



MAINE POWER RELIABILITY PROGRAM

A CENTRAL MAINE POWER COMPANY PROGRAM

TOWN OF DIXFIELD, MAINE SHORELAND ZONING PERMIT APPLICATION

Section 243A Transmission Line Construction and Section 229 Transmission Line Rebuild

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Application Form

Agent Authorization Letter

Shoreland Zoning Permit Application

Maine Power Reliability Program Description

The Maine Power Reliability Program (MPRP) is a project by Central Maine Power Company (CMP) to upgrade Maine's bulk power system. The vast majority of Maine's bulk power transmission system was placed into service in the early 1970s and is now reaching the limits of its ability to meet the growing electrical demand of Maine customers. Since the last major transmission infrastructure was completed more than 30 years ago, the patterns of both available generation and customer load have shifted significantly. For example, population has become more concentrated in the southern part of the state, while the generation needed to serve that load is now more distant and dispersed. When these pattern changes are combined with the increasing peak demand the current transmission infrastructure in Maine will, in very few years, become inadequate. In addition, the reliability and security standards mandated by law and administered by the North American Electric Reliability Corporation (NERC), the Northeast Power Coordinating Council, Inc. (NPCC), and ISO New England (ISO-NE) have changed significantly in recent years. CMP must upgrade its bulk power system with this proposed project to meet the mandatory standards and to provide reliable electric service to Maine customers into the future.

CMP's system consists of both "transmission" and "distribution" lines. Transmission lines function as the highway system of the electrical grid by feeding electricity from where it is generated (such as at power plants) to substations. From there, the distribution system takes over by carrying the electricity from substations to customers. Transmission lines in Maine are typically operated at one of two levels – 115,000 volts, also expressed as 115 kilovolts (kV) and 345,000 volts, often referred to as 345 kV.

CMP's 345 kV transmission system was built and put into service in 1971. Since then power consumption has more than doubled. In recent years, both CMP and ISO-NE have identified reliability issues with the 345 kV system that need to be assessed and addressed.

In January 2007 the MPRP began a comprehensive needs assessment of CMP's bulk power transmission system. The study included a 10-year forecast to evaluate the system in Maine, including a review of system reliability and performance under various system conditions and operating scenarios, as well as a needs assessment to ensure a reliable transmission system in the most cost-effective manner possible. The study identified a number of significant reliability issues with Maine's bulk transmission system, including insufficient 345 kV transmission capacity, insufficient 115/345 kV transformation capacity, and insufficient transmission support and infrastructure in all regions served by CMP.

After completing the needs assessment, the MPRP team went to work to study possible solutions. This included both transmission and non-transmission alternatives, including energy efficiency, before designating its preferred solution. CMP ultimately arrived at a primarily transmission solution (a small geographic area known as the South Portland loop will be addressed through non-transmission alternatives) based on a number of factors, including electrical performance, cost effectiveness, impacts to landowners, and Maine's environment under various forecasts of future conditions. The proposed solution consists of 345 kV and 115 kV transmission lines and associated substations throughout CMP's service territory, where particular needs were identified (Figure 1).

Insert Figure 1

The proposed transmission solution ranges from Eliot in the south, Rumford in the west, Warren and Searsport in the east, and Orrington and Pittsfield to the north. In all, MPRP will encompass nearly 80 Maine towns, and will involve approvals from the Maine Public Utilities Commission, the Maine Department of Environmental Protection, the Army Corps of Engineers, and numerous municipalities.

Project Description in Dixfield

The part of the program located in Dixfield involves work in the existing transmission line corridor that traverses a portion of the Town. See attached location maps included as Exhibit 1 and ROW configuration included as Exhibit 2.

