Tuesday, November 2, 2016

Donna Jerry, Senior Health Policy Analyst
Green Mountain Care Board
89 Main St., City Center
Montpelier, VT 05620

RE: Docket No. GMCB 017-15 CON
Certificate of Need for replacement boiler at the Southwest Vermont Medical Center

Dear Ms. Jerry,

Thank you for the opportunity to testify to the Green Mountain Care Board (GMCB) on Thursday, October 27, 2016 in the matter of the Certificate of Need proposal by the Southwestern Vermont Medical Center (SVMC) for their boiler replacement project. It is our understanding that we can also provide written comment as well. I would like to reiterate some of the comments made during my testimony and provide some supporting information.

In the first place, to clarify, I am a renewable energy consultant with over 25 years of evaluating the economics of biomass opportunities for institutional clients. In fact, I was part of the team that evaluated this project for SVMC in 2009. I do not sell any products and do not have any vested interest in the outcome of the hospital's decision. I am also the Renewable Energy Vermont Board chair and testifies on behalf of the biomass industry in Vermont.

On the issue of fuel costs, the slide that the hospital included in their presentation on fuel costs might have been confusing. It included costs for propane, wood pellets, #2 fuel oil, Natural Gas and cordwood. The source cited for the table is the VT Fuel Price Report, which is compiled by the Vermont Department of Public Service for residential heating fuels. The only fuel in the list that the hospital is considering using is #2 fuel oil and commercial pricing for fuel oil is different than residential. Wood chips are the only viable wood fuel for this facility. Compressed Natural Gas is considerably different in cost and attributes than pipeline gas used for heating homes.

A more appropriate comparison would be to use commercial fuel costs. I compiled the table below of commercial fuel costs and applied relative boiler efficiencies based on my experience to get the actual cost per MMBtu after combustion.

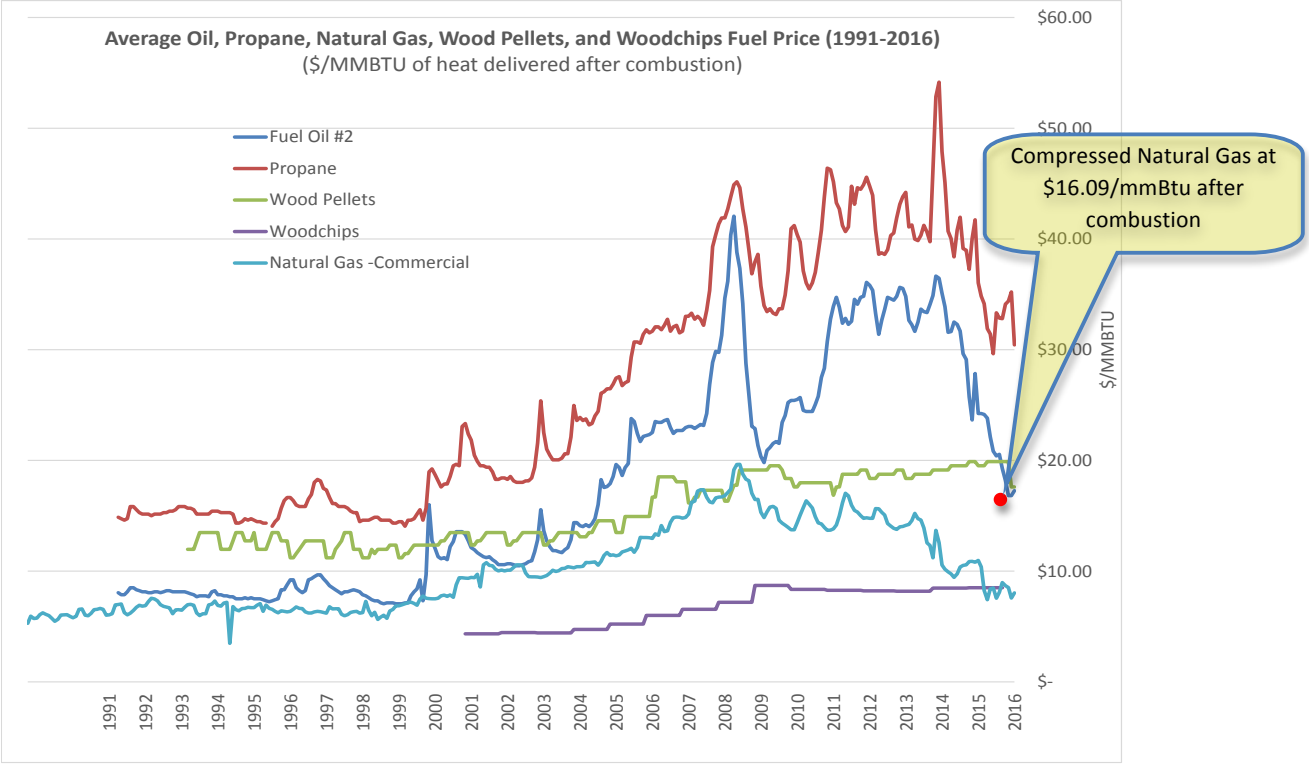
Fuel Type	Unit	Cost per Unit	Btu per Unit (dry)	Moisture Content	MMBtu per Unit (wet)	Cost per MMBtu Delivered	Average Seasonal Efficiency	MMBtu per Unit After Combustion	Cost per MMBtu After Combustion
Natural Gas	CCF	$7.89	1,027,000	0%	1.027	$7.68	80%	0.822	$9.60
Compressed NG	CCF	$13.22	1,027,000	0%	1.027		80%	0.822	$16.09
#6 Oil	gallon	$1.68	150,000	0%	0.150	$11.20	65%	0.098	$17.23
Wood Chips	ton	$70	16,500,000	40%	10.0	$7.01	75%	7.5	$9.35

