# PROJECT PIONEER

## ALBERTA AND LOCAL COMMUNITY PERCEPTIONS OF CARBON CAPTURE AND STORAGE (CCS)

## NON-CONFIDENTIAL EXECUTIVE SUMMARY – 2011 POLLING RESULTS

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## ABSTRACT OF THE PROJECT

Project Pioneer will be one of the first carbon capture and storage (CCS) projects to utilize an integrated approach for CCS, and is expected to serve as a prototype for the long-term, commercial-scale application and integration of CCS technologies to achieve reductions in greenhouse gas emissions. The partners in Project Pioneer are TransAlta Corporation (TransAlta), Capital Power L.P. (CPLP), Enbridge Inc. (Enbridge), the Alberta provincial and Canadian federal governments, and the Global CCS Institute as a Knowledge Sharing Partner.

Project Pioneer is being proposed to capture 1 million tonnes of carbon dioxide ($CO_2$) annually from a coal fired power plant and transport the $CO_2$ by pipeline to a sequestration field or to be utilized for enhanced oil recovery (EOR) in a depleted oil field.

The key components of Project Pioneer are:

- Carbon capture facility (CCF)
- Pipeline from the CCF to the Sequestration Field
- Pipeline from the CCF to the EOR site
- Saline formation sequestration field

The Carbon Capture Facility (CCF) portion of Project Pioneer will be retrofitted onto the Keephills 3 coal-fired power plant. Keephills 3 is located approximately 70 km west of Edmonton, Alberta and is jointly owned by TransAlta and Capital Power.

The CCF will treat approximately one third of the flue gas from Keephills 3 and will capture approximately 1 million tonnes of $CO_2$ annually. The $CO_2$ will be compressed and transported by pipeline to a sequestration site to be injected approximately 2 km underground into a saline formation known as the Nisku Formation. A pipeline will also be built to transport the $CO_2$ to the primary EOR target, the Pembina oilfield, where the $CO_2$ will be injected and used for enhanced oil recovery and stored permanently underground. The Pembina oilfield is approximately 80 kms southwest of the Keephills 3 facility.

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## INTRODUCTION TO THE POLLING ACTIVITY

In partnership with Shell Canada, TransAlta commissioned Ipsos Reid to conduct research with Albertans regarding Carbon Capture and Storage (CCS). The specific research objectives included:

- Measuring the issue agenda;
- Profiling views on and desired actions/outcomes for the environment;
- Determining awareness, knowledge, and viewpoints on CCS;
- Establishing the relative importance of CCS;
- Exploring best forms of education on the subject;
- Determining awareness, knowledge, and viewpoints on Project Pioneer; and,
- Understanding the most effective channels and approaches to communicating on CCS and Project Pioneer.

A total of 1,600 telephone interviews were completed for this study. 800 interviews were conducted with a random and representative sample of adult Albertans living across the province with 400 interviews conducted specifically for TransAlta with residents in the Keephills 3 area and 400 interviews conducted specifically for Shell.

The margins of error for this study were +/- 3.5% 19 times out of 20 for the Alberta General Public sample and +/- 4.9% 19 times out of 20 for Shell or TransAlta Community samples.

The interviews were conducted from August 4th through 14th, 2011. The average interview length was 20 minutes.

Those who worked for or lived in a household with someone working for either TransAlta or Shell, an advertising, public relations, or communication agency, or the media, were excluded from this study.

# 2.0

## TRANSALTA CARBON CAPTURE AND STORAGE STUDY – ALBERTA SUMMARY

### Findings

Respondents were asked specifically to indicate their level of concern about climate change. Just over one third (36%) of Alberta respondents said climate change was a very urgent or urgent concern for them personally. Although within the margin of error, it is worth noting this finding represents a decline from the 39% recorded in 2010. The percentage of respondents who said climate change was a not very or not at all urgent concern for them personally increased from 28% in 2010 to 32% in 2011.

