

**COMMISSION TO DEVELOP A PLAN
FOR THE EXPANSION
OF TRANSMISSION CAPACITY
IN THE NORTH COUNTRY**

PROGRESS REPORT

DECEMBER 1, 2008

**PURSUANT TO SB 383
CHAPTER 348, LAWS OF N.H. 2008**

I. INTRODUCTION

The Legislature concluded in 2007 as part of House Bill 140 that the development of renewable energy in New Hampshire is in the public interest and that the existing transmission infrastructure in the northern part of the state will need to be upgraded in order to achieve renewable generation goals. To assist it in further policy decisions, the Legislature directed the Public Utilities Commission (PUC) to prepare a background report describing, among other things, the existing electricity transmission system, the transmission siting process, and the approximate costs of potential transmission upgrades. The report, which was issued on December 1, 2007, was intended to lay the foundation for further action by the Legislature, and includes information on various approaches to upgrading the Coos County loop.

As noted in the Background Report, construction of transmission for remote renewables is an important topic in many parts of the country. Each state addressing how to incorporate renewable generation remote from population or load centers into the existing transmission network is confronting the fact that historically the transmission system was constructed to meet the demand in particular geographic areas. As a result, the need for sizable transmission in rural areas such as Coos County was low and, furthermore, transmission lines tend to diminish in size and carrying capacity as they move further away from more populous areas with high loads to less populous areas with low loads. Consequently, transmitting power from remote areas where large scale wind and biomass generation is likely to be sited requires the upgrade of existing transmission or the construction of new transmission.

In New Hampshire, transmission for remote renewables is receiving close attention as a result of “25 by 25,” Governor Lynch’s “goal of ensuring that at least 25 percent of New Hampshire’s energy comes from renewable sources by 2025” and the recently enacted renewable portfolio standards for electricity providers. In 2008, following on its action in the previous term, the Legislature passed Senate Bill 383, creating a commission to develop a plan for the expansion of transmission capacity in the North Country (Transmission Commission). See [Attachment A](#).

Senate Bill 383 took effect on July 7, 2008 and called for a report by December 1, 2008 of the Transmission Commission’s “findings and any recommendations for proposed legislation.” During the five-month interim, the Transmission Commission was directed to meet monthly to receive progress updates from the Public Utilities Commission and to provide input to the Public Utilities Commission with regard to “achieving the necessary transmission capacity expansion in a timely fashion.”

The Commission is made up of two members from the Senate and two from the House, representatives from the Governor, the Office of Energy and Planning (OEP), the Department of Resources and Economic Development (DRED) and the Public Utilities Commission, and three North Country members appointed by the Governor. The Commission also includes non-voting participants designated by the Congressional delegation, as well as representatives of the unregulated energy supply industry, Public Service Company of New Hampshire, National Grid and the New England Power Generators Association. See [Attachment B](#) for roster of members. In addition, Senate Bill 383 provides for the participation of the Office of Consumer Advocate, the state’s electric distribution utilities and transmission companies, and developers of renewable

generation projects in formulating a proposal for the upgrade of the transmission system in the North Country.

This report includes in Part II a summary of the Transmission Commission's meetings, descriptions of various ongoing efforts to overcome regulatory hurdles and updates regarding the status of renewable generation projects. Part III sets forth the few legislative proposals that were advanced. Finally, Part IV identifies next steps for the Transmission Commission. In addition, there are a number of attachments and web links that have been included to provide further background on the subject matter.

II. PROGRESS REPORT

A. Summaries of Meetings

August 21, 2008

The Transmission Commission's organizational meeting began with the election of Senator Martha Fuller Clark as Chair and Representative Naida Kaen as Vice-Chair. PUC Chairman Tom Getz provided the legislative background for the formation of the Commission and explained the requirements of Senate Bill 383. Joe Staszowski, Director of NEPOOL and ISO Relations for Northeast Utilities (the parent company of PSNH), described the electrical system in northern New Hampshire, in particular the Coos County loop. See Map, [Attachment C](#). Mike Harrington, the PUC's Regional Policy Adviser, gave an overview of the process for regulating electric transmission lines, including the roles of the New England Independent System Operator (ISO) and the Federal Energy Regulatory Commission (FERC). Tom Frantz, Director of the PUC's Electric Division, gave a rundown on the PUC's outreach efforts and the numerous meetings that have been held over the past year with North Country stakeholders and the

generators. PUC Commissioner Clifton Below recounted a number of efforts pursued by the PUC regarding regionalization of the costs of upgrading the Coos County loop and explained the opposition of some states to such regionalization. Representatives from Noble Environmental, Clean Power Development, Laidlaw Energy and Wagner Forest Management gave updates on their projects.

