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POWERPLAY

FINAL REPORT - MAY 6 2016

Overcoming motivation as a barrier to energy efficiency amongst low income apprentices and trainees in regional NSW.

Australian Government
Department of Industry, Innovation and Science

This activity received funding from the Australian Government.

ABOUT SKILLSET ENVIRONMENT

Skillset is a non-government organisation that started as a group training organisation in 1982 in Central West NSW. It has evolved to provide services in the education, workforce and environment sectors.

Skillset is committed to establishing long-term partnerships with like-minded organisations to implement action to build robust and healthy communities and industries in regional, rural and remote Australia.

The company has a service reach from the Blue Mountains to Broken Hill in NSW and throughout several regional areas of Queensland.

Skillset Environment with its partner, Campbell Page, is one of the larger Green Army providers for the federal government. It provides innovative solutions for land repair, energy and waste usage to reduce our footprint on the planet.

Acknowledgements

This report, compiled on the findings of Western Research Institute, is a collaborative effort to discuss our learnings from the PowerPlay program. We would like to acknowledge Essential Energy's contribution to these research findings.

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EXECUTIVE SUMMARY

In the context of rapid and significant increases to electricity costs around 2010, the then federal government sought to introduce a pricing mechanism related to carbon that would help address international concerns about climate change. While the retail power price increases at the time were largely driven by network upgrade expenses to accommodate a projected increase in demand, the carbon price, or tax as it became known, was also projected to increase the cost of electricity.

This was of particular concern to low income households for whom the quarterly power bill represents a significant proportion of income. There was, and remains, concern for this segment of the community who may be forced into hardship, lose discretionary spending, and/or suffer poor health outcomes as a result of being unable to heat and cool their homes to a safe comfort range, say 19 to 24^{o}C.

In order to address this concern a range of financial compensation measures were introduced and the Low Income Energy Efficiency Program was announced. The following excerpt is from the funding guidelines.

The objectives of the Low Income Energy Efficiency Program are to:

- *trial and evaluate a number of different approaches in various locations that assist low income households to be more energy efficient*
- *capture and analyse data and information to inform future energy efficiency policy and program approaches.*
- *In addition to the objectives above, the program will have the following benefits:*
- *assist low income households to implement sustainable energy efficiency practices to help manage the impacts of the carbon price and improve the health, social welfare and livelihood of low income households*
- *build the knowledge and capacity of consortium members to encourage long-term energy efficiency among their customers or clients*
- *build the capacity of Australian energy efficiency technology and equipment companies by maximising the opportunities for Australian industries to participate in the projects.*

The application process asked which barrier the applicant intended to address; Financial, Information, Split Incentive (rental premises) or Other.

Skillset has been a Group Training Organisation since 1982 and as such, had wide experience and networks with apprentices and trainees who are known to be on low incomes and to live in a range of circumstances from predominantly at home in the first years of training, to living in shared housing towards the end of their trade qualification. From Skillset's experience it was known that this cohort was difficult to engage with around sustainability issues.

However it was noted that, despite low wages, young apprentices could find the money and information required for recreation or, for example, to drive a high performance, 'pimped up' car. This led to the thinking that it was actually the **motivation** around energy efficiency that needed addressing first. How could we show these people that energy efficiency was simple, socially acceptable and worthwhile – without sounding like a nagging parent? Through selecting "Other" as "Motivation", Skillset's application became "Overcoming motivation as a barrier to energy efficiency amongst low income apprentices and trainees in regional NSW".

Research and lived experience indicated that simply telling our apprentices and trainees how to do something related more to their life choices than vocation was most often met with resistance or, at best, politely ignored. Through research we became aware of the emerging field of "gamification" that promised to take participants on a learning pathway in an enjoyable, non-didactic, non-threatening manner.

After engaging the expertise of a consultant to deepen our understanding of the basics of gaming, Skillset identified a learning pathway that was designed to deliver behaviour change around energy consumption. An App development company was engaged to develop game mechanics off this

learning pathway and thus, to create an engaging game that covertly 'switched on' the user to the fundamental value of energy conservation. This was called PowerPlay (named by the cohort).

Knowing that not all of our study cohort was likely to be attracted to mobile device gaming, we also maintained game-like elements around the theme of PowerPlay using predominantly Facebook and SMS. Direct conversation both face-to-face and via telephone also became important as did the PowerPlay website and video content.

Recruitment of participants was much more difficult than envisaged, primarily due to the imposition of a registration and sign-up process that was excessively arduous for the perceived benefit of being involved in the program. That said, the process was legitimately in place to manage privacy and consent and to collect baseline data. Despite various tactics, including financial incentives, sign-ups remained low and a choice appeared between studying a smaller number in higher detail or continuing to target a larger number of participants but being less certain of the ability to capture meaningful data from them.

