

KEY POINTS

- Launched in 2009, the Northern Pass Transmission Project is meant to carry electricity from Quebec to the New England grid by way of New Hampshire. The project is in a political deadlock because alternative methods have not been investigated and New Hampshire bears major economic, social and ecological costs while receiving few benefits from the proposed transmission line.
- Energy infrastructure projects have to find the right nexus between energy markets, environmental integrity and security of supply in order to become socially acceptable. The Northern Pass has yet to find an optimal balance between benefits for both New Hampshire and the New England Region, due to the project being developed independently of a regional planning process.
- In order to develop socially acceptable energy infrastructure projects in the future, the Conference of the New England Governors and Eastern Canada Premiers (NEG ECP) should take a larger planning role in energy infrastructure development. Developing future projects on a regional basis will not only enhance social acceptability, but will also allow for a better analysis and distribution of the costs and benefits in the region.

A CALL TO THE CONFERENCE OF THE NEW ENGLAND GOVERNORS AND EASTERN CANADA PREMIERS FOR BILATERAL ENERGY GOVERNANCE

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INTRODUCTION

The Northern Pass Transmission Project is mired in political deadlock due to conflict over its potential impacts and current assessment process. Although the proposal has little political support within New Hampshire, the US Department of Energy (DOE's) assessment process is moving forward. New England has become increasingly dependent on natural gas for power generation, which has dramatically risen in price recently, and the Northern Pass presents an opportunity to diversify the region's electrical supply. However, as the project stands, New Hampshire bears a majority of the economic, social and ecological costs, while receiving little of the regional benefit of affordable, flexible and reliable energy. There may be similar alternatives to the Northern Pass that secure the regional benefits of energy security and reliability while also reducing local costs. Without comparing the Northern Pass against alternative infrastructure projects, policy makers cannot assess which project generates the most net benefits. This policy brief contrasts the local and regional impacts of the Northern Pass, in order to shed light on the deficiencies that arise when analysing energy infrastructure projects in isolation.

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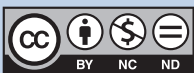


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New Hampshire Governor Maggie Hassan points out the imbalance of benefits incurring from the Northern Pass, writing: "As it stands, for the people of New Hampshire, the project is all cost and few, if any, savings. All people in New England deserve better, and the people of New Hampshire will continue to demand better" (Hassan 2013b, 1). Due to concerns about the impact of the project for New Hampshire and the regional nature of energy generation and transmission, it is recommended that the NEG ECP take a larger role in planning regional energy infrastructure.

BACKGROUND

Announced in 2009, the Northern Pass is a 300 km (187 miles) transmission line project meant to carry 1,200 megawatts (MW) of electricity from Quebec's Eastern Townships to New England by way of New Hampshire, being the largest electric transmission project New Hampshire has ever seen. The project is being developed by Northeast Utilities in partnership with NSTAR, who have since merged, and Hydro-Québec (which is the sole financier).

There is widespread opposition to the project in New Hampshire and from New England industry and environmental groups. After many landowners in New Hampshire refused to sell to Northern Pass, a new route was announced in the summer of 2013, with proposals to bury two sections in northern New Hampshire as an attempt to bypass these landowners. However, the project is still widely opposed within the state. Governor Hassan believes that "project officials must more fully explore options for burying more of the lines" (Hassan 2013a, 1). Citizens and environmental groups contest the ecological impacts, economic benefits, emissions reductions and demand for new energy. Opposition groups have pointed to potential alternatives to the Northern Pass including the

FIGURE 1: SNAPSHOT OF CERTAIN EXISTING AND PROPOSED GENERATION AND TRANSMISSION PROJECTS IN EASTERN CANADA AND THE NORTHEAST UNITED STATES



Source: New England States Committee on Electricity (NESCOE) (2013a).

Green Line, Cape Wind and stricter energy conservation policies.¹

In late 2013, the project received approval from the Independent System Operator (ISO) for New England to connect to the regional grid. It is also currently undergoing an environmental impact statement by the DOE, a preliminary draft of which is expected in mid-2015 at the earliest.

¹ The proposed Green Line would carry electricity from northern Maine, with a connection to New Brunswick, to southern New England. Cape Wind is a wind farm off the coast of Massachusetts.