In the corridor that extends through the southeastern portion of Town for approximately 2,000 feet, from Peru northeasterly through Dixfield and into Canton, the project involves:

- Rebuilding an existing 115 kV electrical transmission line, Section 229. This transmission line, which currently runs on approximately 45-foot tall H-frame structures in the center of the corridor, will be moved to the south side of the corridor and placed on four single-pole wood structures that are typically 75 feet above ground. Each single pole will require approximately 40 square feet of ground disturbance during construction.
- Installing a new 115 kV transmission line, Section 243A. This new transmission line will run on five single-pole wood structures that are typically 75 feet above ground, and will be located in the existing corridor. Each single pole will require approximately 40 square feet of ground disturbance during construction.

Structure heights will vary due to varying terrain and the need to achieve spans that will avoid or minimize impacts to natural resources. Typical above ground structure heights are described above, although some structures may exceed those heights in specific instances. See the attached table (Exhibit 3) for a description of the number of structures within specific height ranges for the rebuilt and new transmission line sections.

The proposed upgrades in Dixfield, as outlined above, are a part of the program to improve the reliability, safety, and security of the bulk power transmission system in Maine, while at the same time meeting the increasing demands for electrical power.

Shoreland Zoning Districts Impacted

The proposed project will traverse one area mapped as a Resource Protection District on the Town of Dixfield Shoreland Zoning Map. This area is located along the Androscoggin River just southwest of Canton Point Road. The MPRP crosses the Androscoggin River and the associated floodplain at the town line between Dixfield and Peru. Both the Androscoggin River and its floodplain are located within the Resource Protection District.

As discussed below in Land Use Standards, Section 15(L)(2), impacts to these resources have been minimized to the maximum extent practicable. For instance, CMP will maintain a 50-foot vegetative buffer (25 feet on either side of the top of bank) at the Androscoggin River crossing to minimize the potential for soil erosion and sedimentation into the river and to protect riparian

habitat values. The buffered area will be protected and maintained by selective clearing during construction and reduced cutting of vegetation during maintenance and operation of the transmission line. In addition, because the area is associated with wetland, the use of herbicides for vegetation maintenance will be prohibited. Construction and maintenance of the proposed transmission line will not cause or increase flooding or cause a flood hazard to any neighboring structures.

There is currently one existing H-frame structure (two poles total) associated with Section 229 within the RP District. CMP proposes to remove this existing structure and install one new single pole as part of the Section 229 rebuild (Structure 229-70) and one new single pole for the new Section 243A (Structure 243A-142) within the Resource Protection District. Installation of each pole will result in approximately 40 square feet of ground disturbance.

Permitted Land Uses

The MPRP is classified under the Ordinance as an “essential service,” which, pursuant to Section 14 and Table 1, is a permitted use in the RP district with the approval of the Planning Board. Although the project does not involve “installation” of an essential service because it is related to an existing essential service, the transmission line project meets the requirements of Section 15(L) of the Ordinance for installation of an essential service in the Resource Protection District:

- The installation of essential services, where feasible, shall be limited to existing public ways and existing service corridors.
- The applicant must demonstrate that no reasonable alternative exists.
- Such facilities must be located so as to minimize any adverse impacts on surrounding uses and resources, including visual impacts.

Land Use Standards

The following section addresses the Land Use Standards found at Section 15 in the Shoreland Zoning Ordinance.

A. Minimum Lot Standards

Not applicable.

B. Principal and Accessory Structures

Not applicable.

C. Piers, Docks, Wharfs, Bridges, etc.

Not applicable.

D. Campgrounds

Not applicable.

E. Individual Private Campsites

Not applicable.

F. Commercial and Industrial Uses

Not applicable.

G. Parking Areas

There will be no parking areas associated with the project within the RP District.

H. Roads and Driveways

There will be no new permanent roads or driveways associated with the project, other than CMP-maintained access points and access ways suitable for routine and urgent maintenance by its own vehicles. Temporary access ways, which are not considered to be roads or driveways, will not add any impervious surface area will be established for use during the construction phase, including construction within the RP District. This will be an ongoing process as access will be established to areas undergoing immediate construction.

