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Granite Staters Weigh in on Renewable Energy Versus Drilling

Environmental Quality of Life Ranks High Across Party Lines

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Environmental Questions on the Granite State Poll

Since the fall of 2001, the Granite State Poll has been conducting telephone interviews with random samples of New Hampshire residents about four times each year. State and national political topics, such as how people view candidates or elected officials, have been staples of this poll. During campaign seasons, the poll draws national attention in forecasting election results. During quieter times, it asks many nonpolitical questions as well. Trained personnel at the University of New Hampshire Survey Center conduct the 10- to 15-minute interviews.

Starting in 2010, the Granite State Poll began regularly including environmental topics among its mix of survey questions. For example, almost 80 percent of New Hampshire residents say that they understand a moderate amount or a great deal about the issue of global warming or climate change.[1] This unexpectedly high percentage led researchers to design other questions that test actual knowledge. Knowledge, it turns out, often lags behind self-assessed "understanding." For example, although nearly 80 percent believe they understand climate change issues, only 56 percent can correctly identify the meaning of "greenhouse effect" from a list of three choices. Success rates are lower on some other basic questions. Political beliefs often filter what knowledge people choose to acquire.[2]

In 2012, the environmental questions expanded to include non-climate topics, in connection with a new five-year project on Ecosystems and Society under the New Hampshire Experimental Program to Stimulate Competitive Research (EPSCoR).[3] Supported by a grant from the National Science Foundation, the project links an innovative team of researchers from universities and colleges around the state to make advances and build capacity for education, research, and economic development. The research focuses on better understanding how changing climate and land use affect services provided by New Hampshire ecosystems, services such as clean water; wood for fiber, fuel, or timber; protection from flooding; climate regulation (via carbon storage and changes in surface reflectivity); recreational opportunities; and cycling of key nutrients such as nitrogen and sulfur. This brief presents first results from EPSCoR survey questions asking New Hampshire residents how important various ecosystem services are to their own quality of life. Other questions sought views on energy and the history of the state's forests.

Key Findings

- Two-thirds of New Hampshire residents surveyed by the Granite State Poll think that, for the future of this country, increasing renewable energy use should be a higher priority than exploration and drilling for oil.
- Large majorities of Democrats and Independents, and a sizable minority of Republicans, favor renewable energy development.
- Almost everyone (98 percent) agrees that clean water is very important to their quality of life. Scenic values of forest and farm lands rank second (66 percent), followed by outdoor recreation and forests for wood products.
- Only one-third of respondents realize that, despite current threats, the total area of forests in New Hampshire is greater now than it was 100 years ago. Awareness of this forest history is higher in less developed regions of the state.
- Nine in ten New Hampshire residents believe that climate change is happening now; 54 percent agree with the scientific consensus that current changes are caused mainly by human activities, whereas 36 percent believe they are caused mainly by natural forces.

Renewable Energy or More Drilling?

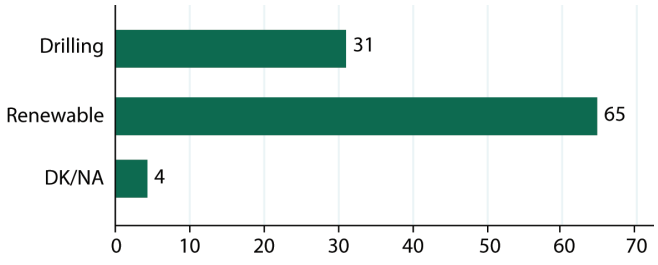
Rising prices, foreign sources, limited supplies, and impacts on pollution and climate all make continued dependence on fossil fuels problematic. Renewable energy sources such as wind, solar, hydroelectric, tidal, geothermal, and biomass have drawn increasing national attention, although U.S. subsidies for renewable energy still fall well short of those devoted to fossil fuels.[4] New Hampshire produces none of the coal, oil, or gas it consumes, which gives state residents another possible incentive for developing local sources of renewable energy.[5] With such challenges in mind, we asked this future-oriented question:

Which do you think should be a higher priority for the future of this country, increased exploration and drilling for oil or increased use of renewable energy such as tidal, wind, or solar?

