

**The Center for Local, State, and Urban Policy
University of Michigan**

And

**The Institute of Public Opinion
Muhlenberg College**

**Survey of Pennsylvania Residents on the
Issue of Global Warming and Climate Policy Options**

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KEY FINDINGS REPORT

February 2008

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- 1) Pennsylvania residents overwhelmingly believe that the earth's climate has become warmer over the past four decades and that this constitutes a serious problem.
- 2) A substantial majority of Pennsylvanians believe that global warming is at least partially the result of human activities.
- 3) Numerous factors have combined to convince residents of Pennsylvania that the earth's climate is warming. Diminishing glaciers and personal observations of warmer temperatures in Pennsylvania have had the largest impact on individual perceptions of these changes. Heavily-publicized events such as Hurricane Katrina and the film "An Inconvenient Truth" have had less impact.
- 4) Pennsylvania residents believe that both the federal and state governments have a responsibility to take actions to reduce global warming.
- 5) Residents of the Keystone state have extremely varied levels of support for various policy approaches to reduce greenhouse gas emissions.
- 6) Pennsylvanians strongly support government requirements for vehicle manufacturers to increase the fuel efficiency of their products.
- 7) There is strong opposition in Pennsylvania to either a tax on gasoline or a broader carbon tax as a means of reducing fossil fuel consumption.
- 8) Pennsylvania residents are very supportive of government policies that would require a specific portion of electricity production to be derived from renewable sources.
- 9) A substantial majority of Pennsylvania residents support increased use of nuclear power to reduce greenhouse gas emissions.
- 10) Pennsylvania residents are decidedly divided over their support for a market-based policy that would allow trading of permits for carbon emissions.
- 11) About 2 out of 3 Pennsylvanians indicate a willingness to pay more money each year in order to increase the production of renewable energy sources.

METHODOLOGY: The following key findings report summarizes data collected in a telephone survey of residents of the state of Pennsylvania between October 17 and December 4, 2007. The surveys are based on a random sample of adults age 18 and older who reside in Pennsylvania. Interviewing and sampling was conducted by the Muhlenberg College Institute of Public Opinion. The final number of completed surveys was 581 with a resulting margin of error of +/- 4% at the 95% confidence interval. However the margin of errors for sub groups (i.e. women, Republicans, Catholics) is larger due to smaller sample size. Percentages throughout the survey have been rounded upward at the .5 mark, thus many totals in the results will not equal 100%. The survey questionnaire was designed by Dr. Barry Rabe of the Ford School of Public Policy at the University of Michigan and Dr. Christopher Borick of the Muhlenberg College Institute of Public Opinion, in some instances linked directly with prior national survey questions to allow for comparison across various audiences. We are grateful for the constructive support during this project of Dr. Brian Jacob and Thomas Ivacko of the Center for Local, State, and Urban Policy (CLOSUP) at the University of Michigan and Karen Clark at Michigan State University.

OVERVIEW: The year 2007 was a monumental one for the issue of climate change. During this period, climate change rose to the forefront of the national agenda. The International Panel on Climate Change (IPCC) released a major report on the increasing body of evidence regarding global warming and former Vice President Al Gore won the Nobel Peace Prize for his efforts to educate the public on this issue. The Supreme Court ruled in April that the U.S. Environmental Protection Agency needed to reconsider its decision to refrain from designating carbon dioxide as an air pollutant under the Clean Air Act. President Bush approved legislation in December that mandated the first statutory increase in Corporate Average Fuel Economy in decades. Dozens of states intensified their earlier involvement on this issue, reflected in a wave of new state and regional efforts to reduce greenhouse gases. The early stages of the 2008 Presidential campaign indicated that this will be the first such race in which climate change policy proposals are a central concern and Congress has launched a wide-ranging series of hearings on possible next legislative steps. In short, climate change has moved rapidly from the back-burner toward the front of the American public policy agenda at multiple levels of government.

In 2007 energy issues also played a prominent role in the Commonwealth of Pennsylvania. Governor Ed Rendell began the year by proposing his Energy Independence Strategy for the state. Building upon the 2004 passage of Pennsylvania's Alternative Energy Portfolio Standard, Rendell hoped to advance the Keystone State's development and use of alternative energy sources. Thus the governor proposed an aggressive legislative package that included subsidies for the development of alternative fuels such as ethanol and a requirement that 10% of gasoline sales in the state be replaced by alternative fuel sources. Rendell's plan also called for the creation of an 850 million dollar energy independence fund that would be used for: venture capital to bring alternative energy firms to Pennsylvania; tax breaks to consumers to purchase energy efficient goods; and resources to increase adoption of alternative energy sources such as solar panels. To help foster action on his energy initiative the Governor called for a

special legislative session in September but as the fall months passed by the energy legislation bogged down in partisan conflict. As 2008 began the fate of energy legislation in the Keystone State remains very much in the balance.

These notable events at the national and state level corresponded with a dramatic shift in terms of public opinion in the United States regarding climate change. A number of national surveys have shown significant increases in public attention and concern regarding the effects of human activities on the earth’s climate. However, there has been very limited research on the views and attitudes of Pennsylvania residents regarding these key issues. This study seeks to provide detailed data on the perspectives of Pennsylvanians regarding global warming and various policy options available to reduce human impacts on the earth’s climate.

