STATE OF MAINE PUBLIC UTILITIES COMMISSION

DOCKET NO. 2008-255

CENTRAL MAINE POWER COMPANY
and
PUBLIC SERVICE OF NEW HAMPSHIRE
Request for Certificate of Public Convenience
and Necessity for the Maine Power Reliability Program
Consisting of the Construction of Approximately
350 miles of 345 kV and 115 kV Transmission Lines ("MPRP")

Public Service of New Hampshire

The Northeast Utilities System

VOLUME II

CHAPTER 330 MATERIALS

July 1, 2008

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TABLE OF CONTENTS

Volume II **CHAPTER 330 MATERIALS**

CHAPTER 330 MATERIALS

The following provides more details of the MPRP project, in accordance with Chapter 330 of the Commission's Rules.

A. Maps (Chapter 330 § 6(A))

Exhibit A sets forth the Proposed Solution Map which depicts the entire scope of the MPRP. The shaded bubbles on the Proposed Solution Map are the areas in the Needs Assessment identified as requiring reinforcement of the transmission system to provide reliability. The heavy green line shows the proposed 345 kV transmission lines and the magenta line shows the proposed 115 kV transmission lines. The magenta line with a black outline indicates the three areas where double circuit transmission lines are to be separated. The blue line with blue dots indicates lines that were identified to be rebuilt. The magenta lines with magenta dots indicate existing 115 kV transmission lines that require re-rating to meet reliability standards. The green line with a green dot in Wiscasset shows the location of Section 378 which is a 345 kV line that requires re-rating. Black pentagons indicate a new autotransformer and an orange octagon denotes a capacitor bank addition at that substation.

Exhibit A also includes strip maps which depict the proposed transmission line organized by segment. Each segment originates on its southwest end and progresses northeast. The proposed 345 kV lines are shown in lime green and 115 kV in magenta, both labeled with a bold section number in its respective color outlined with black. Existing sections are labeled in black with a white outline shown on a forest green line for 345 kV, blue for 115 kV, and red for 34.5 kV. On these existing lines, the poles are shown by brown circles labeled with the pole number in black. The corridor currently owned by CMP is shown with a red line on each edge of the area. Corridors that have been identified to be purchased are shown with a gold line.

Substations are identified by a green triangle, and the name of the substation is in bold, green text with a black outline. At substations where an autotransformer is to be added, a black pentagon is shown, and an orange octagon denotes a capacitor bank addition. Along the corridor, many lines are shown that identify natural resource information as denoted in the legend. Locator maps are shown in the bottom left of the page that correlate how the primary map is situated within the municipality and in relation to the rest of the segment, with their respective scale noted directly above their frame. *See* Exhibit A.

B. System Diagrams (Chapter 330 § 6(B))

The System One Line Diagram Index is a key to help determine which substations are shown on each particular detailed sheet. On Sheets 1A through 1C the schematic layout of each substation is shown. The color coding of existing and proposed transmission lines is provided in the legend. *See* Exhibit B-1.

C. Description Of Type Of Line (Chapter 330 § 6(C))

With the exception of the portions of the scope in the Lewiston city center, the proposed type of line is overhead (or above ground). Due to the prohibitive costs associated with underground construction (typically at least 8 to 10 times the cost of building above ground), underground transmission is utilized only when all overhead options are exhausted. In addition to being significantly more costly, the incremental cost of underground construction is much less likely to be considered for regional rate treatment, and, therefore, Maine customers would be more likely to bear the incremental costs of this type of installation through local transmission rates. For this reason, underground construction is considered only when no other viable overhead solution exists.

