

Review of 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 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:** 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 5 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 2018.
- Regression model based on top 10 Transmission District peak load days from each Summer.
- Regress daily peak MW against daily weather, annual macroeconomic variable, energy efficiency trend and binary variables to determine 2019 predicted peak load.
- Calculate a +/-25% confidence interval for the 2019 predicted peak load based on standard error of the regression to obtain the upper and lower bounds for the RLGf.

Criterion 3 – Energy Growth

- Regress summer energy against summer Cumulative Temperature Humidity Index, macroeconomic variable and energy efficiency trend to determine 2018 predicted summer energy.
- Using the variation in predicted summer energy from each model, construct +/- 25% bandwidths on 2018 predicted summer energy due to variations in weather and the economy.
- Criterion 3 is independent of Criteria 1 and 2.

Criteria 1, 2 & 3 Summary

T.O.	Type	Lower Bound	2019 RLGf	Upper Bound	Test	2018 RLGf
Con Edison	Criterion 1 - Peak Growth	0.9897	1.0038	1.0009	0	1.0023
Con Edison	Criterion 2 - Economics	0.9871	1.0038	1.0083	1	1.0023
Con Edison	Criterion 3 - Energy Growth	0.9859	1.0038	1.0082	1	1.0023
Central Hudson	Criterion 1 - Peak Growth	0.9553	0.9950	1.0253	1	0.9920
Central Hudson	Criterion 2 - Economics	0.9647	0.9950	1.0157	1	0.9920
Central Hudson	Criterion 3 - Energy Growth	0.9674	0.9950	1.0091	1	0.9920
LIPA	Criterion 1 - Peak Growth	0.9830	0.9861	0.9930	1	0.9955
LIPA	Criterion 2 - Economics	0.9873	0.9861	1.0179	0	0.9955
LIPA	Criterion 3 - Energy Growth	0.9839	0.9861	1.0216	1	0.9955
National Grid	Criterion 1 - Peak Growth	0.9828	0.9920	1.0013	1	1.0010
National Grid	Criterion 2 - Economics	0.9875	0.9920	1.0112	1	1.0010
National Grid	Criterion 3 - Energy Growth	0.9860	0.9920	1.0130	1	1.0010
NYSEG	Criterion 1 - Peak Growth	0.9843	0.9968	1.0064	1	0.9982
NYSEG	Criterion 2 - Economics	0.9897	0.9968	1.0157	1	0.9982
NYSEG	Criterion 3 - Energy Growth	0.9932	0.9968	1.0127	1	0.9982
O&R	Criterion 1 - Peak Growth	0.9670	0.9822	1.0114	1	1.0019
O&R	Criterion 2 - Economics	0.9709	0.9822	1.0118	1	1.0019
O&R	Criterion 3 - Energy Growth	0.9786	0.9822	1.0017	1	1.0019
RG&E	Criterion 1 - Peak Growth	0.9918	0.9940	1.0019	1	0.9904
RG&E	Criterion 2 - Economics	0.9829	0.9940	1.0130	1	0.9904
RG&E	Criterion 3 - Energy Growth	0.9842	0.9940	1.0105	1	0.9904

