

Review of Final 2022 Regional Load Growth Factors

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Evaluation of RLGFs – Criteria 1, 2, and 3

- **Regional Load Growth Factors are submitted to the NYISO by the Transmission Owners, and reflect expected growth in summer peak load. The 1+RLGF is expressed as the ratio of the forecast year peak load to the current year weather normalized peak.**

- **The Load Forecasting Manual and Technical Bulletin 251 specify that the NYISO will evaluate Regional Load Growth Factors (RLGF) in the current year for each Transmission District based upon three criteria:**
 - **Criterion 1 – Index of Recent Historical Peak Load Growth**
Bandwidth based only on the recent growth of weather-adjusted peaks
 - **Criterion 2 – Projection of Peak Load Growth in Relation to Economic Growth**
Projection of peak load growth based on a regression of historical summer daily peaks, historical economic data and other variables, and projected economic growth
 - **Criterion 3 – Projections Performed by the ISO**
An independent projection of load growth currently based upon a regression of historical summer energy, historical economic data and other variables, 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 – Index of Recent Historical Peak Load 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 – Projection of Peak Load Growth in Relation to Economic Growth

- Uses daily weather, peak and economic data from the most recent five to 15 summers
- 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 other variables to determine next year's predicted peak load using the projected economic growth.
- Calculate a 25th to 75th percentile confidence interval for the predicted peak load based on the standard error of the regression to obtain the upper and lower bounds for the RLGf, with a minimum of a 1% difference between the two. The NYISO may take into account additional factors when establishing the range for Criterion 2.

Criterion 3 – Projections Performed by the ISO: Summer Energy Growth

- Regress historical summer energy against summer CTHI (Cumulative Temperature & Humidity Index), macroeconomic variable(s) if significant, energy efficiency trend variable, and other variables to determine the predicted summer energy for the following year
- Calculate a 25th to 75th percentile confidence interval for the predicted summer energy based on the standard error of the regression to obtain the upper and lower bounds for the RLGf, with a minimum of a 1% difference between the two. The NYISO may take into account additional factors when establishing the range for Criterion 3
- Criterion 3 is an independent projection performed by the ISO, and is an independent measure separate from Criteria 1 and 2. The NYISO may change the Criterion 3 methodology as necessary

Combined Criterion (Criteria 1 and 2)

- In the event that the ranges for Criterion 1 and Criterion 2 are mutually exclusive, the NYISO will construct an alternate Criterion by combining the ranges of Criterion 1 and Criterion 2
- The upper and lower bounds of the combined Criterion shall typically be calculated by averaging the upper bounds of Criterion 1 and Criterion 2, and averaging the lower bounds of Criterion 1 and Criterion 2, with a minimum 1% difference between the upper and lower bounds
- In the event that Criterion 1 and Criterion 2 are combined, then it is sufficient for the RLGf to satisfy either the Combined Criterion or Criterion 3

Final 2022 Criteria 1, 2 & 3 Summary

T.O.	Type	Lower Bound	2022 1+RLGF	Upper Bound	Test	2021 1+RLGF
Con Edison	Criterion 1 - Historical Peaks	0.9831	1.0190	0.9992	0	1.0492
Con Edison	Criterion 2 - Economic Projection	0.9987	1.0190	1.0201	1	1.0492
Con Edison	Criterion 3 - Summer Energy	1.0028	1.0190	1.0198	1	1.0492
Central Hudson	Criterion 1 - Historical Peaks	0.9989	1.0050	1.0143	1	0.9950
Central Hudson	Criterion 2 - Economic Projection	0.9756	1.0050	1.0131	1	0.9950
Central Hudson	Criterion 3 - Summer Energy	0.9869	1.0050	1.0091	1	0.9950
LIPA	Criterion 1 - Historical Peaks	0.9819	0.9781	0.9919	0	1.0030
LIPA	Criterion 2 - Economic Projection	0.9727	0.9781	1.0015	1	1.0030
LIPA	Criterion 3 - Summer Energy	0.9774	0.9781	0.9897	1	1.0030
National Grid	Criterion 1 - Historical Peaks	0.9907	1.0000	1.0073	1	1.0000
National Grid	Criterion 2 - Economic Projection	0.9845	1.0000	1.0099	1	1.0000
National Grid	Criterion 3 - Summer Energy	0.9982	1.0000	1.0112	1	1.0000
NYSEG	Criterion 1 - Historical Peaks	0.9724	1.0081	1.0097	1	1.0014
NYSEG	Criterion 2 - Economic Projection	0.9929	1.0081	1.0170	1	1.0014
NYSEG	Criterion 3 - Summer Energy	1.0037	1.0081	1.0152	1	1.0014
O&R	Criterion 1 - Historical Peaks	0.9701	0.9900	1.0308	1	1.0036
O&R	Criterion 2 - Economic Projection	0.9757	0.9900	1.0111	1	1.0036
O&R	Criterion 3 - Summer Energy	0.9967	0.9900	1.0082	0	1.0036
RG&E	Criterion 1 - Historical Peaks	0.9996	0.9974	1.0201	0	0.9852
RG&E	Criterion 2 - Economic Projection	0.9671	0.9974	0.9991	1	0.9852
RG&E	Criterion 3 - Summer Energy	0.9880	0.9974	1.0009	1	0.9852