ASSESSMENT OF THE NORTHERN PASS

In order to fully understand the potential trade-offs in developing energy infrastructure it is necessary to assess projects in conjunction with other alternatives. According to Monica Gattinger (2012), energy infrastructure planning needs to find a socially acceptable balance point between energy markets, environment and security of supply in order to identify the optimal policy path for the region. This balance cannot be discovered by assessing the Northern Pass Project separately from other potential projects. This policy brief expands on the four policy dimensions mentioned above in relation to the Northern Pass, first in New Hampshire and followed by the regional context.

**TABLE 1: AVERAGE RETAIL PRICE OF ELECTRICITY TO ULTIMATE CUSTOMERS BY END USE
SECTOR FOR NOVEMBER 2013–FEBRUARY 2014 (US CENTS/KWH)**

Date	Pacific Contiguous	Mountain	West South Central	East South Central	South Atlantic	West North Central	East North Central	Middle Atlantic	New England
February 2014	12.79	10.90	10.22	10.20	11.35	9.94	11.54	16.86	17.79
January 2014	13.21	10.78	10.19	10.04	11.10	9.75	11.27	15.63	16.98
December 2013	13.11	10.82	10.33	10.03	11.02	9.98	11.35	15.28	18.35
November 2013	13.50	11.02	10.90	10.31	11.30	10.53	12.04	15.50	16.54

Data sources: US Energy Information Administration (2014a; 2014b; 2014c; 2014d).

It also explores the context of regional political relations and how this forms the basis for cooperation on issues of energy infrastructure. By finding the right nexus between energy markets, environment and security of supply, the political deadlock that now exists over Northern Pass can be avoided in the future.

ENERGY MARKETS

Information pertaining to the electricity market impact and economic benefits of the Northern Pass is varying and conflicting. Consumer energy prices in New England are 56 percent higher than the national average (US Energy Information Administration 2014a), making energy prices an important policy incentive for New England states. The New England Ratepayers Association (2013) is in favour of the Northern Pass Project, arguing that it provides both price stability and reliability to the region by hedging against volatile natural gas prices, which was made ever apparent this past winter (see Table 1 for the price volatility within New England, as compared to the rest of the regions within the United States). NESCOE (2013b) conducted a simulation where three hypothetical 1,200 MW hydroelectric projects were developed in Canada and exported the power they produced to the New England region. NESCOE was able to conclude that the three projects would result in a US\$103–471

million annual reduction in electricity prices for the region. The report concluded that the two most beneficial projects would be a 1,200 MW connection between New Brunswick and Maine and a 1,200 MW connection between Quebec via New York to Connecticut (ibid.). These hypothetical projects are analogous to the Northern Pass Project, in terms of electricity generated and because New Hampshire, where the Deerfield Station is located, is north of Connecticut.

However, tension exists between the goals of reducing energy costs and creating a regional renewable energy industry. As the Northern Pass will not be financed by any New England states and requires no subsidies, this project could be considered more attractive than domestic wind and solar projects; which require government subsidies (Northern Pass LLC 2013). However, New England states have committed to developing domestic renewable capacity through Renewable Portfolio Standards (RPS) and other subsidy programs. Concern exists over the potential for large-scale hydroelectric to flood state's RPS with a mature technology which would obstruct the development of domestic renewable projects (New England Power Generators Association 2011). If New England states accepted large-scale hydroelectric into their RPS, it could supply 45 percent of the renewable energy credits on the market and this would hamper the development of renewables within the region (Synapse

Energy Economics Inc. 2011). Connecticut and Vermont both allow large-scale hydroelectric to qualify for renewable energy credits; Massachusetts Governor Deval Patrick, however, has been steadfastly opposed to the inclusion of large-scale hydroelectric in RPS programs.

ENVIRONMENT

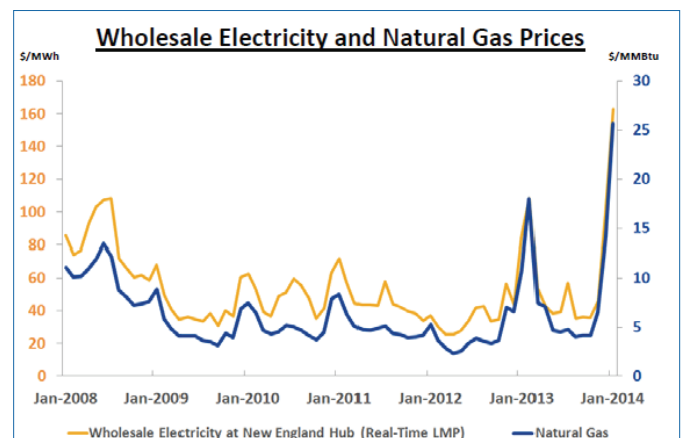
Ecological damage due to the Northern Pass Project will be concentrated in northern New Hampshire and Quebec. The Northern Pass cuts through 18 km (11 miles) of the White Mountain National Forest. Two forest blocks that have been designated top priority by the New Hampshire Wildlife Action Plan will be fragmented, which will have a negative impact on the functioning of ecosystems and break up wildlife corridors. Species at risk include the federally threatened Canada Lynx, and the state-threatened American Marten (O'Brien 2013). The White Mountain National Forest and Appalachian National Scenic Trail are also important recreational resources, popular at least in part for their visual beauty. With the decline of the timber industry, tourism has become the most important industry in northern New Hampshire.

