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Memorandum

To: Steve Klein, Legislative Joint Fiscal Office
From: Tom Kavet and Nic Rockler
CC: Catherine Benham
Date: February 19, 2008
Re: Regulatory Assistance Project "Whole Buildings Efficiency Service" Proposal

OVERVIEW

This review analyzes potential economic impacts associated with the "Whole Buildings Efficiency Service" as outlined by the Regulatory Assistance Project (hereafter referred to as "RAP") in their January 2008 document, *"Affordable Heat: A Whole Buildings Efficiency Service for Vermont Families and Businesses."* Based on this document and accompanying numerical supporting data supplied to the Joint Fiscal Office, we have extended this analysis to include indirect and induced economic impacts associated with this proposal through use of a comprehensive State economic impact model.

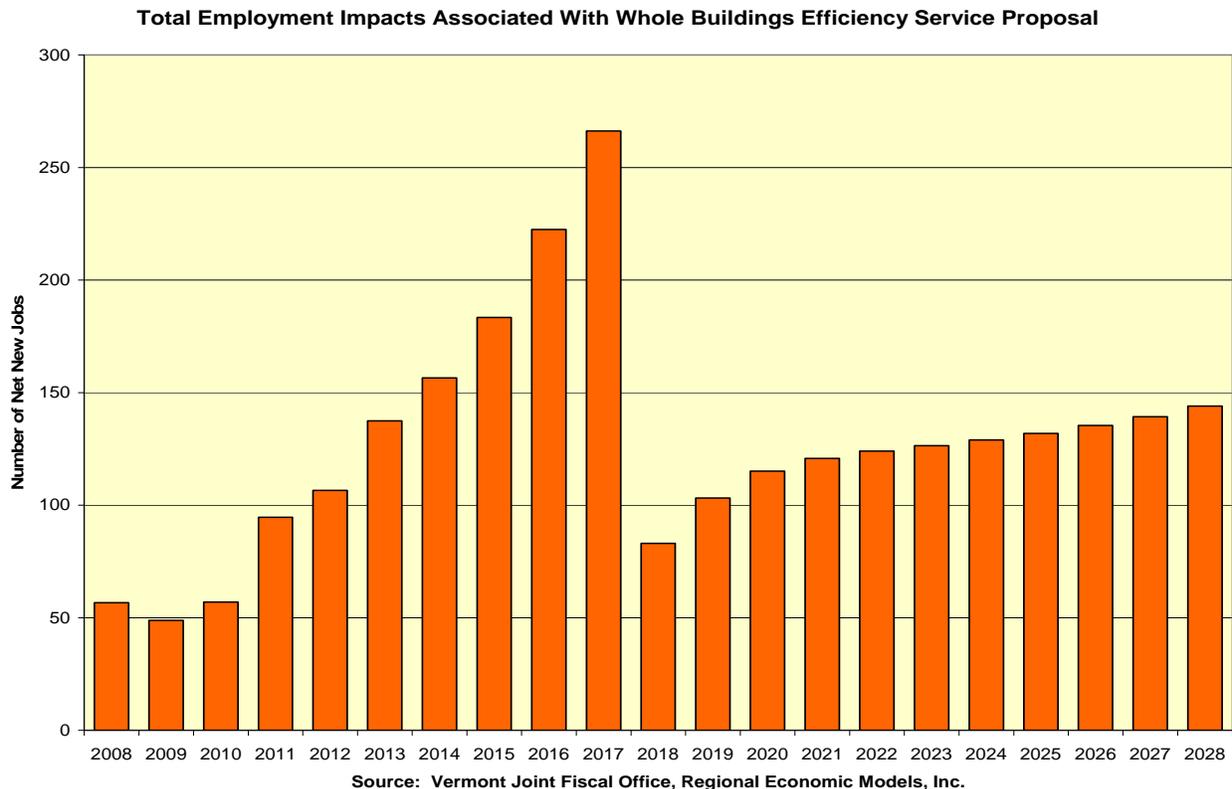
It should be noted that we did not independently verify the source data or assumptions used in the original RAP analysis. Accordingly, it may be useful at some future date to run the same analyses with assumption ranges or alternative "worst-case" assumptions for key inputs (such as assumed energy prices, assumed revenues, assumed savings from efficiency measures, assumed market size, assumed feasibility of market penetration, etc.) and explore potential impacts from such changes.

While we note some of the most important key assumptions herein, we also strongly recommend that an independent program follow-up analysis accompany any enabling statute, with annual audits that verify the assumptions used to justify the program. Based on these reviews, it may be beneficial to expand the program more rapidly than currently proposed if results are exceeding expectations, modify it if program benefits are below expectations, or eliminate it if the return on this public investment is not positive.

PRIMARY FINDINGS

Based on an analysis using RAP project assumptions and a Vermont State economic model prepared by Regional Economic Models, Inc. (hereafter, REMI), we find the following aggregate economic impacts:

- 1) *Although the primary financial return on investment occurs in the latter years of the program¹, as energy savings persist in the absence of further public and private investment, the expenditures in the first ten years of the program will yield significant immediate and longer term net economic benefits to the State.*** These include the creation of hundreds of net new jobs in the maintenance/repair construction sector, more than \$7 million (in constant 2000 dollars) in additional real Gross State Product during the peak expenditure year of 2017 and more than \$5 million in real GSP by 2028. The program will result in more than 200 net new jobs by 2016 and result in about 125 permanent jobs from 2020 and beyond, as consumer and business expenditures on heating fuels decline, in favor of other expenditures with greater local multipliers.



¹ See "Affordable Heat: A Whole Buildings Efficiency Service for Vermont Families and Businesses," January 2008, by the Regulatory Assistance Project, Figure 7-1, page 8.