SECTION ONE: PERCEPTIONS OF THE PROBLEM: During the last year it has become evident that significant percentages of the American citizenry perceive average temperatures as increasing, attribute this phenomenon at least in part to human activity, and view this development as a serious problem. This has been reflected in a number of surveys conducted nationally during 2007, many of which have been widely reported in the media. Our Pennsylvania findings generally follow the pattern seen nationally, with some exceptions noted below.

Increasing Global Temperatures. On the question of increasing global temperatures, an ABC News/Washington Post/Stanford University survey released in April 2007 showed a 10% increase from the prior year in the belief that global temperatures have been increasing over the past four decades. This is consistent with findings from a range of other national surveys conducted during 2007 that reflect increases in these beliefs from previous years. In our survey of Pennsylvania residents, nearly 3 out of 4 respondents indicated that the average temperature on earth has been getting warmer over the past four decades. This mark is nearly identical to the results of a national survey by the Pew Research Center in January of 2007 that used identical question wording.

TABLE ONE

“From what you've read or heard, is there solid evidence that the average temperature on earth has been getting warmer over the past four decades?”

	Yes	No	Not Sure/ Refused
Pennsylvanians (November 2007)	74%	16%	9%
Americans (January 2007)	77%	16%	7%

PA results from U of M/Muhlenberg; National results from Pew Research Center

While belief in global warming among Pennsylvanians largely transcends demographic factors such as gender, age and religion, there are significant differences among

individuals in terms of political party affiliation. As can be seen in Table Two there is a fairly large gap between Democrats and Republicans regarding the existence of global warming. More specifically, while nearly 9 of 10 Pennsylvania Democrats in the state believe there is solid evidence the average temperatures on earth are warming, only about 6 out of 10 Pennsylvania Republicans share this view. Pennsylvania Independents fall evenly between Democrats and Republicans on this issue.

TABLE TWO

“From what you've read or heard, is there solid evidence that the average temperature on earth has been getting warmer over the past four decades?”

	Yes	No	Not Sure/ Refused
Pennsylvania Democrats	87%	6%	6%
Pennsylvania Republicans	61%	30%	8%
Pennsylvania Independents	74%	14%	11%

Source of Increasing Global Temperatures. National surveys conducted during 2007 generally concur that majorities attribute global temperature increase either to human activity or some combination of human activity and natural patterns. Among the 3 out of 4 Pennsylvania residents that indicated the earth is getting warmer, the clear majority believe that humans are at least in part responsible for the increase in temperature. Some 43% of Keystone State residents who believe the earth is getting hotter identified human activity as the primary source of global warming, with an additional 27% saying the increased temperature was caused by a combination of human activity and natural patterns. These findings are fairly consistent with those of a January 2007 survey conducted by the Pew Research Center

TABLE THREE

“Is the earth getting warmer because of human activity such as burning fossil fuels, or mostly because of natural patterns in the earth's environment?”

	Human Activity	Natural Patterns	Combination of Human and Natural Causes	Not Sure/Refused
Pennsylvanians (November 2007)	43%	21%	27%	10%
Americans (January 2007)	47%	20%	33%	<1%

PA results from U of M/Muhlenberg; National results from Pew Research Center

Note: This question was only posed to respondents who indicated there is solid evidence that the earth is warming.

Problem Severity. In addition to a belief that the planet is getting warmer and that human activity is causing the increase, most residents of Pennsylvania see global warming as a serious problem. Over 7 out of 10 residents identified global warming as either a very serious (47%) or somewhat serious (30%) problem with less than 1 in 10 indicating that it does not constitute a problem at all. The Pennsylvania results tightly mirror national tendencies from the Pew Research study in January of 2007.

TABLE FOUR

“In your view is global warming a very serious problem, somewhat serious, not too serious or not a problem?”

	Very Serious	Somewhat Serious	Not Too Serious	Not A Problem	Not Sure/Refused
Pennsylvanians (November 2007)	47%	30%	12%	8%	3%
Americans (January 2007)	45%	31%	12%	8%	3%

MI Results from UM /Muhlenberg; National results from Pew Research Center

Pennsylvania views on the seriousness of global warming as a problem vary significantly according to the gender of state residents. While 52% of female residents of the Commonwealth indicated that global warming is a very serious problem, only 41% of their male counterparts rated the problem at this level.

TABLE FIVE

“In your view is global warming a very serious problem, somewhat serious, not too serious or not a problem?”

	Very Serious	Somewhat Serious	Not Too Serious	Not A Problem	Not Sure/Refused
Male	41%	32%	14%	10%	2%
Female	52%	29%	10%	5%	2%

Partisanship also plays a role in the views of Pennsylvania residents on the seriousness of global warming, with Democrats and Independents substantially more likely than Republicans to rate this issue as very serious. As can be observed in Table Six below, Pennsylvania Democrats are nearly twice as likely as Republicans in the state to say global warming is a very serious problem, with Independents in Pennsylvania more likely to align with state Democrats on this issue.

