

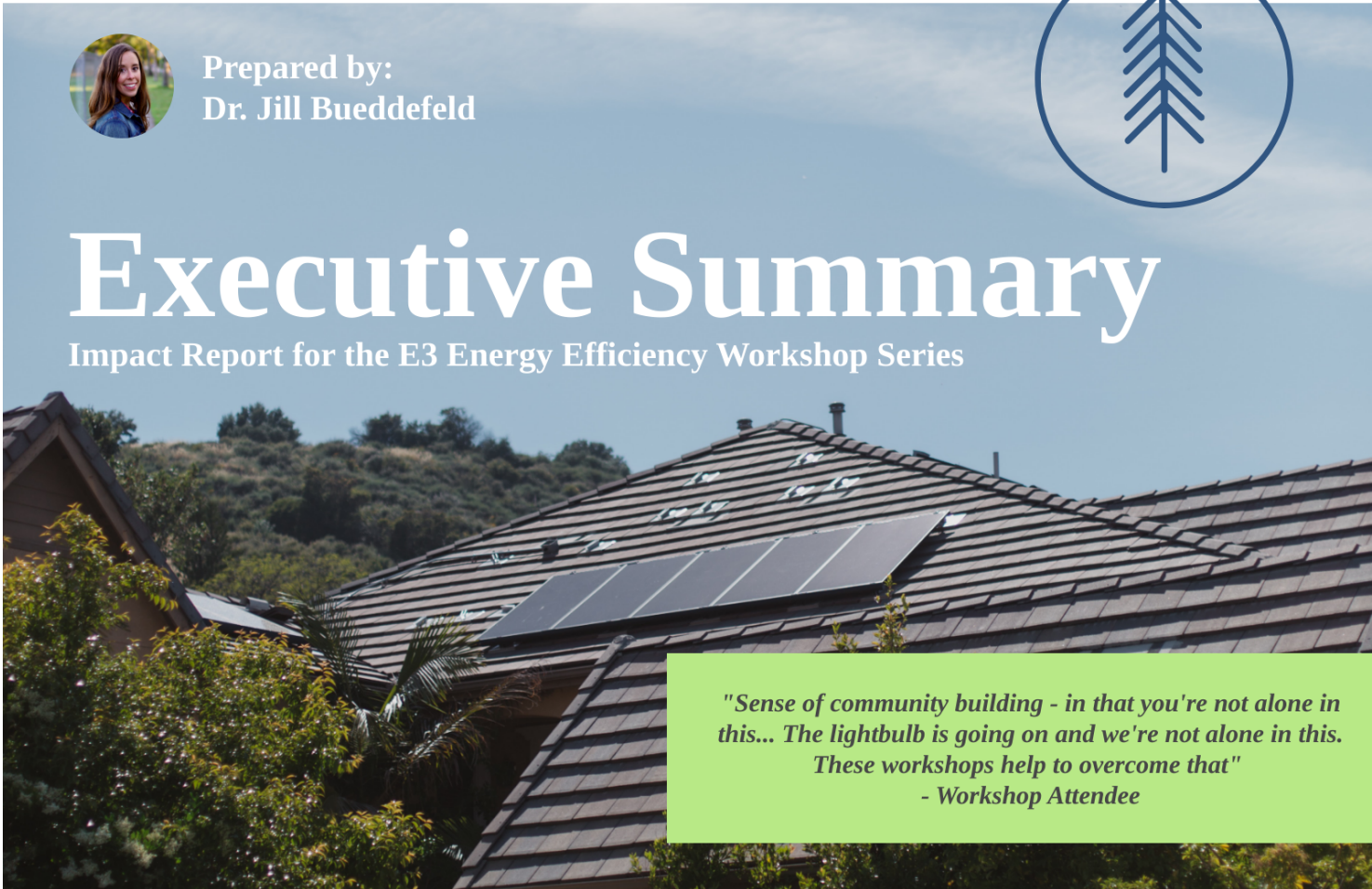


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Executive Summary

Impact Report for the E3 Energy Efficiency Workshop Series



"Sense of community building - in that you're not alone in this... The lightbulb is going on and we're not alone in this. These workshops help to overcome that"
- Workshop Attendee



Hosted by the Biosphere Institute of the Bow Valley, the Energy Efficiency Education (E3) Workshop Series invited residents from the town of Canmore, Alberta to attend a series of in person workshops on residential energy efficiency solutions. The purpose of the workshop series was to increase knowledge about residential energy options, and to lead to participants taking specific action to improve their homes' energy efficiency.