1. 345 kV transmission lines

The proposed single circuit 345 kV transmission lines (Sections 3020, 3021, 3022, 3023, 3024, 3025 and 3026) will be located in ROWs as follows:

a. Section 3020 – Surowiec Substation in Pownal to a new Elm Street 345 kV Substation near the Yarmouth-Cumberland town line.

b. Section 3021 – So. Gorham Substation in Gorham to the Maguire Road Substation in Kennebunk

c. Section 3022 – Maguire Road Substation in Kennebunk to the PSNH Newington Substation in Newington NH.

d. Section 3023 – Orrington Substation in Orrington to Detroit.

e. Section 3028 – Detroit Substation to a new Albion Road Substation in Albion Road

f. Section 3024 – New Albion Road Substation in Albion Road to the Maxcy's Substation in Windsor.

g. Section 3025 – Maxcy's Substation in Windsor to a new Gulf Island II Substation in Lewiston.

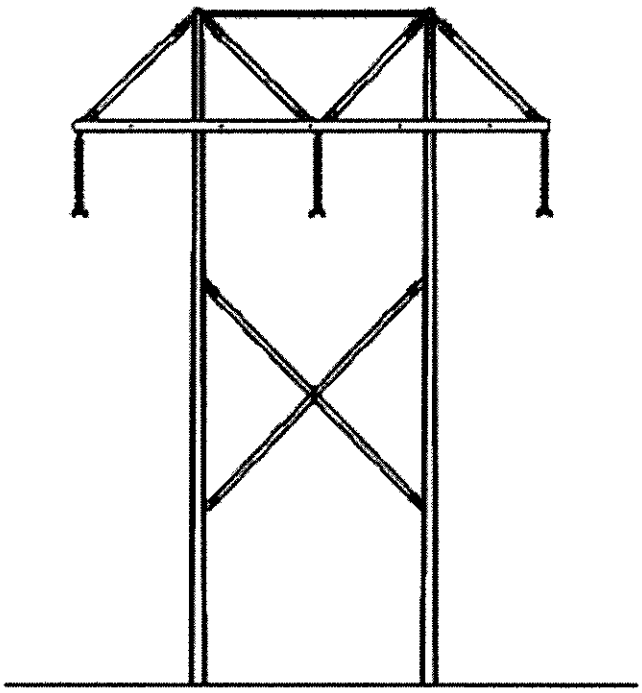
h. Section 3026 – Gulf Island II Substation in Lewiston to the Surowiec Substation in Pownal.

The total length of new 345 kV transmission lines is approximately 245 miles.

In general, the new 345 kV transmission lines are to be constructed on two pole H-frame type structures at tangent structure locations shown schematically in the figure below. Where the horizontal direction of the line changes, three pole angle structures are planned, due to the magnitude of the transverse loading at these structure locations. The likely structure material will be either round wood, laminated wood columns or tubular steel. The selection of the preferred structure type is based on a number of factors, including economics, structure height, environmental impacts and maintenance. In general, the poles will be directly embedded in the ground; however, due to poor soil conditions or an inability to obtain guying rights, some

structures may require a concrete caisson foundation. Guy wires may be used to support the structures at locations where the direction of the line changes. In locations where the existing rights-of-way are not sufficient, supplemental guying easements will be required. Where those supplemental easements are required and are not available, alternative structure types may be considered, such as self supporting tubular steel structures on concrete caisson foundations.

TABLE MPRP-12



TYPICAL 345 KV H-FRAME TANGENT STRUCTURE

The 345 kV conductor will consist of a twin bundle per phase with each subconductor being a 1,590 thousand circular mils (KCM) 54/19 aluminum conductor with steel reinforced strand (ACSR), code name "Falcon". Each conductor is approximately 1.5 inches in diameter. The lowest conductor shall be a minimum of 32' above ground. Two overhead shield wires will be installed above the phase conductors, one being an overhead ground wire (OHGW) and the

other an optical ground wire (OPGW). The phase conductor selection is based on an economic evaluation which considered the initial capital costs associated with a given wire size and the subsequent net present value of the estimated costs associated with line losses for that conductor. This study also considered the effects of audible noise and corona, each a function of the effective diameter of the conductor bundle. A similar evaluation is underway regarding the selection of the OHGW and the OPGW. Results of this evaluation are not yet available.

