



MAINE POWER RELIABILITY PROGRAM

A CENTRAL MAINE POWER COMPANY PROGRAM
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FACT SHEET

Non-Transmission Alternatives (NTA)

A study was commissioned by the Maine Power Reliability Program to evaluate non-transmission alternatives to potential transmission system solutions, including how new generation, conservation, energy efficiency, demand response and demand side management programs might mitigate or delay the need for additional transmission construction.

The Non-transmission Alternative Study

- Mirrored the Transmission Study – based upon the whole system and the areas of need identified and framed by the Needs Assessment.
- Considered strategically placed and designed generation
- Factored in aggressive demand side management (includes energy efficiency and demand control technologies)
- Emissions impacts from new generation were considered
- Costs and benefits to CMP customers of both transmission and non-transmission alternatives were assessed

Key Findings

- First study of its size and kind in New England.
- Energy efficiency and demand controls improve both transmission and non-transmission alternatives solutions.
- Using less electricity is the most reliable and cheapest and “source” of electricity.
- In the South Portland area, demand programs could delay the need for a new transmission line.
- Demand side options are not enough to eliminate need for transmission solution in 4 of the 5 areas studied.
- Generation options provide an alternative but are more costly than the transmission option.



Generation Options Considered

Wood-fired biomass	Gas Turbines
Fuel Cells	Combined cycle units
Micro-turbines	Diesel/ICUs
Wind	IGCC Coal
PV Solar	Battery Storage
CHP	

Energy Efficiency Measures

Energy efficiency measures typically are physical, long-lasting changes to buildings and equipment that result in decreased energy use and reduced peak demand while maintaining the same or improved levels of energy service. For this study, the maximum achievable cost-effective energy efficiency potential is defined as the potential over time of energy efficiency measures that are cost effective and would be adopted given a concerted, sustained campaign involving aggressive programs and market interventions. This represents the upper limit of program participation, which for this study is assumed to result in an 80% penetration rate of energy efficiency measures over the 10 year study horizon.

Demand Response

Demand response is a change in electric use from normal consumption patterns in response to changes in the price of electricity over time or incentive payments designed to result in lower electricity use at times of high market prices or reliability concerns. GDS estimated cost-effective demand response potential for major residential and commercial end-uses, for small/medium industrial customers as a group, and for the largest industrial customers located in the five studied NTA sub-areas. The assumed rate of customer participation in demand response programs is a “best estimate” of long term participation based on a review of other relevant studies and reports.

Residential Energy Efficiency and Demand Response Measures Considered

Energy Efficiency Measures

- ENERGY STAR® Room Air Conditioners
- ENERGY STAR Refrigerators
- ENERGY STAR Freezers
- ENERGY STAR Built-In Dishwasher
- ENERGY STAR Clothes Washers
- ENERGY STAR Dehumidifier
- Standby Power
- Pool Pump & Motor
- ENERGY STAR Compliant Programmable Thermostat
- High Efficiency Central Air Conditioners
- Compact Fluorescent Lamps
- Water Heater Blanket
- Low Flow Shower Head
- Pipe Wrap

- Faucet Aerators
- Solar Water Heaters
- High Efficiency Water Heaters
- Efficient Furnace Fan Motors
- ENERGY STAR Windows
- Insulation and Weatherization (Electric Heat and Low Income – Electric Heat)
- ENERGY STAR New Construction

Demand Response

- Room Air Conditioning (Time-Based Rates)
- Central Air Conditioning (Direct Load Control)
- Electric Water Heating (Direct Load Control)

Commercial Energy Efficiency and Demand Response Measures Considered

Energy Efficiency Measures

Space Heating

- High Efficiency Heat Pump
- Hydronic Heat Pump
- Ground Source Heat Pump

Water Heating

- Heat Pump Water Heater
- Booster Water Heater
- Point of Use Water Heater
- Solar Water Heating System
- Solar Pool Heating

Envelope

- Integrated Building Design
- Double Pane Low Emissivity Windows

Space Cooling – Chillers

- Centrifugal Chiller, 0.51 kW/ton, 300 tons
- Centrifugal Chiller, Optimal Design, 0.4 kW/ton, 500 tons

Space Cooling - Packaged AC

- Efficient Electric HVAC
- Ground Source Heat Pump – Cooling

Space Cooling - Maintenance

- Chiller Tune Up/Diagnostics - 300 ton and 500 ton
- DX Tune Up/ Advanced Diagnostics

HVAC Controls

- Retrocommissioning
- Programmable Thermostats
- Energy Management System

- EMS Optimization

Ventilation

- Dual Enthalpy Economizer
- Demand-Controlled Ventilation

Motors

- Efficient Motors
- Variable Frequency Drives (VFD)

Lighting – more than 20 measures taken into account including:

- HP T8 Fixture (replacing standard T8)
- T5 Fluorescent High-Bay Fixtures (replacing HID)
- LED Exit Signs
- Metal Halide Track
- Occupancy Sensors (Switch or Remote Mounted)
- Daylight Dimming (Existing & New Construction)
- Efficient Lighting Design (Existing & New Construction)

Refrigeration

- VendingMiser® for Soft Drink Vending Machines
- Refrigerated Case Covers
- Refrigeration Economizer
- Commercial Reach-In Cooler
- Commercial Reach-In Freezer
- Commercial Ice Makers
- Evaporator Fan Motor Controls
- H.E. Evaporative Fan Motors
- Zero-Energy Doors
- Door Heater Controls
- Discus and Scroll Compressors
- Floating Head Pressure Control

Compressed Air

- Compressed Air – Non-Controls
- Compressed Air – Controls

Other

- EZ Save Monitor Power Management Software
- Energy Star Transformers

Demand Response

- HVAC Load Control
- Lighting Load Control and Time-Based Rates

Industrial Energy Efficiency and Demand Response Measures Considered

Energy Efficiency Measures

- Efficient Industrial Lamps and Fixtures
- Motor System Optimization (including adjustable speed drives)
- Electric Supply System Improvements
- Pump System Efficiency Improvements
- Air Compressor System Management
- Advanced Motor Designs
- Transformers
- Fan System Improvements
- Industrial Motor Management
- Sensor and Controls
- Advanced lubricants
- Advanced Air Compressor Controls

Demand Response

- Small/Medium Industrial (Time-Based Rates)
- Large Industrial Demand Response Program

