

Remarks of Anthony W. Buxton
at
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Abromson Center, University of Southern Maine, Portland
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Good afternoon,

I speak today for myself, and for no clients, a practice against which tradition counsels. But I feel a duty to speak now about a serious environmental mistake New England has made for far too long. To paraphrase Churchill's 1939 admonition, we are entering an era of consequences. Time is of the essence, and our individual times here are acutely finite.

I have advocated for years on behalf of both increased gas pipeline capacity and renewable energy infrastructure.

The uncertain results to date verify my observation that the energy policy of New England is to endlessly debate energy policy. I first said this for humor, but I say it now because it is true. We must end our regional indecision and seize the real energy opportunities available to us now. The debate is good for legal fees and advocacy group fundraising, but it locks us within a status quo that irrationally impairs the imperative of our civilization: to accord our society with our planet. If New England's objective is to create a low carbon society with all deliberate speed, we are failing, and unnecessarily.

Despite vast expense, New England regresses in power plant emissions. We remain the most oil-reliant region of the nation, with 40 percent of homes heating with oil. Despite tighter vehicle emissions standards, our transportation emissions remain by far our largest source and continue unabated.

We are rightly proud of our reduction in coal and oil-based generation and the Regional Greenhouse Gas Initiative (RGGI). But the reality is that we have grid reliability in winter only by creating about an additional million metric tons of CO₂, including the absurdity of burning oil in gas plants. We have no viable alternatives to new natural gas plants to replace generation retirements. About 10,000 of the region's 32,000 MW could be gone by 2020, all dispatchable. Yet we cannot transport inexpensive gas even to existing plants in winter, when it is most needed. Some gas utilities cannot meet demand for gas for home heating in winter. We struggle in legislatures and courts to contract with 400 MW of Class 1 renewables here and some 3000 MW of wind and hydro there, and the sum won't even come close to replacing what we have exhausted. Some of our anticipated new generation won't be on line for a decade. If New England's energy strategy were a PhD dissertation, we would be sent back to high school.

I criticize all of us who are parties to this endless debate. Our failure to agree to use proven energy technologies creates an obligation we can never pay, an obligation that arises when unnecessary energy consumption literally goes up in smoke. Every year of the New England energy status quo releases millions of unnecessary metric tons of CO₂ into the atmosphere.

If we reduce our heating oil consumption by half (still more than triple the national average), New England would reduce CO₂, SO_x and NO_x dramatically. The technologies available are heat pumps and natural gas, both of which are less expensive than oil and have less than half the emissions.

If we reduce diesel and gasoline used in transportation by ten percent each, the savings for CO₂, SO_x and NO_x will be enormous. The technologies are LNG, CNG, and electricity. If we use only electricity, and it is entirely generated by natural gas, the savings are greater and costs are competitive. What if half of our electricity came from renewables?

If we finally eliminate all coal and oil electric generation, we eliminate more than that million metric tons of CO₂ we unnecessarily emit each winter, plus SO_x and NO_x.

Each of these examples is possible now, saves consumers money and moves us toward a dramatically reduced-carbon economy.

Why haven't we done this? First, transitions away from fossil fuels cost some competitors revenues. As Connecticut Governor Malloy observed about generator opposition to gas pipeline expansion ". . . if I just made an extra \$7.5 billion in the last two years, and I was the market, I'm not sure I would want to resolve this issue." Second, we have an advocacy industry that opposes the use of certain technologies and fuels. This unintentionally makes it easier for fossil fuel technologies to resist change. The rationale of this opposition apparently is that incremental change based in part on natural gas is worse than delaying change now, regressing on emissions for some indeterminate period, and forcing ultimate change to involve no fossil fuels at some unknown point in the future. Both the fossil fuel and opposition industries have every right to do what they do, yet there is a damaging synergy to their advocacy.

A more important truth is that there apparently has never been a rigorous, scientific analysis of whether the underlying rationale of the opposition industry is true for New England. Specifically, is it true that uncoordinated, undirected hand to hand combat in and around New England's bastardized energy markets is better for the planet than would be other strategies available to us? Would it be a healthier planet if New England used the emissions and cost benefits of existing technologies now and moved more deliberately toward a dramatically reduced carbon society?

Studies from Harvard, MIT, Regulatory Assistance Project and Europe show that a natural gas pipeline and gas generator backbone is essential to a short and medium-term electric grid using a high percentage of intermittent renewables. But the opposition industry implies that building the

gas pipeline capacity to fuel the 5,000 to 8,000 MW of existing gas generation we need in winter will “addict” New England to gas, and the renewables we need won’t get built. This could have been said about coal, oil and nuclear plants, yet we have shown the willingness to abandon these energy technologies even before their licenses or useful lives expire. To paraphrase others, we didn’t leave the Stone Age because we ran out of stones. In sum, the existing evidence contradicts the unsubstantiated fear that incremental change using existing technologies will harm rather than help achieve a low-carbon economy.

With adequate gas pipeline capacity, we immediately save about a million metric tons of carbon emissions in a typical cold winter, just in the electric sector. We lower electricity costs by one to three billion dollars a year, depending on weather. In a cold, expensive winter, New England pays \$9 billion for electricity; in a warm winter we pay \$5-6 billion. (We spend just less than \$1 billion a year on state and utility energy efficiency programs.) Some of the savings from the “gas dividend” could be targeted to more renewables and efficiency. Lower electricity and heating costs create political headroom for more renewables and efficiency.

The argument against this is that we don’t need more pipeline capacity or more gas. This is true, at best, for only those winters, like the last, when it is 60 degrees on Christmas Day in all of New England. Further, this may be an argument that global warming prevention is futile.