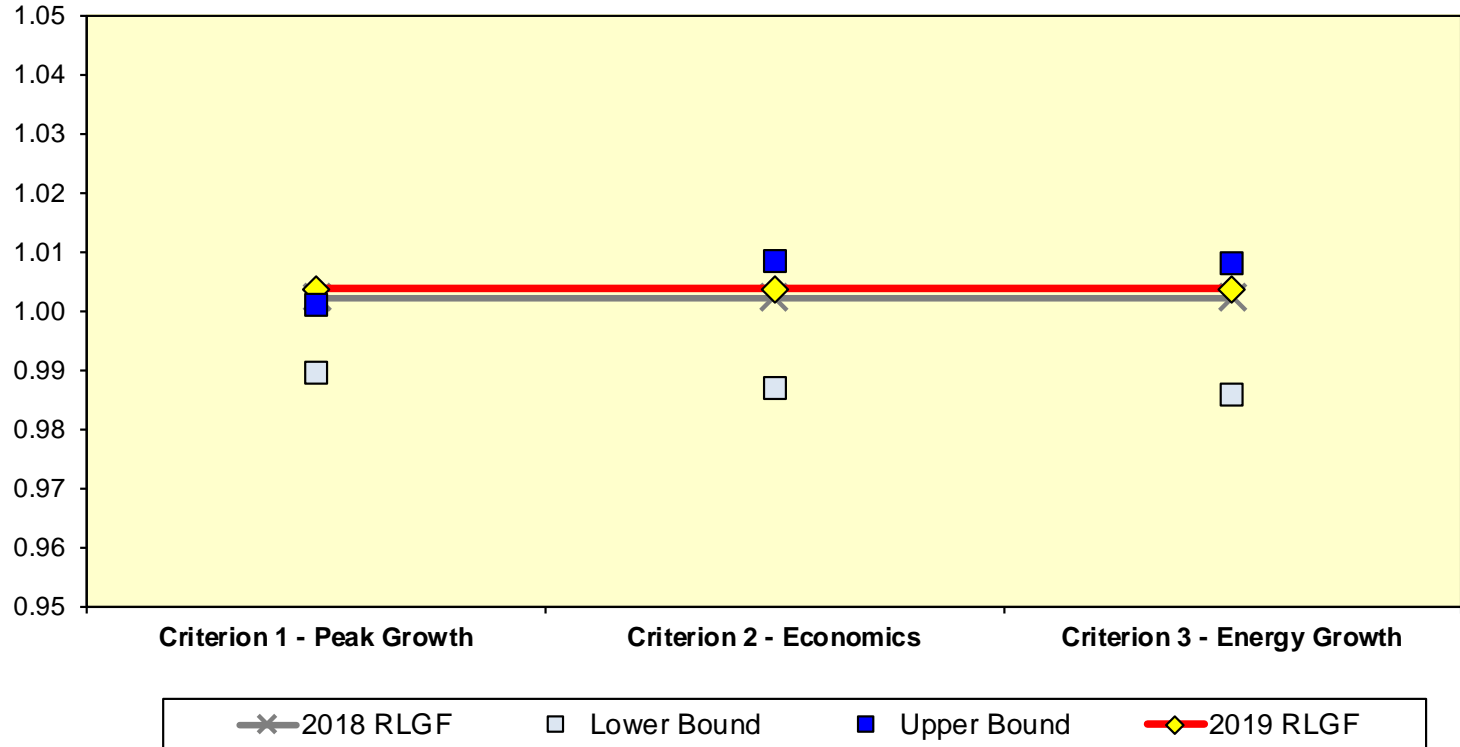
Load Growth Criteria

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

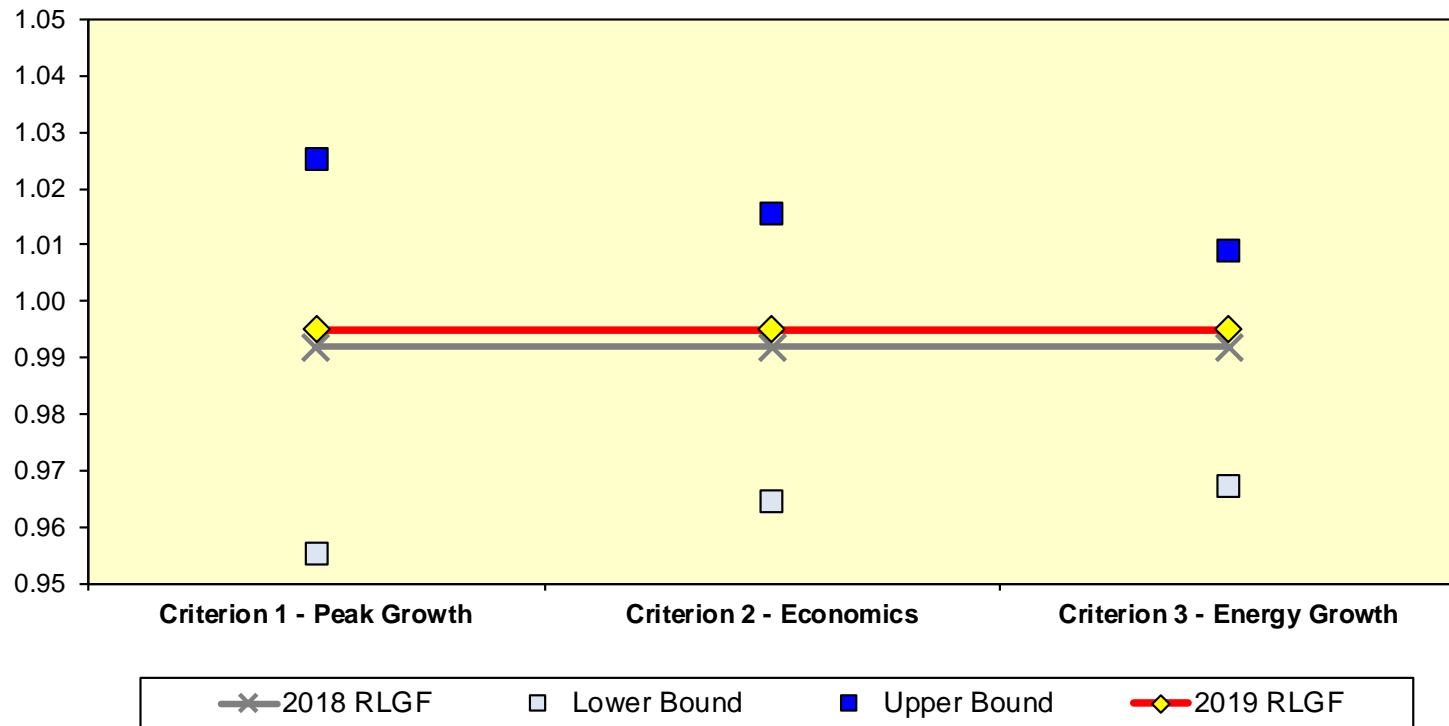
A '0' in the column labeled 'Test' indicates that the RLGf is not between the upper and lower bandwidths.