Based on an economic optimization conducted during the line design process, structures will be spaced approximately 650' apart, although the exact spacing will vary dependent upon a number of factors, including, but not limited to, structure height, wire design tensions, terrain topography, environmental constraints and crossing features. Based on this structure spacing and the total project length, approximately 2,000 new 345 kV structures are anticipated. Pole heights will vary depending upon span length and terrain, but they will generally average 75 to 85 feet above ground.

To facilitate the construction of Section 3022 (Maguire Road Substation in Kennebunk to the PSNH Newington Substation in Newington, NH) within the portion of ROW owned in fee by PSNH, the existing 345 kV and 115 kV lines will require relocation. These lines are owned by PSNH. The two lines will be relocated to new double circuit single pole structures. This construction will minimize the need to expand the existing ROW while allowing sufficient space to construct the new Section 3022 345 kV line. Structures will be tubular steel utilizing direct embedment were possible or concrete foundations if structurally required. The 115 kV line conductor will be replaced with 1590 ACSR while the existing 345 kV conductor will be relocated onto the new structures.

The final portion of Section 3022 will involve a crossing of the Piscataqua River into NH. To meet code and structural requirements, the structures used to span the river will be steel, lattice or tubular construction. It is expected these structures will be in excess of 200' tall and require additional ROW width. The exact height of the river crossing structures and required ROW expansion will be determined during final engineering and permitting.

2. 115 kV transmission lines

The new 115 kV transmission lines proposed (sections 244, 251, 252, 254, 255, 256) will be located in rights-of-way as follows:

a. Section 244 – Maxcy's Substation in Windsor to the Highland Substation in Warren.

b. Section 251 – Gulf Island II Substation in Lewiston to the Livermore Falls Substation in Livermore Falls.

c. Section 252 – Livermore Falls Substation in Livermore Falls to the Riley Substation in Jay to the Rumford IP Substation in Rumford.

d. Section 254 – Orrington Substation in Orrington to the Maxcy's Substation in Windsor.

e. Section 255 – Gulf Island Substation in Lewiston to the Middle Street Substation in Lewiston.

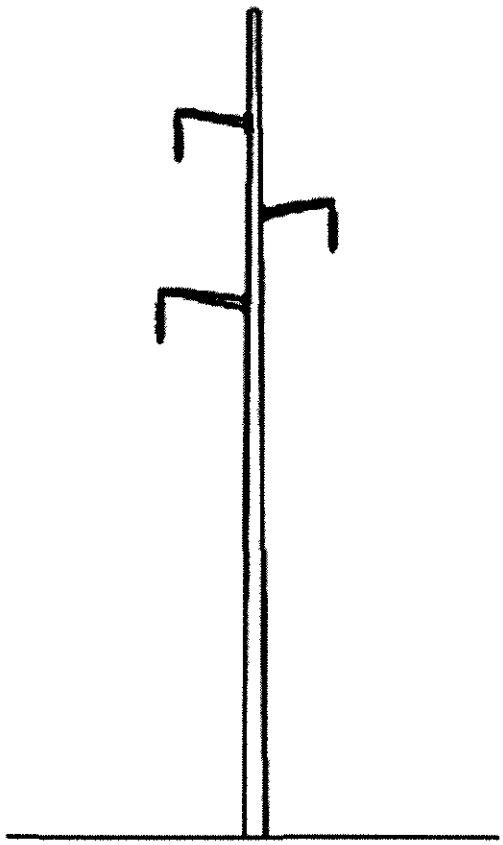
f. Section 256 – Middle Street Substation to the Lewiston Lower Substation in Lewiston.

