Innovative Research Group, Inc.

www.innovativeresearch.ca

Report prepared for:

The Alberta Government – Ministry of Energy

ALBERTA NUCLEAR CONSULTATION

TABLE OF CONTENTS

1.0 Executive Summary

Following the release of the Nuclear Power Expert Panel's report, the Alberta Ministry of Energy engaged Innovative Research Group Inc. to conduct the Alberta Nuclear Public Consultation. The consultation process began with a multi-pronged qualitative research process to identify the range of views that Albertans hold on Alberta's electricity options and nuclear energy. Once those views were identified, they provided the foundation for a telephone survey of 1024 randomly-recruited Albertans to see how many Albertans agreed with the various viewpoints raised during the qualitative research process. Since only the telephone results are statistically representative of the Alberta population, the Executive Summary report uses the telephone survey results to illustrate key findings. However, the results from all four elements of the study are provided in the detailed findings section of this report for readers to review at their pleasure.

Key findings include the following:

1. Given a choice of three options in the randomly-recruited, quantitative telephone survey of Albertans, a plurality (45%) preferred that nuclear power plants be considered on a case-by-case basis. About one-quarter (27%) said the province should oppose proposals, while about one-fifth (19%) said the province should encourage proposals. One in twelve (8%) said they didn't know.

2. Albertans' preference for a case-by-case review is based on their conflicting underlying attitudes:

- While most Albertans believe the province needs to grow, a minority believe growth is neither desirable nor inevitable. Albertans who share this view have a strong likelihood of opposing the consideration of nuclear power as an energy option for Albertans.

- Albertans have conflicting views on nuclear specific attitudes. The typical Albertan is both confident that science and the industry have things under control yet fearful of the potential negative impacts of nuclear. Only those Albertans who hold consistently positive views of science and the nuclear industry - and are less concerned by the potential for negative consequences - actually want to see the government encourage nuclear proposals.

- Albertans who want to see nuclear proposals judged on a case-by-case basis share a belief that growth will require more electricity and have the conflicted views on nuclear described above. This middle ground is divided by several considerations. Some are strongly driven by a desire to keep

electricity prices low no matter what. Others are passionate about growth and electricity's role in driving growth but hesitate over nuclear consequences.

3. In reviewing nuclear power plant proposals, Albertans want the government to focus primarily on the health, environment and safety aspects of the nuclear plants, including the handling and storage of nuclear waste. These priorities were inter-related. While a strong majority (79%) of Albertans believe it is critical to keep the price of electricity as low as possible, economic concerns such as cost and reliability of electricity supply and the economic benefits created by new power plants were generally raised only after health, environment and safety factors.

Background to Key Findings

1. Given a choice of three options in the random quantitative survey of Albertans, a plurality (45%) preferred that proposals to build nuclear power plants be reviewed on a case-by-case basis. About one-quarter (27%) said the province should oppose proposals, while about one-fifth (19%) said the province should encourage proposals. One in twelve (8%) said they didn't know.

In the quantitative survey, there was a significant gender difference in levels of support. Men (29%) were three times more likely to say that the province should encourage proposals than women (9%). More women (31%) said they wanted the province to oppose proposals than men (25%). As with the overall results, a plurality of women (47%) and men (42%) said proposals should be reviewed on a case-by-case basis.

The differences between regions were not as striking as gender. While support for encouraging proposals was at or about 1 in 5 in all regions, the North region (780 area code except Edmonton) was most opposed (32%) compared to the Calgary region (24%), which was least opposed.

In the public consultation process, Albertans voluntarily completed the workbook survey. They were more polarized and more opposed in their views on nuclear energy, compared to the general population reflected in the quantitative survey results. Of the voluntary participants, more than 4 in 5 said they would either encourage (28%) or oppose (55%) nuclear power plant proposals, with only 1 in 6 (16%) choosing the case-by-case option. By contrast, a majority of the participants in the randomly-recruited discussion groups favoured a case-by-case consideration (57%), with just over 1 in 5 wanting proposals encouraged (22%), and about 1 in 7 wanting the province to oppose proposals (13%). While neither of these qualitative processes reflect a statistically valid representative sample of Albertans, their participation was instrumental in allowing the researchers to understand the range of views on the issues, providing critical input into the quantitative survey.

Knowledge seems to be a necessary but not sufficient requirement for support while opposition was relatively stable across self-assessed levels of nuclear knowledge. Support grew dramatically as knowledge grew. The same relationship is seen between those who are more engaged in Alberta's electricity issues and those who are less engaged.

2. Albertans' preference for a case-by-case review is based on their conflicting underlying attitudes:

Attitudes towards growth key to attitudes towards nuclear

Over two-thirds (69%) of quantitative survey respondents agreed that: "We are going to need a lot more electricity to maintain our quality of life and economic well-being". This finding was consistent with input from the randomly-recruited discussion groups and the workbook survey responses. While most Albertans believe the province needs to grow, a minority does not believe growth is desirable or inevitable, with many of them having strong environmental motivations. For the most part, Albertans who prefer to avoid growth do not want more power. They are willing to support new power sources, but only if the new source replaces a more damaging existing power source. Those who prefer to avoid growth have a strong likelihood of opposing the consideration of nuclear power as an energy option for Albertans.

Conflicting nuclear views drive Albertans to case-by case review

A majority of Albertans believe that science can solve the nuclear waste issue (61% agree) and are confident that the nuclear industry can build and operate nuclear plants safely (65%). At the same time, over 7 in 10 Albertans (72%) agreed that: "I worry we don't understand the health impacts of nuclear power plants on surrounding communities". Over 3 in 4 (77%) agreed that "It's wrong to generate 40 or 50 years of electricity for our generation and then leave a nuclear waste problem that will go on for generations to come", including a majority (56%) who strongly agreed.

The typical Albertan sees growth as inevitable and trusts both science and the nuclear industry, yet there remains a fear of the unknown and the long-term risks of nuclear. It is this conflict that leaves the largest group of Albertans supporting a case-by-case review.

Those Albertans who trust science and industry, and are less concerned about the likelihood of potential negative consequences of nuclear energy, are the most likely to want to see nuclear proposals encouraged.

Price sensitivity divides Albertans with conflicting views on growth and nuclear

The conflict between underlying attitudes is explored in more detail through cluster analysis in the quantitative survey report. Cluster analysis allows us to group Albertans by shared attitudes.

The cluster analysis shows that price sensitivity is a key factor for about one quarter of the Albertans with seriously conflicted attitudes on nuclear energy. However, most Albertans believe cost should not be the only deciding factor. Over 7 in 10 (72%) disagreed with the statement: "I don't care where we get power from so long as it is at the lowest price". Over 2 in 5 (41%) strongly disagreed.

Affordable green options

Three-quarters of the telephone respondents (75%) agreed that: "We can have all the affordable electricity from renewable energy we need if we really try". Similar views were consistently expressed in the randomly-recruited discussion groups and argued strongly in the environmental stakeholder groups.

3. In reviewing nuclear power plant proposals, Albertans want the government to focus primarily on the health, environment and safety aspects of the nuclear plants, including the handling and storage of nuclear waste. These priorities were inter-related and elevated above secondary concerns such as cost and reliability of electricity supply.

Albertans placed safety, waste, health, and environmental considerations at the top of the list as most important considerations when evaluating potential power projects. All of these items received extremely or very important ratings in the 80% to 90% range. This hierarchy of issues was much the same in the qualitative research process. As was found in the randomly-recruited discussion groups, discussion of safety would lead to health issues, discussion of environment would lead to concerns over waste, and so on. These issues are strongly linked in many Albertans' minds.

The underlying concern for many Albertans is fear of catastrophe. Over 6 in 10 Albertans agreed that "I am reluctant to take a chance on nuclear energy because when things go wrong, they go very wrong". While a majority of Albertans shared the key concerns of health, environment, safety, and waste, there was a difference between those who trusted that science would find a way to manage waste safely and trusted the industry to operate safely, compared to those who did not agree and whose fears have not been placated. Trust in science and in the industry was a key factor driving support for nuclear energy.

Although they were rarely the first mentions in the discussion groups, economic criteria were also on the minds of Albertans. The following were extremely or very important considerations for a majority of Albertans: a dependable supply of electricity (68%); impact on the price of electricity (62%); and job creation (54%).

Other Findings:

- **Consultation**. Participants in the randomly recruited discussion groups and stakeholder groups called for more public education and consultation. Many participants discussed the "fear of the unknown" and the need for time to inform the public. Other participants discussed the need for more voices to be heard, including environmental voices. In particular, environmental stakeholders called for a more public debate and the need to bring forward research not included in the Expert Panel report. Local government and business stakeholders spoke to the need for a public consultation process that functions effectively, and learns from mistakes of past public consultations. First Nations and Métis stressed their desire for Nation-to-Nation consultations whenever their Treaty or Aboriginal rights were involved. Some participants expressed the need for the government to make decisions and not to consult indefinitely.

- **Community.** In the qualitative research process, randomly-recruited group participants and local government representatives wanted the construction of a nuclear power plant proposal to anticipate and plan for community impacts, including adequate support for communities to keep pace with infrastructure, housing, medical and social services needs. Many participants cited the example of Fort McMurray as an example of improperly planned growth that they wished to avoid.

- **Industry Impact of Nuclear**. Both environmental and business stakeholders were concerned with the impact that a large baseload nuclear power plant would have on the electricity system in terms of discouraging new investment for other energy suppliers - including renewable energy - and the ability of the system to manage electricity supply when the nuclear supply goes offline for either maintenance or repair.

2.0 Overview of the Public Consultation Process

In **2008, the Alberta government** appointed an Expert Panel to "prepare a comprehensive and objective report on nuclear energy".

The panel was asked to provide a comprehensive examination of: environmental, health and safety issues; waste management; comparing nuclear energy with other electricity generation technologies; current and future nuclear power generation being used in Canada and around the world; and Alberta's future electricity needs. The government announced that a public process would follow the report's release.

The public consultation process started shortly after the release of the Expert Panel report. The panel report was publicly released in March 2009 and the consultation process commenced in April.

The purpose of the public consultation process was to identify the range of views that Albertans hold on Alberta's electricity options and nuclear energy through a multi-pronged qualitative research process, concluding with a quantitative survey of Albertans. In particular, the research was focused on finding answers to the following three questions:

- Should nuclear power be considered as an option for meeting Alberta's energy needs?
- What are Albertans' views of nuclear energy?
- If nuclear power proposals are considered, what criteria should be considered in evaluating them?

The consultation process was conducted between April 21 and July 20, 2009. The initial phase included three streams of qualitative research to collect the full range of views held by Albertans on the three questions above:

- Twenty randomly-recruited general population discussion groups in ten communities across the province;
- An online and mail back workbook and survey open to any Alberta resident who chose to participate (with 3,615 completed responses);
- Meetings with individuals who are involved in stakeholder groups, representing diverse perspectives, across various sectors such as First Nations and Métis, community, business, and environmental groups .

Consultation materials were based on the Expert Panel's report and were designed to provide Albertans with an overview of the issues and direct them to detailed information in the panel's report and to other national and international sources.

The input collected from the qualitative phase was used to design a random telephone survey that allowed for generalizable benchmarks to be established for each of the three research questions identified above. A total of 1,024 Albertans responded to the survey conducted from July 8th to 20th, 2009 with a margin-of-error of 3.06%, 19 times out of 20.

Task	Brief Description	Timing
Release of Expert Panel report		March 26, 2009
Material Design	INNOVATIVE worked with the Ministry of Energy's communications group and developed the workbook based primarily on the content in the Expert Panel report.	March-April, 2009
Randomly recruited Discussion Groups	Twenty general population discussion groups (two groups in each of ten communities around the province) where participants reviewed the workbook and discussed the issues therein.	April 21 – April 30, 2009
Workbook survey open for public feedback	The workbook and survey were made available online. Paper copies of the workbook and survey were also available by request.	April 27 – June 1, 2009
Stakeholder Discussion Groups	Six discussion groups with stakeholders, representing environmental, industry, and community perspectives.	June 3 – June 5, 2009
Quantitative Telephone survey	Public opinion survey of 1,024 randomly selected Albertans.	July 8 – July 20, 2009

Privacy

All responses are combined with others to protect the privacy of the respondents. Comments by Albertans reflected in this report are not attributed to anyone by name.

3.0 Province-wide Quantitative Survey

Overview

This report provides the results of a province-wide survey designed to address three questions:

- Should nuclear power be considered as an option for meeting Alberta's energy needs?
- What are Albertans' views of nuclear energy?
- If nuclear power proposals are considered, what criteria should be considered in evaluating them?

The answer is that Albertans would like nuclear proposals to be considered on a case-by-case basis.

- This is driven by conflicting views on the need for power, and the pros and cons of nuclear which will be explored in further detail.
- If proposals are to be considered, the primary concerns Albertans want to see addressed are the health, environmental and safety elements of the project. Material concerns related to economic benefits and price are also relevant.

Report Structure

The report structure is based on the three questions identified on the previous page:

- First, Albertans' views on whether nuclear energy should be considered or not are presented, including key differences between different groups.
- Second, Albertans' views of nuclear energy are benchmarked by showing the results of attitudinal statements generated by input collected through discussion groups, online and mail-in workbooks and stakeholder sessions. Some of these are related to underlying beliefs that inform nuclear choices while others are nuclear specific.
    - While a total of 18 different attitude statements were included, the qualitative input suggested we would likely find that a smaller set of underlying values were really driving opinion. As a result, the attitudinal results have been organized and presented based on Albertan's underlying value dimensions as identified through a research tool called factor analysis.
    - We have also grouped Albertans' according to their shared values using another tool called cluster analysis.
- Third, a final section presents Albertans' views on priorities for evaluating nuclear proposals if nuclear proposals are considered. Again, the qualitative input suggested we would likely find that a smaller set of underlying values were really driving opinion. As a result, the attitudinal results have been organized and presented based on Albertans' underlying value dimensions as identified through factor analysis.

Methodology

This custom telephone survey was conducted among 1,024 Albertans selected by random digit dialing from Wednesday, July 8th to Monday, July 20th, 2009.

The sample is proportionally weighted by region, age and gender according to the 2006 Canadian census data.

The margin of error for the Alberta sample is approximately ±3.06, 19 times out of 20.

The margin of error will be larger for sub-samples of the survey.

Note: graphs may not always total 100% due to rounding values rather than an error in the data. Sums are added before rounding numbers.

Initial Attitudes

Measuring Albertans' Views on Nuclear Energy

The key policy question in this survey was the following:

Which one of the following statements best represents your view?

- The province should encourage proposals to build nuclear plants in Alberta.
- Proposals to build nuclear power plants should be considered on a case-by-case basis.
- The province should oppose proposals to build nuclear power plants in Alberta.

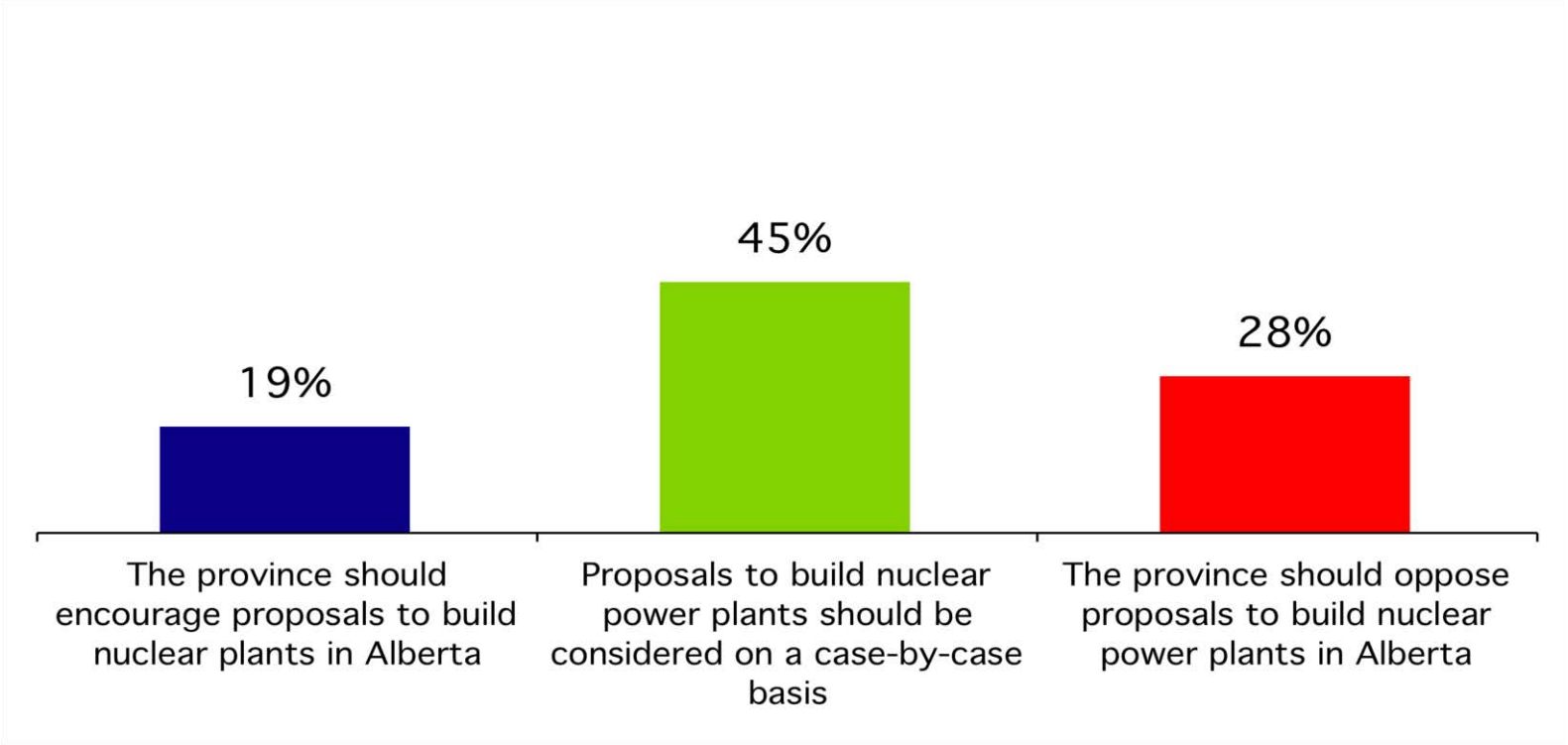
Only one question - awareness of the consultation - was asked prior to the policy question. Those who were unaware were then told:

"In fact, the Province of Alberta has been conducting a public consultation as to whether nuclear power would be an appropriate addition to the energy options available to Alberta today."

In addition to the basic top line results, this report shows the demographic profile for supporters of each option as well as showing support by various measures of engagement.

Views on Nuclear Energy Proposals

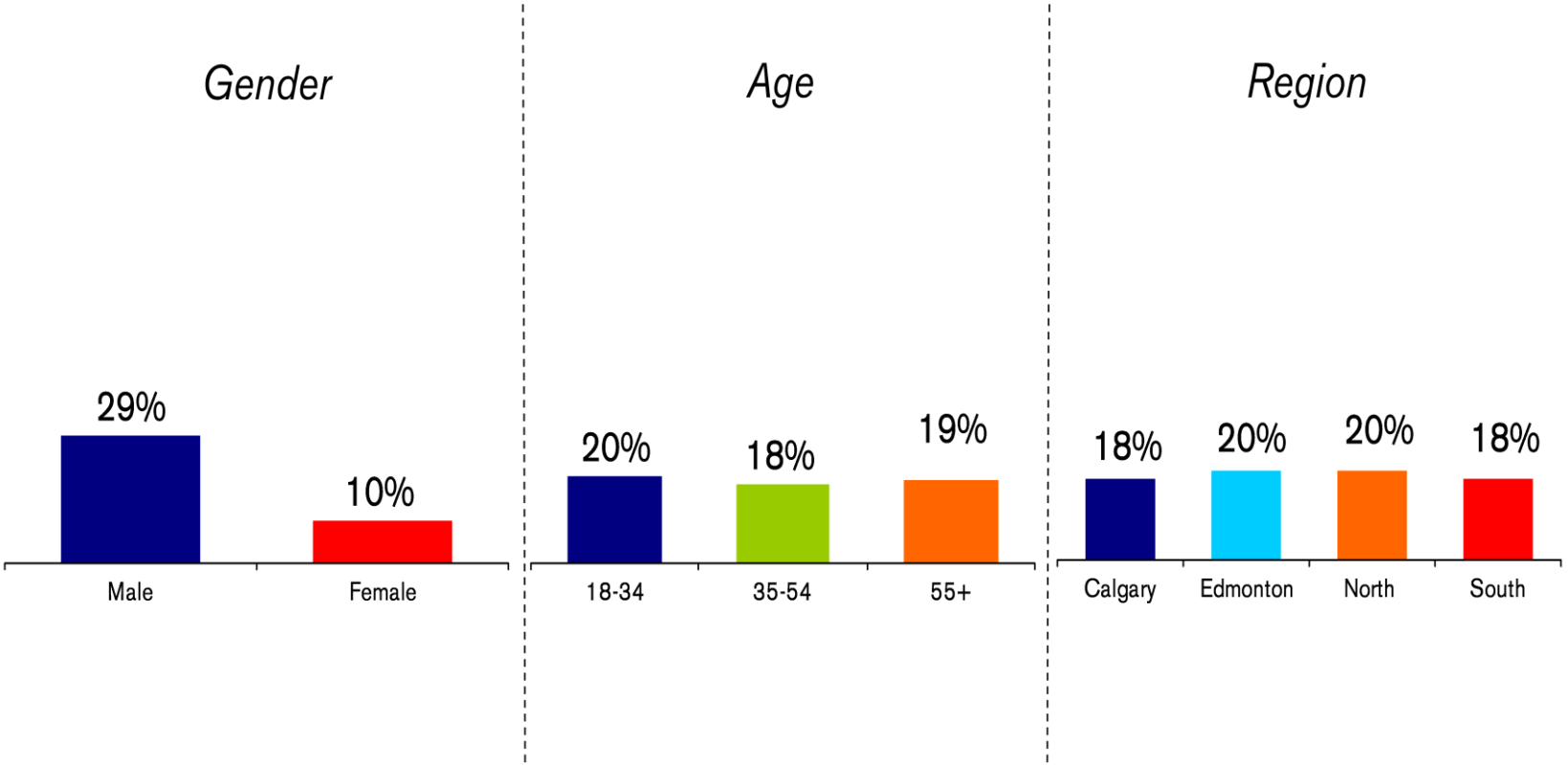
Which of the following statements best represents your point of view?



Note: Don't know (8%) not shown

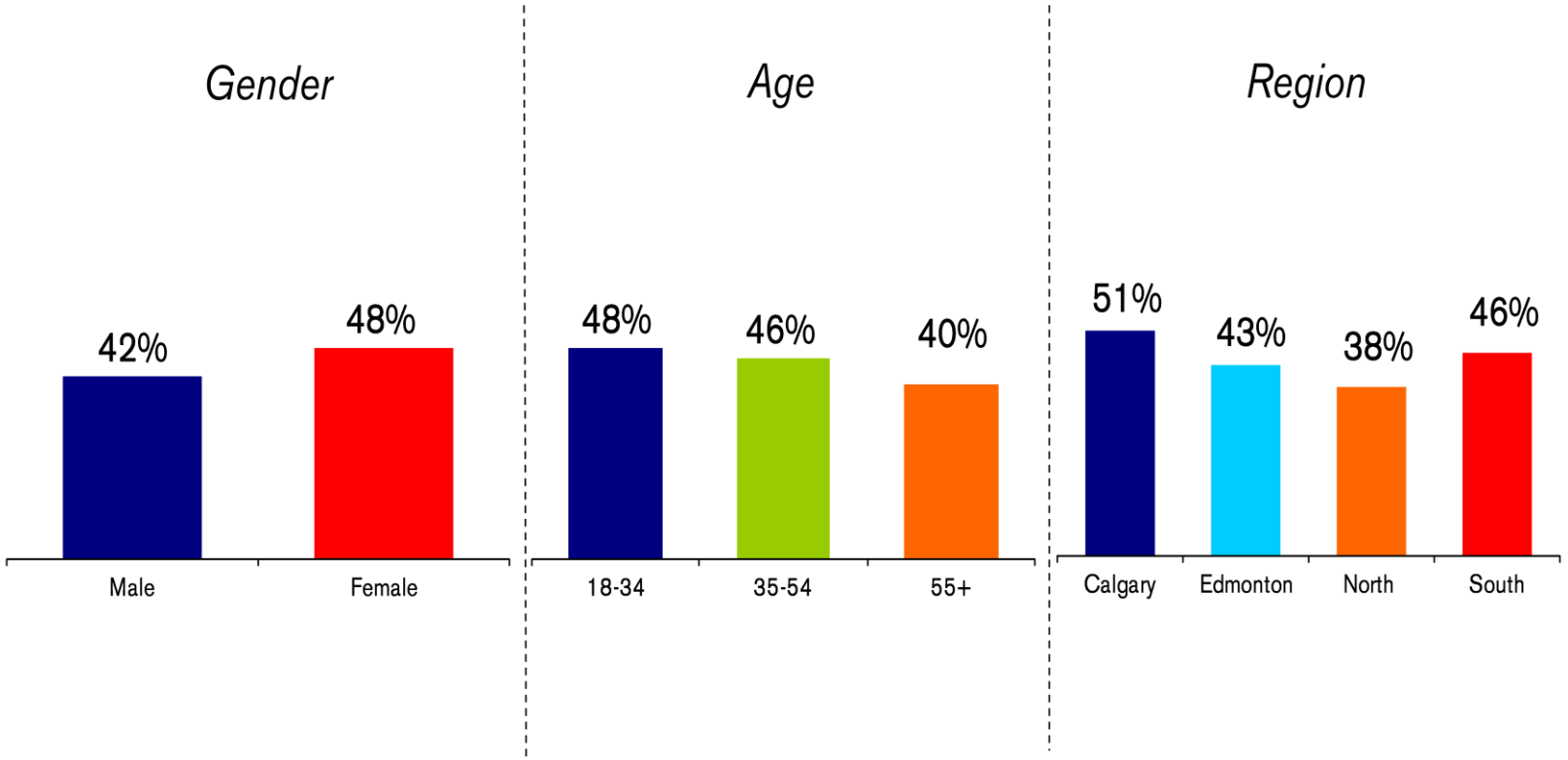
Nuclear Supporters by Key Demographics

Those who report that the Alberta Government should encourage nuclear proposals…



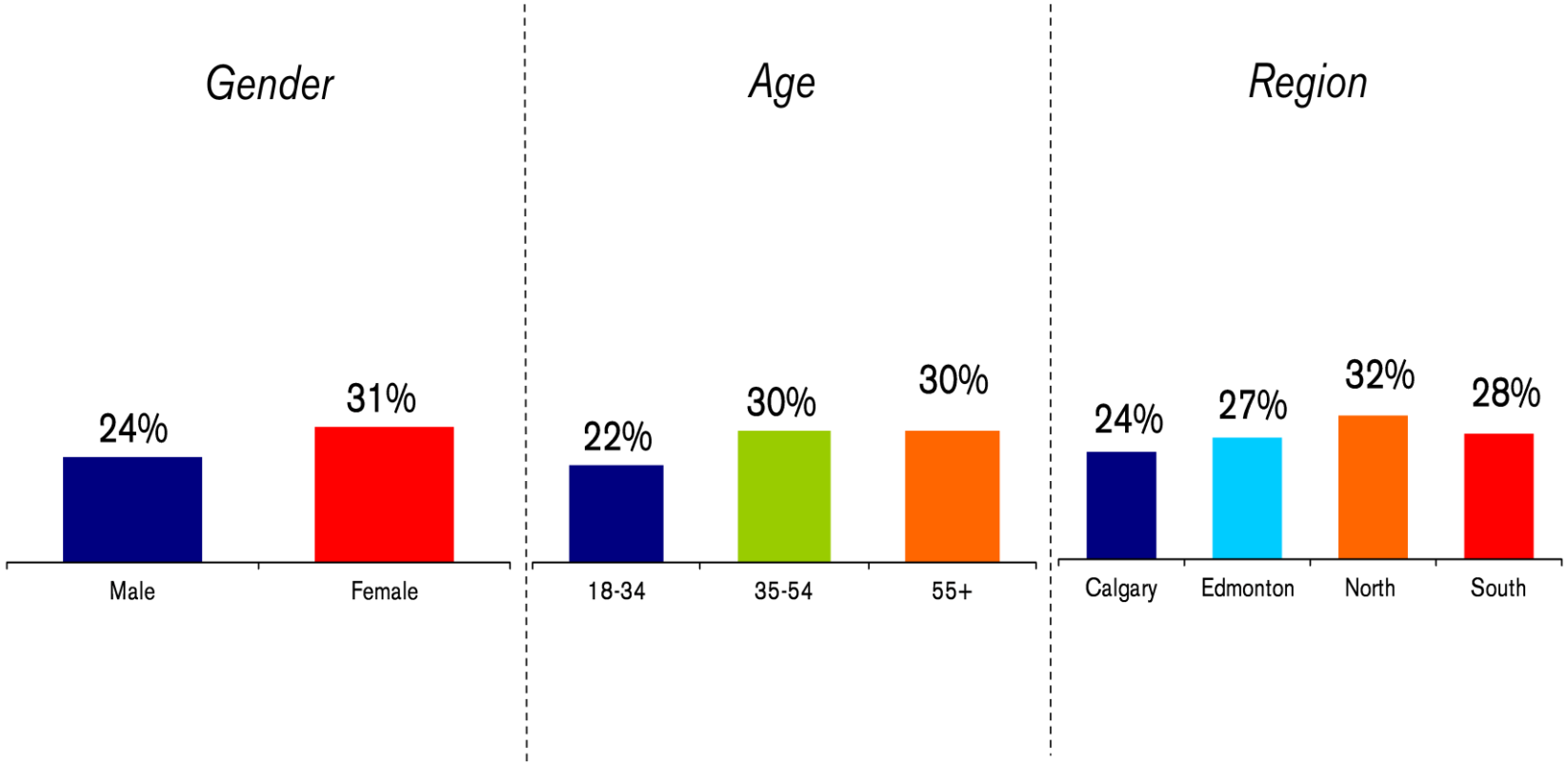
Case-by-Case Supporters by Key Demographics

Those who report that the proposals to build nuclear power plants should be considered on a case by case basis……



Nuclear Opponents by Key Demographics

Those who report that the government should oppose proposals to build nuclear power plants…



Public Engagement

How much do people know or care about nuclear energy … and does it matter?

Engagement refers to the degree people are already involved in the issue in some way.

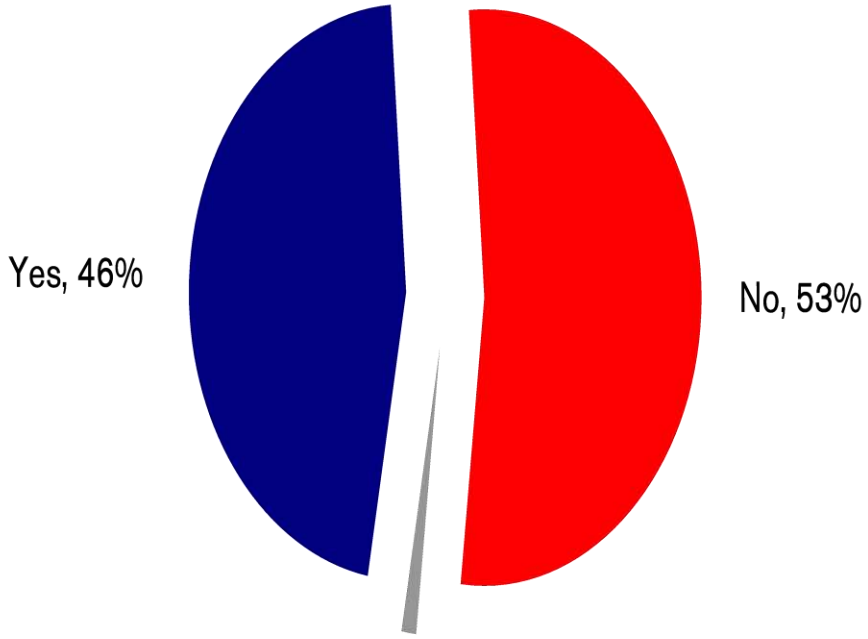
While the levels of engagement are interesting in themselves, looking at the results for individuals who are more engaged allows us to explore the difference between electricity and nuclear issue publics (people who follow an issue more closely than others) to see if there are any differences.

The survey includes three measures of engagement related to the nuclear energy consultation, from general to specific:

- How closely do they follow electricity issues in the news?
- How familiar are they with how nuclear energy is used to generate electricity?
- Are they aware of the consultation?

Awareness of Nuclear Consultation

Q Have you read, seen, or heard anything regarding a provincial government consultation on whether or not nuclear power generation should be considered as an option for meeting Alberta's energy needs ?



Those that respond 'Yes'

Gender	%
Male	55%
Female	38%

Age	%
18-34	36%
35-54	45%
55 +	58%

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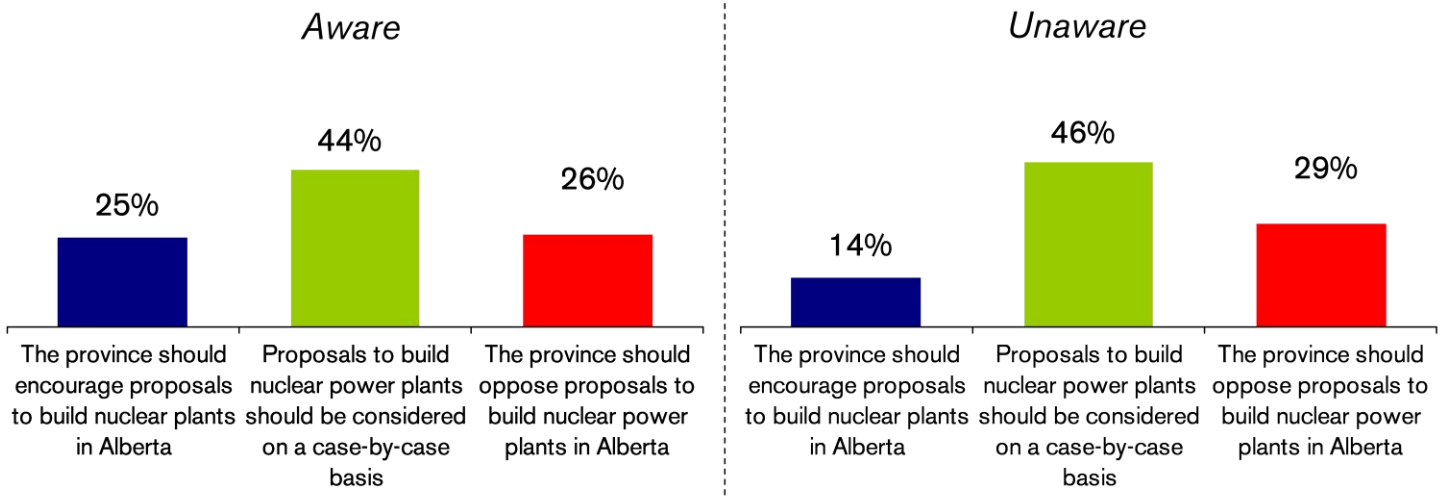
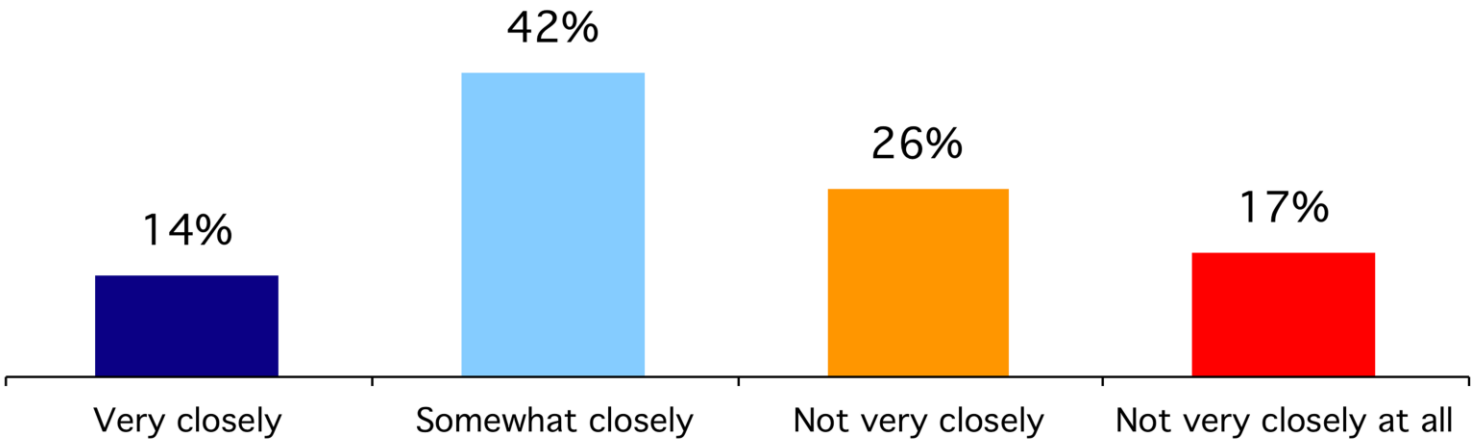
Views on Proposals by Awareness of Consultation

Have you read, seen, or heard anything regarding a provincial government consultation on whether or not nuclear power generation should be considered as an option for meeting Alberta's energy needs?