After negotiations, the Department advised that the original target of 900 participants was still applicable (based on that number being a statistically representative sample of the national population of apprentices) and that they also wanted valid consumption data. The only possibility of achieving this was to intensively study a sub-set of participants that we considered could be persuaded to complete the required paperwork. The result was a target of 800 'light touch' participants and 160 'intensive'. In terms of data analysis, light touch equates to having "No Direct Consumption Data" (NDCD) recorded and intensive means "With Direct Consumption Data" (WDCD). NDCD participants would be asked what changes had occurred as a result of PowerPlay and the benefit of these would be inferred. WDCD participants would also complete this survey but their actual consumption would be recorded and compared to other households in the region.

During the time taken for the project variation to be approved a national decline in apprenticeships and the end of a mining construction boom resulted in Skillset having direct relationships with less than 500 apprentices. To attract a study population of 900 would require relationships outside Skillset and so TAFE Western, Green Army and other Group Training companies were invited to participate.

An intensive social media campaign and generous financial incentives resulted in meeting the recruitment target in a matter of weeks. In fact the recruitment drive was pulled back in February 2015 as it became evident that we would quickly exceed the budget for sign-ups and set up false expectations with non-eligible friends of new recruits. While effective at capturing the target sample size however, this strategy also recruited participants who were only interested in collecting $50. Our challenge was to see how many of these could be converted to valuing energy efficiency.

Our trial group was predominately 17 to 24, working full-time, male, living with 3 or 4 other people in a relatively new home, interested and moderately knowledgeable about energy conservation, and living in the Central West or Sydney/Central Coast regions.

There were problems created by the recruitment approach which became compounded by unforeseen changes in Skillset staffing that resulted in a delay of up to 4 months from participants signing up to receiving regular, strategically targeted communication. While the competition elements such as the quizzes and high score prizes were 'in play', little communication effort went into creating genuine engagement and a community of interest until a Social Marketing Strategy came into effect in July 2015. Consequently, numbers of engaged participants remained low for this period and an unknown but conceivably large percentage of recruits lost interest. Even so, at a final wrap up survey completed in February 2016, 25% of all participants recruited were reported as engaged which is much higher than the 1-3% engagement rates for cold call campaigns.

The Social Marketing Strategy was aimed at creating a community of interest with genuine buy-in to PowerPlay and hence, the value of being energy efficient. The core elements were:

- A new web-site with increased clarity around messages and inclusion of regular, authentic video content.

- The fortnightly quiz. A short term regular engagement carrying simple energy or environment messages with a $250 prize voucher.
- The monthly challenge. Directly linked to scores from playing the PowerPlay App. A phone, energy efficient TV or fridge as the prize.
- The household retrofit kit. For WDCD participants only. $130 worth of simple, energy efficiency-related items.
- The Household video competition. For WDCD participants to contribute an on-line video about the retrofit kit, voted on by the broader community.
- Game of Champions events. To create prestige and pride in the PowerPlay community, to introduce environmental themes, and to communicate the initiative to a wider audience.

While PowerPlay continued operation through to the time of this report a series of surveys were conducted to record any changes made in or by participants. These received low response rates which led to direct phone calls as a way of capturing enough data. Participants were classified as "engaged" if they completed surveys, partook in any or all elements of the game or classified themselves as engaged by telephone.

Two focus groups and a series of in-depth interviews were also conducted for the dual purpose of adapting PowerPlay delivery and collecting qualitative research information.

Quarterly sets of data were provided by Essential Energy to Western Research Institute (WRI) consisting of the individual household records for WDCD participants and records of all households in the Bathurst and Orange postcodes.

The combination of quantitative and qualitative data has been analysed in this report on the basis of having 232 (25%) engaged participants.

Unfortunately due to delays in variation approval, recruitment and mobility of participants, only a limited number of WDCD participants resulted in a long enough engagement period to gather statistically significant data. This related to a September-October 2015/2014 comparison and revealed an aggregate trial group reduction in consumption of 653kWh. While not providing any solid measure of reduced energy use by the trial population, this result is important in deciding if motivation has been overcome as a barrier for the trial group.

Survey responses and case studies indicate that PowerPlay has positively impacted on participants, including the promising admission by 94% of engaged participants that they had changed their behaviour and/or purchasing decisions as a result of being involved in the program. The inference of these changes based on estimation using government backed 'typical savings' data was an annual saving of $465. Combined with a downward indication of consumption from WDCD participants, the authors of this report are confident that;

- IDT or gamification **can** be used to overcome motivation as a barrier to energy efficiency amongst low income apprentices and trainees in Australia.
- The degree to which this translates as savings on power bills is not clear from this study but it is possible to amount to hundreds of dollars per year.

