

NDARE 2010 Energy Efficiency Survey Findings and Report

Produced for the

North Dakota Alliance for Renewable Energy

By

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SURVEY METHODOLOGY

Between September 1st and October 15th, 2010, the Bureau of Governmental Affairs conducted a phone survey of 600 randomly selected residents of the state of North Dakota over the age of eighteen to determine the distribution of attitudes and opinions among citizens on the subject of energy efficiency. The questionnaire was developed by the North Dakota Alliance for Renewable Energy (NDARE), with input from the Bureau. The survey instrument consisted of 34 questions designed to gather information on energy consumption patterns and opinions on a range of energy policies currently under consideration in the state. Additional questions were also included to measure certain demographic characteristics of the respondents.

The sample was drawn from randomly generated telephone numbers purchased by the Bureau from Qwest Communications, and were chosen to ensure that each region was proportionately represented. The percentages for each region were as follows: Northwest, 19.3 percent; Southwest, 14.7 percent; South Central, 18.7 percent; Southeast, 24.7 percent; Northeast, 22.7 percent¹. Most calls were made between 6:00 PM and 9:00 PM in the evening, Monday through Thursday. The size of the sample was calculated to produce estimates of the opinions of the population as a whole within a range of plus or minus 4% in 95 out of 100 samples. In other words, we are 95 percent confident that the opinion of the true population will be no more than 4% higher or 4% lower than the numbers reported in this sample. This level of statistical confidence meets or exceeds the standards commonly used in opinion polling today and may be considered a reliable indicator of the actual opinions of the citizens of North Dakota at the time the survey was conducted.

SURVEY RESULTS

This report includes a copy of the survey with the response percentages for each question on the survey (Appendix C). We have also calculated cross-tabulation tables to show how the responses to each question break down within the demographic data that were included in the survey (Appendix B). To assist with the interpretation of these data, we have selected key findings and data for discussion have been organized and presented into tables for this report. In the first section, the demographic characteristics of the sample are presented to give the reader an understanding of who responded and who did not. The remaining results are organized into four sections. The first discusses attitudes toward energy efficiency, the second examines improvements and incentives for improving energy efficiency, the third looks at what motivates citizens to increase energy efficiency, and the fourth assesses the level of support for proposed energy policies.

Demographics:

The primary demographic characteristics gathered for this sample were education, political party, gender, income, and the type of area in which the resident lives². The characteristics of the sample in each of these

¹ A list of the counties included in each region is provided in Appendix A at the end of this report.

² For complete information on the responses to each question, please refer to the frequency tables provided in Appendix C at the end of this report.

categories is not statistically different from those observed in previous surveys completed through the Bureau, suggesting that the sample used for this analysis is representative of the larger population on these dimensions. For this sample, the gender breakdown among responses was 49 percent male and 51 percent female. With regard to education, 28 percent reported an education level of high school or less, another 35 percent have attended some college, 27 percent have a Bachelor’s degree, and 11 percent have a post-graduate degree. When asked to characterize their community, 23 percent said they live in a city, 36 percent said a small town, and 41 percent said a rural area.

On political ideology, the sample also exhibits a normally shaped distribution that is consistent with previous studies of North Dakota. Of those who answered this question, the greatest number (43 percent) claim no party affiliation (Independent), while 35 percent self-identified as either strong Republican or leaning Republican and 22 percent were strong Democrat or leaning Democrat. Nearly 11 percent of respondents declined to answer this question however, perhaps due to the charged atmosphere observed in an election season.

Income distribution within the sample is displayed in Table 1 below. The average income range is between \$50,000 and \$75,000, with slightly more respondents with incomes over \$75,000 and slightly fewer with incomes under \$25,000. This means that the findings may be more reflective of the affluent residents of North Dakota than of the population overall. Approximately 16 percent of respondents declined to answer this question.

Which of the following best describes your combined annual household income?

Table 1: Income distribution					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Under 25,000	86	14.3	17.0	17.0
	25,000-50,000	131	21.8	25.8	42.8
	50,000-75,000	136	22.7	26.8	69.6
	More than 75,000	154	25.7	30.4	100.0
	Undisclosed	93	15.5		
Total		600	100.0		

Questions were also asked on the questionnaire about characteristics of respondents’ housing, including renting vs. owning and the type, age, and energy efficiency of the respondent’s primary residence. By a very large margin, the respondents in this sample are home owners and reside in single-family homes. Approximately 86 percent of respondents own their primary residence, while 14 percent rent. Roughly 83 percent reside in single-family homes, 5 percent live in mobile homes, 4 percent in condos or twin homes, and another 7 percent live in apartments. The age of the homes represented in the sample skews toward older homes, with only 15 percent less than 10 years old. Twenty percent are between 11 and 25 years old, 35 percent are between 26 and 50 years old, and nearly a third (30 percent) are more than 50 years old.