Each RLGf must fall within 2 of the 3 criteria.

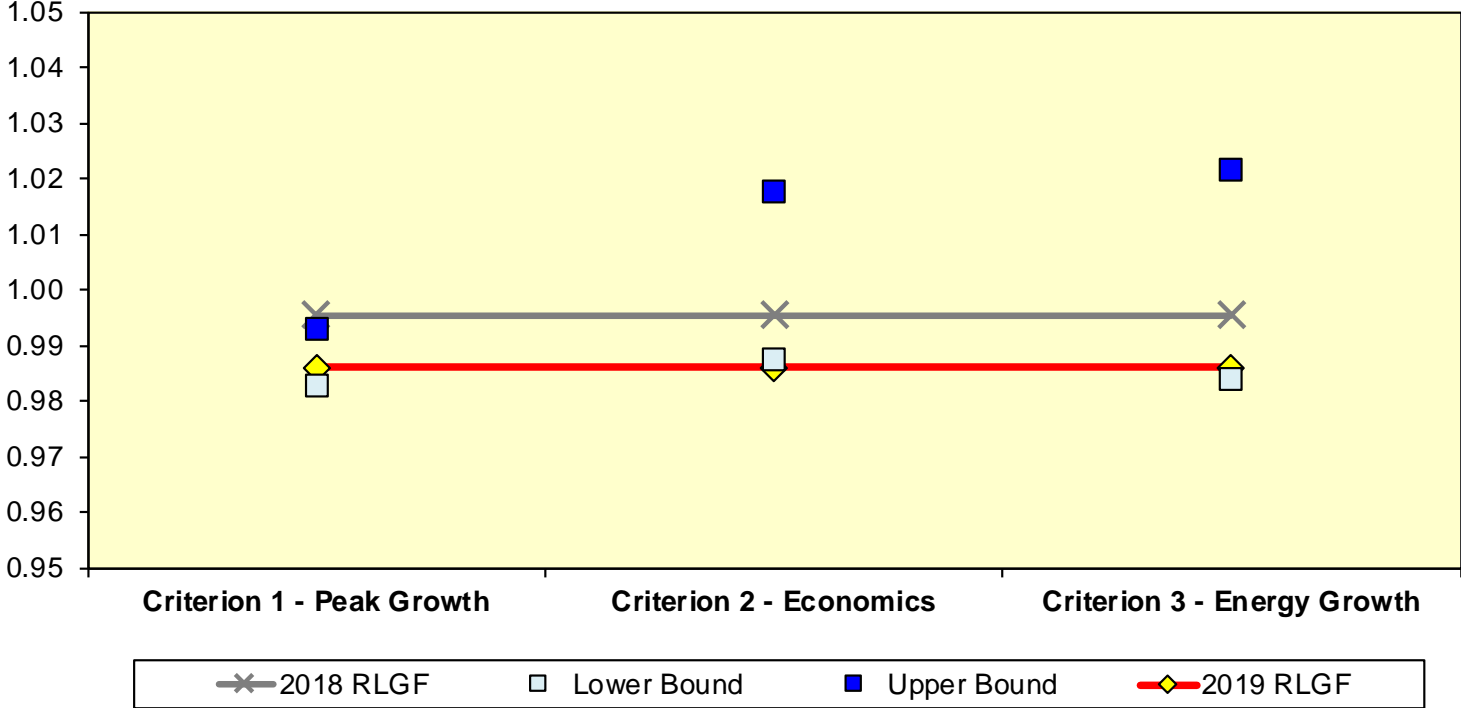
Consolidated Edison RLG Review



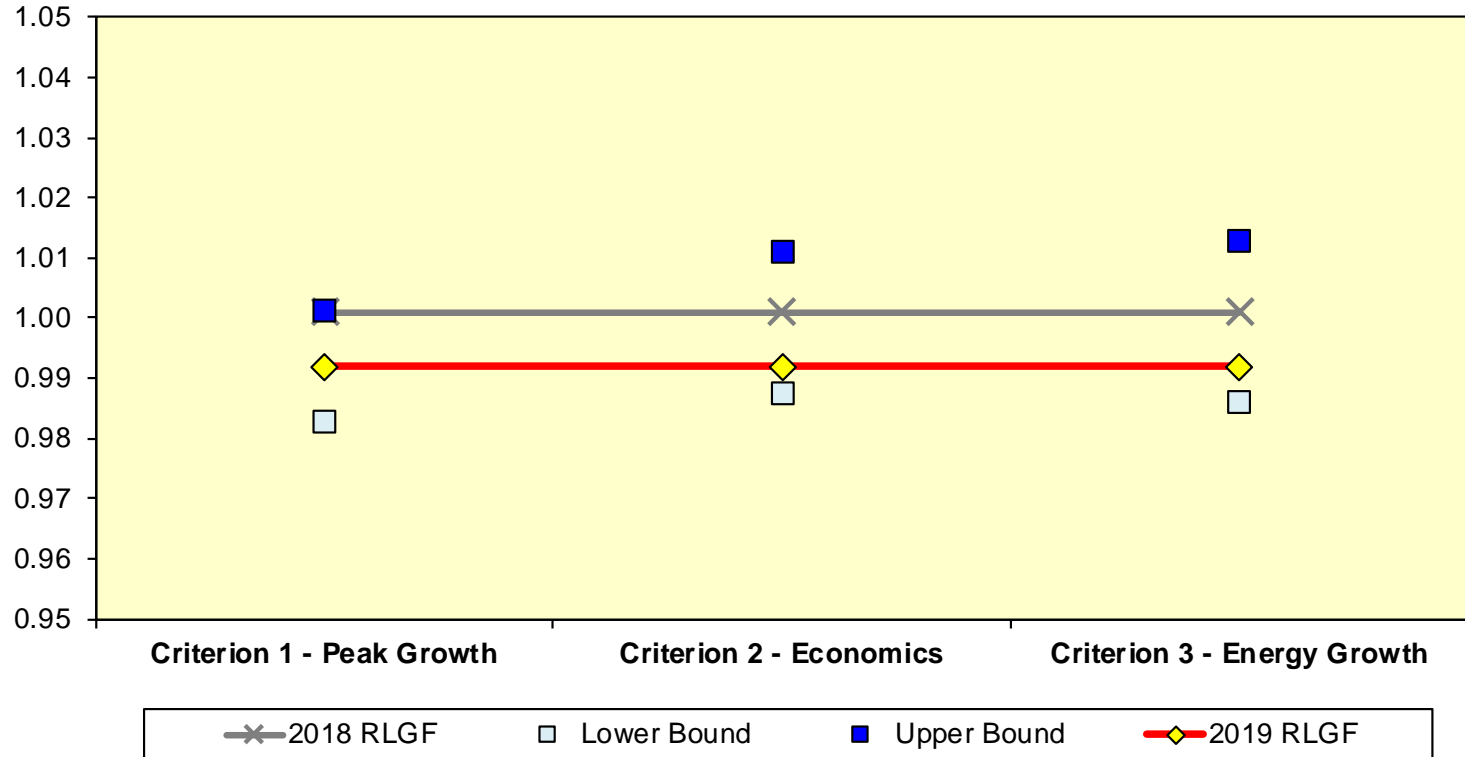
Central Hudson RLG Review



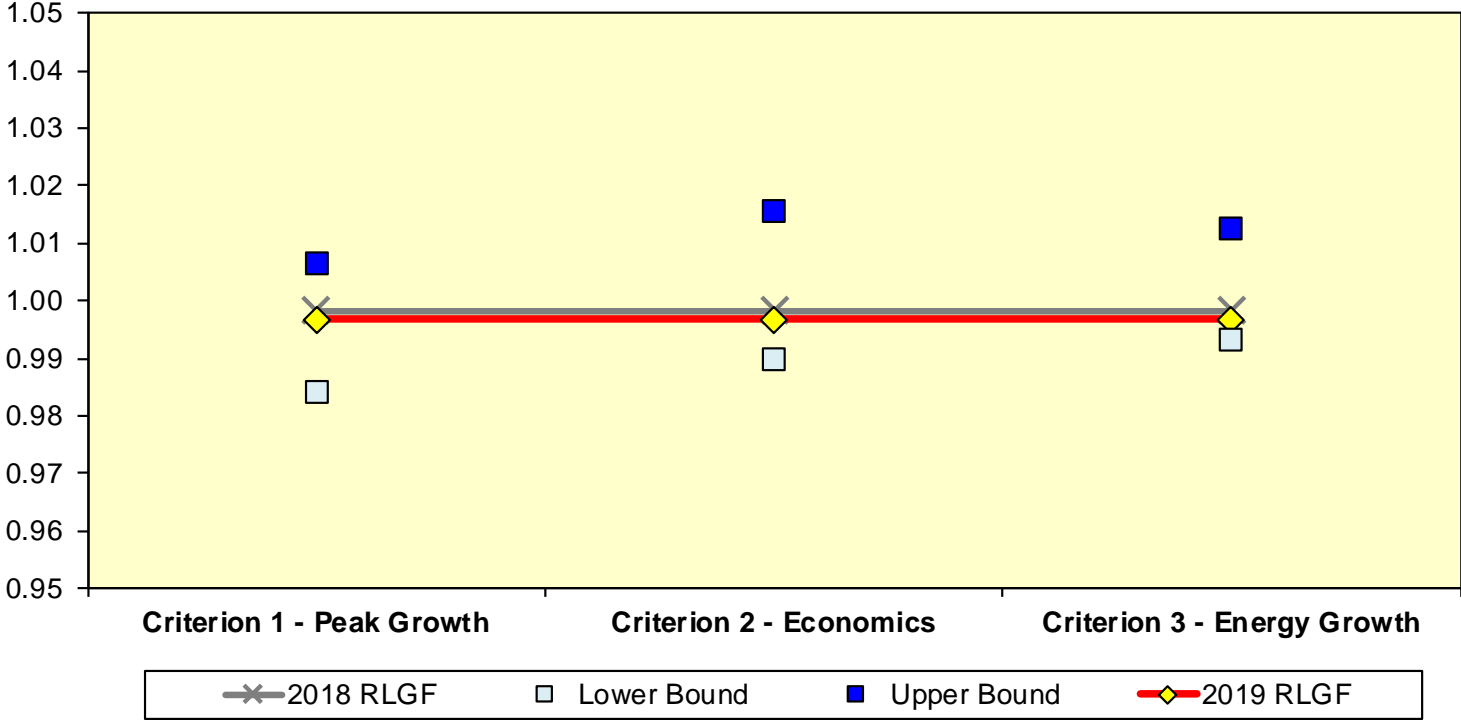
LIPA RLGf Review



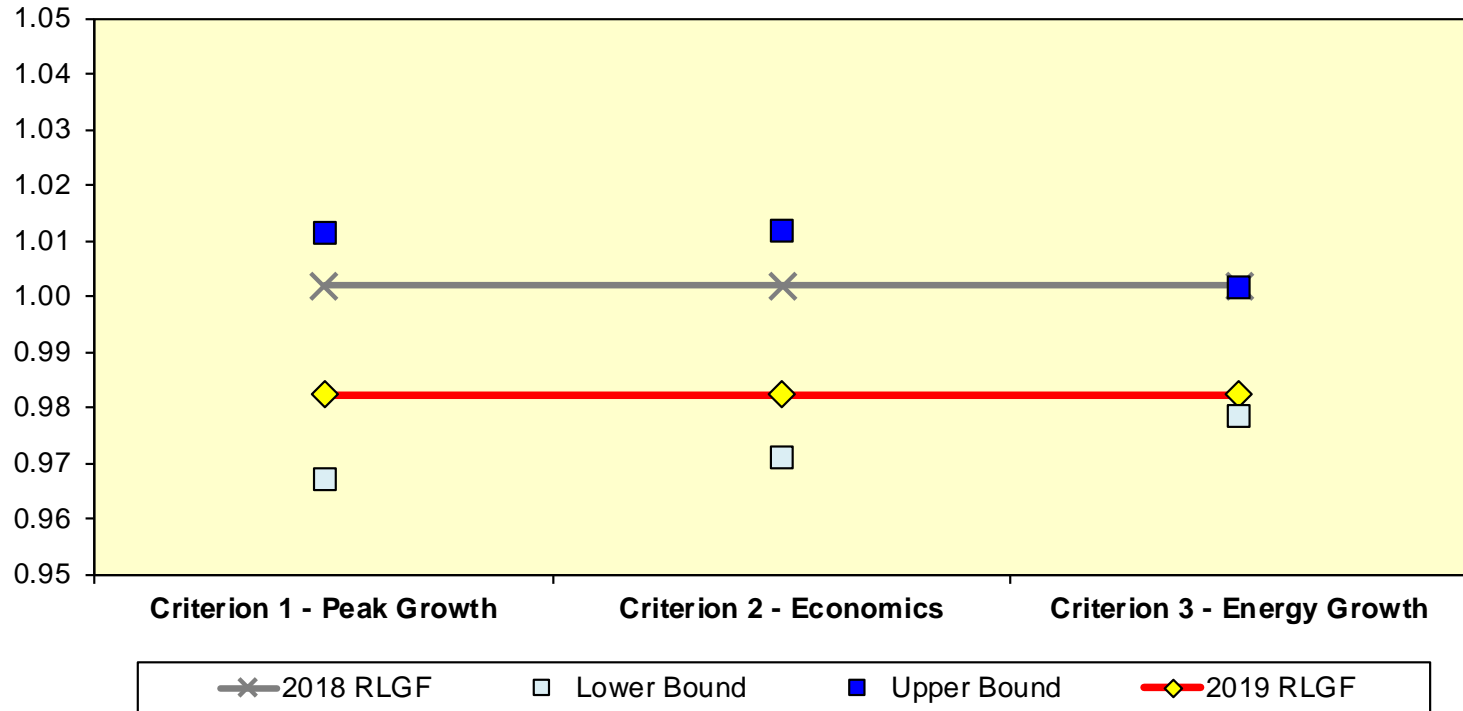
National Grid RLGf Review



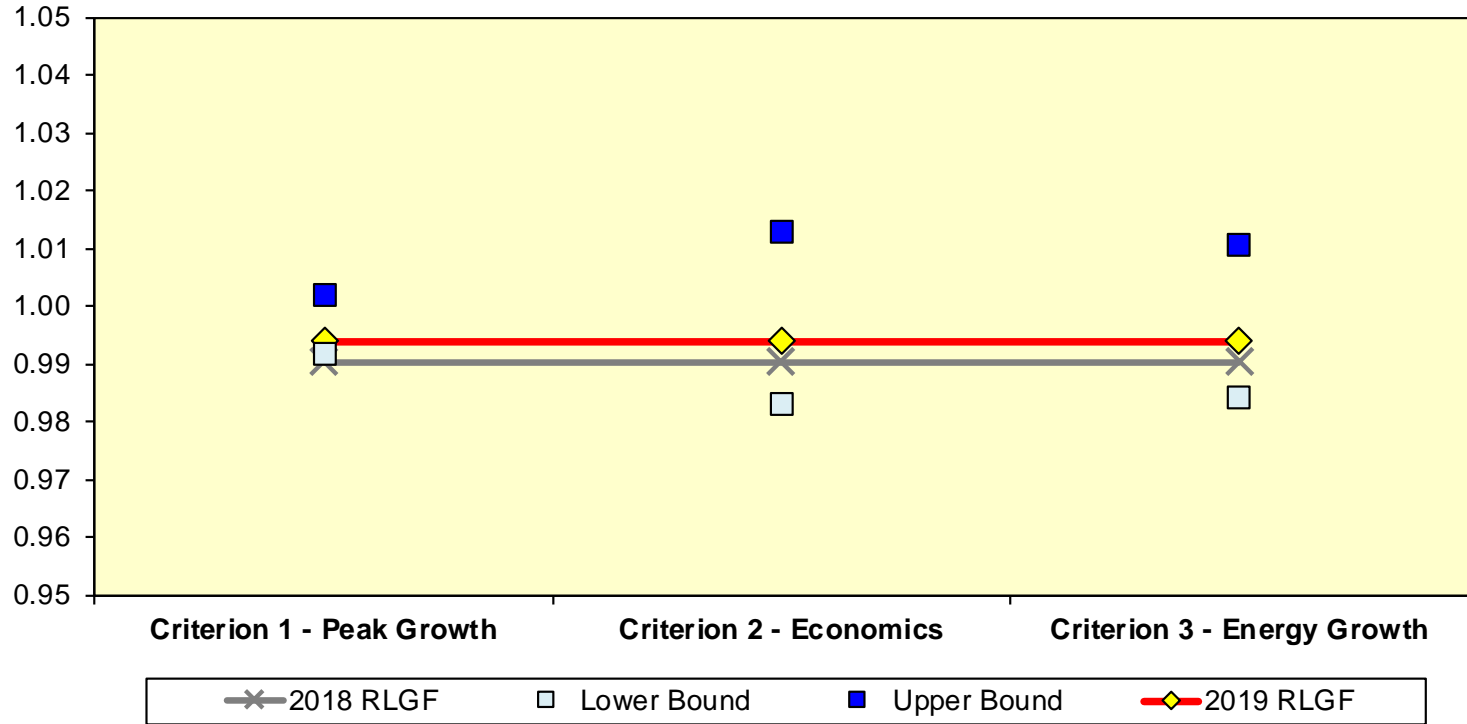
NYSEG RLG Review



Orange & Rockland RLG Review

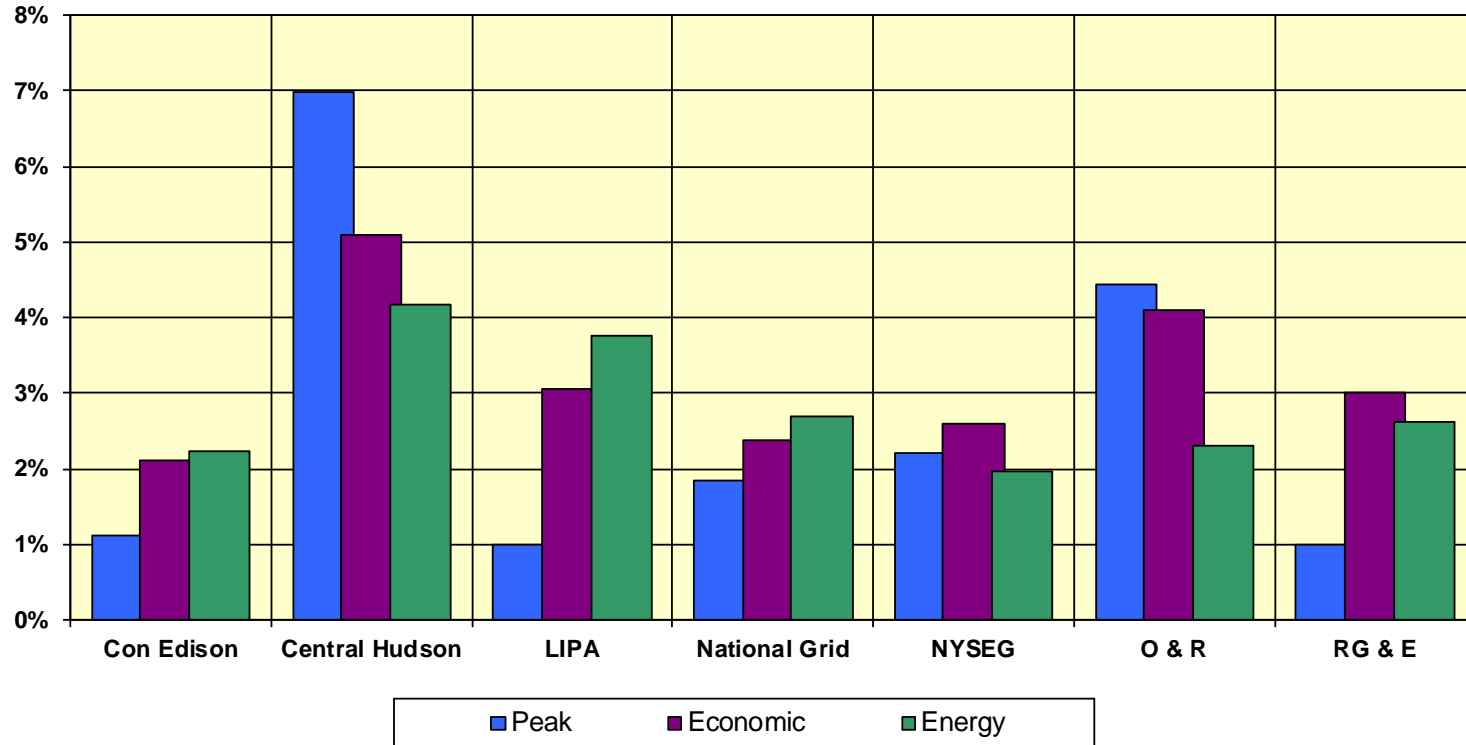


Rochester Gas & Electric RLGf Review



Summary of Overall Bandwidths (Low to High)