Electricity Engagement

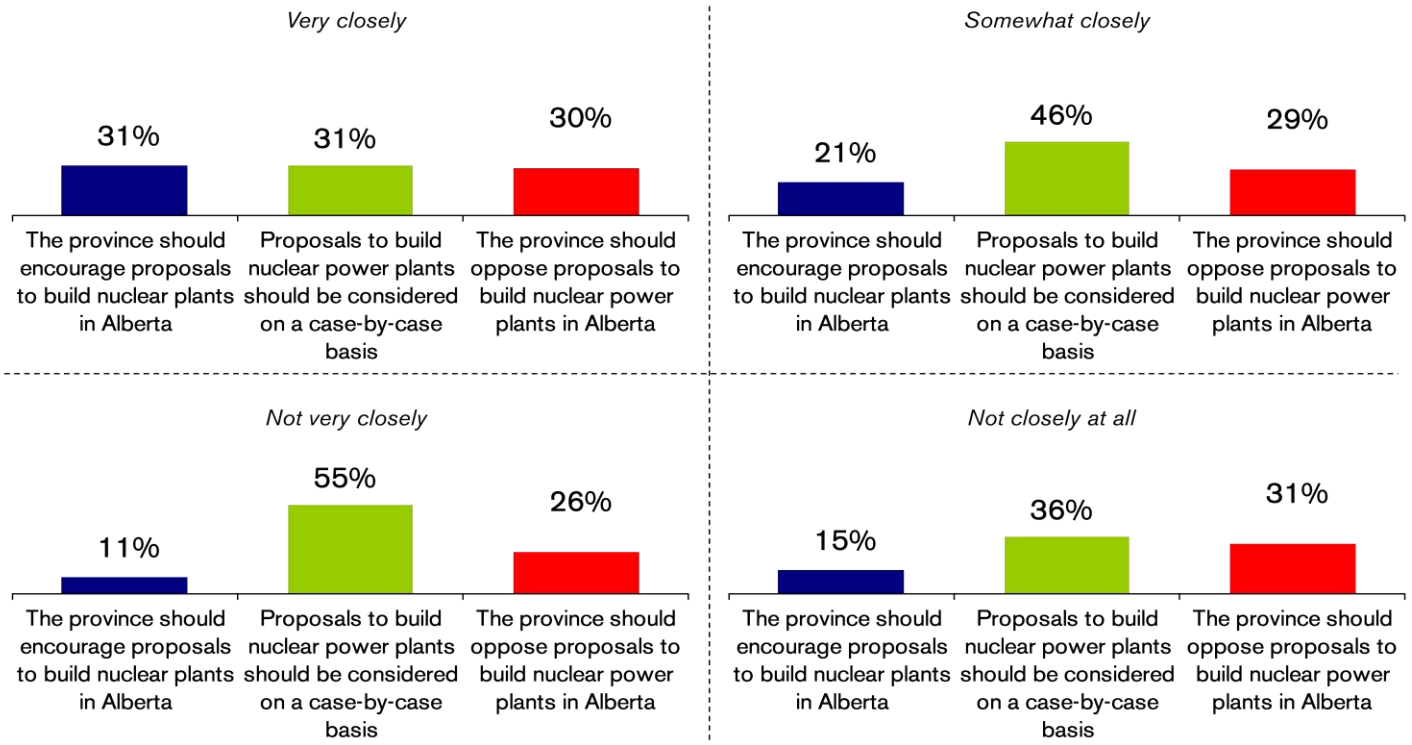
How closely do you follow news about how electricity is generated, distributed and used here in Alberta? Is that…



Note: Don't know (1%) not shown

Views on Proposals by Level of Engagement

How closely do you follow news about how electricity is generated, distributed and used here in Alberta? Is that…



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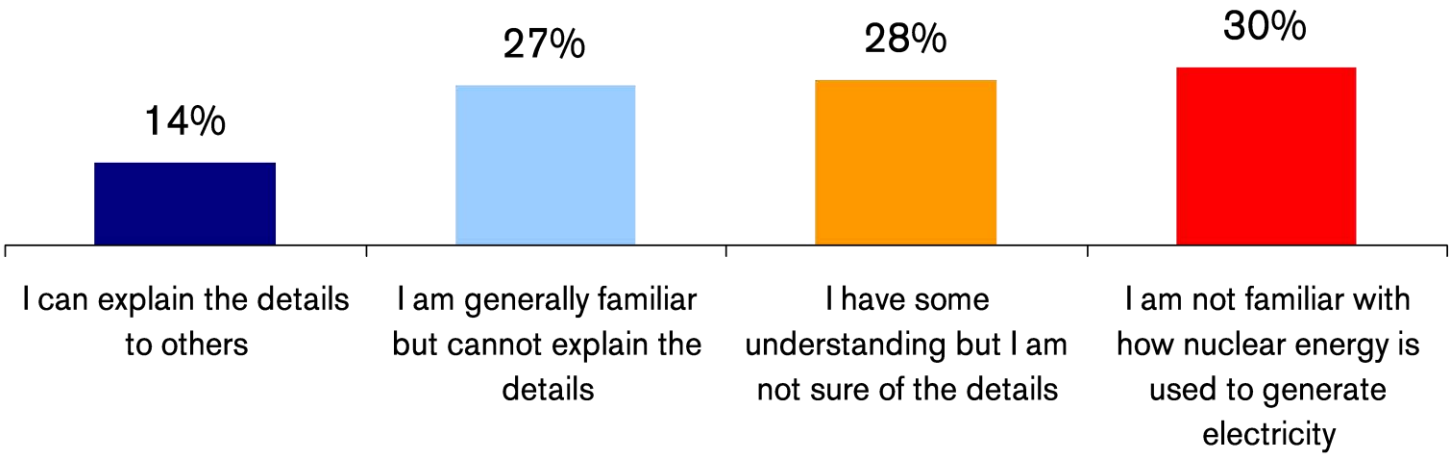
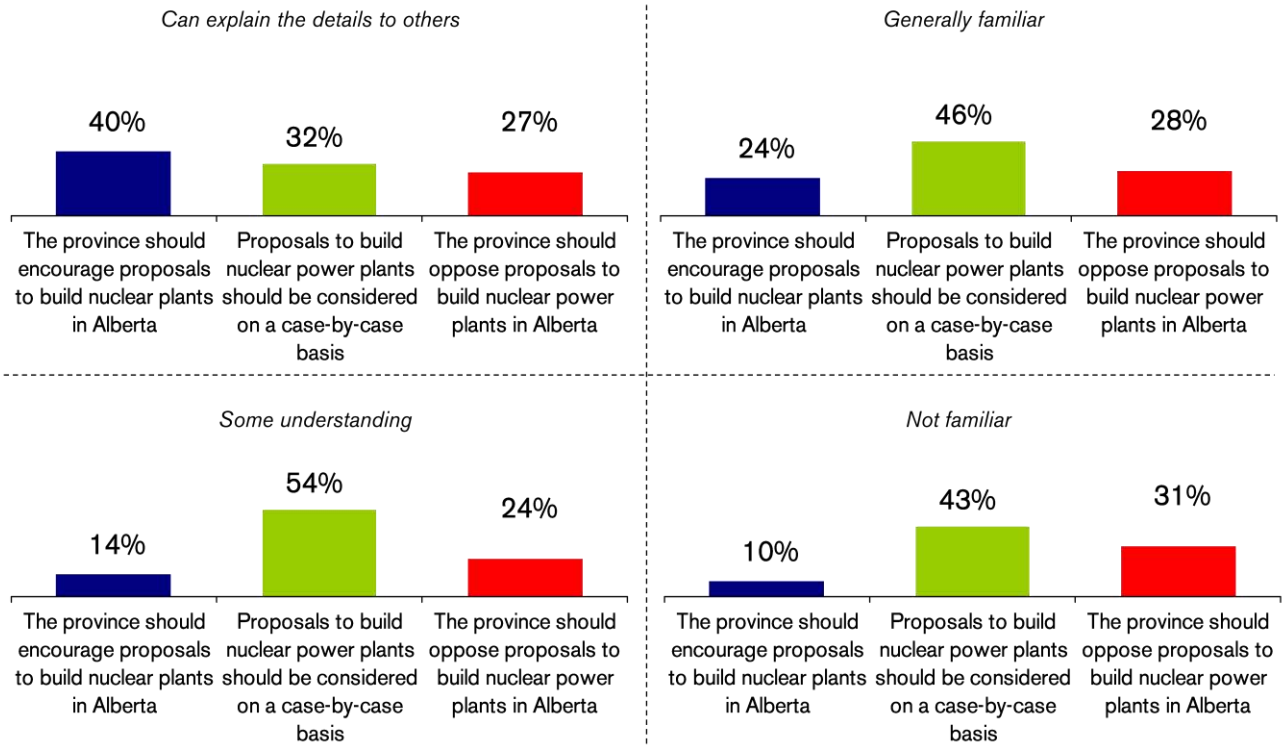
Familiarity with Nuclear Power

And how familiar are you with how nuclear power is used to generate electricity?



Note: Don't know (1%) not shown

Views on Nuclear Power by Level of Familiarity



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Underlying Attitudes

Underlying Attitudes: Factor Analysis

Through analysis of the discussion groups and workbooks, it became clear that several attitudes outside of the nuclear debate influenced Albertan's views on what position the Alberta government should take on proposals for nuclear energy plants.

Some of these items were general orientations towards growth and the environment; others were more specifically targeted towards the electricity sector.

Factor analysis was used to identify underlying value dimensions and the attitudes are presented by factor.

Using Factor Analysis to Simply Results

A list of 11 potential underlying attitudes that inform nuclear choices were developed starting with the initial workbook list and then revised based on input from the qualitative research process.

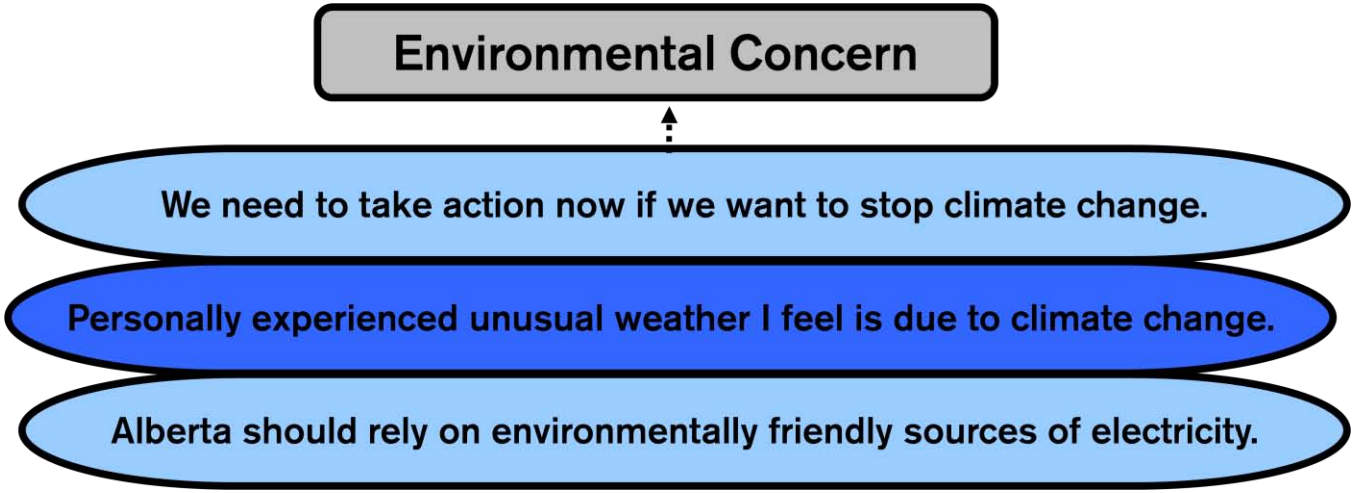
While each of those attitudes seems distinct in important ways in discussions and workbooks, factor analysis was used on the results from the survey to allow us to find out whether there are underlying value dimensions that are driving a variety of different measures.

We have categorized the messages according to these factors so similar statements are grouped together.

We ended up with three major factors and five stand alone items.

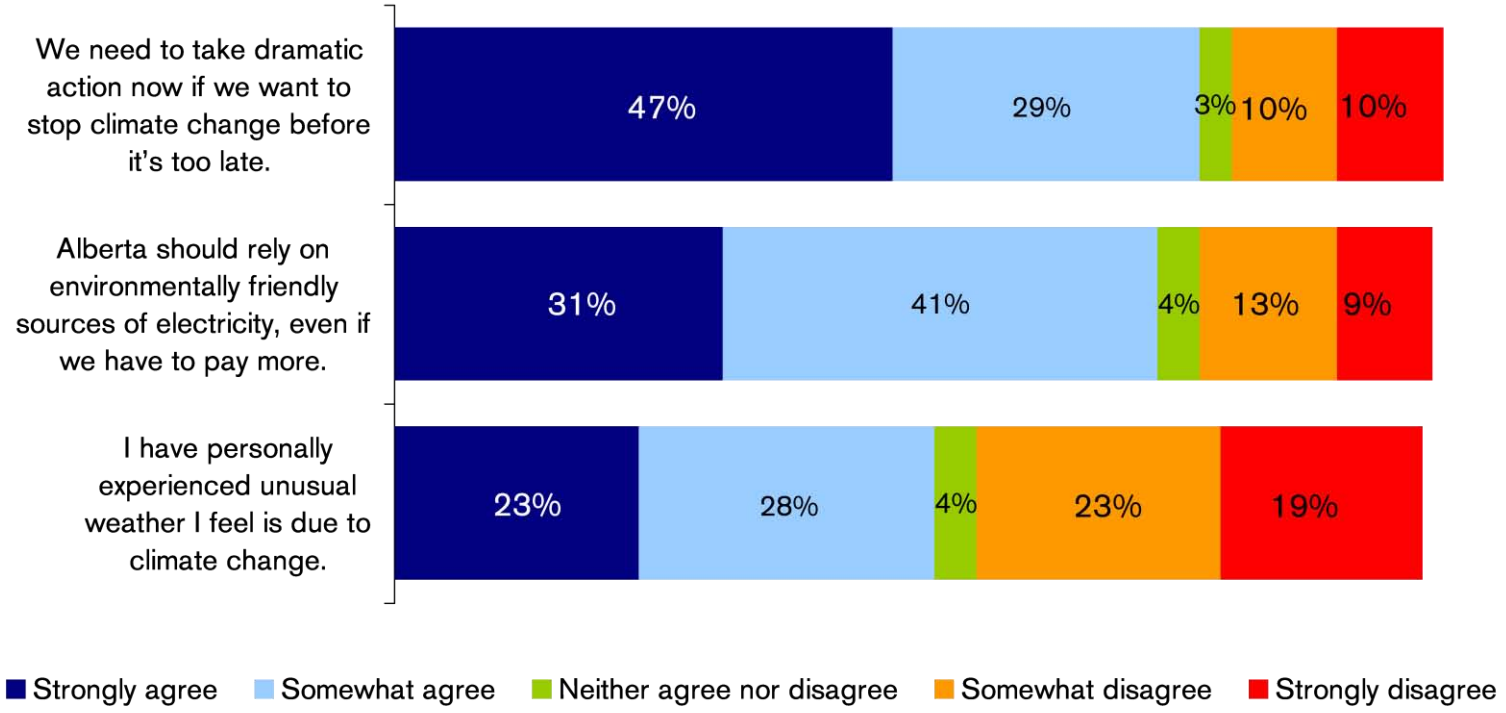
Environmental Concern Factor

Factor Variable



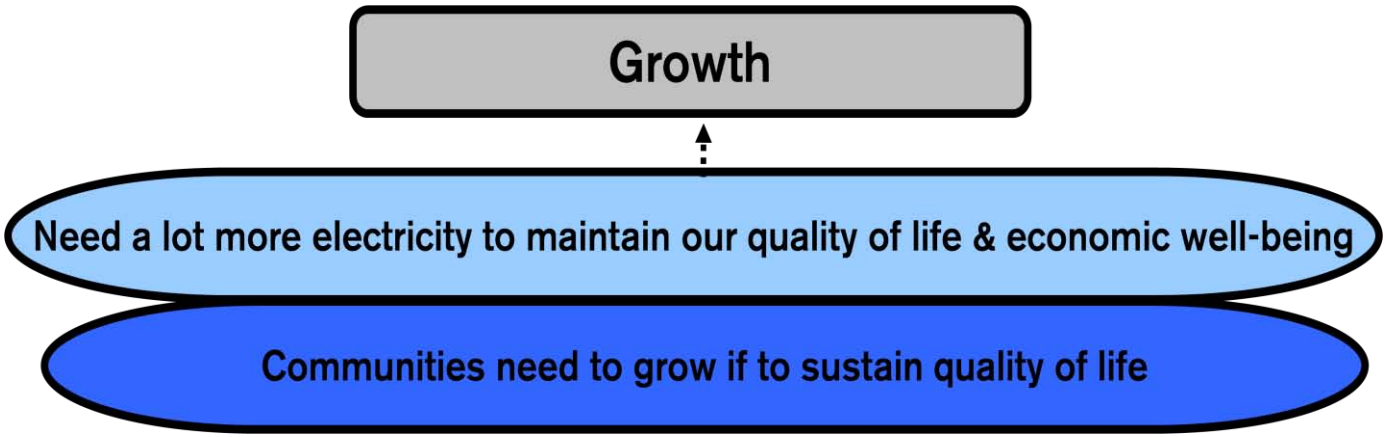
Environmental Concern Items

I am going to read some general statements about topics such as the environment and the economy. Please tell me if you agree or disagree with the following statements.



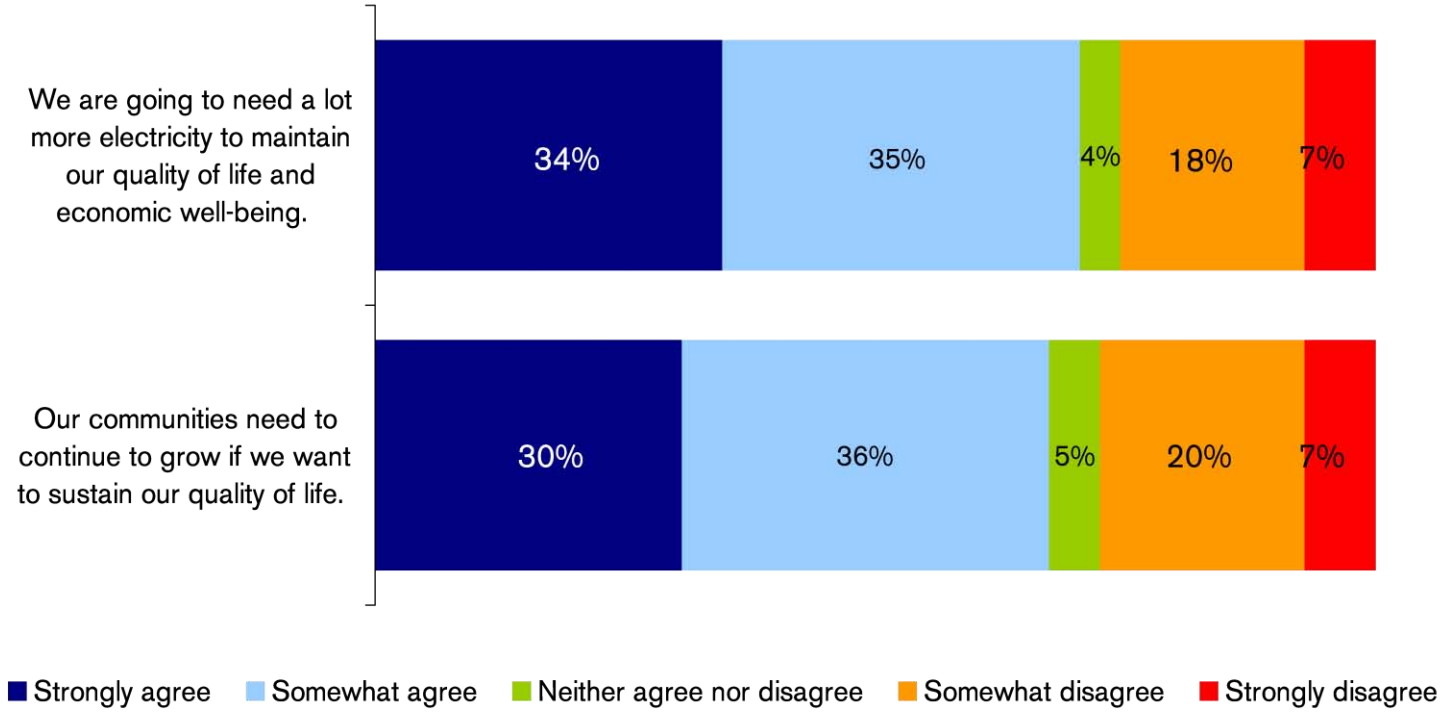
Growth Factor

Factor Variable



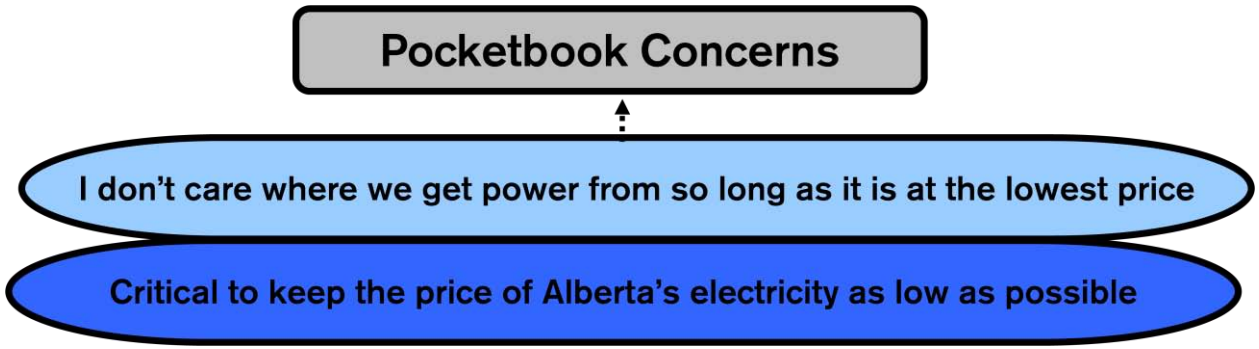
Growth Factor Items

I am going to read some general statements about topics such as the environment and the economy. Please tell me if you agree or disagree with the following statements.



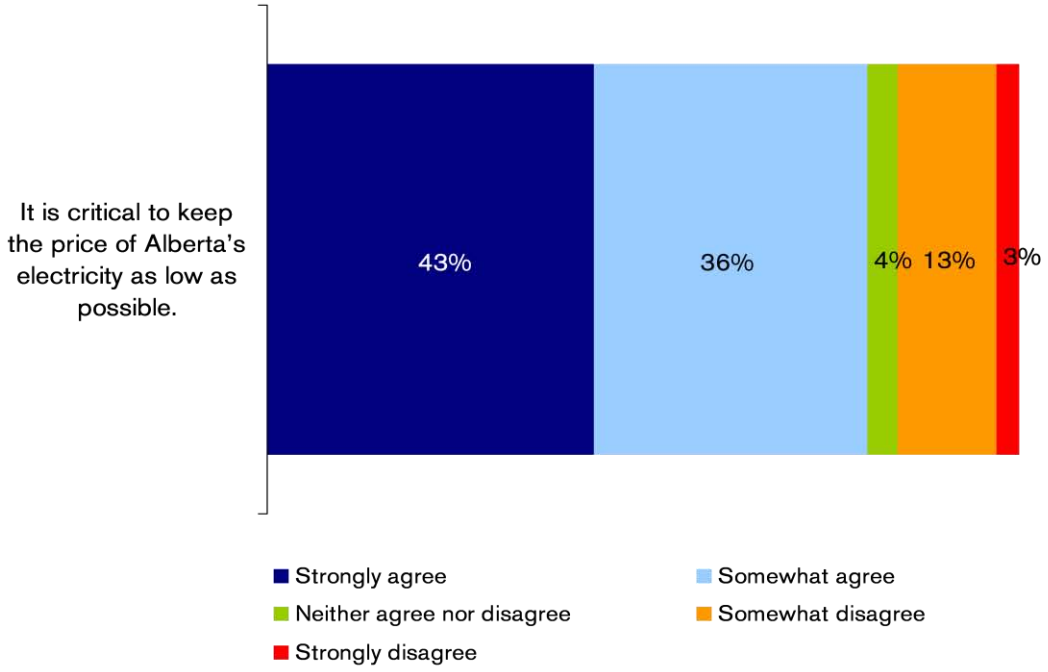
Pocketbook Concern Factor

Factor Variable



Correlation between Pocketbook Concerns and Economic Status: Keeping Prices Low

Q I am going to read some general statements about topics such as the environment and the economy. Please tell me if you agree or disagree with the following statements.



Those that 'Strongly Agreed'

Income	%
Under $40K	55%
$40K-$79K	46%
$80K+	35%

Makes Ends Meet	%
Difficult	55%
Not Difficult	36%

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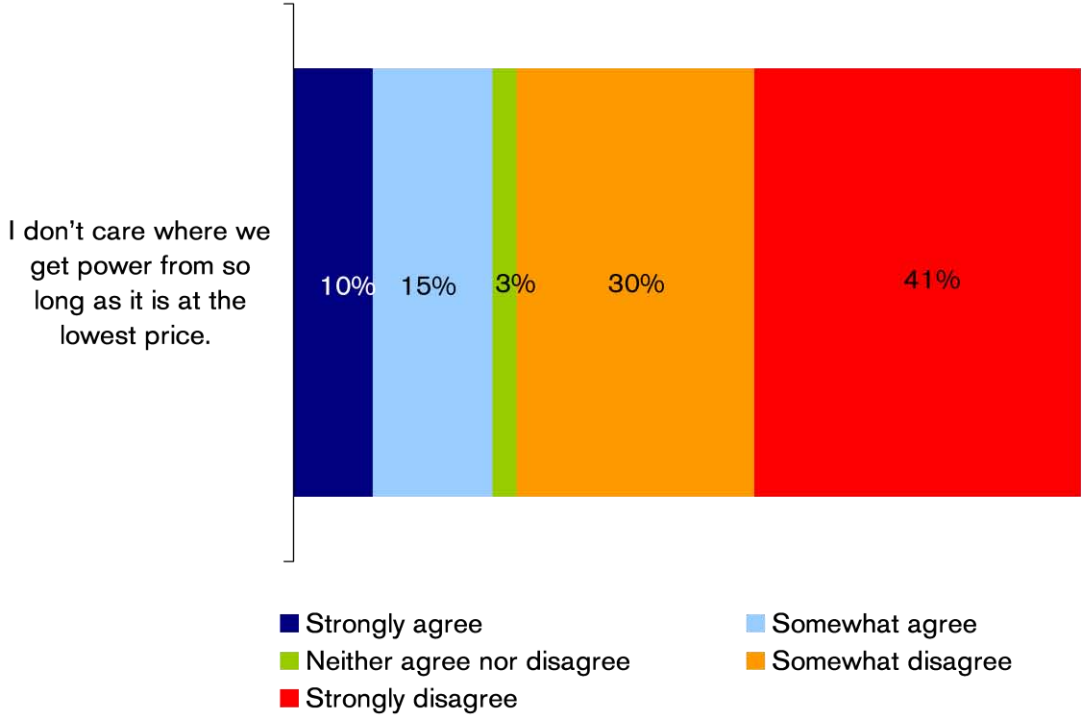
Correlation between Pocketbook Concerns and Economic Status: Putting Price Concerns First

Q I am going to read some general statements about topics such as the environment and the economy. Please tell me if you agree or disagree with the following statements.



Those that 'Strongly Agreed'

Income	%
Under $40K	26%
$40K-$79K	9%
$80K+	6%

Makes Ends Meet	%
Difficult	14%
Not Difficult	7%

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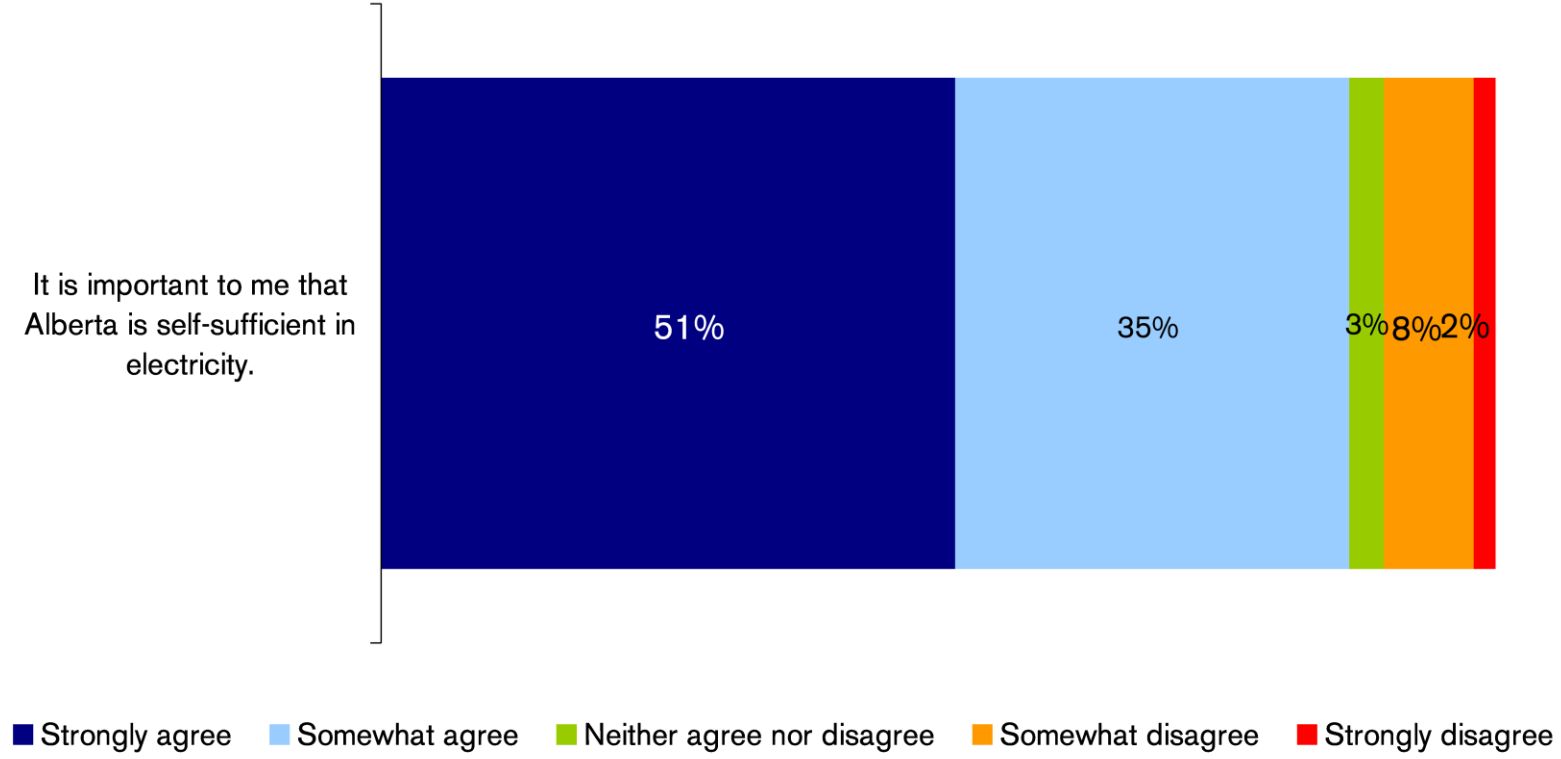
Stand-alone Items

Five items ended up on their own.

- '*Self sufficiency'* is the strongest of the stand-alone items and forms its own fourth factor.
- Current perceptions of price also emerged as its own factor separate from the goal of having a low price.
- '*Belief in ability of conservation to meet future demand'* was the last factor.
- '*Lower carbon for competition'* cut across several items including environment, self-sufficiency and conservation.
- '*Can have affordable renewables'* cuts across three almost equally – environment, price and belief in conservation.

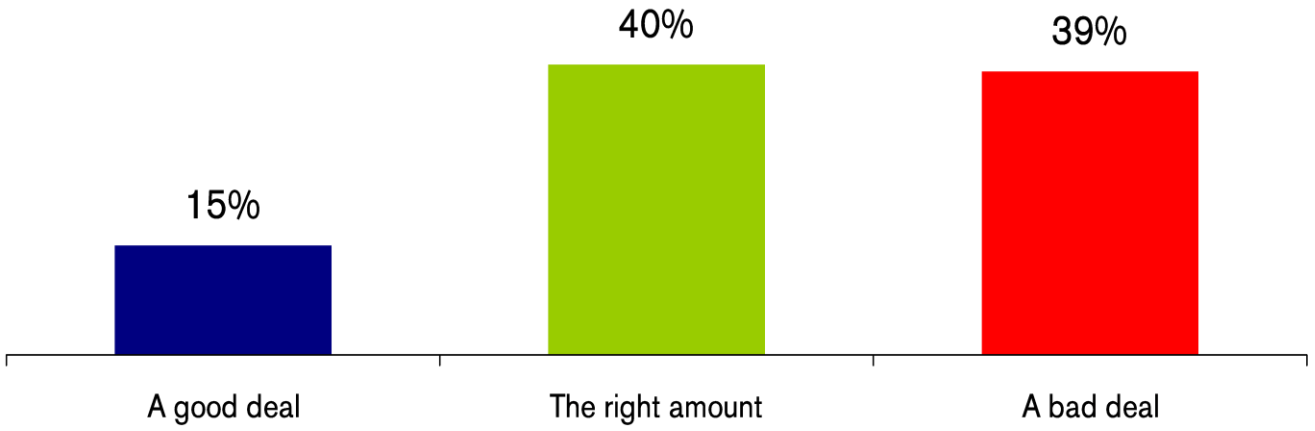
Self-Sufficiency Item

I am going to read some general statements about topics such as the environment and the economy. Please tell me if you agree or disagree with the following statements.



Current Perceptions of Price

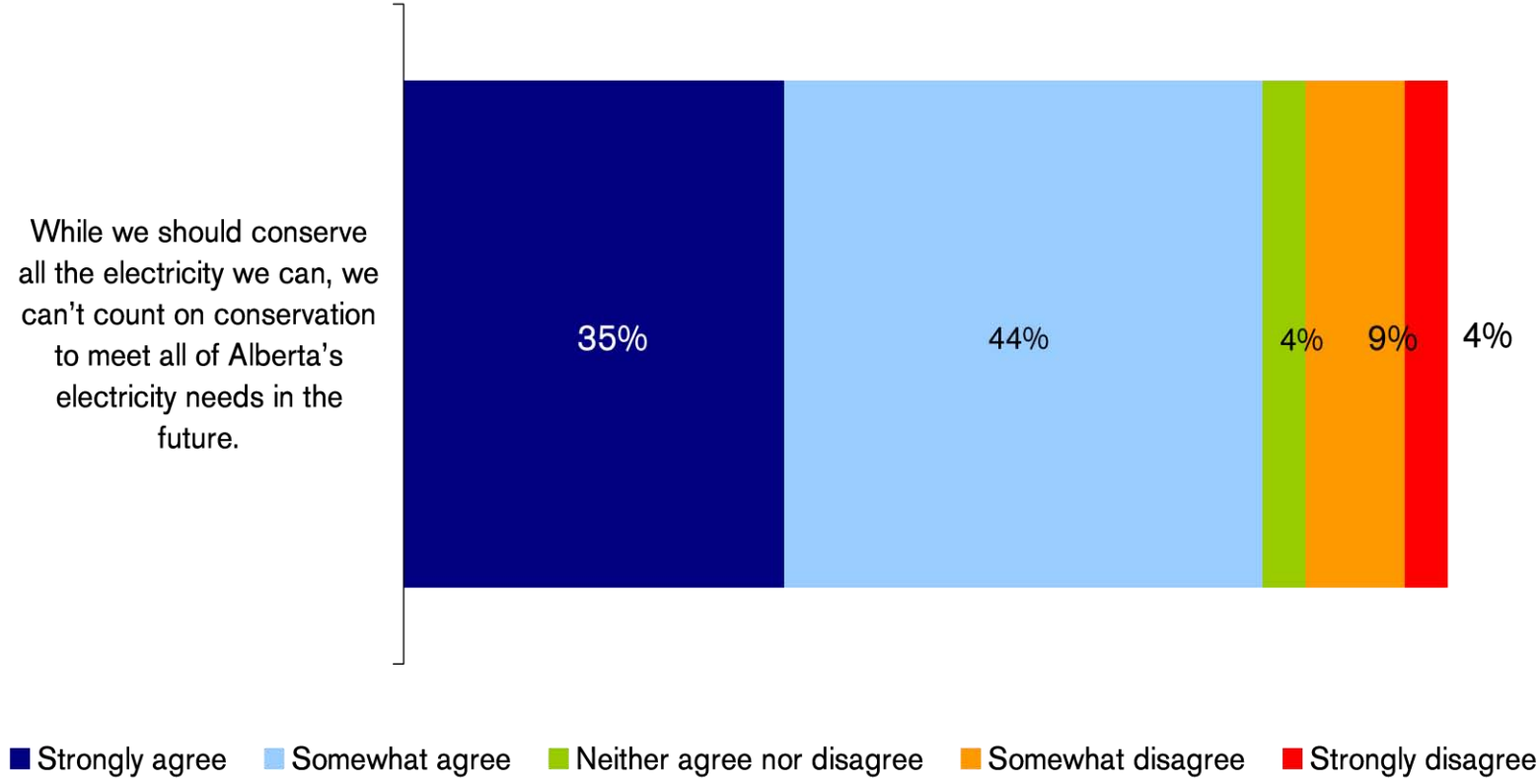
Thinking about how much you pay for electricity, do you think the price you are paying is a good deal, a bad deal or about the right amount?



Note: Don't know (7%) not shown

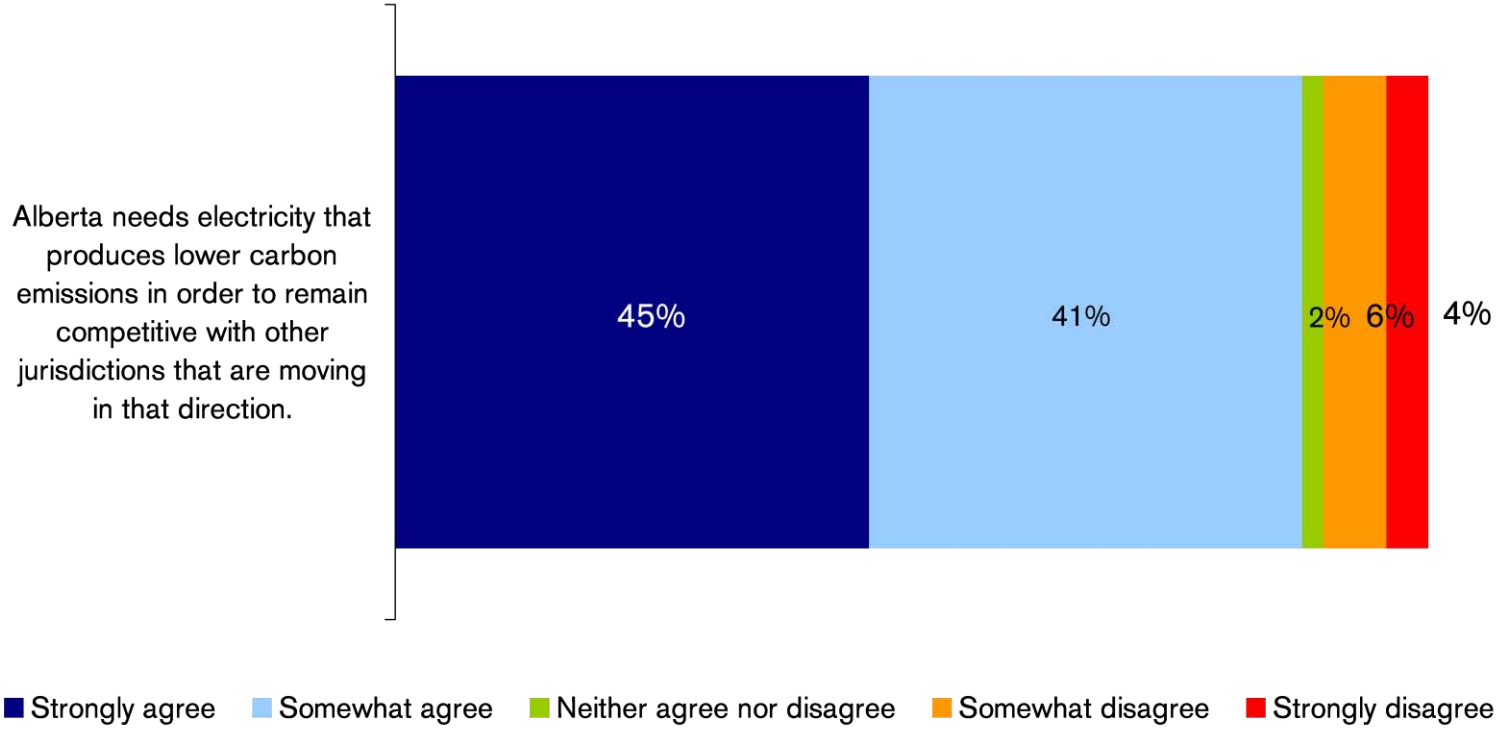
Conservation Measure

I am going to read some general statements about topics such as the environment and the economy. Please tell me if you agree or disagree with the following statements.



