

Colorado Homeowner Preferences on Energy and Environmental Policy

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NREL

National Renewable Energy Laboratory

1617 Cole Boulevard
Golden, Colorado 80401-3393

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Prepared under Task No. PV908201



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Colorado Homeowner Preferences on Energy and Environmental Policy

Executive Summary

Colorado homeowners follow national trends in preferring renewable energy over conventional energy sources. They tend to view nuclear energy, coal, and oil as posing environmental threats when used to produce electricity. Homeowners regard solar and wind power as the best electricity sources from an environmental standpoint.

Solar energy and wind power are also ranked highest of all electricity sources on a number of other factors, including safety, cost, abundance, national self-reliance, meeting growing energy demands, stimulating economic development, diversifying our energy mix, adding high-tech jobs, and improving our economy.

The most important environmental problems defined by the survey respondents are water pollution, air pollution, and resource depletion. Respondents indicate that they perceive only a moderate link between energy and environmental problems. This may be because the connection between energy and water pollution is not clear to homeowners.

When asked to rank 11 renewable energy sources that would best meet the energy needs of Colorado, homeowners most frequently select PV, wind power, and passive solar energy.

Most homeowners favor the idea of utilities adding renewables to their resource mix. Among those "favorable, environmental benefits" and "conserving natural resources" are important reasons.

Sharing the cost of developing renewables, either through federal subsidies, rate-basing, or a combination of an electricity rate increase and green pricing, appears to be the most favored solution to the problem of funding the development of renewables. Most homeowners (81%) are willing to pay a modestly higher electricity rate to have renewables included in the fuel source mix; the most frequently mentioned amount is \$2.25 per month. Nineteen percent say they are unwilling to pay a higher electricity rate for green power.

Report Highlights

- Water and air pollution are perceived as the most important environmental problems
- Environmental problems are viewed as somewhat energy-related
- Solar and wind power are viewed as the least environmentally threatening sources of electricity; nuclear energy and coal are viewed as the most environmentally threatening
- Among renewables, PV and wind power are seen as the best sources for meeting energy needs
- Homeowners trust their utility companies, and want them to add renewables to their energy mix
- Homeowners prefer to see the costs of developing renewables shared broadly, either through federal subsidies of electricity generation from renewables or modest increases in electric rates
- Most homeowners are willing to pay a higher electricity rate for green power, but one in five homeowners are unwilling to pay a rate increase for green power
- When it comes to *voluntary* green pricing programs, most homeowners are willing to pay an additional amount more on their electric bills for green power
- Utility restructuring is favored by the largest percentage of homeowners
- Most homeowners agree that "utility customers don't have enough choice in their electric service today"
- Colorado homeowner preferences mirror those expressed in national polls.

Respondents were asked to assume that the use of renewable electricity would, for the immediate future, depend on the voluntary actions of electricity customers. They were asked whether they would choose to pay more for renewable electricity. Thirty-eight percent say they are likely to pay more, 21% are neutral, and 37% say they are unlikely to pay more. However, when then asked about specific amounts, 76% of the homeowners say they are willing to pay at least \$1 more per month on their electric bill to get some or all of their electricity from green power. A majority say they would pay at least \$4 more per month. The most frequently selected amount, by 20%, is \$5 more per month.

A plurality of 47% of homeowners is favorable toward the idea of utility restructuring; however, respondents may not have known enough about restructuring to respond in more than a tentative manner. Reasons for favoring restructuring emphasize competition and keeping prices down. Reasons for an unfavorable response are that electricity would or could cost more.

When asked about the basis on which they would choose an electricity service provider—should they have a choice—homeowners indicate *price of electricity* and *quality of customer service* as the most important criteria. The provider's reputation is also an important choice factor. Environmental effects are viewed as important, but less so than price and service. The geographic location of the provider is not an important utility choice criterion.

Colorado utilities seem to have a relatively good reputation with their customers. Homeowners are, in general, satisfied with the service they receive. They also favor utility development of clean-coal technology to help control emissions. Widespread support exists for utilities to develop renewables as part of their electricity generating mix. However, a majority perceive reluctance on the part of their utilities to do so.

In conclusion, more-affluent, married Colorado single-family homeowners are somewhat favorable to utility restructuring; want to see green power developed; prefer to share the costs broadly by various means; are willing to pay slightly higher electricity rates to develop renewable sources of electricity; and believe that utility customers don't have enough choice in their electric service today.

Colorado Homeowner Preferences on Energy and Environmental Policy

Introduction

A survey on energy and environmental policy was conducted in conjunction with a more comprehensive market assessment of residential grid-tied photovoltaic (GPV) systems for Colorado. Data were collected by the University of Colorado from May 1998 through July 1998. A mail questionnaire focused on important contextual issues, including broad questions concerning energy preferences, environmental concerns, and utility restructuring, as well as attitudes toward utility companies. Respondents were asked to complete this questionnaire in addition to a longer, companion questionnaire about GPV.¹ The study included these additional questions to permit analysis on whether perceptions and policy preferences on energy and the environment affects homeowner interest in purchasing residential GPV.²

The questionnaire was sent to a probability sample³ of single-family homeowners in the state of Colorado. This sample was drawn from a sampling frame that included only homeowners who represent married couples with annual incomes of \$50,000 or more. The number of respondents was 206, for a response rate of approximately 60%. Based on this number of respondents, the margin of error associated with the results of any individual question is approximately 6.7%.

The survey respondents (henceforth known as "the sample") are more representative of affluent, married homeowners in Colorado than of all homeowners in the state.⁴ In fact, 95% of them are married and 83% have annual incomes of at least \$50,000.⁵ Seventy-six percent are male heads of households. More than half (52%) represent two-parent families with children, and another 40% represent two-adult families (no children). The majority (54%) are between 25 and 49 years of age, and 36% are 50 to 64 years of age. Occupationally, 26% describe themselves as professionals and 19% as managers or executives. Thirteen percent own their own businesses, 10% are skilled trade or craft workers, and 12% are retired. The balance work in a variety of other occupations.

Environmental concern has been increasing for many years, as shown in national poll data (Farhar 1994a, 1994b, 1996). For example, in the 1970s, opinions of national survey respondents were polarized when a trade-off was posed between adequate energy and environmental protection. About 35% were on each side of the question in 1973, and the percentage hovered around that point until 1981. Then, public opinion began to diverge and, by

¹Findings from the GPV survey are reported in Farhar and Coburn (1999).

²Results from the GPV analysis are not included in this report.

³The sample was chosen using the interval selection method of systematic sampling. A commercially available sampling frame was employed.

⁴This sample differs significantly from the larger GPV sample in the following ways: a statistically higher percentage of respondents are married, have higher incomes, are between 50 and 64 years of age, and live in two-parent families with children. In addition, fewer are retired and fewer are age 65 or older. This sample does not differ significantly from the larger GPV sample on educational attainment, geographic area of residence in Colorado, political orientation, type of community (rural versus urban), choice of primary heating fuel, utility service territory, likelihood of moving, and lifestyle and values.

⁵These numbers are not each 100% owing to changes in actual respondent characteristics occurring after the point in time when the frame was constructed, and/or to initial frame inequities.

1990, a clear majority of respondents expressed more concern for the environment than for adequate energy supplies. For the first time in two decades, survey data indicated that a majority of the population believed environmental protection laws and regulations had not gone far enough.

Trends in public opinion polls have also shown long-standing preferences for renewables and efficiency over other energy sources and usage patterns. Majorities of respondents to national polls dating back to 1979 prefer renewable energy and energy efficiency over other alternatives when cost or price are not mentioned. The pattern of preferences for using renewables to supply energy and energy efficiency to decrease demand has been consistent in the poll data for 20 years. This is one of the strongest patterns identified in all of the national poll data on energy and the environment. In addition, majorities of the respondents, ranging from 56% to 80%, say they would pay a premium for environmental protection or renewable electricity.