This report addresses the question as to the cost of achieving these gains and if the benefit for individuals and society more broadly is worthy of this cost.

Cost benefit and cost effectiveness analysis has been conducted considering program delivery costs at 4 levels. Level 3 is the grouping that is probably most indicative of the cost for an organisation to deliver a similar program without the impost of a government grant or research project. At this level, with 232 engaged participants and an implied benefit of $465 per person per year, payback occurs in around 10 years.

Cost effectiveness analysis revealed that prizes and the sign up incentives were the most effective components to recruiting participants into the PowerPlay trial. We do not infer that this would also be true in a non-government of commercial context.

Taking the learning from this trial into a commercial or program space would not only reduce compliance and governance costs, more importantly, it would open the game up to large numbers of participants at a small marginal increase in delivery costs. Analysis in this report shows that if the benefit of $465 is real, then a roughly ten-fold increase in participants for this trial would have reached a cost-benefit ratio of 1 in year 1. Based on the exponential growth in sign-ups that was witnessed and cut off by this study, reaching 10,000 people on line to result in 2500 engaged participants is not unrealistic and readily achievable.

Analysis was also completed to establish how the benefit value changes with increased participant populations. As expected, with higher engagement numbers the required benefit to achieve break even in year 1 falls to around $170 per person with 10,000 participants. It is $95 with 110,000 participants.

The important implication of this finding is that the confidence around potential benefit increases with higher participant numbers. This analysis is also based on the assumption that no future benefits are realised beyond the first year and that there are no indirect benefits such as increased health or comfort. Neither of these can be assumed to be true.

On the basis of the results achieved in this trial and analysis undertaken, the authors of this report recommend that IDT or gamification continue to be investigated and utilised as a mechanism for creating positive behaviour change, including for fields other than energy efficiency. We provide recommendations for future roll-out of a similar program at national scale.

1. INTRODUCTION

INTRODUCTION

In June 2013, Skillset Ltd (Skillset) secured funding under Round 2 of the Federal Government's Low Income Energy Efficiency Program (LIEEP). The program being implemented by the Department of Industry, Innovation and Science (formerly, the Department of Resources, Energy and Tourism) aimed to engage consortia of government, business and community organisations to trial new and innovative approaches to assist low income and vulnerable households overcome identified barriers to energy efficiency and to better manage their energy use.

Skillset's PowerPlay proposal, entitled *Overcoming motivation as a barrier to energy efficiency amongst low income apprentices and trainees in regional NSW,* was initially aimed at educating and motivating apprentices and trainees in western NSW to achieve greater household energy efficiency and to nurture behaviour change from the early stages of establishing their own households.

Objectives of the PowerPlay Program

Skillset's funding application identified the following program objectives:

- evaluation of the effectiveness of applying Interactive Decision Theory (IDT) to overcome motivation as a barrier to young apprentices and trainees engaging with energy efficiency for households in western NSW;
- a decrease in energy consumption within the participant group in comparison to a comparative group for the same billing period, indicating adoption of the energy efficiency initiatives and the effectiveness of these initiatives;
- identification of the most common behavioural changes reported by those with reduced energy consumption for the quarter;
- an assessment of the financial viability of the program via a cost benefit analysis, in which the discounted benefits and cost savings of the program will become the benefit to be compared to the establishment and operational costs of the program, and
- lower energy consumption levels are maintained beyond the program, indicating continued behaviour change.

Why target apprentices and trainees?

Apprentices are the lowest paid workers in Australia. Research conducted by the Centre for Applied Research in Social Science for Group Training Australia showed that first and second year apprentices in all vocations across Australia were paid below the Henderson Poverty Line and Austere Budget Standard.

This is exacerbated in regional areas due to the long distances often travelled to attend TAFE, and the associated costs involved. Skillset conducted a survey of apprentices and trainees in November 2012, which identified that 44 percent paid rent and 72 percent ran a vehicle.

Despite the fact that at the time of the application writing, there were 470,000 Australian apprentices, this demographic was often overlooked as a vulnerable segment of the population, containing both youth, who were hard to reach, and older adults who were re-training and most likely had sacrificed some level of income to do so. Both these age groups were represented in our trial group.

Because of the difficulty in reaching this demographic, Skillset initially targeted its own network of apprentices, trainees and later Green Army participants to recruit participants into the trial program.

Project consortium

The project consortium comprised:

- Skillset who was responsible for the development and management of the IDT game, recruitment and engagement of the trial group throughout the program;
- Western Research Institute (WRI) as the research partner which ran the quarterly surveys, wrap up survey, focus groups and in depth interviews for the case studies; and
- Essential Energy as the energy partner responsible for collection of comparative baseline energy data and providing the quarterly consumption data for participants in the trial group.

What were the energy efficiency barriers being addressed?