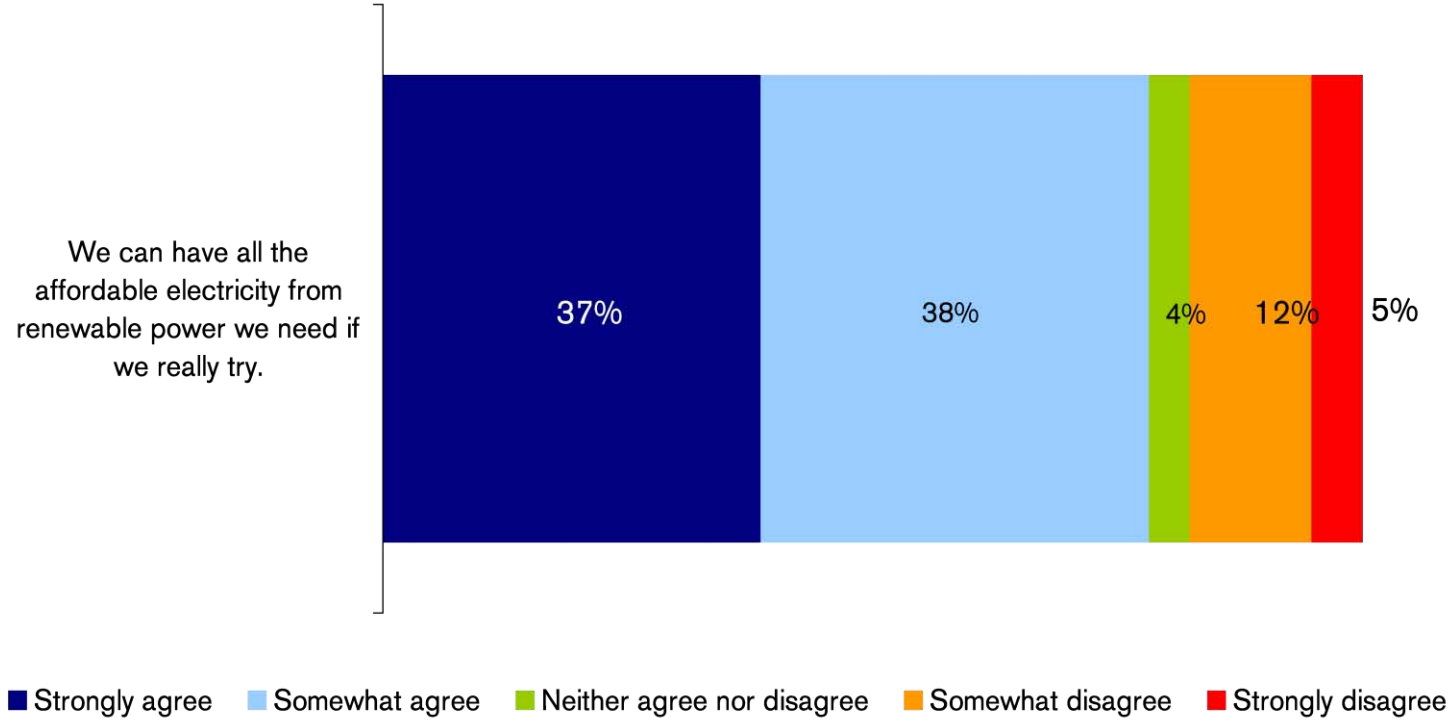
Lower Carbon Emissions as Competitive Issue

I am going to read some general statements about topics such as the environment and the economy. Please tell me if you agree or disagree with the following statements.



Renewable Power Item

I am going to read some general statements about topics such as the environment and the economy. Please tell me if you agree or disagree with the following statements.



Nuclear Attitudes

Nuclear Attitudes

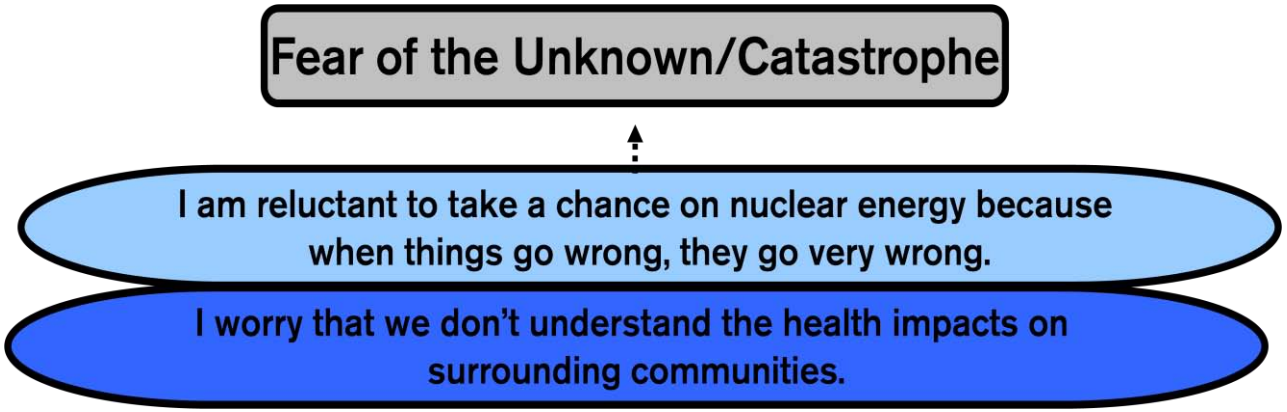
After all the discussions and comments on nuclear energy, six key attitudes emerged for inclusion in the survey:

- *Long-term consequences* – "It's wrong to generate 40 or 50 years of electricity for our generation and then leave a nuclear waste problem that will go on for generations to come"
- *Fear of the unknown* – "I worry that we don't understand the health impacts of nuclear power plants on surrounding communities."
- *Fear of catastrophe* – "I am reluctant to take a chance on nuclear energy because when things go wrong, they go very wrong."
- *Belief in science* – "Science will find a way to manage nuclear waste safely."
- *Belief in the industry experience* – "I am confident that after fifty years of experience, the nuclear industry understands how to build and operate nuclear power generating plants safely."
- *Desire for economic benefits* – "I like the fact that any new nuclear plant will create hundreds of highly skilled and well paying jobs."

Factor analysis was used to identify underlying value dimensions and the attitudes are presented by factor. Just two statements came together while the other four emerged as distinct items.

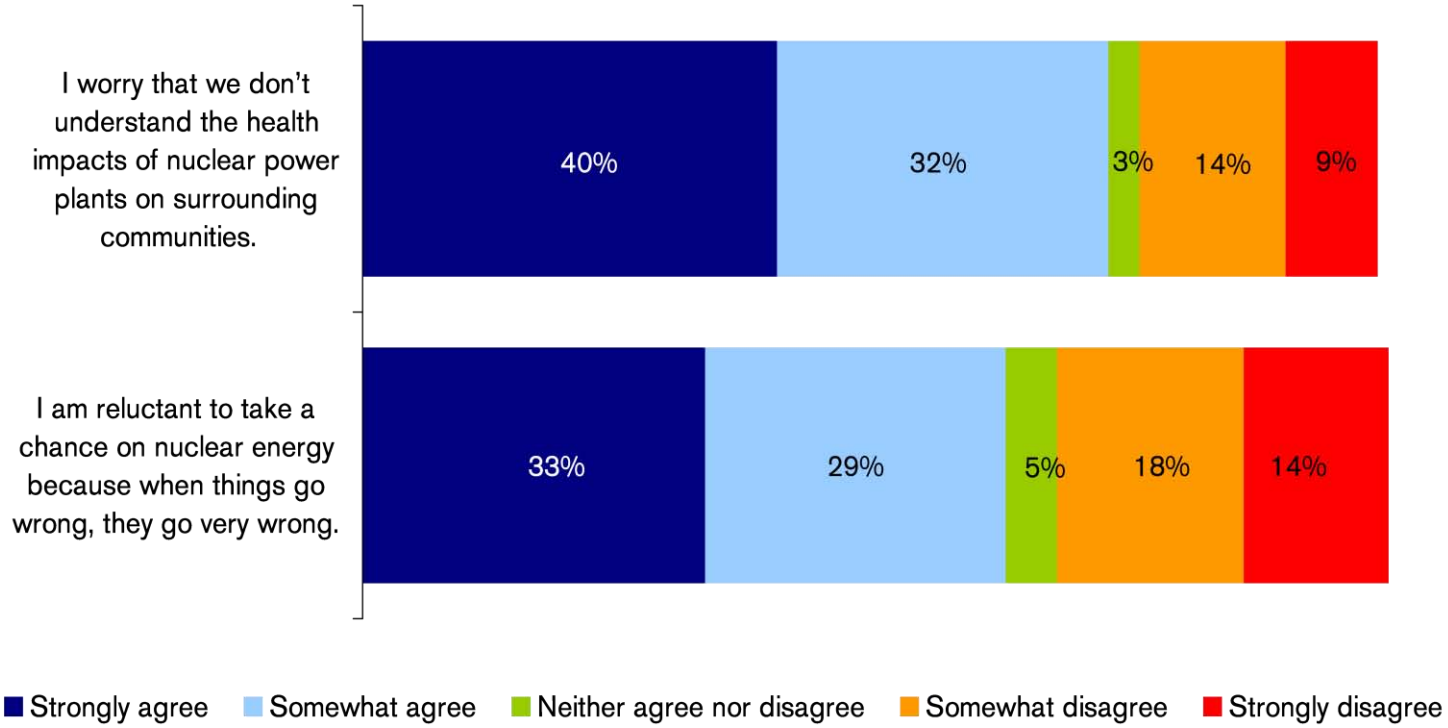
Fear of the Unknown / Catastrophe Factor

Factor Variable



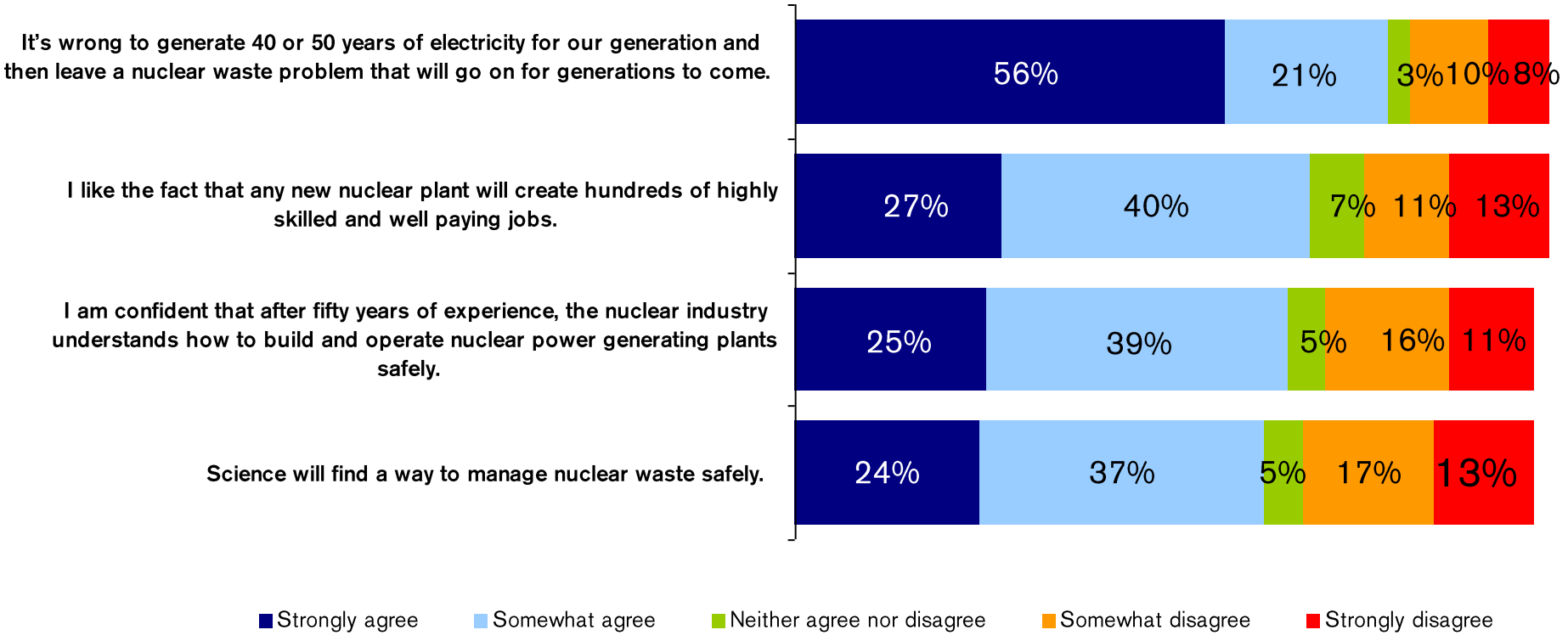
Fear of the Unknown / Catastrophe Items

I am going to read some general statements about topics such as the environment and the economy. Please tell me if you agree or disagree with the following statements.



Stand-alone Nuclear Items

I am going to read some general statements about topics such as the environment and the economy. Please tell me if you agree or disagree with the following statements.



Community Decision

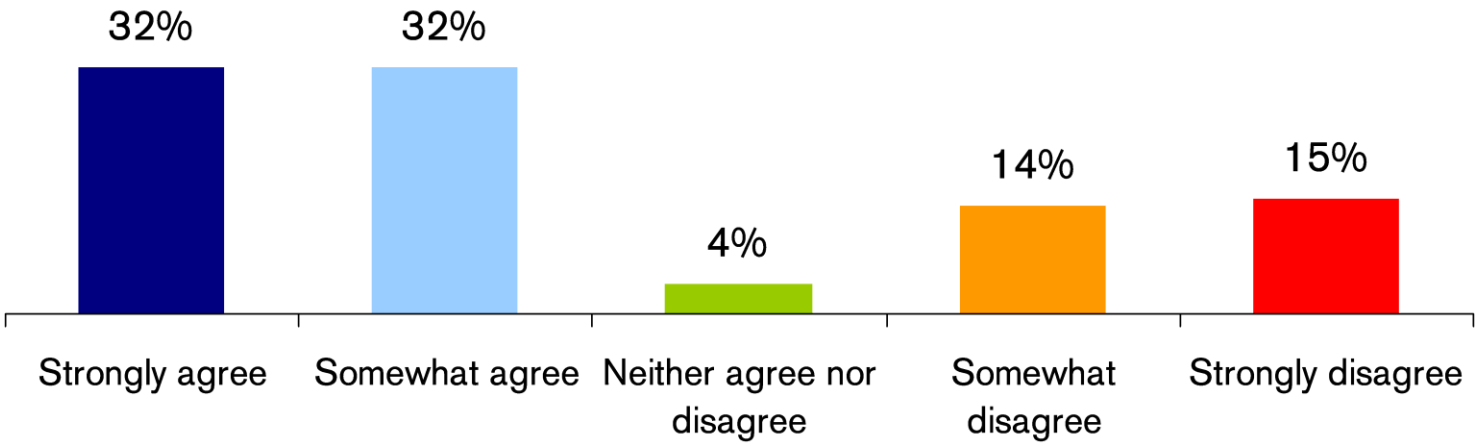
Let the Community Decide?

One theme that emerged from the discussion groups was that the people who should have the most influence on the decision to accept or reject a nuclear power project are people in that community.

Let the Community Decide?

Q

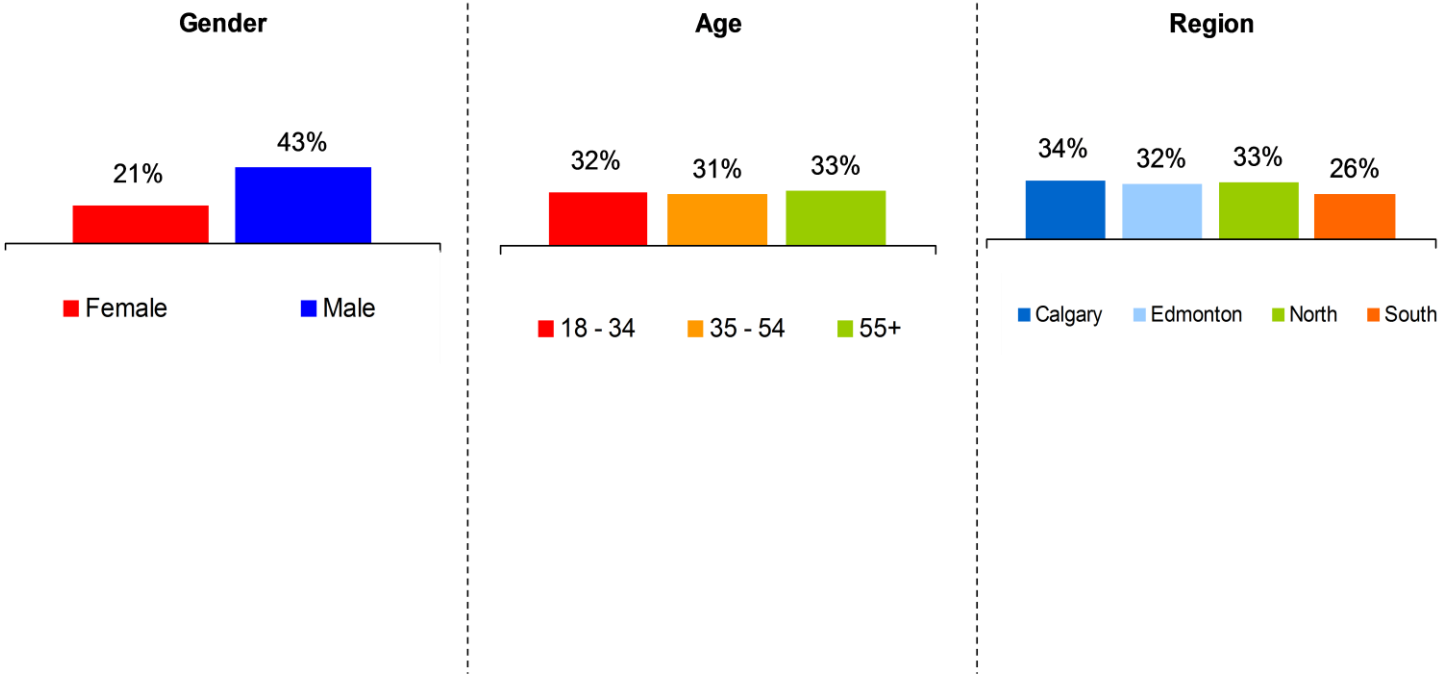
Now I am going to read some statements about nuclear energy. Please tell me if you agree or disagree with the following statements. *If a community in Alberta really wants to have a nuclear power plant I would not oppose it.*



Note: Don't know (3%) not shown

Supporters of Letting the Community Decide

Those who report 'Strongly Agree' with the following statement: *If a community in Alberta really wants to have a nuclear power plant I would not oppose it.*



Nuclear Value Clusters

Mapping Albertans' Conflicting Views

Relatively few Albertans hold views that consistently lead them to support or oppose nuclear power projects.

Most, but not all, Albertans see a problem they feel nuclear power can solve. They believe Alberta will need more electricity to sustain its quality of life.

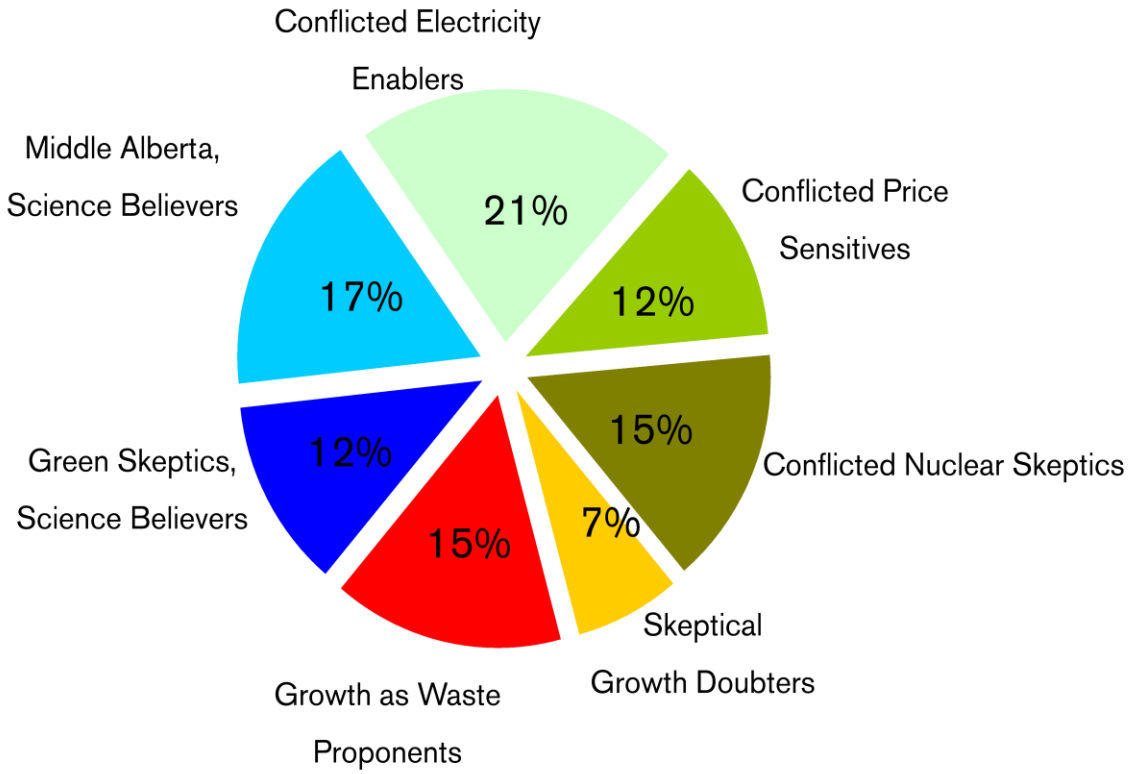
Most, but not all, Albertans are concerned about climate change and want to do something about it before it's too late.

Most, but not all, Albertans are concerned about the long-term consequences of nuclear waste and have some fear of the unknown.

A majority think science can solve the waste problem and most believe the nuclear industry has learned from experience.

We have used cluster analysis to group Albertans by their shared views to better understand the tensions that leave Albertans looking at nuclear on a case-by-case basis.

Alberta Nuclear Value Clusters



Cluster Highlights

Growth as Waste Proponents

•62% female;
•Much less likely to agree that communities need to grow and that more electricity supply is needed;
•Not trusting of science to find a way to manage waste nor confident in nuclear industry to operate safely;
•How electricity is generated matters environmentally;
•Strongly believe in climate change

Skeptical Growth Doubters

•56% female;
•Much less likely to agree that communities need to grow and that more electricity supply is needed;
•Not trusting of science to find a way to manage waste nor confident in industry;
•Not persuaded by need to act on climate change.

Conflicted Nuclear Skeptics

•63% female;
•Mostly agree that communities need to grow and that more electricity is needed;
•Split on trusting science and industry;
•Very concerned about nuclear impacts;
•Concerned about how electricity is generated and want climate change action.

Conflicted Price Sensitives

•55% male;
•Share mainstream nuclear concerns;
•Most concerned cluster regarding cost of electricity and least concerned about how electricity is generated as long as it lowest price.

Conflicted Electricity Enablers

•57% female;
•Strongly believe in need for growth and more electricity supply;
•Very concerned about nuclear safety and potential health impacts.

Middle Alberta Science Believers

•58% male;
•Very trusting of industry safety record, that science will find a way to manage waste safely, and not at all reluctant to support nuclear because of worst-case scenarios;
•Some concern about unknown consequences of nuclear;
•Where electricity comes from matters
•Strongly supports action on climate

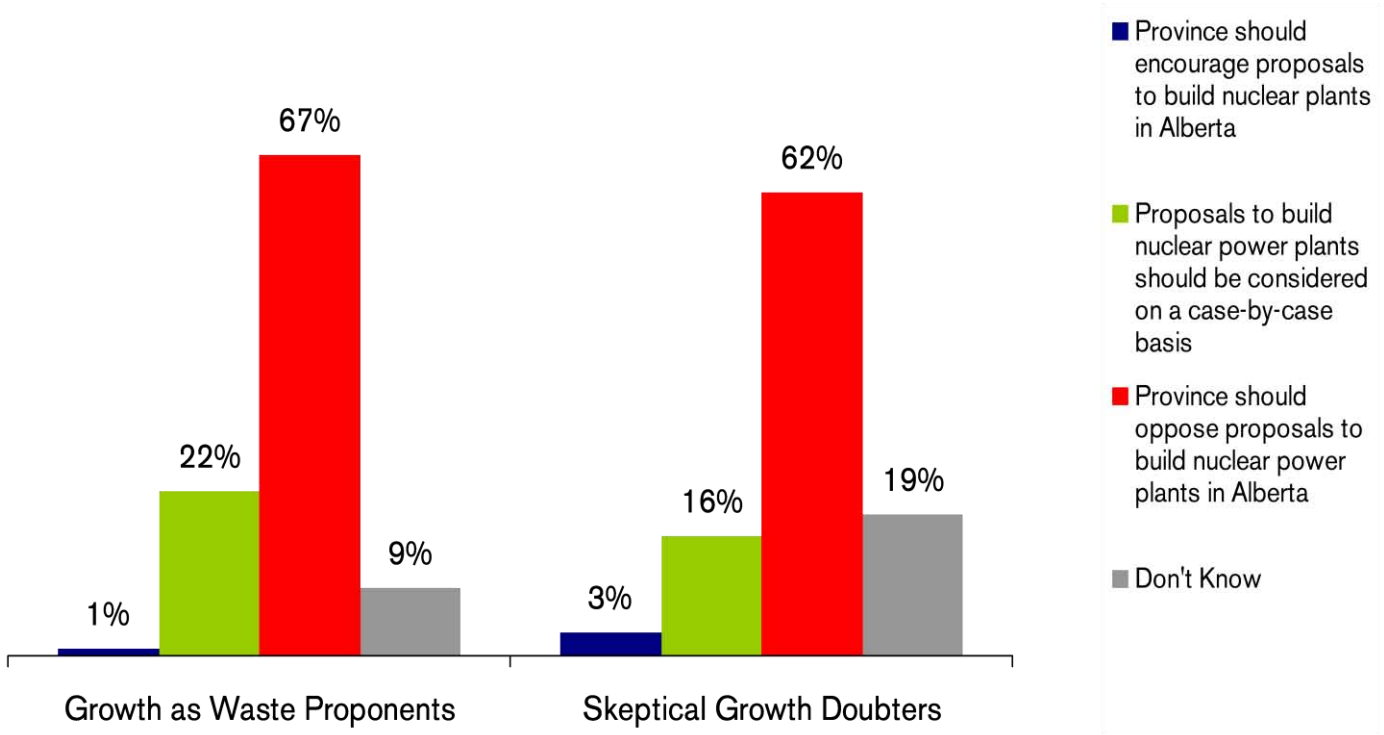
Green Skeptics Science Believers

•79% male;
•Most trusting that science will find a way to manage waste safely, and that industry will manage plants safely;
•Least concerned cluster regarding potential health impacts;
•Least likely to agree that action on climate change is needed.

INNOVATIVE RESEARCH GROUP

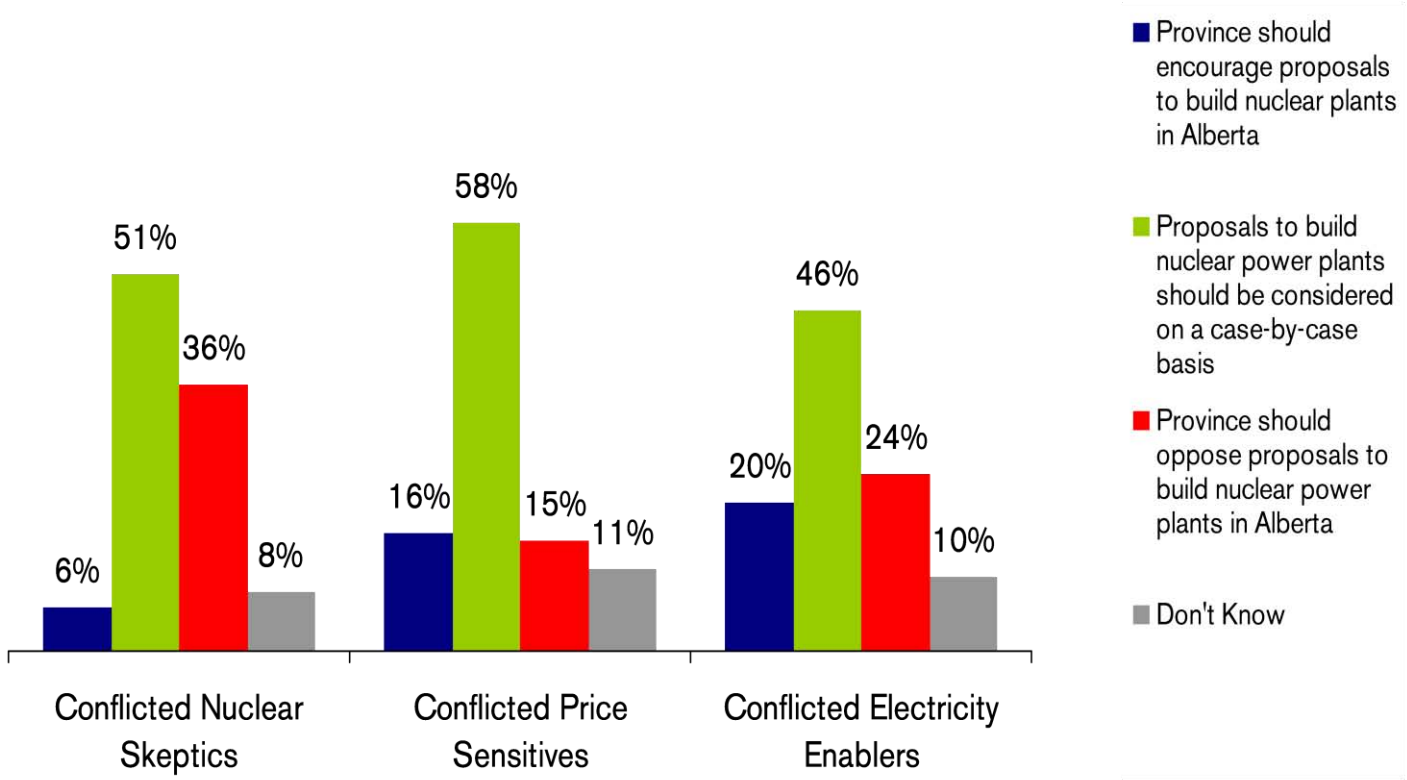
Growth Challenging Clusters Strongly Opposed to Nuclear Power

Which of the following statements best represents your point of view?



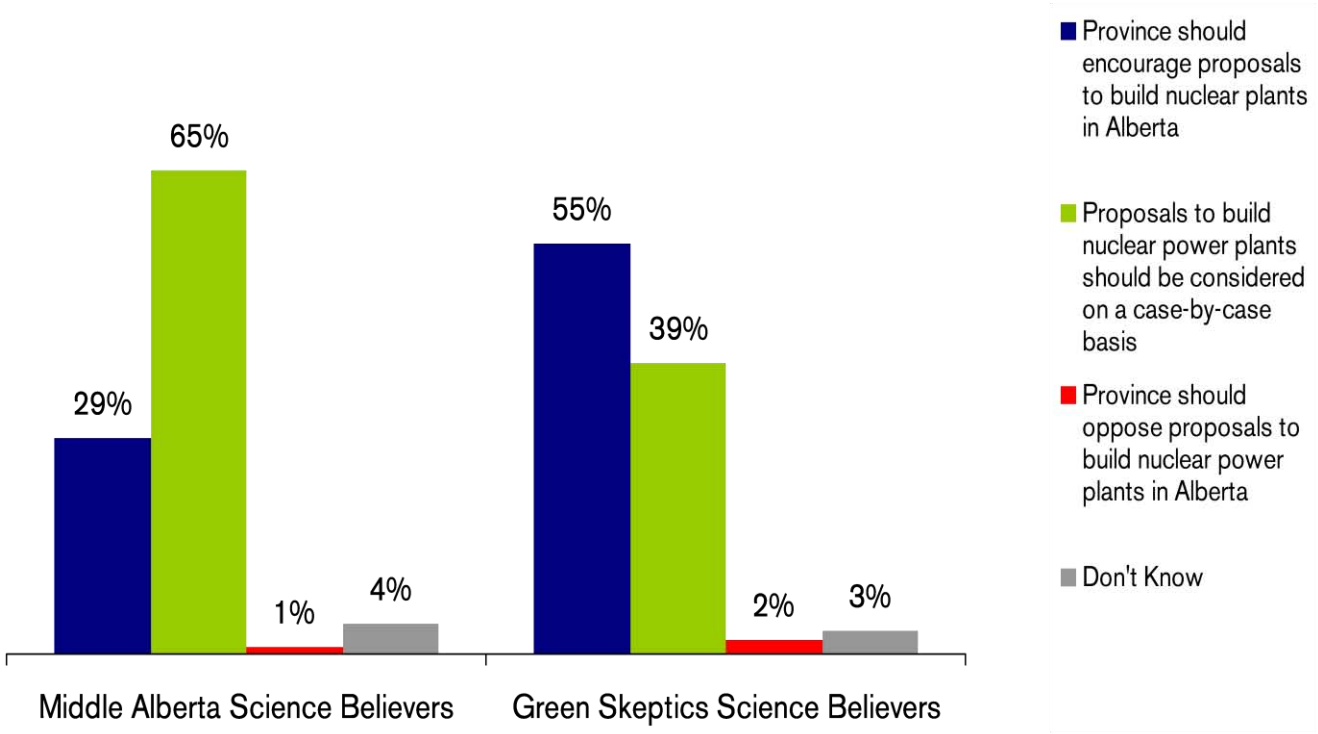
Conflicted Clusters More Likely to Say Case-by-Case

Q Which of the following statements best represents your point of view?



Science Believing Clusters Most Supportive of Nuclear Proposals

Which of the following statements best represents your point of view?



The Most Opposed Groups Simply Don't Buy into the Argument that Growth is Inevitable … or Good

	Cluster						
	Growth as Waste Proponents	Skeptical Growth Doubters	Conflicted Nuclear Skeptics	Conflicted Price Sensitives	Conflicted Electricity Enablers	Middle Alberta Science Believers	Green Skeptics, Science Believers
	1	7	3	2	4	6	5
AGREE - "Our communities need to continue to grow if we want to sustain our quality of life."	32%	25%	78%	75%	93%	56%	70%
AGREE - "We are going to need a lot more electricityto maintain our quality of life and economic well-being."	34%	36%	83%	60%	97%	61%	80%

The Two Most Supportive Groups Stand Out for their Trust in Science and the Nuclear Industry

	Cluster						
	Growth as Waste Proponents	Skeptical Growth Doubters	Conflicted Nuclear Skeptics	Conflicted Price Sensitives	Conflicted Electricity Enablers	Middle Alberta Science Believers	Green Skeptics, Science Believers
	1	7	3	2	4	6	5
AGREE - "Science will find a way to manage nuclear waste safely."	7%	8%	54%	70%	85%	77%	89%
AGREE - "I am confident that after fifty years of experience, the nuclear industry understands how to build and operate nuclear power generating plants safely."	13%	5%	47%	77%	89%	90%	97%
AGREE - "I am reluctant to take a chance on nuclear energy because when things go wrong, they go very wrong."	91%	83%	90%	70%	86%	6%	6%
AGREE - "I worry that we don't understand the health impacts of nuclear power plants on surrounding communities."	95%	74%	97%	73%	94%	43%	16%

INNOVATIVE RESEARCH GROUP

The Middle Groups Share a Desire for Green Growth and Nuclear Concerns but Have Unique Elements

	Cluster						
	Growth as Waste Proponents	Skeptical Growth Doubters	Conflicted Nuclear Skeptics	Conflicted Price Sensitives	Conflicted Electricity Enablers	Middle Alberta Science Believers	Green Skeptics, Science Believers
	1	7	3	2	4	6	5
AGREE - "Science will find a way to manage nuclear waste safely."	7%	8%	54%	70%	85%	77%	89%
AGREE - "I am confident that after fifty years of experience, the nuclear industry understands how to build and operate nuclear power generating plants safely."	13%	5%	47%	77%	89%	90%	97%
AGREE - "We need to take dramatic action now if we want to stop climate change before it is too late."	94%	25%	83%	75%	99%	89%	19%
AGREE - "I have personally experienced unusual weather I feel is due to climate change."	79%	10%	28%	52%	91%	47%	6%
AGREE - "I don't care where we get power from so long as it is at the lowest price."	2%	26%	5%	63%	47%	1%	35%

INNOVATIVE RESEARCH GROUP

Evaluating Nuclear Power Projects

If Nuclear Proposals are considered, how should they be judged?

A list of potential criteria for judging proposals was developed starting with the initial workbook list and then revised based on input from the qualitative research process.

A total of 15 distinct potential decision criteria were identified and included in an importance battery in the random survey.

While each of those criteria seems distinct in important ways to people close to the nuclear power issue, the discussion groups showed there was a lot of inter-connection between health, environment and safety issues.

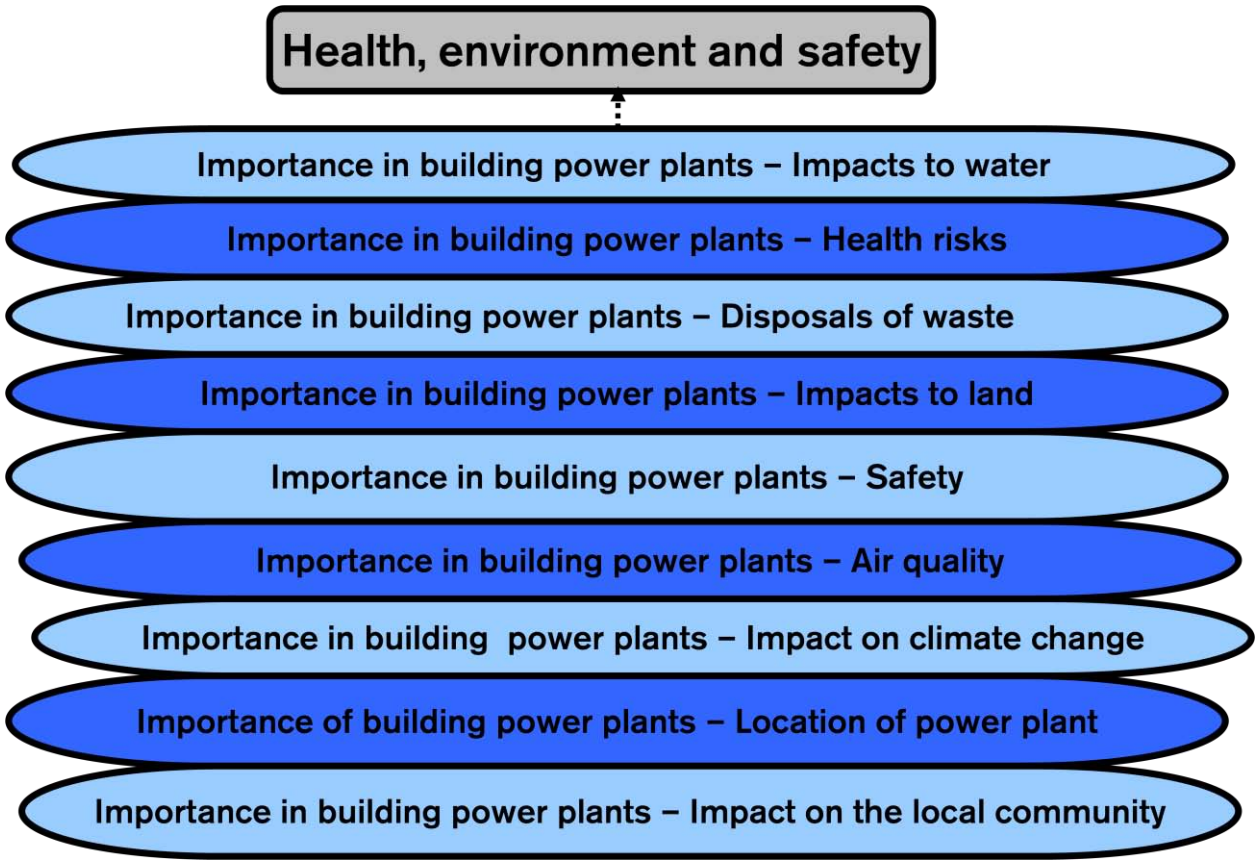
Factor analysis was used on the results from the survey to allow us to find whether there are underlying value dimensions that are driving a variety of different measures.