TABLE SIX

“In your view is global warming a very serious problem, somewhat serious, not too serious or not a problem?”

	Very Serious	Somewhat Serious	Not Too Serious	Not A Problem	Not Sure/Refused
Democrat	59%	30%	5%	4%	3%
Republican	31%	35%	19%	13%	2%
Independent	56%	23%	11%	6%	5%

SECTION TWO: FACTORS THAT SHAPE BELIEFS ABOUT GLOBAL WARMING:

As the previous section has shown, most Pennsylvania residents believe that the earth is warming and that human activities have contributed to these changes. National polls also show that the number of Americans who acknowledge global warming has grown significantly over recent years. What is not clearly known are the reasons that individuals in Pennsylvania and beyond believe that the earth is warming. Thus this project attempts to measure the impact that a number of factors may have played in influencing Pennsylvanian views of the existence of global warming.

In particular, five factors were selected as possible contributors to one’s belief in the existence of global warming. These factors were chosen because of their prominent role in the scientific theories of climate change, as reflected in the IPCC reports, or their key role in the ongoing public discourse and media coverage of the issue. While these factors are clearly not inclusive of all reasons that may cause an individual to believe the earth is warming, the selected options provide an initial test of the factors that underlie beliefs on this matter. In Table Seven below the five factors included in this study are listed.

TABLE SEVEN

“For each factor I mention please indicate if it has had a strong effect, moderate effect, small effect, or no effect on your view that the earth is getting warmer.”

1. Declining glaciers and polar ice throughout the globe
2. Warmer temperatures in your area during recent years
3. Computer models that indicate the earth is getting warmer
4. The strength of Hurricane Katrina
5. Al Gore’s documentary, “An Inconvenient Truth”

The results of the survey indicate substantial variation in the impact that each factor plays in determining individual views on global warming. In particular, Pennsylvanians indicate that longer term observations of changes at both the local and global level have a greater effect on their views about global warming than other factors included in the study. For example, a majority (55%) of survey respondents who believe the earth is getting warmer indicated that declining glaciers and polar ice levels had a strong effect on their view of this matter. Also playing a strong role in convincing Pennsylvania residents that the earth is warming was their personal observation of increasing temperatures in their area, with 4 out of 10 Pennsylvanian saying that higher temperatures in their localities strongly effected their belief that the earth is warming. Of less importance in terms of shaping beliefs about global warming were singular events such as Hurricane Katrina and Al Gore’s documentary “An Inconvenient Truth.” Only 1 out of 4 survey respondents stated that the 2005 hurricane that struck the Gulf Coast had a strong effect on their beliefs that the earth was warming, with the Gore documentary strongly affecting one quarter of Pennsylvania residents. It should be noted that the survey took place shortly after Gore was selected as the winner of the Nobel Peace Prize in October, which resulted in renewed media coverage of the film and his views on global warming.

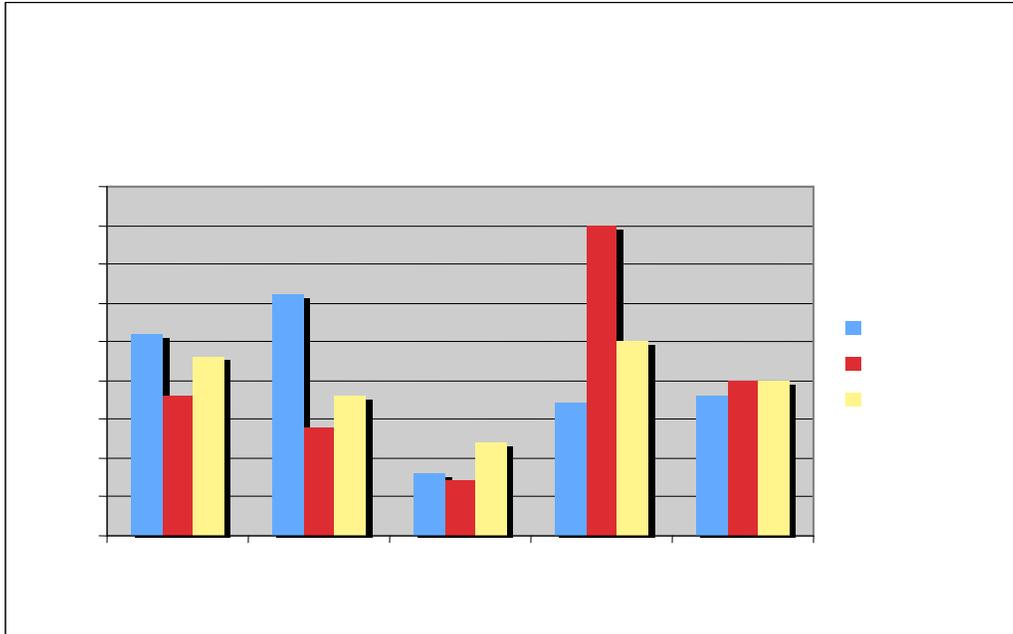
TABLE EIGHT

“For each factor I mention please indicate if it has had a strong effect, moderate effect, small effect, or no effect on your view that the earth is getting warmer.”