Energy preferences and environmental concerns are linked. National survey data show that most environmental concerns—such as air pollution, oil spills, acid rain, pollution from automobiles, and the greenhouse effect—are energy related, in the minds of respondents (Cambridge Reports/Research International 1990). A 1993 survey asked whether respondents agreed with the statement that every time we use coal or oil or gas, we contribute to the greenhouse effect. Nearly two-thirds said the statement was "probably true" or "definitely true," showing awareness of a connection between energy cause and environmental effect (National Opinion Research Center 1993). Electricity customers were asked to rank energy sources used to generate electricity in terms of their perceived environmental threat (Cambridge Reports 1990). The results indicated that solar energy was perceived as least risky, followed by hydropower and natural gas. Oil, solid waste incineration, coal, and nuclear power, respectively, were perceived as the most environmentally risky sources. These and other data directly show, or imply, that the public has begun to connect energy production and use with damage to the environment (Farhar 1993;1996).⁶

Attitudes toward utility companies have become more favorable than they were in the late 1970s and early 1980s, when the oil and utility price shocks occurred (Farhar 1994a). A 1989 Roper poll found that electric utilities ranked fourth on a list of 12 types of services in terms of excellence of service provided⁷ (Farhar 1993). The percentages of respondents assigning positive ratings to utilities have remained high in recent years. In a 1989 Roper poll, 77% said their electric utility provided "excellent service" or "good service." In 1990, 93% of a national sample said they were "very satisfied" or "satisfied" with public utilities, such as their gas company, electric company, or phone company. In 1992, 84% of a national sample said they were "very satisfied" or "reasonably satisfied" with the electric company in their area (Farhar 1993).

The present study provided an opportunity to collect data to determine whether a sample of Colorado homeowners reflects the same opinions on energy and environmental policy as those expressed in national polls. In addition, it provided the chance to empirically document whether homeowners explicitly connect energy production and consumption with environmental concerns.

This report, which summarizes the findings of the perceptions and preferences of Colorado homeowners, is organized into the following five sections:

Section One: Ranking of environmental problems and the degree to which energy and environmental concerns are linked

⁶Studies mentioned showing national polling data are cited in Farhar (1993, 1996).

⁷Such as supermarkets, doctors, banks, phone companies, department stores, credit card companies, and mail order companies.

- Section Two: Preferences among energy alternatives, including perceived environmental threat of various energy sources and preferences among renewable energy sources
- Section Three: Preferences between rate-basing and green-pricing approaches to paying for renewable electricity, and on state willingness to pay more for green power
- Section Four: Favorability toward restructuring and utility choice criteria in a competitive environment
- Section Five: Attitudes toward utility companies, including trust and criticisms, and attitudes toward utility involvement in renewables.

Section One Energy and the Environment

This section presents findings on Colorado homeowners' ranking of the importance of environmental problems.

Respondents were provided with a list of 10 environmental problems and asked:

On a 1 to 10 scale, how important do you think each of the following environmental problems is in today's world?

Not at all important										Very important	Don't know
1	2	3	4	5	6	7	8	9	10		<input type="checkbox"/>

Table 1 summarizes findings on the importance assigned to these environmental problems. The table lists the mean scores from the oversample for each of the problems, as well as three associated response percentages: the percentage of respondents assigning 10 on 1-10 scale, with 1 = "Not at all important" and 10 = "Very important"; the percentage of respondents assigning 8, 9, or 10 ratings; and the percentage of respondents assigning ratings of 7, 8, 9, or 10. This data arrangement shows the percentages giving each environmental problem the greatest importance (the 10 rating), strong importance (an 8, 9, or 10 rating), or, simply, importance (a 7, 8, 9, or 10 rating). Environmental problems are listed in the table from high to low according to the sizes of their mean scores.

Water pollution, air pollution, and resource depletion are the three environmental problems receiving the highest scores, on average. They receive mean importance ratings of 8.0 or more, and approximately 75% of respondents assign them 8, 9, or 10 ratings.

Five environmental problems comprise a second group of problems⁸ receiving mean importance ratings ranging from 7.1 to 7.9. The percentage of respondents assigning the strong 8, 9, or 10 importance ratings to these five problems ranges from 49% to 63%. This second group encompasses *hazardous waste and radioactive waste, habitat/species loss, oil spills, and acid rain*.

Mining and climate change/global warming comprise a third group of two environmental problems receiving average scores ranging from 6.4 to 6.6. The percentage of respondents assigning 8, 9, or 10 ratings to these two concerns are 42% to 47%, respectively.

⁸Groupings of items are divided where the mean scores and percentages show natural breakpoints, and also where the mean score of the first item of the group above the break is likely to be significantly higher, statistically speaking, than the mean score of the first item of the group below the break

The mean score is 6.8, indicating that respondents believe environmental problems are somewhat related to energy, but not strongly so. Forty-five percent indicate a strong 8, 9, or 10 relationship, and 62% assign relationship ratings of 7, 8, 9, or 10. Table 2 contains more information pertaining to this question.

Table 2. Linkage of Energy with the Environment

<i>To what extent do you feel our environmental problems are related to energy production and use?</i>	
Response categories	%
Related (7-10)	62
Neutral (5-6)	17
Not related (1-4)	16
Don't know	6
Total	101*
Base n	198
*Percentages do not add to 100 because of rounding.	

In summary, most of today's global environmental problems perceived as important by a majority of Colorado homeowners are energy related. When asked directly, a majority of respondents indicate that energy and our environmental problems are, indeed, related.

Table 3. Perceived Environmental Threat of Various Sources of Electricity

Electricity Source	Mean	%10	%8,9,10	%7,8,9,10	Base n
Nuclear energy	7.2	32	52	65	201
Coal	7.1	18	51	67	199
Oil	7.0	15	49	64	197
Solid waste incineration	5.5	8	23	32	178
Natural gas	4.4	3	11	16	195
Hydropower	3.9	2	10	16	197
Solar	1.9	1	1	1	199
Wind	1.7	1	1	1	201

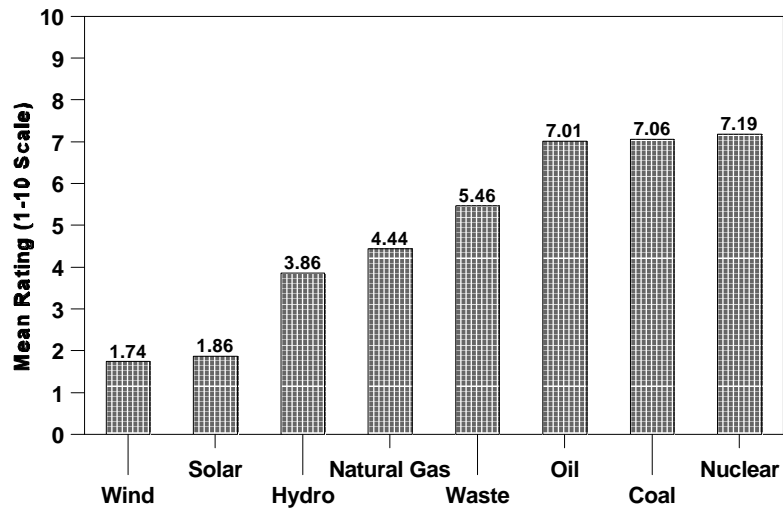


Figure 1. Perceived Environmental Threat of Various Sources of Electricity

Perceived Characteristics of Energy Sources

The second question on comparative energy preferences, modeled after a national poll question, was:

Which source of electricity do you think of most when you read each of the following phrases? [For each phrase, please circle only one energy source.]