Determinations surrounding the exact nature of the construction of these temporary access ways will be made by the contractor in consultation with an environmental representative. All access paths are temporary and will be removed once construction is complete. In general a “temporary long-term” access way will be established for general access to the corridor for construction purposes. These temporary access ways will be in place for more than one growing season, but will be removed once all aspects of construction in that area are complete. Access to pole sites, either for removal or installation, will be achieved by temporary access ways which will be in place for no more than one growing season. Areas where soils have been disturbed will then be mulched with hay. Vegetation will be allowed to reestablish once the temporary access ways have been removed.

Measures will be taken to avoid and minimize impacts to streams and wetlands through the use of crane mats, temporary bridges, geo-textile fabrics, and culverts, when necessary. Appropriate erosion controls will be installed wherever necessary. If necessary, mats will be placed parallel to the upland edge as abutments to further protect bank stability and establish stability. No extensive grubbing (grading to remove root systems) within wetland crossing areas will be done prior to mat placement. However, some minor grading may be required to ensure mat stability and construction access safety. All such grading will be performed on a limited basis and only with prior approval by CMP’s environmental representatives. Streams that are too wide to cross with crane mats or temporary bridges will be avoided.

I. Signs

There will be no signage associated with the project.

J. Storm Water Runoff

With the exception of the immediate area occupied by the support structures, there is no increase in impervious surface area associated with the transmission line, therefore, there will be no significant storm water run-off generated from the project. All new construction will be designed to minimize storm water runoff from the site in excess of the natural predevelopment conditions.

K. Septic Waste Disposal

Not applicable.

L. Essential Services

- (1) A guiding principle in the design of the MPRP transmission line upgrades has been to utilize the existing transmission line corridors to the maximum extent possible. Only

where existing corridors cannot accommodate the proposed upgrades while meeting safety and reliability standards is CMP seeking to widen the existing corridors. Creating an entirely new corridor is a last resort. As a result, the vast majority of the transmission line upgrades proposed as part of the MPRP are located within or immediately adjacent to existing corridors. Co-location of the transmission line upgrades, as opposed to the creation of new corridors, has multiple benefits, including the minimization of impacts to communities, individual property owners, and the environment.

Within the Town of Dixfield, rebuilding the existing 115 kV electrical transmission line (Section 229) and installing a new 115 kV transmission line (Section 243A) will occur entirely within the existing transmission line corridor.

- (2) The corridor along which the transmission lines will cross the Resource Protection District. Within the corridor, CMP has, to the greatest extent practicable, sited each individual single pole structure so as to avoid, and where unavoidable to minimize, adverse impacts on surrounding uses and resources. As part of this avoidance and minimization effort, CMP has attempted to site the single pole structures so that none are located within either the Resource Protection or Stream Protection districts. In Dixfield, however, due to the fact that the existing corridor crosses the Resource Protection District and the single pole structures cannot be sited in a manner that allows the entire district to be spanned, two structures will be located in the Resource Protection District. There is no reasonable alternative for locating these structures within the Resource Protection District. The amount of ground disturbance associated with the planned structures will be small, i.e., limited to the immediate vicinity of the pole placements (approximately 40 square feet per pole), and because the project is within the existing transmission line corridor (which contains structures of a similar bulk and style), locating structures within the Resource Protection District causes the least overall impact when compared to the alternatives. Avoiding this district would require expanding or moving the existing transmission line corridor or erecting much taller and much more substantial structures (e.g., steel towers with concrete footings) to achieve the required spans over this district. The overall environmental and visual impacts of either of these alternatives would be much greater than the impacts associated with the project as planned.

M. Mineral Exploration and Extraction

Not applicable.

N. Agriculture

Not applicable.

O. Timber harvesting.

Not applicable.