Reason	Strong Effect	No Effect
Declining glaciers and polar ice	55%	5%
Higher temperatures in local area	40%	8%
Computer modeling	32%	9%
Hurricane Katrina	26%	24%
“An Inconvenient Truth”	24%	24%

Note: This question was only posed to respondents who indicated there is solid evidence that the earth is warming

While Republicans were less likely than Democrats to be persuaded by all the factors tested in this study, the greatest variation was found in reference to former Vice President Gore’s film on climate change. More specifically 40% of GOP affiliates in Pennsylvania said Gore’s film had no effect on their perceptions of global warming compared to only 17% of Democrats and 25% of Independents.



Note: This question was only posed to respondents who indicated there is solid evidence that the earth is warming

SECTION THREE: RESPONSIBILITY FOR DEALING WITH GLOBAL WARMING:

The study examined the views of Pennsylvania residents on the responsibility of various levels of government for dealing with global warming. In recent years many state governments have taken an increased role in adopting policies that are aimed to curb climate change. Twenty-five states, including Pennsylvania, have enacted policies that mandate increased use of renewable energy and fifteen are formally pledged to develop a carbon cap-and-trade system for emissions reduction. As mentioned earlier in the study, Pennsylvania’s legislature continues to debate further efforts to support the development of renewable and alternative energy sources. This increased activity in many states has occurred at the same time that there has been growing criticism of limited national efforts to address global warming and unprecedented attention to the issue through hearings during the first year of the 110th Congress. Thus respondents were asked to express their views on the responsibility of the various levels of government in the United States for dealing with global warming.

TABLE NINE

“For each type of government that I mention please tell me what level of responsibility it should have for addressing global warming”

	A Great Deal of Responsibility	Some Responsibility	No Responsibility	Not Sure/Refused
Federal Government	56%	30%	11%	4%
State Governments	38%	44%	15%	3%

As can be seen in Table Nine, Pennsylvania residents place the greatest responsibility for dealing with global warming on the federal government, with more than half of respondents indicating the government in Washington D.C. has a great deal of responsibility on this matter. While not placing as much responsibility on state governments, a vast majority of Pennsylvania residents placed at least some responsibility in dealing with global warming at the state government level.

SECTION FOUR: RESPONSE TO ALTERNATIVE POLICY OPTIONS

While a majority of Pennsylvania residents are in agreement that global warming is occurring and that it is a serious problem facing the nation, there is substantially less agreement among them on some of the prominent policy alternatives that are being proposed to address global warming. This section reviews the divergent responses to these policy alternatives.

Carbon and Energy Taxes and Fees to Reduce Consumption

Because most leading climate scientists believe emissions from fossil fuel use are a primary cause of global warming, it is frequently argued that government needs to create financial disincentives in order to reduce consumption. The most basic form of an economic disincentive is a tax applied to the use of carbon emitting products, although this could take multiple forms, including taxation of the carbon content of various fossil fuels. This approach has broad support from diverse economists and policy analysts and has been endorsed by some members of Congress. Perhaps the most commonly known example of a disincentive to fossil fuel use is the gasoline tax. Although not originally conceived as a solution to global warming, nonetheless the gasoline tax is currently applied by both federal and Pennsylvania authorities and is also operational at varying levels in the remaining 49 states. Although the most familiar form of carbon taxation to the general citizenry, the gasoline tax option is also the least supported method of addressing climate change among the various policy options that we examined. As can be seen in Table Ten only about 1 in 4 residents of Pennsylvania support increasing gasoline taxes to reduce consumption. Conversely, a solid majority of Pennsylvanians indicated that they strongly oppose this approach. The survey results also show very low levels of support for a broader tax increase on all fossil fuels. Only about 3 out of 10 Keystone State residents indicated any level of support for this policy option that would place taxes on fossil fuels such as natural gas and coal.