Motivation was the primary barrier to energy efficiency that this project sought to address which was perceived as preventing the demographic from seeking knowledge and to act to improve household energy efficiency.

Consequently, this project sought to evaluate whether interactive games and youth targeted program components, incorporating peer recommendation and aspirational incentives, would be effective in raising the level of motivation in the target group. Furthermore, the project sought to understand whether or not any resulting increased motivation would influence behaviour change or decision making related to energy efficiency in the household.

Additionally, while not the primary barriers being addressed by the trial, other significant barriers were finance, information and rental accommodation. With first year apprentices earning about half the federal minimum wage; and 25 percent of Skillset's first and second year apprentices living in a unit or shared house; the provision of information and energy efficient products to this target audience also aimed to address these three barriers.

Recruitment Strategies

The initial project design involved Skillset field officers recruiting its own network of trainees and apprentices into the trial program with a target of 900 participants. The program was later opened up to Green Army employees and extended to apprentices and trainees Australia wide to meet its recruitment targets.

The initial communication strategy to recruit and engage participants included the:

- development of apprentice-relevant materials and distribution of energy saving product packs;
- provision of energy efficiency resources to participants;
- conducting a Facebook *Challenge* and a weekly quiz via SMS alerts to encourage participants to share energy efficiency tips amongst their peers;
- distribution of aspirational prizes to weekly, monthly, quarterly and annual winners

The interactive decision making tools

The Facebook *Challenge* was an energy efficiency game designed around IDT that incorporated peer recommendation and feedback loops which reinforced desired behaviours. It was based on participants posting their tips to save energy on Facebook to build their scores to win the monthly Tipper prize.

The weekly quiz, which was sent as an SMS text to each participant, was designed to reinforce the *Challenge* posts occurring on Facebook. The weekly quizzers were asked to text their answers to build their weekly score which would accumulate to win a major prize.

The initial prizes were graded based on participant's involvement:

- Weekly Quizzer winners – Subway vouchers to offset lunch costs;
- Monthly Tipper winners - fuel vouchers to attend TAFE;
- Quarterly Billers - the value of the annual electricity bill for the 'biggest loser'; and

- The Yearly Quizzer Prize of an energy efficient fridge to the participant with the highest weekly quizzer score

Six months into the implementation of the program, Skillset had to review its IDT approach because of the slowness in reaching its target numbers for the trial which at that time totalled 27 participants.

It then undertook further research around game theory and gamification which resulted in the development of a mobile device based application nested within regular Facebook quizzes and social media based challenges. Skillset then conducted a competition for its apprentices and trainees to 'Name the Game' and crowd sourced its original visual design resulting in 'PowerPlay'.

The PowerPlay game

In February 2014 the department approved a contract variation to allow a game to be produced to attract the target group. It was developed on a budget of $100,000 and downloaded as an app to be played on mobile devices.

Sydney app development company, 2 and 2, was contracted to work with Skillset to design the app. It took three months to develop and went on to win a 2014 Australian Mobile & App Design Award.

The design involved creating an interactive game where the player would learn about energy saving through while rebuilding the energy supply of their post-apocalyptic town in western NSW before the 'Elementals' sapped their power at night.

Skillset and the game developers played with models to develop the story, actions and game architecture as part of developing the creative and content brief for its animation. Photos of buildings in country towns were used to make the town and the buildings as real as possible for the players.

The 'Elementals' were the floods, bushfires and storms that ravaged the town as the extreme result of climate change. They provided the 'shoot them up' interactive element for the game where the player had to destroy them as they appeared randomly on their screen in the night sequence.

The game was not accessible to everyone in the trial group. It could only be played on Apple and Android mobile devices purchased in the last couple of years.; it required the player to have an internet connection and a data plan to register their scores; and the database at the back end of the game was not developed to run real time competitions and provide more in depth insights into player behaviour.