Shows the Range of Variation for the Three Criteria



Summary of Economic Data (1 of 2)

Variable & TD	Unit	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Con-Ed_Employment	1,000	4,121	4,187	4,283	4,372	4,488	4,629	4,743	4,826	4,896	4,951	4,974	4,966
Con-Ed_GDP	\$ Millions	647,927	664,693	684,239	700,024	702,942	723,077	732,562	737,011	750,910	766,887	771,766	779,932
Con-Ed_Households	1,000	3,453	3,489	3,535	3,569	3,602	3,630	3,654	3,666	3,676	3,704	3,735	3,763
Con-Ed_Income-Real	\$ Millions	496,122	518,682	546,937	564,913	575,205	596,973	612,677	618,011	633,775	642,152	644,217	651,228
Con-Ed_Population	1,000	9,105	9,191	9,296	9,385	9,459	9,525	9,579	9,598	9,617	9,656	9,692	9,727
Cen-Hud_Employment	1,000	191	190	190	190	191	192	194	195	198	200	201	201
Cen-Hud_GDP	\$ Millions	20,872	21,176	21,135	21,332	21,240	21,162	21,163	21,195	21,693	22,296	22,462	22,736
Cen-Hud_Households	1,000	199	200	200	200	201	201	202	202	202	203	204	205
Cen-Hud_Income-Real	\$ Millions	21,738	22,203	22,575	22,729	22,705	23,308	23,886	23,790	24,072	24,471	24,617	24,871