We have grouped the messages according to these factors so similar criteria are grouped together.

We ended up with two major factors and three stand-alone items.

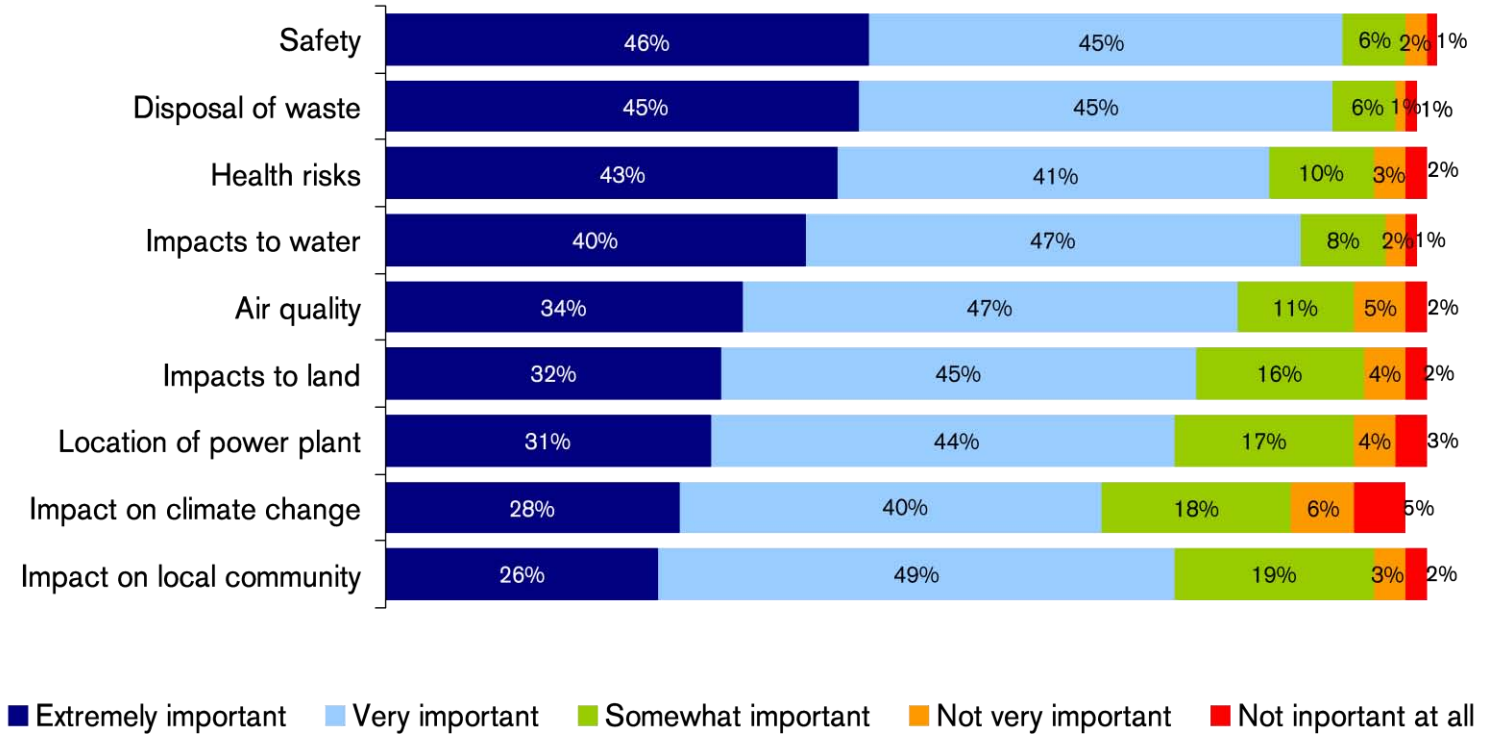
Underlying Health, Environment and Safety Factor Most Powerful Underlying Dimension

Factor Variable



Health, Environment, and Safety Factor Items

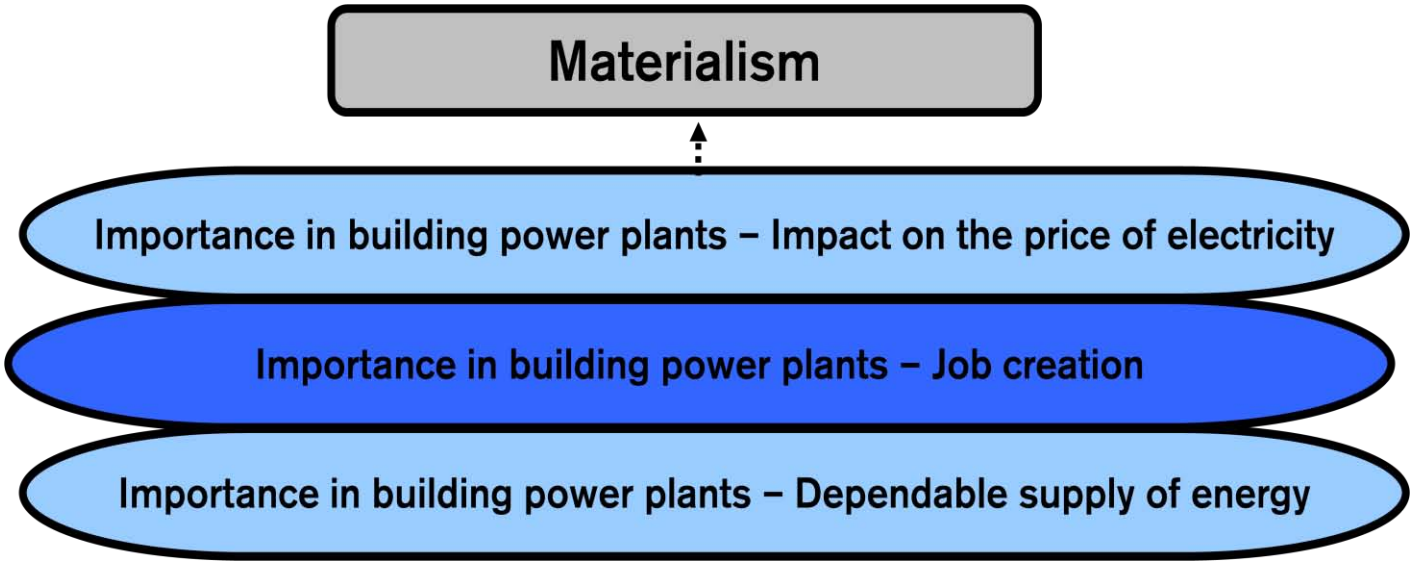
How important are each of the following criteria to you, when evaluating potential power projects?



Note: Don't know not shown

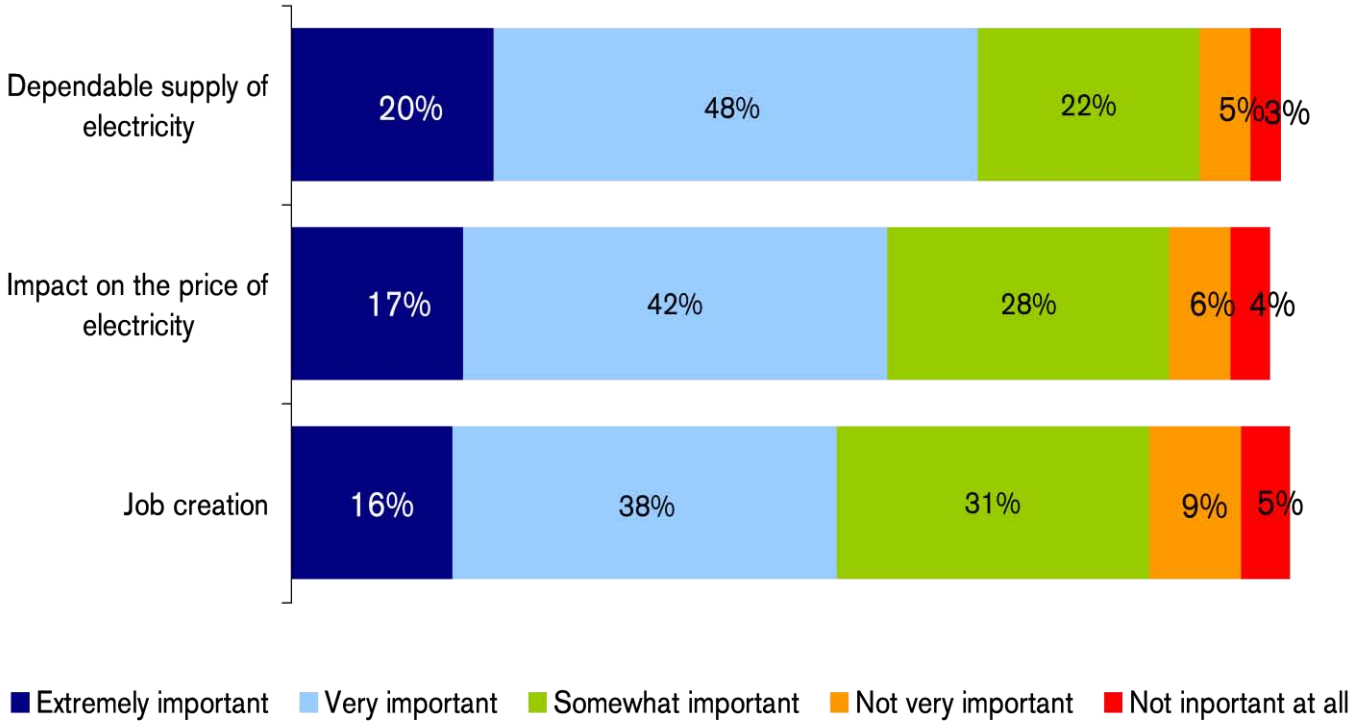
Material Concerns Form Second Distinct Factor

Factor Variable



Materialism Items

How important are each of the following criteria to you, when evaluating potential power projects?



Note: Don't know not shown

Stand-alone Items

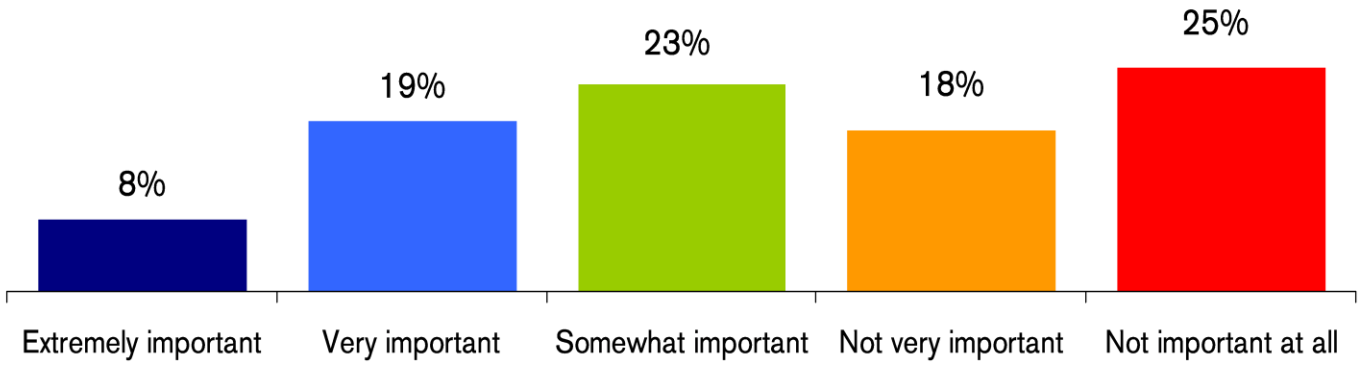
Three items ended up on their own.

'*Spiritual values'* and '*Support of the local community'* emerged as very distinct items driving their own factors.

'*Potential for project to be target for terrorism'* cut across several factors. It had the strongest relationship with 'Spiritual values' and the "health, environment and safety' factor but did not clearly belong with one or the other.

Spiritual Values

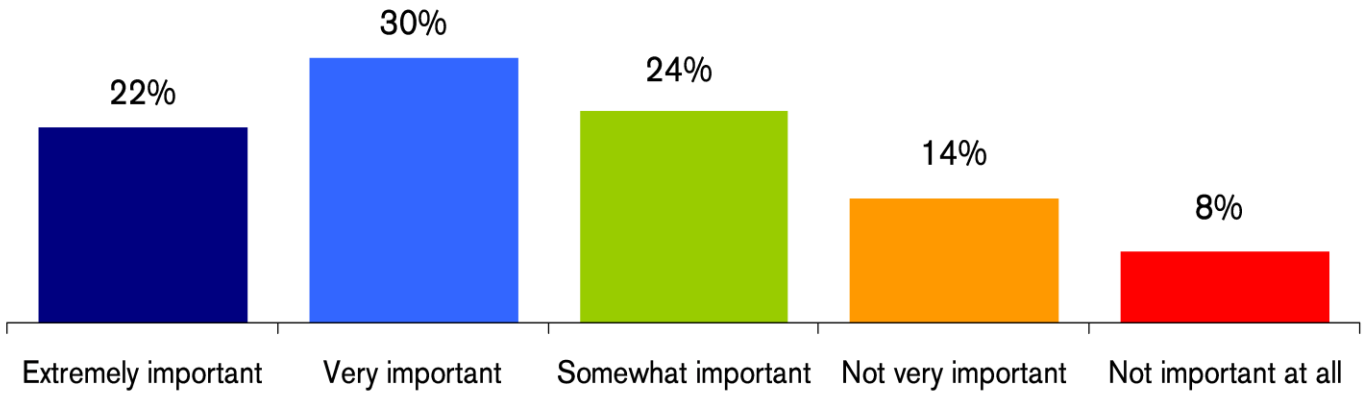
How important are each of the following criteria to you, when evaluating potential power projects? *Spiritual Values.*



Note: Don't know (8%) not shown

Target for Terrorism

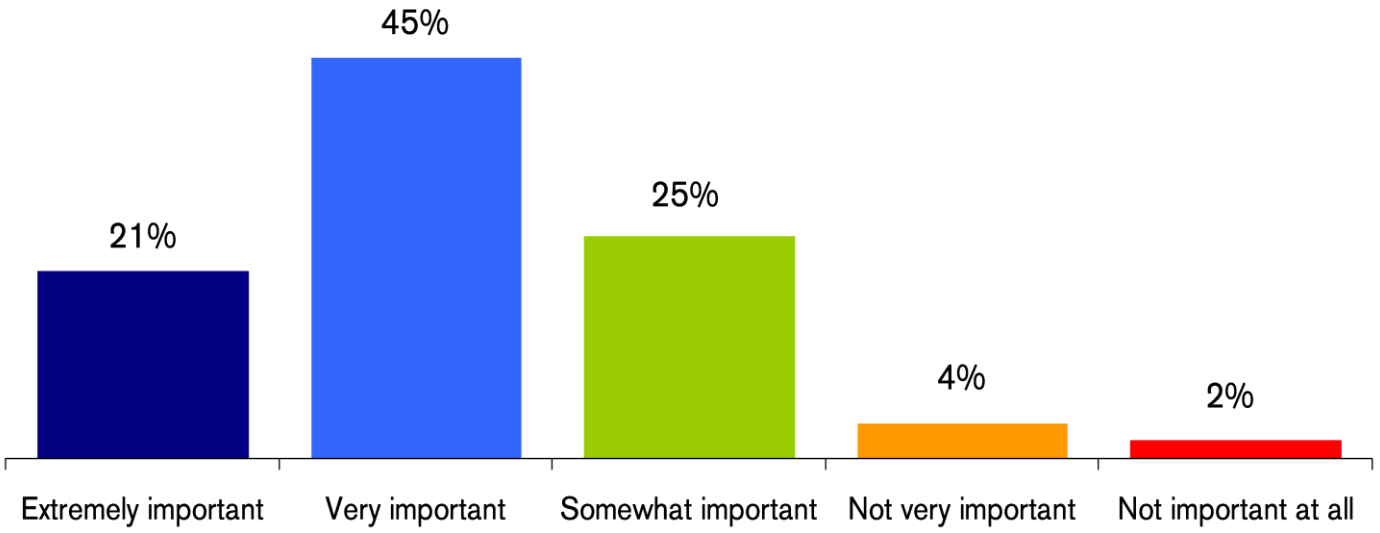
How important are each of the following criteria to you, when evaluating potential power projects? ***Potential to be a target for terrorism.***



Note: Don't know not shown

Support of the Local Communities

How important are each of the following criteria to you, when evaluating potential power projects? *Support of the Local Communities.*



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4.0 QUALITATIVE RESEARCH PROCESS: ABOUT THE WORKBOOK

In an effort to provide information to Albertans and garner feedback on the range of views concerning nuclear power in Alberta, a workbook was designed based on the Nuclear Power Expert Panel's report.

The workbook covered a wide range of topics related to nuclear energy, and its potential application in Alberta, followed by a survey that individuals could complete and submit as part of the public consultation process. The workbook was available in print and online. It was organized as a "Q & A", where individuals could review an index of common questions about Alberta's electricity system and nuclear energy, then look up the information that responds to those questions. Both the paper and online versions of the workbook were designed to help readers navigate through the topics. Workbook readers were provided with additional information sources if they chose to investigate a topic further. Before publication, the workbook was tested in focus groups with the purpose of improving design and functionality, ensuring key topics were covered, and addressing any perceptions regarding bias, one way or the other.

The workbook content included an overview of electricity in Alberta today (Section 1); options for meeting Alberta's future electricity needs, including a chart comparing the various options (Section 2); and background on nuclear energy (Section 3): how it works, the industry in Canada and around the world, environmental impacts, nuclear fuel management, nuclear safety, lessons from past nuclear accidents, and regulatory issues in Alberta.

The workbook survey consisted of 31 questions, with opportunities for open-ended responses and additional comments.

The workbook was used in the three components of the qualitative research process:

- In the random discussion groups, all participants were given a copy of the workbook to read prior to discussing the issues, with the workbook sections used as a guide for discussion.

- From April 27th to June 1st, full-time residents of Alberta could complete the workbook survey and thus provide their feedback on nuclear energy issues as part of the consultation process.

- The workbook was also used as a focus of discussion in stakeholder meetings.

5.0 QUALITATIVE RESEARCH PROCESS: RANDOMLY RECRUITED DISCUSSION GROUPS

5.1 About the Discussion Groups

The purpose of the randomly recruited discussion groups was to understand the range of views and insights of average Albertans as to whether or not nuclear power should be considered as an option for meeting Alberta's energy needs. Participants of voting age were recruited randomly through the public phone listings, with a representative mix of age groups and gender.
A series of twenty discussion groups were held across Alberta, in ten communities. The locations were chosen to ensure regional balance, to provide representation of urban and rural perspectives, and some were held in areas where nuclear power proposals have been publicized in the past, or presently.

Participants, 193 in total, were drawn from those communities and surrounding areas. The groups took place from April 21st through April 30th, 2009. Overall, participants were balanced by gender, ranged from 18 to 91 years of age, and represented a number of different backgrounds including; energy, farming, transportation, finance, health, food and beverage, construction, technology, homemakers, retirees, students, education, and retail. All participants were given a cash incentive for their participation.

Location	Date	# of Participants	Location	Date	# of Participants
Edmonton – Group 1	April 21st, 2009	9	Fort McMurray – Group 1	April 28th, 2009	10
Edmonton – Group 2	April 21st, 2009	7	Fort McMurray – Group 2	April 28th, 2009	9
Peace River – Group 1	April 22nd, 2009	11	Whitecourt – Group 1	April 29th, 2009	9
Peace River – Group 2	April 22nd, 2009	11	Whitecourt – Group 2	April 29th, 2009	10
Grande Prairie – Group 1	April 23rd, 2009	11	Taber – Group 1	April 28th, 2009	11
Grande Prairie – Group 2	April 23rd, 2009	10	Taber – Group 2	April 28th, 2009	10
Rocky Mtn. House – Group 1	April 22nd, 2009	9	Medicine Hat – Group 1	April 29th, 2009	11
Rocky Mtn. House – Group 2	April 22nd, 2009	9	Medicine Hat – Group 2	April 29th, 2009	10
Wainwright – Group 1	April 23rd, 2009	8	Calgary – Group 1	April 30th, 2009	10
Wainwright – Group 2	April 23rd, 2009	9	Calgary – Group 2	April 30th, 2009	9

5.2 How the Discussion Groups were organized

The discussion groups were two-hours in duration. Two groups were held in each location: at 5:30pm and 8:00pm.

Upon commencement of the discussion group, the moderator (from Innovative Research Group) advised the group of the topic.

Prior to delving into the main objective of the research, respondents were given a backgrounder on the consultation process. The moderator allowed approximately five minutes for participants to read the document which outlined the objective, the methodology, Alberta's current relationship with nuclear energy, and Innovative Research Group's privacy and confidentiality agreement. Participants were assured that their comments would not be attributed to them personally in the report, and that their comments would be used only to assist the Alberta government in making more informed decisions as it develops its official position on nuclear energy proposals in the future.

Once participants had read and discussed the backgrounder on the process, each participant was provided with a copy of the *Alberta Nuclear Consultation Workbook* to read. The moderator gave the group a tutorial on how the workbook is organized, the table of contents and the web links. The moderator also presented the group with the Nuclear Power Expert Panel report which participants could use as a reference tool as they reviewed the workbook. They were encouraged to fill out the questionnaire at the back of the workbook if they had time. The amount of time spent reading varied from group to group, but was usually about 35-50 minutes spent reviewing materials prior to full discussion.

The discussion began by exploring general themes of energy consumption in Alberta and whether or not Alberta will be able to sustain itself on the electricity system that is already in place. Following this discussion, the moderator asked participants to list what they believe are the key criteria to be used when choosing the type of electricity generation that is best for the province. The list was built on a flip chart by the moderator. Participants were then asked to indicate their top three criteria by placing a check mark beside each of them.

Next the moderator asked participants to list the pros and cons of nuclear energy. A list was also produced on a flip chart. In most groups, the moderator asked participants to revisit the first list of criteria strictly on the basis of nuclear energy and assess whether their priorities shifted.

Participants were then asked to fill out Questions 28 and 29 from the workbook survey– whether they believed the province should encourage, oppose or consider proposals to build nuclear power plants on a case-by-case basis, and why. The moderator asked participants to state their answers and explain why they had chosen their given option.

5.3 Awareness

Generally, there was a low level of awareness among the discussion group participants that there was a public consultation underway concerning nuclear energy in Alberta (the random groups were held early in the public consultation process). There was higher awareness in communities, such as Peace River, Grande Prairie, and Whitecourt, where there had been discussion of specific nuclear proposals over the last several years.

When participants were probed on their awareness of the proposal to build a nuclear plant in Alberta, the majority outside of Peace River, Grande Prairie, and Whitecourt had not heard about it. Some participants were aware of a proposal generally, and fewer volunteered that they had heard there was a proposal in the Peace region. Some participants had heard about a proposal in Saskatchewan.

5.4 Knowledge

The moderator posed the following questions to the discussion groups:

- *Could you have explained how nuclear power is used to generate electricity before you came here this evening?*
- *Were you familiar with Canada's nuclear industry before you reviewed this workbook?*

Most participants indicated that they knew very little about how nuclear power is used to generate electricity. Some participants' knowledge was based on personal experience, such as having lived near a plant in the past or having family live near a plant. Some participants said they had learned about nuclear energy in school, through science classes or other training. In most groups, participants referenced high-profile accidents such as Three Mile Island or Chernobyl.

"Know through work, lived near to one at Chalk River."- Male, Wainwright

"Just what you learned in school."- Male, Wainwright

"I did quite bit of consulting work with oil industries, nuclear was always a subject matter, never anything specifically in pursuit of nuclear energy, primarily with the federal government for alternative energies." - Female, Calgary

A minority of participants, usually just one or two in each group, considered themselves to be at least fairly knowledgeable about nuclear energy. They tended to be individuals with work experience in an industrial field - such as oil and gas - or through education. One participant had worked in a nuclear plant in Ontario over 25 years earlier. Another participant was familiar with radiation issues through her work in health care.

Despite participants overall modest knowledge of nuclear energy, most knew there were nuclear plants in Canada, and that there were not any currently in Alberta. Some participants were surprised to read that there is a research reactor based at the University of Alberta.

Most participants felt that the information in the workbook was useful overall. Many participants said that the information provided was a 'crash course' on nuclear energy.

"I think this booklet is a great starting point to educating the public, this has definitely brought me to the next step....a really good stepping stone." - Female, Calgary

"More education like what is in here (the workbook)"- Male, Calgary

Some participants wanted to learn more and felt that there should be continued efforts put forth by the government to educate people on nuclear energy. Recommendations included:

- "More discussions like this";
- Community meetings;
- Open house stations with the pros and cons clearly indicated;
- Hearing from all sides and all perspectives.

Some wanted to know about the details of nuclear plant proposals early in the process because they feel the process requires time to educate Albertans on the issue.

"Need to give them the option. Education. People are so ill informed about the technology." Male, Fort McMurray

"I think education is a good idea, look at Earth Week." – Male, Edmonton

"Face to face will take a long time, but it is your backyard and your life." – Female, Taber

"Educate the people [and] they will make the right choice." - Male, Rocky Mountain House

There was a feeling of bias among some skeptical respondents. They felt the workbook, and the Expert Panel Report, was strictly focusing on the positives of nuclear energy and not enough on the negatives.

"You have to know both sides to make an educated decision. All that I am saying about this (booklet) is that it was one sided … I do not know if I read anymore I would change my mind." - Female, Rocky Mountain House

There was general interest in hearing from experts. There was some criticism that the Expert Panel was not diverse enough. There was considerable interest in many groups about hearing from the workers of nuclear plants and residents that live near them. Some participants wanted to know whether workers and residents had been affected adversely or not, whether there were higher rates of cancer or birth defects in those communities and whether there was community acceptance. Some specifically wanted to see studies on health impacts in Ontario communities where nuclear power plants are based.

"I want to hear from the average people, intermingled with experts." – Female, Rocky Mountain House

"There are other plants that are functioning, want to hear from the people that live in those communities." – Female, Medicine Hat

"People who have worked in the nuclear power plant, just to see if there are any side effects, whether they were in contact or not." – Male, Wainwright

"Someone that does not have financial gain from it." – Female, Taber

"(Want to hear from) people from different countries." - Female, Medicine Hat

"People who have retired from the industry. They have an accurate opinion of the pros and cons."- Male, Grande Prairie

5.5 Electricity needs in Alberta

Referencing Section 1 in the workbook ("Electricity in Alberta Today"), the moderator asked:

- *From what you have read, seen, and heard, do you think Alberta will need more electricity in the future or can the province make do with what it has today?*

Overall, most participants believed that Alberta would need more electricity in the future. Many participants attributed this need to population growth and the increasing role of electricity in everyday living. A number of participants linked power outages with a lack of reliable supply.

"As the population grows this translates into demand, unless we become conservative in our use."- Female, Rocky Mountain House

"We'll need more. The population just keeps growing. Everywhere, not just Alberta. So the more population, the more power that is going to be used." - Female, Grande Prairie

"The only way we would not need more electricity is if the population did not grow, I am having one outage after another and it has got to be that there is not enough electricity." - Female, Edmonton

There was a common sentiment among participants that consumers and industries have become gluttonous with their use of electricity. Many participants wanted to see extensive steps taken to conserve power, but still believed more electricity would ultimately be needed. Some participants, in various groups, mentioned the growing need for electricity in the future because of innovations like the electric car.

"If you look at past trends, 10 years ago how many people had cell phones, how many people had computers, how many people had TV's, how many had 3 TV's? Everything it seems escalates. So we are going to find new toys, the new innovative devices that everyone wants to plug in. Your car!" - Male, Fort McMurray

"I look at my personal use in my house. And my dad's power bill at home was $50/month plus transmission and mine is $150.00/month. That tells me I'm using more than three times the amount that he is and it's all on stupid things like turning my TV on with a push of a button from my chesterfield, if I want to turn my stereo to come on... Every little LED light in my house is using that extra $100/month. Unless we change our lifestyle more than most people are willing to." – Male, Peace River

"Unless people are educated on other ways of saving energy, history has shown us that mankind is a consuming monster, doesn't matter how much we need, we will ask for more unless people are educated enough to how much we need."- Male, Wainwright

"There is constantly energy conservation programs out there, there are many consumer options now, but you do not hear about many conservation efforts in the industries. Where is the onus on industry to conserve? … We anticipate enormous growth so are we going to throw new sources of energy instead of balancing it with industrial conservation?... If there is power conservation on an industrial level, then I do not think the average Albertan knows about it. I think it should be very clearly laid out and communicated here."- Female, Calgary

"I would want to see data to support the industry usage, the bottom line for them is making money, why would they waste energy? It will make a big difference in their bottom line."- Male, Calgary

There was a minority of participants who believe Alberta can meet its additional electricity needs solely through conservation and renewable energy. Some participants stated that following this path was a question of will and commitment.

"If we can smash neutrons how come we cannot build a better battery? Now we are going to build something positive from something that originated for destruction? Human knowledge comes up with many different things. Nuclear is pretty permanent and scary. We are talking about waste that takes thousands of years to get rid of. I do not want my children and my grandchildren to have this in their lives." - Female, Taber

"Look for new ways that are not going to wreck our environment, wind power in Netherlands is enough to power the country."- Female, Medicine Hat

"Technology is making leaps and bounds, who knows what the future will bring to the type of renewables we have now, no one wants all that coal for energy."- Male, Calgary

"The car in the 1900's was a very expensive commodity until Henry Ford came along and he invented a way to make it very cheap for people to be able to afford it. I believe that could be done with renewables. It takes nine years to start the approval process of a nuclear power plant. In those nine years, what is the technology going to be for us. Twenty to thirty years ago we were looking at space like 'wow'. There goes that shuttle again." - Male, Fort McMurray

While most participants accepted (or did not challenge) growth forecasts, a minority of participants felt that with the economic downturn Alberta will not be requiring more power in its near future, or not be requiring as much as forecasted by the Expert Panel. In one discussion group in Calgary, there was considerable discussion about the sustainability of growth forecasts.

"I do not think demand will escalate as quickly as said in the workbook, simply because the economy is in a slump, and the negative perception of the oil sands." - Female, Medicine Hat

"Going to need less if the economy keeps going down the toilet."- Male, Grande Prairie

"I think the projection is not sustainable. If it [industrial electricity needs] increases by 91% there needs to be adjustment. We just do not have enough resources." - Male, Calgary

5.6 Key Criteria for Electricity Generation

Participants were engaged in a discussion about Alberta's energy options, with reference to Section 2 of the workbook.

➢ *As we choose between the different ways we can generate electricity, what do you think are the key criteria we should use when choosing which type of generation is best for Alberta?*

As participants volunteered criteria in response to the question, the moderator recorded them on a flip chart. Once the group was satisfied that they had a comprehensive list, each participant was asked to 'vote' three checkmarks on the priority most important to him or her. They could place three checkmarks beside one criterion, or spread the checkmarks out to two or three key criteria.

This exercise captured the range of criteria that participants felt were important when evaluating electricity power plant proposals, and their relative priority. The moderator explained that the criteria were meant to apply to all types of power plant proposals, not just nuclear power plants.

Major Priorities

Across the twenty discussion groups, there was a consistent pattern of priorities. Four criteria were consistently mentioned early in the discussion and received the most checkmarks:

- Environmental impacts
- Health impacts
- Safety
- Waste

There was not a clear distinction between these topics. Discussions about waste, for example, would lead quickly to environmental issues. Discussions on safety would jump to a discussion on health.

These concerns were expressed in the context of ongoing operating impacts, and the impacts of a worst-case scenario.

Overall, among the 193 random discussion group participants, the general heading of **environment** had the most checkmarks. In addition to the broad environment category, participants checked environmentally-specific items such as waste, water, air quality, CO_2 emissions and wildlife.

"When you build or design a plant, you have to take into consideration the environment, the bottom line we want to live our lifestyle."- Male, Taber

"I think we have a responsibility to protect our environment for them, and if it comes at a higher cost, then we do." - Male, Medicine Hat

"I would suggest that environmental considerations are more important than cost." - Male, Taber

"How is this going to affect the future generations? We are digging down into Mother Earth and placing garbage."- Female, Edmonton

"How much of the natural landscape … will be permanently destroyed in order to sustain or to build these sources of power? The wildlife that lives within it, their habitat will be permanently destroyed." – Male, Peace River

"I just heard that there has been discussion around privatizing water, in my opinion that water is a public resource. I could see this being misused. I am concerned about the quality of water." - Female, Edmonton

"Going from CO_2 to radiation emissions, one is not better than another." – Female, Rocky Mountain House

"(Coal mining) releases a lot of toxins into the air, I mean the CO_2 is one thing but the sulphur dioxide is worse. It's corrosive. It kills trees..." - Male, Whitecourt

"Particulates in the air, you don't want the community to have an asthma problem because of everything coming out of the plant."- Male, Wainwright

"Environmental disaster, you do not have the technology to clean the smoke stacks."- Male, Calgary

"Biggest problem is heat, pumping heated water into the environment ... In terms of storage and waste management, the French have the best system, they actually refine it and not store it."- Male, Calgary

"Environment, the size of the space, destroying grass and vegetation, animal habitats, beaver dams, birds, fish." - Female, Fort McMurray

Some participants felt that there isn't a straight forward solution to the energy crisis and that there are risks to everything.

"You're going to have risks at anything you do. If they have done the basic research on the issues like environment, address those issues first and that is the basis they will go for then I am going to support it." - Male, Edmonton

CO_2 emissions and/or climate change were cited in all discussion groups but they did not emerge as a stand-alone top priority. While environment ranked very highly, it was based on more tangible impacts to people and the surrounding environment. A small number of participants questioned the assumptions and science behind climate change.

The general heading of **health** garnered the second-most number of checkmarks. Concerns included potential impacts on cancer rates, birth defects, infertility, and a concern that the full impacts are still not known. There was concern for both the nearby population and workers. Many participants wanted to see more information, beyond what was available in the workbook and the Expert Panel report.

"If you do not have health, nothing else matters." – Male, Calgary

"We do not know all the health implications." – Female, Taber

"It is nice to have a steady power supply but I do not want to risk health, environment, safety" Male, Taber

"My fear is radiation exposure over 20, 30 years of health problems." – Female, Edmonton

"First of all, why are we thinking about building a nuclear power plant in our province, if we already have this many and have had accidents, can't we learn from them? We are creating more problems. Chernobyl was the first thing that came to my mind. We felt the effect from across the world. It affects our health, my health." - Female, Edmonton

"The benefits for Whitecourt would be tremendous, but the scary part re the health repercussions for animal beast or human." - Female, Whitecourt

In some groups, positive health impacts from improved air quality were discussed by some participants:

"Healthier living next to nuclear than living next to a coal plant, I think health is a positive." – Male, Medicine Hat

"There would be little radiation. I grew up by an oil refinery, and that is more dangerous than nuclear." Male, Edmonton

The issue of **safety** received the third-most number of check marks. Safety was often tied to worst-case or accident scenarios for a power plant, whether it is an explosion, a leak, or exposure to hazardous material or radiation. Many participants were citing nuclear plants when discussing safety.

"Safety of the people working in the plant. They are going to be contaminated and there are families that could be contaminated by them when they come home. If they don't take care of their own people do you think going to give a rats behind about anyone else." - Male, Grand Prairie

"Not enough emphasis can be put on safety for people and environment near the area" – Male, Whitecourt

"Facility safety - how it is going to constructed. Community safety is making sure that the surrounding communities will have the least impact as possible." - Female, Edmonton

"Generally, there are high safety standards compared to any other industries, biggest thing is human error." – Male, Calgary

Contrary to some of the negative concerns shared by participants, one participant made the point that you are only going to hear about the really bad accidents and made the analogy of cars versus planes in terms of their safety - *many more people die in car accidents every day and you don't hear about all of those. A plane crashes and it's all over the news*.

"It's like driving a car vs. a plane you aren't going to kill 500 people when you are driving a car." - Male, Whitecourt

Waste was a prevalent concern among participants. While there was some discussion regarding waste from non-nuclear energy sources, most participants focused on nuclear waste specifically. This conversation often coincided with distress around health and safety.

"Still have some reservations, no permanent [nuclear] storage facility in Canada, where is this all going? There is a safety issue and lack of trust in the federal/provincial government, if they are actually telling the government what they need to know..." - Female, Edmonton

"They don't have 100% guarantees that they have everything (the waste) under control."- Female, Edmonton

"I don't know if the Province knows the long term effects. I just don't know if there is any scientific way to dissipate the waste ... and make it environmentally friendly."- Female, Edmonton

"I think the biggest thing about waste [is that] it's not about storing it so it's of out of sight out of mind. I think we need research and development to know how to dispose of it. There has got be a way to dispose of it and I don't know if it's that far away. I mean if we spend a certain amount of money to find a way to dispose of it that would be the answer everyone is looking for. The biggest problem is the waste of a football field three metres high full of stuff." - Male, Peace River

A man in the Calgary group who had worked in the industry years ago believes there is a need to look at the recycling of the waste.

"I haven't worked in it for 35 years, to me the question here is that we should be recycling the waste, like the smoke stacks of coal, I do not look at it as waste but as a misuse of resources, this waste is not like US waste, this is not quite as volatile, recycle and re-enrich it, increase the half life, looking at it degrading it, half life meaning halving the radiation levels, the long term plan is recycling."- Male, Calgary

Again, it is important to understand that while there were four distinct themes in these discussions – environment, health, safety, and waste – the concerns ran together and appear to reflect one general underlying concern.

Second Tier Priorities

A second tier of criteria were frequently mentioned, though did not receive the same level of priority as the aforementioned criteria. These second tier priorities were mentioned in most or all groups.

Financial and economic criteria, such as **cost or price of electricity**, and **jobs and the economy**, were consistently raised in the discussion groups but usually after top tier priorities of environment, health, safety, and waste. Most participants voted their three checkmarks on the top tier priorities rather than financial and economic considerations.

In a number of the groups, there was discussion concerning the trade-off between the top tier priorities versus the cost of electricity. There was no clear consensus about how to manage trade-offs. Some participants stated that the top priorities should be adhered to, even if it means paying more for electricity. However, there were some participants who did not want to pay more than what they are paying today, and others said that many in the public at large would resist higher rates. Some participants said that there is a balance between meeting top tier priorities and ability to pay, however, other participants disagreed with the premise that there is a trade off to be made, viewing it as a false choice, and that more focus and attention must be put on developing renewable energy.