- » Increased exploration and drilling for oil
- » Increased use of renewable energy such as tidal, wind, or solar

By more than a two-to-one margin, New Hampshire residents give higher priority to renewable energy development. Figure 1 shows results from 1,088 interviews conducted in winter and spring 2013.[6] The question will be repeated on future polls, watching for possible shifts as new events and energy developments take place.

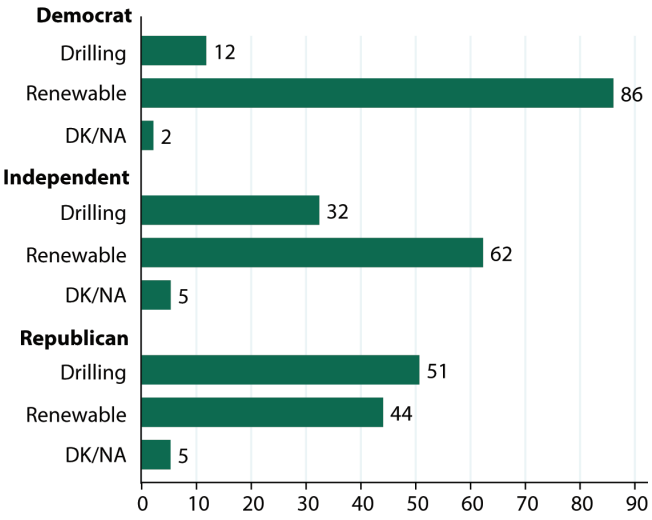
Figure 1. Which should be higher priority, increased exploration and drilling for oil, or increased use of renewable energy?



Note: Probability-weighted percentages. Sample size is 1,088.

Survey responses on environmental topics often fall into partisan patterns.[7] During the 2008 presidential election, the slogan "drill, baby, drill" was introduced at the Republican convention and later chanted by candidates and crowds. Given this background, it is not surprising to see a political division in how people answered the poll's renewable/drilling question, but this division does not change the picture of strong public support for renewable energy. Figure 2 breaks down answers by political party. Large majorities among Democrats (86 percent) and Independents (62 percent) prefer renewable energy development. Even among Republicans, renewable energy finds substantial support (44 percent), although a slight majority (51 percent) give higher priority to more drilling.[8]

Figure 2. Should drilling or renewable energy be a higher priority, by respondent's political party.



Note: Probability-weighted percentages. Sample size is 1,088.

Ecosystems and Quality of Life

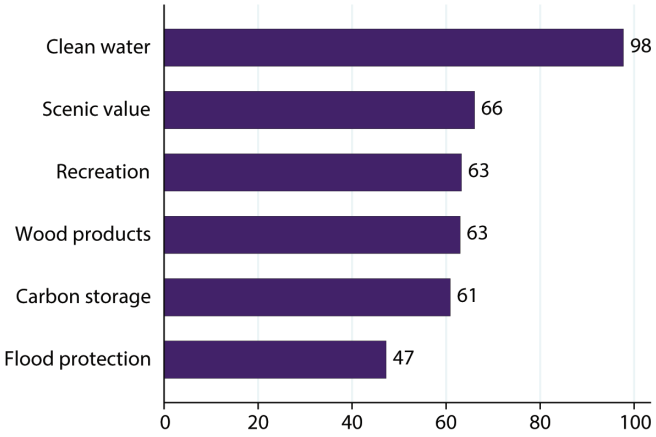
The "New Hampshire advantage" is an expression that sometimes refers to the Granite State's lack of income and sales tax. But, for many people, the state's advantages also include clean air, clean water, abundant natural resources, and a plethora of recreational opportunities. Scientists refer to the amenities and requirements that the natural environment provides as *ecosystem services*. To learn more about how New Hampshire residents value and rank different ecosystem services, the spring 2013 poll asked the following:

I'm now going ask you some questions about things that New Hampshire environments might provide. For each of these I'd like to know whether you think this is very important, somewhat important, or not important to your own quality of life.