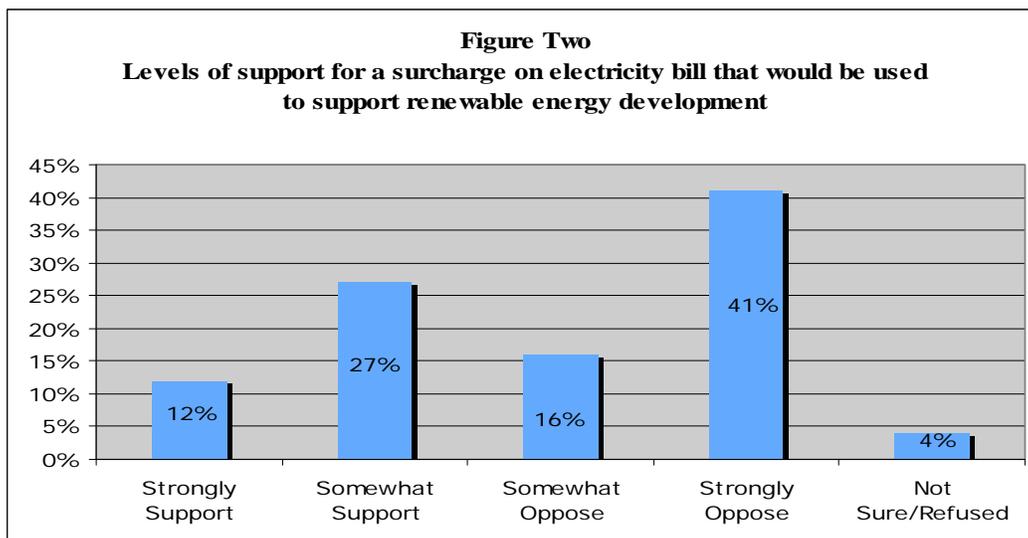
TABLE TEN

Levels of Support for Energy Taxes Among Pennsylvania Residents

	Strongly Support	Somewhat Support	Somewhat Oppose	Strongly Oppose	Not Sure/Refused
Gasoline Tax Increase	8%	16%	14%	57%	4%
Fossil Fuel Tax Increase	9%	20%	15%	48%	8%

In addition to using taxes to reduce the consumption of carbon emitting fossil fuels, governments may also levy energy taxes to build a fund to support the development of renewable energy resources. This has been explored most commonly in electricity, where 15 states have some form of an electricity tax (most commonly known as a “public benefit charge”), intended both to reduce consumption of this energy source and to create a pool of funds necessary to promote greater use of renewable energy sources such as wind or solar power. This method for funding alternative energy development is also a major component of Governor Rendell’s energy independence strategy, as well as a major point of contention in the current energy debate in Harrisburg. The governor proposed borrowing \$850 million in a bond issue to fund energy initiatives in the Commonwealth, and to repay the money through a surcharge on electric bills for residential customers and industrial users. Republicans in the legislature have strongly opposed this funding mechanism, citing the impending electricity rate hikes that will occur when rate caps expire in 2010 as a major reason for their opposition to Governor Rendell’s call for a surcharge hike.

The results of the Pennsylvania survey indicate that electricity surcharges receive slightly more support than direct taxes on gasoline and other fossil fuels, but are opposed by a majority of Pennsylvania residents. The breakdown of support levels for this policy option is presented in Figure Two below.



Governmental Subsidies for Non-Fossil Fuels and Clean Coal

With fossil fuel use identified as the primary cause of global warming, there has been an increased focus on developing fuels that are derived from alternative sources. Thus energy sources such as nuclear power and bio-fuels including corn-based ethanol have been advanced as part of the solution to the climate dilemma. Nuclear energy generates virtually no greenhouse gases, although it presents a number of environmental concerns which have contributed to a virtual halt of new facility development since the 1970s. Bio-fuels and ethanol have begun to play a larger role as supplemental transportation

fuels, but many questions have been raised about the large levels of governmental subsidies already being allocated and the actual environmental benefits of these alternatives given the high energy levels required to produce these fuels from crops. In this study we tested the level of support that Pennsylvania residents have for the development of non-fossil fuel sources. The results indicate overwhelming support from Pennsylvanians for increased government support for the development of ethanol, with about three out of four residents of the state either strongly or somewhat supporting this policy option. The results also show significant levels of support for reducing greenhouse gas emissions through increased use of nuclear power. More specifically 60% of Pennsylvania residents indicated that they support increased government assistance to expand production of nuclear power.

In addition to fairly strong support for government efforts to develop nuclear power and ethanol, Pennsylvania residents are favorably disposed towards government efforts to support the development of clean coal technology. As the most abundant fossil fuel found in the United States and a key source of electric power, coal plays an important role in meeting the nation’s power needs. Of course, Pennsylvania is also home to one of the nation’s largest coal reserves, including most of the anthracite (hard coal) supplies in the United States.

While plentiful in both Pennsylvania and other areas of the nation, coal is also one of the most significant sources of carbon emissions, with the highest carbon content per unit of energy produced of any fossil fuel source. It is, therefore, a major contributor to global warming and there is no existing technology to reduce or capture carbon emissions once coal is ignited. The federal government has supported research on “clean coal” technology which is intended to allow the fuel to be used while also limiting its impact on global warming and other aspects of the environment. This technology remains experimental and is not in operation yet in the United States. Meanwhile, the Commonwealth of Pennsylvania has put forth initiatives for the development of coal gasification systems that would produce synthetic gas and natural gas products. Pennsylvania residents offer great levels of support for increasing government assistance to the development of clean coal technology with 87% either strongly supporting or somewhat supporting this policy option.

TABLE ELEVEN

Levels of Public Support for Government Efforts to Increase Use of Non-Fossil Fuels and Clean Coal Technology

	Strongly Support	Somewhat Support	Somewhat Oppose	Strongly Oppose	Not Sure /Refused
Ethanol	39%	36%	8%	12%	3%
Nuclear Power	25%	34%	19%	15%	6%
Clean Coal	42%	45%	4%	4%	4%

Regulatory Options to Increase Efficiency and Expand Renewable Energy Use

In December 2007, the United States Congress enacted an 800-page energy bill, featuring several provisions that could serve to reduce greenhouse gases in coming decades. Perhaps most significantly, the legislation established increased fuel efficiency standards for motor vehicles sold in the United States. For the first time in a generation Congress increased Corporate Average Fuel Economy (CAFÉ) standards, thus mandating automakers to produce more fuel efficient vehicles during upcoming years. The survey was completed during the latter stages of Congressional deliberation over this legislation. The results indicate very high levels of support for increasing vehicle fuel efficiency standards, with almost 3 out of 4 Pennsylvanian strongly supporting this policy option.