"I would suggest that environmental considerations are more important than cost." - Male, Taber

"It's like organic food, you want to buy it but it is too expensive." - Female, Medicine Hat

"There's a limit to pay, if you can't eat." - Male, Rocky Mountain House

"The more green, the more costly. If the cost goes up then people will think more of how to cut costs." - Male, Calgary

"From what I know, I'm not super knowledgeable but being cheap is a huge thing. Not everyone has an oil job and making big money. Cheap is nice. I see it as green." - Female, Peace River

"Too expensive with environment, health, and the cost of 1000 years of waste and we haven't solved a solution for that."- Male, Medicine Hat

"Cheaper looking at coal vs. uranium but the cost of uranium right now does not include the disposal of waste – going into this without any idea of what we are going to do with it." - Male, Medicine Hat

Impacts on the community that would host a new power plant were regularly raised. In particular, many participants across most groups raised issues surrounding rapid growth and the necessary infrastructure which will be required to support it. Many participants cited Fort McMurray as an example of how local infrastructure did not keep pace with growth. There were specific concerns about the local government's ability to keep up with services and the need for funding support.

Specific impacts included demand for housing, health care, and schools. There was also concern about increased crime. A number of participants raised the concern about a sharp increase in the population of young males with "time on their hands".

"Cost of power, and cost to my tax dollars go to subsidizing it: infrastructure, roads to get to sites, monitoring, site reclamation afterwards … Say they hire 2000 people for the nuclear plant. Who is going to build a school to house their kids?" – Female, Peace River

"You have a huge influx of transients an immediate demand on infrastructure that is going to go away. You're hesitant to build a hospital or 4 or 5 schools because you know that all that in a few years all the construction is going to be gone." – Female, Peace River

"Increase in crime, sexual assault, drug and alcohol abuse, violence. Typically from the transient workers that are coming in that are not part of the community restraints aren't there, away from home." – Male, Peace River

There were consistent conversations in the northern groups around labour shortages which they are presently experiencing. The fear is this will worsen with the opening of a nuclear plant.

"There are a couple of negatives on that… you get at the lower end and they will have labour shortages because any able bodied person … can get on at an entry level at the nuclear plant so you aren't going to be flipping burgers at the local McDonald's. When you go to order a burger there won't be anyone to take your order." - Male, Peace River

"Can't afford the infrastructure we have now. Just a bigger problem in the end. Look around Grande Prairie when booming, the hotels, etc. Grande Prairie has to pay the bill. Can't get anyone to work in the mall because everyone wants top dollar. It has changed this town." - Male, Grande Prairie

Concerns were also expressed about how the local community benefits economically from construction.

"You have to remember that if you are going to have over 2000 people working they have to come from somewhere. And I would suggest that probably 80% of those people are married people trying to make a living and send their money home and they have a family." – Male, Peace River

"Don't see how we could sustain something like this... We don't even have sufficient land for the residents." – Female, Fort McMurray

A young man from Peace River felt strongly that construction of a plant would be a positive for the community.

"Focus is too much on the immediate and not on the long run of the whole situation. Like where I grew up where they wanted to put the plant by the lake. There isn't a lot going on there. The land isn't worth [much]... what else are you supposed to do with your land? ...A lot more job creation in the area...you put a plant in and a lot of the younger people are going to stay around." - Male, Peace River

In the northern discussion groups, there was discussion about the best approach to housing construction workers. Some felt that it was best to house workers in temporary work camps. Others saw a benefit for local residents to rent bedrooms and suites out to workers to make some extra income. An example was cited about how temporary housing was converted into a college dormitory.

"Probably the impact to the communities. When the pulp mill was built, and all those extra people came into town, it changed things so much. No services available for people no apartments for rent. Just everything." - Female, Peace River

"Some camps people just stay in camp. They finish their shift they go to camp, and they just stay in there and the town doesn't benefit. " – Male, Whitecourt

"If you are in a camp situation ...It's more attractive to bring workers to a camp... Plus you would get away from the crime thing...When the mill was built out here, there was a camp and they would come in on Friday nights but It wasn't in your face." – Male, Peace River

"I think if you are trying to attract high-paying high-skilled jobs, these people are going to want to bring their families, and families aren't going to want to live in camp." - Female, Peace River

"On a smaller scale there are people who don't want to live in a camp.. People who are willing to rent out bedrooms, I do this myself...so if your kids move away from home and you have two empty bedrooms you can generate wealth that will actually go back into the pockets of residents of the community. In Lloydminster when they built the upgrade there they went against having a camp...They managed to absorb over 1500 workers into their community over a short period of time. They got a college dorm built out of it...and left a legacy." - Male, Peace River

A few people were concerned about losing the "small town" feel of their community. Many had moved to northern areas specifically to get away from the bigger cities and to improve their quality of life. Some were threatened by the idea of 'outsiders' coming in with a superior attitude.

"My hometown is Grand Prairie and when I grew up there it was 12,000. Now I don't like to go back. I don't like it. Because there is all of these issues that people talk about around here. Other than the odd big box store when I go back there. I don't find that stuff is that reasonably priced because there is a higher level of income. If a nuclear plant comes in the people that work there will be highly trained people with university degrees or higher. There is going to be a class of people that will be pretty wealthy in the community... Us and them." - Male, Peace River

Location was a criterion regularly raised in discussion groups. Some participants stated that their support for a power plant was based on where it would be located, with a view that a location away from people would be better than others. Some participants said they would be fine with a power plant built "somewhere else"; other participants said that other community's backyards should be considered the same way as if it was one's own backyard.

"There is not going to be a location that does not affect someone." - Male, Edmonton

"Location is a major issue if something goes wrong."- Female, Edmonton

"You don't want it right downtown. You want it in the background hidden where no one can see it."- Male, Fort McMurray

"I think rural people are more open minded, if you were to put it near Calgary or Edmonton it would never happen." – Male, Taber

Regulation was not always a top-of-mind mention, but once raised, it often generated follow-up discussion specifically in regard to nuclear energy. Participants in various groups had views on what would constitute necessary regulatory oversight. Most participants expressed a strong desire for rigorous oversight. There were some positive mentions about Canada's track record in nuclear power. Some participants wanted to see local advisory committees where local people would be aware of how a nuclear power plant was meeting standards. Some participants also suggested that there be watchdogs independent from government.

"Who is going to be the policeman? How is the government involved in it?" - Male, Wainwright

"Who is monitoring these plants to make sure they are being managed properly?" - Female, Taber

"As far as I know the government doesn't have regulation or border controls to operate these plants." – Female, Grand Prairie

"Needs to be a team of people. There shouldn't just be one person responsible. It would have to... going back to the checklist where we identified all of the things that were important to us you should have somebody monitoring each area of that. So somebody who is above board

monitoring the air quality and the water and they are all reporting back to each other and providing information to anyone who wants to access it." – Female, Peace River

"The regulatory agencies do not necessarily represent all bodies of interest and that is the concern." - Male, Calgary

"Not sure if all eggs should be put in that basket...Government has a way of smoke and mirroring things to look good. I think it should also be privately regulated as well as government regulated. I think it should be a tiered thing." - Male, Peace River

"I think someone paid by community that has complete access, like an ombudsman who can report to a board of town's people. Whatever happens, a safety issue. If someone slips on a banana peel coming out of the lunch room. Anything that happens in the plant." - Male, Peace River

"Needs to be some sort of independent, who is knowledgeable about the industry but not actually part of the industry. Can regulate what they are doing and keep it in real language...town council would have a big say in what's going on." - Male, Whitecourt

In some groups, participants said that they were concerned about regulatory standards in the oil sands and, therefore, concerned about a nuclear regulatory regime.

In most groups, the specter of **terrorism** was raised, specifically in the context of nuclear power. This was usually mentioned toward the end of discussion, when participants were ensuring that they had not missed any topics. Some participants believed that it would be a target because of the implications of a disaster. Some said that the combination of nuclear energy and the oil sands would increase Alberta's threat level. Others said that there were already targets in Alberta, such as tank farms, that would be as, or more, vulnerable to terrorism actions than nuclear. It was commented by some that Canada already has 22 nuclear plants and that the threat in Alberta would be no greater. Some believed that adequate security would be in place, and that nuclear plants are well protected from external events.

Resource depletion was a recurring issue in many groups. Participants, especially advocates of renewable energy, were concerned about the supply of raw materials to fuel electricity supply, whether it be coal, natural gas, or uranium. Some participants cited this as a reason to invest more heavily in wind and solar power. Others were less concerned about resource depletion, saying that there was ample supply of these resources for the foreseeable future.

"How much uranium is available to run existing plants and for how long?" – Male, Grand Prairie

Other mentions

There were a number of other issues that were raised in some of the discussion groups, but not widely.

- **Financial viability** of a potential power plant. What would happen if it failed? Would taxpayers be responsible for the cost of decommissioning?
- **Ownership of the power plant**. Some participants were more comfortable with public ownership than private ownership.
- **Training**. The training of construction workers and plant workers was raised by some participants, particularly in regard to safety.
- **Price regulation**. Some participants said the price of electricity should be regulated.

In some groups, there was a discussion as to how the key criteria applied to a range of electricity options, such as coal and wind. There was general consensus that every option has positive attributes but also some type of impact. For example, it was broadly understood that coal was "cheap", but generated higher emissions - such as NOx, SOx, and CO_2 - than other forms of electricity. It was also stated that wind was "clean", but that it was "intermittent" and some participants stated that there are health and wildlife impacts.

5.7 The Pros and Cons of Nuclear Power

After discussing the key criteria for evaluating any type of electricity power plan proposal, the moderator focused participants on nuclear energy specifically.

➢ *What seem to be nuclear power's negatives? What seem to be nuclear power's positives?*

Nuclear Pros & Cons (Summary of all groups)	
Cons	**Pros**
Waste – lack of a long term solution; uncertainty of looking a thousand years into the future; life-cycle for waste storage and handling	Cheap electricity
Worst case scenarios/ Radioactive leaks	CO_2 emissions
Health concerns: infertility, birth defects, cancer	Health (better air quality)
Fear/Psychological	Jobs
Water	Reliable
Security	Lots of power
Not Renewable	Lots of uranium
Food Chain – contamination	Community economic benefit
Regulatory – Alberta's reputation	CANDU/ Track record

The moderator alternated between discussing the pros first and cons first among various groups.

Beginning with the negatives, the issue of **nuclear waste** was an important topic in all groups. It was a stumbling block for many participants who were considering whether or not nuclear energy should be supported. Specifically, participants said they were concerned about:

- Lack of a long-term solution and the lack of a permanent storage area.
- The length of time required to store waste and the uncertainty of future events, whether they are political or environmental.
- A moral issue of generating waste today that future generations will have to manage tomorrow.

A minority of participants were less concerned, saying that the amount of waste generated was small. Some said the impacts of nuclear waste were preferable to the current impact of air pollution from fossil fuelled-power plants. The potential of recycling nuclear fuel and minimizing the amount of waste was discussed in some groups.

A number of participants raised the issue of the transportation of waste and the safeguards that would need to be in place.

Some participants appreciated certain benefits of nuclear power but were very concerned with **worst-case scenarios**, saying "when it goes wrong, it goes really wrong". Worst-case scenarios were described as an explosion or radioactive leak. Most of the groups discussed past-accidents such as Chernobyl and Three Mile Island. Some participants said they believed Canada had a much better safety record and that technology had advanced. Other participants believed the consequences of mistakes were too high to contemplate nuclear energy in Alberta.

"Safety, making sure there are not going to be any big accidents. What about an earthquake?" – Female, Peace River

"Meltdown is an issue. Chernobyl is still being felt internationally." – Female, Rocky Mountain House

"They think it's green but the thing that concerns me is what if there is an accident, people around here will be done. My grandkids are my concern." – Female, Peace River

"In the event of a nuclear accident, you have a lot more potential to hurt a lot more people." – Male, Calgary

"Reading what happened in Ukraine there; I know that was 23 years ago but still a lot of people that suffered because of it. And really they don't know enough. They think it's really green and safe and everything but do they? We don't want to be the ones to be the ones to find out...Why does it have to be here? People up in arms because it's half a mile from their place. Why?" Female, Peace River

Health concerns were raised consistently as a negative. For the most part, these concerns were borne of uncertainty. Many participants had heard of concerns through the media about cancer rates, birth defects, and infertility, and wanted more information. Some participants contended that health was a positive because of improvements in air quality.

"More concerned with health concerns. How does it affect our generation's health. Me personally, infertility, it's something I've heard a lot about. And wouldn't find out until later." – Female, Grand Prairie

"Stillborns, health, are there cows being born with two heads?" – Female, Calgary

"Main fear of all people is radiation, the waste will be around for thousands of years." – Male, Edmonton

"The benefits for Whitecourt would be tremendous, but the scary part is the health repercussions for animal, beast or human." - Female, Whitecourt

"Any health hazards- talk to people down east where they (nuclear plants) were and they weren't happy with them. They figure they cause cancer and everything."- Female, Whitecourt

Participants in most groups specifically raised the issue of **fear** and the psychological impact of nuclear power. This was discussed in the context of past-accidents and impact of nuclear weapons. Some participants said that managing the fear around nuclear power would be an important consideration before community acceptance could be gained. Some participants said that, with fossil fuels, it was "the devil we know". When the topic was discussed, the importance of education and transparency in the regulatory and public information process was stressed by some participants.

"Fossil fuels we know the devil we are dealing with, a lot of this is fear factor and I am right in there with it." – Female, Rocky Mountain House

"We already know the devil in oil and gas, we do not know the devil of all the other ones, like wind, issues around wind resources someone getting headaches, why would we go to a devil we do not know." – Female, Wainwright

"It is like a sleeping giant, everything is okay when it is sleeping but when you wake up everything goes wrong, what if? I feel like we are still learning." – Female, Medicine Hat

"You can put your hands around coal, many of the voter population grew up in the cold war era and when you think nuclear, you think bomb." – Male, Calgary

The impact of nuclear power plants on **water** - specifically the intake then discharge of warm water into a river system or lake - was seen as a negative in most groups. It was generally acknowledged that this was a similar process to coal and natural gas fired plants, though some participants questioned the amount of water that would be required in a nuclear plant. There were some concerns about the potential of contaminating the water supply with radioactive materials.

Related to this concern was nuclear energy's potential impact on the **food chain**. Participants in some groups were concerned about how a contamination would impact ground water, wildlife, and habitat.

"The warm water, the effects on wild life." – Female, Grand Prairie

"Loss of diversity and habitable space for other things besides us."- Male, Calgary

"The toxins that they eat in their food." – Female, Grand Prairie

The potential for a nuclear power plant to be a target for **terrorism** was seen as a negative in many groups. It was not a primary concern but consistently made the list.

Some participants said another negative was that nuclear was **not renewable**, because there was a finite supply of uranium, and also because of waste issues.

"At the same time even though you are saying renewable and green energy is effective, it isn't. Because no matter what you do you are still putting a strain on the environment around us and... it is expensive. But there needs to be a large social change toward that kind of energy. We can't go burning up coal and natural gas and uranium because eventually that's going to run out. There needs to be social change toward these or eventually there just isn't going to be the energy." – Male, Fort McMurray

In most groups, at the conclusion of the discussion on nuclear pros and cons, the moderators asked participants to review the key criteria they listed in evaluating all types of power plants and re-vote their checkmarks on the basis that the proposed plant was a nuclear plant.

Overall, the original priorities remained mainly the same, however, there was a shift toward waste being a more important priority.

5.8 Overall Views: Questions 28 and 29 from the workbook survey

In the final stage of the discussion group, participants were asked to independently review and answer questions 28 and 29 in the workbook, regarding their overall views on the issue. Once all participants had finished answering the question in their workbook, each participant stated their answer and their reasons for choosing that option.

Q. 28. Which one of the following statements best represents your view? [Choose One]

- *The province should encourage proposals to build nuclear plants in Alberta.*
- *Proposals to build nuclear power plants should be considered on a case-by-case basis.*
- *The province should oppose proposals to build nuclear power plants in Alberta.*
- *Don't Know*

Q. 29. And why do you say that?

Overall, 22% of the 193 random discussion group participants chose the first option **"The province should encourage proposals to build nuclear plants in Alberta".**

They were primarily male respondents with a solid trust in technology and regulation, many of whom said they had at least a fair knowledge of nuclear energy. Reasons for supporting this option included:

- Alberta has a need for more power;
- Nuclear is firm, reliable, baseload power;
- Clean and green source of energy compared to fossil fuels;
- Healthier option'
- Canada and CANDU reactors have a good track record when it comes to safety.

"I think it is practical and I am not afraid to take a chance." – Male, Wainwright

"It seems like one of the better ways to go. Carbon footprint is a lot smaller compared to rest. With the future in mind, it may cost more; the efficiency will help it pay for itself." – Male, Edmonton

"Should encourage it, job creation and air quality." – Male, Medicine Hat

"Why not look at all the ideas, I like to look at the facts and form opinions. Nuclear power is an option and good idea." – Male, Medicine Hat

"Good option for Alberta, if the spent fuel can be dealt with beforehand, in the end of the day a plant will be built, let it be nuclear." – Male, Calgary

"We all know that Alberta is still booming and the industrial is still growing, we need reliable electricity." – Female, Taber

"Resources are becoming harder to find and produce." – Female, Edmonton

"Technology has been around a long time. They don't have CO_2 like the coal plants do, they seem to have a long life span and they both need water. One makes a lot of pollution and one doesn't." Male, Rocky Mountain House

"Alternatives like coal have an impact on the environment." – Male, Grand Prairie

"Encourage - although I think everything will be looked at case-by-case. The reason is resources are going to become harder to find and produce and nuclear power seems to be a good answer to both of those concerns. By encouraging the development, technology will be better, resources are going to be better. It comes back to the whole Thomas Edison thing, when electricity was first brought on board everyone was scared to death of it. Now we can't live without a light bulb. I think that technology will take over and look after itself." - Male, Peace River

The second option, **"Proposals to build nuclear power plants should be considered on a case-by-case basis",** was chosen by a clear majority - 57% - of participants.

Participants who chose this option represented a wide range of backgrounds. Many participants were torn on the issue, seeing benefits but also concerned with environmental, health, and safety aspects of nuclear energy. Some were basically opposed to nuclear energy, but believed it should at least be formally considered, while some were proponents but believed that each proposal should be considered separately. This was exemplified in one Calgary group were two individuals vigorously debated the virtues of nuclear energy from opposite perspectives, but both chose this middle option.

The participants that chose the second option were not saying "never" but were also not prepared at this time to say "yes". They had many questions, sought more information, and expressed conditions that would be necessary in order for nuclear proposals to proceed.

Issues that participants were weighing included:

- Community
  - How the community is consulted;
  - The location of the plant;
  - Impacts of construction, including worker housing, traffic, hospitals, and schools. This concern was voiced throughout the province, but particularly strong in the North.

- Policies and Process
  - The need for power;
  - The government's role;
  - Further study required including adequate time to consider proposals;
  - More emphasis should be put on renewables.

- Proponent / Operator
  - The proponent's track record.

- Economics
  - Who bears the costs;
  - Who benefits;
  - Taxpayer liability .

"You can't have a standard blanket policy for it, population is different, resources are different, landscape is different." – Male, Wainwright

"Need full idea of risks like location to make a decision." – Male, Calgary

"Nuclear energy is clean compared to coal and is a better choice but if proposals are to be considered it should be up to the community" – Female, Whitecourt

"The community needs to have a part in the discussion." – Male, Grand Prairie

"Each company may propose something different, some companies may have better proposals, and they may have solutions that we haven't come up with. Our responsibility to protect future generations." – Female, Medicine Hat

"Different plants have different conditions" – Male, Taber

"Thinking long term, not only the waste but accountability – haven't got things ironed out, there are still many unknowns of the long term management of it. If they had more clarity of how they were going to proceed." – Female, Edmonton

"Before we can have nuclear waste we should know where we're going to store it... And according to what were told there are no permanent storage facilities in Canada." – Female, Edmonton

"Don't want to rule it out. I would prefer an alternative to nuclear." - Female, Fort McMurray

"Every area is different, and some areas may not meet all the requirements. Also, after reading through the workbook, it does seem fairly safe, but I would also like to research more before choosing #1." - Female, Whitecourt

"I think nuclear power is in our future, but we don't need 20 or 30 plants in Alberta." - Male, Whitecourt

"I feel that a nuclear plant would help our community with jobs and lower cost with power as well as overall community improvement." - Male, Whitecourt

"You have to look at each individual proposal – environmental, socioeconomic and security, there are too many unknown variables. Yes, I know we need a considerable power in the future, but we need to look at each company individually." - Male, Wainwright

The third option was chosen by 13% of participants: **"The province should oppose proposals to build nuclear power plants in Alberta".**

Most of these participants were emphatic about opposing nuclear. The majority were women.

Among their reasons were:

- The ramifications of failure were too great;
- Irresponsible without a long-term plan for nuclear waste - leaving a problem for future generations;
- Solving one problem (fossil fuels) with another (nuclear);
- Too many unknowns;
- Would not want it in their community;
- Much more emphasis should be put on renewables. There needs to be greater will to explore green options.

"No confidence in ability to regulate and private ownership, it will turn into a money market." – Male, Medicine Hat

"Rather pay more for my children." – Female, Medicine Hat

"We live in a wasteful society. Corporations and individuals should cut down on energy consumption. Cannot make an informed decision due to a lack of personal knowledge. Have we considered other avenues of energy?" – Female, Edmonton

"I think the safety, environmental impact and health are big issues. I think conservation should be looked at as a possibility." – Female, Taber

"It is a short term solution to a long term problem. I think we need a solution that will have less effect on the environment. I realize it is impossible to come up with something that has zero effect, but I believe we have the technology and capabilities. The technology is there we are just not using it." – Male, Wainwright

"I don't think it's a viable long term solution. I would prefer something else more environmentally friendly like solar power or geothermal..." – Female, Peace River

"Opposed – in twenty years just don't know. A long time to leave this (waste) for generations to come. Too long for me." – Female, Fort McMurray

"One death is too many. Why are we not putting our time and energy looking into some other way which does not carry with it such risk when errors are made? The life span alone says to me that the unknown factors for years to come in having to deal with human and or mechanical error would be enough for me to say, 'There has got to be a better solution'." – Male, Whitecourt

"The lifespan of nuclear waste is so unknown due to its lifetime of waiting till it's 'cold'. What kind of legacy is that to leave our children. We talk right now about our "carbon footprint", well I think nuclear plants would be a nuclear disaster to our planet." - Female, Fort McMurray

"Nuclear waste is stored 500-1000 years from now. How will this impact the 5 to10 generations from now? There seems to be too many unknowns. How will this impact health, land and environment in years...centuries from now? Our focus should be on reducing our current consumption, or twinning current energy plants ie. Wind mills, solar, water dams. We can't manage today's ozone depletion so why add more technology that would contribute to it?" - Female, Fort McMurray

There were a couple of people who didn't feel they had enough information to make a decision on the ballot question when asked.

"I do need time to review goods and bads about nuclear power plants. One plant to be put here in Whitecourt means good, our town will benefit lots and in all sorts of ways. I am really insecure or have no confidence in the issue of "health" for our citizens (and this is way more important than money). So I need and I believe many people need true, documented facts about any health issues involved, and all the issues." - Female, Whitecourt

6.0 Qualitative Research Process: Public Consultation- Workbook Results

Methodology

As part of Alberta's Nuclear Public Consultation, full-time residents were invited to review the Alberta Nuclear Consultation Workbook and complete a 31-question survey. The workbook was made available in online and paper versions. The consultation period was held from April 27th to June 1st, 2009.

The Government of Alberta placed newspaper advertisements and online ads to encourage participation in the workbook survey.

The purpose of the workbook survey was to identify the range of views that Albertans hold on the province's electricity options and nuclear energy.

The data collected from this process, along with randomly-recruited discussion groups and stakeholder consultations, informed the development of a quantitative survey which was conducted at the conclusion of the qualitative process.

Participation in this workbook survey was voluntary. Unlike a randomly-recruited quantitative survey, this sample is self-selected and is not weighted to reflect Alberta's demographics. While the data reflects the range of views of Albertans, it specifically reflects the views of those who chose to participate in this consultation and should not be considered as a statistically accurate reflection of the Alberta population.

A privacy note was provided in both the online and paper versions of the workbook. Personal information was not collected, except for home address. Residency information was requested to address requirement that residents were full-time Alberta residents. Of 3630 records collected during the consultation period, 15 records were rejected because of inadequate address information. All records were reviewed to ensure that Alberta addresses were provided. Personal address information was not audited.

Note: Graphs may not always total 100% due to rounding values rather than an error in the data. Sums are added before rounding numbers.

Participation in the Workbook Survey

The total amount of participants in the workbook survey process was as follows:

Online	Paper	Total Valid	Rejected
3393	222	3615	15

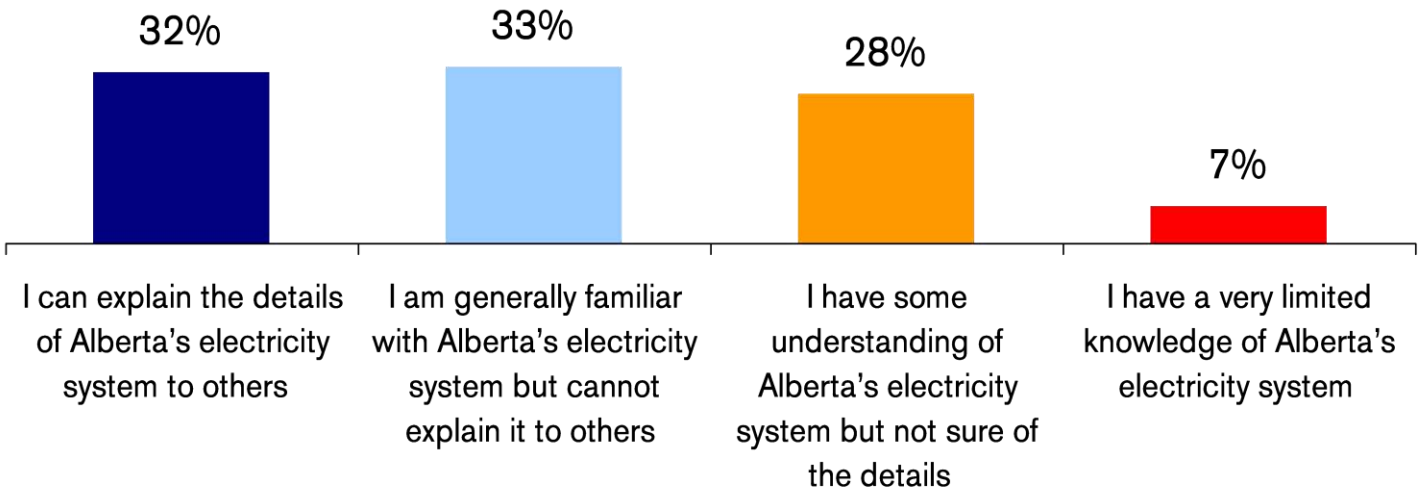
	Edmonton	North[1]	Calgary	South[2]
Valid Surveys	1063	969	1096	487
% of Total	29%	27%	30%	13%
Region's % of Alberta pop.	30%	21%	30%	19%

1. North – communities in 780 area code, excluding Edmonton
2. South – communities in 403 area code, excluding Calgary

Results

Two-thirds Generally Familiar with Alberta's Electricity System

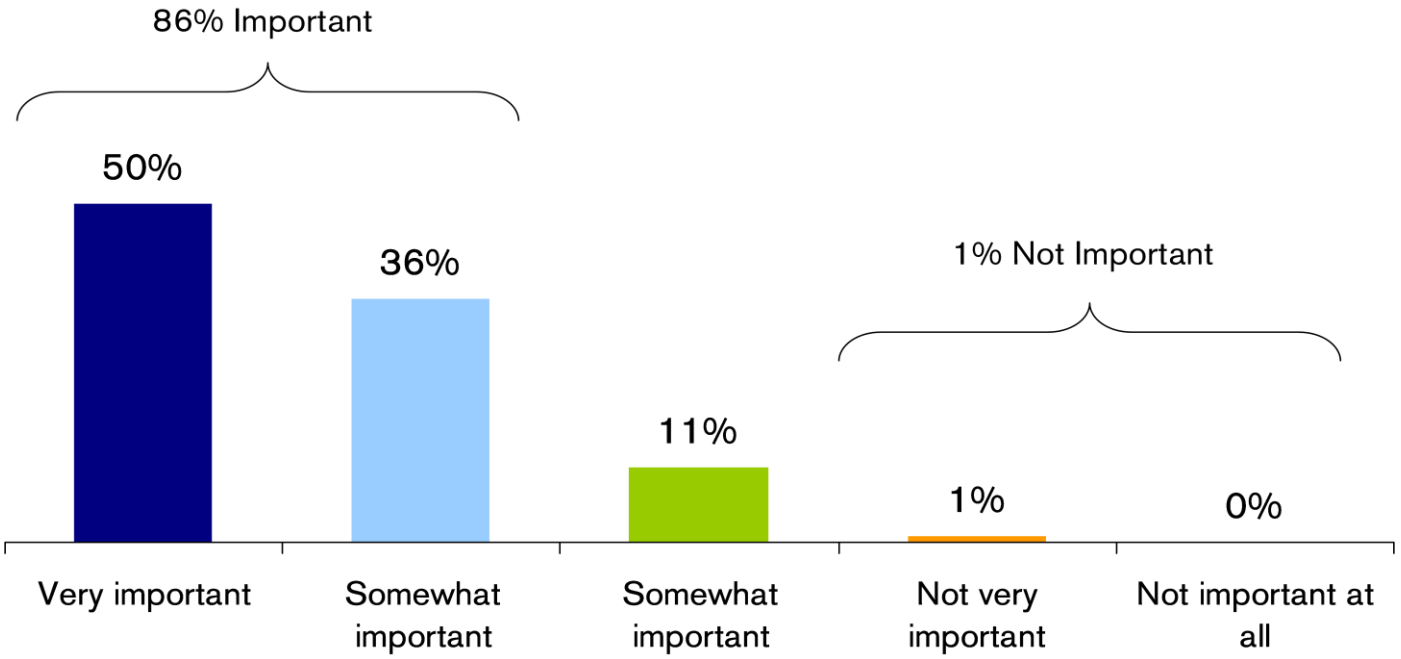
How familiar are you with Alberta's electricity system?



INNOVATIVE RESEARCH GROUP

Vast Majority Believe Energy Supply is Important to Alberta's Economic Future

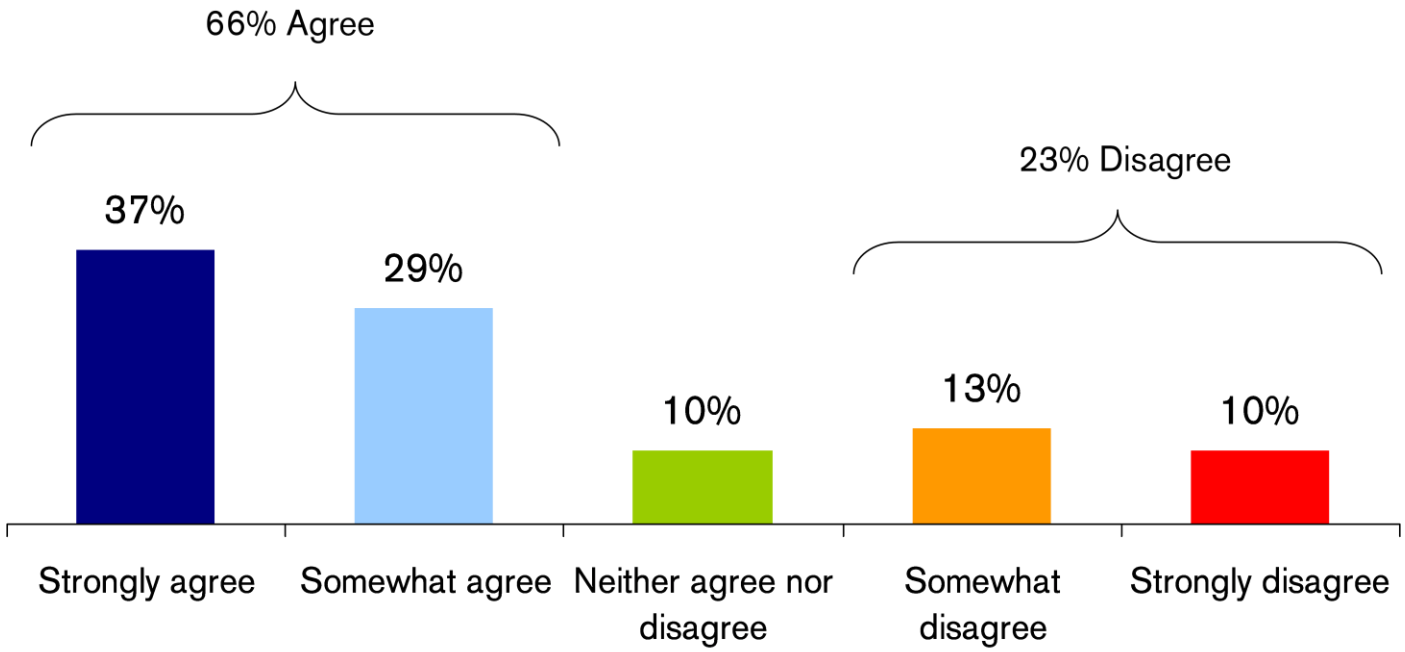
How important do you think electricity supply is to Alberta's economic future?



Note: Don't know (<1%) not shown

Two-thirds Agree that More Electricity is Needed after Conservation

Q Do you agree or disagree that, even after achieving all possible conservation, we will still need more electricity?



Note: Don't know (1%) not shown

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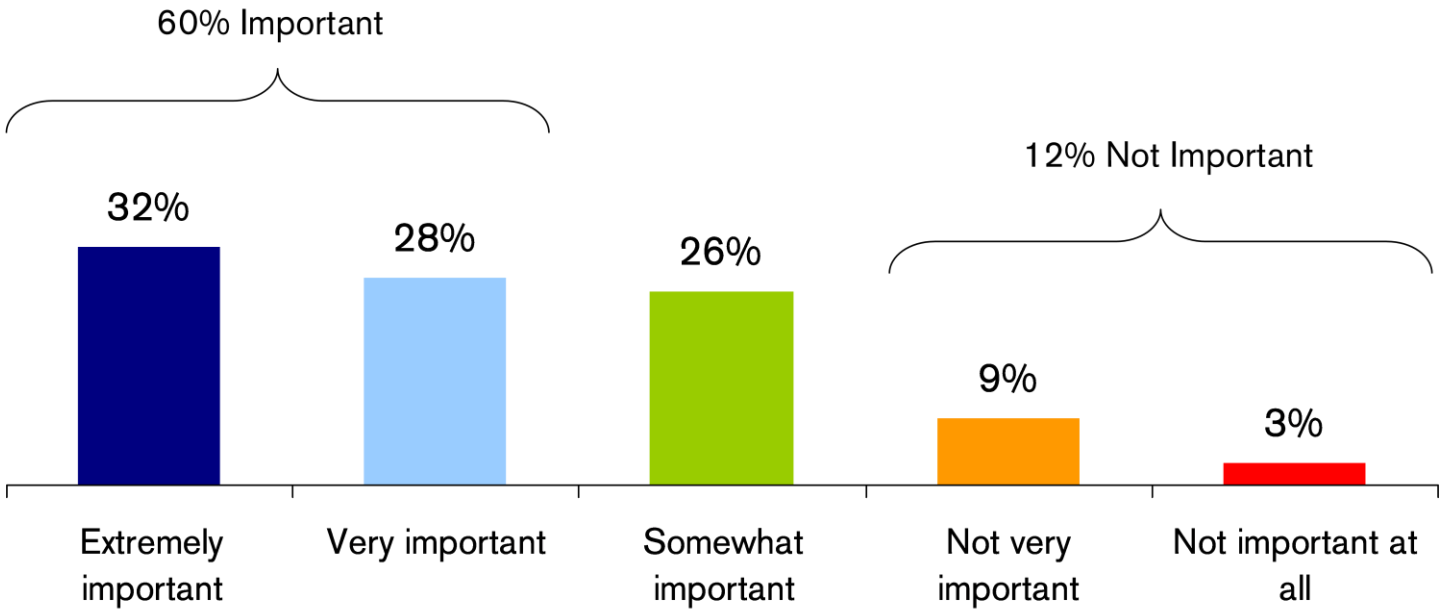
Three-Fifths Believe it is Important for Alberta to be Self-Reliant in Terms of Electricity

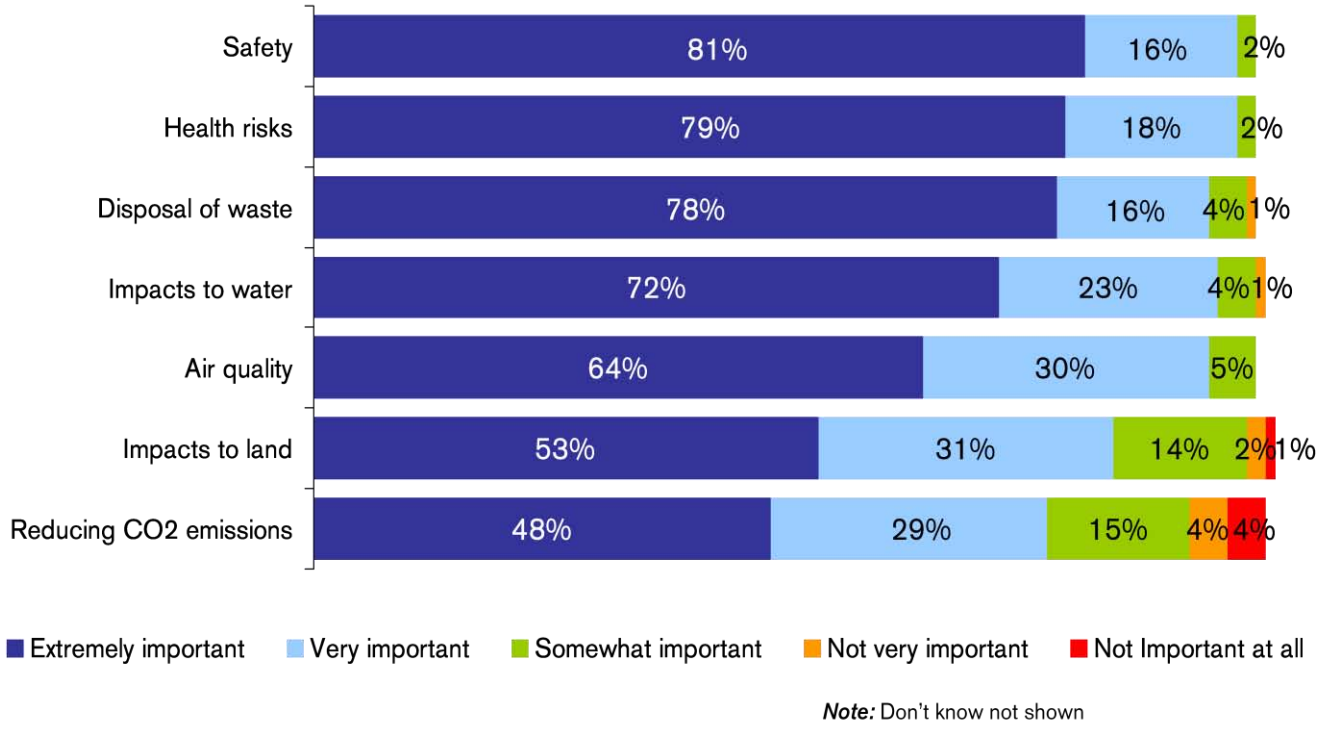
How important is it that Alberta is self-reliant in terms of electricity, rather than depending on supply from other jurisdictions?



Note: Don't know (1%) not shown

Safety, Health Risks, and Waste Disposal Most Important Criteria When Evaluating Potential Projects

How important are each of the following criteria to you, when evaluating potential power projects?