Responses about six electricity sources mentioned were solicited: coal, hydropower, natural gas, nuclear, oil, and solar and wind. Respondents were asked to select one of the six sources for each of the listed characteristics. The numbers in parenthesis are the percentage of respondents choosing "solar and wind".⁹

- Best for the environment (79%)
- Safest (70%)
- Most abundant (43%)
- Makes the U.S. most self-reliant (45%)
- Least expensive (24%)
- Will help the most in meeting growing demands for energy (41 %)
- Stimulates economic development the most (24%)
- Diversifies and extends our energy mix the most (52%)
- Improves the quality of our air the most (80%)
- Adds the most new high technology jobs (40%)
- Use of this energy source will increase the most in the 21st century (60%)
- Best for the U.S. economy (32%)
- Most positive for you (51%).

Table A-1 in Appendix A contains information about the responses to these items. Surprisingly, the highest percentage of respondents identifies *solar and wind* as the resource most closely tied to every one of the 13 characteristics listed. Although it might be expected that 79% would indicate that solar and wind are *best for the environment*, it is more surprising that solar and wind are also selected—more often than the other power sources—as the resource that makes the U.S. *most self-reliant*, is *most abundant*, is *best for the economy*, and is *least expensive*. The pattern of findings is similar to that from national poll data.

Particularly large percentages of respondents linked *solar and wind* with four specific characteristics: *improves the quality of our air the most* (80%), *safest* (70%), *use will increase the most in the 21st century* (60%), and *diversifies and extends our energy mix the most* (52%). Other energy sources are not as highly regarded. For many of the characteristics, the least frequently selected sources are fossil fuels. Although nuclear power is selected more often than fossil fuels on all 13 characteristics, nuclear's frequency of selection does not approach that of solar and wind power.¹⁰

These findings corroborate those from other studies in which majorities of respondents in national and local-area samples select renewables as the preferred energy source when respondents are presented with a list of conventional and renewable power sources on which to express their preferences.

⁹Not all potential characteristics of electricity sources were included in this list, nor was energy efficiency included as part of the energy supply options listed.

¹⁰Although solar and wind power are selected most frequently among energy alternatives on each characteristic, the most frequently occurring response for two of the characteristics—35% for *stimulates economic development the most* and 33% for *best for the economy*—was "don't know."

Preferences among Renewable Energy Alternatives

Energy specialists and utility staff are often faced with the problem of deciding which renewable resources would be welcomed, or at least accepted, by their customers. A question was included in the survey to help address this problem.

Listed below are a number of energy sources often thought of as renewable. Of these choices, which three do you think would be best to use for meeting energy needs in Colorado? [Please rank your top three choices, with 1 as your first choice, 2 as your second choice, and 3 as your third choice.]

The choices, listed in the following order, were: biomass power (burning forest or agricultural waste, or energy crops); burning municipal solid waste; geothermal (heat from within the Earth's crust); ground-source heat pumps; small-scale hydropower; large-scale hydropower; landfill gas; passive solar houses; solar cells (photovoltaics/PV) for electricity; active solar (solar domestic hot water systems); wind power.¹¹

Table 4 contains information about the responses to this question. The top-ranked renewable energy sources for Colorado are *solar cells (PV) for electricity*, selected by 33% of respondents as their first choice; *wind power*, selected by 14% as their first choice; *passive solar houses*, selected by 12% as their first choice; and *active solar*, selected by 7% as their first choice. *Biomass power* (1.5%) and *ground-source heat pumps* (0.5%) are selected least often as a first choice on this list.

In summary, the electricity sources perceived as least environmentally threatening—solar and wind—are also the most preferred. In addition to their environmental benefits, solar and wind are preferred over other electricity sources for other positive attributes, such as safety, economic benefits, and self-reliance and diversity of U.S. energy supply.

¹¹Responses to this questions could have been influenced by the fact that the questionnaire was included in a package with the questionnaire on grid-tied photovoltaics.

Table 4. Top-Ranked Renewable Energy Sources for Colorado

Listed below are a number of energy sources often thought of as renewable. Of these choices, which three do you think would be best to use for meeting energy needs in Colorado?

Renewable energy source	1st choice %	2nd choice %	3rd choice %
Solar cells (photovoltaic/PV for electricity)	33	19	15
Wind power	14	22	25
Active solar (solar domestic hot water systems)	7	17	11
Passive solar houses	12	10	10
Large-scale hydropower	9	8	7
Burning municipal solid waste	7	6	8
Small-scale hydropower	6	6	5
Geothermal (heat from within the Earth's crust)	6	4	6
Landfill gas	2	1.5	6
Biomass power (burning forest or agricultural waste, or energy crops)	1.5	2.5	3
Ground-source heat pumps	0.5	3.5	2
Other*	2	0.5	2
Total	100	100	100
Base n	197	192	187

*Included mention of hydrogen.

Section Three

Rate-Basing Versus Green Pricing

This section discusses preferences between two different ways of paying for renewable electricity: (1) rate-basing, a situation in which all electricity customers pay a slight increase in electricity rates, and (2) green-pricing, a situation in which only those customers who are actually interested in renewables pay more. The section also covers the survey respondents' stated willingness to pay more for green power under each of these scenarios.

A key policy question is the extent to which electricity customers are willing to absorb in their utility bills the cost of developing renewables. In the United States, customers wanting their utility companies to add renewables to their power-generating mix have been asked to voluntarily pay an extra amount each month on their utility bills through green-pricing programs.¹² Utility Companies do not want the costs of renewable generation to become stranded if electricity markets open up to competition, and price is the only criterion on which they are competing.

In parts of the country where utilities have offered these programs, 1%–2% of customers have immediately volunteered to pay an extra charge on their electric bill to cover the costs of centralized green power. The amount paid has averaged between \$2.50 and \$5.00 per month (Farhar and Houston 1996; Holt 1998; Farhar 1999). Because these programs are relatively new, their track record of participation over time is not yet established.

The present survey included four key questions related to this issue. The first question was:

Electricity from renewables costs more than electricity from conventional energy sources. However, some argue that using renewables benefits everyone. If utilities were to develop renewables as part of their power mix, how should the cost be paid for? [Please check one response.]

Although no single approach would satisfy everyone, taken together, the response categories show broad-based support for renewables development received majority support. Table 5 reports the findings. The modal response, selected by 29%, is that *the federal government should subsidize power generation from renewables just as it subsidizes power generation from other fuels*. This result is particularly interesting because most respondents describe themselves as politically conservative (mean score of 4.53 on a 1-10 scale, where 1 was "Very conservative" and 10 was "Very liberal").

The next most frequently mentioned response, selected by 25% of respondents, is that *everyone's rates should be increased slightly* (rate basing). A slightly lower percentage of respondents, 21%, indicate that *only those who choose renewable sources should pay* (green pricing). Eighteen percent indicate that renewables should be paid for *both by a slight increase for everyone and voluntary contributions of those specifically choosing them*. Finally, 3% say that renewables should not be developed, and 4% give other responses.¹³

¹²The situation in California, which has statewide utility restructuring, is different. Electricity customers there can choose to purchase their electricity from a renewable electricity provider.

¹³Other responses, mentioned by seven respondents, included "will reduce profits" and "should not drive up costs to customers."