- » Clean water
- » Outdoor recreation such as hunting, hiking, or swimming
- » Forests for wood products such as lumber, paper, or fuel
- » Protection from flooding
- » Trees for carbon storage, to help reduce global warming
- » Scenic value of forest and farm lands

Almost everyone (98 percent) views clean water as very important to their quality of life, which is not surprising for this health and survival necessity (see Figure 3).[9] Scenic value of forest and farm lands, however, comes in a strong

Figure 3. Ecosystem services that are very important to your own quality of life.



Note: Probability-weighted percentages. Sample size is 507.

second at 66 percent, followed closely by outdoor recreation opportunities (63 percent), wood products (63 percent), and carbon storage in forests (61 percent). In contrast, protection from flooding is very important to just 47 percent. Its lower ranking could reflect the fact that many people live on high ground, where flood risks seem distant. It might also reflect limited understanding about the connection between floods and ecosystems; natural landscapes, rather than pavement, can better soak up and slow runoff, making flooding from large storms less destructive.

Most of these ecosystem services have strong bipartisan support. Democrats and Republicans assign similarly high importance to clean water, scenic values, and outdoor recreation. Two questions about the value of forests, however, reveal partisan divisions. Republicans are more likely than Democrats to assign very high importance to using forests for wood products (65 versus 54 percent). Conversely, Republicans are less likely to value carbon storage to help reduce global warming (52 versus 72 percent).[10] Despite these differences, majorities from both parties (and Independents) agree that ecosystem services provided by New Hampshire's forests and other ecosystems are important to their own quality of life.

The History of New Hampshire Forests

New Hampshire forests face challenges from cutting and development, driven by population growth and rising amounts of land use per person. As a result, total forest cover has been declining since the early 1980s.[11] Climate change and insect infestations, enhanced by winter warming, add stresses that are likely to increase in the future.[12] Although recent trends are troubling, New Hampshire forests have experienced significant change in the past few centuries. Early settlers in New England had largely cleared off the landscape, cutting trees for wood or simply burning them to make room for farms. By the 1850s, about 70 percent of New Hampshire south of the White Mountains had been cleared. In the late 1800s, heavy logging and fires severely reduced northern forests as well. Downstream, disastrous flooding and sediment-choked rivers showed effects from deforestation and raised public concerns that led to early steps toward forest preservation in the early 1900s.[13] The strengthening conservation movement, combined with the Great Depression and with a shift of U.S. agriculture to less rocky lands farther west, eventually gave forests some space to regrow. By 1980, forest area had recovered from less than 50 percent to approximately 87 percent of the state.[14]

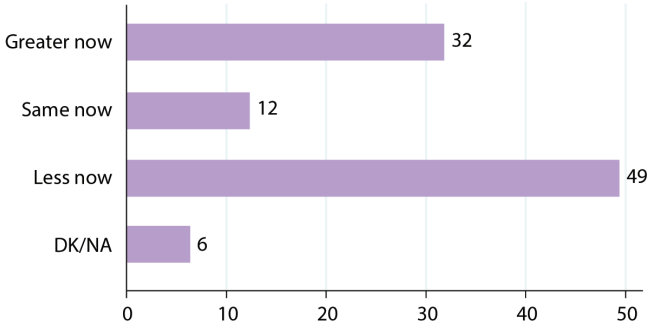
Modern New Hampshire residents have watched trees cut down for development in many parts of the state, and many are aware of rising concerns about insects, climate change, and forest health. Reminders of the older, deforested landscapes are visible in stone fences that run through the woods or dense stands of young trees. Testing awareness of the landscape's history, we asked this question.

Which of the following three statements do you think is more accurate? The area covered by forests in New Hampshire today is ...

- » Greater than it was 100 years ago.
- » About the same as it was 100 years ago.
- » Less than it was 100 years ago.