Also included with the scope of this program are 115 kV transmission line rebuild projects. These projects affect all or portions of the following CMP sections: 60, 66, 67, 67A, 80, 84, 86, 88, 166, 167, 203, 212, and 250. These 115 kV rebuild projects are required either as a direct result of the system study (Sections 84 and 86) or, more commonly, as a result of the efforts to maximize the use of the existing corridors (Sections 60, 66, 67, 67A, 80, 88, 166, 167, 203, 212 and 250). Two of the 115 kV lines which are being rebuilt were identified as requiring re-rating, indicating that their capacity was exceeded (Sections 67A and 88). Rebuilding these

lines, therefore, not only serves to make additional space in the existing corridors, but also addresses issues identified in the system study.

In general, the new 115 kV transmission lines are to be built as single circuit construction, generally on single poles of wood or steel, with either line post insulators or davit arms, and in accordance with CMP's design standards. A single pole structure with davit arms is shown in the figure below. Single pole construction, as opposed to an H-frame structure type, has been selected for the 115 kV lines, in order to make the most use of the existing corridor widths. The single pole configuration utilizes less right-of-way than the H-frame structure type, and at 115 kV, the economics of the structure type selection are less significant than at 345 kV. Where the line changes horizontal direction, the structures will be guyed single pole angle or deadend structures. Where the right-of-way is insufficient for guying, additional right-of-way may be acquired, if available. In the event that additional land rights are not available, alternate structure types may be required, such as self supporting tubular steel structures supported by reinforced concrete caisson foundations.

TABLE MPRP-13



TYPICAL 115 KV TANGENT STRUCTURE TYPE

The conductor for 115 kV lines will be a single conductor per phase, using 1,113 thousand circular mils (KCM), 45/7 aluminum conductor with steel reinforced stranding (ACSR), code named "Bluejay", consistent with CMP's current 115 kV design standards. Each conductor is approximately 1.3 inches in diameter. The lowest conductors will be a minimum of 25' above ground. An overhead shield wire will be installed above the conductors, and may be an optical ground wire (OPGW) or an overhead ground wire (OHGW). Determination of the use of OPGW versus OHGW has not been made for all 115 kV line sections at this time.

Based on an economic optimization conducted during the line design process, structures will be approximately 400' apart. Most structures will be directly embedded in the ground,

although some structures may require reinforced concrete caisson foundations where poor soil conditions exist or where guying rights are not available. Pole heights will vary depending upon span length and terrain. Based on typical spans and terrain, they will generally average 75' above ground in order to maintain minimum vertical clearance to ground. For the 80 miles of new 115 kV line, CMP anticipates installing approximately 1,100 structures.

Underground construction is planned on section 256 from the Middle Street Substation to the Lewiston Lower Substation. This section will be an underground high-pressure fluid or gas-filled (HPFF/HPGF) pipe cable system. The pipe cable system will be rated at the equivalent of 795 MCM "Drake" conductor. The cable will be either 1250 MCM or 1500 MCM copper for the HPFF, or 1500 MCM or 1750 MCM for the HPGF, depending on final design conditions. The pipe will be 8 5/8" O.D. steel pipe with a 0.250" wall thickness and filled with insulating dielectric fluid or gas under a 200 psi static pressure. The pressure will be maintained by a pre-engineered fluid pumping plant for the HPFF or compressed gas supply for the HPGF; which will be located inside the Middle Street Substation fence.

For additional information regarding the description of the type of line, *see* Exhibit C.

3. Safety features

Petitioners will build the proposed 115 kV and 345 kV transmission lines in accordance with general industry standards and good utility practice, including all necessary live-line working clearances, strength and load factors as governed by the National Electrical Safety Code (NESC). In all instances, the lines will be designed to meet or exceed the NESC standards. The transmission lines and all facilities will be operated in full compliance with the respective Petitioners' safety standards, which fully comply with Federal Occupational Safety & Health Administration requirements.