Table 5. Rate Basing versus Green Pricing

<i>Electricity from renewables costs more than electricity from conventional energy sources. However, some argue that using renewables benefits everyone. If utilities were to develop renewables as part of their power mix, how should the cost be paid for?</i>	
Response categories	%
The federal government should subsidize power generation from renewables just as it subsidizes power generation from other fuels	29
Everyone's rates should be increased slightly	25
Only those who choose renewable sources should pay	21
Both (a slight rate increase for everyone, plus those who specifically choose renewable sources should be charged more)	18
Other	4
Should not develop renewables as part of the utility power mix	3
Total	100
Base n	201

Willingness to Pay a Slightly Higher Electricity Rate (Rate-Basing)

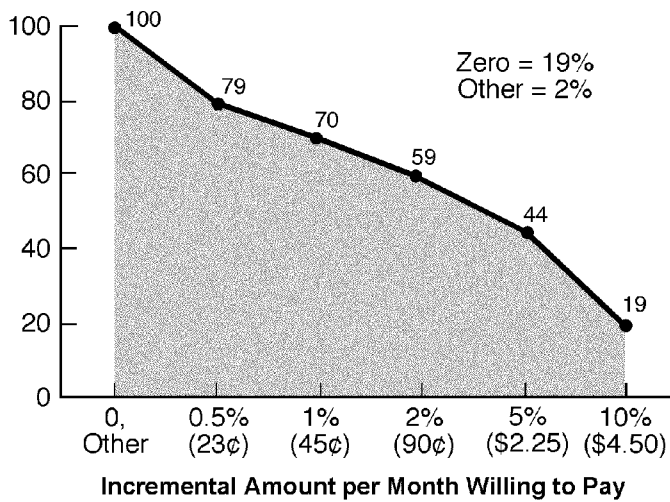
The second question focused on willingness to pay for an electricity rate increase (rate-basing) to cover the cost of renewables development. Respondents were asked:

If everyone were to pay a slight increase in electricity rates to develop renewable sources of electricity, what is the most you would be willing to pay? [Please check one response.]

Response options were given in percentages and the equivalent dollar amount per month, based on a typical monthly electric bill of \$45. These were:

- ½% more (about 23¢ per month on a typical residential bill)
- 1% more (about 45¢ per month)
- 2% more (about 90¢ per month)
- 5% more (about \$2.25 per month)
- 10% more (about \$4.50 per month)
- 0 - Not willing to pay more.

Provided everyone pays, most respondents (79%) say they are willing to pay a higher monthly electricity rate. Figure 2 and Table A-2 in Appendix A present the data from this question. The most frequently specified amount is 5% more, or \$2.25 per month. Almost one in five respondents (19%) indicate they would be willing to pay 10% more, or \$4.50 per month. Cumulatively, more than one-third (35%) say they would pay between 23¢ and 90¢ more per month for renewable electricity development, and 79% indicate they would be willing to pay an incremental amount.



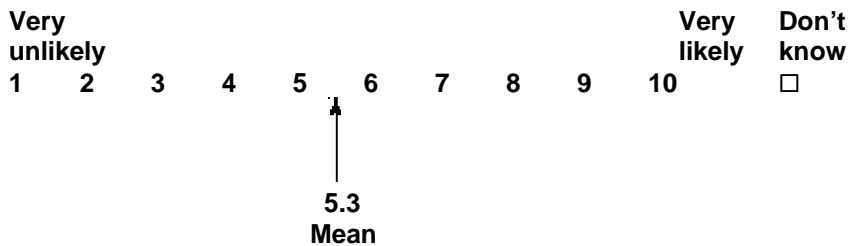
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Figure 2. Incremental Monthly Amount Respondents Are Willing to Pay Under a Rate-Basing Program to Develop Renewable Forms of Energy (Cumulative)

Stated Likelihood of Voluntarily Paying More for Green Power (Green Pricing)

The third question asked how likely people would be to voluntarily pay more for green pricing. The question was phrased:

Assume that for the immediate future, the use of renewable electricity sources will depend on the voluntary actions of electricity customers. If paying for renewable electricity were offered on a voluntary basis, how likely would you be to pay more money on a monthly basis to get some or all of your electricity from renewables? Would you say ... ? [Please circle one response.]



The mean score is 5.3 on the 10-point scale. Willingness to pay more for green pricing is polarized: 38% of respondents indicate they are likely to pay more (7, 8, 9, or 10 on a 10-point scale) and 37% indicate they are unlikely to do so (1, 2, 3, or 4 on a 10-point scale). More than one in five (22%) indicate a neutral or mixed position (5 or 6 on the scale), and 4% say they don't know. Table 6 presents the findings.

Table 6. Likelihood of Paying More for Green Power in a Green-Pricing Program

<i>Assume that for the immediate future, the use of renewable electricity sources will depend on the voluntary actions of electricity customers. If paying for renewable electricity were offered on a voluntary basis, how likely would you be to pay more money on a monthly basis to get some or all of you electricity from renewables? Would you say. . . ?</i>	
Response categories	%
Likely (7-10)	38
Neutral/mixed (5-6)	22
Unlikely (1-4)	37
Don't know	4
Total	101*
Base n	200
*Percentages do not add to 100 because of rounding.	

Willingness to Voluntarily Pay More for Green Power (Green Pricing)

The final question in this series queried respondents on the actual additional amount they would be willing to pay (assuming they were willing to pay anything) under a green-pricing program. The question was:

At this time, how much more would you choose to pay on your electric bill each month to ensure that some or all of your electricity comes from renewable sources? [Please check one response.]

More than three-quarters (76%) of respondents say they were willing to pay an incremental amount ranging from \$1 per month to more than \$10 per month on their electric bill for renewable electricity. Almost a quarter (24%) of respondents say they are unwilling to pay anything more. The most frequently indicated amount, selected by 20% of respondents, is \$5 more per month. Figure 3 and Table A-3 in Appendix A present the findings.

Table 6 shows that 37% say they are *unlikely* to pay more on a voluntary basis to get some or all of their electricity from renewable sources. Table A-3 shows that only 24% say they would *not* choose to pay more for green power. This shows that 13% changed their minds in a direction positive toward green pricing when they saw the question mentioning relatively modest amounts for green pricing; for example, \$1, \$2, or \$3 more per month. This suggests that approximately three in four homeowners would state they are willing to pay at least a modest incremental amount on their utility bill, and that almost four in ten homeowners would be likely to actually do so.

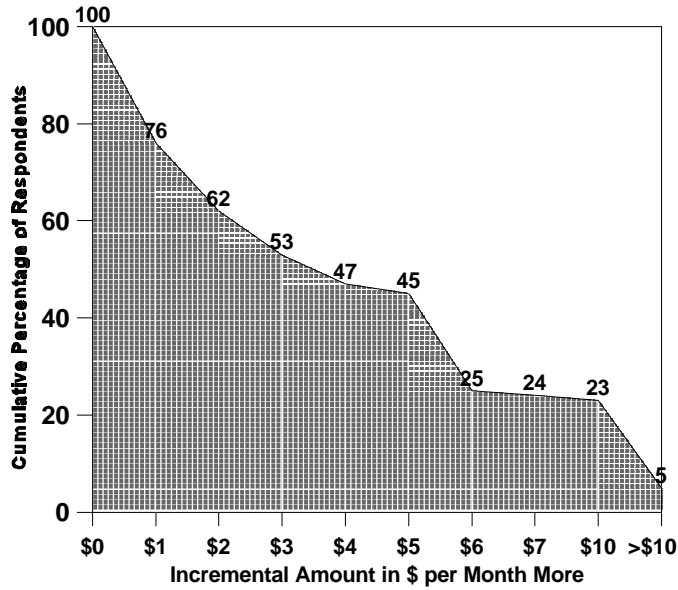


Figure 3. Incremental Monthly Amount Respondents Are Willing to Pay Voluntarily under a Green-Pricing Program (Cumulative)

Summary

In summary, the sample tends to favor paying for the development of renewables either through a federal subsidy or through a slight electricity rate increase. Respondents are polarized on how likely they would be to actually pay anything more for voluntary green pricing programs, with approximately 40% indicating that it is likely they would pay more, and approximately the same percentage indicating that it is unlikely they would actually pay anything more. However, when asked about a specific amount, the percentage indicating a willingness to pay something more per month for green power reaches 76% willing to pay at least \$1 per month more.