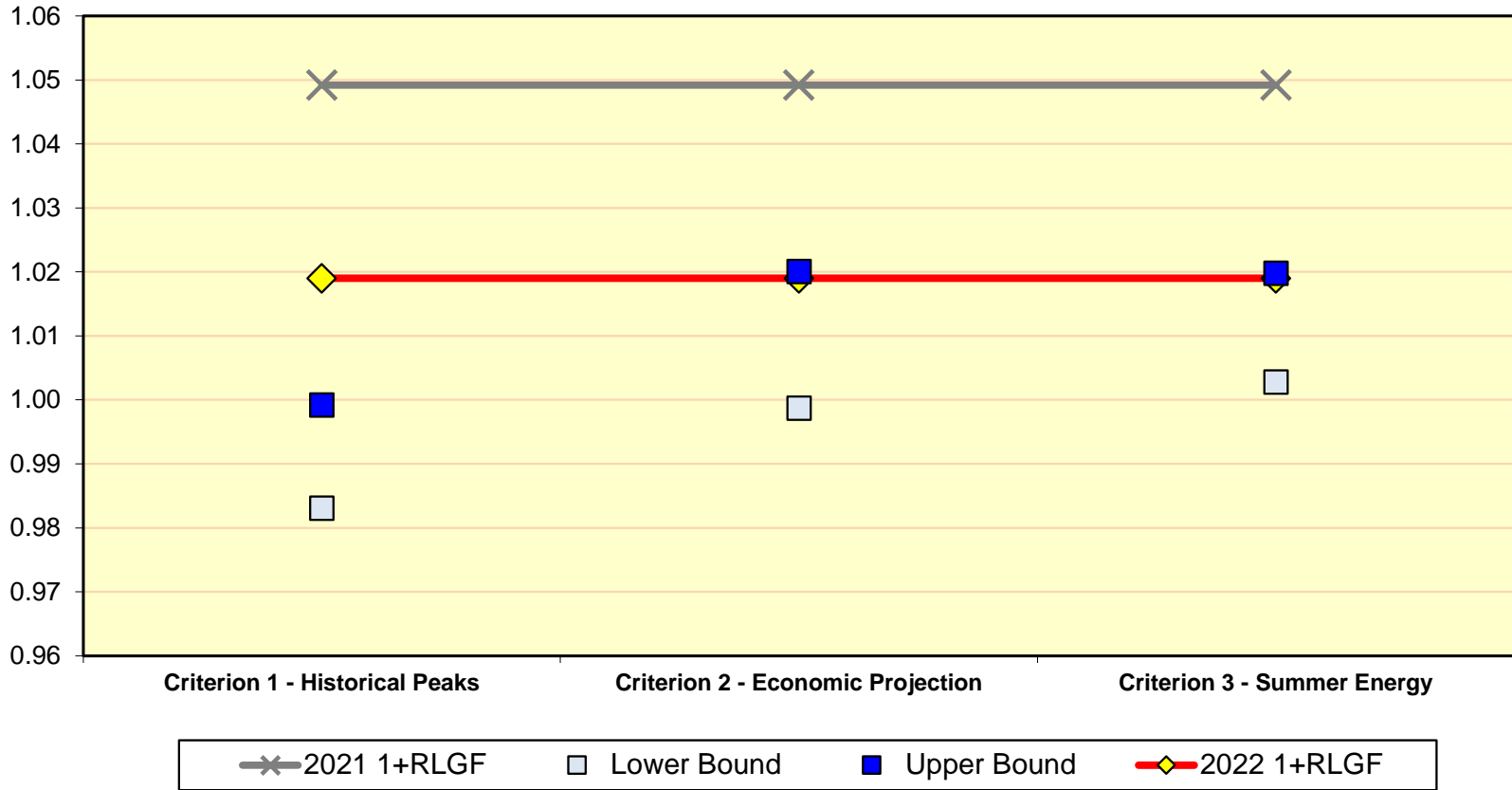
Load Growth Criteria

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. In the event that Criteria 1 and 2 are mutually exclusive and a Combined Criterion is required, it is sufficient for the RLGF to fall within either the Combined Criterion or Criterion 3.

