RACC

Research on Adaptation to Climate Change in the Lake Champlain Basin And Vermont's Waterways

Report:
Value of Water Quality and Public Willingness to Pay for Water Quality Policy and Project Implementation

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ABSTRACT

A recent report by the Vermont Agency of Natural Resources has indicated that approximately $156 million is needed annually for the next ten years for the State of Vermont to meet its obligations under the Clean Water Act, though confidence has declined in this estimate. Recent public opinion polling indicates that the most publicly-acceptable means for raising funds are through one-time development fees and annual stormwater fees. Further polling indicates that the median willingness to pay among Vermont households is $40 per year, when raised through water utility and vehicle registration fees. The polling also suggests that willingness to pay could be increased through outreach and education.

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Executive Summary

This report contains a summary of two pieces of analysis pertaining to Vermont resident's perceptions of water quality and "willingness to pay" to sustain water quality. These surveys include: the Research on Adaptation to Climate Change (RACC) project's 2013 Water Quality Public Opinion Survey[1] and the 2014 annual Vermonter Poll,[2] which included questions regarding Vermont residents' willingness to pay for water quality across the State of Vermont. This report revisits some of the major findings coming out of the initial report, reexamines some of the data from this report, and integrates a second survey of Vermont residents undertaken in the winter of 2014. An overview of the methods employed in this research may be found in the Appendix A.

Two major conclusions may be drawn from the analysis of this data:

Vermonters' place a high value on water quality.

In the first report of Vermont residents' perception of water quality, released in January of 2014 by the Research on Adaptation to Climate Change in the Lake Champlain Basin (RACC) team,[3] several main findings were ascertained:

1. Vermont residents are deeply concerned about water quality, more so than any other surveyed policy issue.

2. Vermont residents believe that water is a public good, and that we ought to focus on the maintenance of recreational opportunities, high quality of life, and economic health as the primary impacts of water quality policy.

3. Vermont residents show a strong preference for state-level responsibility for water quality, and also believe that responsibility ought to be clearly designated.

4. Vermont residents are convinced that adequate funding ought to be dedicated to water quality in Vermont.

5. Water quality exerts a significant influence on Vermont residents' recreational choices.

6. Socioeconomic, cultural, and life stage factors influence Vermont residents' perception of water quality-related legal and economic issues.

[1] Koliba *et al*, 2014
[2] Center for Rural Studies, no date, "Vermonter Poll," Most Recently Accessed: 23 Oct 2014
[3] Chris Koliba, Asim Zia, Steve Scheinert, and Katherine Logan, 2014, "2013 Water Quality Survey," Burlington, VT.

7. Vermont residents have a fairly high level of confidence in experts on climate change.[4]

This initial report highlighted Vermont residents' hesitance to pay fees or taxes for improved water quality. However, additional polling data commissioned by RACC researchers shed new light on Vermont residents' willingness to pay (WTP) for water quality. These results gave cause to revisit the conclusions we drew from the first survey and seek to develop a more comprehensive picture of Vermont residents' willingness to pay for clean water.

A majority of Vermonters are willing to pay for water quality.

While approximately 35% of Vermont residents polled reported an unwillingness to pay additional fees, the remaining 65% have strong willingness to pay to conserve water quality (See Figure 5).

In most Vermont counties, residents are willing to pay $40 or more as additional water utility and vehicle registration fees per year. The exceptions are the following counties: Caledonia, Essex, Franklin, Lamoille and Orange (See Figure 6).

Additionally, Vermont residents with shorter residency time (e.g., more transplants to the area)) reveal a higher willingness to pay for water quality.

Older and college educated respondents were more likely to be willing to pay $80 or more annually for clean water than the general population. Respondents who revealed an affiliation with the Democratic Party were more likely than individuals with any other political affiliation to be willing to pay more than $40 a year for clean water.

In a geographic dimension, the distance that respondents lived from Lake Champlain did not appear to be a significant determinant of respondents' willingness to pay (See Table 3).

We estimate that 189,552 households in Vermont would be assessed the additional water utility fee. If an additional fee of $20 per year is added on to the water utility bills of these households, we estimate that $3,791,000 per year could be collected. Further, if a $20 per year additional fee is levied on vehicle registrations for the estimated 605,000 motorized vehicles registered in Vermont,[5] an additional $12,100,000 could be raised. Both water utility and vehicle registration fees could add a combined total of $15.89 million per year.

The results from the first survey, the RACC Water Quality Survey,[6] correlate well with these findings (See Table 1).

- 58.7% of respondents find one-time development fees acceptable.
- 41.3% of respondents find annual development fees acceptable.

[4] Koliba *et al*, 2014, 2.
[5] Data from the Vermont Department of Motor Vehicles.
[6] Koliba *et al*, 2014,

- 58.9% of respondents find stormwater fees acceptable.
- 34.2% of respondents find broad-based taxes acceptable.
- 46.1% of respondents find excise taxes acceptable.

Self-reported Democrats and Progressives are more likely to support one-time development fees, stormwater fees, broad-based taxes, and excise taxes for water quality improvement.

Age, income and education play a limited, but statistically significant role in determining respondents' willingness to pay.

The distance that respondents lived from Lake Champlain does not appear to exert a significant influence on respondents' willingness to pay (See Table 2).

Summary Conclusion:

These data indicate that political identity and education are the most consistent predictors of increased acceptability of payment mechanisms and increased willingness to pay. This provides two suggestions about how policy can promote willingness to pay. The first suggestion derives solely from these observations of the data. Vermont, with its high proportion of registered Democrats and Progressives can rely on their political beliefs to support policies that raise money to pay for water quality programs. Additionally, greater education and outreach about the problem are likely to increase voter support for water quality programs.

The second suggestion arises when the observations about political identity, education, and sense of place[7] are examined together. In interviews, state agency representatives involved with water quality, report hearing complaints from Vermont residents who live outside of the Lake Champlain Basin (LCB) suggesting that too much attention is paid to the LCB area, to the exclusion of other watersheds. With water quality problems evident throughout Vermont, these data can be interpreted to suggest that efforts to raise awareness and address water quality concerns should include a state-wide portrait of water quality challenges. Greater support for water quality programs across the state might be found by increasing awareness of other watersheds, thereby increasing broader voter awareness of program activity throughout Vermont.

[7] B. Hannon, 1994, "Sense of place: Geographic discounting by people, animals, and plants," *Ecological Economics*, 10(2); B.P. Kaltenborn, 1998, "Effects of sense of place on responses to environmental impacts: A study among residents of Svalbard in the Norwegian high Arctic," *Applied Geography*, 18; B.W. Eisenhauer, R.S. Krannich, and D.J. Blahna, 2000, "Attachments to special places on public lands: An analysis of activities, reason for attachments, and community connections," *Society and Natural Resources*, 13(5); M. Vorkinn and H. Riese, 2001, "Environmental concern in a local context: The significance of place attachment," *Environment and Behavior*, 33(2); B.S. Jorgensen and R.C. Stedman, 2003, "A comparative analysis of predictors of sense of place dimensions: Attachment to, dependence on, and identification with lakeshore properties," *Journal of Environmental Management*, 79; A. Zia, B. Norton, S. Metcalf, P. Hirsch, and B. Hannon, 2014, "Spatial Discounting, Place Attachment and Environmental Concern: Toward an Ambit-Based Theory of Sense of Place," *Journal of Environmental Psychology*, 40.