Workshop 1: Residential Renewable Energy Solutions
(February 20, 2020)

Workshop 2: Efficient Heating and Cooling for your Home
(March 5, 2020)

Workshop 3: Energy Efficient Financial Solutions
(March 26 - online webinar)

The workshops were hosted at the Canmore Civic Centre until the start of the Covid-19 pandemic. The last workshop was converted to an online webinar.

01 Research Design



This research consisted of a **mixed-methods pre-post research design**, which is used when participant numbers are uncertain and the use of surveys alone may not be sufficiently informative. Participants were invited to complete an **online survey** immediately before the workshop and then sent a follow-up survey 2-3 months later, which they completed online.

A sub-sample of participants were invited to also complete a brainstorming activity, called a **personal meaning map**, immediately before and after the in-person workshop in order to gain a more complete understanding of what was learned from the series.

*The final workshop was hosted online as a webinar due to COVID-19. Hence, the study design was adapted to invite participants in the final workshop to complete the survey online only.

02 Workshop Participation



Pre-Workshop

Survey: N = 49 participants

Meaning Map: N = 21 participants

Post-Workshop:

Survey: N = 36 participants

Meaning Map: N = 15 participants

Workshop Attendance:

Workshop 1: 45 people

Online Views: 34

Workshop 2: 38 people

Online Views: 45

Online Workshop: 18 people

Online Views: 75

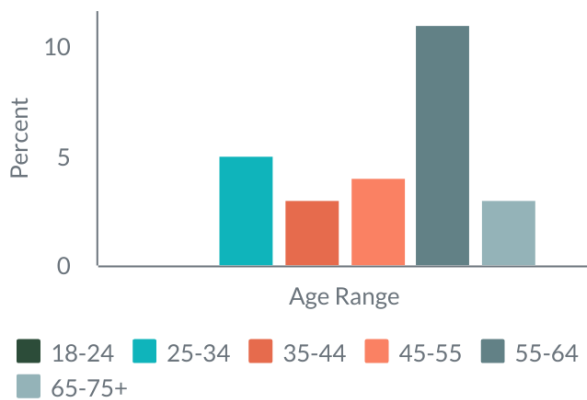




Participant Demographics

The average age range of pre-workshop survey participants was 55-64, which varied from the follow-up survey participants, where the average age range was 25-34. Low response rates for this question may have skewed the age range.

Average Age (Pre-Workshop)



Only the age range demographic variables were notably different between the pre- and post-workshop survey responses. Since survey respondents had to attend a workshop in order to complete the follow-up survey, the data is still representative of the total population of workshop attendees.



The majority of all participants were highly educated, with 35% having obtained a Bachelor's degree and an additional 33% having obtained a Master's degree as well.

Participants were primarily working as paid employees (51%) or were self-employed (25%). The average reported household income was \$97,068 - \$150,472.

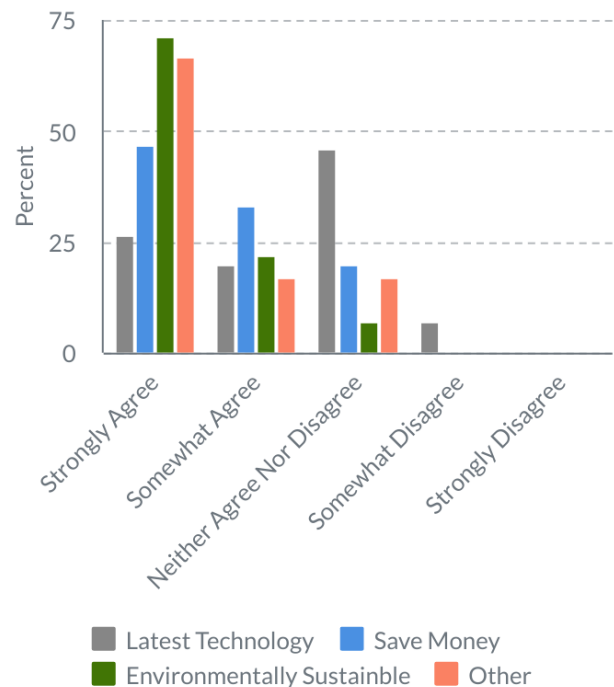


Motivation to Learn



Participants were asked "why are you interested in learning more about energy efficiency?"