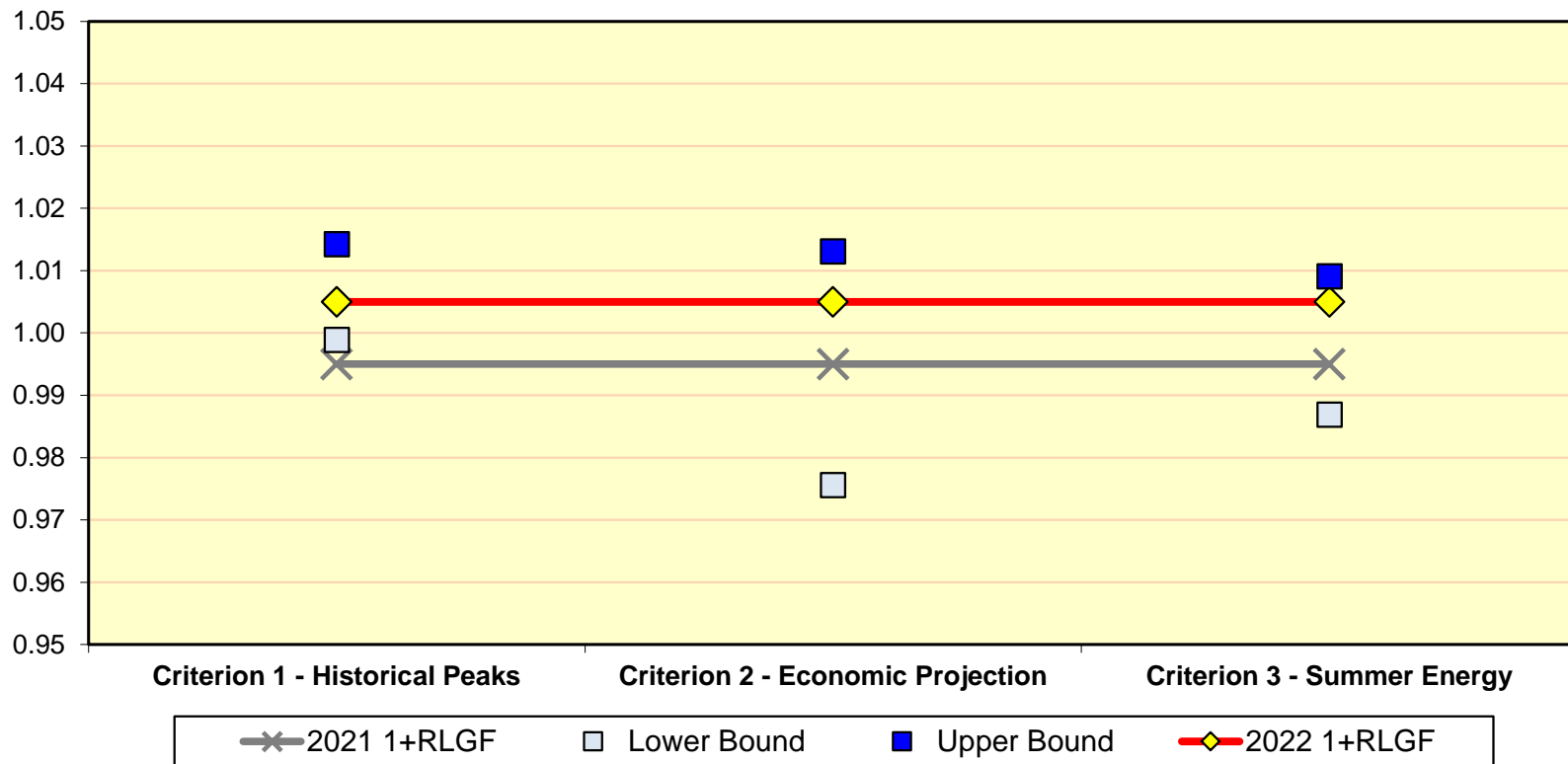
Con Edison 1+RLGF Criteria



The Con Edison 1+RLGF of 1.019 passes Criteria 2 and 3, and is accepted.

