

From: Dr. Arthur Hammon, retired science educator
26 Park Street
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To: Site Evaluation Committee (SEC) for the Northern Pass Project
May 29, 2017,

Re: A buried line: Estimated value of all (40 year) Northern Pass revenues for a 1000 Megawatt buried line during a 40 year lifetime = \$65.5 billion dollars

To the SEC

I am a retired science educator in the fields of physics and chemistry. I have attended several of the Public Information Sessions concerning the Northern Pass project. I am especially interested in the arguments by project representatives that underground burial is not feasible. Both Vermont and Maine seem to be able to accomplish this. I asked at a public session if there were reasons why New Hampshire's geology or landscape made underground burial more difficult than our neighboring states but the engineers were unable to articulate a clear response.

I have since done a "back of the envelope" calculation regarding the commercial value of the electrons that might pass through a 1000 Megawatt buried line during an expected 40-year lifetime. The calculation begins with physical constants and then applies a \$0.187 per kilowatt-hour as the current kilowatt/hour rate charged by Eversource. It seems that the return-on-investment of this line, even buried, would be substantial for Eversource. Below is a summary of my calculations:

A 1000 megawatt line carries 1000×10^6 watts per hour or 1×10^6 kilowatt/hours/hour.

Multiplying this number by 24 hours/day and 365 days/year and 40 years, the number of kilowatt-hours/40 years of billable electricity, 3.504×10^{11} kilowatt hours.

A recent Eversource bill for my home in Whitefield applied a total of \$0.187/kwh to compute my bill. Using these estimates, the net value to project stakeholders of the electrons sent through a buried Northern

Pass line of 1000 Megawatt at the current rate over 40 years is $\$65.5 \times 10^9$ or \$65.5 billion dollars.

If, as stated by Northern Pass project officials at the public hearing, that a buried line might cost as much as \$3 billion dollars, that cost represents only 4.5% of the revenues that would be realized at the current kwh rate over the 40 year-life of the buried line.

Even adjusted for operating expenses, a 19-fold return on investment seems a more than reasonable business plan for the Northern Pass project. Despite storylines by company officials that imply that a buried line is not fiscally feasible, I would remind them that the plural of the word "anecdote" is not "data". As my data show, a buried Northern Pass line based on company information and applying current electrical rates is fiscally feasible and reasonably profitable for the company.

I hope these calculations might prove helpful in the decisions that are to be made. I remain,

Sincerely,

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