Attitudes toward energy efficiency:

One of the objectives of this survey was to discover how North Dakotans think about energy efficiency, whether those attitudes have changed in the past five years, and if they have taken measures to increase the energy efficiency of their homes. Given the national attention that has been focused lately on energy-related issues, it is perhaps unsurprising that 65 percent report that efficiency is very important to them and another 32 percent indicate that it is somewhat important. Only 3 percent indicated little or no importance. When broken down by demographic groups however, the data show that some groups are more concerned about efficiency than others.

Table 2 shows the data stratified by six of the demographic characteristics introduced above. A chi-square test compares the differences observed in the data between groups and identifies those that are statistically different from the overall percentages. In this case, a statistically significant relationship is observed between groups for education, income, and gender. This suggests that females, those with the least education, and those with the lowest incomes are significantly more concerned about energy efficiency than the average.

A different pattern is observed however, when considering how attitudes about consumption have changed over the past five years. Although a similar percentage (64 percent) indicate that they think more about consumption today than five years ago, a chi-square test for this question reveals that those reporting the greatest change are renters and the most educated. The combination of these two findings suggests that the recent emphasis on conservation and energy efficiency has had the desired effect of increasing awareness overall, but that for the least educated and poorest of our citizens it is nothing new.

		Table 2: the importance of energy efficiency				
		Very important	Somewhat important	Not too important	Not important at all	Total
Own/rent	Own	65%	33%	2%	0%	100%
	Rent	64%	32%	4%	1%	100%
live	Rural area	66%	32%	1%	0%	100%
	Small town	68%	29%	3%	0%	100%
	City	59%	37%	2%	2%	100%
education	High School or less	79%*	19%	2%	1%	100%
	Some college/2 year degree	59%	37%	2%	1%	100%
	4-year degree	61%	39%	1%	0%	100%
	Graduate School	60%	38%	2%	0%	100%
ideology	Strong Republican	58%	40%	2%	0%	100%
	Lean Republican	56%	43%	0%	1%	100%
	Independent	68%	29%	3%	0%	100%
	Lean Democrat	67%	31%	2%	0%	100%
	Strong Democrat	72%	25%	2%	2%	100%
income	Under \$25,000	80%*	17%	1%	2%	100%
	\$25,001 - \$50,000	65%	31%	4%	0%	100%
	\$50,001 - \$75,000	60%	39%	1%	0%	100%
	More than \$75,000	62%	36%	2%	1%	100%
gender	Male	60%	37%	3%	1%	100%
	Female	71%*	28%	1%	0%	100%
	Total	65%	32%	2%	1%	100%

Energy Improvements

Respondents were also asked if they or their landlord had done anything to improve the energy efficiency of

their residence within the last five years. Sixty-four percent indicated that they have made improvements, but varied considerably in specifics. Table 3 shows the percentage of the 380 respondents who answered ‘yes’ for a range of potential improvements.

Table 3: Energy Improvements		Count	Row N %
insulation.caulking.stripping	Yes	260	68%
eff.windows.doors	Yes	271	71%
eff.heating.cooling	Yes	164	43%
eff.lighting	Yes	170	45%
eff.appliances	Yes	178	47%
energyaudit	Yes	24	6%
adjust.install.thermostat	Yes	164	43%
turn.off.app.devices	Yes	240	63%

From these data, it appears that the most common improvement undertaken is to upgrade windows and doors, followed closely by insulation and simply turning off devices when not in use. Many respondents indicated multiple improvements over a 5-year period, suggesting that once a decision to increase efficiency has been made, subsequent improvements are more likely. As illustrated in Table 4, the average number of improvements was 4, with 12 respondents (3.2 percent) reporting that they had engaged in every efficiency improvement. Twenty-five respondents indicated that they had taken measures to improve efficiency that were not on the list, such as new roofs, improved skirting, solar technologies, and others. A complete list of these responses can be found among the tables in Appendix C.