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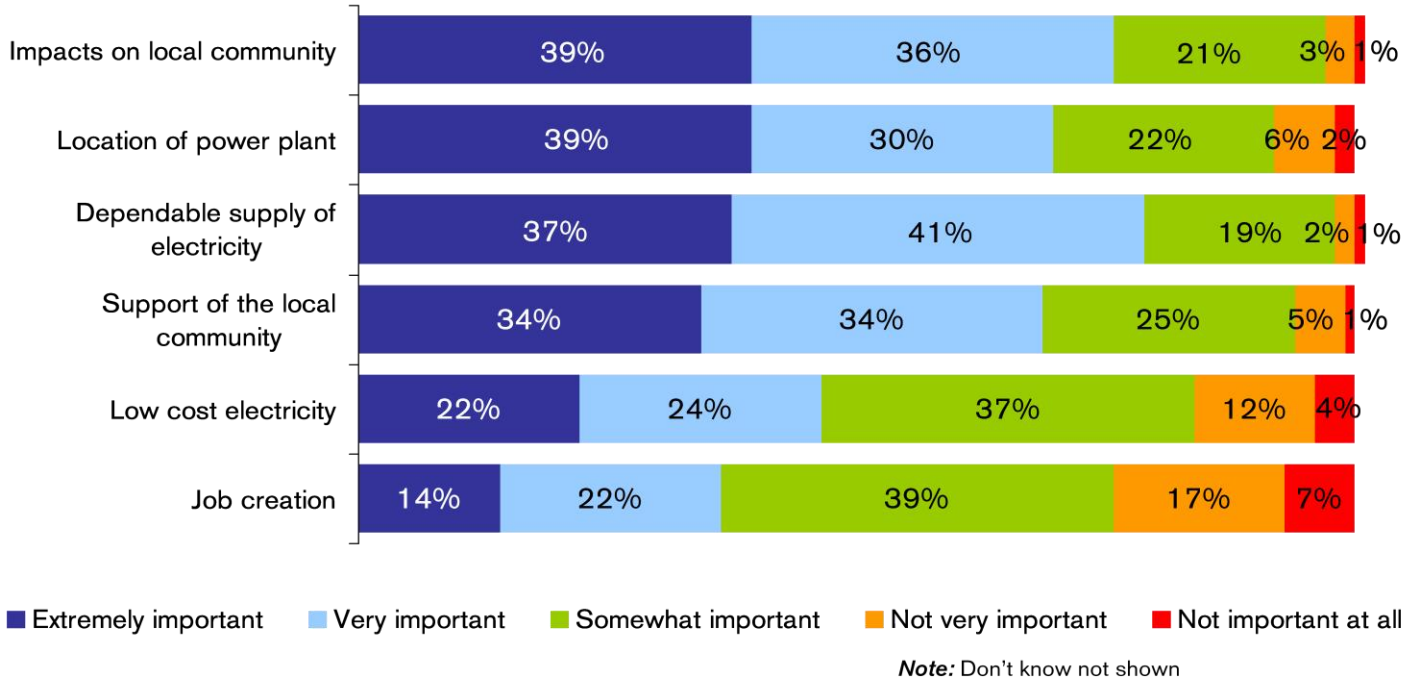
Job Creation and Low-Cost Electricity Least Important Criteria

How important are each of the following criteria to you, when evaluating potential power projects?



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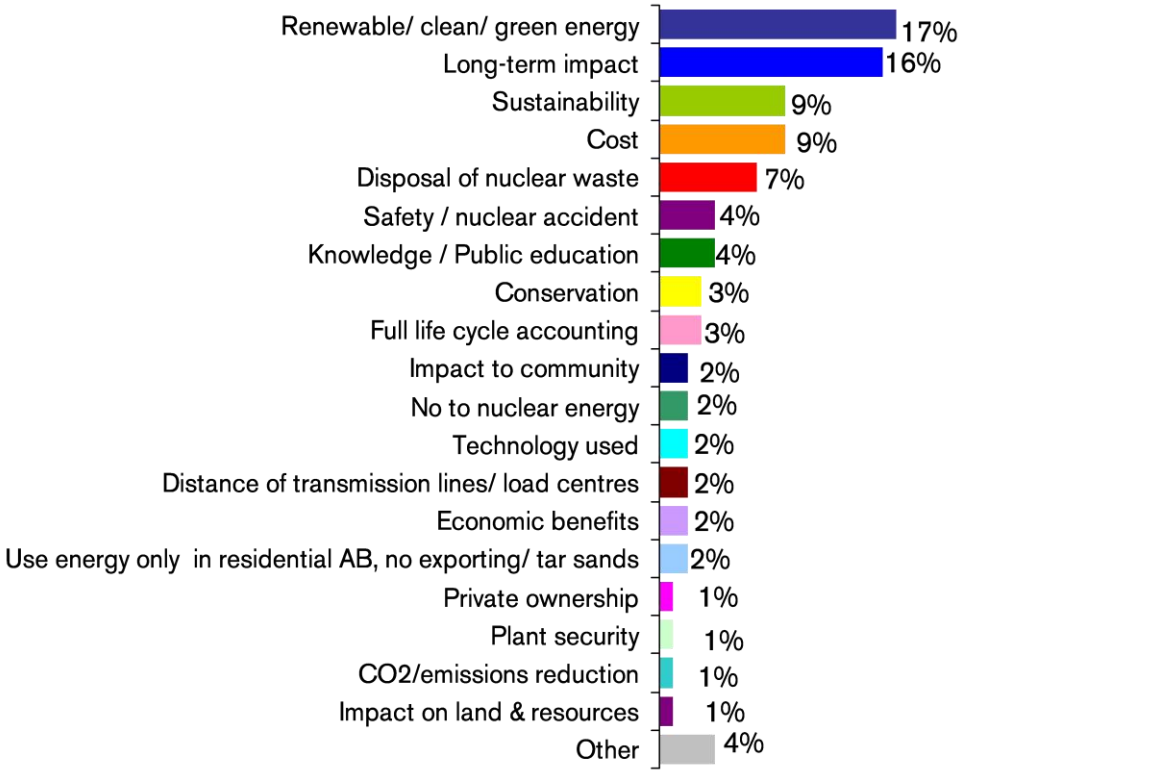
Renewable Energy and Long-Term Impact Most Popular Other Criteria in Evaluating Energy Options

Q Are there any other criteria you believe are important when evaluating energy options?



Note: 'Refused' (3%) not shown

Verbatim Responses

Are there any other criteria you believe are important when evaluating energy options?

Renewable/clean/green energy:

- "All solar or wind options must be pursued in combination with conservation. We can make enough power through solar or wind. We must learn to be less wasteful."
- "All the renewable options, i.e. ; solar, wind, biomass, should be developed first, before thinking about nuclear or more coal generated electricity."
- "Alternative energy including wind farms and solar provide clean renewable energy and jobs. The price of these technologies is dropping since they are still relatively new and as they become more wide spread the cost drops."
- "The Alberta government should be looking at alternative energy research, including solar and wind power as well as hydrogen fuel cells, which could be integrated into and eventually replace, the present electrical grid power supply. I am not at all supportive of the Alberta government pursuing nuclear energy as a power source for this province."
- "Green energy sources should be evaluated extensively."

Long-term Impact:

- "Wildlife, fish, bird, etc. How about our future- how is going to affect the population?"
- "Effect on environment and wildlife. Effect on cancer rates of children and workers. Effect on possible terrorism. Effect on land, farm and home values. Effect on tourism and natural products made in the area."
- "Responsible stewardship of the natural environment must take precedence over matters of economy or consumer convenience."
- "Impacts on ecosystems (migratory birds, mammals etc.). Impacts on communities along transport routes (where the uranium would be shipped through). Impacts on land, water and air from storage of waste as well as re-using of spent fuel (fuel recycling and enriching is a very noxious procedure). Tritium levels in water and air."
- "We need to be thinking about 5 generations from now not just now. We have not even scratched the surface on reduction or energy alternatives."

Verbatim Responses

Sustainability:

- "Alberta should examine options which will provide for a sustainable future which does not include oil and gas. Oil and gas are non-renewable resources and Alberta has dedicated too much of its future towards oil and gas. Eventually the oil and gas will run out or be too costly (both monetary and environmentally) to produce and we need a renewable, sustainable source like nuclear power."
- "That we are self sustaining in the event of a power grid failure and that we will have uninterrupted power if the power grid we are hooked up on to fails. We need to get off the world power grids to be able to survive."

Cost:

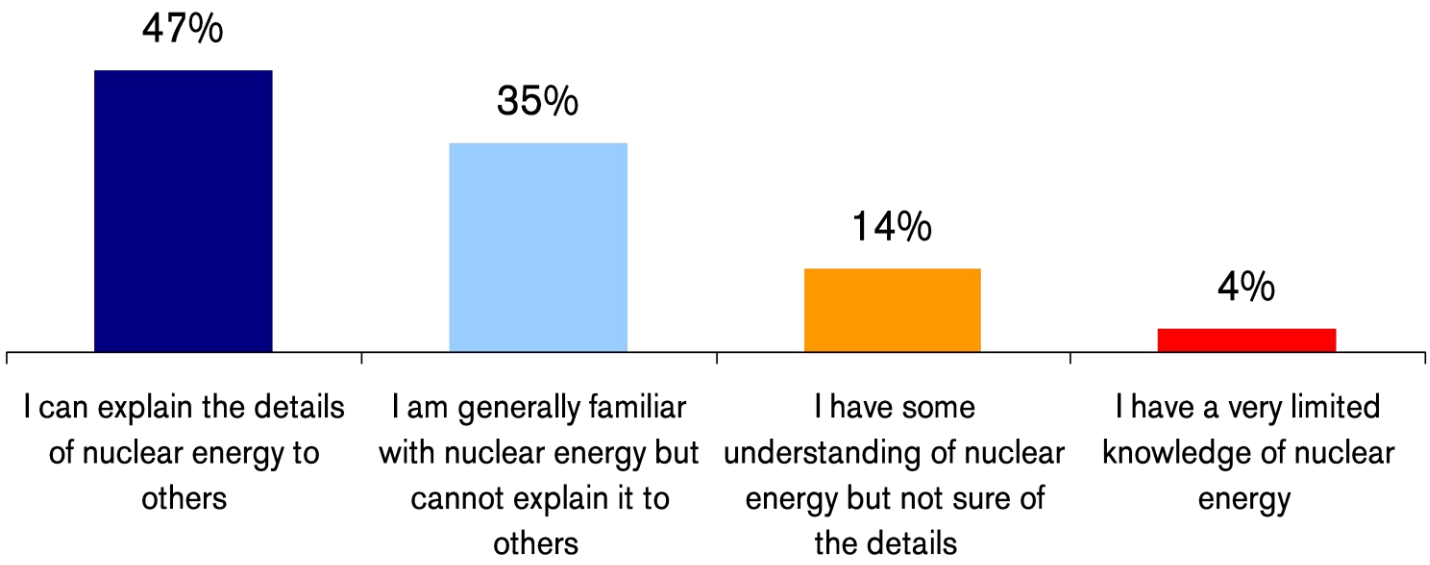
- "The cost of energy should include all costs, including those referred to as externalities. These would include the cost of waste disposal, effects on human health and the effects on our natural ecosystems and our climate. We need to evaluate the cost of cleanup from the pollution generated by our energy use."
- "Budgets for nuclear plants are always underestimated to make them more palatable to the tax paying public. So the economic costs are never presented accurately."
- "Cost of the project life cycle of the facilities and cost to the taxpayer for construction operation etc. and net cost of electricity to the consumer."
- "Long term cost including eventual decommissioning and cleanup."

Disposal of nuclear waste:

- "Safe disposal of waste is critical and as this cannot be sustained with nuclear power it simply is not an option. There are the obvious progressive alternatives."
- "The possibility of more nuclear waste in Canada is unacceptable. We have great forward reaching options with wind and solar power which won't leave us with a millennia of toxic waste."
- "The fact that spent fuel rods are dangerous for thousands of years and the power plant itself becomes radioactive waste at the end of its' life."

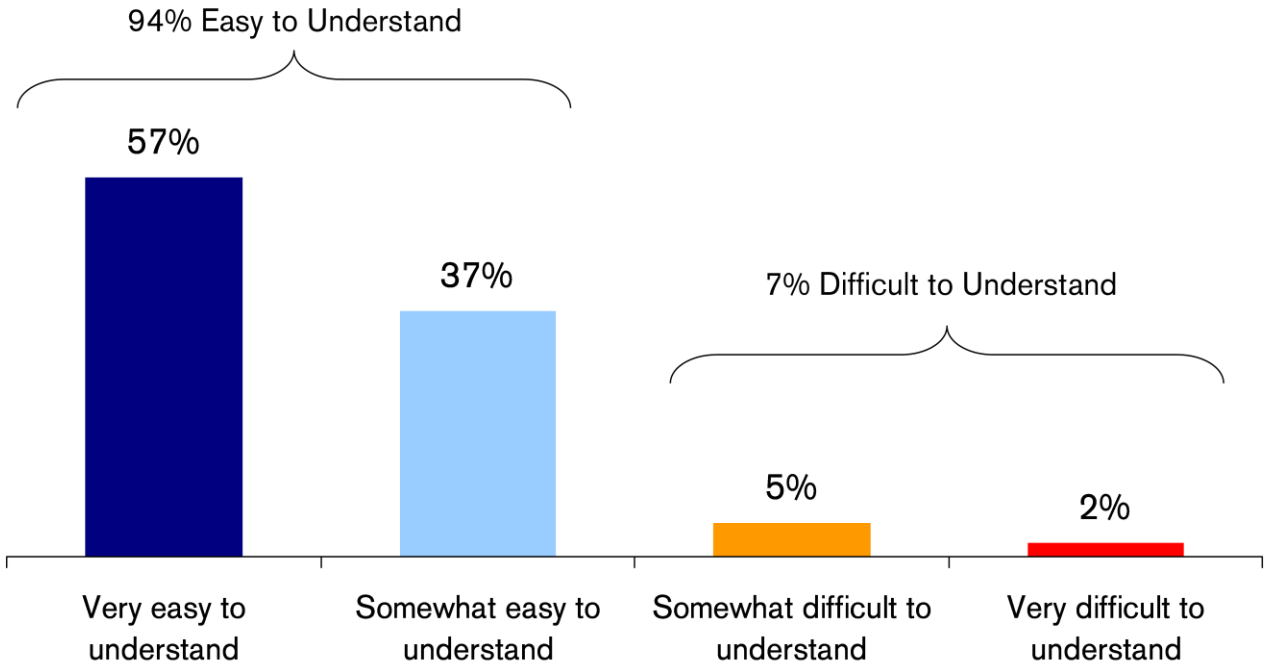
Four-Fifths Generally Familiar With Nuclear Energy

What is your level of knowledge about nuclear energy?



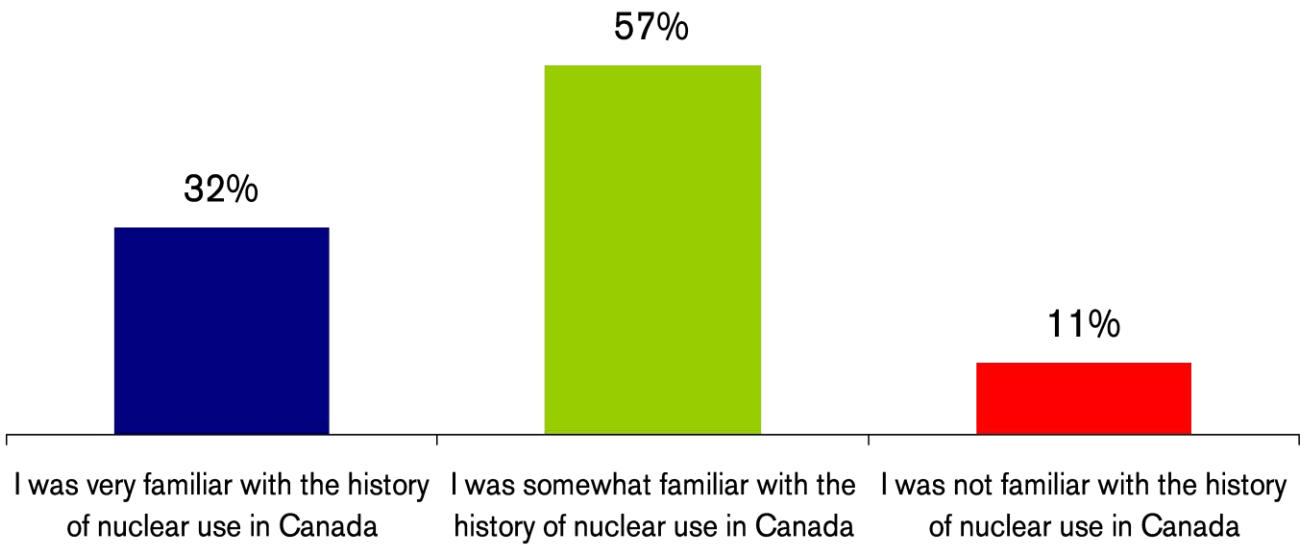
Nine-in-Ten Found Information in Workbook Easy to Understand

How easy or difficult to understand was the information in this workbook concerning how nuclear energy works?



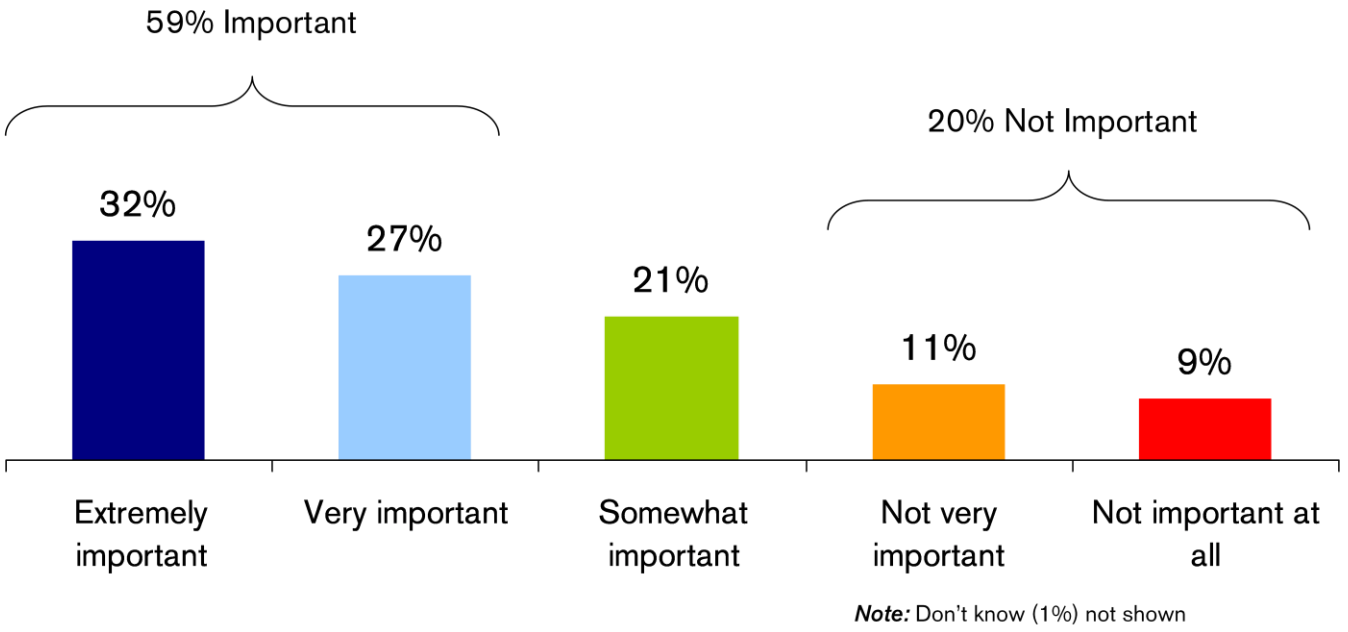
Majority Were Somewhat Familiar with History of Nuclear Use in Canada

Before you reviewed this workbook, how familiar were you about the history of nuclear use in Canada?



Three-Fifths Feel that CO_2 Emissions are Important when thinking about Nuclear Power

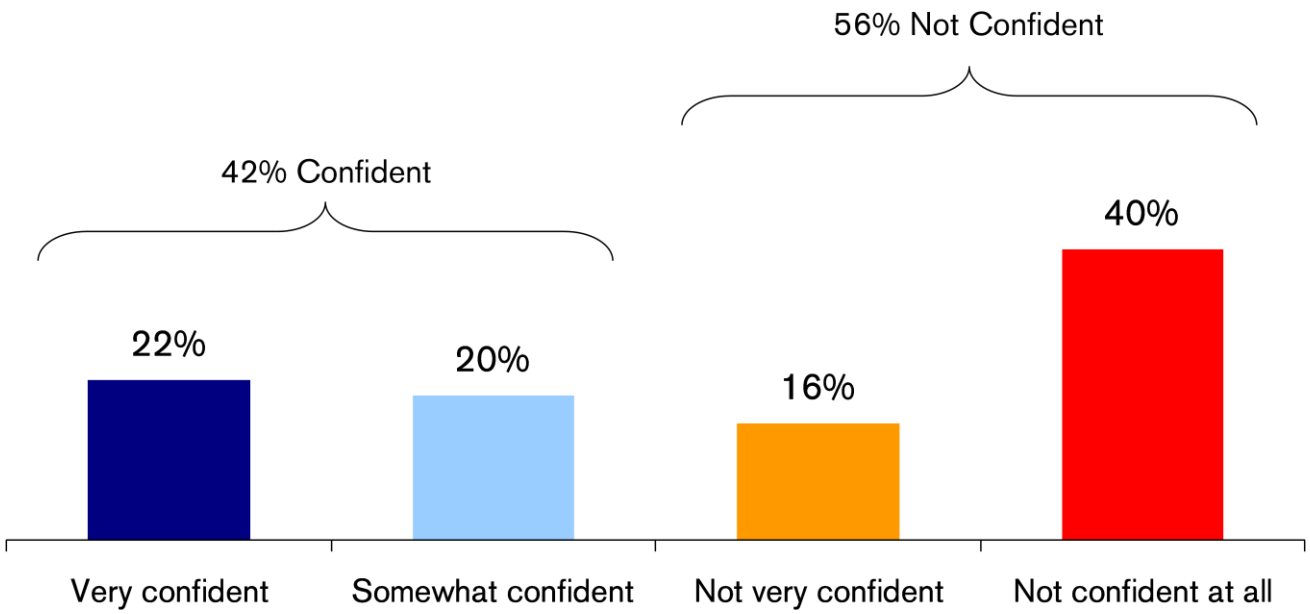
When thinking about nuclear power as an energy option, how important of a consideration is CO_2 emissions?



Note: Don't know (1%) not shown

Majority are Not Confident that Canada's Nuclear Waste is Stored Safely

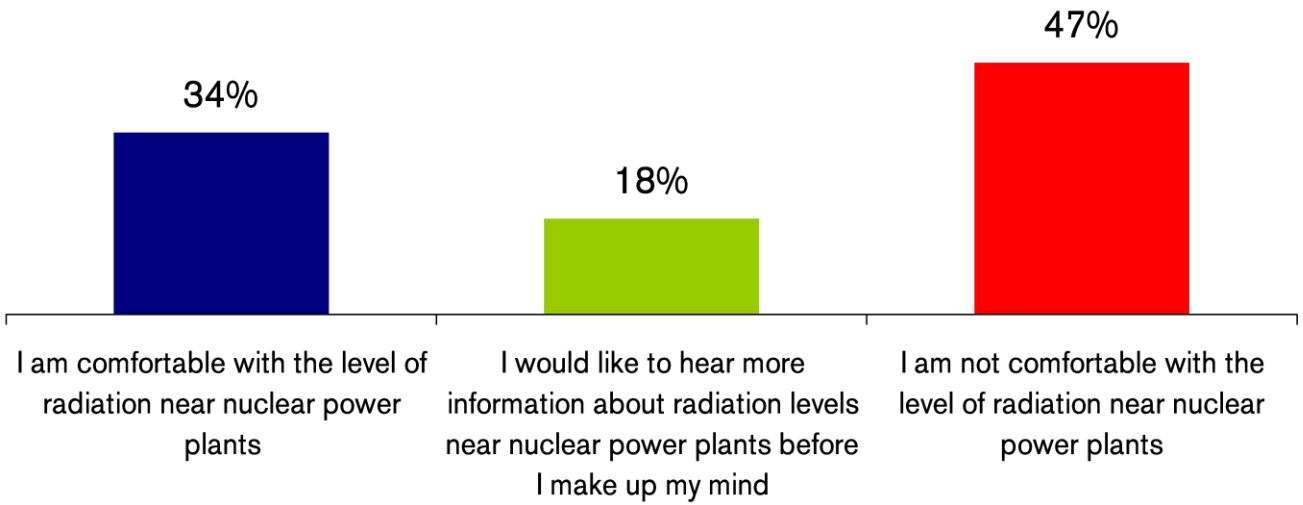
Q Based on what you have read, seen, and heard about nuclear waste storage in Canada, how confident are you that Canada's nuclear waste is safely stored?



Note: Don't know (<1%) not shown

Half are Not Comfortable with the Level of Radiation near Nuclear Power Plants

Q **The Expert Panel report states that radiation levels near nuclear power plants are within international and Canadian guidelines for safety. Based on what you have read, seen, and heard, which statement best represents your view?**



Note: Don't know (1%) not shown

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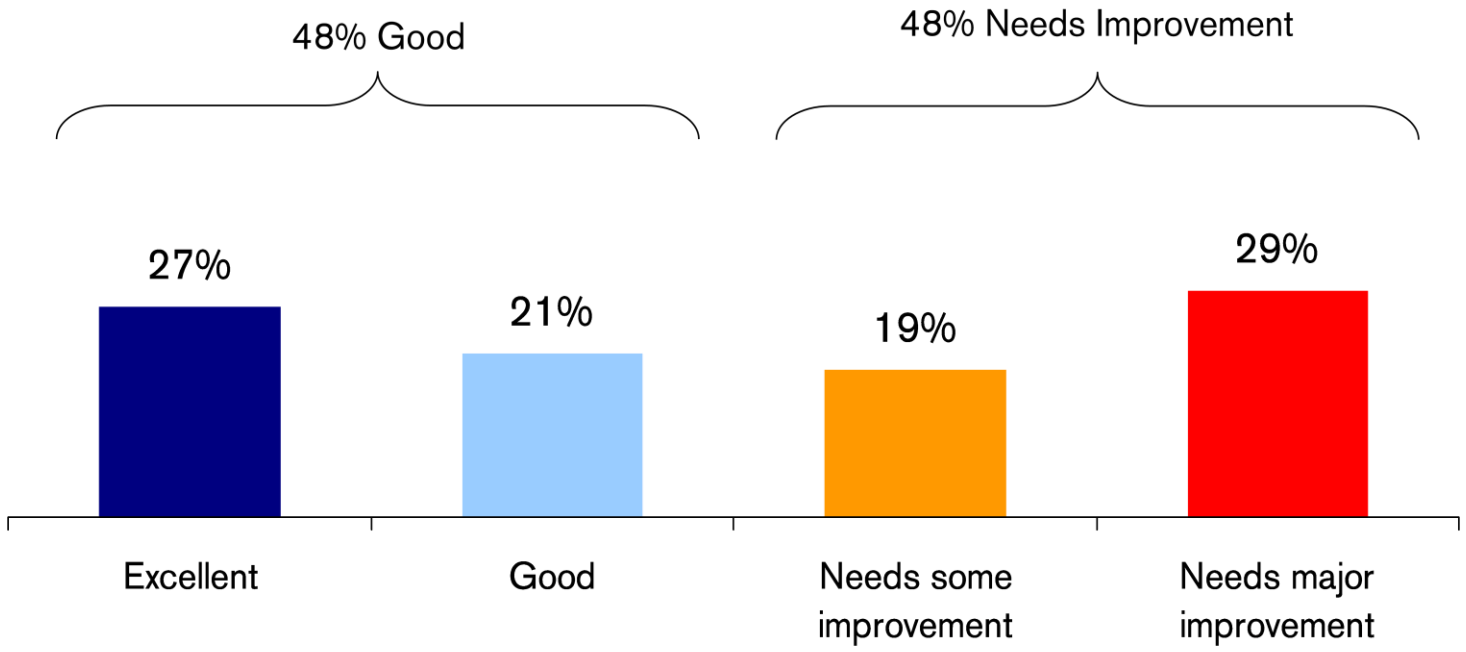
Respondents Split on Canada's Nuclear Safety Record

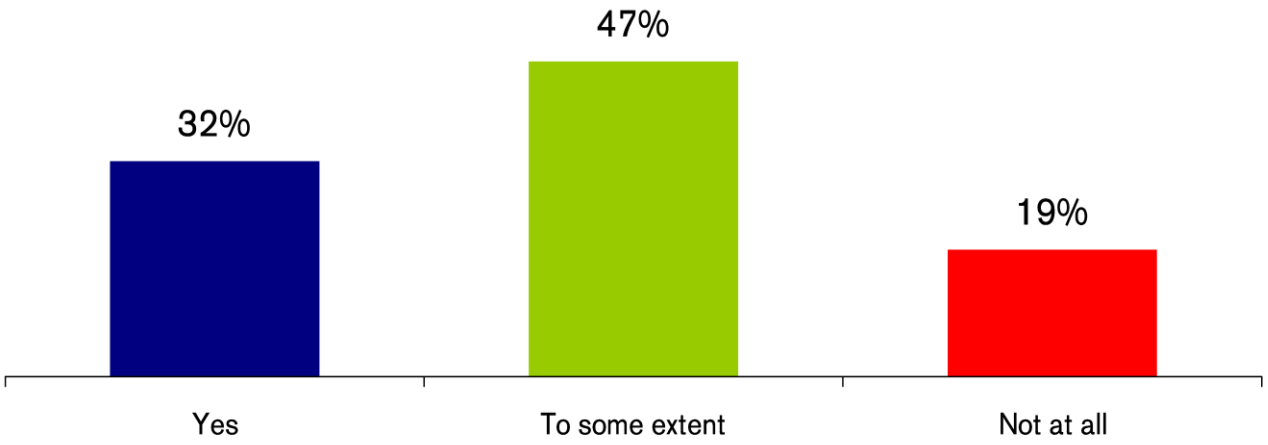
Q Based on what you have read, seen, and heard, what is your view regarding the safety record of Canada's nuclear industry? Is its safety record…



Note: Don't know (4%) not shown

Two-Thirds Looking for More Information about Alberta's Electricity Options and Nuclear Energy

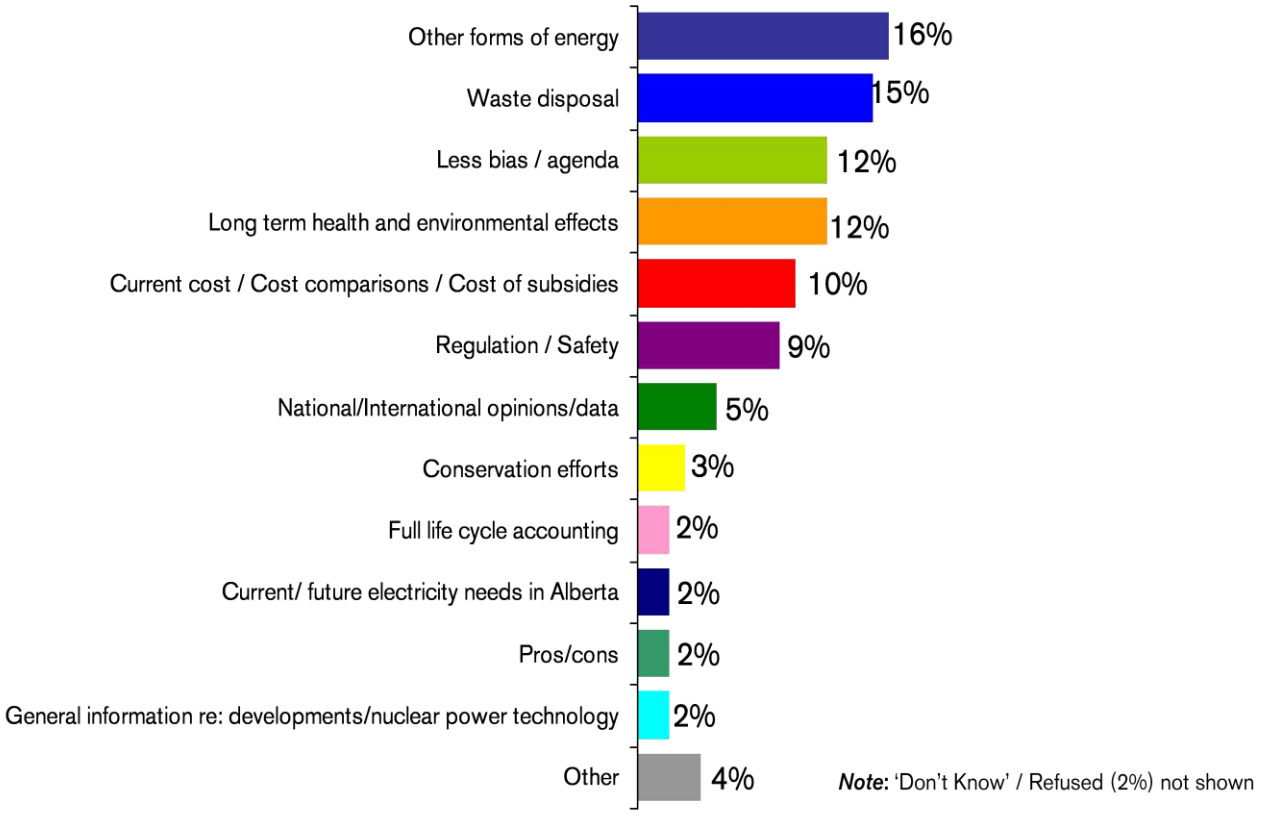
Looking at the workbook and the Expert Panel's report, were your questions about Alberta's electricity options and nuclear energy answered?



Note: Don't know (2%) not shown

Additional Information Requests

What additional information would you have liked to have seen in the Expert Panel report and/or the workbook?



Note: 'Don't Know' / Refused (2%) not shown

INNOVATIVE RESEARCH GROUP

Verbatim Responses

What additional information would you have liked to have seen in the Expert Panel report and/or the workbook?

Other forms of energy:

- "I would have liked to have seen much more emphasis placed on other sources of power such as wind, water and solar power. Technology is being developed which shows to my satisfaction that these sources are much more environmentally friendly. I am not satisfied about the safety of nuclear power plants having regard to the past disasters."
- "A much more intensive and in-depth exploration of renewables and decentralized supply. The coverage of renewables is painfully inadequate and represents an existing bias towards 'big generation'."
- "You do not address other energy options and this report is skewed towards only nuclear as a solution to CO2 emissions."
- "Your energy options chart did not look at 'green' energy options in enough detail – hydro and solar - we live in a province that has more sun than anywhere else in Canada - even in the winter!

Waste disposal:

- "More details on long-term nuclear waste disposal. The consultants who prepared this report seemed to conveniently gloss over some very significant and contentious issues with the long-term effect of waste disposal and the impact on the WORLD'S environment."
- "I would like to see more detailed information about the storage and long term solutions or lack thereof for dealing with waste from nuclear energy plants. I believe this concern far outweighs any benefit(s) which may occur from the use of nuclear energy. I believe that the public deserves to know about the long term financial support required to deal with waste."
- "I would like a much more detailed description of the storage area and disposal process."
- "Fundamentally the storage of nuclear waste is and remains the greatest failing of the technology. Because of the half-lives of the waste materials safe storage is virtually impossible."

Verbatim Responses

Less bias/agenda:

- "I would have liked the Expert Panel to have been made up of unbiased people. I would have liked the Expert Panel to have gone into some of the downside of a nuclear power plant instead of having their report read like a Bruce Power advertisement."
- "I feel the information is one sided. Only saying the positive without the realities of what Alberta could be like with a Nuclear Reactor. It can't be all good there's always some bad with the good and I just didn't see that."
- On every point I would like to have seen unbiased comparisons with green renewable energy options.

Long term health/environmental effects:

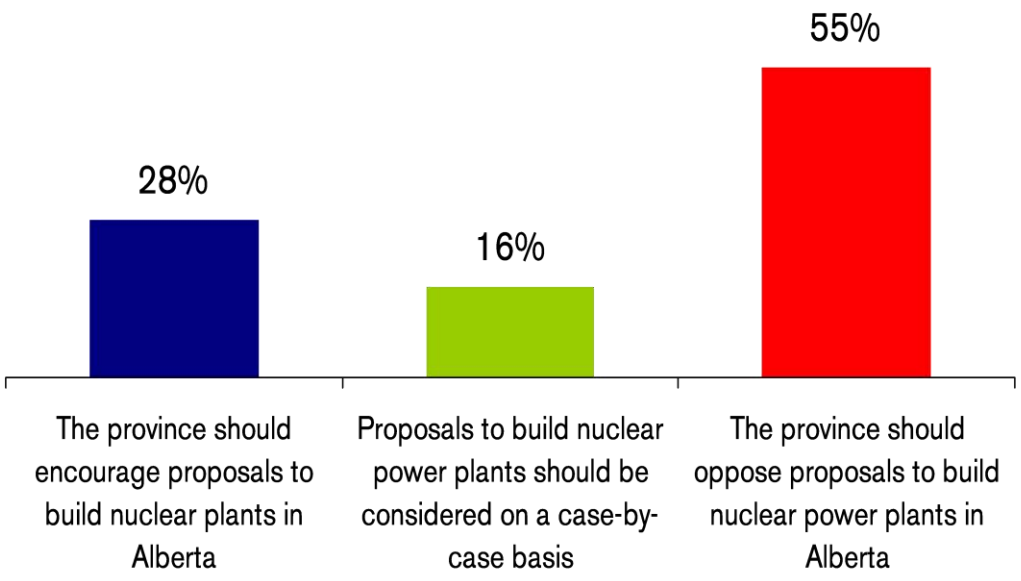
- "More description of the long term effects to people and communities in the vicinity of existing nuclear power plants. Comparative information on communities that use alternative forms of energy generation, like solar or wind power. A less pro-nuclear power generation survey."
- "Info from the medical sector regarding health risks and statistics from the past health issues that have been raised regarding living near nuclear plants or participating in the nuclear industry. Was there a medical person on the panel?"
- "Impact on future generations and air water land wildlife quality in the next 1000 years."

Current costs/cost comparisons/cost of subsidies:

- "A thorough analysis of costs (there have been big problems with the nuclear plants in Ontario in relation to cost overruns and medium to long term maintenance."
- "The total of all future costs of refurbishing and decommissioning nuclear power plants. The total cost for future generations to deal with the toxic waste produced."
- "Life cycle cost comparison between nuclear and sustainable energy production."

Majority Oppose Nuclear Proposals

Which one of the following statements best represents your view?