D. Description Of Proposed Corridor (Chapter 330 § 6(D))

The proposed transmission corridor for the MPRP is approximately 350 miles long, with a cleared corridor of 170 to 500' in width. All of the new circuits will follow existing utility corridor. Approximately 550 parcels of land will need to be acquired from abutters to the existing utility corridor, in approximately 23 towns.

The major 345 kV route travels between PSNH Newington NH Substation and Orrington Substation (Orrington). The sections are listed in detail in the Transmission Alternatives Assessment (Exhibit I-2). The existing utility corridors to be utilized are owned by CMP (263 miles), MEPCO (79 miles) and PSNH (8 miles).

Included within the scope of work for transmission line corridors for the MPRP are new transmission line construction, existing transmission line reconstruction and existing conductor re-rates or re-tensioning. Exhibit D-1 provides a detailed description of the proposed corridors.

E. Cost Estimates (Chapter 330 § 6(E))

A discussion of the cost estimates for the MPRP project is set forth in Section V.B of Volume 1 of the Petition. The following describes the revisions in the cost estimates that have been made to date.

After the identification of the preferred N5_S1 routes, additional engineering was performed and additional information became available, which led to certain modifications to the project scope and related costs. The following discussion describes these modifications and their cost impacts in more detail.

1. Maxcy's Substation

The Transmission Alternative Assessment considered expansion of the existing Maxcy's Substation at the current site in Windsor. After selection of the N5 alternative, detailed

engineering and site analysis revealed that it would be preferable to build a new substation. The principal reasons for this decision were:

1. The existing site is constrained by the West Branch of the Sheepscot River, which is an Atlantic salmon spawning river and it would require a substantial setback, precluding expansion to the west towards the river.

2. Due to the environmental constraint to the west of the substation, expansion must be made to the east, which would require relocation of the existing control building and autotransformer. This would require extensive outages at the site during construction, resulting in significant stress to the transmission system.

3. The existing 115 kV yard is not compliant with the requirements of a bulk power substation and must be upgraded as part of this project.

4. The existing autotransformer is reaching the end of its service life, and relocating a unit of this age presents reliability concerns.

While the precise level of cost associated with this modification has not been developed, the change has no significant impact on the comparison of the preferred route with the other routes studied by MPRP, given that some expansion of the Maxcy's substation is included in all of the northern alternatives.

2. Maguire Road Substation

The comparative estimates considered expansion within the existing Maguire Road Substation possible without expansion of the existing fence line or property boundary. Following initiation of detailed engineering, it is apparent that this assumption is not valid. Therefore, the estimate included in this Petition requires revision.

From an alternatives analysis standpoint, changes in the Maguire Road estimate are immaterial, because expansion of the Maguire Road Substation would be required in both the S1 and S2 alternatives.

3. Maguire Road to Three Rivers Transmission Corridor

At the time the comparative estimate was being developed, CMP was working to obtain additional rights of way along the Section 197 corridor. The comparative cost estimate assumed that CMP would be successful in obtaining these additional land rights. Following the selection of the preferred alternative, it became apparent that approximately two miles of this corridor cannot be expanded due to adjacent residential properties. Therefore, the scope in this section of corridor has been modified from the original H-frame geometry to a single pole configuration for the 345 kV circuit. Additionally, the comparative estimate did not consider rebuilding Section 250 between the Quaker Hill Substation and the Three Rivers Substation, as required for the proposed configuration. The estimate proved herein will be revised as the estimating process moves forward.

This revision has no impact on the decision to select the S1 alternative over the S2 alternative, as both options include this change.

4. Extend Scope to PSNH Newington Substation

The Transmission Alternatives Assessment considered interconnection of the new 345 kV line at a point near the existing Three Rivers Substation in Maine. During the course of the alternatives analysis, the system study identified some advantages to extending the new 345 kV line to the PSNH Newington Substation in New Hampshire. The costs associated with extending the line, as well as the costs associated with rebuilding the PSNH 115 kV line N133, were not included in the cost estimates developed as part of the alternatives analysis. Engineering continues in order to determine the most suitable alternative to interconnection with the PSNH system. Following this effort, the detailed estimate will be updated to reflect the scope identified.