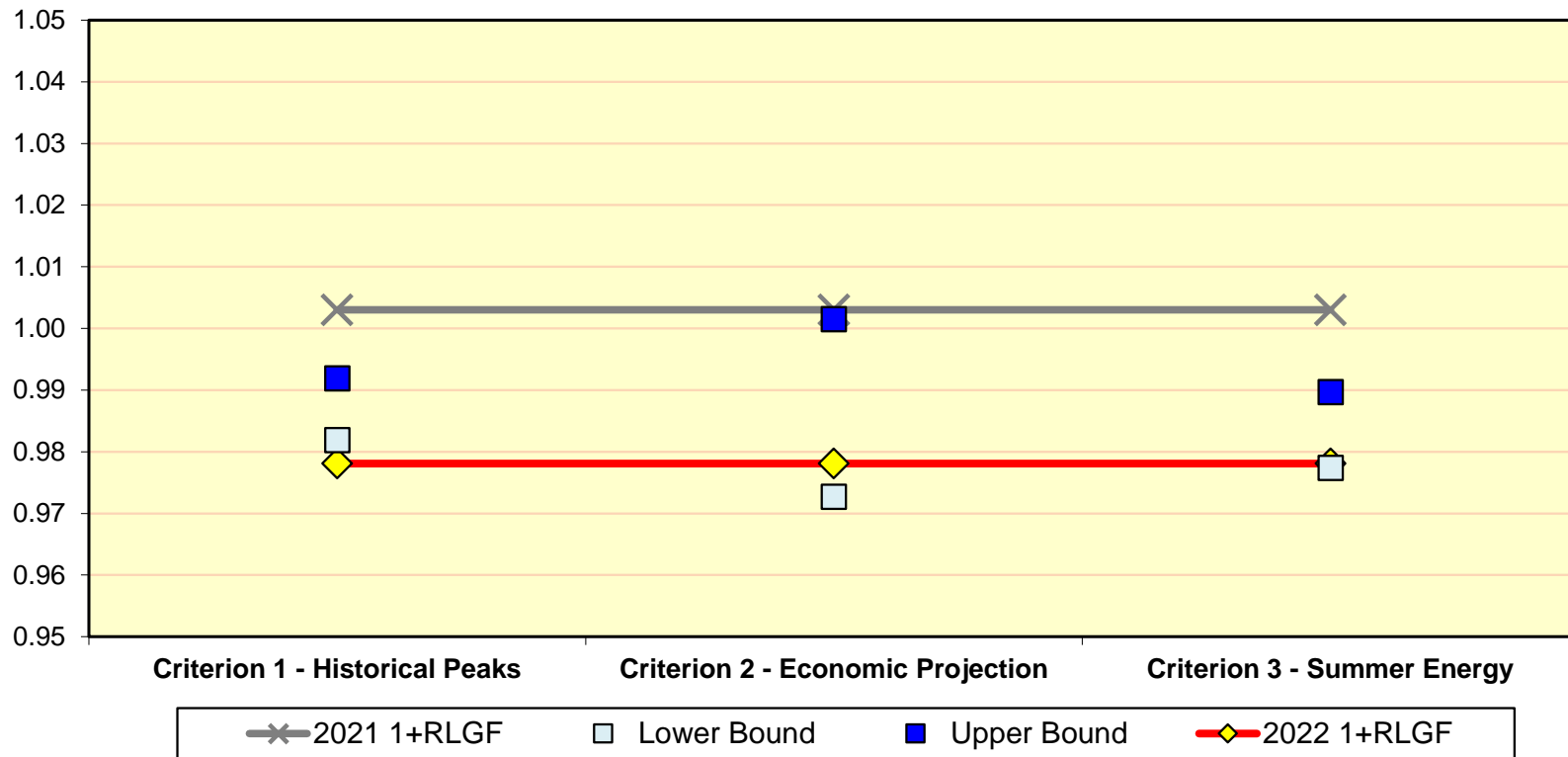


Central Hudson 1+RLGF Criteria



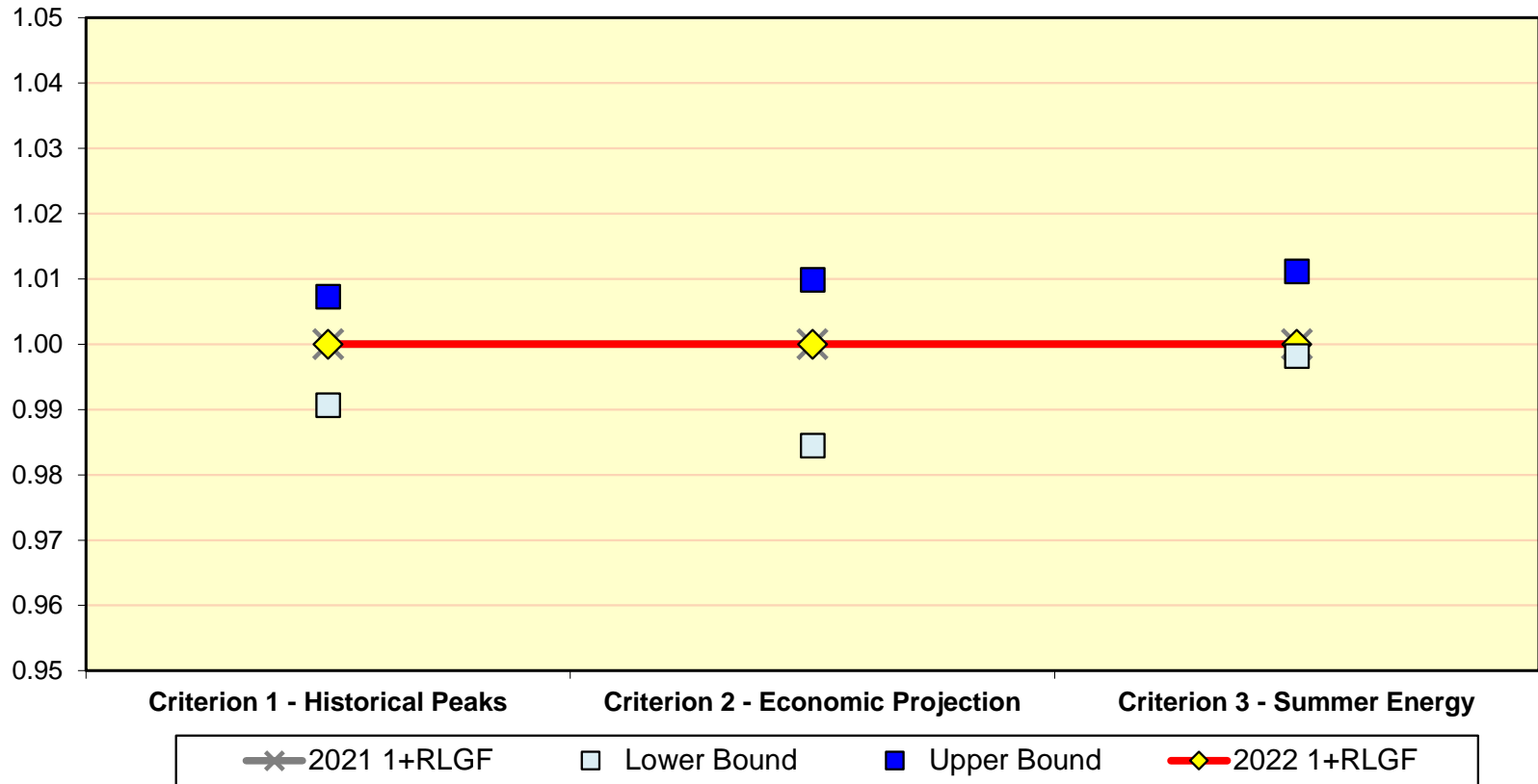
The Central Hudson 1+RLGF of 1.005 passes all three Criteria and is accepted.