Only 32 percent of the respondents understood that, even with current challenges, forest cover today is substantially greater than it was 100 years ago. Reflecting recent trends and perhaps a general sense of loss, 49 percent guessed incorrectly that forests cover less area now (see Figure 4).[15]

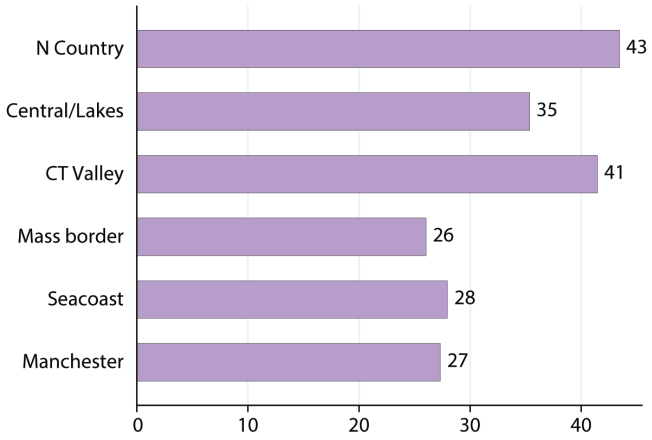
Figure 4. Believe the area covered by forests is greater, the same, or less now than it was 100 years ago.



Note: Probability-weighted percentages. Sample size is 1,171.

Awareness of earlier forest cover is higher in the North Country and Connecticut River Valley regions of the state (see Figure 5). Fewer people in the Massachusetts border, Seacoast, and Manchester regions, where urban development has concentrated, know their landscapes were deforested a century ago.[16]

Figure 5. Aware forest area is greater now, by region of the state.



Note: Probability-weighted percentages. Sample size is 1,171.

Beliefs About Climate Change

The possibility that fossil fuel combustion could change Earth's atmosphere and climate was first proposed in the late 1800s. Since then, it has developed from a scientific hypothesis into a broad area of research.[17] In recent decades, even as the consensus among scientists strengthened, polarization on this topic grew wider among political leaders and the U.S. public.[18] To track what the New Hampshire public believes about climate change, we asked the following question:

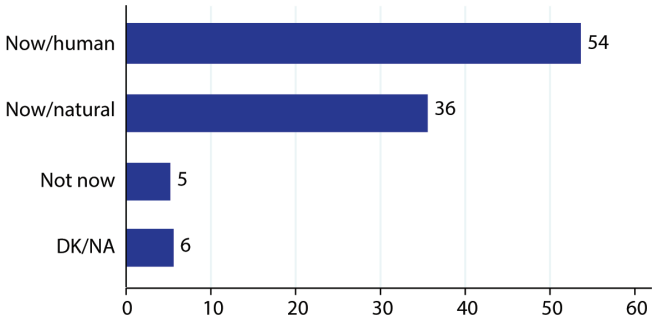
Which of the following three statements do you personally believe?

- » Climate change is happening now, caused mainly by human activities.
- » Climate change is happening now, but caused mainly by natural forces.
- » Climate change is NOT happening now.

Interviewers read the response choices in rotating order to avoid possible bias. In agreement with this scientific consensus, 54 percent of the respondents chose the now/human response (see Figure 6).[19]

The results resemble those from a summer 2011 survey that asked the same question nationwide.[20] On the national survey, 52 percent said climate change is happening and

Figure 6. What do you personally believe about climate change?



Note: Probability-weighted percentages. Sample size is 6,893.

caused mainly by humans, whereas 39 percent agreed change is happening but mainly for natural reasons.