Changes to the costs for this portion of the program have no effect of the decision to select the S1 alternative, as all options considered include this revision.

5. Elm Street to Cape Substation

As part of the NTA analysis, the proposed 115 kV line from the Elm Street Substation to the Cape substation was eliminated from the MPRP scope. The costs developed as part of the alternatives analysis, and presented here, include estimated costs to build an overhead line from Elm Street to E. Deering and an underground line from E. Deering to Cape Substation, as well as expansion of the E. Deering and Cape Substations. These costs will be removed as the detailed cost estimate is developed.

6. Moshers Substation

Due to the contingency analysis at the Moshers Substation, it was determined in the system studies that a reconfiguration of the 115 kV bus to a breaker and a half scheme is required. This reconfiguration is required for all alternatives, and, the costs which were not included in the comparative estimates will not impact the alternatives selected.

7. Livermore Falls Substation

Due to the contingency analysis at the Livermore Falls Substation, it was determined in the Transmission Alternatives Assessment that a reconfiguration of the 115 kV bus to a breaker and a half scheme is required. Costs included in this analysis included a bay addition, not a bus reconfiguration. The detailed estimate will include a new substation adjacent to the existing site and decommissioning of the existing station.

8. Section 41, Days Corner Substation and Wales Corner Substation Removal

In order to maximize the use of the existing corridor along segment 15, the alternatives analysis considered removal of Section 41. Estimated costs for removal of the existing line were

included in the evaluation of the segment. Estimated costs for additional 115 kV/34.5 kV and 115 kV/12.5 kV transformation required to replace the existing Days Corner and Wales Corner Substations fed by Section 41 were not included, however. Costs associated with this scope change will impact all alternatives which include segment 15, namely N1 and N5. Although the estimates for the new substation(s) are not complete, they are expected to be well within the provided contingency included in the alternatives analysis, and, therefore, should not impact the selection of the N5 alternative.

F. Costs To Date (Chapter 330 § 6(F))

See Exhibit F.

G. Description Of Changes (Chapter 330 § 6(G))

The material called for in this section is set forth in Exhibit G as well as the Needs Assessment, Transmission Alternatives Assessment and the system reliability analyses, Exhibits I-1, I-2 and J.

H. Alternative Routes (Chapter 330 § 6(H))

See route alternatives matrix – Exhibit H-3.

I. Alternatives To Construction Of Transmission Line (Chapter 330 § 6(I))

See NTA Report – Exhibit I-3.

J. System Reliability (Chapter 330 § 7)

The material called for in this section is set forth in the Needs Assessment, Transmission Alternatives Assessment and the system reliability analyses, Exhibits 1-1, 1-2 and J.

K. Relevant Commission Precedent

In developing the analyses that form the basis for the MPRP CPCN and in shaping the specific request for authority to construct new facilities, Petitioners have been guided by the

statutes and rules described in the text in Volume I of this Petition. Their interpretation of this legal framework is further guided by the Commission's prior CPCN decisions, discussed below.

1. CPCN Decisions

a. MPS

Maine Public Service Co., Order, Docket No. 2004-538 (Oct. 21, 2005) presents an example of an insufficient showing of need. There, the Commission denied a request for authorization to construct a 138 kV transmission line on the grounds that current system resources were sufficient to meet system load in northern Maine through the intermediate term, and there could be more cost-effective approaches to address reliability issues that could arise well into the future.