Motivations



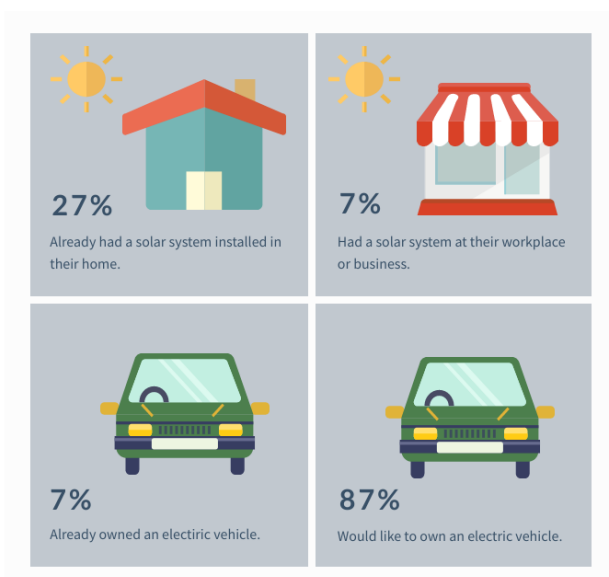
The majority of respondents indicated that they were interested in learning more about residential energy efficiency in order to become more environmentally sustainable.



#1 Residential Renewable Energy



To measure the impact of behaviour change, participants were asked if they already had a solar system at their home or business and if they already owned or would like to own an electric vehicle.



These results indicate that the workshop audience was already highly engaged and motivated to seek out renewable energy solutions.

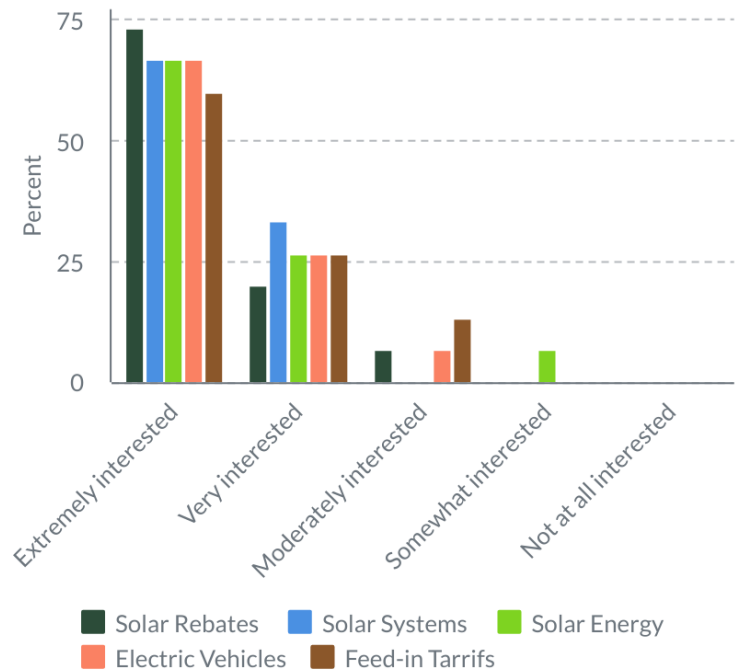
Prior Interest and Knowledge

Based on the results from the prior engagement analysis, and the relatively high percentage of people who already had a solar system installed in their home, it was anticipated that attendees would have a very high pre-workshop level of knowledge.

In addition, perceived levels of interest prior to an event are often a good indicator of a person's knowledge prior to an event. Meaning, if interest is high beforehand participants may come into the event with a high level of pre-attendance knowledge.

Nearly all participants reported being 'extremely' or 'very interested' in all the main topics for the Residential Renewable Energy Workshop.