The Natural Gas price is from US EIA data for 2015 for commercial customers and is the most recent year data is available. The Compressed NG and #6 Fuel Oil prices are from a letter from

SVMC to the GMCB dated September 2, 2016. The Wood Chips price is based on the current price for several large institutional customers in Vermont.

The above table shows that the cost/MMBtu for woodchips is 40% less expensive than Compressed Natural Gas. The study that was done in 2009 by GDS Associates estimated an annual fuel usage of 666,102 gallons of #6 fuel oil. If SVMC used woodchips to cover 85% of their heating load, they would displace over 560,000 gallons of #6 fuel oil, reduce their carbon footprint by over 7,000 tons and save over $400,000 in fuel costs *in the first year alone*.

Wood fuels tend to be much more stable in price than fossil fuels. The graph below illustrates the price volatility of fossil fuels in recent years compared with wood prices. Fuel oil and propane prices are based on the VT DPS residential price survey because commercial prices are not available. Natural gas pricing is based on EIA data for commercial and institutional customers. Pellet prices were compiled by the Biomass Energy Resource Center (BERC) for bulk delivered pellets. Woodchip prices were also compiled by BERC for commercial and institutional customers. The Compressed Natural Gas price is the $/MMBtu listed in the SVMC September 2, 2016 letter multiplied by the efficiency factor of the boiler in order to be consistent.



A concern that was expressed during the hearing is the potential volume of truck traffic. The 2009 GDS study did a truck traffic analysis[1]. It estimated that the number of truck deliveries on a peak winter weekday would be 2.8 more than for #2 fuel oil. Not nothing, but not a lot.

There was a concern expressed at the hearing about CO_2 emissions from wood heating equipment. We have included with this letter a white paper prepared by BERC on carbon emission impacts of modern wood heating in Northeastern US. The conclusion from that paper is that modern wood heating is a low carbon fuel. Again, not nothing, but not a lot.

Finally, there was a question about just how local wood chip fuel would be for this facility. I guess it depends on what is meant by local. Vermont's pipeline gas comes from Alberta. Fuel oil could come from Pennsylvania, Texas or Saudi Arabia. The New England wood basket knows no political boundries. Wood chip fuel used in Massachusetts might come from New York, New Hampshire, Maine or Vermont. Similarly, wood chip fuel used in Vermont might come from Massachusetts just as it might come from Vermont. But it will certainly come from within a day's roundtrip drive and the closer the supply, the less expensive it will be. Increasing demand for biomass fuel in Vermont helps create jobs for the region. Local need not mean Vermont.

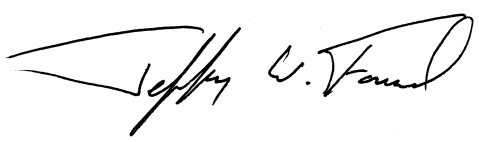
In conclusion, I would like to restate our recommendations.

1. When making a choice between mutually exclusive capital investments, it is prudent to compare all equipment and operating costs spent over the life of the longest-lived alternative in order to determine the true least cost choice. The total cost of acquisition, fuel costs, operation and maintenance of an item throughout its useful life is known as its "life cycle cost." ***The Green Mountain Care Board should require a life cycle cost analysis for any energy related projects that they review.***
2. Energy Performance Contracting is an approach to financing energy investments whereby a 3rd party energy services company (ESCO) provides the upfront capital, which is then paid off from annual energy costs savings over a period of years. During this time the end use entity is often guaranteed a discounted energy cost relative to their current costs. ***If the hospital is concerned about the capital cost of this project, they should consider a performance contract with an energy service company.***
3. Boilers by their nature are expensive capital investments with long lives. SVMC has proposed to build their boiler plant in such a way that they will be able to convert one of the boilers to wood fuel in the near future. ***If the Green Mountain Care Board deems it in the hospital's and the public's best interest for this project to move forward with a compressed natural gas boiler, it should include in its Certificate of Need the requirement for the hospital to revaluate in 3 – 5 years the feasibility of converting to a biomass boiler.***

[1] Biomass Feasibility Study for SVMC, February 5, 2009 prepared by GDS Associates, Inc.

I want to thank you again for the opportunity to present to you our evaluation and recommendations for this project. Please feel free to contact us if you have any questions about the information we have presented or if we can be of any further assistance. We look forward to your findings on SVMC's CON application.

Sincerely,



Jeff Forward, Chair