Note: Don't know (1%) not shown

Those that respond 'Province should oppose'

North	57%
South	53%
Edmonton	58%
Calgary	53%

Those that respond 'Province should encourage'

North	26%
South	27%
Edmonton	25%
Calgary	32%

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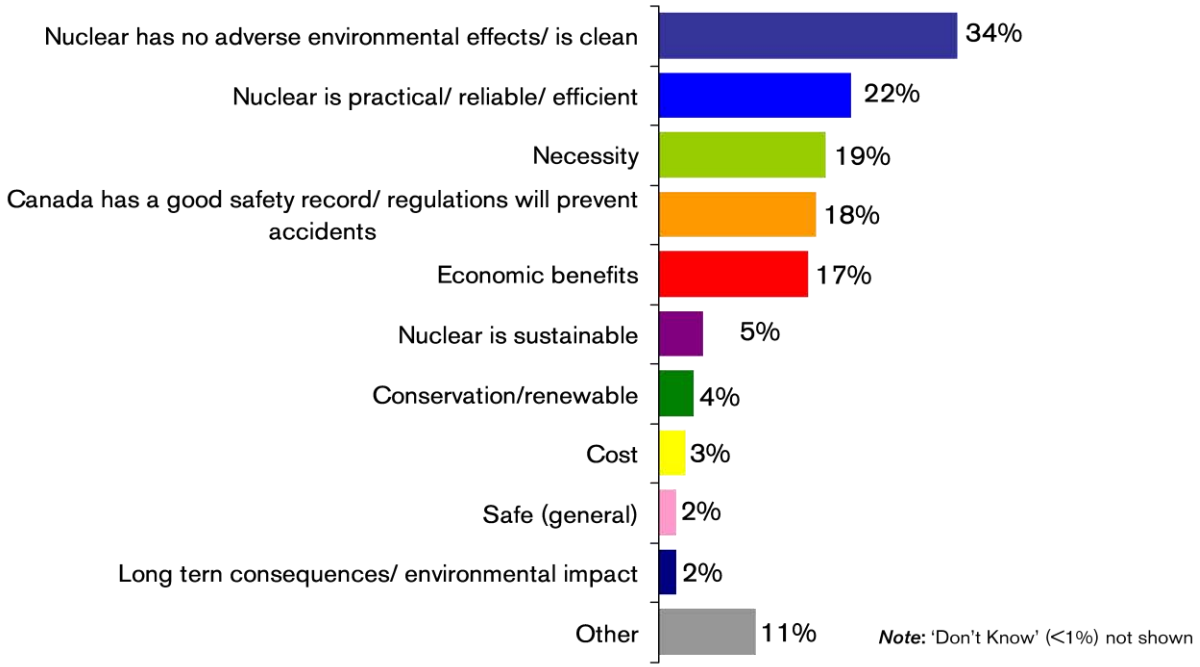
Support for Nuclear Driven by Perception that Nuclear is Clean, Green and Practical

Q And why do you say that? ENCOURAGE



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Verbatim Responses

And why do you say that? ENCOURAGE

Nuclear has no adverse environmental effects/ is clean:

- "I feel that with the growing environmental concerns relating to greenhouse gas emissions that nuclear energy once again needs to be considered as a foundation for supplying Alberta's electricity needs."
- "Nuclear generated energy is clean and reliable. We should think about an orderly phase-out of coal plants when nuclear comes on board. These plants are ideal for base-load generation."
- "Nuclear energy is one of the most environmentally friendly alternatives. It has been perfected to a state where it produces little harm to the environment and nearly complete protection of the entire population. It is also one of the most cost effective forms of energy."
- "High-efficiency and pollution trade-off (ground storage vs. Greenhouse gases) makes more sense to me. Especially for the oil sands it does not make sense to waste clean-burning natural gas to refine dirty oil. Nuclear energy would be more efficient and cleaner for oil sands extraction."

Nuclear is practical/ Reliable/ Efficient:

- "This is the most secure and most efficient source of electricity there is. Additionally it is the most environmentally sound source of large amounts of reliable energy."
- "With the understanding I have of the energy business environmental aspects included nuclear energy is a sensible practical proven and achievable alternative for Alberta."
- "The province of Alberta will require a stable, reliable and affordable source of electricity in the years ahead. Nuclear power (along with other modes of electricity generation), can provide electricity effectively to Albertans."
- "We simply are going to need more power to keep our economy growing. Nuclear is clean power and safe for our environment. There are no absolutes in this life and the small risks are not an issue for me being a practical person."

Verbatim Responses

Necessity:

- "We in southern Alberta are at the end of transmission lines from large plants in the north. We need a secure, reliable source(s) of electricity within our own region i.e. Calgary and south. Nuclear plants are clean, safe, and can be air-cooled in areas where water use is at a premium. they provide high quality jobs and have economic and educational/training spin offs that will enhance regional economic stability."
- "Future assured supply of affordable electricity is vital to Alberta's economic viability in the coming years."
- "Alberta needs electricity. There is no good reason to waste fossil fuels when nuclear is available."

Canada has a good safety record/ regulations will prevent accidents:

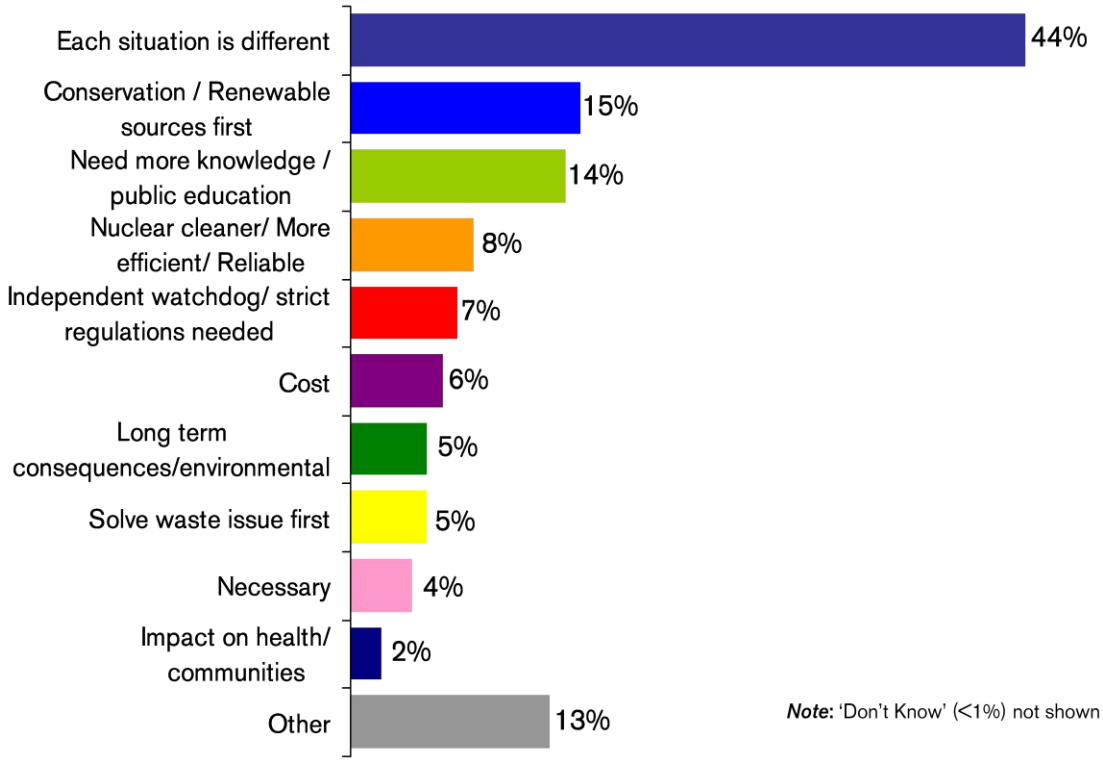
- "For the most part nuclear power is a clean and safe method for electricity production. With the right standards and protocols in place I believe that any disasters could altogether be avoided."
- "Nuclear power generation is safe secure and clean. The level of monitoring and security is second to none and the economic impact of lower electricity costs vs. natural gas is very worth pursuing."
- "Canada's safety record when dealing with nuclear energy is excellent."
- We (Alberta) have an obvious present and future need for growth in power generation and availability. Past experience with nuclear power generation using world-renowned CANDU technology indicates such tools are capable of providing for our needs in a safe, reliable and extendable fashion.

Economic Benefits:

- "Cheap energy sources could create new industries and great opportunities for the community."
- "The Alberta economy is largely affected by the pricing of our resources outside of Alberta. I feel that Alberta would benefit from the diversification of our electricity base away from these same resources. Reducing Alberta's overall CO2 emissions would help us fight the image of the "dirty oil" we produce in Northern Alberta. It would be good if Alberta could establish ourselves as an expert resource in Nuclear power as long term it may be one of the alternatives accepted to replace hydrocarbon's which we base so much of our economy on now."

Those that want Case-by-Case Evaluation feel that Each Project has Different Considerations

Q And why do you say that? CASE-BY-CASE



Note: 'Don't Know' (<1%) not shown

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Verbatim Responses

Q **And why do you say that? CASE-BY-CASE**

Each situation is different:

- "Although nuclear power plants can be potentially very dangerous, they are a better option than coal or oil. However, because they are so dangerous it is important to look at each situation differently, and to thoroughly understand what impact the plant will have on the environment and local community."
- "Because I think location plays such a big part of it, you will have to base it on a case-by-case basis."
- "Proposals should be encouraged, but must be evaluated on an individual basis to ensure that the right projects are approved which will best support the interests of residents."
- "Because each proposal is unique and it depends on the area, environmental impact, societal impact and a region's ability to cope with/accommodate the projected growth that a large construction/operation like a nuclear plant will bring."
- "Each proposal should be carefully reviewed at the time to assess need vs. costs and possible impact to the environment and community - not every proposal will be the same and shouldn't be treated the same."

Conservation/ Renewable Sources First:

- "All forms of non nuclear power options and all possible conservation measures should be pursued, even though nuclear appears most cost effective. Nuclear will do nothing to reduce C02. Nuclear has never approached the topic of waste management other than warehouse and wait 1000 years. By ignoring the cost of nuclear waste indicates that the taxpayer will pay the tab eventually."
- "While I am not opposed to nuclear power as a viable source of electricity it is my view that we should be taking advantage of all renewable sources of generating electricity before building nuclear power plants that do have safety concerns and with which we have no safe long term disposal for the radioactive waste that will be generated. This province should be a world leader in renewable energy not nuclear power."
- "I would rather see money and time being put into developing renewable solutions (wind and solar) as well as changes in lifestyle and conservation."
- "Nuclear energy should be considered only if/after all conservation measures and innovations have been exhausted. Nuclear energy should be a last resort."

Verbatim Responses

Need More Knowledge/ Public Education:

- "Nuclear energy is a complicated multi layered issue that should require consultation with Albertans in an open environment. Given that circumstances for each possible reactor may be different it seems logical that this should be done on a case by case basis."
- "I believe that we have not looked and totally considered and evaluated the other options to the fullest extents and that further research and development needs to be done in the nuclear area before we start to develop it in Alberta."
- "I don't believe it's effective to say one extreme or the other. They may be necessary if no other feasible options exist but should not be the rule and should not just be pushed through without consider other options very thoroughly."

Nuclear is Cleaner/ More Reliable:

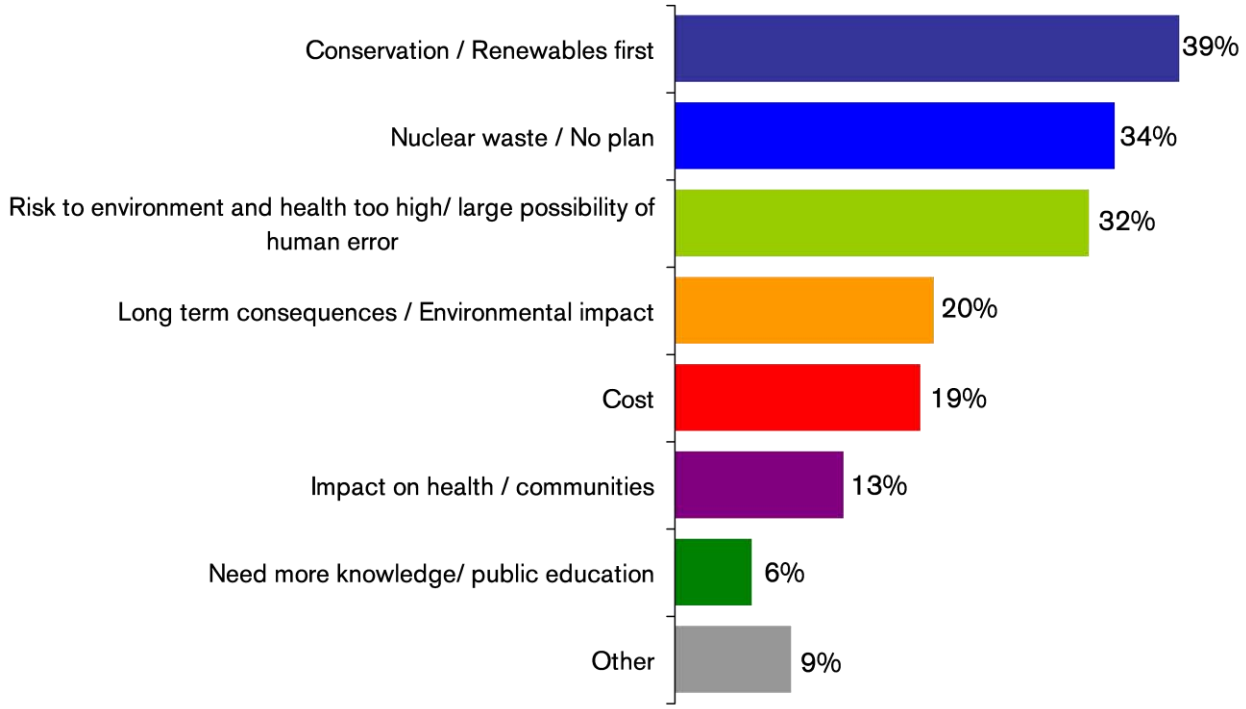
- "I believe we need a completely reliable source of energy. Wind power is expensive, unreliable and needs total back-up. Solar and wind can't be major players. Coal is not environmentally friendly and oil and natural gas supplies are depleting."
- "While I am cautious I still believe it is the best option."
- "Nuclear power, when handled properly, is safe and less damaging to the environment than coal-fired plants."
- "Nuclear is a serious option for meeting Alberta's electricity needs without exacerbating climate change, but sites must be considered carefully to avoid damage to the local ecosystem."

Independent watchdog/ strict regulations needed:

- "Without proper controls, the government will be in the pockets of the nuclear industry just like they are in the pocket of the oil industry. Without an independent watchdog, i think this would be a terrible idea."
- "Safety will always be a top concern. We need to 100% certain that those who build these plants have addressed all possible safety concerns and that they have in place a solid long term plan for the safe disposal of nuclear waste products. While I support nuclear power, we must be absolutely certain that those involved are addressing all safety concerns."
- "I don't want any fly by night operator coming in and building a poorly designed nuclear reactor."

Support for Renewables, Concern for Waste Top Reasons of those Opposed to Nuclear Projects

Q And why do you say that? OPPOSE



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Verbatim Responses

And why do you say that? OPPOSE

Conservation/ Renewable Sources First:

- "Nuclear should only be considered once all feasible measures to improve efficiency and conserve have been implemented. The province should be doing more to promote alternative energy and develop new technology for energy that avoids the huge costs and health/ environmental risks of nuclear. Nuclear in Canada has proven to be a very expensive way to produce energy and its not entirely reliable."
- "Canadians don't need more power they need to make wiser choices in the way they use their power. No amount of power is worth the irreversible damage we are doing to our decaying planet, which in return majorly affecting our citizens' future."
- "Alberta does not need nuclear power. We can meet all our anticipated need for electricity over the next 20 years through a combination of energy conservation, renewable energy and natural gas co-generation."
- "I believe more resources should be put towards energy sources that are clean, and low impact as well as energy conservation education. The possible consequences of a nuclear power plant to the water and the long-term effects are not worth the energy produced."

Nuclear waste / No plan:

- "Storing of nuclear waste is not proven to be foolproof and we have no idea as to the contamination the leaks into soil and ground water. This radiation continues for thousands of years! We know the horrendous effects radiation can have to the health of all living things in the surrounding areas."
- Until they devise safe disposal methods for the nuclear waste, it should not be used at all. Also, even with 'acceptable' levels of radiation near plant sites, they are too dangerous for people, or animals, to live near."
- "Because of the length of time required to store nuclear waste. It appears to be a temporary solution with long term consequences."
- "No one as of yet has come up with a 100% safe solution of dealing with nuclear waste. Leaving it for future generations to deal with is absolutely dumb. That is not an inheritance I want for my children and grandchildren."
- As there is no proper way to dispose of nuclear waste currently it is irresponsible to consider nuclear power as a sustainable solution to our electrical needs.

Verbatim Responses

Risk to environment and health too high/ large possibility of human error:

- "While nuclear power has been presented as a "safe" technology, the risks remain too high. Although seemingly small in numeric terms, potential environmental impacts are too severe and poorly understood for nuclear power generation to be undertaken. Political, economic and regulatory structures are currently inadequate to deal with the high degree of risk. Also, not enough has been done in terms of leadership and innovation in seeking other more environmentally viable options."
- "The risk is not worth the reward. It only takes one major accident in the history of Alberta to adversely affect lives for generations to come."

Long term consequences / Environmental impact:

- "There is no need for more info. I am 22 and wish for my future children to grow up in this beautiful countryside as I did. We don't need our land to be dried up. Water you cannot swim in. There has to be a better, safer way for electricity like wind or solar."
- "I say this because overall the potential risks of damage to the environment and public safety far outweigh the benefits of such power generation."
- "The short and long term environmental and human health hazards outweigh other concerns. Even if this were not true, there is not enough water in Alberta to support a nuclear power plant."

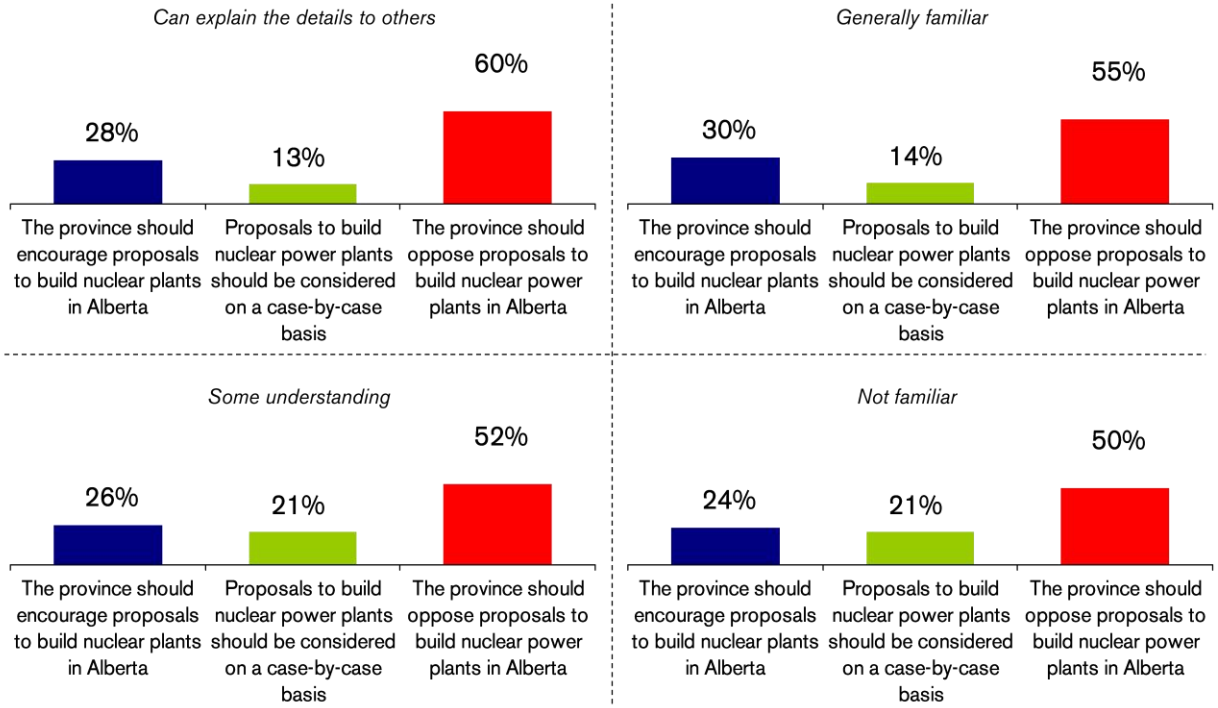
Cost:

- "Any nuclear power plants development is going to cost taxpayers millions if not billions in subsidies. Any other option is better than the nuclear option for financial reasons alone."
- "Long term costs are not recognized in the workbook. Costs of dismantlement at end of plant and equipment's life, cost of health care long term due to nuclear pollution of cooling water, and other forms of escaped radiation."
- "Nuclear power plants perennially have cost over-runs during construction and the cost of de-commissioning them is prohibitive."
- "Significant studies have shown that nuclear is not economically profitable despite a lot of government subsidies."

Engagement

- Engagement refers to the degree people are already involved in the issue in some way. While the levels of engagement are interesting in themselves, looking at the results for the more engaged allows us to explore the difference between electricity and nuclear issue publics (people who follow an issue more closely than others) to see if there are any differences.
- Workbook survey participants were asked about their familiarity with Alberta's electricity system and their level of knowledge about nuclear energy.
- The results on the following two slides show that those who participated in the workbook survey who have a higher familiarity with Alberta's electricity system are more likely to either encourage or oppose proposals than those with less familiarity. With regard to their knowledge of nuclear energy, the effect is more pronounced with those saying that they have less knowledge being less likely to choose encourage or oppose compared to those who say they have a higher level of knowledge.

Views on Nuclear Proposals by Level of Engagement: Familiarity with Alberta's Electricity System



Don't Know values as follows: Explain details (0%); Generally familiar (1%); Some understanding (1%); Not familiar (5%)

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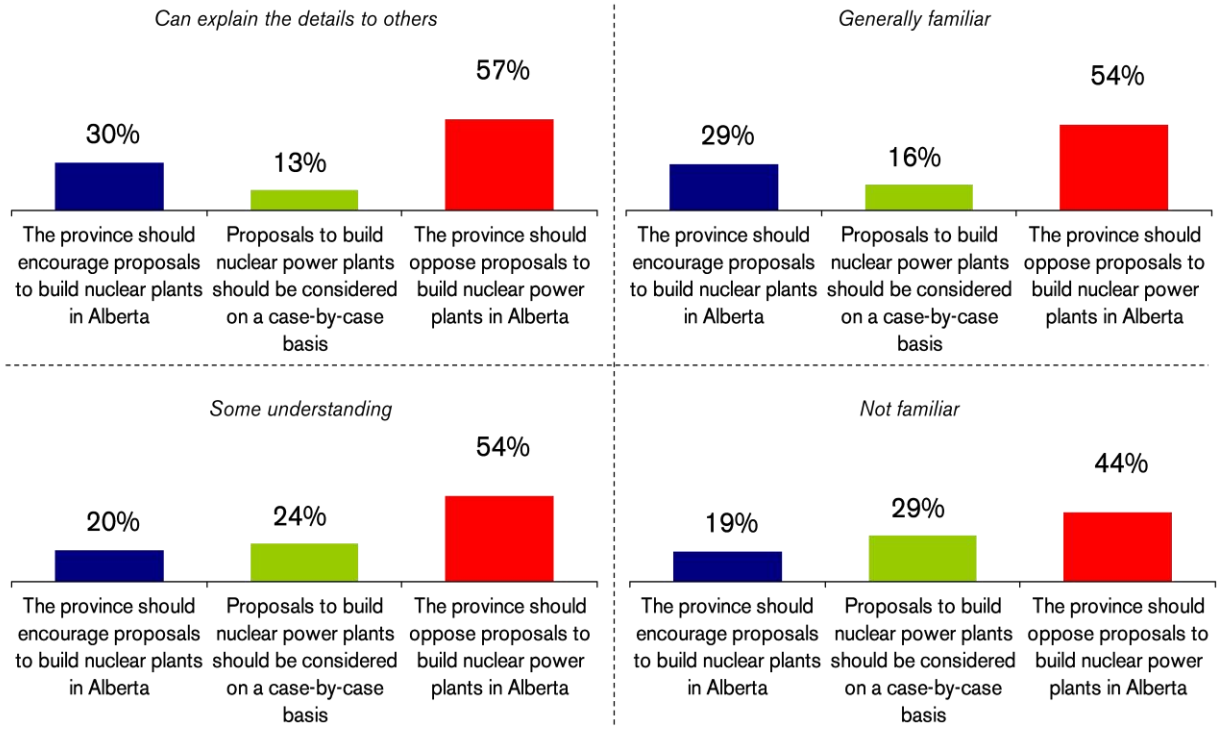
Views on Nuclear Proposals by Level of Engagement: Level of Knowledge about Nuclear Energy



Don't Know values as follows: Explain details (0%); Generally familiar (1%); Some understanding (2%); Not familiar (8%)

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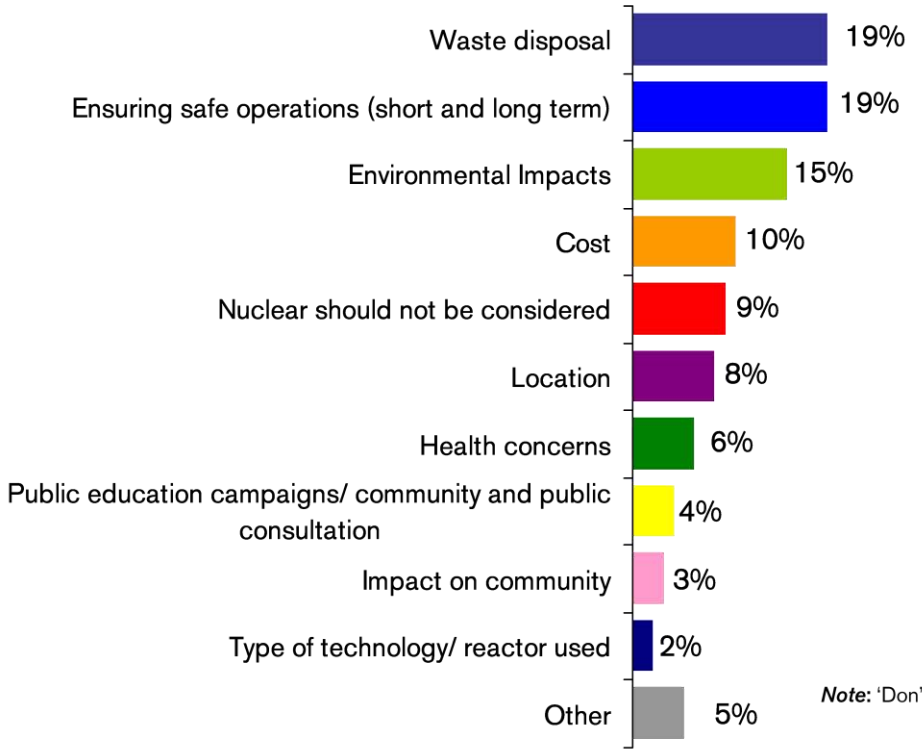
Waste Disposal and Safe Operation of Plants Most Important Issues to Review

If the provincial government decided to consider proposals to build nuclear power plants, what are the most important issues about nuclear power plants that should be reviewed?



Note: 'Don't Know'/ 'Refused' (<1%) not shown

Verbatim Responses

If the provincial government decided to consider proposals to build nuclear power plants, what are the most important issues about nuclear power plants that should be reviewed?

Waste disposal:

- "Waste storage is my main concern, a very troubling legacy to leave to those who come after us. Troubling enough that the question in my mind is if the benefits of generating nuclear power outweigh the problems of a very long time frame of dangerous materials to deal with."
- "Safe and permanent disposal of nuclear waste. That the company/companies involved have the financial resources available and put in trust for the safe storage of their waste for the 500 years or however long it needs to be stored until safe for disposal."
- "The depleted by-products of nuclear power plants thirty - fifty years down the road. The cost and hazards of storing these bi-products for the lifetime of by-product."
- "The waste that we haven't got enough technology to deal with is a major issue. I don't want to pay to look after that junk for the next 1000 years or more. No one yet has convinced me of a safe way to store it. It's highly corrosive and all containers are exposed to human errors and natural disasters. We've definitely put the cart before the horse."

Ensuring safe operations (short and long term):

- "Safety regulations i.e. management and operator qualification reporting inspection."
- "Safe guard against failure. A strict and set guideline as to how things will be handled in case of a failure with the system. To protect the area and the people in the area. And also to have regulations and guidelines as to protect the surrounding environment. Going "cheap" should not even be involved as to who gets the contract or not. And should also be on a partnership with any company that receives the contract to build and/ or run the nuclear facility. NO PRIVATE CONTRACTS unless government has some interest in it."
- "Safety -leakages on site -the potential for critical mass-transportation of the waste to its final storage-where is it going to be temporarily stored etc. etc. etc. huge concerns here."
- "Safety is my biggest concern. I realize that there are standards for this but it cannot be stressed enough that one operator can cause a tragedy that will live on to haunt many generations to come."

Verbatim Responses

Environmental Impacts:

- "Environmental and health risks. To not consider long-term consequences has been proven to be a foolish strategy. It's far more costly (both through money, image, and resources) to clean up after than to take time for decision-making and to implement safeguards that may seem excessive in the short-term."
- "The most important issue is protecting the environment. The LEAST important issue is economics."
- "Environmental impact. Institute legislation that would make the penalties for safety and environmental violations the strongest in the world. Give priority to designs with the least environmental impact. i.e. least water usage."

Cost:

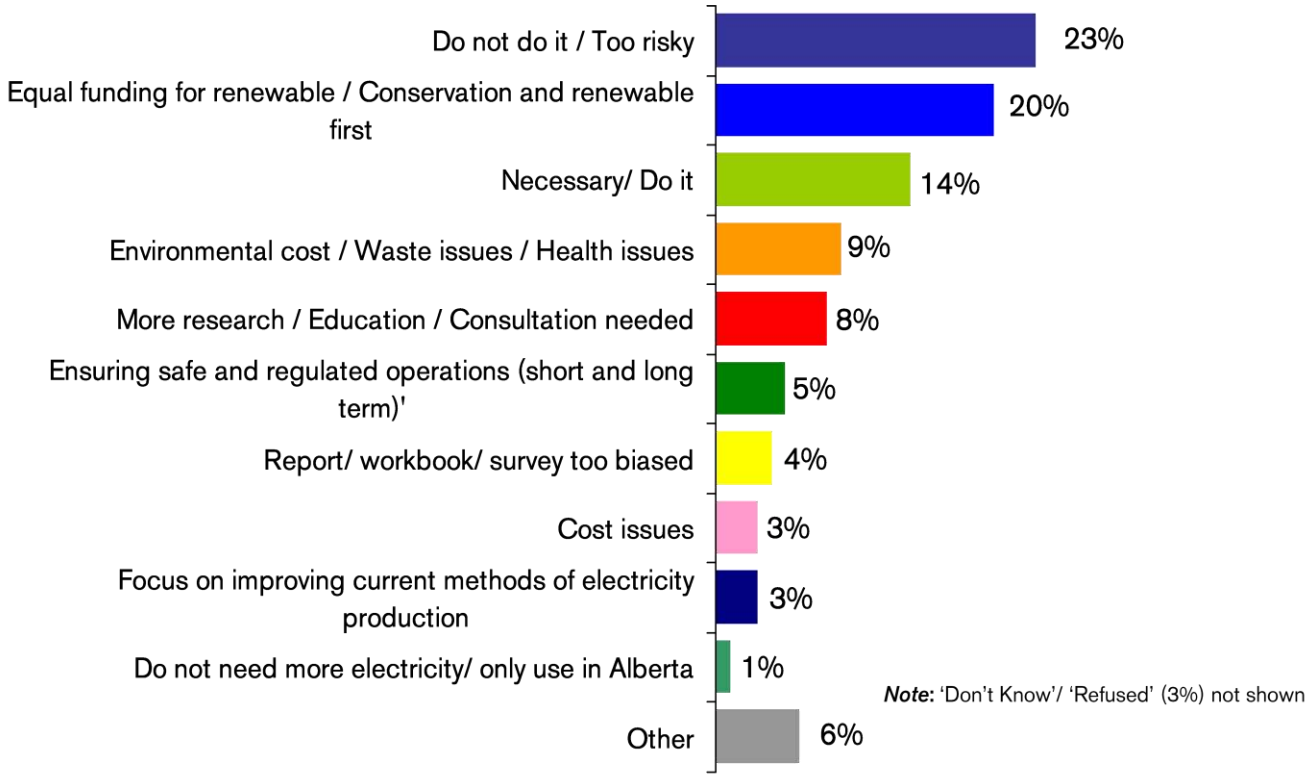
- "The total cost to the province including the eventual refurbishing/decommissioning of plants and the long term storage of waste. Also the potential impact to the economy should something go wrong with the plant. We never expected BSE and it happened so don't keep your heads in the sand about nuclear mishaps either."
- "The real $ cost and cost to the environment i.e. from uranium mining and enrichment to construction water issues storage of spent fuel and finally the eventual decommissioning of such nuclear power plants."
- "Costs borne by the taxpayer for nuclear power plants--not a single nuclear power plant outside of places like North Korea and China goes in on time or under budget."

Nuclear should not be considered:

- "The provincial government should not consider proposals to build nuclear power plants. Failure may be somewhat rare, but the consequences of those failures are disastrous."
- "Why consider this? Why not be a leader and invest in a program to put solar panels on every house and garage in Alberta. See how much that reduces the demand."
- "Alberta should be nuclear free."
- "If a Nuclear Power Plant is built; there will be more. And I will no longer want to live in Alberta. It will no longer matter what I care; or what any Albertan thinks. Once a Nuclear Plant is built it is too late to discuss the issues; the damage is done."

Additional Comments

Q **Are there any additional comments you would like to make regarding the potential of generating electricity from nuclear energy in Alberta?**



Verbatim Responses

Are there any additional comments you would like to make regarding the potential of generating electricity from nuclear energy in Alberta?

Do not do it / Too risky:

- "Yes, please do not do it. I feel helpless as a citizen and a victim of people's greed and consumer lifestyles. The writing is on the wall and we are ignoring it. So many jobs, so much revenue can be generated from sustainable energies and industries. Nuclear is not sexy, its just dumb."
- "I am totally opposed to this technology in this province, we are blessed with so many resources, and we have made some bad choices around those resources. We are dealing with the fallout from those choices environmentally, why would we import another dangerous technology? Once more, long term, safe solutions that future generations can live with."
- "I am completely opposed to introducing nuclear power in Alberta. We should not be financially underwriting this type of expensive environmentally unsound and dangerous energy source."
- "Alberta should follow the lead of B.C. and ban nuclear power plants."
- "I would move my family out of Alberta if nuclear plants were built."

Equal funding for renewable/ Conservation and renewable first:

- "Put resources into conservation first, and renewables second, and storage of electricity third. Dedicate resources to other cleaner energy generation technologies forth, and then carbon capture fifth. Nuclear should not enter the equation."
- "Simultaneously consider the advantages and disadvantages of other technologies. Develop a vision of electricity generation and use in Alberta in which we: (1) conserve more energy; (2) produce less CO2; (3) take advantage of renewable energy sources; and (4) consider risks for future generations."
- "Alberta needs to diversify from fossil fuels. Renewable clean energy such as wind and solar are best but Nuclear should be considered as well."
- "I am not at all comfortable with the idea of a nuclear reactor in my province. I sincerely hope the AB government will not consider this option & instead give renewable energy more of a boost. Help the individuals generate their own power with incentives to install solar panels conserve energy etc."

Verbatim Responses

Necessary / Do it:

- "I am supportive of Alberta relying on nuclear energy for a major portion of its future electricity needs. I would like to see nuclear energy displace natural gas as a …fuel for power generation. Natural gas should be reserved for petrochemicals etc."
- "The fact that Alberta is heavily dependent on coal for power is a dangerous situation that needs to be remedied with a realistic alternative. Nuclear power has proven itself to be such an alternative."
- "This is a safe reliable base load power source with extremely low emissions and Alberta needs this type of power source."
- "Alberta must move ahead with a pro-nuclear policy in a timely manner to allow investment to occur. Alberta must ensure a sustainable supply of Power now to meet the future needs."

Environmental cost / Waste issues / Health issues:

- "Water is getting scarcer every day. Man cannot survive without water. If shove comes to push we need water but man can survive without electricity."
- "Nuclear power is NOT a renewable cost effective safe nor clean source of energy. Additionally it will leave us with a legacy of toxic waste which continues to poison people and the planet for centuries."
- "There are examples of limited foresight everywhere resulting in disastrous environmental and health effects. Nuclear waste is far too toxic to be blinded by the money to be made. We need to think about what happens 50 to 100 years down the road when there is a significant stockpile of hazardous waste that needs to be disposed of."

More research/ Education/ Consultation needed:

- "It would be excellent to hear that the Provincial government will not be taking any stand one way or another until they have reviewed all the info available and talked to both those for and opposes to nuclear energy."
- "We need a referendum on this issue."
- "Please listen to the people and not just industry."
- "A lot of people are going to have a lot of questions. Everyone will need to be properly informed."
- "Europe has great success with nuclear energy with an excellent track record. Bring in experts from Germany Holland France etc. to speak to the Albertan's who are unaware of the success of Europe's use of nuclear energy especially within small areas near large populations."

Summary of Workbook Survey Results

- The views of 3,615 Albertans were collected during the consultation period through a voluntary survey in the Alberta Nuclear Consultation workbook. Responses were collected online and through the mail.
- Of those who completed the voluntary workbook survey during the consultation period, almost 9 in 10 said Alberta's electricity supply was either extremely or very important to the province's future.
- Respondents believed Alberta needs more power and should be self-sufficient. Two-thirds of respondents agreed Albertans will need more electricity, even with conservation and 3 in 5 said that Alberta being self-sufficient in terms of electricity was extremely or very important.
- Safety, health risks, disposal of waste and environmental issues such as water quality, air quality, land impacts, and CO2 emissions were the most important criteria for respondents when evaluating power plants. Community impacts and economic criteria were important but a lower priority. Respondents were also interested in renewable energy and long-term impacts.
- Approximately half of respondents were not convinced that Canada's nuclear industry is safe. A majority of respondents were concerned that nuclear waste was not being safely stored and about half were not comfortable with radiation levels near nuclear plants. Respondents were split as to whether Canada's nuclear industry had a good safety record, or if it needs improvement.
- Overall, about 1 in 3 said that the Expert Panel report answered all of their questions about Alberta's electricity options and nuclear energy, and 1 in 2 respondents said their questions were answered to some extent. Respondents wanted to see more information on other forms of energy, more information on waste disposal, health impacts, and cost. Some respondents believed the report was biased in favour of nuclear energy proponents.
- Over half of Albertans (55%) who completed the workbook survey during the public consultation period were opposed to nuclear proposals. Over a quarter (28%) wanted nuclear proposals encouraged and about one in six (16%) said proposals should be considered on a case-by-case basis.
- Over 9 in 10 respondents said the workbook was very or somewhat easy to understand. Most respondents said they were at least generally familiar with Alberta's electricity system and generally knowledgeable about nuclear energy.

7.0 QUALITATIVE RESEARCH PROCESS: STAKEHOLDER GROUPS

7.1 About the Stakeholder Groups

The purpose of the stakeholder meetings was to collect the range of views - from individuals representing groups and interests with unique perspectives, -as to whether or not nuclear energy is an appropriate addition to the energy options available to Alberta today. The input from the stakeholder meetings, combined with the random discussion groups and the workbooks were used to design the quantitative survey of Alberta residents.

To encourage frank and full discussion, participants were informed that they were not expected to speak on behalf of their organization and that while their comments would be reflected in the report, their comments would not be attributed to them personally.