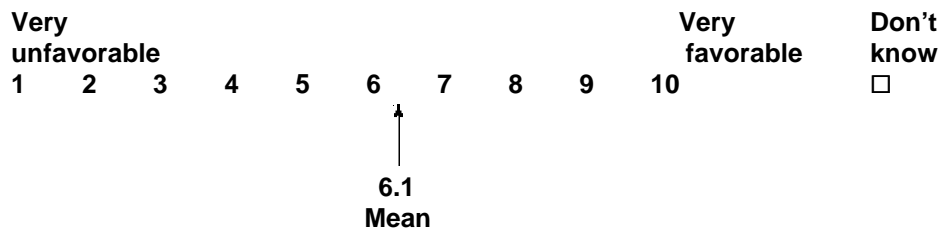
Section Four Utility Restructuring

This section presents findings on homeowner favorability toward restructuring and preferred utility choice criteria in a competitive utility environment.

Because respondents might not be familiar with the concept of utility restructuring, the questions about this topic were preceded with a paragraph-long explanation, as follows.

Following are two questions about electricity sources and ways in which electricity is distributed.

Currently, Coloradans are not able to choose their electric service provider. In any community, only one power company provides electricity. Policy makers are considering opening the generation of electric power to competition, allowing customers to choose the power generating company they want to use. The process would be similar to the way consumers can now choose among long-distance providers. However, the company that owns and operates the utility grid (electric lines, towers, and substations) would remain a regulated monopoly. How do you feel about this idea of "restructuring" electricity power production and giving customers a choice? How favorable are you to the idea of electric utility restructuring? [Please circle one response.]



A 1-10 scale, ranging from "Very unfavorable" to "Very favorable," provided the response options. The overall mean score is somewhat though not strongly, favorable at 6.14. Table 7 summarizes the responses. Twenty-six percent of respondents give restructuring a very favorable (9-10) rating, 21% a favorable (7-8) rating, 16% a neutral (5-6) rating, 10% an unfavorable (3-4) rating, and 18% a very unfavorable (1-2) rating. Ten percent of the respondents say they don't know.

Table 8. Importance of Utility Choice Criteria

<i>If it came to pass that customers could choose their electricity provider, on a scale of 1-10, how important would each of the following be in your choice?</i>					
Utility choice factor	Mean score	%10	%8,9,10	%7,8,9,10	Don't know
Price of electricity offered by the provider	9.0	55	86	94	--
Environmental effects of producing the electricity	7.64	29	61	75	1
Quality of customer service	8.87	50	86	92	0.5
Reputability of the company	8.43	44	78	85	--
Geographic location of the company	5.12	10	25	33	2
*Base n for each item is 204.					

In summary, the largest percentage is positive toward the idea of utility restructuring; however, it is possible that respondents may not know enough about restructuring to respond in more than a tentative manner. Price of electricity and quality of customer service appear to be important criteria for choosing an electricity provider, along with the provider's reputability. Environmental effects are also apparently important, but less so than price and service. The geographic location of the provider is apparently not an important choice criterion.

Section Five

Attitudes toward the Utility

This section discusses the survey's findings on attitudes toward the utility company, including trust in the utility, criticisms of utility operations, and attitudes toward utility involvement in the use of renewables to generate electricity.

A series of statements measured attitudes toward the utility company, including attitudes about the involvement of the utility company in developing renewable electricity. A list of 17 attitude items was preceded by the following statement:

Finally some statements about your utility company...

Please give us your opinion on the following statements concerning your utility company and renewable electricity. Would you say you agree or disagree with the following statements? [For each statement, please circle one response.]

The statements represent three different categories: (1) trust in the utility company, (2) criticisms of the utility company, and (3) attitudes toward utility involvement in renewables.

Trust in the Utility Company

Evidence from other polls suggests that those individuals more trusting of their utility company are more likely to participate in a green-pricing program. Consequently, this characteristic was felt to be an important one to evaluate in the present study. Trust was measured by five statements in the questionnaire, about which respondents were asked to express their degree of agreement. In general, 74% of respondents agree that they are *very satisfied with the service they receive from their utility company*. A majority (59%) agrees that their utility company *should focus its efforts on developing clean-coal technologies in order to reduce emissions*. Less confidence is expressed in the utility *making good decisions on the selection and development of new power sources* (44% of respondents agreeing and 23% disagreeing). Similarly, fewer respondents agree with the statement that *all they wanted was reliable power at the lowest rate possible* (43% agree and 25% disagree). Finally, a majority of respondents (54%) disagree with the statement that *it makes no difference to them how their utility company generates electricity*. Table A-5 in Appendix A presents the findings on these questions.

Criticisms of the Utility Company

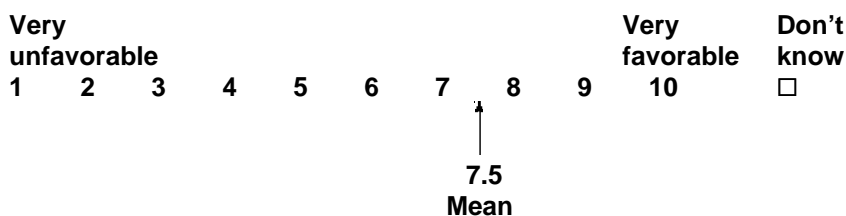
Six statements measured the level of criticism or skepticism about the utility company. Fewer respondents agree with the statements in this category than with those in the other two categories. A majority (53%) agrees that *utility customers don't have enough choice in their electric service today*. Likewise, a majority (57%) also agrees that their utility company *will be forced to use renewable sources of energy—they will have no choice*. Forty-six percent agree that their utility *is only driven by bottom-line profitability*.

Pluralities disagree with the following statements: *my utility company is not environmentally concerned* (49% disagree), *I am skeptical about the accuracy of the utility billing system* (47% disagree), and *I doubt that my utility company has any real commitment to renewable energy* (41% disagree). However, approximately 25% agree with these statements. Table A-6 in Appendix A presents the findings on these questions.

Utility Involvement in Renewables

To further explore respondent support for the idea of Colorado utilities developing renewable resources to include in their electricity generating mix, the following question was asked:

Many electric utilities in Colorado are considering the addition of renewables as one of the sources from which electricity will be generated. Even though the cost is higher right now, adding these resources might make sense for long-term environmental, economic, and resource planning reasons. How do you feel about this? How favorable are you to adding renewable power sources? [Please circle one response.]



The mean response is favorable (a mean score of 7.5 on the 10-point scale). Twenty-four percent indicate a rating of 10; 62% indicate a strongly favorable 8, 9, or 10 response, and 70% were favorable at 7, 8, 9, or 10 ratings (Table A-7 in Appendix A).

Respondents were then asked why they took the position they did (Table A-7). Among those assigning favorable ratings (70%), the most frequently mentioned reasons are *good for the environment* and *helps to conserve natural resources*. Also frequently mentioned are *will need these alternatives for future energy needs* and *benefits future generations*. Among those regarding adding renewables unfavorably, the most frequently mentioned reason is *would cost too much*.

Attitudes toward utility involvement in renewables were also measured by six statements. Most respondents (77%) agree that they want their *utility company to look for new technologies and sources for generating electricity*. Similarly, 76% agree that they believe their *utility should take some of the risk in developing renewable energy sources*. Two-thirds agree that they are favorable towards their *utility's involvement with developing renewable sources for generating electricity*. However, only 44% agree that their *utility company is responsible for developing renewable energy sources*. Forty-two percent agree that they would like to be a *team player with their utility company in renewable energy*. Most (62%) understand that their *utility needs to make profit a priority when developing alternative energy sources*. Table A-8 presents the findings.

In summary, Colorado utilities seem to have a relatively good reputation with their customers. Homeowners are, in general, satisfied with the service they receive. They also tend to favor utility development of clean-coal technology to help control emissions. Widespread support exists for utilities to develop renewables as part of their electricity generating mix. However, respondents are somewhat divided on how trustworthy they think their utility might be in actively developing renewables.

Conclusions

More affluent, married Colorado homeowners mirror national trends in preferring renewable energy over conventional energy sources. They view nuclear, coal, and oil as posing serious environmental threats when used to produce electricity. Homeowners regard solar power and wind power as best for the environment.