Cen-Hud_Population	1,000	529	530	529	527	526	524	522	522	522	522	521	521
LIPA_Employment	1,000	1,225	1,236	1,252	1,271	1,287	1,299	1,318	1,334	1,348	1,363	1,369	1,367
LIPA_GDP	\$ Millions	153,028	155,132	156,468	159,128	158,977	161,592	163,872	164,229	166,984	170,498	171,440	173,234
LIPA_Households	1,000	947	954	959	961	966	969	970	972	974	979	985	990
LIPA_Income-Real	\$ Millions	165,975	171,012	177,006	180,638	179,566	185,683	190,770	190,647	192,602	194,907	195,451	196,953
LIPA_Population	1,000	2,827	2,843	2,850	2,854	2,860	2,862	2,861	2,861	2,863	2,864	2,865	2,866
N-Grid_Employment	1,000	1,776	1,775	1,784	1,797	1,805	1,812	1,826	1,842	1,855	1,870	1,876	1,873
N-Grid_GDP	\$ Millions	206,380	208,756	208,990	210,945	210,964	214,590	217,024	218,234	221,831	226,127	226,835	228,562
N-Grid_Households	1,000	1,614	1,623	1,632	1,639	1,648	1,654	1,658	1,658	1,657	1,663	1,671	1,677
N-Grid_Income-Real	\$ Millions	158,410	162,099	164,356	165,728	166,141	170,196	173,924	173,998	176,289	177,987	178,075	179,019
N-Grid_Population	1,000	4,002	4,005	4,005	4,005	4,003	3,995	3,981	3,976	3,976	3,970	3,964	3,958