LIPA 1+RLGF Criteria



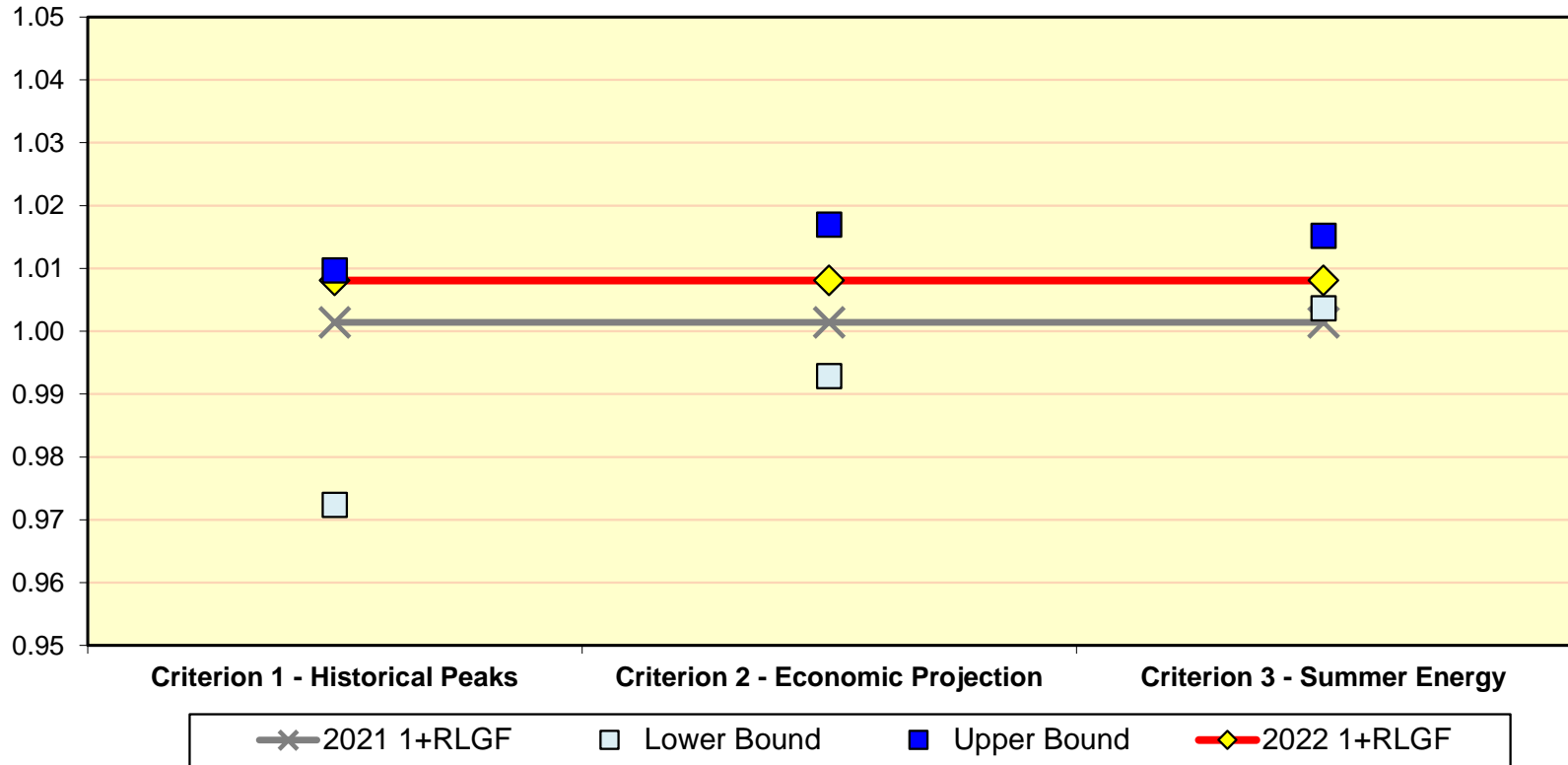
The LIPA 1+RLGF of 0.9781 passes Criteria 2 and 3, and is accepted.