Solar power and wind power are also ranked highest among all suggested electricity sources on a number of other factors, including safety, cost, abundance, national self-reliance, meeting growing energy demands, stimulating economic development, diversifying our energy mix, adding high-tech jobs, and improving our economy.

When asked to rank 11 renewable energy sources for development in Colorado, homeowners most frequently select PV and wind power as their first choice, along with passive solar.

Homeowners favor sharing the cost of developing renewables broadly, either through federal subsidies or slight increases in electricity rates. Most homeowners (79%) are willing to pay modest incremental amounts per month on their electric bills to develop green power. When it comes to voluntary green pricing programs, approximately 40% indicate they are likely to pay something more to ensure that part or all of their electricity comes from green power. But, when asked about specific incremental amounts ranging from \$1 to more than \$10 a month, a majority (76%) are willing to pay at least \$1 more per month for renewable power.

A plurality of 47% of the sample is favorable toward the idea of utility restructuring; however, respondents may not know enough about restructuring to respond in more than a tentative manner. Reasons given for favoring restructuring emphasize *competition* and *keeping prices down*. Reasons given for unfavorable responses are that *electricity would or could cost more*.

Colorado utilities enjoy a high level of customer satisfaction. At the same time, most homeowners seem to want their utilities to do more, such as investing in the development of green power.

In conclusion, more-affluent, married Colorado single-family homeowners are somewhat favorable toward utility restructuring; want to see green power developed; prefer to share the costs broadly either through tax subsidies or modest electric rate increases; and believe that utility customers don't have enough choice in their electric service today.

More research will be needed to characterize the perceptions and preferences of all Colorado electricity customers on energy and environmental policy.

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Appendix A. Tables

Table A-1. Perception of Electricity Sources

<i>Which source of electricity do you think of most when you read each of the following phrases?</i>									
Phrase	Coal %	Hydro-power %	Natural gas %	Nuclear power %	Oil %	Solar and wind %	Don't know	Totals	Base n
Best for the environment	--	9	6	3	1	79	2	100	204
Safest	1	17	5	2	--*	70	5	100	202
Most abundant	21	8	15	7	--	43	6	100	202
Makes the U.S. most self-reliant	14	7	10	14	3	45	7	100	204
Least expensive	17	15	17	8	--	24	19	100	202
Will help the most in meeting growing demands for energy	7	3	8	22	1	41	18	100	202
Stimulates economic development the most	5	5	8	12	11	24	35	100	203
Diversifies and extends our energy mix the most	1.5	4	5	11	0.5	52	26	100	200
Improves the quality of our air the most	--	8	3	6	--	80	3	100	203
Adds the most new high technology jobs	--	4	2	30	1	40	22	99*	201
Use of this source will increase the most in the 21st century	0.5	2	7	15	0.5	60	15	100	204
Best for the economy	4	4	7	12	7	32	33	99*	204
Most positive for you	1	7	11	7	1	51	22	100	204
*Less than 0.5%. **Percentages do not add to 100 because of rounding.									

Table A-2. Incremental Monthly Amount Respondents Are Willing to Pay in Electricity Rate Increases to Develop Renewable Forms of Energy

<i>If everyone were to pay a slight increase in electricity rates to develop renewable sources of electricity, what is the most you would be willing to pay?</i>	
Response categories	%
Not willing to pay more	19
1/2% more (about \$0.23 per month on a typical residential bill)	9
1% more (about \$0.45 per month)	11
2% more (about \$0.90 per month)	15
5% more (about \$2.25 per month)	25
10% more (about \$4.50 per month)	19
Other	2
Total	100
Base n	202

Table A-3. Incremental Monthly Amount Respondents Are Willing to Voluntarily Pay in a Green-Pricing Program

<i>At this time, how much more would you choose to pay on your electric bill each month to ensure that some or all of your electricity comes from renewable sources?</i>	
Response categories	%
Not willing to pay more	24
\$1 more per month	14
\$2 more per month	9
\$3 more per month	6
\$4 more per month	2
\$5 more per month	20
\$6 more per month	1
\$7 more per month	1
\$10 more per month	18
More than \$10 per month	5
Total	100
Base n	200

Table A-4. Reasons for Attitude toward Restructuring (Open-ended question)

Reasons mentioned	%	First mention (n)	Second and third mention (n)	Total mention (n)
<i>Favorable</i>				
Competition keeps costs and prices down	25	(42)	(3)	(45)
Competition is the American way	8	(11)	(3)	(14)
Like option to choose	5	(9)	--	(9)
Monopolies are hard to trust	2	(4)	--	(4)
Free enterprise worked before government involvement	*	(1)	--	(1)
Deregulate all utility companies	*	--	(1)	(1)
Monopolies tend to stagnate innovation	1	(1)	(1)	(2)
<i>Unfavorable</i>				
Will or might cost customers more for electricity	12	(15)	(7)	(22)
Phone restructuring has been a mess for consumers	11	(12)	(7)	(19)
Worry about service/interrupted power	6	(8)	(3)	(11)
Electric company can do it	6	(8)	(3)	(11)
Stay with what works	3	(6)	--	(6)
Don't want phone calls wanting me to change	3	(1)	(5)	(6)
Sounds like a nightmare	3	(4)	(2)	(6)
Prefer regulated monopolies	3	(2)	(3)	(5)
Costs of restructuring	2	(3)	(1)	(4)
Large customers will benefit most	2	(1)	(2)	(3)
Will discourage technological improvements in power	1	(1)	(1)	(2)
Will discourage improvements in transmission systems	1	(1)	(1)	(2)
Policy makers aren't representing broad public interest	1	(2)	--	(2)
<i>Unsure</i>				
Need to know more	2	(4)	--	(4)
Totals	97**	(136)	(43)	(179)
*Less than 0.5%. **Percentages do not add to 100 because of rounding.				

Table A-5. Trust in the Utility Company

<i>Please give us your opinion on the following statements concerning your utility company and renewable electricity.</i>					
Statement (1-8 scale)	Agree or strongly agree (6-8) %	Neutral, unsure (4-5) %	Disagree or strongly disagree (1-3) %	Totals	Base n
In general, I am very satisfied with the service I receive from my utility company	74	19	7	100	201
I believe that my utility company should focus its efforts on developing clean coal technologies in order to reduce emissions	59	22	19	100	181
I trust that my utility company makes good decisions on the selection and development of new power sources	44	33	23	100	202
All I want from my electric utility is that they provide reliable power at the lowest rate possible	43	32	25	100	203
It really makes no difference to me how my utility company generates electricity	24	22	54	100	200

Table A-6. Criticisms of the Utility Company

<i>Please give us your opinion on the following statements concerning your utility company and renewable electricity.</i>					
Statement (1-8 scale)	Agree or strongly agree %	Neutral/ unsure %	Disagree or strongly disagree %	Totals	Base n
I believe that my utility company will be forced to use renewable sources of energy — they will have no choice	57	26	17	100	175
Utility customers don't have enough choice in their electric services today	53	26	21	100	197
I believe that my utility company is only driven by bottom-line profitability	46	26	28	100	188
I believe that my utility company is not environmentally concerned	25	26	49	100	171
I doubt that my utility company has any real commitment to renewable energy	25	34	41	100	168
I am skeptical about the accuracy of my utility company's billing system	24	29	47	100	191

Table A-7. Position toward Electric Utilities Adding Renewables to Their Fuel Mix

Many electric utilities in Colorado are considering the addition of renewables as one of the sources from which electricity will be generated. Even though the cost is higher right now, adding these resources might make sense for long-term environmental, economic, and resource planning reasons. How do you feel about this? How favorable are you to adding renewable power sources?