Over the time span of polling thus far, from April 2010 through April 2013, there has been no general up or down trend. The wide gap between Democrats (almost 80 percent agree that current changes are caused mainly by human activities) and Republicans (less than 30 percent) has been stable. Independent voters land in the middle. A recent analysis found that the beliefs of Independents, in particular, tend to vary with daily temperature.[21]

Conclusion

By a two-to-one margin, New Hampshire residents surveyed by the Granite State Poll believe that increased use of renewable energy should be a higher priority than more exploration and drilling for oil. Similarly, high percentages say that ecosystem services including clean water, scenic values, outdoor recreation, and trees for wood products or climate benefits are very important to their own quality of life. Although partisan differences are evident on several questions, there is broad agreement on most points.

Responses to a question about flooding suggest the need for better awareness about connections between land cover and the extent and magnitude of flooding that can occur during a large storm. Residents could also use more information on historical forest cover. Most respondents are unaware that New Hampshire's forests cover more area now than they did a century ago.

A large majority believe they understand climate change at least moderately well. When tested, however, knowledge often proves to be thin. It may reflect belief in scientific-sounding but politically spun arguments rather than exposure to the science itself.[21]

Taken together, these survey results show a combination of strong public interest but limited knowledge about larger processes behind environmental conditions. Such environmental processes are topics of active scientific research, and findings

from that research have recognized importance for local, state, and national planning. Interest and knowledge gaps found by public surveys help to highlight areas where there is a need for more effective communication of key scientific findings. Outreach through broader, innovative, and two-way communication with the public has become an increasingly prominent aspect of many scientists' work, including those in the New Hampshire EPSCoR project. It is certain to grow more important as environmental and resource challenges unfold.

ENDNOTES

1. L. C. Hamilton,"Do You Believe the Climate Is Changing? Answers From New Survey Research," Issue Brief No. 3 (Durham, NH: Carsey Institute, University of New Hampshire, 2011).

2. L. C. Hamilton, "Did the Arctic Ice Recover? Demographics of True and False Climate Facts," *Weather, Climate, and Society,* vol. 4, no. 4 (2012): 236–249. doi: 10.1175/WCAS-D-12-00008.1

3. New Hampshire EPSCoR, www.epscor.unh.edu (accessed April 16, 2013).

4. Environmental Law Institute,"Estimating U.S. Government Subsidies to Energy Sources: 2002–2008" (Washington, DC: Environmental Law Institute, 2009), available at www.eli.org/Program_Areas/innovation_governance_energy.cfm (accessed April 13, 2013).

5. M. Moiman, "Renewable Energy in New Hampshire—Part 1," available at nhenergy.blogspot.com/2013/01/renewable-energy-in-new-hampshire-part-1.html (accessed April 13, 2013); New Hampshire Office of Energy and Planning, "Renewable Energy Incentives: Local, State, Federal" (Concord: New Hampshire Office of Energy and Planning, 2013), available at www.nh.gov/oep/programs/energy/RenewableEnergyIncentives.htm (accessed April 13, 2013); New Hampshire Climate Change Policy Task Force, "The New Hampshire Climate Action Plan: A Plan for New Hampshire's Energy, Environmental, and Economic Development Future," (Concord: NH Department of Environmental Services, 2009), available at http://des.nh.gov/organization/divisions/air/tsb/tps/climate/action_plan/nh_climate_action_plan.htm.

6. All percentages reported in this brief include a minor statistical adjustment called *weighting*, as commonly done in serious survey research. Weighting gives results that better represent census profiles of the New Hampshire population. The "margins of error" or approximate 95 percent confidence intervals for weighted percentages in Figure 1 are plus or minus 3 points.

7. For examples from coastal Maine, see T. G. Safford and L. C. Hamilton,"Ocean Views: Coastal Environmental Problems as Seen by Downeast Maine Residents," New England Policy Brief No. 3 (Durham, NH: Carsey Institute, University of New Hampshire, 2009), available at www.carseyinstitute.unh.edu/publication/ocean-views-coastal-environmental-problems-seen-downeast-maine-residents (accessed April 14, 2013).

8. The partisan differences in Figure 2 are statistically significant ($p< .001$). Design-based F statistics, appropriate for weighted percentages (see endnote 6), were used for hypothesis tests reported in this brief.

