445 | 51,110 | 51,463 | 52,389 |
| NYSEG_Households | 1,000 | 418 | 419 | 420 | 420 | 420 | 419 | 419 | 419 | 420 | 420 | 421 | 421 |
| NYSEG_Income-Real | $ Millions | 40,036 | 40,829 | 41,087 | 40,637 | 41,624 | 42,076 | 42,425 | 43,379 | 43,507 | 43,671 | 43,751 | 44,079 |
| NYSEG_Population | 1,000 | 1,058 | 1,056 | 1,054 | 1,050 | 1,043 | 1,036 | 1,030 | 1,026 | 1,023 | 1,019 | 1,015 | 1,012 |
| OR_Employment | 1,000 | 254 | 257 | 258 | 263 | 268 | 273 | 278 | 285 | 291 | 294 | 296 | 297 |
| OR_GDP | $ Millions | 32,468 | 32,015 | 32,086 | 32,391 | 33,147 | 33,782 | 34,292 | 35,466 | 36,738 | 37,410 | 38,034 | 38,948 |
| OR_Households | 1,000 | 227 | 228 | 228 | 229 | 231 | 232 | 233 | 235 | 237 | 239 | 241 | 243 |
| OR_Income-Real | $ Millions | 31,901 | 32,602 | 32,844 | 32,948 | 34,080 | 34,801 | 35,323 | 36,312 | 36,863 | 37,571 | 37,743 | 38,146 |
| OR_Population | 1,000 | 688 | 690 | 692 | 695 | 698 | 700 | 703 | 706 | 708 | 709 | 712 | 716 |
| RGE_Employment | 1,000 | 491 | 497 | 500 | 502 | 505 | 509 | 513 | 516 | 519 | 521 | 521 | 522 |
| RGE_GDP | $ Millions | 62,001 | 61,991 | 62,376 | 62,220 | 63,188 | 64,280 | 64,572 | 64,941 | 66,673 | 67,726 | 68,518 | 70,153 |
| RGE_Households | 1,000 | 422 | 424 | 426 | 428 | 429 | 430 | 431 | 432 | 433 | 435 | 436 | 437 |
| RGE_Income-Real | $ Millions | 43,715 | 44,799 | 45,051 | 44,450 | 45,794 | 46,895 | 47,209 | 48,153 | 48,079 | 48,032 | 48,096 | 48,503 |
| RGE_Population | 1,000 | 1,055 | 1,055 | 1,055 | 1,054 | 1,051 | 1,047 | 1,044 | 1,043 | 1,042 | 1,040 | 1,038 | 1,037 |
| Employment_NYCA | 1,000 | 8,605 | 8,752 | 8,879 | 9,031 | 9,200 | 9,359 | 9,490 | 9,600 | 9,710 | 9,786 | 9,791 | 9,804 |
| GDP_NYCA | $ Millions | 1,268,764 | 1,292,688 | 1,324,169 | 1,329,569 | 1,359,081 | 1,377,912 | 1,396,315 | 1,419,803 | 1,451,629 | 1,474,201 | 1,490,325 | 1,519,960 |
| Households_NYCA | 1,000 | 7,369 | 7,435 | 7,484 | 7,537 | 7,578 | 7,614 | 7,633 | 7,648 | 7,676 | 7,705 | 7,735 | 7,762 |
| Income_NYCA | $ Millions | 1,013,952 | 1,047,654 | 1,065,708 | 1,076,573 | 1,117,166 | 1,150,270 | 1,180,122 | 1,226,284 | 1,244,217 | 1,244,781 | 1,248,162 | 1,261,662 |
| Population_NYCA | 1,000 | 19,446 | 19,536 | 19,602 | 19,644 | 19,661 | 19,656 | 19,621 | 19,567 | 19,528 | 19,512 | 19,507 | 19,508 |

Data is from Moody's Analytics, August 2019.

# Questions?

# Our mission, in collaboration with our stakeholders, is to serve the public interest and provide benefit to consumers by:

- Maintaining and enhancing regional reliability
- Operating open, fair and competitive wholesale electricity markets
- Planning the power system for the future
- Providing factual information to policymakers, stakeholders and investors in the power system