Response (1-10 Scale)	%
Favorable (7-10)	70
Neutral/mixed (5-6)	15
Unfavorable (1-4)	9
Don't know	6
Total	100
Base n	199

Reason for position (“Please check the three most important reasons”)	Reason 1 (n)	Reason 2 (n)	Reason 3 (n)	Total (n)	%
<i>Unfavorable</i>					
Would cost too much	(43)	--	--	(43)	8
We have plenty of power now	(3)	(1)	--	(4)	--
Could be bad for utility companies	(3)	(3)	(1)	(7)	1
It would adversely affect the economy	--	(6)	(2)	(8)	1
Seems like we don't need to do this	(1)	(5)	--	(6)	1

Reason for position (“Please check the three most important reasons”)	Reason 1 (n)	Reason 2 (n)	Reason 3 (n)	Total (n)	%
Wouldn’t necessarily help the environment	(2)	(6)	(6)	(14)	3
We have plentiful amounts of conventional resources in this area	(3)	(3)	(3)	(9)	2
Don’t believe conventional fuels adversely affect the environment	--	(2)	(7)	(9)	2
<i>Favorable</i>					
Good for the environment	(97)	(13)	--	(110)	20
Helps to conserve natural resources	(29)	(66)	(8)	(103)	19
Benefits future generations	(6)	(36)	(38)	(80)	14
Could be good for the economy long-term	--	(20)	(9)	(29)	5
We need many options to produce electricity	(3)	(16)	(16)	(35)	6
Could be profitable for utilities	--	(2)	(3)	(5)	--
Will need these alternatives for future energy needs	(3)	(6)	(76)	(85)	15
Seems like the right thing to do	--	(1)	(10)	(11)	2
Base n	(193)	(186)	(179)	(558)	99*
*Percentages do not add to 100 because of rounding.					

Table A-8. Attitudes toward Utility Involvement in Renewables

<i>Please give us your opinion on the following statements concerning your utility company and renewable electricity.</i>					
Statement (1-8 scale)	Agree or strongly agree (6-8) %	Neutral, unsure (4-5) %	Disagree or strongly disagree (1-3) %	Totals	Base n
I want my utility company to look for new technologies and sources for generating electricity	77	16	7	100	201
I believe that my utility company should take some of the risk in developing renewable energy sources	76	16	8	100	200
I am favorable toward my utility's involvement with developing renewable sources for generating electricity	67	25	8	100	182
I understand that my utility company needs to make profit a priority when developing alternative energy sources	62	21	17	100	198
My utility company is responsible for developing renewable energy sources	44	37	19	100	152
I would like to partner with my utility company (be a team player) in being involved with renewable energy	42	37	21	100	190

Appendix B. The "Optional" Questionnaire

OPTIONAL SECTION ON ENERGY, ENVIRONMENT, AND UTILITY RESTRUCTURING

If you have time and are particularly interested, we would very much appreciate your answering these additional questions.

Thank you very much for completing the main questionnaire on grid-tied PV for homes. If you would like an additional opportunity to respond, we would appreciate receiving your views on this questionnaire. These questions deal with broad ideas on energy, the environment, and utility restructuring.

If you have time, please take a few minutes to complete these last few questions. Again, thank you for sharing your views on these topics.

LOTTERY!

If you choose to complete and return this optional section, we will include your business reply envelope in a \$100 drawing as a way of thanking you for your additional input.

When you have completed this section, please write the word "Lottery" on the blank envelope before you seal it in the postage-paid business reply envelope, and drop it in the mail.

FOLLOWING ARE TWO QUESTIONS ABOUT ELECTRICITY SOURCES AND WAYS IN WHICH ELECTRICITY IS DISTRIBUTED.

Currently, Coloradans are not able to choose their electric service provider. In any community, only one power company provides electricity. Policy makers are considering opening the generation of electric power to competition, allowing customers to choose the power generating company they want to use. The process would be similar to the way consumers can now choose among long-distance providers. However, the company that owns and operates the utility grid (electric lines, towers, and substations) would remain a regulated monopoly. How do you feel about this idea of “restructuring” electricity power production and giving customers a choice? How favorable are you to the idea of electric utility restructuring? *[Please circle one response.]*

Very unfavorable
1
2
3
4
5
6
7
8
9
10
Very favorable
Don't know

Why do you feel this way?

If it came to pass that customers could choose their electricity provider, on a scale of 1 to 10, how important would each of the following factors be in your choice? *[For each factor, please circle one response.]*

	Not at all important										Very important	Don't know
	1	2	3	4	5	6	7	8	9	10	11	12
1. Price of the electricity offered by the provider	1	2	3	4	5	6	7	8	9	10	<input type="checkbox"/>	<input type="checkbox"/>
2. Environmental effects of producing the electricity	1	2	3	4	5	6	7	8	9	10	<input type="checkbox"/>	<input type="checkbox"/>
3. Quality of customer service	1	2	3	4	5	6	7	8	9	10	<input type="checkbox"/>	<input type="checkbox"/>
4. Reputability of the company.	1	2	3	4	5	6	7	8	9	10	<input type="checkbox"/>	<input type="checkbox"/>
5. Geographic location of the company	1	2	3	4	5	6	7	8	9	10	<input type="checkbox"/>	<input type="checkbox"/>

NEXT ARE SOME QUESTIONS ABOUT ELECTRICITY SOURCES AND RENEWABLE ENERGY.

Which source of electricity do you think of most when you read each of the following phrases? *[For each phrase, please circle only one energy source.]*

	Electricity sources						Don't know
	Coal	Hydro-power	Natural gas	Nuclear	Oil	Solar and wind	
1. Best for the environment	1	2	3	4	5	6	<input type="checkbox"/>
2. Safest.	1	2	3	4	5	6	<input type="checkbox"/>
3. Most abundant.	1	2	3	4	5	6	<input type="checkbox"/>
4. Makes the U.S. most self-reliant	1	2	3	4	5	6	<input type="checkbox"/>
5. Least expensive.	1	2	3	4	5	6	<input type="checkbox"/>
6. Will help the most in meeting growing demands for energy . . .	1	2	3	4	5	6	<input type="checkbox"/>
7. Stimulates economic development the most	1	2	3	4	5	6	<input type="checkbox"/>
8. Diversifies and extends our energy mix the most	1	2	3	4	5	6	<input type="checkbox"/>
9. Improves the quality of our air the most	1	2	3	4	5	6	<input type="checkbox"/>
10. Adds the most new high technology jobs	1	2	3	4	5	6	<input type="checkbox"/>
11. Use of this energy source will increase the most in the 21st century	1	2	3	4	5	6	<input type="checkbox"/>
12. Best for the U.S. economy.	1	2	3	4	5	6	<input type="checkbox"/>
13. Most positive for you	1	2	3	4	5	6	<input type="checkbox"/>

Listed below are a number of energy sources often thought of as renewable. Of these choices, which three do you think would be best to use for meeting energy needs in Colorado? *[Please rank your top three choices, with 1 as your first choice, 2 as your second choice, and 3 as your third choice.]*

- 1. Biomass power (burning forest or agricultural waste, or energy crops)
- 2. Burning municipal solid waste
- 3. Geothermal (heat from within the Earth's crust)
- 4. Ground-source heat pumps
- 5. Small-scale hydropower
- 6. Large-scale hydropower
- 7. Landfill gas
- 8. Passive solar houses
- 9. Solar cells (photovoltaics/PV) for electricity
- 10. Active solar (solar domestic hot water systems)
- 11. Wind power
- 12. Other *[Please specify]* _____

Many electric utilities in Colorado are considering the addition of renewables as one of the sources from which electricity will be generated. Even though the cost is higher right now, adding these resources might make sense for long-term environmental, economic, and resource planning reasons. How do you feel about this? How favorable are you to adding renewable power sources? *[Please circle one response.]*

Very unfavorable
1
2
3
4
5
6
7
8
9
10
Very favorable
Don't know

Why do you feel that way? *[Please check the three most important reasons.]*

Unfavorable Favorable

Electricity from renewables costs more than electricity from conventional energy sources. However, some argue that using renewables benefits everyone. If utilities were to develop renewables as part of their power mix, how should the cost be paid for? *[Please check one response.]*

- 1. Everyone's rates should be increased slightly
- 2. Only those who choose renewable sources should pay
- 3. Both (a slight rate increase for everyone, plus those who specifically choose renewable sources should be charged more)
- 4. The federal government should subsidize power generation from renewables just as it subsidizes power generation from other fuels
- 5. Should not develop renewables as part of the utility power mix
- 6. Other *[Please specify]* _____

If everyone were to pay a slight increase in electricity rates to develop renewable sources of electricity, what is the most you would be willing to pay? *[Please check one response.]*

- 1. 1/2% more (about 23¢ per month on a typical residential bill)
- 2. 1% more (about 45¢ per month)
- 3. 2% more (about 90¢ per month)
- 4. 5% more (about \$2.25 per month)
- 5. 10% more (about \$4.50 per month)
- 6. 0 (not willing to pay more)
- 7. Other *[Please specify]* _____

NOW, TWO QUESTIONS ON THE VOLUNTARY ACTIONS OF ELECTRICITY CUSTOMERS...