Data is from Moody's Analytics, August 2018.

Summary of Economic Data (2 of 2)

Variable & TD	Unit	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
NYPA_Employment	1,000	34	33	33	33	34	33	33	34	34	35	35	35
NYPA_GDP	\$ Millions	4,261	4,025	3,667	3,586	3,600	3,574	3,589	3,628	3,667	3,732	3,747	3,771
NYPA_Households	1,000	32	32	32	32	32	33	33	33	33	33	33	33
NYPA_Income-Real	\$ Millions	2,983	3,001	2,969	2,997	3,001	3,094	3,197	3,166	3,223	3,322	3,334	3,365
NYPA_Population	1,000	82	82	82	82	82	81	81	81	81	81	81	81
NYSEG_Employment	1,000	391	392	393	395	396	394	395	397	399	403	404	404
NYSEG_GDP	\$ Millions	43,044	43,865	43,365	43,530	43,328	43,046	42,730	42,643	43,177	44,001	44,191	44,509
NYSEG_Households	1,000	397	398	399	401	401	401	401	400	400	401	403	404
NYSEG_Income-Real	\$ Millions	36,972	37,735	38,538	38,768	38,155	38,942	39,555	39,394	39,881	40,271	40,321	40,520
NYSEG_Population	1,000	1,008	1,007	1,005	1,003	1,000	994	988	983	981	979	978	976
OR_Employment	1,000	251	254	257	259	263	269	273	279	284	286	287	287
OR_GDP	\$ Millions	30,826	30,754	30,334	30,566	30,752	31,116	31,774	32,290	32,953	33,644	33,868	34,265
OR_Households	1,000	225	227	228	228	229	230	232	233	234	236	238	239
OR_Income-Real	\$ Millions	30,901	31,520	32,250	32,588	32,627	33,545	34,528	34,500	35,172	36,066	36,177	36,510
OR_Population	1,000	683	688	691	694	697	701	705	709	712	713	715	718
RGE_Employment	1,000	522	527	533	536	538	541	546	550	554	561	564	563
RGE_GDP	\$ Millions	62,581	63,217	63,102	63,517	63,106	63,831	65,136	65,447	65,955	67,584	68,238	69,113
RGE_Households	1,000	444	447	450	452	455	456	458	459	460	462	465	467
RGE_Income-Real	\$ Millions	45,254	46,519	47,681	47,932	47,214	48,548	49,824	49,418	50,119	50,708	50,761	51,017
RGE_Population	1,000	1,114	1,116	1,117	1,118	1,117	1,115	1,113	1,111	1,111	1,111	1,111	1,111
Employment_NYCA	1,000	8,511	8,594	8,725	8,854	9,003	9,171	9,328	9,457	9,568	9,668	9,710	9,695
GDP_NYCA	\$ Millions	1,168,919	1,191,617	1,211,301	1,232,628	1,234,908	1,261,988	1,277,849	1,284,677	1,307,171	1,334,767	1,342,547	1,356,121
Households_NYCA	1,000	7,310	7,369	7,435	7,482	7,534	7,573	7,607	7,622	7,636	7,680	7,732	7,778
Income_NYCA	\$ Millions	958,354	992,771	1,032,312	1,056,293	1,064,615	1,100,289	1,128,361	1,132,923	1,155,133	1,169,884	1,172,953	1,183,482
Population_NYCA	1,000	19,350	19,460	19,574	19,667	19,743	19,797	19,830	19,841	19,863	19,897	19,928	19,957

Data is from Moody's Analytics, August 2018.

The Mission of the New York Independent System Operator, in collaboration with its stakeholders, is to serve the public interest and provide benefits 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 policy makers, stakeholders and investors in the power system



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