### Awareness of CCS

Respondents were asked what new technologies would soon be used to reduce carbon dioxide emissions in Canada. Carbon capture and storage was mentioned most often (21%), followed closely by alternative energy (19%), and environmentally friendly cars (16%) on an unaided basis. Those respondents who did not mention CCS were then asked if they had heard of CCS – over half (55%) said yes. When unaided and aided awareness were combined, the total level of CCS awareness among Albertans was 65%.

Those respondents who were aware of CCS (either aided or unaided awareness) were then asked what is CCS? The most frequently mentioned response (53% of respondents) said it is storing $CO_2$ or carbon underground with 41% saying it is capturing carbon before it is released into the air and 20% indicating specifically that CCS involves pumping $CO_2$ into underground caverns.

Just under two-thirds (64%) of Albertans who were aware of CCS indicated they strongly or somewhat supported the use of the technology.

The technology/process of carbon capture and storage was explained to all respondents who were then asked to name what they consider to be the main benefit of CCS. Equal mention was made of the reduction or removal of $CO_2$ emissions (23%) and the prevention of $CO_2$ from entering the atmosphere (23%) as the main benefit. Respondents were also asked to indicate what they consider to be the main concern or drawback of carbon capture and storage. Potential leaks or ruptures (22%), the cost of CCS (17%) and the possible unknown long term effects of CCS (13%) were the most frequently cited worries.

### Prioritizing and Supporting CCS

Just under eight-in-ten respondents (79%) indicated that CCS should be a top priority of companies that produce energy and just over seven-in-ten (71%) said that CCS will benefit Canada.

Two-thirds of respondents (66%) believe that CCS is part of a long term solution to protecting the environment with virtually the same number (65%) saying both that CCS is a good way to balance economic development and protecting the environment and (64%) that it will have a very positive impact on the environment.

Six-in-ten respondents said that CCS should – in part – be supported by funding from government (61%) and that CCS should be a top priority of government (60%).

When asked specifically about the economic benefits of CCS, nearly eight-in-ten (78%) of respondents believe CCS will create jobs and bring other benefits to the economy and three quarters (76%) view the technology as allowing Canada's energy companies to continue their activities while still reducing carbon dioxide emissions. Respondents were also asked for their views on some particular environmental benefits of CCS. Over half (54%) agree CCS can be implemented more quickly to benefit the environment than other potential technologies and just under half (48%) say that using CCS will make it less likely that Canadians will have to significantly change our lifestyles in order to reduce $CO_2$ emissions.

## CCS & Other Energy Infrastructure

More than half (55%) of Alberta respondents believe that the potential safety risks of a CCS facility are about the same as is the case with other energy infrastructure in Canada such as oil and gas wells, oil and gas pipelines, electricity generation plants and electricity transmission lines. Among the remaining respondents, the number who believe there is more safety risk (18%) is little different from the number who say there is less safety risk (21%).

## Interest in Learning About CCS

The study showed strong interest in learning more about how CCS is being used in Canada. Fully seven-in-ten respondents (71%) said they would be interested in learning about the use of the technology in our country.

## Project Pioneer

Respondents who were previously aware of Project Pioneer were asked what they had heard about the project. Knowledge was limited with 14% saying the project was being started, 9% indicting they had only heard the name, 7% having heard something about the project via the media and 7% saying the project will capture $CO_2$.

More than two-thirds of Albertans (68%) who were aware of Project Pioneer indicated they strongly or somewhat supported the project. The reasons mentioned most often for supporting the project were because Project Pioneer is a good idea (23%), that it will prevent $CO_2$ from entering the atmosphere (10%) and that it is good for the environment overall (10%). Please note the base size of supporters in this question was 40. The reasons cited most often by these respondents for their lack of support for Project Pioneer was because the respondent disagreed with the concept of CCS (29%), that it doesn't address the bigger/long term problems for the environment (24%) and the role of government in helping to fund the project (24%). Please note the base size of those who do not support the project in this question was 17.

Project Pioneer was explained to all Alberta respondents who were then asked for their views on the project. Just under eight-in-ten (79%) said that Project Pioneer will benefit Alberta and nearly three quarters (72%) believe Pioneer specifically is a good way to balance economic development and protecting the environment. Seven-in-ten (69%) expect the project will have a very positive impact on the environment and more than six-in-ten (63%) said that they personally support Project Pioneer.