Quebec is currently expanding its hydroelectric capacity in the Côte-Nord region with the Romaine Complex. Though not all of this new capacity is connected to the Northern Pass, hydroelectric development is largely driven by a desire to expand exports to the United States. Construction of hydroelectric dams floods large areas of terrestrial habitat and destroys upstream and downstream wetlands. Flooding can also accelerate the release of mercury from the soil and its uptake into the food chain (Arnold 2013).

Official estimates of greenhouse gas (GHG) reductions resulting from the Northern Pass by NESCOE (2013b) assume that the GHG emissions of hydroelectricity are

zero. However, the flooding of boreal forest in Quebec results in significant GHG emissions. While there are still net GHG emissions reductions, these are not as significant as they could be, as hydroelectric imports to New England displace natural gas rather than coal or oil. Hydroelectric emissions are greater than natural gas emissions over the first several years of a new reservoir's life. Over its lifetime, however, a hydroelectric dam emits between one-third and two-thirds the GHG emissions of a natural gas plant (Steinhurst, Knight and Schultz 2012).

FIGURE 2: WHOLESALE ELECTRICITY AND NATURAL GAS PRICES



Source: ISO New England (2014b).

SECURITY OF SUPPLY

The six New England states have seen their electricity portfolios change dramatically since the 1990s. Most of the states have switched to natural gas from nuclear, coal or oil. As a whole, the region generates 52 percent of its electricity from natural gas (ISO New England 2013). This has raised concern because of the spike in natural gas prices in the winter of 2013-2014. The average price of natural gas is now the highest it has been in 10 years and is more expensive than the price of oil. This has encouraged the region to increase the amount of oil it

burns to generate electricity (ISO New England 2014a), thus increasing regional GHG emissions.

Moreover, power plants in New England are scheduled to shut down in the next few years. The Vermont Yankee Nuclear Power Station, which produces three-quarters of Vermont's in-state electricity generation, is planned to shut down in late 2014. Several old coal and oil power plants across New England are also expected to retire by 2020. However, this capacity may be offset by new generation within New England. In total, these plants amount to over 8,000 MW of electricity generation (ISO New England 2013).

Increased hydroelectric imports offer a solution to some of the energy system concerns in New England. However, the Northern Pass Project is not the only transmission interconnection project under consideration in eastern Canada and New England. These alternatives may or may not generate more net benefits to the region in comparison to the Northern Pass Project. An isolated analysis of each option cannot assess whether the energy market, environment and security of supply benefits outweigh local costs. A regional planning process is necessary to maximize social acceptability.

For example, the Green Line proposed by the New England Independent Transmission Company would carry 1,000 MW to 1,200 MW of wind-generated energy in Maine to southern New England. This project includes a link from Maine to the New Brunswick grid. Quebec, Nova Scotia and Newfoundland would also use the Green Line whenever wind units are not operational (NESCOE 2013a). The Northeast Energy Link is another alternative. This new line would connect Maine to Massachusetts and would have a capacity of up to 1,100 MW provided by Maritime provinces and northern New England states (ibid.). Another option would be to increase delivery by

improving the capacity of already existing transmission lines between eastern Canadian provinces and New England states, as is the case with the Maine Power Reliability Program (ibid.).

SOCIAL ACCEPTABILITY

Despite regional benefits, the Northern Pass cannot proceed without social acceptance. A poll conducted for the Nashua Chamber of Commerce (2014) identified that 46 percent of New Hampshire residents were in favour of the Northern Pass Project, while only 35 percent of residents opposed the project, with the remaining 19 percent being neutral. Sixty-four percent of New Hampshire residents are in favour of the state expanding electricity generation via alternatives to natural gas. However, residents in Northern New Hampshire are more likely to be opposed to Northern Pass and many anti-Northern Pass citizen groups have been formed in the region, including "No Northern Pass" and "Live Free or Fry." Environmental groups, including the Nature Conservancy and Society for the Protection of New Hampshire Forests also oppose the project.