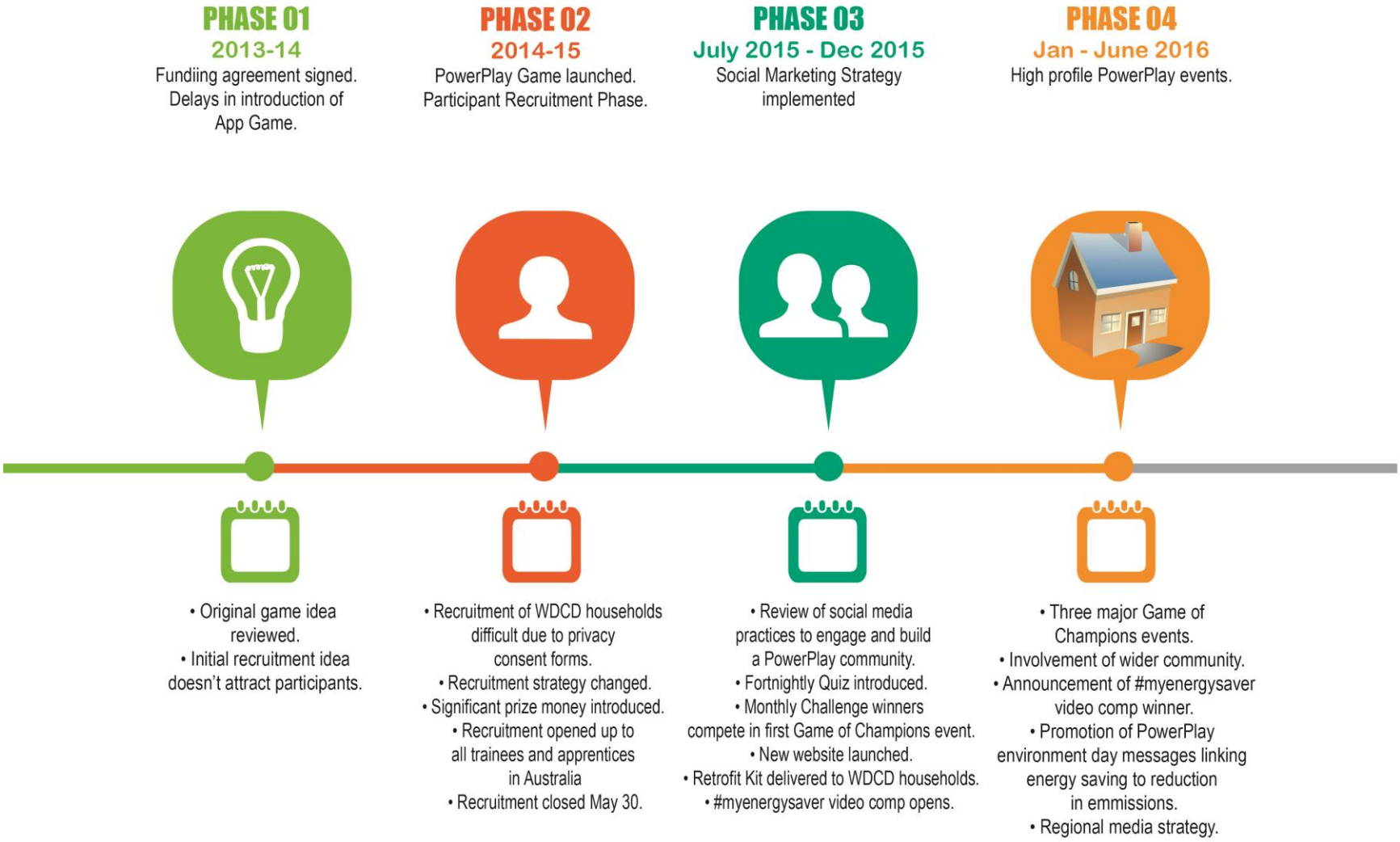
Despite this, the game has continued to engage subset of participants throughout the trial period and has played a major role in promoting participation in and awareness about the overall program.

Project timeline

Recruitment of participants closed on May 30, 2015 after reaching its target number of 900 with 812 participants registered and a smaller trial group of 114 participants registered to have their household energy use monitored during the trial. The program will end June 30 2016.

The following timeline outlines the different phases of the program as it evolved to address the difficulties encountered in recruitment and engagement of trial participants which is explained more fully in this report.

Diagram 1 – PowerPlay Project Timeline



2. TRIAL METHODOLOGY

TRIAL METHODOLOGY

In the interest of providing the reader with clarity, this section will contain both the original methodology and adaptive measures taken in response to consequences of the implementing the original project design.

The original game methodology, which was based on Interactive Decision Theory (IDT), was not effective in attracting participant interest and engagement in the trial program.

Further research around game theory and gamification led to the development of the PowerPlay game that formed the central basis of the program.

While the game did not incorporate IDT as it was originally conceptualised, IDT was partially explored through the game features where players were able to interact with the game environment, make decisions and perform actions based on information about energy efficiency.

This learning pathway is more accurately described as ‘gamification’; the use of game play to impart a message or lesson in a non-didactic, interactive fashion. This interaction with the game environment was designed to influence the way participants continued to play the game, and also influence their preferences for energy efficient behaviours in the real world.

IDT was also explored through the use of social media as part of the broader PowerPlay program. The peer recommendation and feedback through Facebook posts reinforced the importance of community in helping engage participants to increase their motivation to be energy efficient and, ideally, translate their motivation into normal household behaviour.

The PowerPlay Game

The game was designed to be both fun and thoughtful where players progressed through three levels to gain the highest score to win the monthly competition and prize valued at $1500.