September 29, 2008

Kate Peters from the Governor's Office reported Governor Lynch's efforts at the New England Governors' Conference (NEGC) meeting in Bar Harbor, which resulted in a resolution by the NEGC recognizing the importance of remote renewable resources within the region and committing to resolve any differences among the states that would impede the development of such resources. See [Attachment D](#). Commissioner Below, Senator Fuller Clark and Representative Kaen shared their views on the ISO's Regional Energy Conference held in Boston. Among other things, Commissioner Below noted the position of Massachusetts Department of Public Utilities Chairman Paul Hibbard that Massachusetts can meet its renewable portfolio requirements with in-state resources (See [Attachment E](#)) and that the costs of transmission upgrades for renewables, including those in New Hampshire, should not be regionalized.

Joe Rossognoli from National Grid made a presentation explaining National Grid's perspective on an approach to allocating risk among the various stakeholders in the development of large scale renewable transmission projects. See [Attachment F](#). Lou Bravakis from Laidlaw stated that there were too many unknowns for generators to provide details on what a workable approach to allocating risk among stakeholders would look like. Senator Fuller Clark emphasized the need to find a timely way to figure out

how costs can be shared in a reasonable and equitable way. OEP Director Amy Ignatius expressed concern that the generator response is the same as it was a year ago and urged them to propose a definitive plan as soon as possible.

October 27, 2008

Larry Gasteiger, FERC's Director of Tariffs and Market Development for the Eastern U.S., described FERC's process and attitude towards transmission expansion. He explained the FERC's overall focus on reliability as well as its new back-up authority for transmission siting. In addition, Mr. Gasteiger discussed FERC's acknowledgment of the need to build transmission for location-constrained renewable generation and the California ISO's proposal to change the existing rules governing such transmission.

Haijin Shi from Landvest presented a wood supply study for Coos County that his firm conducted for DRED. Landvest concluded that approximately 640,000 green tons were available annually for biomass generation, which would equate to roughly 50 MWs of capacity. See [Attachment G](#). Eric Kingsley from Innovative Natural Resources Solutions presented a biomass fuel availability study he conducted on behalf of Clean Power Development. Mr. Kingsley focused on drive times from Berlin, NH and used a price cap supplied by his client, which resulted in a conclusion that there was sufficient biomass availability within a 60-minute drive of Berlin to produce approximately 30 MWs of generation capacity. See [Attachment H](#).

The meeting concluded with a question and answer session. Representative King inquired about the ability of the generators to share the costs of transmission and asked about the rate impact of the potential \$150 to \$200 million investment. Tom Frantz, Director of the PUC's Electric Division, estimated that a \$100 million transmission

investment would raise overall rates between 1.5% and 2 % if all of the costs were to be borne by New Hampshire ratepayers. Bill Sherry from National Grid commented that Coos County is electrically balanced between load and generation and that the existing network in the north is not robust enough to handle the infusion of significant new generation, though the network in the south is sufficiently robust. Doug Patch, representing Noble, said that his client's first project does not trigger the need for a system upgrade to the Coos County loop but that subsequent projects by Noble and other developers will require such an upgrade. Rep. Lyle Bulis raised the issues of reserving wind generation for New Hampshire customers and reforming the ISO's queue process. Michael Harrington from the PUC explained that activities were ongoing to change the queue rules.

