

Report Background

ESAI Power LLC, a respected and independent energy research and consulting firm, at the request of GridAmerica Holdings, estimated reductions in greenhouse gas emissions (GHG) in the Northeast U.S. power markets over a 10 year period, from the procurement of the following resources under Massachusetts law, Section 83D of the Global Warming Solutions Act (GWSA):

- 1,700 MW Quebec and New York new Class 1 wind generation delivered over the proposed Granite State Power Link (GSPL) and Northeast Renewable Link (NRL);
- 1,000 MW of existing large-scale hydro generation facilities in Quebec delivered over the proposed Northern Pass; and,
- 700 of existing large-scale hydro generation facilities and 300 MW of new Class 1 wind generation, both in Quebec, delivered over the proposed Northern Pass.

ESAI's report, "Analysis of Greenhouse Gas Emissions Impacts: New Class I Resources vs. Existing Large Hydro," reflect expectations about market rules, market conditions and analytical assumptions as of June 2017.

The Opportunity

The Massachusetts Clean Energy RFP, an outcome of GWSA, will result in clean energy procurement of 9.45 TWh, or approximately 15% of Massachusetts' total energy demand over the next 20 years. Through competitive bidding processes (83C and 83D), the electricity distribution companies in Massachusetts solicited long-term contracts for clean energy in March, received bids on July 27, 2017, and are expected to decide January 27, 2018. GSPL and NRL bid into 83D, as did projects like Northern Pass.

Report Findings *(see charts below for more detail)*

Combined, GSPL and the NRL will enable approximately 1,700 MW of new wind and solar power in the United States and Canada, resulting in a **22.6 million ton reduction** in global CO2 emissions over the first 10 years of operation, accounting for impacts across New England, New York and Ontario. These deliveries of new Class I wind generation will result in **net increase of renewable energy and a significant reduction of GHGs.**

By contrast, Northern Pass and similar transmission projects that will deliver 700 MW of existing hydro and 300 MW of new wind generation would result in a **3.5 million ton reduction** over the same period accounting for impacts across New England, New York and Ontario.

Additionally, lines carrying only existing or near-operation large-scale hydro would result in **virtually no reductions** in global CO2 emissions across the same area.

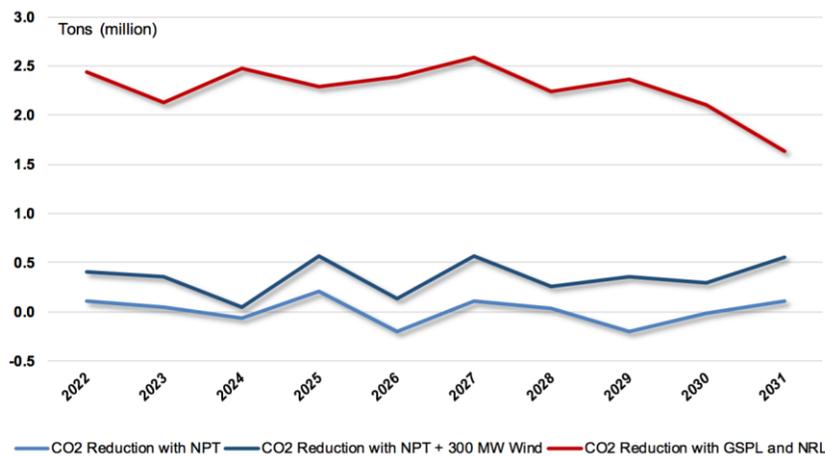
Analysis

While the GWSA and RFP process is intended to result in the procurement of long-term clean energy contracts, not all "clean energy" is created equal, as carbon emissions reductions and impacts in neighboring regions vary widely across different types of renewable generation and individual projects. Achieving the true intent of the GWSA requires **new clean energy generation**, and not simply the redirection of existing clean energy from large-scale hydro projects.

Deliveries of renewable energy from GSPL and NRL, primarily new wind generation, will result in a significant **net reduction in GHG emissions.** Because most of the renewable energy for those projects will be generated from new resources that would not be built without a contract under the 83D RFP, the deliveries on the transmission lines will provide a **substantial net increase in renewable energy** for the region.

By contrast, the environmental benefits of Canadian hydropower generation from existing and near-operation resources will be realized even without a contract under the 83D RFP. Existing tie-line capacity from Quebec is sufficient to allow delivery of all energy expected to be available for export. As a result, any increase in deliveries of hydropower from Quebec to New England simply diverts it from other areas and results in an increase in fossil fuel generation to replace the energy that otherwise would have been imported from Quebec. The offset of a reduction in GHG emissions in Massachusetts by an increase in GHG emissions outside the Commonwealth is defined in the GWSA as “leakage”. In the case of Northern Pass, New England Clean Power Link and the New England Clean Energy Connect, “leakage” will certainly occur – total GHG emissions may decrease within New England and Massachusetts, but GHG emissions will increase in other regions, thereby defeating the true spirit, intent and goal of the GWSA.

Total GHG Emissions Impact, by Year (for New England and Massachusetts)



Reduction in GHG Emissions with GSPL & NRL (000 tons)

	New England	New York	Ontario	PJM	MISO	Total
2022	2,696	(712)	367	8	79	2,438
2023	2,891	(774)	364	(475)	125	2,130
2024	2,919	(625)	366	(331)	145	2,475
2025	3,052	(767)	341	(532)	202	2,296
2026	2,840	(508)	314	(277)	20	2,390
2027	3,079	(878)	346	(103)	138	2,583
2028	2,832	(774)	305	(46)	(75)	2,243
2029	2,696	(836)	335	(26)	199	2,368
2030	2,561	(806)	377	(255)	221	2,099
2031	2,267	(766)	265	(271)	134	1,629
10 Year Total	27,835	(7,446)	3,381	(2,307)	1,188	22,651

Reduction in GHG Emissions with Northern Pass (000 tons)

	New England	New York	Ontario	PJM	MISO	Total
2022	2,746	(1,047)	(1,178)	(129)	(278)	113
2023	2,606	(1,082)	(1,108)	(143)	(229)	44
2024	2,644	(1,289)	(1,045)	(118)	(255)	(63)
2025	2,665	(1,162)	(1,026)	(271)	(3)	203
2026	2,594	(1,110)	(935)	(653)	(103)	(206)
2027	2,683	(1,381)	(841)	(160)	(189)	112
2028	2,479	(1,315)	(866)	(235)	(30)	33
2029	2,646	(1,388)	(828)	(806)	177	(199)
2030	2,347	(1,153)	(842)	(444)	81	(10)
2031	2,106	(733)	(861)	(333)	(75)	103
10 Year Total	25,516	(11,661)	(9,530)	(3,292)	(903)	130