- 2) **State stimulus of job growth in the construction, maintenance and repair sector may be especially timely with declining construction and real estate markets leaving an increasing number of Vermont workers in this industry unemployed.** Weak construction and real estate markets are likely to be a feature of the Vermont economy for the next 5+ years, much like the State's experience with the last real estate cycle in the early 1990's. Given this situation, the proposed program should offset some of the inevitable rise in unemployment, and skilled workers should be readily available for program employment.
- 3) **Beneficial State economic impacts will be enhanced by the high local labor content of the proposed expenditures.** Based on existing State programs, it is expected that nearly three-quarters of the direct building efficiency expenditures will consist of demand for local labor. This will result in relatively high local multipliers and elevated State and local economic impacts.

- Selected Economic Impact Metrics: Differences Relative to Baseline Levels -

	2008	2012	2016	2020	2024	2028
Employment	57	107	223	115	129	144
Real GSP (Fixed 2000\$)	\$ 1,766,000	\$ 2,657,000	\$ 5,981,000	\$ 3,452,000	\$ 4,303,000	\$ 5,550,000
Personal Income (Nominal \$)	\$ 959,400	\$ 917,400	\$ 4,356,000	\$ 3,563,000	\$ 4,665,000	\$ 6,130,000
Real Disposable Income (Fixed 2000\$)	\$ (9,117,000)	\$ (27,770,000)	\$ (37,450,000)	\$ 265,100	\$ 1,143,000	\$ 1,934,000
Real Output (Fixed 2000\$)	\$ 4,066,000	\$ 8,671,000	\$ 17,620,000	\$ 9,369,000	\$ 9,750,000	\$ 11,340,000

- 4) **Real disposable income will be negative until program investments financed by consumers and businesses (including public tax increases and assumed private sector outlays for building efficiencies recommended by the program) subside in 2018. Ultimately, the reduced energy consumption these investments enable will support real disposable income gains of nearly \$2 million per year in constant 2000 dollars.**
- 5) **The program, as proposed, will provide significant economic and other benefits to those least able to afford building improvements.** With more than a third of the projected \$400 million total building investment in years one through ten directed at low income households, the program will act as a substantial transfer payment and confer additional fiscal and non-economic benefits, such as lower public heating assistance needs, improved health due to enhanced home heating temperatures, and increased disposable income for other essential needs for those at the lowest income levels.

CRITICAL ASSUMPTIONS

While the RAP “Whole Buildings” proposal shows considerable net economic benefits to the State over the long term, there are a number of critical assumptions that these estimates are reliant upon. It should be noted that longer term projections – and those used in the report extend to a 20 year period – are particularly subject to error (both positive and negative).

The most important assumptions, and potential projection risks, include the following:

- **Energy prices:** The energy price assumptions herein assume a 3% annual price increase, escalating from current market base levels. Given the recent volatility in energy prices, the use of current market prices as base levels could introduce an upward price bias, since prices have risen rapidly of late. Alternatively, the use of a 3% price growth factor over a 20 year forecast horizon could represent a downside bias given the price experience of the past 10 years, growing global demand, supply constraints and structural U.S. dollar weakness. It should be noted that all economic and fiscal analyses could be run with differing energy price estimates, or ranges, if desired. The Legislature and/or Department of Public Service may wish to do so if these estimates are to be used in other public energy assessments.
- **Building Efficiency Savings:** RAP assumes energy efficiency savings per building of approximately 25%. Although this is based on considerable prior experience with low income and other weatherization programs, it is possible that as the program expands beyond the “neediest” units, the savings per unit could decline. If this critical estimate is higher or lower, it could materially affect program benefit measurements.
- **Market Penetration:** The estimates used in the RAP analysis assume fairly conservative market size assumptions for most sectors, however, the program escalates to a very substantial number of units in the latter years of the weatherization work (years 5-10). If the market becomes more difficult to penetrate over time or the market size estimates are erroneous, this could affect program performance.
- **Private Investment Behavior:** The proposed program assumes substantial capacity and willingness of moderate and higher income residential and business owners to make private investments with relatively limited public funding support and very limited State-level building code jurisdiction and enforcement. If program assumptions regarding critical private sector investment do not occur as expected (and these total nearly half of all program expenditures over the ten year investment phase), program benefits will be significantly affected.

OBSERVATIONS AND SUMMARY

The RAP “Whole Buildings” proposal will result in considerable net economic benefit to the State, with both immediate stimulus from a labor-intensive investment period that will upgrade the energy efficiency of tens of thousands of Vermont homes and buildings, followed by longer term benefits from ongoing reductions in heating fuel consumption. With a substantial portion of the economic benefits accruing to low income households, this program also provides critical public assistance to those most vulnerable to heating fuel price increases.

There are also non-economic benefits from this initiative that should be noted, not the least of which is a significant reduction in State CO₂ emissions, which have been linked to global warming. RAP estimates cumulative CO₂ reductions of more than 2.6 million tons over the 20 year program horizon. Although this is not accorded any economic “value” in the present simulation model, there may be significant environmental benefits to such reductions.

Other benefits not explicitly modeled herein include healthier citizens, as moderate home temperatures can be maintained, more productive and competitive businesses, as reduced energy costs drop to the bottom line, and lower fuel prices, resulting from demand reductions.

Although the proposed program offers an exceptional return on public investment based on the assumptions provided by experienced RAP professionals, given the magnitude of the public expenditure involved (more than \$200 million over 10 years), it would seem prudent to include an ongoing review of program performance in the enabling legislation so as to provide early program feedback and insure accomplishment of its stated purpose.