P. Clearing of Vegetation for Development

Some clearing of vegetation will be required within the service corridor to accommodate the project and ensure that the project meets federal reliability and safety standards. The amount of clearing will be limited to that which is necessary for development of the project, and is generally limited to removal of species that are capable of growing tall enough to interfere

with the transmission lines (so-called “capable species”). Non-capable species are allowed to remain to ensure that the corridor is vegetated, which prevents erosion and provides wildlife habitat. No grubbing (i.e., stump removal) will take place. See attached map provided as Exhibit 1 for more detailed information.

Q. Erosion and Sedimentation Control

With the exception of the immediate area around the base of the support structures (poles measure approximately 5-6 square feet) there will be no increase in impervious surface area associated with the transmission line. The amount of ground disturbance associated with this project will be limited to the immediate vicinity of the pole placements and the impacts associated with access roads. CMP has developed a standard manual, “Environmental Guidelines for Construction and Maintenance Activities on Transmission Line and Substation Projects” (2007), which it uses as a routine part of all transmission and substation projects. (A copy of the manual is attached as Exhibit 4.) This manual contains erosion and sedimentation control requirements, standards, and methods that will be used to protect soil and water resources during construction of the various MPRP components. The manual was developed in consultation with the Maine Department of Environmental Protection (DEP) and is based on DEP’s *Maine Erosion and Sediment Control BMPs*, dated March 2003, and DEP’s Chapter 500, and contains specific Best Management Practices appropriate for electric transmission line and substation construction. These guidelines will be followed in the construction of transmission lines.

R. Soils

Based on the applicants’ analysis of the Soil Survey Geographic Database compiled by the United States Department of Agriculture – Natural Resources Conservation Service, soils within the transmission line corridor will accommodate the proposed MPRP construction activities. Soil constraints within the transmission line corridor will be managed and mitigated through implementation of erosion and sediment control measures, proper site and project design, and special construction procedures.

S. Water Quality

To minimize spill potential during construction, no fueling or maintenance of vehicles will be performed within 100 feet of wetlands, streams or other sensitive natural resources. After construction, the electrical transmission line corridor is maintained to encourage the growth of scrub-shrub vegetation. Trees within the corridor that are capable of growing up into the conductors (“capable species”) must be removed for safety and reliability reasons. CMP uses a selective herbicide program to treat an area once every four years to maintain an early successional stage of growth. Herbicide is selectively applied (using a low-pressure backpack applicator) to capable species to prevent growth (or re-growth of a cut plant) of individual plants. CMP does not use herbicides within 25 feet of any waterbody or wetland with standing water. Crew forepersons are certified by the Maine Pesticide Control Board, and all herbicides are EPA registered. The selective use of herbicides within the transmission line corridor does not pose a threat to groundwater quality and will not impair designated uses or the water classification of the water body.

T. Archaeological and Historic Resources

Following extensive consultation with the Maine Historic Preservation Commission (MHPC), CMP conducted pre-historic and historic archaeological investigations as well as historic architectural surveys along the project corridor. Survey reports have been submitted to the MHPC.

Approval Standards

The following section addresses the Approval Standards found at Section 16D(6) in the Shoreland Zoning Ordinance.

The proposed use will:

1. Maintain safe and healthful conditions.

The proposed project will maintain the same safe and healthful conditions already present in the transmission line corridor. The transmission line corridor and the structures within it are maintained to established industry standards so as to ensure the safety of utility workers and the general public. Maintaining sufficient clearances around the conductors is paramount to the safe and reliable operation of the line. These clearances are achieved through appropriate siting of the structures themselves and through vegetation maintenance practices as described above. All construction will be in accordance with CMP's transmission standards, general industry standards, and "Good Utility Practice," including all necessary live-line working clearances, strength factors, and reliability factors as governed by the National Electrical Safety Code (NESC). In all instances, the line will be designed to meet or exceed the NESC and other standards, as applicable. The transmission line and all facilities will be operated in full compliance with CMP safety standards, which fully comply with Federal Occupational Safety & Health Administration requirements.