The scoping report on Northern Pass issued by the DOE (2014) attracted 7,560 comments from more than 6,400 New England individuals and organizations. The results of the report are in Table 2 below.

Job creation within New Hampshire is a major aspect of social acceptability. While the Northern Pass LLC (2013) claims that 1,200 jobs will be created in New Hampshire, a report commissioned by the New England Power Generators Association concluded that less than 600 jobs would be created and that these would primarily be temporary (Polecon Research 2012). One of the major contributing factors feeding this figure is the state's limited technical capacity and resource inputs to construct a

project of this magnitude without out-of-state assistance. Even if New Hampshire had the in-state capacity to build the line, Northern Pass partners have a history of relying on out-of-state companies. Consequently, it is expected that New Hampshire businesses and workers will only receive 11–19 percent of the total expenses of the project (ibid.).

TABLE 2: DOE SCOPING REPORT RESULTS

Reason for Opposition	Percent of comments directed at these concerns (in %)
Alternatives	17.1
Economy	10.4
Purpose and need	7.8
Health and safety	7.7
Tourism	6.6

Adapted from: DOE (2014).

Note: Comments directed at the issue of alternatives framed the current route as environmentally unacceptable and encouraged burial of the line and other rights of way to be investigated. Economic concerns included skepticism about job creation, the positive impact on the energy market and electricity prices, as well as concern about the impact on the tourism industry (further echoed in the tourism line). With respect to purpose and need, New Hampshire respondents emphasized that the state is energy sufficient and that the project should not be imposed on New Hampshire residents to meet the greater needs of the New England region.

RECOMMENDATIONS

The first NEG ECP conference was held in 1973 with the goal of advancing common interests. Due to the actors involved, the NEG ECP has the potential to take leadership on regional binational energy governance. Planning cooperation in New England advanced in December 2013, when the New England Governors released the “Regional Energy Infrastructure Initiative,” which commits the states to increase regional cooperation on renewable energy and on energy infrastructure issues (New England Governors 2013). However, the future of this initiative is uncertain as Massachusetts has since

backed away. The NEG ECP should expand regional cooperation within New England across the Canada-US border with the following recommendations.

Institute a binational regional transmission planning process within the NEG ECP that takes public policy goals surrounding environmental issues and socio-economic development into account. As New England seeks to increase imports of hydroelectric and renewable power from Canada it is necessary to extend electricity infrastructure planning processes across the border. Integration of electricity infrastructure planning has begun in New England through the Regional Energy Infrastructure Initiative. However this process primarily focuses on system reliability and energy market impacts. It is vital that these planning processes take into account public policy goals, including environmental and economic development concerns. The NEG ECP binational regional transmission planning process would focus on evaluating energy projects in a regional context to identify the cost and benefits of proposed energy projects. In completing these evaluations, the planning body will be able to decide which energy projects should be pursued. Rejection of an energy project would be rooted in analysis, which identifies the net cost of the project as being higher than other possible projects. In identifying optimal energy projects, state and regional interests can both be met, allowing this body to achieve the joint-gains that are not achievable in the current system.

Include civil society and industry groups, akin to the Pacific Northwest Economic Region (PNWER), in the NEG ECP binational regional transmission planning process. The NEG ECP is composed of political leaders. However, participation from all stakeholders is necessary to ensure social acceptability is achieved. The binational regional planning process needs to include both civil society groups and industry groups to ensure that all

concerns and issues are heard and addressed. Assessments and documentations should be made publicly available in the interest of transparency and accountability.

Fund the functions of the binational regional planning process in an equitable manner by project stakeholders.

Based on the example of PNWER and its funding mechanism, one-third of the funding should be provided through state and provincial dues, one-third through private sector sponsorship and dues and the rest through public and private grants (PNWER n.d.). This funding mechanism will allow for the fair distribution of future economic costs of energy infrastructure projects in the New England and eastern Canada region.

CONCLUSION

This brief exposes the fragmentation that exists between the costs and benefits of the Northern Pass Project within New Hampshire and its impact on the wider region of New England and Quebec. It highlights that regional energy infrastructure projects assessed in isolation are likely to lack social acceptability if no further investigation is performed on their broader regional impacts on energy markets, the environment and regional security of supply. In order to prevent future social and political deadlock for binational energy infrastructure projects, the NEG ECP Conference needs to pursue binational planning of energy infrastructure.

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