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(Second set of Comments on Energy Strategy)

1. I feel very strongly that the "draft vision" as written is inappropriate. It envisions a future where everyone's imagined needs are conveniently met. I recommend that the Strategy start with a clear statement of the several significant problems to be solved, including but not limited to those enumerated in Senate Bill 191. Lurking in the background - but very evident nevertheless - are the need to reduce CO2 emissions and the possible need to conserve energy resources for future generations.

I also believe the draft vision is potentially misleading to the public, as it suggests that such an outcome not only is possible, but also is reasonable for people to expect government to work toward. For example, fuel diversity in the "north country" might have been ideal a decade or so ago, but now we will need to be satisfied with what is reasonably available. Which might not be a problem if, for instance, homes are heated with heat pumps.

2. I believe the public will have to know (and care) more about energy in the future, as the vision implies, and therefore I would include elementary-school and secondary-school education on energy, to be integrated into science and math curricula.[1]

3. Energy efficiency is a "perfect" jobs program, that addresses the root of the problem - namely, that automation has displaced workers wholesale, even enabling off-shoring and enabling big-box retailers to outcompete the small merchants and other businessmen who used to form the proud and active civic core of so many small cities and towns. But retrofitting buildings can be neither automated nor off-shored. And it requires multiple skill levels, from building science and lead abatement and house construction issues to the direct insulation installation work. It will keep a lot of people busy for a couple of decades, cut people's energy costs, help the economy, and keep money in-state. Maybe this is worth a mention.

4. While a "cost effective energy efficiency" measure is defined broadly as one that is cheaper than supply, this could be more clearly defined. One can assume that a product, such as an LED bulb or a refrigerator, qualifies if it saves its cost within its lifetime. But what about permanent (i.e. very long lasting) changes to a building, for instance is a $10,000 insulation and air sealing job? Are all (correctly implemented) insulation jobs worth doing, given that they will eventually pay for themselves? And assuming this is true, what does the strategy say about the pace at which such insulation work is done?

5. Navigant suggests that, with building energy efficiency, some measures are easily justified today and other measures may be easier to justify in the future as energy costs rise and/or products get cheaper[2]. This might be true for straight product replacement, such as light bulbs and refrigerators. Navigant proposes that the state be prepared to extend the project as the cost/benefit picture improves (i.e. energy costs rise or produces cost less).

However, I don't believe this is appropriate for building retrofit (air sealing, insulation, more efficient heating appliance, window repair), and I think an aim of the energy strategy should be to go right ahead with "deep" retrofits. It may not be feasible financially or politically in NH, and it may take decades anyway, but our aim should be to go for deep retrofit ASAP. Let me offer some reasons.

- First of all, reducing the heating load is an important first step, as it is fuel-neutral, reduces CO2 consumption, lasts virtually forever, improves comfort, pays back cash savings to the building owner which goes back into the NH economy, and eases the entire process of getting energy or fuel into the building. Reducing electricity consumption does a little of this too, of course, although electrical products have finite lifetimes.
- Funding a retrofit project generally[3] requires loans, paid back from energy cost savings. This works if energy prices are stable or declining, as costs go down. However, if prices rise, the borrower may not realize any cash savings. If you cut fuel costs 50% but fuel prices soon double, you have no cash savings. Likewise if you cut costs 25% but prices rise by 1/3. Therefore, in a time of rising prices, lenders will back away from lending money on the basis of cash savings. Only the already well-off will be able to afford a retrofit. Therefore, the time to do the expensive work is ASAP. Afterwards, the savings will pay for all the low fruit.
- Picking the "Low fruit" first will likely make the "higher fruit" more difficult - maybe impossible - to cost-justify. If a programmable thermostat cuts costs by 25%, the potential savings attributable to later steps will also be reduced by 25%, i.e. the payback period for those later steps will be lengthened by 25%, which therefore may be more difficult to fund. This is true even in a period of stable energy prices. Better to do the expensive steps first.
- If fuel prices rise significantly we will likely be in a tough financial situation, and have a harder time in general. Energy efficiency projects will have to compete for scarcer funds in such a situation. Postponing these projects is not a good strategy.[4]
- There is an urgency about building energy efficiency, because this work requires resources to accomplish, and should not be done in a rush or with careless oversight or by amateurs.

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[1] A 7th grader should be able to compute, for instance, the Btus per hour needed to maintain the interior of his or her (appropriately simplified) house at a given temperature increment over the outdoor temperature. This is a fundamental 'problem' that drives understanding of many if not most building heating questions (e.g. deciding between, say, new windows or attic insulation).

[2] See final paragraph on page 29 of the strategy

[3] For the majority of people

[4] I once suggested - at a town budget hearing - that our town start a "capital reserve fund" saving $5,000 a year over 6 years to insulate the town library. A smarter citizen jumped up and said "That's stupid! We would be putting away $5000 a year and at the same time wasting $5000 a year on avoidable fuel expense, spending twice as much money for the privilege of being chilly* for 6 more years!" So we put the entire $30,000 on a warrant article, which passed with more votes than any other. It would be equally "stupid" to require homeowners to "save up" for insulation projects rather than get assistance in financing.

*A cold [e.g. uninsulated] ceiling can make people feel chilly even in warm air