November 24, 2008

The Transmission Commission met to review the preliminary draft of the Progress Report due on December 1, 2008 and proposed a variety of edits that were agreed to; the PUC was directed to make revisions to the preliminary draft and file the final report. In addition, Joe Staszowski from NU described additional engineering options and cost alternatives for an upgrade to the Coos County loop. Finally, the Transmission Commission discussed next steps and agreed that: (1) New Hampshire should continue to pursue the upgrade of transmission capacity in the North Country to develop its native renewable energy resources; (2) it would be useful to extend the work of the Transmission Commission to develop a responsible course of action to accomplish such an upgrade; (3) if necessary, legislation to extend the work of the Transmission Commission should be introduced; (4) it is incumbent upon renewable generation project

developers to fashion a detailed proposal for allocating the costs and risks of a transmission system upgrade that would lead to the construction of their projects; (5) the Public Utilities Commission should continue to work with the renewable generation developers and the transmission companies to facilitate a California-style arrangement that fairly balances costs and risks; (6) the Public Utilities Commission should calculate the rate effects of the various engineering scenarios and cost allocation proposals that emerge; (7) the Public Utilities Commission should continue to advocate for regionalizing the costs of upgrading the Coos County loop; (8) participants in the Transmission Commission's activities should pursue on their own any legislative efforts that they believe are relevant to the goal of upgrading the Coos County loop; and (9) this report should be provided to the appropriate committees in the House and Senate.

B. Regional Efforts

The Public Utilities Commission has continued to pursue efforts in two main areas at the regional level. First, the PUC has advocated changes to the interconnection queue process, which controls the order in which a project is considered by the ISO for various engineering studies and establishes a priority order among projects. Among other things, the queue has been a source of consternation among stakeholders because of the relative ease with which a project can get a place in line and stay in line without an appreciable need to demonstrate ongoing project viability.

Second, the PUC has advocated for regionalized treatment of the cost to upgrade the Coos County loop. As a general matter, the PUC has argued that the renewable generation projects in northern New Hampshire can confer regional benefits and, if studies confirm this to be the case, the cost of transmission to bring the projects on line

should be borne by the region. In particular, the PUC contends that the Coos County loop upgrade may qualify as a market efficiency upgrade under Attachment N of the ISO tariff and, as a consequence, regionalized cost treatment would be appropriate if the project were determined to sufficiently reduce region-wide electric production costs.

Interconnection Queue

The Interconnection Queue, or the Q, is the list of potential generating facilities in chronological order of when they made their interconnection filing with ISO New England. The interconnection analysis performed by the ISO is done on a first come, first served basis. This is important because where there is an overlapping impact in the interconnection of potential generators, the generator who filed first, and hence has a higher Q position, is given first rights to use the existing transmission. The interconnection analysis for the generator with the lower Q position is performed with the assumption that the higher Q generator will already be connected to the grid. Therefore, the transmission capacity required by that generator will not be considered available for use by the second generator.

During the development of the New England Forward Capacity Market (FCM) it was recognized that improvements were needed to the Q to improve the efficiency of the process. Although the need for improvements was not precipitated by the Coos County loop issue, many of the concerns raised were similar to those raised in discussions of how the Q rules were affecting the proposed generation in Coos County.

A Q working group was established with representatives from the various stakeholders in New England participating. Thirteen meetings were held from September, 2007 until June, 2008 and a set of proposed changes was developed. These

changes were considered as part of the NEPOOL/ISO Stakeholder process and resulted in a filing with FERC in October, 2008. A FERC response is expected in the next few months. The proposed changes if approved would affect generators 20 MWs and larger.

The main thrusts of the proposed changes are:

- To increase the likelihood that generating projects that are maintaining queue positions and consuming study effort are viable projects with a demonstrated ability and willingness to proceed to completion; and
- To provide for better alignment between the Q interconnection process and the new FCM, especially with respect to projects with long lead times.

Additional information on the proposed changes can be found in [Attachment I](#).

Market Efficiency Upgrades and Economic Studies

The ISO Open Access Transmission Tariff describes two types of upgrades that are eligible for regionalized cost treatment, a reliability upgrade and a market efficiency upgrade. Reliability upgrades have been the focus of Transmission Owners like Northeast Utilities (NU) and National Grid in New England for decades. The basic rule for such projects is that if they are determined to contribute to regional reliability then all six states pay the costs of such projects, sometimes referred to as pool transmission facilities or PTF, in proportion to their respective load requirements. If a project, or a portion of a project, is determined to be unrelated to regional reliability then the costs are localized.