The main reasons cited for supporting Project Pioneer were because it is a good idea (23%) and it is good for the environment (21%). The major reasons given for not supporting Project Pioneer were because these respondents disagree with the idea of CCS (19%), believe it doesn't deal with the bigger problems for the environment (16%) and are concerned that CCS uses unproven technology (10%).

### Coal Based Electricity Generation

Three quarters (75%) of Alberta respondents would support expanding the use of coal in Canada if using CCS meant it would have no more impact on the environment than other ways of producing energy. Six-in-ten (60%) agreed with a more general proposition that if CCS was used to reduce carbon dioxide emissions, they would personally support expanding the use of coal in Canada to address our growing energy needs.

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## TRANSALTA CARBON CAPTURE AND STORAGE STUDY – COMMUNITY SUMMARY

### Findings

One of the objectives of this research was to have a better understanding of which issues residents considered important to their local community. Those living in the Keephills 3 area indicated the economy was the most important issue for their community. This was mentioned by 16% of respondents. Following closely behind were concerns about safety (14% total – crime, policing, public safety), healthcare (12%), jobs/unemployment (9%) and education (9%). Environmental concerns were mentioned by 7% of respondents.

Respondents were asked specifically to indicate their level of concern about climate change. Just under a third (31%) of Keephills 3 area respondents said climate change was a very urgent or urgent concern for them personally. This result is effectively unchanged (within the margins of error) from the 30% recorded in 2010. On an Alberta wide basis, those saying climate change is a very urgent or urgent concern fell from 39% in 2010 to 36% in 2011. The percentage of respondents who said climate change was not very urgent or not at all urgent increased for both Keephills 3 area respondents (38% to 43%) and Alberta residents overall (28% to 32%).

## Awareness of CCS

Respondents were asked what new technologies would soon be used to reduce carbon dioxide emissions in Canada. Carbon capture and storage and environmentally friendly cars were the two technologies mentioned most frequently by Keephills 3 area respondents. Each was cited on an unaided basis by 20% of those queried. The broad category of alternative energy (wind, solar, geothermal etc) was mentioned by 15% of survey participants. Respondents who did not mention carbon capture and storage were asked next whether they had heard of CCS prior to participating in the survey research. Just over half (55%) of Keephills 3 area respondents indicated having heard of carbon capture and storage prior to the study – the same finding as was recorded for all of Alberta. When unaided and aided awareness were combined, the total level of CCS awareness among Keephills 3 area respondents was 64%. This was a decrease (within the margin of error) from the 68% measured in 2010.

Those respondents who were aware of CCS (on either an aided or unaided basis) were then asked what is carbon capture and storage. The most frequent response (49%) said the technology stores $CO_2$ or carbon underground (just over half (53%) of Albertans who were aware of CCS said the same). And, of those living in the Keephills 3 are who were aware of carbon capture and storage over half (58%) strongly or somewhat supported the use of CCS. This was a decline (also within the margin of error) from 61% support in 2010.

The technology/process of carbon capture and storage was explained to all respondents who were then asked to name what they consider to be the main benefit of CCS. Just over one in five (21%) said reducing or removing $CO_2$ from the atmosphere was the main benefit of the technology. Nearly the same percentage (20%) said the main benefit was prevention of $CO_2$ from entering the atmosphere. Respondents were also asked to indicate what they consider to be the main concern or drawback of carbon capture and storage. Potential leaks or ruptures (22%), possibly unknown long term effects of CCS (18%) and the cost of CCS projects (13%) were the most frequently cited worries. These results were similar to those of all Alberta respondents.

## Prioritizing and Supporting CCS

Nearly eight-in-ten Keephills 3 area respondents (79%) agree that using CCS will allow energy companies in Canada to continue their activities while still reducing carbon dioxide emissions and three quarters (76%) believe using the technology will create jobs and bring other economic benefits and (75%) that CCS should be a top priority of companies that produce energy.

Just under six-in-ten (58%) said they would personally support the development of CCS projects in their own community with virtually the same percentage indicated that CCS should be a top priority of government (57%) and should in part be supported by funding from government (57%).