The interactive component was to stop the ‘Elementals’, as pictured above, before they could take out your power supplies which was recorded on the screen, resulting in you having to start again.

The message about energy saving was communicated through a series of cards that the player could use to build their game points. The cards would flip over with a message about how much energy each item could save you.

Some of the cards used in the educational component of the game

The Elementals which provided the interactive component in the game

STORMS FLOODS BUSHFIRES

With the introduction of the new game the weekly SMS quiz was stopped following a lack of interest from registered participants.

Recruitment

Skillset methodology for recruitment was initially based on using its field officer network to recruit 1200 apprentices and trainees through its branch offices:

- Bathurst
- Orange
- Dubbo
- Cowra
- Mudgee
- Tamworth
- Parkes

The field officers were to establish eligibility amongst apprentices and trainees to register in the program. The follow up monitoring of participant engagement was to be managed by a dedicated program coordinator who was responsible for identifying and pursuing opportunities to promote the program, collect 'sign-ups' and ensure information provided by the participants was correct.

The initial recruitment methodology had an administrative focus with an assumption that the target group would respond to the approach made by field officers and comply with the requirements to make their household energy use data available to the program. Two key challenges in recruiting Skillset participants became evident throughout 2014 that led to a change in program scope and redesign of the interactive design tools.

1. Cumbersome, two-step sign-up process preventing participation:

Skillset approached a large number of its apprentices and trainees to join the program but only achieved minimal registrations (<5%).

The main factor was asking participants to have the person who paid the energy bills in their household provide their National Metering Identifier (NMI) and complete the Essential Energy consent form and the government privacy consent form for release of their energy consumption data to the program. This second step in the initial sign-up process was viewed by many account holders as an invasion of privacy and was identified as a significant barrier to attracting apprentices to the program.

2. Downturn in apprenticeships:

A downturn in apprenticeships nationally was also reflected in lower apprenticeship numbers in the target region, meaning that the pool of apprentices initially identified for recruitment had contracted by nearly half by the time the program was launched. This impacted the likelihood of meeting the targeted number of participants from Skillset's network of apprentices and trainees.

Measures to overcome the sign-up process barrier through increased incentives for registration were trialled during the third quarter of 2014, without a significant improvement in registrations. As a result, a program variation was submitted to the Department in October 2014, with the aim of adapting the program to include two trial groups:

1. *With No Direct Consumption Data* (NDCD): Participants who registered to participate without providing energy consumption data and where the focus of the evaluation was on collecting data relating to behavioural change; and
2. *With Direct Consumption Data* (WDCD): A second smaller subset limited to participants in the Orange and Bathurst regions who registered to provide energy consumption data and where the evaluation could assess both behavioural change and the translation to energy consumption.

Approval was received from the Department to proceed with this two-stream approach, which also allowed Skillset to broaden the geographic reach of the program to achieve maximum participation and therefore return on investment. The program was subsequently extended to:

- TAFE Western apprentices and trainees;
- Skillset Green Army participants;
- other organisations in the group training network in Australia; and
- other apprentices and trainees Australia wide.

Participant target numbers for program

The number of participants targeted for the two streams were:

- 800 NDCD participants
- 160 WDCD participants

Revised recruitment strategies

Internal to the Skillset network

1. Utilising Skillset's Field Officer network to establish eligibility amongst apprentices and trainees to register with the program and to facilitate registration by:
    - explaining to potential participants the purpose and requirements of the program and providing an information pack with all required registration forms for completion;
    - managing the completion of eligibility forms; and
    - passing the completed forms to the PowerPlay Project Coordinator, who would then pass the consent forms to Essential Energy for validation (once the participant was validated as the authorised account holder, registration with the program could be finalised)

2. Active recruitment through SMS, email, phone calls and direct visits.
    - Meeting with Skillset's larger Host companies and meeting apprentices on work sites to present the program and encourage them to sign-up. This included organising bulk sign-ups for major hosts with large numbers of apprentices/trainees.
    - Active recruitment of Skillset Green Army participants.

External to the Skillset network

1. Approaching the Western Institute of TAFE to assist in recruitment for the program (at the time, TAFE had around 4000 apprentices in training) who were potential candidates for the PowerPlay program. This involved attending the various campuses and trade classes across the Central West to present to the apprentices, provide a BBQ and invite them to sign-up to the program.

2. Peer referral strategy whereby participants could receive a further $50 for signing up a friend.

3. Accessing Group Training Organisations (GTO) networks across Australia to recruit participants, including payment of a referral fee to these partners.

4. Providing online recruitment for trainees and apprentices who were attracted to the program through Facebook and received a $50 gift voucher on sign-up.