Table 4: Number of energy improvements

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	59	15.6	15.6	15.6
	2.00	59	15.6	15.6	31.1
	3.00	48	12.7	12.7	43.8
	4.00	53	14.0	14.0	57.8
	5.00	64	16.9	16.9	74.7
	6.00	57	15.0	15.0	89.7
	7.00	27	7.1	7.1	96.8
	8.00	12	3.2	3.2	100.0
Total		379	100.0	100.0	

Energy Audits

By a sizeable margin, the least common improvement mentioned was the energy efficiency audit, which is a surprising finding given the relative simplicity and low cost associated with this improvement compared to many of the

other options. When asked how familiar they were with the costs and benefits of a home energy efficiency audit, only 32 percent answered either slightly or very familiar. When asked how much they would be willing to pay for an energy audit of their home, respondents showed considerable variation in their answers. Over half the respondents (56.7%) indicated they would not pay anything for an energy audit, though two thirds of these (65.9%) said they would be interested if the audit were free.

Tables 5a and 5b show the number and percentage of respondents in each price range. The data show that 42.8 percent of respondents are willing to pay something for the information conveyed by an energy audit. Approximately 40 percent of this group loses interest when the price climbs beyond the \$50 range, and another 33 percent drop out when the price climbs beyond \$100. Less than a quarter of those willing to pay - and only 12 percent of the sample overall - would be willing to pay more than \$100 for an energy audit of their home. In contrast, an energy audit that was provided free of charge would be appealing to roughly 80 percent of the sample (the 42.8 percent who would pay something, plus the 37.3 percent that expressed interest if free).

Table 5a: Audit.payment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	\$1-\$50	103	17.2	40.1	40.1
	\$51-\$100	85	14.2	33.1	73.2
	\$101-\$150	24	4.0	9.3	82.5
	\$150-\$200	27	4.5	10.5	93.0
	\$250 or more	18	3.0	7.0	100.0
	Total	257	42.8	100.0	
Missing	System	343	57.2		
Total		600	100.0		

Table 5b: Audit.followup

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No interest at any price	116	19.3	34.1	34.1
	Only if it was free	224	37.3	65.9	100.0
	Total	340	56.7	100.0	
Missing	System	260	43.3		
Total		600	100.0		

Incentive Programs

Respondents appeared similarly unfamiliar with current rebate or incentive programs related to improving efficiency. Thirty-four percent of the sample said they were either slightly or very familiar with incentive and rebate programs, yet only 22 percent indicated that the decision to improve their residences had been influenced by

government incentives, and only 17 percent indicated that they or their families had taken advantage of an incentive program. Anticipating the need for increased information about available incentive opportunities, respondents were asked about their preferences for learning about increasing energy efficiency. As shown in Table 6, respondents are most likely to turn to the Internet for information, followed by family and friends and their utility provider.

Table 6: Sources of Information				
	Highly unlikely	Somewhat unlikely	Somewhat likely	Highly likely
internet	24%	8%	12%	56%
utilityprovider	15%	21%	35%	28%
govtagency	39%	29%	22%	10%
ext.service	34%	27%	25%	14%
library	61%	19%	12%	9%
family.friends	15%	19%	36%	31%

When questioned about the feasibility of a “one stop shop” for information related to incentives and other information relevant to energy efficiency, a solid 76 percent of respondents indicated that they were either somewhat likely or very likely to make use of such a resource. And once again, respondents expressed a marked preference for services delivered through an online website. Respondents appear to prefer the flexibility to research the information on their own schedule and at their own pace over having the assistance of a person to explain the available options. Their preferences in this regard are shown in Table 7 below.

Table 7: One stop shop delivery options				
	Highly unlikely	Somewhat unlikely	Somewhat likely	Highly likely
stndrd.website	23%	10%	22%	45%
vid.conference	47%	28%	16%	10%
nonprofit	29%	29%	29%	14%
local.build.depts	27%	27%	29%	17%
tele.number	35%	26%	23%	16%

Utility Providers

A series of questions on the proper role of utility providers provides context for these preferences. Fifty percent of respondents in the sample get their electricity from investor-owned utilities, and 41 percent are served by rural electric cooperatives. Another 3 percent are served by municipal utilities, and 6 percent were unsure of the nature of their provider. Respondents were asked three questions about their expectations of utility providers, and their responses are shown in Table 8 below. According to the data, it is very important to North Dakotans that their utilities provide both information on how to increase efficiency and incentives to do so. Over 80 percent in both cases

chose 'somewhat' or 'a lot' to describe the importance of these activities.

Table 8: Utility Providers

	Not at all	Just a little	Somewhat	Alot
elect.util.encourage	13.9%	22.7%	35.7%	27.7%
elect.util.info	4.4%	14.3%	37.4%	44.0%
elect.util.incentive	6.2%	12.4%	33.3%	48.2%

When it comes to evaluating existing utility efforts, support is somewhat weaker, though a majority still indicates that their utility does a good job at encouraging them to become more efficient.