National Grid 1+RLGF Criteria



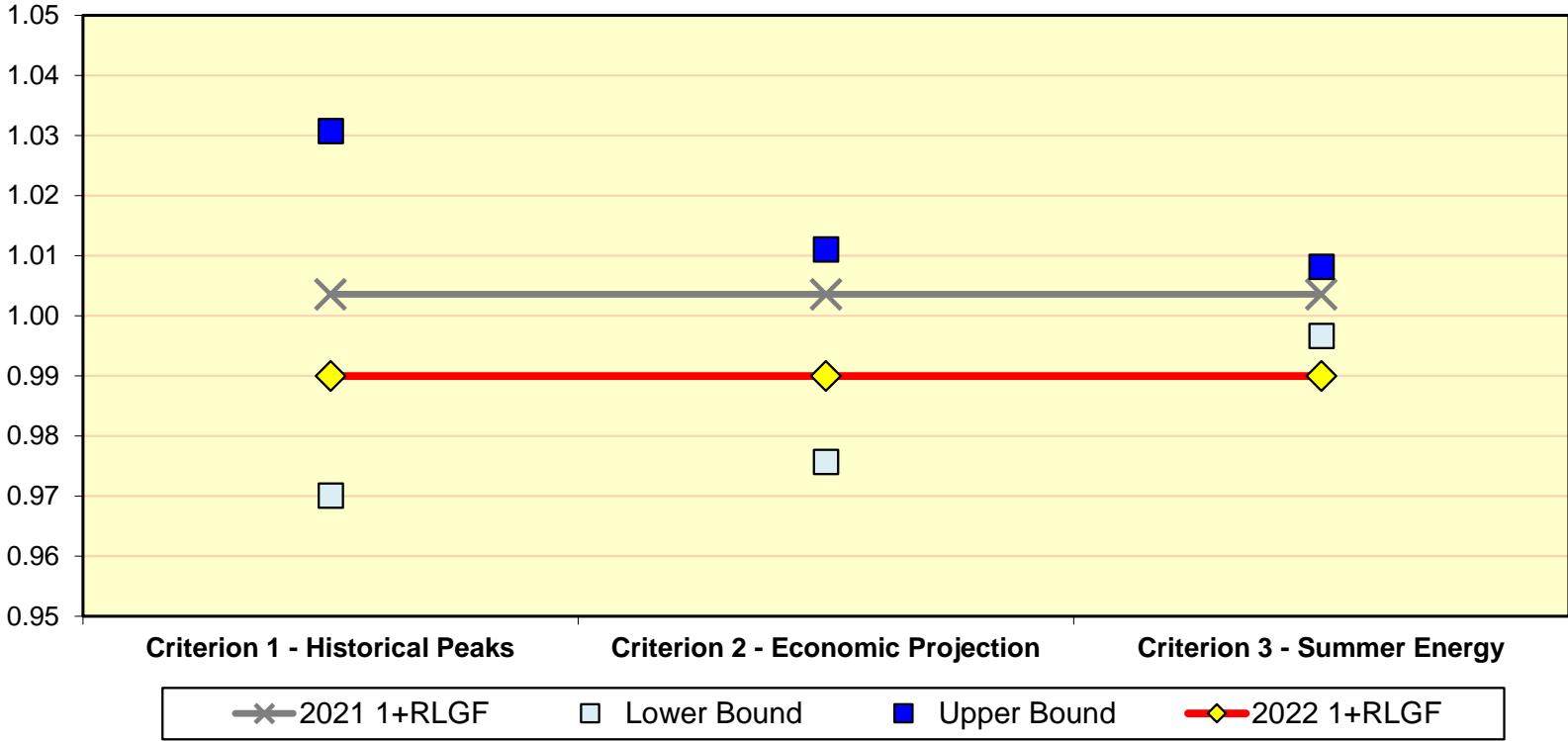
The National Grid 1+RLGF of 1.00 passes all three Criteria and is accepted.

NYSEG 1+RLGF Criteria



The NYSEG 1+RLGF of 1.0081 passes all three Criteria and is accepted.