Looking at other expected benefits of carbon capture and storage, over half of Keephills 3 area respondents indicated that CCS will help to increase the amount of oil and gas that can be produced in Canada (55%), that CCS can be implemented more quickly to benefit the environment than other potential technologies (52%) and that using CCS will make it less likely that we will have to significantly change our lifestyles in order to reduce $CO_2$ emissions (52%).

## Project Pioneer

All of the Keephills 3 area respondents were asked specifically if they had heard of Project Pioneer – 16% said yes. When asked what they had heard about the Project Pioneer, 23% of those aware said they had only heard the name, 22% said the project had started, 19% said the project was to capture $CO_2$, and 16% said it was funded or supported by the government.

Just over six-in-ten (61%) of the Keephills 3 area respondents who were aware of Project Pioneer said they strongly or somewhat supported the project. This finding was virtually identical to the 62% support recorded in 2010. When looking at the Alberta population, 68% of those who were aware of Project Pioneer supported the project. This was a decline from 74% in 2010.

The reason most frequently mentioned by these Keephills 3 area respondents for supporting Project Pioneer were because it's good for the environment (15%) and provides economic development and jobs (13%). The reasons most often cited by those respondents for not supporting Project Pioneer were because of a lack of trust in TransAlta or government (40%) and a view that the technology is unproven (15%).

All of the Keephills 3 area respondents were asked what they thought were the main benefits of Project Pioneer. About one-in-five (21%) said the removal or reduction of $CO_2$, 18% said it would create jobs and 10% said it would improve the environment. Concerns about Project Pioneer included potential leakage or ruptures (11%), the possibly unknown long term effects of storing $CO_2$ underground (10%) and the cost of the project (10%).

Nearly two-thirds (63%) of all Keephills 3 area respondents indicated that they personally supported Project Pioneer. This finding was virtually equivalent to the 64% recorded in 2010. About three quarters of respondents (77%) said Project Pioneer would benefit Canada (77%) and that Project Pioneer is good way to balance economic development with protecting the environment (74%). More than seven-in-ten Keephills 3 area respondents believe that Project Pioneer will have a very positive impact on the environment (71%) and a similar number view the project as being part of a long term solution to protecting the environment (68%).

The main reasons given for supporting Project Pioneer were because it is a good idea (22%), is good for the environment (16%) and is a good start (13%). Another 16% said they were not familiar with the project or needed more information. The main reasons for not supporting Project Pioneer were because of considering the technology to be unproven (16%), the belief that CCS doesn't deal with the bigger environmental problem (14%), a lack of trust in TransAlta or government (14%) and because respondents do not agree with the idea of carbon capture and storage (12%). Another 25% said they were not familiar with the project or needed more information.

Approximately six-in-ten (59%) Keephills 3 area respondents believe that the potential safety risks of a CCS facility are about the same as is the case with other energy infrastructure in Canada such as oil and gas wells, oil and gas pipelines, electricity generation plants and electricity transmission lines. Among the remaining respondents, about the same number believe there is more safety risk (21%) as believe there is less safety risk (17%).

Nearly three quarters of respondents (73%) in the Keephills 3 area would be interested in receiving information about Project Pioneer.

### Coal Based Electricity Generation

About one quarter of Keephills 3 area residents (26%) said they are in favour of shutting down coal plants and replacing them with natural gas plants. And of those, 63% said that even if Alberta has a very long term supply of inexpensive coal, they would still like to see the coal plants replaced.

Three quarters (76%) of the Keephills 3 area respondents would support expanding the use of coal in Canada if using CCS meant it would have no more impact on the environment than other ways of producing energy. More than two thirds (68%) agreed that if CCS was used to reduce carbon dioxide emissions, they would personally support expanding the use of coal in Canada.

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## CONCLUDING THOUGHTS

An overview of some of these polling activity results were used in Pioneer's open houses, held in November 2011, in two local area communities (Keephills and Stony Plain). Further examination and deliberation will now occur to determine how best to incorporate these current (and now aggregated) findings into an evolved communications and public outreach strategy.

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