The Commission explained the applicable standard as follows:

> In determining need, the question ultimately is whether the proposed facility is necessary to permit the public utility to provide safe, reasonable and adequate service, and therefore, is it in the best interests of the public utility's ratepayers. Benefit to the ratepayer is traditionally determined based upon the need for the line, taking into account economics, safety and reliability.
>
> In requesting a certificate of public convenience and necessity, the utility must demonstrate that the new source is needed and that the resource being considered is the most economical, or at least is a part of an overall least cost plan. Additionally, the utility must demonstrate that the timing is reasonable. The option chosen must be reasonable compared to the other alternatives and while cost is an important consideration as part of this comparison, environmental factors may justify a reasonable cost increase.

(Order at 21 (citations omitted).)

Noting that transmission planning issues are increasingly complex when T&D utilities no longer control generation resources, the Commission observed that, in determining whether generation should be included as an available resource for planning purposes in a post-restructuring environment, the applicant should "determine whether or not the resource is likely

to be available during the planning period, based on the resource's historical performance, contractual commitments, capital commitments, and the availability of fuel supply and the system operators' ability to call on the unit during an emergency." (Order at 22.) One reason the application was rejected was because it appeared that generation alternatives to building new transmission infrastructure had not been adequately explored. The Commission also rejected the applicant's request to work toward meeting an N-2 reliability standard because, in part, the Commission was not aware of any requirement that MPS adhere to that standard. (Order at 23.)

b. BHE

While two applications by Bangor Hydro-Electricity Co. were resolved by stipulation, the Commission's orders in both provided further guidance to Petitioners for this petition.

- **NRI**

In *Bangor Hydro-Electric Co.*, Order Approving Stipulation, Docket No. 2004-771 (Aug. 22, 2005), the Commission approved a stipulation and issued a certificate of public convenience and necessity authorizing BHE to build an 85 mile, 345 kV transmission line from Orrington to the Canadian border, known as the Northeast Reliability Interconnect (NRI).

The Order noted that there was at that time only one transmission link between New England and New Brunswick, and, upon construction, the NRI would provide an additional link between the two regions, improving system reliability, increasing import/export transmission capacity and reducing line losses. (*Id.* at 2.) The Order also noted that because the NRI's benefits are regional, ISO-NE approved the line as a pool transmission facility, with resultant cost socialization among all electricity customers in New England. (*Id.*)

The Stipulation included provisions in which, among other things, BHE agreed to work with the other parties (the Public Advocate and IECG) toward the elimination of transmission

charges specific to transactions between New England and New Brunswick, and that the approval could be revoked if the Commission determined that there was a material increase in the risk that any NRI-related cost would be considered localized.

The Commission explained that, to approve the application, it had to determine whether there was a public need for the NRI "in that the benefits to ratepayers of the project outweigh the costs. Because the costs of the NRI will be 'socialized' and paid for by all ratepayers in the New England region, we look to the benefits and costs from the perspective of all affected Maine ratepayers." (*Id.* at 4.) Noting that the identification of which ratepayers to consider could in some instances present difficult issues, the Commission did not have to reach that question because it found that New England ratepayers, Maine ratepayers as a group and BHE ratepayers in particular will all see a net benefit. (*Id.* at 4 n.2.) ISO-NE's determination that the project's costs would be rolled into the regional tariff was deemed "a critical factor" in the Commission's approval of the NRI, and should that treatment change, the economics would not support the project. (*Id.* at 5-6.)

The cost-benefit analysis included in the Order noted that BHE had relied on ISO-NE analyses to identify net benefits for New England deriving from energy cost savings resulting from additional transfer capability, reductions in line losses, avoided reliability investments and a transfer of the recovery of a greater portion of BHE's overhead costs through the regional tariff. (*Id.* at 4.) While the Commission expressed some concern that the ISO-NE analyses might have overstated net benefits, the Commission nevertheless concluded that the record showed it reasonably likely that the benefits of the NRI would exceed its costs, in part because the ISO-NE analyses reflected only a six year period while the transmission line would have a substantially longer useful life. (*Id.* at 5.) "As a general matter," the Commission noted, "increased

transmission capability between regions will result in benefits over time for both regions through increased reliability (especially in times of system emergencies) and increased opportunities for economic transactions." (*Id.*)

- **Hancock**

In *Bangor Hydro-Electricity Co.*, Order Approving Stipulation, Docket No. 2006-686 (Oct. 2, 2007), BHE analyzed the following alternatives as solutions to capacity and reliability problems in the Hancock County region:

1. rebuild existing 34.5 kV lines;
2. generation;
3. conservation; and
4. build a new 115 kV line, in 1 of 3 different alternative configurations, A, B or C.

