

Clean Renewable Power



Gearing up for New Transmission Jobs

The proposed Northern Pass project is expected to generate more than 1,200 jobs during its three-year construction project.

Anticipating the need for highly skilled electrical workers to build this and other transmission projects in the region, the International Brotherhood of Electrical Workers (IBEW) trade union recently put out a call for applicants to join its paid apprentice training program for journeymen linemen.

With a training center in Barrington, NH, the Northeastern Apprenticeship and Training (NEAT) program prepares individuals for a career in building and maintaining power line systems. Its curriculum includes on-the-job training, at-home study, classroom instruction, and takes about three and a half years to complete.

An ongoing transmission upgrade project in Maine is the largest construction project in the state's history and illustrates the impact transmission projects can have on local employment. Central Maine Power says that in the last year, the Maine Power Reliability Program has supported work for more than 2,250 people and 218 Maine-based companies, and is expected to contribute over \$300 million in wages and salaries over the duration of the project (www.maine-power.com).

For more information about the NEAT program, visit www.nhpowerjobs.com and for a listing of Northern Pass job opportunities, visit www.northernpass.us.



Landowner Newsletter

Life Goes on At Minot Farm

If there is a family who knows the ebb and flow of life in New Hampshire, with both its long-held traditions and modern technologies, it is the Minots of Bath. The Minots have owned and operated a family farm on a bend in West Bath Road since 1799. Today, with 450 acres and 50 head of Ayrshire and Holstein cattle, this seventh-generation farm does a little bit of everything: dairy, maple products, eggs, hay, forest products, custom work, and bush hogging (rotary mowing).

The farm's setting is quintessential New Hampshire. Not far from the Minot's colonial-era red barn are three covered bridges, a village common with a white-steepled church, and the Brick Store, said to be the oldest general store in America. Through the seasons, the Minot's cows enjoy world-class views of blazing foliage, snow-capped mountain peaks, and blossoming meadows. Their pastures also feature aspects of the modern world, a utility right-of-way (ROW) that includes both high-voltage alternating current (AC) and direct current (DC) transmission lines.



Willie Minot and his father, Alden enjoy a day on their farm.

The cows don't care, and neither do the Minots.

"These lines have been part of my life for all of it so far," says Willie Minot. "I don't even notice them; they are part of the landscape." A sixth generation Minot farmer, Willie manages the farm's fields and also acts as chief of the Bath Fire Department. His father, Alden, is "retired"—if that is possible for a farmer—and Willie's son, Will, manages the cows.

The AC line was built through the farm in the late 1920s, and the DC line was added in the ROW in the late 1980s. As with the proposed Northern Pass project, there was some anxiety in the community about possible adverse effects from the new line when the DC line was proposed. Some people were worried about "the aesthetics of it," Willie recalls. "The poles were going to stick up higher, and the geese were all going to get knocked out of the sky by it."

Other opponents warned that cattle wouldn't breed or milk beneath the lines and that farmers would go bankrupt, or that they would be harmed by electric and magnetic fields (EMF), or that they would receive shocks from equipment left under the line for a long time.

None of this has come to pass for the Minots. "We had absolutely no change whatsoever as far as a drop in production," Willie says. "There was no change in anything around here—other than having to make a few more passes around the structures with our mower when we hay."

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NP Landowner Update

Q & A

Q: How would the tax benefit from the proposed Northern Pass transmission line benefit local townspeople?

A: Construction of the Northern Pass transmission line will increase the tax base of the local municipalities, and, in turn, will produce greater local property tax revenue for those New Hampshire communities. The Northern Pass is expected to add approximately \$25 million a year in new property tax revenues. The tax investments from this project will not require communities to add additional services (e.g., schools, improved roads, water, and sewer services). These investments will be substantial for many communities, increasing the local tax base by up to 60 percent.

Q: Does the easement across my property go beyond what is presently cleared?

A: It may. Some right-of-ways (ROWs) are cleared to their full easement width, while others are not. Landowners interested in knowing the location of the easement boundaries should review their property deeds, keeping in mind that certain features referenced in the deed like rock walls, roads, property boundaries and the location of power lines within the ROW may have changed over the years.

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If anything, Willie says, he has enjoyed the power lines for the snowmobile trails the ROW provides. "My wife and I have been avid snowmobilers since back in the '60s. These power lines make a fantastic way for us to get from point A to point B."

The eighth generation of Minots is barely in grade school, but when his time comes to work on the farm, the lines will still be there—and, presumably, so will the maple trees and hay and cows, just as they have been for more than 200 years.

"Nature seems to go on as usual," Willie says.

Understanding Transmission Line Design—Reading Cross Sections

Why does a transmission line look the way it does? What determines the height and design of the structures, or the width of a right-of-way (ROW)?

The major driver of all of these decisions is the need to provide adequate clearance around the power lines—including between the wire and the ground, between wires of adjacent lines, and between a wire and the edge of the ROW. The National Electric Safety Code (NESC) sets these clearance requirements. The proposed Northern Pass transmission project will be designed to comply with all NESC code requirements to ensure the line's safe and reliable operation.

A right-of-way "cross section" is a drawing that illustrates clearances in a particular ROW, showing what a power line would look like if you were standing in the middle of the ROW.

Pictured below is an illustration of a typical transmission cross section.

A. Shows the distance that the wire will sag. Because a wire is made of metal, and metal expands when heated, a wire will sag from the heat generated by the electrical current flowing through it. The sag distance is determined by the temperature and weather conditions and the maximum temperature the wire can reach while operating.

B. Shows the lowest distance that the wire can be above the ground. This usually occurs at the midpoint between two structures.

These two distances (A and B) and the operating voltage of the line determine how high the structure has to be.

The next two distances are determined by the line's voltage, and influence the distance required between structures and the overall width of the ROW:

C. Shows the distance between adjacent lines.

D. Shows the clearance to the edge of the ROW.

Sample Cross Section