Let’s take this to where we deliberately seek to give homes and businesses alternatives to oil heat other than biomass. The technologies available are natural gas by pipe or derivatives, such as propane, and heat pumps. Where natural gas lines cannot reach, power lines do, enabling heat pump conversion. Both, however, require natural gas availability in winter. Heat pumps become even less carbon intensive as more renewables come on line. Replacing heating oil with natural gas lowers CO2 emissions by one third even before subtracting trucking emissions. Heat pumps show similar reductions, depending on the electric fuel mix (in recent winters, coal and oil have produced over 25% of electricity). Geothermal, energy efficiency and other technologies can help, but we must first decide to act affirmatively to end our overreliance on heating oil.

Using distribution pipelines and the grid to reduce use of heating oil also portends use of the electric grid to reduce use of diesel fuel and gasoline. As Steven Grove, a founder of Intel has observed, there is a fortuitous overlap of our road network by our electric grid. The grid delivers electricity to virtually every place where motor vehicles are based. When electricity becomes a motor fuel, carbon and other emissions from transportation are reduced in proportion to the combination of gas and renewable electricity generation. If Maine PUC Chair Vannoy correctly estimates that 74 percent of the kilowatt hours on Maine’s grid are from renewable sources, then the emission savings from powering our cars with electricity in New England are profound. LNG in heavy trucks and CNG in medium trucks can also drive movement from diesel to natural gas. For example, if the trucks delivering pulp to a medium-sized Maine pulp mill were switched from diesel to LNG, it would result in a substantial reduction of CO2 annually.

To summarize just this one possible alternative route to a lower carbon society, New England would build adequate gas pipeline capacity to serve the gas power plants necessary in winter and to reduce use of heating oil. We would use some or all of the \$1-3 billion cost reduction to encourage more renewables and energy efficiency. Renewables will be dispatched first when available, suppressing demand for gas generation. Gas generation capacity would be maintained to ensure availability when intermittent renewables are unavailable. Coal and oil generation would be eliminated. Meeting of the states' Renewable Portfolio Standards would drive further increases in renewables, further suppressing demand for gas generation. Heating needs would be deliberately transitioned away from heating oil to piped natural gas, delivered gas derivatives and geothermal and heat pumps, using part of state energy efficiency funding. Finally, we would transition some 5 to 10 percent of new motor vehicles each year to full electric or hybrid technologies, or, in the cases of heavy and medium trucks, to LNG or CNG. While gradual, the CO2 consequences would be substantial.

Obviously these are significant energy technology changes, changes of the magnitude necessary to become a lower carbon society. I have not costed out this plan or done extensive due diligence.

And that's my most important point: no one appears to have done this, either for this rough plan or any other, to get New England to a significantly lower carbon future. Not our great universities, not our wealthy, high-purposed foundations, not our governments or quasi-governmental agencies, not the opposition industry. No one.

The six state governments prepare energy plans which focus on one state, not on the region. That's inadequate, because single-state plans fail to employ our most valuable tools: the regional electric grid and the energy markets run by ISO-New England through that grid. That's like a pole vault without the pole; you just can't get there from here. In our national grid, New England is largely autonomous, and within that umbrella, virtually all other fuels are imported via free markets we cannot control.

For further example, not one of the more than thirty recent professional studies of whether New England should build more gas pipeline capacity examined alternative ways to get New England, comprehensively, to a lower carbon future. Each evaluated the costs and benefits of gas pipelines, because that was the issue at hand.

So, clearly, we share an energy myopia: we focus on one state or one sector, such as power generation. Unsurprisingly, our myopia encourages misallocation of resources by causing us to use available tools to remove the last, most intractable fossil fuels from the generation sector instead of using the very same tools to harvest low-hanging fruit in the heating and transportation sectors.

In uncertain times, we must find our way by right principles. Our public institutions must take the more expansive view and test alternative routes to a low carbon society, even though none

may have authority to compel it. Yet, we should not expect miraculous courage from government. Instead, I respectfully suggest that the first movers here must be the entities with the greatest commitment to the lower carbon society, the philanthropies which fund so much in New England, including much of what I have called the opposition industry.

At some point there arises an obligation to do far more than oppose certain projects and to support the more myopic solutions, such as renewable projects, RPS standards and similar good but limited initiatives.

Stated more broadly, isn't there an obligation to show how and at what cost "we can get there from here"? If we cannot or will not attempt these proofs, isn't there a fully justified implication that we cannot get there, or can do so only at politically unacceptable sacrifice? Doesn't that just divide us and slow the progress we know we must make?

My argument is not a tactic in the gas debate. It is the opposite: in the gas debate I was stunned to learn just how close we in New England are to getting this carbon thing right and making huge advances unprecedented outside Europe. At great cost we have the grid we need, but we fail to use it "smartly" thus far to reduce carbon in our heating and transportation sectors. The digital revolution will make our grid vastly more valuable, especially in carbon reduction, if only we let it. Consumers are moving powerfully to gas and heat pumps to replace oil, but we desperately need pipeline capacity to meet the growing heating need and make the grid economically reliable in winter. We need no greater number of gas power plants, though more efficient plants should replace older, less efficient plants. Total kilowatt hours from gas in New England should drop, except to the extent gas and renewables replace oil, diesel and gasoline in the heating and transportation sectors. Carbon emissions will drop significantly.

Benji Borowski, Todd Griset and I explored these issues in detail in a 75-page report published in 2015, entitled [An Affordable Clean Energy Future: A Superior Energy Paradigm for New England](#). The report is available at energycostcrisis.com. I invite your review of the report. The report provides many of the resources we found from diverse sources all over the world.

In closing, I urge that each of us examine just how close we are in New England to one or more viable paths to a low carbon society. Working with respect and cooperation, we can find our way.

Thank you.