Prior Interest




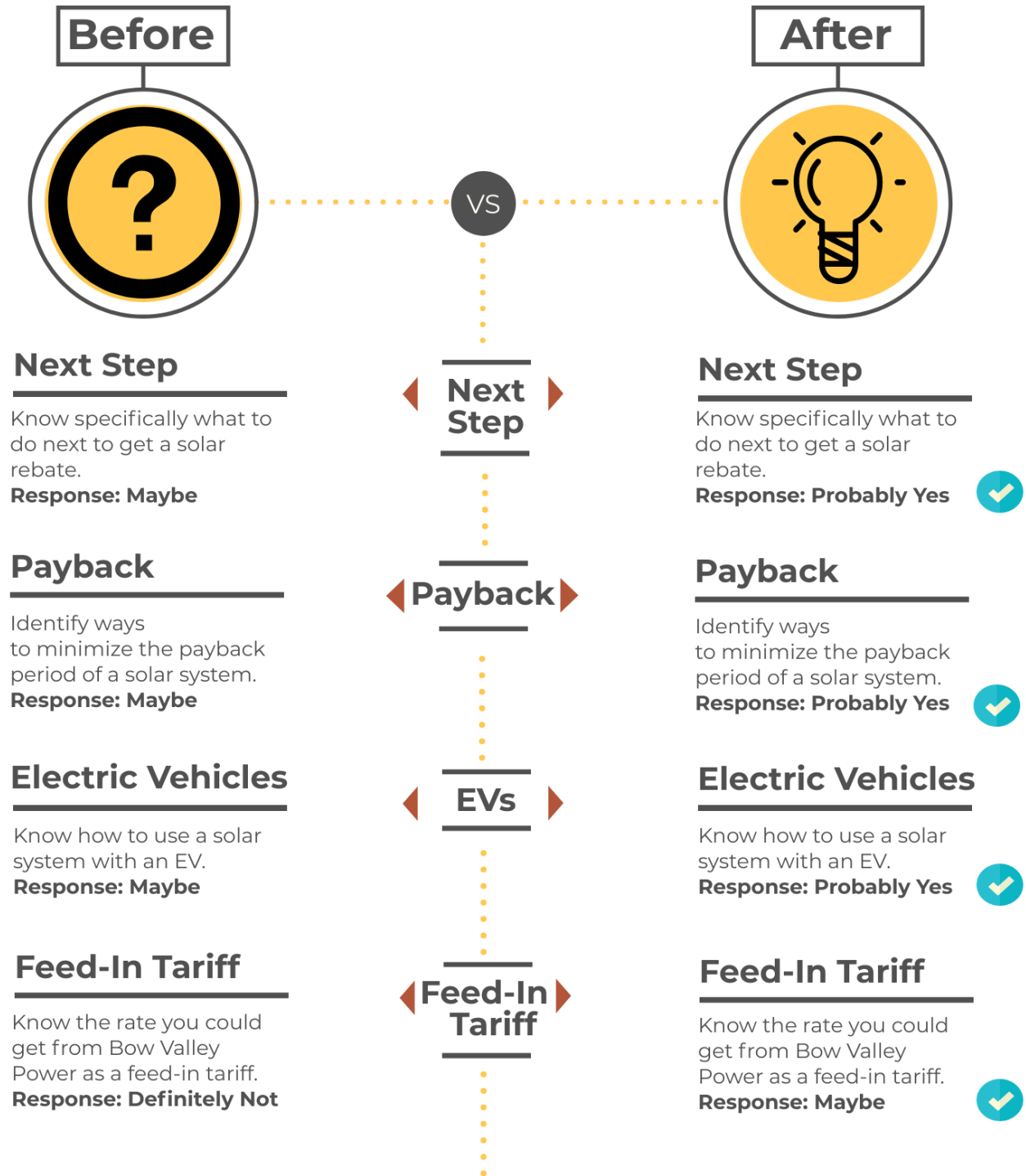
Despite high-prior interest and engagement, participants claimed to be only **'moderately knowledgeable'** for solar rebates, solar systems, solar energy, and electric vehicles.

Prior knowledge was the lowest for feed-in tariffs, where the majority of respondents claimed to be only 'somewhat' or 'not at all knowledgeable'.