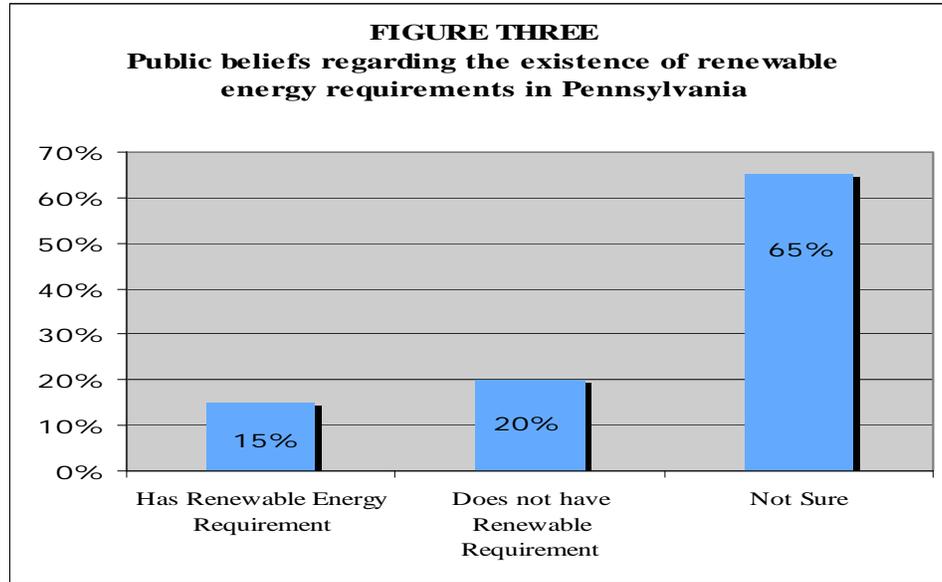
TABLE TWELVE

Levels of Public Support for Increasing Fuel Efficiency Standards for Vehicles

Strongly Support	75%
Somewhat Support	18%
Somewhat Oppose	2%
Strongly Oppose	4%
Not Sure/Refused	1%

Another major focus of the 2007 congressional energy debates revolved around the issue of requiring portions of electricity production to come from renewable energy sources through so-called renewable portfolio standards (RPS). Congress debated extensively proposals that mandated electricity producers to include renewable energy sources such as wind and solar power. In the end Congress did not pass a renewable requirement as part of the energy bill, but many states are already actively involved in this arena. At the time of the survey, twenty five states representing approximately 60 percent of the American population had adopted legislation that requires a portion of their electricity portfolios to be generated from renewable sources. For example, Pennsylvania requires a steady increase in its level of renewable-based electricity, climbing from 1.5% in 2007 to 18% in 2020.

While Pennsylvania is often recognized for its alternative energy standards its residents appear to have little knowledge about this policy. Survey respondents were asked whether or not they thought Pennsylvania had such a standard. Only 15% of Pennsylvania residents who were interviewed correctly stated that Pennsylvania had a renewable electricity requirement, while 20% of respondents incorrectly reported that the state did not have such a standard. Notably, 2 out of 3 Commonwealth residents were unsure about the status of Pennsylvania's renewable energy requirements.



In turn, the survey results indicate that Pennsylvanians overwhelmingly support the establishment of a state RPS. More specifically, 78% of Pennsylvania residents support a renewable energy standard, with 49% of respondents strongly supporting this option. While support for renewable requirements was high across most demographic categorizations of Pennsylvanians, there were a few notable differences across groups. As can be seen in Table Thirteen, the Commonwealth’s men are more likely than Pennsylvania’s women to oppose requirements for renewable electricity, with 23% of males opposing this option and only 9% of women holding the same position.

TABLE THIRTEEN

“The government should require a set portion of all electricity to come from renewable energy sources such as wind and solar power.”

	Strongly Support	Somewhat Support	Somewhat Oppose	Strongly Oppose	Not Sure
Overall	49%	29%	9%	6%	4%
Males	46%	27%	14%	9%	2%
Females	52%	31%	5%	4%	6%

Market-Based Emissions Trading

A final category of policy that is designed to address climate change relies on the development of markets in which the right to emit greenhouse gases can be bought and sold by businesses and other parties. The establishment of so-called emissions trading markets to swap carbon emission allowances has been supported by many economists and policy analysts who contend that this approach can decrease greenhouse gases at

lower cost than through more traditional regulatory means. This approach is currently being used across the European Union and is being developed among collaborating states in the northeastern and far western regions of the United States. In turn, there have been numerous proposals introduced in the current Congress to establish such a system nationally and this very issue surfaced in the recent presidential primaries between one of its strongest proponents (Senator John McCain) and an increasingly vocal critic (former Governor Mitt Romney).