WDCD participant recruitment strategies

1. Face-to-face contact through visits to individual households to recruit WDCD participants from the local area.

2. Offering an additional incentive of a $50 gift voucher.

Offering financial incentives to encourage registration

The earlier gift vouchers offered by the program were from Enviroshop, an online store to the value of $150 but it failed to attract interest.

From April 2014, the registration incentive was changed to a $50 gift card on completion of sign up with an additional $50 if you signed up a friend. An additional $50 gift card was offered to WDCD registrants resulting in a participant earning $150 in gift vouchers if they fully subscribed to the program and recruited a friend.

In June 2014, major prizes valued at $1500 were introduced to encourage participants to register in the program, play the game and complete the quarterly survey introduced by WRI.

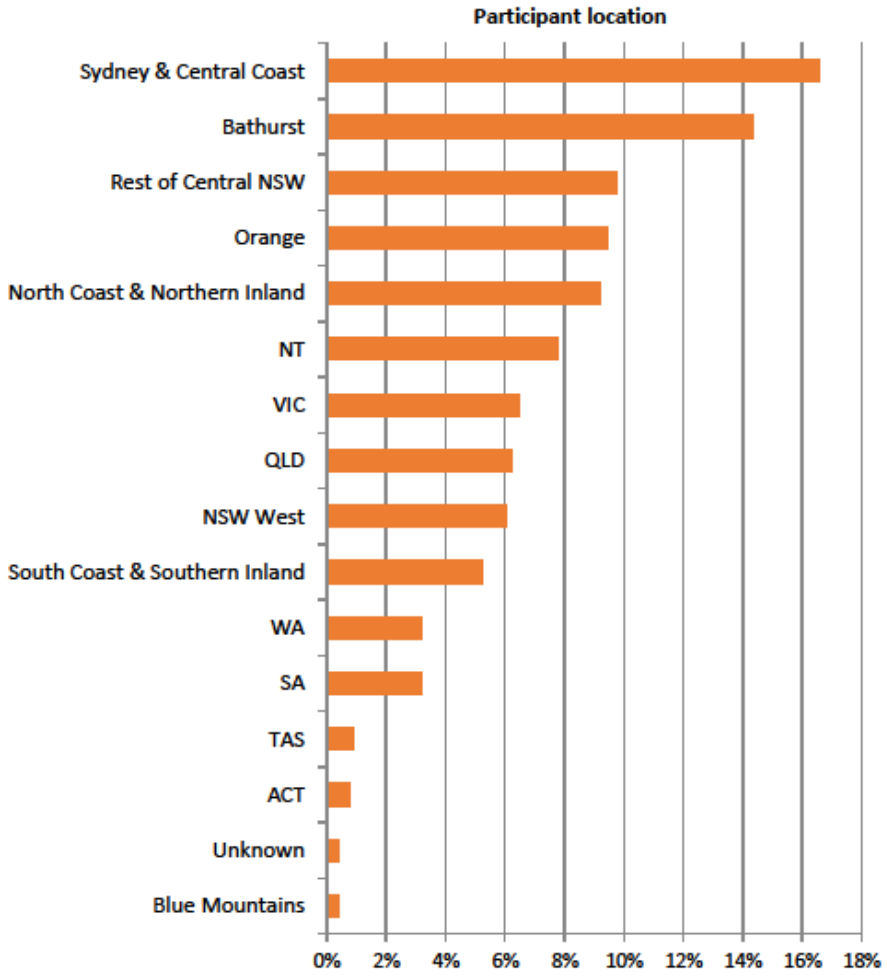
At the end of May 2015, registration closed resulting in Skillset meeting its target group numbers with a total of 926 registered participants comprising:

- 812 NDCD participants
- 114 WDCD participants

Geographic spread of participants

The following chart shows the demographic spread of the trial group.
A brief profile of participants is presented in the Results section.

Chart 2.1 – Participant location



Engagement strategies

In June 2015, Skillset contracted social marketing company, Bravo Marketing By Design, to review the program and develop a communication strategy to engage participants following a decline in participation during the recruitment phase.

Facebook was the main communication channel for communicating with participants after the SMS weekly quiz had stopped. The program's website was used to provide information about recruitment with links to the game, Facebook and the online registration portal. It also contained some information about energy saving through a series of videos.

The review found that the main message communicated on Facebook was the financial incentive supported by a graphic that displayed money in the back pocket of a pair of jeans. While this message had worked successfully for the recruitment drive, it was not enough to maintain the interest of participants once they had signed up and received their gift vouchers.

The consultant identified that another reason in the decline in engagement was that participants thought they were no longer eligible after finishing or leaving their traineeship or apprenticeship. This represented a significant group who had registered early and had disengaged from the program, with some leaving the region to find employment or go to university. Once disengagement had occurred it was extremely difficult to reconnect with this group.