A health concern that is sometimes expressed revolves around the electric and magnetic fields produced by transmission lines. These fields are produced by any electric equipment or anything that carries electric current. The World Health Organization and numerous other scientific agencies around the world have studied the issue extensively. These studies have been unable to establish that electric and magnetic fields produced by transmission lines such as those being proposed as part of the MPRP cause any adverse health effects. There is no scientific basis to project any adverse health effects as a result of the electric and magnetic fields produced by transmission lines associated with this project. Accordingly, this standard has been met.

2. Not result in water pollution erosion or sedimentation to surface waters.

As described above with respect to Ordinance Sections 15(J) and (S), the MPRP will not result in water pollution, erosion, or sedimentation to surface waters.

3. Adequately provide for the disposal of all wastewater.

There will be no wastewater disposal required for this project, and therefore this standard has been met.

4. Not have an adverse impact on spawning grounds, fish, aquatic life, bird, or other wildlife habitat.

Impacts to spawning grounds, fish, aquatic life, bird, or other wildlife habitat and unique critical areas will be largely avoided through the use of the existing service corridor, which has been in place for several decades. In general, given the existing landscape characteristics of the site, construction and maintenance of the project is not expected to create conditions that are not already common to the project area. It is fully anticipated that local wildlife populations will adapt and respond to any additional alterations much as they already do to ongoing land uses within the vicinity of the proposed project. Therefore, impacts to wildlife are expected to be minimal to non-existent. Identified significant wildlife habitats and natural areas, such as vernal pools and rare plant locations, will be avoided and minimized to the extent practicable through careful siting and placement of poles. Once installed, the transmission line structures, due to the minimal amount of ground surface area they occupy, will have no significant impact on these natural areas. Significant wildlife habitats and natural areas will be avoided to the greatest extent practicable during construction, including measures that are taken to ensure any impacts will be minimal and temporary. Thus, this standard has been met.

5. Conserve shore cover and visual, as well as actual, points of access to inland waters.

The proposed project will take place entirely within the existing corridor, which already contains structures of a similar nature. The proposed project will not block or otherwise significantly affect visual points of access to inland waters, and will have no impact on actual points of access to inland waters. The corridor will continue to be maintained in a vegetated state, thereby preserving a similar degree of shore cover which currently exists.

6. Protect archaeological and historic resources as designated in the comprehensive plan.

As discussed above with respect to Shoreland Zoning Ordinance Section (15)T, the project will protect archaeological and historic resources as designated in the comprehensive plan.

7. Will avoid problems associated with floodplain development and use.

As depicted in the attached maps, only two of the proposed structures are planned to be within the 100-year floodplain. However, the project meets the requirements found in Article VIII of the Town's Floodplain Management Ordinance. Because of the nature of a transmission line and the minimal additional impervious surface associated with the project, construction and maintenance of the proposed transmission line will not cause or increase flooding or cause a flood hazard to any neighboring structures. Furthermore, the program will not affect runoff/infiltration relationships. Thus, the project will avoid problems associated with floodplain development and use.

8. Be in conformance with the provisions of Section 15, Land Use Standards.

As discussed above with respect to Shoreland Zoning Ordinance Sections 15(A) through (T), above, this project complies with all of the provisions of Section 15 of the Ordinance.

EXHIBIT 1

- **USGS Project Location Map**
- **Project Scope and Natural Resources Map**

EXHIBIT 2

Transmission Line Configuration Cross Section

EXHIBIT 3
Structure Height Ranges

Structure Height Ranges in Dixfield	
Above Ground Pole Height (ft)	Number of Poles
61 – 70	2
71 – 80	2
81 – 90	3
91 – 100	0
101 – 110	2
Total	9

EXHIBIT 4

Environmental Guidelines for Construction and Maintenance Activities on Transmission Line and Substation Projects

EXHIBIT 5
List of Abutters

EXHIBIT 6

Proof of Right, Title or Interest