In this study, residents of Pennsylvania were asked to identify their levels of support for this policy option. The results from the survey indicate Pennsylvanians are evenly split between support and opposition for a policy that would allow businesses to buy and sell carbon permits. While 41% of Pennsylvania residents support the creation of such a carbon emissions trading market, 34% oppose such an option

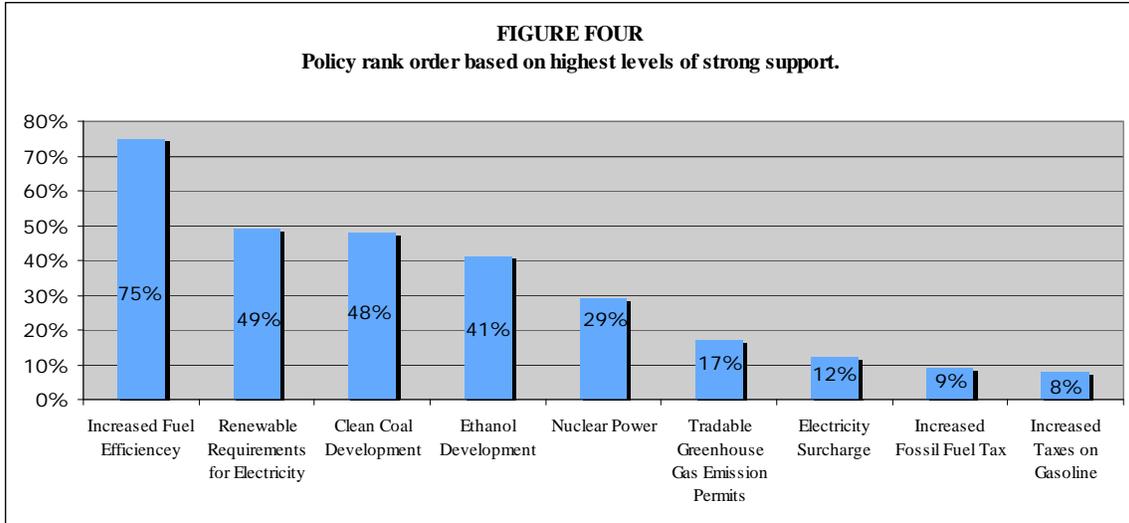
TABLE FOURTEEN

“The government should allow businesses to buy and sell permits to release greenhouse gases as a means of reducing emissions.”

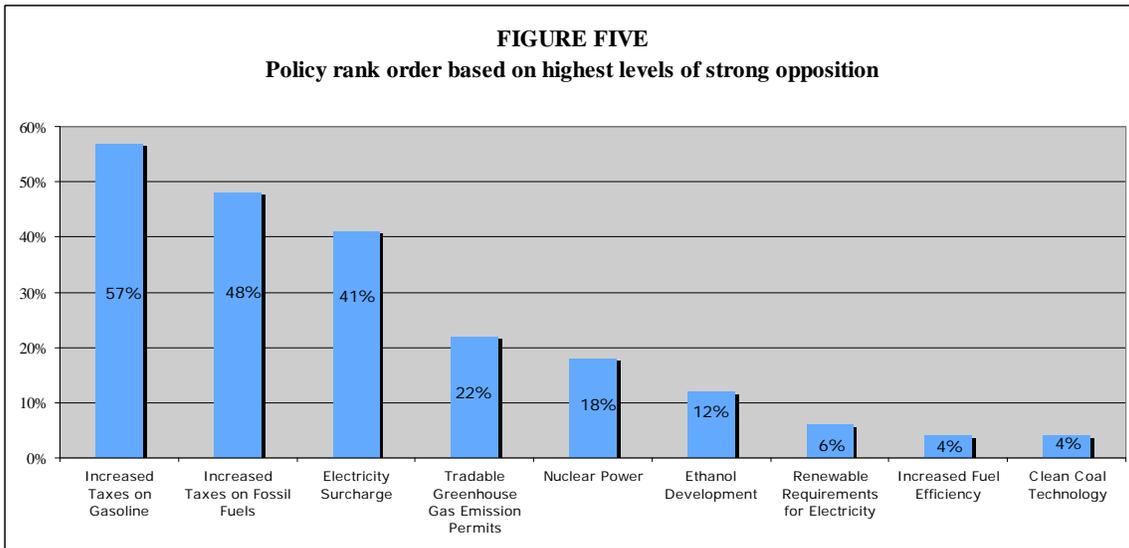
Position	Percent Responding
Strongly Support	17%
Somewhat Support	24%
Somewhat Oppose	12%
Strongly Oppose	22%
Not Sure/Refused	25%

Summary of Support for and Opposition to Competing Policy Options

As the preceding discussion has demonstrated, there are substantial differences among Pennsylvania residents regarding the various options to address global warming. One way to examine the differing views on the policy options is to focus on the intensity of support and opposition for the varied approaches presented to survey respondents. The results presented in Figure Four clearly display the very large variation between levels of support for the options given to Pennsylvania residents. While three out of four state residents offer strong support for increasing automobile fuel efficiency standards, a mere eight percent of Pennsylvanians strongly support increased gasoline taxes.