BHE dismissed the first three as inadequate. Line alternatives A, B, and C were analyzed as to reliability, capacity and cost, with BHE choosing A as optimal solution. While A cost more than C, BHE concluded that A provided greater reliability and capacity for a longer period of time.

Once BHE decided that a 115 kV transmission line was the optimal solution, it next examined what would be the best route. Stating that it considered many possible routes and engaged in meaningful consultation with landowners, local towns, environmental permitting agencies, conservation groups and the Maine Department of Transportation, BHE, after consultation, chose the route that it describes as having the least impacts and for which it stated that it had resolved virtually all stakeholder concerns.

The Public Advocate's expert found that BHE's proposal addressed all of its reliability concerns at a cost that appeared to be comparable to or less than that of the alternatives that were considered. The Bench Analysis of the Commission's Advisory Staff acknowledged the need for some measure of transmission and distribution system improvements to meet current and future

loads in the area, and found that BHE's proposal was the best solution in terms of providing the greatest system capacity and reliability if only one project were to be selected to resolve all of the identified issues. Advisory Staff was not convinced, however, that BHE had completed a sufficiently rigorous least cost evaluation of all reasonable alternatives, including those that could delay some or all of the proposed 115 kV line for some period of time, including possible opportunities to postpone the construction of the project through a combination of "piecemeal" alternatives, including re-rating or upgrades of transformers and conductors, adding capacitors, and opportunities that may be present through generation or conservation.

In response to the Bench Analysis, BHE performed additional studies to (1) investigate clearances and determine the potential for increased capacity levels on its existing lines in the area; (2) assess targeted conservation opportunities in the region; (3) evaluate the appropriate technology and the associated installation costs of a generation solution, while due consideration to the environmental (air quality) license considerations of such an alternative. After such study, BHE submitted testimony that included an expanded alternatives analysis that compared BHE's proposal to six different alternatives, including conservation and generation, concluding that its proposal was the most cost effective alternative.

The Public Advocate joined in a stipulation with BHE, concluding that BHE had demonstrated a need to enhance the electrical system in region to ensure adequate reliability and capacity, and that its proposal was the least-cost method of addressing that need. The Commission approved the Stipulation, agreeing that BHE's proposal was the best project to meet the electrical needs of the region at that time. The Commission stated:

> We agree with Staff that BHE did an excellent job in selecting its preferred route by carefully studying the alternatives, soliciting the views of local and other stakeholders, and taking into account their reasonable concerns.... Based upon

this record, we find that BHE's proposed route is safe, reliable, reasonably-sized and properly located.

2. Other Commission Guidance

In its "Final Report Pursuant to 'A Resolve to Direct the Public Utilities Commission to Examine Continued Participation by Transmission and Distribution Utilities in this State in the New England Regional Transmission Organization,'" January 15, 2008, the Commission expressed its concern that, in transmission planning solutions should be sought that are solutions that are "least cost, efficient, equitable, [and] promote state and regional policy and environmental goals." (Final Report at 23.) The Report observed that "[s]erving growing demand in New England and realizing the [renewable] resource development opportunities in Maine and Atlantic Canada cannot be achieved without sufficient transmission between the regions, much of which could be sited in Maine." (*Id.* at 22.) The Final Report thus admonishes those seeking to build transmission to ensure, to the extent practicable, that the transmission proposal will be consistent with, and advance if possible, these important state and regional policies and the more general policy of coordinated development.