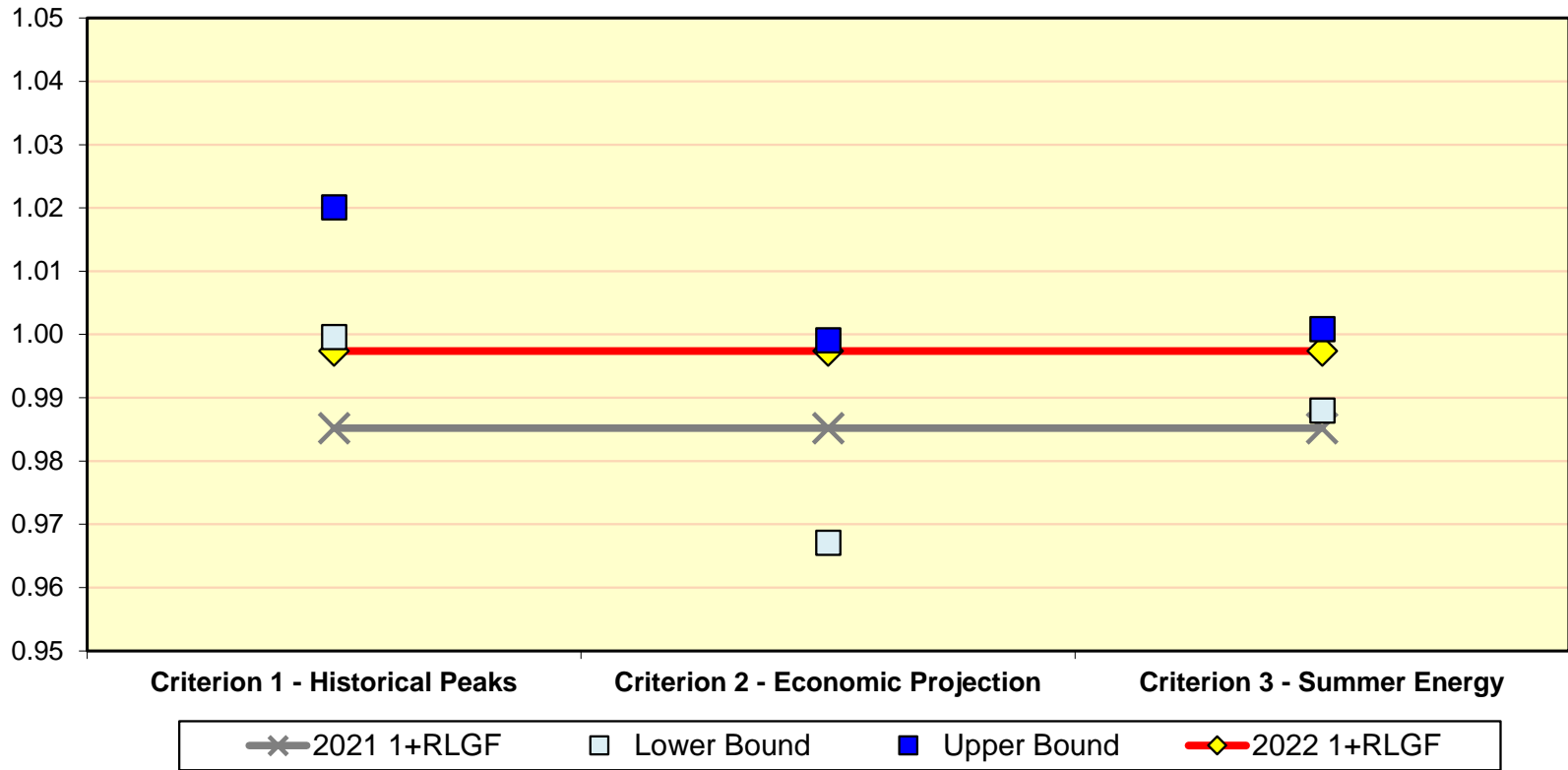
Orange & Rockland 1+RLGF Criteria



The Orange & Rockland 1+RLGF of 0.99 passes Criteria 1 and 2, and is accepted.



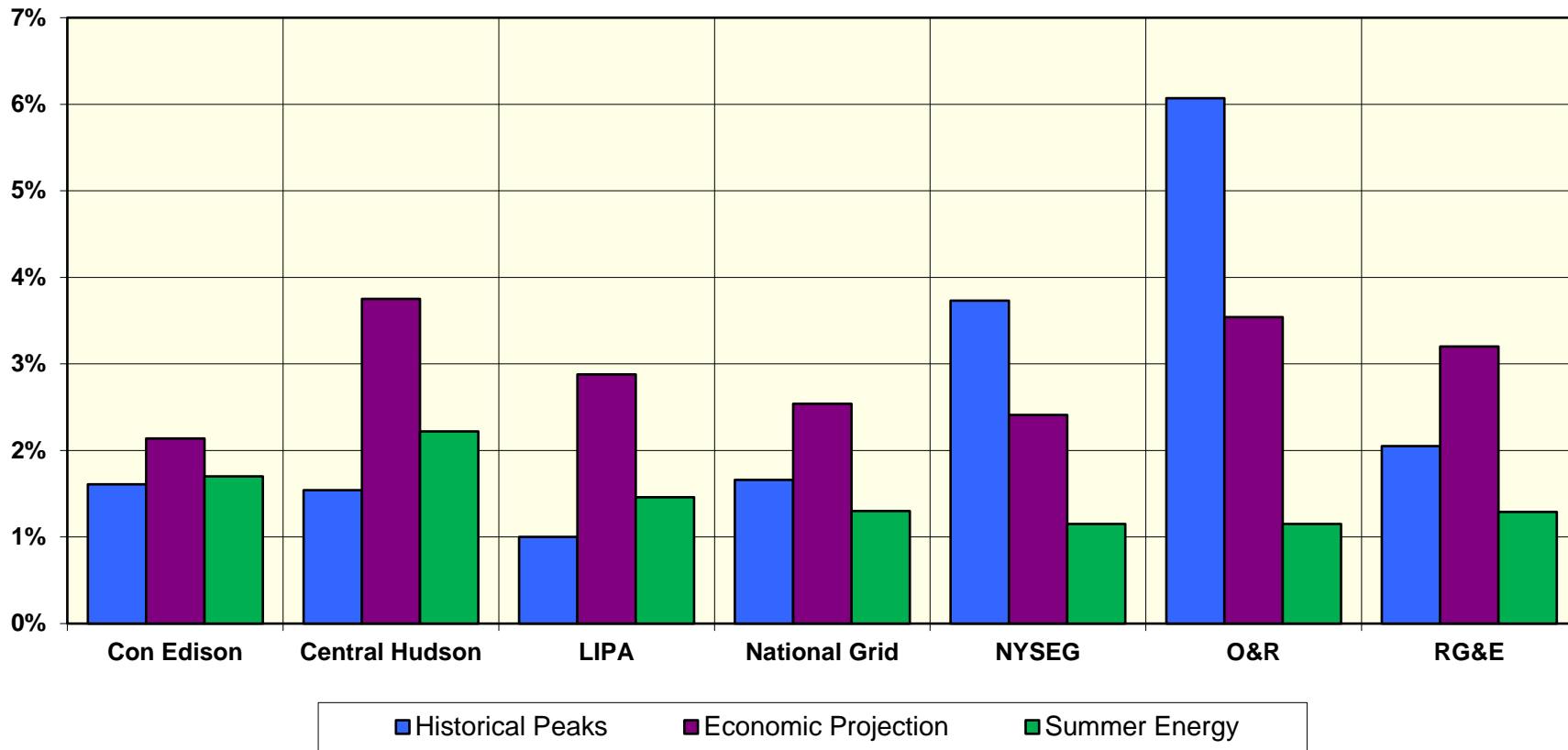
RG&E 1+RLGF Criteria



The RG&E 1+RLGF of 0.9974 passes Criteria 2 and 3, and is accepted.