As Figure Five demonstrates, the highest levels of opposition are linked with those policies that would impose direct costs on citizens through their energy consumption. Policies that impose costs more indirectly, such as through mandating renewable energy development, consistently engender greater support.



SECTION SIX: WILLINGNESS TO PAY FOR INCREASED RENEWABLE ENERGY

All of the options to reduce global warming could entail significant economic costs in the event that they would be implemented. While cost estimates vary considerably across the options being discussed, it is clear that public willingness to pay for policies that reduce greenhouse gases will largely determine the likelihood that any option is adopted by government. In this survey, we asked Pennsylvania residents how much they are willing to pay each year for more renewable energy to be produced. The results of the survey

indicate that about 2 of 3 Pennsylvanians are willing to pay extra money each year in order to increase renewable energy production. Over 4 out of 10 residents of the Commonwealth are willing to pay at least fifty dollars annually to foster the production of more renewable energy. Comparatively less than one in four state residents indicate an unwillingness to pay anything extra to assist with this endeavor. At the same time, willingness to pay declines markedly beyond the boundary of \$100 per year. A breakdown of willingness to pay for renewable energy development can be observed in Table Fifteen below.

TABLE FIFTEEN

“If it required you to pay extra money each year in order for more renewable energy to be produced, how much would you be willing to pay?”

Amount Willing to Pay	Percent Responding
Nothing	24%
1 to 50 Dollars	24%
50 to 100 Dollars	20%
100 to 250 Dollars	13%
250 to 500 Dollars	5%
Over 500 Dollars Per Year	4%
Not Sure/Refused	11%

As with many other aspects of global warming and energy policy the willingness of Pennsylvanians to pay for alternative energy is strongly related to their partisan affiliation, as shown in Table Sixteen. For example, Republicans and Independents were more likely than Democrats to indicate that they would not pay any extra money for the development of renewable energy.

TABLE SIXTEEN

“If it required you to pay extra money each year in order for more renewable energy to be produced, how much would you be willing to pay?”

	Nothing Each Year	1 to 50 dollars	50 to 100 dollars	100 to 250 dollars	250 to 500 dollars	Over 500 dollars	Not Sure/Refused
Democrat	19%	28%	22%	12%	4%	4%	9%
Republican	29%	23%	20%	12%	6%	3%	6%
Independent	27%	17%	19%	13%	8%	6%	10%

Willingness to pay for renewable energy production is also related to the educational levels of Commonwealth residents. Notably individuals with a college degree are twice as likely as those without college diplomas to express a willingness to pay 100 dollars or more a year to increase renewable energy production.

TABLE SEVENTEEN

“If it required you to pay extra money each year in order for more renewable energy to be produced, how much would you be willing to pay?”

	Nothing Each Year	1 to 50 dollars	50 to 100 dollars	100 to 250 dollars	250 to 500 dollars	Over 500 dollars	Not Sure/ Refused
College Degree	22%	25%	21%	14%	6%	5%	7%
No College Degree	31%	24%	18%	10%	2%	<1%	13%

The survey results also demonstrate a clear relationship between the income levels of Pennsylvania residents and the amount of money they are willing to pay in order for more renewable energy to be produced. For example, 63% of individuals with family income levels under \$40,000 per year indicated they would pay less than 50 dollars a year to increase production of renewable energy. Comparatively, 33% of Pennsylvanians with family income above \$80,000 per year would pay no more than 50 dollars annually to boost renewables. These differences are even more pronounced when the highest levels of contributions are considered. While 19% of Pennsylvanians with income levels over \$80,000 expressed a willingness to pay \$250 or more each year for more renewable production, only 3% of individuals with family income below \$40,000 shared this position. A full breakdown of the relationship between income and willingness to pay for renewables is presented in Table Eighteen.

TABLE EIGHTEEN

“If it required you to pay extra money each year in order for more renewable energy to be produced, how much would you be willing to pay?”

	Nothing Each Year	1 to 50 dollars	50 to 100 dollars	100 to 250 dollars	250 to 500 dollars	Over 500 dollars	Not Sure/ Refused
Under \$40,000	33%	30%	16%	8%	2%	1%	9%
\$40,000 to \$80,000	19%	29%	26%	14%	5%	3%	4%
Over \$80,000	19%	14%	20%	20%	11%	8%	9%

SECTION SEVEN: LOOKING AHEAD

With evidence regarding global warming mounting and concerns regarding energy costs and supplies ever present, it appears likely that these topics will play a dominant role in policy debates in the United States for the foreseeable future. As with most policy questions, public opinion will play a central role in determining the ultimate decisions that government will make on these matters. In our study of Pennsylvania, along with a companion project in Michigan, we find a fairly complex set of attitudes among citizens regarding the direction government should take in addressing climate and energy issues. While Pennsylvanians generally acknowledge the reality of global warming, its serious ramifications, and the responsibility of government to deal with the issue, they have mixed levels of support for the array of policy options currently on the table. Commonwealth residents also express limited levels of willingness to pay for efforts to increase the development of renewable energy, thus underlying the current stand-off in Harrisburg regarding Governor Rendell's energy proposals. Therefore we intend to continue measuring public opinion regarding energy and climate questions as a means of assessing public perceptions and desires regarding these important matters.

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