The ISO tariff also provides for market efficiency upgrades under Attachment N, an alternative that only recently has been pursued. Attachment N requests have been filed for northern Maine and by NU for northern New Hampshire, asking the ISO to

conduct studies to determine whether the projects, which are designed to interconnect remote renewable generation projects, are eligible for regionalized cost treatment. See NU request, [Attachment J](#). These filings have engendered great debate among the New England states about the proper allocation of the costs of transmission projects. According to the ISO tariff, such projects would be deemed eligible for regionalized cost treatment where the net present value of the net reduction in total cost to supply the system load exceeds the net present value of the carrying cost of the upgrade.

In addition to the Attachment N debates, there is a corresponding debate about Attachment K to the ISO tariff, which results from FERC action encouraging economic studies of alternative transmission system expansion scenarios. See ISO summary of Attachments N and K, [Attachment K](#). The New England Conference of Public Utilities Commissions (NECPUC) submitted a proposal to the ISO asking it to perform case studies of off-shore or coastal wind, and renewable generation in northern New Hampshire and northeast Vermont. See [Attachment L](#). An Economic Studies Working Group was formed with various stakeholders in an attempt to fashion a rigorous method for reviewing the Attachment K requests but, despite the investment of considerable time and resources, that effort has not shown significant progress to date.

A renewed effort has been undertaken, however, consistent with the New England Governors' resolution at Bar Harbor in September, to resolve the differences that exist among the states relative to the interconnection of remote renewable generation to the regional transmission system. Discussions are currently underway among the Transmission Owners, NECPUC and the ISO that, it is hoped, will avoid protracted litigation and produce instead an approach to projects such as those in Coos County that

recognizes the regional benefit from renewable generation facilities by regionalizing an appropriate portion of the costs of the transmission necessary to bring the generation to market. In the event this effort yields results, subsequent approvals would also be required from NEPOOL and FERC prior to implementation. For additional background on the allocation of costs of new transmission investment and a survey of practices for integrating locationally constrained generation, see **Attachments [M](#) and [N](#)**.

C. Generator Updates

Status of Proposed Generation

The latest active interconnection requests in the ISO-NE queue indicate that over 1900 MW are proposed for New Hampshire, of which 570.8 MW are located in Coos County. Wind projects in Coos County account for 459.5 MW of the proposed total. See [Attachment O](#) for a full listing of New Hampshire projects. Not reflected in the queue for Coos County is another 180-MW wind project that reportedly is in the planning stages.

The first project in the ISO-NE queue is Noble's 99 MW wind farm, which would involve constructing and operating 33 wind turbines with a name plate rating of 3 MW each. The wind turbines would be located on private land in central Coos County and would interconnect with PSNH's existing 115 kV transmission line in Coos County. The project, also known as Granite Reliable Power, LLC, is now pending before the New Hampshire Site Evaluation Committee (SEC). Granite Reliable Power filed an Application for Certificate of Site and Facility for a Renewable Energy Facility in Coos County on July 15, 2008. On August 14, 2008, the SEC issued an order accepting the application and designating the subcommittee members. An order and notice of public

hearing was issued on August 27, 2008. The pre-hearing conference was held on September 18, 2008 and a public hearing was held on October 2 in Groveton. The SEC has until April 6, 2009 to conduct hearings and issue a decision approving or denying Granite Reliable Power’s Application.

The following table indicates the active projects in the ISO-NE queue for Coos County as of October 17, 2008 under the heading of “Interconnection Requests to the Administered Transmission System.”

ISO-NE Queue Position	Name of Project	Fuel Type	Summer MW Rating
166	Granite Reliable Power	Wind	100
176	Granite Reliable Power	Wind	145.5
229	Clean Power Development	Biomass	41
251	Laidlaw	Biomass	61
280	Wind	Wind	180

The projects listed above are proposed to be interconnected to the regionally administered transmission system. Since the PUC issued its Background Report last year, Tamarack, which had proposed a biomass facility in Groveton, has withdrawn from the ISO-NE queue.

Additional requests for interconnection at the sub-transmission level also exist, which are known as “Active – Affected System” requests for interconnection. New Hampshire has five such projects, totaling approximately 100 MW. One of the projects, the Lempster wind project, is now in service. Of the remaining four projects, two are located in Coos County. One is a 6.3 MW landfill gas project and the other is a 34 MW wind project that proposes to interconnect with the New Hampshire Electric Cooperative. The two Coos County projects are in the ISO-NE queue ahead of Clean Power Development’s biomass project, but after the second Noble wind project.