Summary of Criteria Bandwidths (Low to High)

Shows the Range of Variation for the Three Criteria



Summary of Economic Data (1 of 2)

Variable & TD	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Con-Ed_Employment	4,358	4,451	4,598	4,734	4,823	4,918	4,999	5,159	4,438	4,660	4,968	5,071
Con-Ed_GDP	761,404	754,985	773,487	786,846	806,889	828,234	855,856	884,263	812,252	899,003	960,026	975,237
Con-Ed_Households	3,550	3,583	3,611	3,636	3,656	3,649	3,644	3,636	3,606	3,634	3,639	3,651
Con-Ed_Income-Real	566,869	566,756	589,330	614,098	634,158	683,043	692,086	709,246	733,810	721,858	707,778	727,385
Con-Ed_Population	9,311	9,364	9,403	9,434	9,443	9,406	9,358	9,297	9,301	9,260	9,274	9,285
Cen-Hud_Employment	190	191	191	193	195	196	198	201	176	185	194	197
Cen-Hud_GDP	22,816	22,947	22,837	23,100	23,200	23,500	24,350	24,689	22,269	24,488	25,808	26,315
Cen-Hud_Households	200	201	202	202	203	205	206	207	205	206	206	206
Cen-Hud_Income-Real	23,049	22,688	23,079	24,077	24,449	25,348	25,548	26,350	27,287	27,413	26,000	26,661
Cen-Hud_Population	527	525	523	521	519	520	520	519	519	515	514	514
LIPA_Employment	1,264	1,285	1,297	1,313	1,333	1,347	1,348	1,367	1,186	1,255	1,333	1,361
LIPA_GDP	171,971	171,602	173,748	177,791	178,496	180,581	183,326	183,602	166,710	187,204	197,663	200,575
LIPA_Households	960	966	970	973	976	978	982	983	975	982	982	985
LIPA_Income-Real	184,071	177,496	182,838	191,024	194,743	202,227	206,945	211,797	218,184	215,358	211,331	215,984
LIPA_Population	2,846	2,850	2,851	2,847	2,842	2,841	2,839	2,833	2,832	2,818	2,815	2,813
N-Grid_Employment	1,806	1,817	1,821	1,830	1,849	1,858	1,866	1,890	1,673	1,770	1,847	1,876
N-Grid_GDP	227,176	224,756	229,519	233,517	236,260	238,205	245,246	249,674	228,823	252,654	264,411	268,214
N-Grid_Households	1,638	1,648	1,655	1,659	1,665	1,671	1,679	1,679	1,665	1,674	1,674	1,678
N-Grid_Income-Real	166,618	165,407	167,477	174,641	174,196	182,402	182,246	186,417	199,394	197,611	186,041	189,725
N-Grid_Population	4,011	4,007	4,001	3,987	3,970	3,966	3,960	3,944	3,946	3,914	3,912	3,910

Data is from Moody's Analytics, August 2021.

Summary of Economic Data (2 of 2)

Variable & TD	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
NYPA_Employment	33	34	34	33	34	35	35	36	31	33	34	35
NYPA_GDP	3,750	3,798	3,778	3,823	3,911	4,015	4,214	4,317	3,861	4,171	4,359	4,417
NYPA_Households	32	32	32	32	33	33	33	33	33	33	33	33
NYPA_Income-Real	3,025	3,019	3,033	3,216	3,149	3,304	3,224	3,302	3,458	3,594	3,298	3,368
NYPA_Population	82	81	82	81	80	81	81	80	80	80	80	80
NYSEG_Employment	418	420	419	416	418	420	424	428	377	392	411	417
NYSEG_GDP	49,673	49,425	49,309	49,500	49,631	49,877	51,765	52,403	47,048	50,929	53,276	54,034
NYSEG_Households	420	421	421	421	422	421	423	422	419	420	420	421
NYSEG_Income-Real	41,624	40,208	40,783	42,053	41,712	43,487	43,563	44,573	47,746	47,595	44,484	45,384
NYSEG_Population	1,055	1,052	1,046	1,039	1,033	1,027	1,024	1,018	1,019	1,009	1,008	1,007
OR_Employment	257	261	267	271	276	282	286	298	256	270	289	296
OR_GDP	32,161	32,377	32,887	33,911	34,475	34,894	36,245	37,767	34,107	37,408	40,104	41,017
OR_Households	228	229	231	232	233	235	236	239	236	239	241	243
OR_Income-Real	32,956	32,495	33,147	34,646	34,618	35,864	36,301	37,585	38,695	39,272	37,754	38,769
OR_Population	691	694	696	699	701	705	708	711	710	711	715	720
RGE_Employment	499	501	504	507	512	513	517	524	461	493	513	521
RGE_GDP	63,051	62,398	63,307	64,543	65,969	65,340	67,395	68,452	62,150	68,194	71,776	73,045
RGE_Households	425	427	429	431	432	433	436	437	433	436	436	437
RGE_Income-Real	45,534	44,164	44,427	46,837	46,519	48,598	48,516	49,619	53,045	52,706	49,732	50,730
RGE_Population	1,055	1,055	1,053	1,049	1,046	1,043	1,043	1,040	1,040	1,032	1,032	1,031
Employment_NYCA	8,825	8,961	9,130	9,299	9,439	9,568	9,674	9,902	8,597	9,057	9,589	9,775
GDP_NYCA	1,332,002	1,322,288	1,348,873	1,373,032	1,398,831	1,424,645	1,468,398	1,505,167	1,377,221	1,524,051	1,617,424	1,642,855
Households_NYCA	7,453	7,508	7,552	7,586	7,620	7,625	7,640	7,636	7,572	7,625	7,632	7,653
Income_NYCA	1,063,746	1,052,234	1,084,113	1,130,590	1,153,544	1,224,272	1,238,428	1,268,889	1,321,618	1,305,407	1,266,418	1,298,007
Population_NYCA	19,577	19,628	19,653	19,656	19,634	19,588	19,531	19,443	19,447	19,338	19,351	19,360

Data is from Moody's Analytics, August 2021.

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