The following stakeholder groups that accepted an invitation to participate at stakeholder meetings form June 3rd – 5th in Edmonton were:

- Alberta Urban Municipalities Association
- Alberta Association of Municipal Districts and Counties
- Alberta Chamber of Commerce
- Alberta Chamber of Natural Resources
- Athabasca Bioregional Society
- Citizens Advocating the Use of Sustainable Energy (CAUSE)
- Citizens Against Nuclear Development (CAND)
- Earth Alternatives

- Greensense
- Independent Power Producers Society of Alberta
- Peace River Environmental Society
- Pembina Institute
- Regional Environmental Action Committee (REAC)
- Sierra Club, Prairie Chapter
- Sustainable Regional Socio-Economic Development Group
- The Tipping Point Project

There was a session held on June 3rd in Edmonton with representatives of aboriginal organizations, including First Nations and Metis. As with the other stakeholder meetings, this meeting was held to collect a range of views, and participants were not expected to speak on behalf of their organizations. The meeting was held without prejudice to any claims of aboriginal title or rights, and at the request of the participants, the discussion was not recorded.

7.2 Stakeholder Findings

7.2.1 Local Government Stakeholders (June 3, 2009)

Among the local government representatives, there was consensus that Alberta needed more power:

"Definitely need the energy to be produced. Some potential for hydro dams – those opportunities should be fully explored. Does not preclude other options, such as nuclear."

"Ontario is in an energy crunch. They were desperate. We don't want to be in that situation here. We don't want to flip the switch and no power comes on…We have time to look at our options."

While stating that they were not speaking on behalf of AUMA or AAMDC, many participants were open to considering nuclear energy as an energy option in Alberta.

"Most environmentally friendly method of providing power, especially in Fort McMurray area where you are using one natural resource to produce another."

"Where there is a possibility to use waste heat, it makes sense to put the plant there."

"This is the type of industry that will help communities grow. There is a silent majority [who support it]."

"Cost of power was an eye opener. Whether it be social or economic, nuclear has good information there."

"We have lots of wind, but it's not reliable electricity. Nuclear is a viable option."

"We have to do something. Assuming no disaster from nuclear, nuclear best option for carbon."

One participant felt that Alberta should set cleaning up the oil sands as a priority before contemplating nuclear power:

"Alberta doesn't have to lead everything. We have made significant investments in the Oil Sands. Focus on what we do well while fixing the environmental impact. The government will put a lot of resources to the discussion on nuclear, but there are things around that we haven't figured out yet. We have coal, tar sands - are we going to do it well or not? The world is watching."

Meanwhile, one participant shared a concern about Alberta being at risk of depending on nuclear power and forgetting the other players in the energy mix:

"Don't put all your eggs in one basket. In Alberta, we have put our eggs one basket – coal. Diversifying our market makes sense. "

Considering nuclear power as an option, participants raised concerns about its place in Alberta's deregulated marketplace. Some participants were concerned about safety standards in a competitive environment and regulatory regimes.

"Alberta is deregulated, business cases are proven internally. If the province were to give a go-ahead to nuclear, we would have to mesh with federal regulation, which would be new to Alberta."

"If a nuclear plant is built in a deregulated market, what are some of the risks because of de-regulation? Province can't dismiss a provincial role."

"I don't want competition in nuclear. They will cut corners if there is too much competition and then you have accidents."

"Has to stay under federal control. When there is a movement of people, you have inexperience coming in and experienced leaving, we have to maintain government control. Too many variables with private industry."

"The great point is that we have input even into the guidelines they have to do. I would like to see more of what they have to do with public residents."

"When I think deregulation, the idea of competition bringing the price down is a failure. If nuclear comes in, if you want buy-in, public should see the benefits, such as lower rates."

[Another participant responded defining the benefit as *"the lights go on when the switch is flipped."]*

Some participants were concerned about the impact nuclear would have on the other alternatives in the Alberta energy industry:

"Alberta deregulated so why would they need to encourage?"

"'Encourage' indicates a preference."

"Concerns about nuclear industry having an advantage over other options."

"As an investor, I would not want to invest in any other project that only lasts until nuclear turns on."

"Hydroelectric should be the priority. Don't want to give up on other alternatives to go nuclear."

"Alberta could play a role to allow nuclear as base-load and replace coal plants as they reach the end of their life. Keep the coal running while nuclear comes on stream. We don't want them to say that we are going to shut down all the coal – that is crazy."

If nuclear energy was to proceed, participants suggested some issues worth considering:

"Safety is the biggest concern."

"Nuclear waste is a big issue. Generating for fifty years in Ontario and never heard that it's been a big issue. It needs to be highly regulated and controlled..."

"Should be competitive, affordable. Water is a big concern. Storage of waste is a concern."

"Location. Should be a site that is far away from people and not a problem for transmission lines."

"Investor driven. Government control of market conditions can lead to unforeseen consequences. Operator can change so make sure safety not overlooked. There was to be safeguards in place to make sure nothing is overlooked like safety."

"Input from ratepayers. Tough when it's in the backyard. Guidelines where proper locations should be that give a way for municipalities to be involved. Than the door is open for business."

One participant suggested that Alberta look outside its borders to purchase power at cheaper rates. Another participant disagreed with this approach.

"Look outside the border to purchase power at the cheapest rate. Saskatchewan is where the uranium is. If you are looking at rate-of-return, maybe Saskatchewan can do it cheaper because the uranium is there."

"Would be worse for Saskatchewan to build them. Don't want to rely on buying from someone else... We want Alberta to be prosperous. We need to diversify. I am in an area where towns are crumbling because of forestry, oil, and gas down. We need good paying jobs. "

Many participants wanted the Alberta government to provide direction before approaching the public with nuclear power:

"Unless you are prepared to say yes, don't allow them to propose."

"Will the government make a decision? So communities can decide whether they want it and developers can draft a proposal. The government needs to have the courage to make the decision."

"No public involvement until Alberta government can stand up and make a decision...until the government can stand up and say yes or no, this is a useless process."

The role of the municipal governments in the nuclear power consultation was discussed:

"Municipalities should have some say – it would affect their infrastructure and lives."

"Advise municipal councils of their rights concerning jurisdiction. Very confusing to the public. Public assumes we have all this authority but we don't... Don't have adequate knowledge at the municipal level... Rural communities need access to consultants to help walk them through the process."

"Municipalities should have some say. It would affect their infrastructure and their lives. Municipalities directly involved should have a special role: location, siting, infrastructure costs."

One participant drew a comparison to the Natural Resources Conservation Board, saying that the main decision should be off the shoulders of the municipalities but give them major weight to be heard.

The impact of plant construction on communities, particularly rural communities was discussed. In particular, many participants were concerned with the timing of funding support, with funding needed up front to keep pace with services.

"Keep the federal government in. Infrastructure of local communities under pressure. Federal and provincial dollars needed to get community up and going."

"Shadow population (people relocating to community) needs security and medical. Private security – town will not cover police cost. Also medical/nurses on staff. The regulators have the authority to put it within the guidelines."

"Main impact on the 'boonies': EMS, medical, homes, and related infrastructure."

While some participants talked about the need to have infrastructure funded, some said that nuclear should be treated like any other industry, and one participant said that extra costs could affect the economic viability of a plant.

References were made to Fort McMurray as an example of what not to do if and when nuclear power plants came to Alberta, among those that did:

"Fort McMurray, take a look at impacts. Where did revenue come from? What stop-gap measures are required? Local government did not have the levers, not sufficiently equipped."

"There is time to build infrastructure, whereas in Fort McMurray they did not."

There was discussion concerning public fear of the unknown and the need for public education:

"Coffee shop talk – people will jump to conclusions. Need public education process. Each side needs an opportunity to present their facts. As long as there is a balanced group."

"Public fear generated by a lack of education. Energy people have not done a good job of educating the public."

"Fear of previous incidents (Chernobyl). Nuclear is the worst type of accident. It is not an easy topic..."

"Extensive public education is going to be critical. Everyone is afraid of the few accidents that there have been."

One participant made the point that Albertans need to be educated about what happens if nuclear energy is not pursued.

"Albertans need to be educated as to consequences if we don't go with carbon friendly option."

When participants were asked by the moderator to describe a good public consultation process, the following examples were provided:

"Open houses. Do not make them technical, make them short and get them over with."

"If opposition, talk to them first. Find out where they are at and often if there are any misunderstandings, correct misunderstandings before they become full blown."

"Provincial representatives must do some heavy lifting. Heartland transmissions – went to communities one at a time. An open house at a trailer is not sufficient. Provincial members are not engaged."

"Proper notice should be given."

7.2.2 Aboriginal Stakeholders (June 3, 2009)

Representatives of Alberta First Nations and Metis organizations were invited to attend.

There was extensive discussion concerning process. The participants felt strongly that the discussion not be considered as part of the formal consultation process. Rather, participants expressed their desire for direct government-to-government consultation between their organizations and the Government of Alberta.

In accordance with their direction, the discussion was not recorded and not considered as part of the Alberta Nuclear Consultation. The Moderator agreed that any discussions would be held without prejudice.

Following this discussion, a Metis elder specifically requested that the quantitative survey reference "the sacred" and spiritual values. This request was addressed in the final survey.

7.2.3 Business Stakeholders Meeting (June 4, 2009)

The business stakeholder meeting opened with the participants discussing the province's role in the nuclear power consultation:

"I do not know if the government has a role. They have a role in policy and electricity distribution, but it (energy industry) has been market driven."

"*There is a role for government not necessarily a market role…I am not sure what the government needs to do to exercise its role but I think there is a role to establish public policy."*

"Would not want to see government to encourage or discourage. Should be a stable market. All proponents should be considered."

Participants also raised concerns about the impact nuclear power would have on Alberta's regulatory framework. In particular, concerns were raised as to how consideration of a large nuclear plant would work in the context of the new regional approval framework:

"There is a huge coordination between federal and provincial, to see who is responsible for what. The cumulative effects under the water and land use act, if a nuclear plant comes in it would have to look at special regulatory process. I do not know if there is a precedent for it."

"It will be challenging to get a regional approval framework and adding another layer of federal government will be challenging. You may end up going back to approving on an individual project."

Most participants were also concerned of the impact nuclear power would have on the marketplace:

"I wonder what would happen if you had such a huge baseload of nuclear power, and you lost it, what would it do to the system. The other thing is bringing on that much power to the market, what does that do to the market? How do we integrate into the existing system?"

"If we have a nuclear plant, we not only have to carry the cost, but we have to add reserve capacity…You have to enough spinning to cover the loss. There is one sentence in the Expert Panel that speaks of the additional reserves that will be required but it is not really explained in terms of capacity and cost."

One participant noted the effect nuclear power would have on other independent power producers:

"I think if you start looking at changing rules and market structure, that would make it more amendable to nuclear participants then that becomes a concern…If someone comes in and wants to make a multi-billion dollar investment, the market may accommodate it so it gets investment. This change may prove detrimental to other players."

Front and centre in the discussion was the cost and reliability of electricity for industrial consumers:

"[We] do not care how the power is generated as long as the power is stable. Our ultimate concern is that there is electricity from when you turn on the light switch."

"It is really a question, of how do we get to the lowest cost."

"From a business world perspective, I think we care about the lowest cost and the reliability of supply."

Overall, there was consensus that a good consultation process was key for the success of nuclear power proposals in Alberta. When participants described a good public consultation process, terms such as "open" and "transparent" were commonly used. There was specific reference to a consultation process that was seen not to work effectively:

"It has to be a simple process, do a model and test the model before jumping in with both feet. Spend some time making the process. I think you have many different departments and if you include all, you have a monster. You need a process to walk the stray dog through."

"Government ministers and premier also need to provide an even perception. If it appears that the government is in favour, than the public hearings will assume that the consultation will be a formality to validate the government's decision."

"The regulatory framework lately has been broken, for example the transmission process, because of poor consultation of the public."

"It has be open and transparent. You cannot have a repeat of the transmission fiasco. You may want to appoint a special board that deals with regulatory issues."

One participant said that public consultation processes did not accurately depict the average Albertan:

"It is not really public consultation, the people that show up are those with a special interest so it does not really depict the public…Very rarely do you have the average Joe and Jane at these meetings."

7.2.4 Regional Stakeholders Discussion Group (June 4, 2009)

A stakeholder session was held with participants representing perspectives of community members, businesses and advocates for nuclear energy, from the Peace River region.

Overall, participants believed that nuclear power plants would instigate economic growth and prosperity, and that the government should move more boldly towards taking the next steps so that nuclear energy proposals can be fully considered. Participants also believed that planning was critical to managing community impacts effectively and maximizing economic benefits.

Job creation through industrial growth was seen as a key economic benefit for the region:

"More viable businesses. Support services. Schools have been closing…How do we make our communities grow? Well, it won't happen without significant industrial growth."

"2400 full-time jobs – all communities will grow. Total 4000 megawatts for 4 reactors, every 1000 megawatts equals 600 jobs."

"Bottom line issue is we need something to kick start industrial development in our area."

Participants trusted the technology and based their confidence on Canada's track record and regulatory regime:

"Fifty years of lessons learned. I have faith in lessons learned. I have faith in technology from the 50 years so we can mitigate our risks."

"The hoops are already pretty high. Not only are they monitored by Canadian Standards but also internationally."

"Common sense. Look at nuclear record in Canada."

"We have been in business since the 1960s…The science is the science. It talks for itself."

Having said this, confidence relied on the assumption that a proven operator with a solid track record be selected to build and manage the nuclear power plant:

"The last thing we want is a slop job done with short cuts and without the right people in place."

"They have to put a good financial picture forward...We are not talking small dollars. They are going to be out in the big world having their financial statements looked at left, right and centre. They are not going to invest their money carelessly."

"Should be a good employer, good reputation."

"Need a company with a proven track record."

Concerns were raised regarding planning for the new plant. Participants questioned whether the region would have the capabilities to meet the influx of transient workers and how the community would respond.

Some of the impacts that were cited included:

"We need doctors. Work with schools about what they need to do to get a job at the plant...We need to look at the Regional needs not just immediate surroundings. For one to be strong, we all need to be strong. Rail links and transportation – build up the lines. Roads. Need for a second bridge."

"There should be a bus system to take workers to the plant from the surrounding areas."

"Government does not want to see another Fort McMurray growth pattern. A whole of communication and planning to deal with a project of this size. We have all kinds of social issues regardless of plant coming."

Participants raised the point that it was imperative to present a balanced argument about nuclear power plants to the community in order to battle the fear of the unknown. Many believed there was a misinformation:

"There has been a huge push in the negative and very little on the positive side, other than the company. The company is too close to the issue. It should come from someone else. We are really lacking a supply of good accurate information so the public can make up their mind. The public is becoming paranoid right now."

"They (public) do not realize that there are so many legal and provincial requirements to meet to maintain operation."

"Underlying fear of the known. People are afraid of change. People will look for the negatives - they don't want change."

Accountability was a reoccurring theme in the discussion, some comments included:

"Let the community have the sort of involvement and be their own watchdogs. We will make sure things are getting done the way they need to be done."

"They would have to be transparent, fines in places, audits in place, I would make sure these measures are in place."

"Certain amount of honesty and public awareness, and an avenue for the public to report any infractions or discuss what is happening to get a better handling of it."

7.2.5 Environmental Stakeholders Meeting (I) (June 5, 2009)

All participants expressed strenuous concerns regarding the government's consultation process. Major concerns included that the consultation timeline was too short and that the Expert Panel report was biased. Participants criticized the composition of the Expert Panel, stating that it did not have an environmental voice:

"Major concern is the farce of a report and the entire consultation process."

"Not bringing out all the issues."

"If you want to have an Expert Panel, consult other experts."

One participant from the Peace River explained how his organization had surveyed local residents through a mail-out survey, and stated that the vast majority of those returning the survey were opposed to a nuclear plant.

Participants said there needed to be more consultation and a longer consultation period, more public education, open meetings, all perspectives represented, and funding for groups to participate in the process. Some participants called specifically for "informed consent" of the public:

"You need at least a year. Town hall meetings. You need proponents and opponents."

"Transparent process in Europe. Inform then vote."

"The duration of the consultation process - 35 days. Do you know how many days it takes to change the license plate design– 75 days, just a license plate!"

Participants said the costs of nuclear energy were underestimated, including overruns and limited insurance coverage:

"Not informed how much it will cost taxpayers."

"They stated that the four reactors would cost $12 billion, the same reactors that were being proposed in Florida for $30 billion."

"Nothing disclosing insurance, from what I know insurance companies will not insure communities around nuclear plants."

"At the mercy of the federal government to cover losses."

"There was nothing about the extreme cost. Bruce Power says $12 billion to build; American estimates are $36 billion."

"Who's going to pay? We don't need to do this. Are we going this to feed the US?"

Participants said that the health impacts were underestimated in the Expert Panel report, citing research on elevated cancer levels and childhood leukemia around nuclear power plants, and some said that the impacts of Chernobyl were underplayed. The moderator asked participants what other health-related issues they believed were missing in the Expert Panel report:

"Dene peoples' experience with uranium mining."

"Canadian government does not acknowledge any health impacts from nuclear operations."

"Internal emitters are not mentioned."

"There is no mention of levels of tritium, Canada's level 70 times higher than Europe."

"There is no safe level of radiation."

"There are 36 different diseases from radiation, Health Canada only has four listed."

[Health impacts in Port Hope, Ontario cited]

Participants said the full chain of nuclear energy was not fully explored, including impacts of uranium mining and full estimate of CO_2 emissions:

"No mention of uranium killing ten lakes in Ontario."

"Ignores CO_2 impacts when mining, milling, shipping Uranium."

"What about the possibility of traffic accidents transporting nuclear waste?"

"Report glosses over recycling, reprocessing amount of waste."

Some participants were concerned with the impacts of nuclear power on water:

"25% more water [needed] than coal plants because they are less efficient."

"The water is very hot. Water discharge destroys habitat."

"One day we are going to need the water for agricultural, and more important things than corporate gain."

Some participants said that NAFTA and international obligations were not examined and how they may bind Canada/Alberta.

"[There are] NAFTA obligations to export energy. Those obligations can be secured by military enforcement... Another thing missing was the Global Nuclear Energy Partnership (December 28, 2007), where we have committed to importing waste where we export our uranium to."

Participants believe there should be a much stronger focus on renewable energy, including wind, solar, and biomass (in particular utilizing feedlots). Demand side management was also cited. One participant also discussed better utilization of the grid. Another participant mentioned a City of Lethbridge motion calling for an Expert Panel on Green Power.

"All energy options need to be reviewed. Southern Alberta is blessed with wind and sunny days. Alberta is being pressured by the nuclear industry. We can't blame any industry for wanting to expand their markets, but as an energy buyer we need to consider alternatives to make a proper decision... Until we are absolutely certain that renewables cannot meet the energy options, the government has not done their due diligence."

"Germany produces more wind power than Alberta. Biomass can fill in wind intermittency. Nuclear does not fit in with clean projects. It sucks up all the money that should go towards these green projects."

"Wind, solar. Should be doing biomass (feedlots)."

"We have an industry called feedlot alley. Utilize waste."

"Demand-side management. Can get 10-15% of what you need."

"We can trade power with BC. Look east/west instead of north/south."

"Need to spend on offline storage. Pump air into the ground (empty gas wells)... Large scale batteries. Ultra capacitors."

"Distributive generation. Localizing the grid system. Don't lose electricity through transmission."

Participants believed there were moral and ethical issues concerning nuclear energy, such as leaving their children and grandchildren with the obligation of storing nuclear waste.

"It seems incredibly selfish. Dumped on the future. Children get the waste. We have such a short-term mindset."

"Not fair to my child to take the risks. Health. Environmental. Cost. Not self-sustaining, not cost-effective."

"Nuclear has only been around 50 years, don't know all its effects on the generations, as it has only been around two generations."

7.2.6 Environmental Stakeholders Meeting (II) (June 5, 2009)

Participants were very critical of the consultation process, the timelines, and the composition of the Expert Panel, in particular, they stated that there was not an environmental voice represented.

"Timeline of the consultation was too short [compared to other provincial consultations]."

"Many individuals dismissed this as an important activity because it was not readily available."

"Many rural people not on high-speed Internet."

Participants took issue with the content of the Expert Panel, areas they felt were not comprehensively studied, and how the report framed the issues.

"The whole way the panel report is framed by comparing energies and nuclear is not the right approach."

"Leading information that makes you believe that nuclear is ahead of renewables."

"Expert Panel had glaring gaps of analysis and environmental impacts."

"Why is there nothing on tritium and other radiation health effects from nuclear?"

"If it's a debate about electricity, let's have it. Expert Panel review of renewables was insufficient to warrant an open dialogue on electricity generation in the [consultation] process."

"Problem with the original question. It should be: 'What is the best way to meet Alberta's future electricity needs?'"

Some participants queried the role of the Idaho National Laboratory in the research, stating that they have a conflict-of-interest in favour of developing nuclear energy. Other participants expressed concern over the workbook survey, questioning why participants were being asked how familiar they were with nuclear issues and suggesting that some participants would be intimidated. [*The moderator explained that questions measuring one's knowledge of the issue were designed to understand the public's level of engagement on electricity and nuclear energy issues. The moderator accepted the concern and advised that knowledge questions would be put in a different order in the quantitative survey of Alberta residents that followed stakeholder consultations.]*

Participants also expressed a concern that support for nuclear was being driven by survey questions about climate change.

"Concern that those who say CO_2 is important is 'yes' to nuclear."

Participants offered ideas on what makes for a good consultation process. They said the key elements are time, dissemination of information, public involvement, and public hearings.

Participants cited specific reports and issues that they believed were not addressed in the Expert Panel report. Reports and information cited included (participant comments included):

- Pembina Institute study on renewable energy in Alberta
- KiKK report (Germany): *"Increase of … leukemia… other cancers for children under 5 within 5 km, and problems up to 70km from plants."*
- Sellafield, UK: *"One of the most contaminated areas in the world, just as polluted as no-go Chernobyl zones. Impact on the Irish Sea."*
- Japan earthquake, 2007: *"Japanese nuclear plant shut down for 2 years from earthquake damage. Evidence shows that the increase activity in oil sands leads to induced earthquake zones, which may not knock down the plant down but who knows 50 years from now."*
- Tritium report, Ontario, 2007

[Participants provided additional materials following the consultation meeting: 'Human Health Implications of Uranium Mining and Nuclear Power Generation' by Dr. Cathy Vakil and Dr. Linda Harvey, and 'Nuclear Power in Alberta: An Alternate Perspective' by CAUSE – Citizens Advocating the Use of Sustainable Energy]

Concern was expressed over the impact of nuclear power on renewable sources of power, and on the distribution system. Some participants stated 'big' baseload power is not needed.

"If Ontario decides to proceed with nuclear, they will push renewables out of the mix"

"Will stop the spread of renewables."

"[Expert Panel report] suggests that the only option is baseload plants rather than offering options for a sustainable future… European countries have 35% wind power. We have the resource to exploit. Spread it out, it's not being exploited."

"Big baseload precludes small renewables."

"Geothermal has transferable skills from oil and gas drilling abilities. All they need is a bit of money to develop."

"We took the AESO forecast and found that we could still meet the electricity needs. We put nuclear at the bottom end of the desirable forms of energies because it has not been economic, reliable, presents risks to humans and environment, life cycle and operation has problems..."

"When it goes down, it really goes down."

One participant discussed the connection between nuclear energy and the oil sands:

"I think it is in the public mind that there is a connection between oil sands and nuclear power, but there is no real proposal for suitable nuclear-oil sand operation. It is good that consultation did not further perpetuate this thought."

Participants wanted to see a more comprehensive analysis of the economics of nuclear power, liability, and impact on insurance.

"Economics of nuclear power are significant concerns... What are the costs of generation? Decommissioning? Waste management? Is there a reactor that exists without significant government subsidy – no."

"Moody's Investor Service estimates three times the cost of Bruce Power estimate. [Nuclear plant under construction in Finland] is 70% over budget."

"Expert Panel report gives illusion that the provincial government will not have the financial liability."

"CANDU wants overrun protection."

"No private business is going to be around the amount of time the waste will be around."

"No indication that homeowners get insurance... what would we as a homeowner get?"

Participants disputed the benefits of nuclear fuel re-processing, claiming that it leads to more radioactive waste that is more dangerous and difficult to store.

Some participants discussed concerns over impacts on water.

"Glacier that feeds the North Saskatchewan River is melting... Water[at proposed nuclear plant] will go up in steam."

"Can't tap much more out of Athabasca because of impact on oil sands."

Some participants said they were not against nuclear for other applications, such as medical isotopes, university research, and nuclear submarines.

Participants spoke to the issue of the long-term storage of waste and potential for accidents.

"Should not be [leaving] a risk for grandkids."

"Don't want future generations to end up with nuclear waste."

"There is not true geological storage in Canada... Americans have scrapped Yucca Mountain storage. No one has safely neutralized or stored the waste."

"Nuclear power creates unique risks. Other industrial accidents are confined. People make mistakes. Can't afford to make mistakes in nuclear."

APPENDIX:

Random discussion group flip chart exercises

Exhibition A: Edmonton - Group 1		Exhibition B: Edmonton - Group 2	
Issue	**Vote**	**Issue**	**Vote**
Environment	7	Health Impacts	5
CO_2		Air Quality	2
Wildlife		Radiation Exposure	1
Water	1	Noise	
Air Quality		Environment – Mining, Soil Contamination	3
Resource Depletion	1	Price – Construction & Operation, Pay for Itself	1
Health Issue	3	Dependability – Shut downs, is it running effectively in long haul, fuel availability	1
Land Impact		Availability of the Resource	
Cost Efficiency	2	Will the federal government regulate cost	1
Waste – Environmental Impact/Where it is stored	7	Location/Safety	4
Safety	3	Waste	1
Reserves –long term viability		Land Impact	
Appropriate Regulation – standards/accountability	2	Regulation	1
Training	1	Community	
Community Impacts		Worker Pension & Benefits	
Locations		Health Impacts	5

Pros	Cons		
Cleaner vs. Fossil	Greater fall out if problems	More efficiency	Radiation
Cheaper	Longer term risks	Reliability	What evidence from Ontario
Safer vs. Coal Everything Contained	Where foes the radiation go	If it goes right less impact on environment	Waste last a long, long time – impact on future
Jobs	Water – impact on watershed, quality	Smaller footprint e.g. No coal mines	Impact on workers
	Can we trust government?	Good availability of fuel	Safety
Transportation of Waste & Transparency – Not Pro or Con			Fear
			Cost

Exhibition A: Rocky Mountain House - Group 1	
Issue	**Vote**
Environment	7
Available Resources	
Water	2
Net Cost/Price	3
Health	6
Impact on other industries	
Reliability	3
Disasters (Worst Case)	
Safety	4
Waste	3
Impact on Land	2
Community Infrastructure/growth	
Terrorism	

Exhibition A: Rocky Mountain House - Group 2	
Issue	**Vote**
Environment	6
Air – CO_2	1
NOx & SOx	1
Water	2
Consumer Cost – Taxes	1
Health	3
Location	2
Safety	6
Waste	4
Efficient Use of Resources	
Exporting Power	
Ownership	1

Pros	Cons		
Inexpensive	Meltdowns – Disasters (Worst Case)	Energy Output	No Storage – Permanent
Jobs	Potential Impacts on Water	Baseload	Radiation
Land Footprint	Waste	Canadian Standard	High risk when something goes wrong
CO_2 Emissions	Radiation	Minimal NOx & SOx	Long Term Effects
Dependable	Non Renewable		
	Front-end Cost		
Ownership (not a pro or con)	Influence of one company		
	Environmental Impact		
	Health – Reproductive		

Exhibition A: Wainwright - Group 1	
Issue	**Vote**
Environmental impacts	4
-water	2
-air	1
-co2 emissions	2
Safety	4
Sustainable balance	
Cost	3
-supply of resources	
-transportation of resources	
Waste storage	6
Fear	1
Emergencies (war)	1
Supply of power	
Regulation – stringent	

Exhibition A: Wainwright - Group 2	
Issue	**Vote**
Environment	
-Is it renewable?	3
-wildlife	1
-impact on land	1
-water	2
-air quality	2
-particulates	
Waste	2
Safety	5
Security	1
Health	5
Accidents	
Economic jobs	2
Planning (handling growth)	
Stable supply	1
Cost	1
Aesthetics	
Location	1
Regulation (how stringent)	

Pros	Cons
Cheap power	Waste storage
Jobs	Terrorism
Reliable power	Impact on water
Uranium supply	Nuclear accidents
Lower co2/ emissions	Cost of construction
	fear

Pros	Cons
Economic	Health
Jobs	-disasters
Cleaner air	Safety
Cost of energy	-security
	Impact on water
	Storage of waste
	Economic
	-expense to tax payer
	Public opinion/fear

Exhibition A: Taber - Group 1	
Issue	**Vote**
Environment	5
CO_2	4
Land	
Animal Habitat	3
Impact on people	4
Cost Capital	
Cost Operations	
Price	2
Safety	4
Health	
Jobs/Economic	3
Waste by-product/storage	6
Toxicity	1
Location	1
Security	
Reliable Power	3

Exhibition A: Taber - Group 2	
Issue	**Vote**
Emergency Plan	
Safety	6
Community	2
Pollution	4
Radiation	
Worker Safety	
Water usage and reuse	2
Waste	
Availability of Resources	1
Transportation of Resources	
Health	8
Wildlife	
Air Emissions	
Marketable By-products	
Workforce Availability	
Workers suitable to Alberta's weather and environment	1
Cost/price of energy	2
Regulatory	2
Operator - Track Record	
Reliability	1
Lifespan of the plant – can it be updated?	
Decommissioning of plant	
Aesthetics	
Environment	1

Pros	Cons
Canadian Track Record	Chernobyl – meltdown
Cost	Safety
Close to the uranium, unlimited	Potential for going wrong
Low impact on Air, Land	Length of time to dispose
Decrease smog = better heath	Radiation – long term accumulation
CO_2	Know-how
Monitoring? Who regulates?	Psychological Discomfort
Who is in charge?	Lack of Knowledge
	Cost
	Unknown Impacts
	Impacts of Growth
	Security

Pros	Cons
CANDU-trust	Waste – 1000 years
Cheap power	Construction Cost
Jobs - $	Availability of Workers
No CO_2	Trust – FEAR
Economic	Radiation
No NOx and SOx	Disaster Impacts
Reliable	Use of Water
Life Span	Impact on Water/Fish
	Conventional "steam"
	Privately owned – what happens if bankruptcy?

Exhibition A: Medicine Hat - Group 1	
Issue	**Vote**
Environment	8
Cost	1
Reliable	4
Health	3
CO_2	1
Location	
Waste	6
New ways to use power	1
Fuel supply	1
Infrastructure	1
Wildlife	1
Security	
Aesthetics	

Exhibition A: Medicine Hat - Group 2	
Issue	**Vote**
Amount of Supply	
Water Use	2
Environmental	7
Industrialization	1
Private Ownership	1
Waste	
Long term plan	1
Regulatory Plan	1
Habitat	1
Ecological	1
Location	
Cost – Plant & Consumers	
Health Impacts	7
Jobs for Albertans	1
Economy	1
Renewable	3
Future demand	3

Pros	Cons
Jobs	Waste storage – length of time
Reliable	Health
Low CO_2	Will regulations be followed?
Lifespan	Serious consequences if something goes wrong
Industrial uses	Water
Reduce demand for gas	Limited options for location
Cheap	Fish impacts
	Supply of uranium cost?

Pros	Cons
Uranium Supply	Environment – Mining
Health – better than living next to coal plant	Health – radiation
Cheaper	Waste – lack of long term plan
Jobs	Regulation
Produces a lot of power	Use of Water - aquatic impacts
CO_2	Regulatory oversights
	Private ownership
	Worst case scenario

Exhibition A: Calgary- Group 1		Exhibition A: Calgary - Group 2	
Issue	**Vote**	**Issue**	**Vote**
Cost to Consumer	5	Safety	6
Environment (sound, visual, water, land)	8	Health	2
CO_2		Environment	
Safety – Public & Workers	5	Water	3
NOx/SOx (air)		Air – particulates	2
Reliability	2	Vegetation	
Economic – Jobs		Biodiversity/Habitat	2
Developing Emerging Technology – use one type to support the other		Cost – Price/Capital	1
Renewable – supply of resource		Net Benefit	
Waste	1	Self Reliance	
Security	2	Lifespan of Plant	
Health	3	Infrastructure	1
		Location	
		Capacity (generation)	3
		Economic/Jobs	
		Sustainability	1
		Financial Impact to Albertans	
		Who benefits?	
		Impact on Conservation	1
		Waste	5

Pros	Cons	Pros	Cons
Canadian System (security, safety and waste -relative to the US)	Radiation – disaster, worst case scenario, day to day	CANDU Technology	Waste Disposal
Clean	Terrorism/Security	Price to Consumer	Water Usage + Discharge
Cheaper	Waste Disposal	Consistent Capacity	Accidents/Safety
Reliable	Up Front Cost (Risk)	Clean – CO_2	Impacts of Construction
Jobs	Business Failure, Assumed Liabilities ($/Environment)	Reduce Reliance on Fossils (oil sands)	Image Problem
Supporting Canadian Technology	Poultry eggs in 1 basket	Learning has benefits	Lack of Familiarity with nuclear in AB
Available supply of uranium	Water usage – heated water, impact on ecosystem	Supply	Supply
Smaller land footprint	Still learning	Regulation	Regulation
			Concern with focus on oil sands
			Prompted - security

Exhibition A: Fort McMurray- Group 1	
Issue	**Vote**
Health of Community – public opinion	6
Water quality	1
Air quality – acid rain, nox, smog	
CO_2 – global warming/climate change	1
Living conditions	2
Influx of workers	
Roads	
housing	
health	
Safety	5
Location – is it feasible?	
Made in Canada	
Environment	5
- destroying trees	
- land impact – space	
- wildlife and habitat	
Waste	1
Job and economic impacts	2
Where is electricity going	
Electricity productivity	1
- east	
-what can government make	
Appropriate regulations	2

Exhibition A: Fort McMurray - Group 2	
Issue	**Vote**
Environment – Climate Change	7
- Air (smell, ozone)	1
- Land – can we use it again – grow food	2
- Water – can we drink it	1
Fish/wildlife	
Safety – long term side effects, deformities, lungs	
Health issue	5
- Cancer e.g. Fort Chip	
- Radiation poisoning	
- fertility	
Cost (funds, grants, how do you guarantee returns)	1
Impact on labour pool	2
Appropriate regulation	4
Location (NIMBY, aesthetics, impact on other projects)	4
Waste (long-term)	1
Community	2
- roads	
- pollution	
-shops /hospitals	

Pros	Cons
Cleaner than coal	Radioactive waste
More efficient	When it goes wrong it really goes wrong
Availability of fuel	Uranium mining
Low emissions	Expensive to build
More employment	Time consuming
Good pay	Fewer transportation
Waste relatively small	Jobs
Less carbon emission for transport	Environmental destruction
	-water

Pros	Cons
Jobs	Waste (long term)
Clean	Accident
Lower cost	Impact of mining
Made in Canada if CANDU	Safety
Self sufficient	Long term side effects (uranium city)
Will need it	Worry – psychological impact
Experience	Contamination
Spin off industries	Can buy from BC
	Supply of uranium
	Why not pursue geothermal?
	Medical support if accident

Exhibition A: Peace River- Group 1	
Issue	**Vote**
Health	6
Pollution	
Air quality – smog	
Water quality, impact on fish	
Co2	
environment	8
- impact on fish and wildlife	
- water loss – impacts on agriculture	
-erosion	
- impact of mining	
Community Impact	2
-influx of people	
- infrastructure	
- social program/ health	
- housing	
Jobs	4
Cost	1
Safety	5
- earthquakes	
Who benefits/uses the power	
Waste	6
- where will it be stored?	
- impact on environment	
- R& D	
Location	
Regulation	1
Decommissioning	
Education	

Exhibition A: Peace River - Group 2	
Issue	**Vote**
Safety	5
- people in the area	
- workers	
Environmental Impact	4
- noise	
- water (consumption/contamination)	
- air quality (smell, particulates, NOx and SOx)	
CO_2	
Landscape	
Wildlife	
Appearance	
Waste	3
Cost	
- price of power	
- social cost (infrastructure, clean-up, social programs)	1
Community impacts	2
Jobs	
Long term viability	
Health	3
Regulation	3
Location	

Pros	Cons
Green	Waste
Cheap	What if an accident
Costs	Non-renewable fuel
Jobs	Unknowns
	Transients (don't care, crime)
	Aesthetics
	Water impact
	More demands on community service

Pros	Cons
Better for environment	If it goes bad, it's very bad
Cost	Waste
Jobs	No long term storage
Highly regulated (strict)	Local negative impact on water and wildlife
Small site	
Economic impact	

Exhibition A: Whitecourt- Group 1	
Issue	**Vote**
Who benefits	
Storage /waste	3
Environment	5
-water (temperature, mercury, emission, impact on flow)	1
-animals (food chain, habitat)	
-air (particulates, acid rain, nox/sox, co2 climate)	1
Health	4
-lung disorder	
-cancer	
-birth deformities	
Radiation	
Community impact	4
-temp workers	
-camps	
-crime/drugs – more police	
-ghost town	
-local people hired/training	
Economic benefits	1
Safety	3
-infrastructure	
-health	
- emergency response/evacuation/warning	
Terrorists	1
Government guarantee/accountability (e.g. Health)	
Independence	
Cost	1

Exhibition A: Whitecourt - Group 2	
Issue	**Vote**
Impact on people (now and in future)	4
-health	2
-safety	
-jobs	1
Environment (air, co2, climate)	7
-water	
-land	
-animals	
Cost (who pays if deficit)	4
Waste	2
Education (e.g. if accident)	
Security	
Accidents	
Neighbors (avoid people, listen)	1
Property price	
Long term financial viability	
What happens if proponent goes broke	
Appropriate regulation	3
Resource depletion	1
Community	
-systems set up	
-crime	
-schools	

Pros	Cons
Safety	Storage of waste
Cost	Something goes wrong, it really goes wrong
Jobs	Scary
Reliability	
Low c02	
Can be connected	

Pros	Cons
Jobs	Waste
Money in community	Environment (global warming)
Low co2 (better for environment)	Health (cancer, birth defects)
Efficiency	Site impact
cheaper	Waste in river
	Leak, erosion, waste fuel
	Start-up cost
	Ongoing cost
	Bad accident (screwed forever)

Exhibition A: Grande Prairie- Group 1	
Issue	**Vote**
Land	
Environment	7
-impact on food chain	
-water	
-water pollution	
-water evaporation	
-diversion, impact downstream	
-wildlife	
-noise	
-c02	
Impact on other uses/loss of farmland	
Logistics	
-transportation	
Security/terrorism	
Depletion of resource	2
Location	
Private sector – commitment	
Regulations	1
Health	8
Infertility	
Birth defects	
Cancer	
Operators	3
-quality	
-safety/cutting corners	
Waste	6
-impact on soil	
Smog	
Community impacts	

Exhibition A: Grande Prairie - Group 2	
Issue	**Vote**
Environment	7
Tree	
Water – quality	1
Wildlife (acid rain, soot)	
Air quality – NOx and SOx	
Green house gases	
Health	6
-birth defects/ fertility	
- cancer	1
- respiration issue	1
Cost – amount, over pricing	1
Dependability	1
Long term fuel supply	
Resource extraction	
Fuel use	
Waste	2
Job creation	1
Safety/compliance	6
Noise /aesthetics	
Infrastructure	2
-housing, roads, hospitals, schools, poor service	
location	1

Pros	Cons
Less emission	Waste storage (stuck forever)
Steady	Might be something better (ie. Wind)
Cheaper	What we don't know
Better than coal	Fear of what if
Not reliant on other nations	Catastrophic
Employment	Radiation contamination
Health of communities	Lack of knowledge
	Better as backup

Pros	Cons
Job creation	Lack of disposal
Cheaper – economic benefit	Lack of a plan
Less radiation than coal	Heated water
Lower CO2	Accidents
Dependable	Catastrophic
Health by-products	Lack of knowledge in public
	Cheaper to refurbish than shut down
	Transitory