Assume that for the immediate future, the use of renewable electricity sources will depend on the voluntary actions of electricity customers. If paying for renewable electricity were offered on a voluntary basis, how likely would you

be to pay more money on a monthly basis to get some or all of your electricity from renewables? Would you say...? *[Please circle one response.]*

Very unlikely 1 2 3 4 5 6 7 8 9 10 Very likely Don't know

At this time, how much more would you choose to pay on your electric bill each month to ensure that some or all of your electricity comes from renewable sources? *[Please check one response.]*

- | | |
|--|--|
| <input type="checkbox"/> 1. \$1 more per month | <input type="checkbox"/> 7. \$7 more |
| <input type="checkbox"/> 2. \$2 more | <input type="checkbox"/> 8. \$8 more |
| <input type="checkbox"/> 3. \$3 more | <input type="checkbox"/> 9. \$9 more |
| <input type="checkbox"/> 4. \$4 more | <input type="checkbox"/> 10. \$10 more |
| <input type="checkbox"/> 5. \$5 more | <input type="checkbox"/> 11. More than \$10 more |
| <input type="checkbox"/> 6. \$6 more | <input type="checkbox"/> 12. I would not be willing to pay any more at this time |

NOW, TWO QUESTIONS ON ENVIRONMENTAL PROBLEMS...

On a 1 to 10 scale, how important do you think each of the following environmental problems is in today's world?

	1	2	3	4	5	6	7	8	9	10	Very important	Don't know
1. Acid rain	1	2	3	4	5	6	7	8	9	10	<input type="checkbox"/>	<input type="checkbox"/>
2. Air pollution	1	2	3	4	5	6	7	8	9	10	<input type="checkbox"/>	<input type="checkbox"/>
3. Climate change/global warming	1	2	3	4	5	6	7	8	9	10	<input type="checkbox"/>	<input type="checkbox"/>
4. Hazardous/toxic waste	1	2	3	4	5	6	7	8	9	10	<input type="checkbox"/>	<input type="checkbox"/>
5. Loss of habitat or species (extinction).....	1	2	3	4	5	6	7	8	9	10	<input type="checkbox"/>	<input type="checkbox"/>
6. Mining or strip-mining	1	2	3	4	5	6	7	8	9	10	<input type="checkbox"/>	<input type="checkbox"/>
7. Oil spills	1	2	3	4	5	6	7	8	9	10	<input type="checkbox"/>	<input type="checkbox"/>
8. Radioactive waste	1	2	3	4	5	6	7	8	9	10	<input type="checkbox"/>	<input type="checkbox"/>
9. Using up natural resources	1	2	3	4	5	6	7	8	9	10	<input type="checkbox"/>	<input type="checkbox"/>
10. Water pollution	1	2	3	4	5	6	7	8	9	10	<input type="checkbox"/>	<input type="checkbox"/>
11. Other <i>[Please specify]</i> _____	1	2	3	4	5	6	7	8	9	10	<input type="checkbox"/>	<input type="checkbox"/>

On a 1 to 10 scale, to what extent do you feel our environmental problems are related to energy production and use? *[Please circle one response.]*

Not related 1 2 3 4 5 6 7 8 9 10 Strongly related Don't know

Listed below are several energy sources that are used to generate electricity. As you read each one, please circle any number from 1 to 10, where 1 means "no environmental threat," and 10 means "a large environmental threat" to show how much of an environmental threat you think that energy source is when used to generate electricity. *[Please circle one response.]*

	1	2	3	4	5	6	7	8	9	10	No environmental threat	Large environmental threat	Don't know
1. Coal	1	2	3	4	5	6	7	8	9	10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Hydropower	1	2	3	4	5	6	7	8	9	10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Natural gas.....	1	2	3	4	5	6	7	8	9	10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Nuclear.....	1	2	3	4	5	6	7	8	9	10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Oil.....	1	2	3	4	5	6	7	8	9	10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Solar.....	1	2	3	4	5	6	7	8	9	10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Solid waste incineration.....	1	2	3	4	5	6	7	8	9	10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Wind.....	1	2	3	4	5	6	7	8	9	10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

FINALLY, SOME STATEMENTS ABOUT YOUR UTILITY COMPANY...

Please give us your opinion on the following statements concerning your utility company and renewable electricity. Would you say you agree or disagree with the following statements? *[For each statement, please circle one response.]*

	Strongly disagree								Strongly agree	Don't know
1. It really makes no difference to me how my utility company generates electricity	1	2	3	4	5	6	7	8		<input type="checkbox"/>
2. I trust that my utility company makes good decisions on the selection and development of new power sources	1	2	3	4	5	6	7	8		<input type="checkbox"/>
3. All I want from my electric utility is that they provide reliable power at the lowest rate possible	1	2	3	4	5	6	7	8		<input type="checkbox"/>
4. I want my utility company to look for new technologies and sources for generating electricity	1	2	3	4	5	6	7	8		<input type="checkbox"/>
5. Utility customers don't have enough choice in their electric service today	1	2	3	4	5	6	7	8		<input type="checkbox"/>
6. In general, I am very satisfied with the service I receive from my utility company	1	2	3	4	5	6	7	8		<input type="checkbox"/>
7. My utility company is responsible for developing renewable energy sources . .	1	2	3	4	5	6	7	8		<input type="checkbox"/>
8. I believe that my utility company should focus its efforts on developing clean coal technologies in order to reduce emissions	1	2	3	4	5	6	7	8		<input type="checkbox"/>
9. I am skeptical about the accuracy of my utility company's billing system.	1	2	3	4	5	6	7	8		<input type="checkbox"/>
10. I believe that my utility company is not environmentally concerned	1	2	3	4	5	6	7	8		<input type="checkbox"/>
11. I doubt that my utility company has any real commitment to renewable energy	1	2	3	4	5	6	7	8		<input type="checkbox"/>
12. I believe that my utility company is only driven by bottom-line profitability	1	2	3	4	5	6	7	8		<input type="checkbox"/>
13. I am favorable toward my utility's involvement with developing renewable sources for generating electricity	1	2	3	4	5	6	7	8		<input type="checkbox"/>
14. I understand that my utility company needs to make profit a priority when developing alternative energy sources	1	2	3	4	5	6	7	8		<input type="checkbox"/>
15. I believe that my utility company will be forced to use renewable sources of energy—they will have no choice	1	2	3	4	5	6	7	8		<input type="checkbox"/>
16. I would like to partner with my utility company (be a team player) in being involved with renewable energy	1	2	3	4	5	6	7	8		<input type="checkbox"/>
17. I believe that my utility company should take some of the risk in developing renewable energy sources	1	2	3	4	5	6	7	8		<input type="checkbox"/>

THANK YOU FOR COMPLETING THIS OPTIONAL SECTION!

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