In addition to their projects in Coos County, Clean Power and Laidlaw are pursuing projects elsewhere in the state. Clean Power announced early in 2008 that it was working on an approximately 40 MW project in Merrimack adjacent to Anheuser Busch and that it was considering an approximately 50 MW project in Winchester. Laidlaw has also proposed a 20 MW project in Henniker that is being considered by the town Planning Board.

Biomass Availability

At its October 27 meeting, the Commission received two presentations on the availability of biomass for power generation in northern New Hampshire. The presentation by Eric Kingsley of Innovative Natural Resource Solutions, LLC was based on a study the firm completed earlier in the year for Clean Power Development. Innovative Natural Resource Solutions assumes for its study that all existing major markets for biomass will continue to operate, diesel prices will constrain the distance to wood markets, wood will be acquired at specific price points and all biomass will be secured from local and regional sources. The study looks at annual timber harvest volumes by product type in Coos County from 1998-2005. That data indicate that round wood accounts for approximately 1.5 million green tons during the period while whole tree chips make up only a small amount of the volume harvested. Based on the historic data and its model, Innovative Natural Resource Solutions estimates that approximately 200,000 green tons were available annually from Coos County during the period 1998-2005 for biomass production, enough to power a 17 MW biomass plant, assuming a 90% capacity factor and 1.7 green tons per MWH of output. Innovative Natural Resource Solutions also utilized a similar analysis for Coos County based on the pulpwood harvest

from 1998-2005. Assuming one-third of the pulpwood harvest could be utilized for biomass production, Innovative Natural Resource Solutions estimates approximately 29 MW of biomass production could be generated from Coos County using incremental whole tree chips and pulpwood.

The other presentation was by Haijin Shi of LandVest, Inc., LLC. LandVest was retained by the Department of Resources and Economic Development to evaluate the short-term and long-term timber supply in and around Coos County as part of an overall assessment of forest resource availability for potential and existing markets.

LandVest discussed the current situation in Coos County, which accounted for 35% of New Hampshire's timber harvest in 2006, and noted that traditional forest products industries have recently moved out of the region. The LandVest study, which was still preliminary at the time of this report, focuses on wood availability around Berlin, NH. The study looked at the existing pulp mills and power plants close to Berlin and drew circles around those existing facilities; areas that overlapped were eliminated from the potential "wood basket." LandVest estimates that 6,335,219 acres of timberland are potentially available for harvest in the region before making adjustments to the potential timberland for inaccessible terrain or prohibited usage. After determining the potential timberland available, reviewing recent harvest data, and using 2005 base year inventory data from the most recent Forest Inventory Assessment, LandVest modeled a base, low and high annual harvest and net growth rate for the study area. Based on its model simulations, LandVest indicates approximately 3.58 million green tons of low grade wood would be available annually in the study area of which 640,000 green tons could be available for additional biomass consumption. Its high supply estimate is 1

million green tons annually and it estimates 280,000 green tons per year would be available under a low supply scenario. LandVest did not estimate a level of biomass production, but assuming a factor of 13,000 green tons per installed MW, its base case would translate to approximately 50 MWs.

Meeting with Generators

On November 3, 2008, representatives from Noble, Clean Power, Laidlaw, New England Wind Energy, and Wagner Forest Management met at the Commission with Senator Martha Fuller Clark, Chairman Thomas B. Getz, Commissioners Clifton Below and Graham Morrison, and Commission Staff members Michael Harrington and Tom Frantz to discuss potential frameworks upon which a cost allocation solution for building the needed north country transmission could be based. Preliminary discussion focused on the ISO-NE queue, which the generators agreed was time-consuming and flawed. See [Attachment P](#) for an explanation of issues that affect the progress of interconnection studies. The meeting focused primarily, however, on evaluating the California model as a starting point upon which to craft a cost-sharing solution. “California model” refers to the approach developed by the California ISO and approved by FERC as an alternative to the general rule that the developer who causes the need for a system upgrade must pay for the entire cost of the upgrade, which poses a serious obstacle to renewable development when the generation project is small and the cost of the necessary transmission upgrade is large. In general terms, the alternative solution involves a sharing of costs and risks among ratepayers and multiple developers.