Knowledge Change: Residential Renewable Energy



While perceived prior knowledge can be a meaningful indicator, people tend to over-report their knowledge of a general topic in comparison to specific topics. For this reason, participants were asked specific knowledge based details that related to the main objectives of the workshop. **The average responses are presented below.** Responses with a  indicate that the difference between the responses before and after the workshop are statistically significant.



Barriers: Residential Renewable Energy



Most people face barriers when translating what they know into what they do. Within the learning for behaviour change research, we know that identifying common barriers and providing people with specific next steps they can take to overcome these barriers is integral in helping people make more sustainable choices. Participants in this study identified barriers that prevented them from taking action both before and then after the workshop.

Barriers

Before

- ✘ I don't know where to begin (9%)
- ✘ I don't know what actions would be effective (14%)
- ✘ Solar systems cost too much money (23%)
- ✘ I'm unsure if my actions will make a difference (5%)
- ✔ Solar energy systems are too inconvenient or difficult (0%)
- ✘ The necessary actions would make my life less comfortable (5%)
- ✔ My friends or family won't support my actions (0%)
- ✘ My business partners won't support my actions (5%)
- ✘ Other (41%)
Other restrictions related to living in a condominium, renting, or context specific barriers such as trees, other construction barriers, or uncertainty.

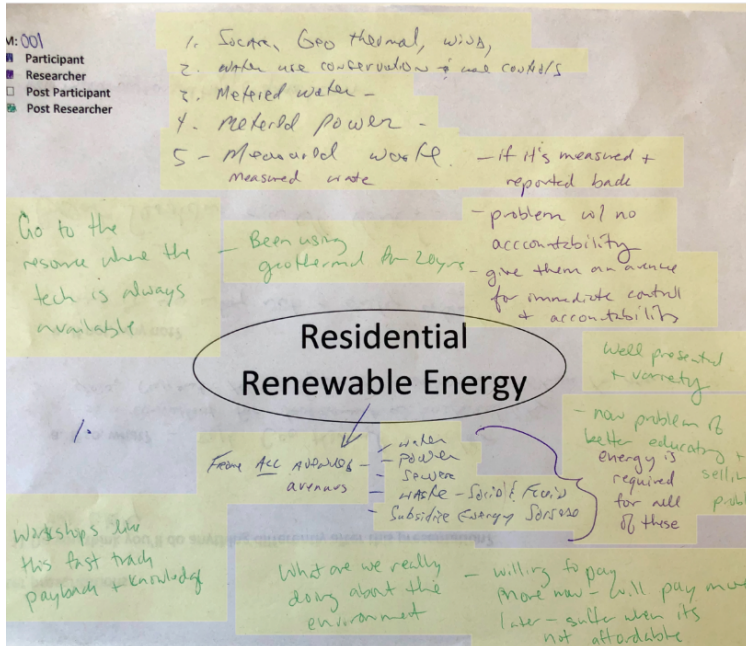
After

- ✔ I don't know where to begin (0%)
- ✔ I don't know what actions would be effective (6%)
- ✘ Solar systems cost too much money (18%)
- ✘ I'm unsure if my actions will make a difference (6%)
- ✔ Solar energy systems are too inconvenient or difficult (0%)
- ✘ The necessary actions would make my life less comfortable (5%)
- ✔ My friends or family won't support my actions (0%)
- ✔ My business partners won't support my actions (0%)
- ✔ Other (36%)
Other restrictions related to living in a condominium or renting.

COVID-19 IMPACT

The follow-up survey took place shortly after quarantine measures were instated. 12% of respondents indicated that COVID-19 had prevented them from taking action.