9. Confidence intervals for the weighted percentages in Figure 3 are about plus or minus 5 points.

10. Republican and Democrat responses are significantly different ($p< .05$) on the two forest questions but not significantly different on other ecosystem services questions.

11. S. Thorne and D. Sundquist,"New Hampshire's Vanishing Forests: Conversion, Fragmentation, and Parcelization for Forests in the Granite State" (Concord, NH: Society for the Protection of New Hampshire Forests, 2001).

12. New Hampshire Department of Environmental Services, "Global Climate Change and Its Impact on New Hampshire's Forests and Timber Industry" (Concord: New Hampshire Department of Environmental Services, 2008); L. Iverson, A. Prasad, and S. Matthews, "Modeling potential climate change impacts on the trees of the northeastern United States," *Mitigation and Adaptation Strategies for Global Change*, 13(5-6) (2008): 487–516.

13. See http://www.foresthistory.org/ASPNET/Policy/Weeks-Act/index.aspx.

14. D. Foster et al.,"Wildlands and Woodlands: A Vision for the New England Landscape" (Cambridge, MA: Harvard Forest, Harvard University, 2010), available at www.wildlandsandwoodlands.org (accessed April 14, 2013).

15. Confidence intervals for the weighted percentages in Figure 4 are about plus or minus 3 points.

16. Regional differences graphed in Figure 5 are statistically significant ($p< .05$). Partisan differences on this historical question are not statistically significant.

17. S. R. Weart, *The Discovery of Global Warming*, revised edition (Cambridge, MA: Harvard University Press, 2008), available at www.aip.org/history/climate/index.htm (accessed March 21, 2013).

18. A. M. McCright and R. E. Dunlap,"The Politicization of Climate Change: Political Polarization in the American Public's Views of Global Warming," *Sociological Quarterly*, vol. 52 (2011): 155–194. For the scientific consensus on climate change, see N. Oreskes, "The Scientific Consensus on Climate Change," *Science*, vol. 306, no. 5702 (2006): 1686; G8+5, "G8+5 National Academies' Joint Statement: Climate Change and the Transformation of Energy Technologies to a Low Carbon Future," National Academies of Brazil, Canada, China, France, Germany, India, Italy, Japan, Mexico, Russia, South

Africa, UK, and USA, 2009, available at www.nationalacademies.org/includes/G8+5energy-climate09.pdf; National Research Council, *Advancing the Science of Climate Change* (Washington, DC: National Research Council of the National Academies, 2010); K. W. Richardson et al., *Climate Change 2007—The Physical Science Basis,* contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (Cambridge: Cambridge University Press, 2009); *Synthesis Report from Climate Change: Global Risks, Challenges & Decisions* (Denmark: University of Copenhagen), available at www.pik-potsdam.de/news/press-releases/files/synthesis-report-web.pdf; P. T. Doran and M. K. Zimmerman, "Direct Examination of the Scientific Consensus on Climate Change," *EOS,* vol. 90, no. 3 (2009): 22–23; J. Cook et al., "Quantifying the consensus on anthropogenic global warming in the scientific literature," *Environmental Research Letters*, vol. 8, no. 2 (2013), available at http://iopscience.iop.org/1748-9326/8/2/024024/article.

19. Because Figure 6 is based on almost 7,000 interviews, confidence intervals for the weighted percentages are much narrower (more precise) than other results in this brief: about plus or minus 1 percentage point.

20. L. C. Hamilton, "Do You Believe the Climate Is Changing?", available at carseyinstitute.unh.edu/publication/do-you-believe-climate-changing-answers-new-survey-research (accessed April 14, 2013).

21. L. C. Hamilton and M. D. Stampone,"Blowin' in the Wind: Short-term Weather and Belief in Anthropogenic Climate Change," *Weather, Climate, and Society,* vol. 5, no. 2 (2013): 112–119. doi: 10.1175/WCAS-D-12-00048.1

22. Hamilton, "Did the Arctic Ice Recover?"

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