Noble stated that though it has endorsed some level of cost-sharing along the California model, it does have concerns about how the California model would work in

New Hampshire. Noble believes more specific information about the details of how the model actually works is necessary if the California model is to become the cost-sharing framework used for New Hampshire. See [Attachment Q](#) for Laidlaw's similar views on cost sharing and related issues. New England Wind Energy stated that it would contact someone familiar with the development of the California model and ask if he would be willing to discuss the California model with the group. See [Attachment R](#) for an update on the California model.

The generators expressed a general concern about the overall capacity of a new transmission line in Coos County and what it would cost. Cost certainty is important to the generators because it affects their ability to finance their projects. It also is important in determining how much they could contribute to the cost of constructing the new transmission line. The discussion of the costs and size of the transmission line led to a more general discussion about risk and who should bear the risk of increased transmission costs above what was forecasted or the risk of constructing transmission for a large level of expected renewable development that may never get built. All agreed that a reasonable risk sharing mechanism among generators, ratepayers and the utilities is needed and expressed their interest in continuing to work toward such a mechanism.

Wagner Forest Management questioned whether renewable developers could, from a legal perspective, work jointly with the other New Hampshire developers on a cost allocation proposal and it also asked whether it was feasible for a state agency to evaluate and rank proposed projects. Some time also was devoted to discussing various ways to reduce the total cost of building transmission such as the use of state industrial

development bonds, though it was mentioned the law would need to change to allow for that outcome, as well as using funding sources such as RGGI or RPS.

III. LEGISLATIVE PROPOSALS

Several recommendations were noted during the Transmission Commission's meetings concerning amendments to state law. First, a general proposal was made to review RSA 162-H, the statute governing the Site Evaluation Committee, with the intention of streamlining the consideration of transmission line construction for renewable generation facilities. Second, it was suggested that legislation be enacted to authorize Coos County or some other economic development body to own and operate transmission facilities. Third, a proposal was made to amend RSA 162-G to make renewable energy facilities eligible for industrial development bonds.

In addition to these proposals at the state level, there is activity at the federal level that is worthy of note. Specifically, much attention is being given to the notion of developing the equivalent of a national interstate highway system for electricity. Susan F. Tierney, Ph.D. published a paper on October 31, 2008 entitled, *A 21st Century "Interstate Electric Highway System"-Connecting Consumers and Domestic Clean Power Supplies*. See [Attachment S](#). Among other duties, Dr. Tierney is a member of President-elect Obama's transition team for energy. As proposed, all Americans would pay for the construction of a high-voltage transmission network and certain strategic transmission projects, but it is not clear that a project such as the Coos County loop upgrade would qualify as a strategic transmission project. Efforts such as this one should be watched closely.

IV. CONCLUSION

Senate Bill 383 calls for development of a proposal for the upgrade of the transmission system in the North Country. Based on the Background Report from 2007 and the meetings held by the Transmission Commission this year, it is fair to say that there is a consensus that realizing the legislative goal will be a time consuming and resource intensive undertaking.

All reasonable steps are being pursued at the regional level to amend the interconnection queue process and to achieve regionalization of the costs of an upgrade to the Coos County loop, though it must be kept in mind that the latter effort faces considerable opposition from outside New Hampshire. As a result, it is important to continue efforts to construct a New Hampshire cost allocation approach that fairly balances costs and risks among project developers, ratepayers and other stakeholders. In that regard, it is critical that project developers bring forward soon a detailed cost allocation proposal for consideration.

V. ATTACHMENTS

Attachment A—SB 383

Attachment B—Transmission Commission Roster

Attachment C—Coos County Map

Attachment D—NEGC Resolution

Attachment E—Navigant Study

Attachment F—National Grid Presentation

Attachment G—LandVest Study

Attachment H—Innovative Natural Resources Study

Attachment I—Interconnection Queue Changes

Attachment J—NU Att. N Request

Attachment K—ISO Summary of Atts. N & K to the OATT

Attachment L—NECPUC Att. K Request

Attachment M—White Paper on Allocation

Attachment N—WIRES Survey of Practices

Attachment O—NH Projects in Queue

Attachment P—ISO Interconnection Studies

Attachment Q—Laidlaw Letter

Attachment R—CA ISO Rules

Attachment S—Tierney Paper