Personal Meaning Map Data: Residential Renewable Energy

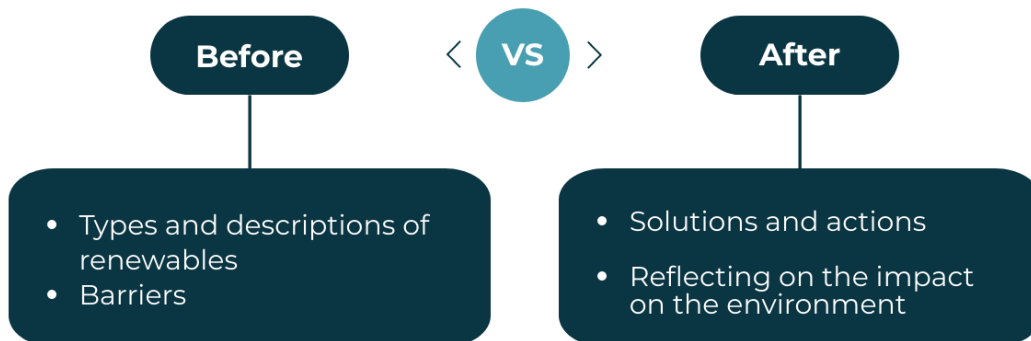


A sub-group of participants were invited to complete a personal meaning map (guided brainstorming activity) immediately before and after the workshops. Different colours of pen were used to identify what was written before and after the workshop.

Personal meaning maps are an effective tool for measuring a broad understanding of what a person learns from an experience. They account for an individual's prior knowledge and interests and provide insight into what they *know* and what is *important* to them, based on what they focus and elaborate on.

All of the personal meaning maps were coded in NVivo, using an inductive process to determine key themes of learning / understanding to compare responses **before and after the webinars**.

Key Themes



The data indicated that the key themes before the webinar consisted predominantly of lists and descriptions of different types of renewable energy. The other dominant theme in the data were barriers or reasons why the participants could not use different types of renewables.

After the webinar there was a notable shift to an emphasis on solutions and actions. A secondary key theme included reflective comments about an individual's or society's impact on the environment. This is an important finding as it indicates that the mindset of the participant's shifted from focusing on barriers to being able to identify solutions and think further about their impact. This supports the findings in the survey that demonstrated the specific barriers that were addressed in the workshop.



Interpreting Findings

The results indicate that participants already had a high pre-workshop level of knowledge, meaning that very little change was observed. The personal meaning map data supports this finding, but provides additional detail.

For example: **before the workshop** the personal meaning maps indicated that the participants had a **wide breadth and extent of knowledge**. This means that participants were able to list and describe many different types of energy efficient topics, but predominantly with little detail or nuance.

After the workshop the meaning maps indicated a much greater depth and mastery of understanding of renewables and a specificity of how to apply the content to their individual lives. The ability to specifically apply knowledge in an individual context is integral to making tangible behaviour change.



After the workshop, barriers were greatly reduced, where participants were no longer uncertain of where to begin and more certain that their actions would make a difference or be supported by their business partners.

However, not all barriers were addressed as there remained a few participants who thought solar systems would be too costly and uncertain if it would be worth the effort.



What action will you take?

Most of the participants responded that they planned to take some form of action after this workshop. The individuals who stated they would not take action described reasons such as currently renting, living in a condominium or waiting to build a home. Below are a few quotations from participants:

Do you think you'll do anything differently after this presentation?

"Learn more about heat pumps and potential applications for our home. Reconsider solar options."

"Not likely. Don't currently have finances to allow us to pursue solar. Expect to be redeveloping our property, so doesn't make sense to invest at this time"

"Encouraged to look into options and installations"

"Most likely. Both geothermal and solar as a consultant for development and sustainability using current technologies is a welcome addition to my work. There is no why not - only when!"

"Might get an estimate on the heat pump. Want to find out more about it first"

"Yes! I will look at ground based and air based heat pumps"

"Get an energy audit. That is the best bang for my buck. The low-hanging fruit"

How did you hear about the workshops?





What would be the other most valuable experiences we could facilitate?



In general all of the open-ended feedback comments were positive, with only one comment that suggested the level of knowledge was not advanced enough.

When asked what other experiences would be valuable participants recommended the following:

- More workshops
- Hard copy summaries of all the companies and their main points
- 2.0 series of workshops that build on further knowledge
- Produce short, high-quality videos to reach more people



Is there anything else you'd like to share with us?



The comments from all of the open-ended feedback sections of all surveys **were overwhelmingly positive**. One respondent said:

"I appreciate the work of the Biosphere. Bringing in knowledgeable and professional presentations creates opportunities for discussion, pro and con, regarding the topics. Bringing alternative points of view will help create informed decisions."

"Thanks for the great work. The experts you brought in were very good"