Motivations

There are a variety of reasons for desiring to increase the energy efficiency of your home. To understand the motivations of North Dakotans when it comes to saving energy, respondents were asked a series of questions about which reasons matter most to them. As shown in Table 9, the most practical and pragmatic reasons were the most frequently cited as highly important. But perhaps more surprising, ideological motivations such as preserving natural resources, promoting energy independence or preventing climate change were cited as important to majorities of the sample. In fact, the only motivation not to be identified as somewhat or very important by a majority of respondents was the availability of low interest loans. Though not all citizens will choose to make the investment in energy efficiency, these responses suggest that North Dakotans understand the implications of their choices, and are factoring broader societal concerns into their decision calculus.

Table 9: Motivations for increasing energy efficiency

	Not at all important	Not too important	Somewhat important	Very important
savings.exceed.costs	4%	8%	23%	65%
incentives.available	14%	21%	33%	33%
loans.available	32%	19%	25%	25%
preserve.resource	10%	14%	31%	45%
protect.enviro	8%	14%	30%	48%
prev.climate.change	24%	18%	23%	36%
avoid.waste	7%	11%	27%	55%

Respondents were also asked about their familiarity with the ENERGY STAR rating systems and the importance of these ratings when making a major purchase. Interestingly, respondents reported mixed levels of familiarity with the program – roughly 45 percent were either somewhat or very familiar with the program – yet solid majorities indicated that the ENERGY STAR rating is somewhat or very important when making purchases. The results of these questions are shown in Table 10 below. One interpretation of these results is that the ENERGY STAR brand is highly trusted even if not highly understood, and is highly valued when citizens begin to think about conserving energy.

Table 10: Energy Star Rating Importance

	Not at all important	Not too important	Somewhat important	Very important
purchase_appliance_washer_dryer_dishwasher	5.7%	8.7%	31.8%	53.8%
purchase_heating_airconditioning	6.4%	6.0%	23.0%	64.6%
purchase_home	10.7%	11.9%	30.5%	46.9%

Support for Energy Policies

Respondents were asked five questions about specific energy policy options under consideration by North Dakota lawmakers. Overall, their responses show a surprising level of support for policies that increase energy efficiency, even when there are costs involved with those policies. Eighty-one percent of respondents indicated either strong or moderate support for loan programs to increase the energy efficiency of schools, 85 percent support requiring high energy efficiency standards for public building projects, and 82 percent favor amending building codes to require energy efficiency standards in all new construction. These results are summarized in Table 11.

Table 11: Support for energy efficiency policies

	Do not support	Somewhat do not support	Somewhat support	Support
school_loans	7.2%	11.9%	30.9%	50.0%
standards_public_projects	5.5%	9.4%	33.3%	51.8%
standards_construction	8.0%	11.0%	33.5%	47.5%

Respondents were also asked to consider how the constitutional trust fund should be used, and whether they would be willing to support an additional charge on their utility bill to fund energy efficiency projects. Eighty-eight percent of respondents said that the trust fund should be used for both project types equally, but split somewhat when it came to the increased charge on their bill. As Table 12 shows, the distribution on this question was much more evenly spaced than on previous questions. A majority of respondents (54%) are at least partially willing to support the idea, but support for a fee-based approach appear significantly weaker than support for programs funded by the trust fund or general tax revenue.

Table 12: Support for a small charge to support energy efficiency policies

	Do not support	Somewhat do not support	Somewhat support	Support
engybill	29.3%	16.6%	22.9%	31.2%

CONCLUSIONS

Based on the data collected for this survey and the analyses presented here, a number of interesting conclusions can be drawn about the attitudes and opinions of North Dakotans toward energy efficiency. First, they appear to be quite concerned about energy efficiency. Many are more concerned now than they were 5 years ago, but for others it has been a growing concern for some time. They also have been and continue to be willing to invest in energy efficiency improvements for their home, yet fewer than one in four are taking advantage of federal and state programs to incentivize these upgrades. Many appear to be largely unaware of the programs and incentives that might pertain to them, but express interest in learning more about them. Their preferred method of information delivery is through the web, and they express interest in a “one-stop shop” as a resource that could provide relevant information from a single web point. Finally, despite a strong general interest in increasing efficiency, North Dakotans are not overly familiar with the benefits of an energy efficiency audit, and as such are unwilling to pay much for the benefits it provides. In contrast, they appear to see value in increasing the energy efficiency of schools and other public buildings, and support policies to require increased standards in these areas.