The methodology behind the social marketing strategy was to:

- review communication messages, channels and program activities with the purpose of building trust and credibility about the program and its competitions;
- build a PowerPlay community that supported the program messages;
- develop more meaningful messages that were informative and relevant to the audience;
- use video clips, highly visual and professionally designed graphics and photography to increase the visual appeal of the game and the competitions; and
- introduce the program to the wider community

Financial incentives

Due to the low engagement in the program during the first two years, money allocated in the budget for prizemoney significantly accumulated. This allowed for a substantial increase in prizemoney being made available for running the PowerPlay Competitions.

- *Monthly PowerPlay Challenges* – $1500 prize of an energy efficient product based on playing the game to gain the highest Level 3 score within one hour.
- *#myenergysaver Video Competition* – $2000 prizemoney for the best video submitted by a household that was having its energy usage monitored.
- *PowerPlay Fortnightly Weekend Quiz* – running a fortnightly, weekend quiz on Facebook where registered participants who posted their answers would go into a draw for a $250 gift voucher.
- *Game of Champions* Events – $1000 prizemoney for the winner of the world environment day title

EVALUATION METHODOLOGY

Objectives of the program evaluation

The evaluation aimed to assess program effectiveness in four ways:

1. by measuring the success of the program in engaging participants;
2. by exploring changes in attitudes and perceptions that could lead to longer term impacts;
3. by testing the influence of each element of the program on participant energy management behaviours; and
4. by assessing how the influence of the program has translated into energy consumption changes.

Participant engagement

Measuring participant engagement in PowerPlay relied on statistics provided by the game and associated Facebook page as well as participant responses to regular surveys. Quarterly surveys asked participants directly about their level of interaction with elements of the program.

Participant attitudes and perceptions

Regular quarterly surveys and the wrap-up survey were used to capture quantitative measures of changes in attitudes and perceptions. Low response rates to many of the quarterly surveys led the evaluator to seek additional information on attitudes and perceptions through in-depth interviews and focus groups which explored how these changes may have longer term, more sustained influences on the participants.

Influence on energy management behaviours

Testing the influence of program elements relied on participant surveys collected at commencement, at every quarter throughout the program, and at program wrap-up. The quarterly surveys asked participants about the extent to which they believe the elements of the program (Facebook site, game etc.) have influenced their energy management behaviours.

Influence on energy consumption changes

Testing how the influence of the program has translated into energy consumption changes required participants to provide the National Metering Identifier (NMI) for their household and to provide consent to access the consumption data associated with the NMI. Program influence was assessed through the following measures:

- A longitudinal assessment was conducted for each participant by tracking changes in each participant's energy consumption over the course of the program in comparison to their previous consumption (comparisons were performed for comparable billing periods); and
- A cross sectional assessment was conducted by tracking changes in the participant group's energy consumption in comparison to the energy consumption of a comparison group from the associated post code region (discussed later in this section).

Differences in cross-sectional data i.e. participant group data compared to comparison group data, aimed to identify whether energy consumption changes had occurred across the broader population regardless of program participation. Cross sectional analysis also aimed to remove, to some extent, the effects of seasonal variation in the data.

Design of the program evaluation

The approach to monitoring and evaluating this program has incorporated the following elements:

- The establishment of baseline participant data through commencement surveys
- The collection of ongoing data through:
  - quarterly update surveys conducted with participants;
  - the collection of data from the program's social media channels and its mobile device application (PowerPlay);
  - the collection of participant energy consumption data from Essential Energy; and
  - the collection of comparison energy consumption data from all residences in the associated postcode regions.
- The collection of primarily qualitative feedback on program operations and outcomes in 2015 through:
  - two focus groups with participants from the local region; and
  - a series of in-depth interviews with participants to develop case studies of their involvement in the program.
- A final wrap-up survey, conducted with program participants in January 2016
- An assessment of the financial viability of the program via a cost benefit / effectiveness analysis.

Revision to evaluation design

In light of issues hindering recruitment, the evaluation approach for this program was revised:

1. to simplify interactions with the program participant, such that engagement with the program was not affected; and
2. to allow for comparison to the broader community in which the WDCD participants reside.

The need to simplify interactions with the program participant influenced the design of the questionnaires used (including the self-complete nature of the surveys) and the approach to collecting energy data. With regard to the latter, it was felt that the collection of energy consumption data directly from Essential Energy would be more efficient than collecting bills from individual participants. This would ensure that all required bill data was extracted in the same format and at set points in time.

Therefore, the evaluation design was adjusted to primarily focus on:

- collecting data relating to behavioural change for the entire participant group; and
- assessing both behavioural change and the translation to energy consumption for the WDCD group.

Each element of the data collection is discussed in detail below.

Establishing baseline data - Commencement survey

The commencement survey aimed to establish baseline participant data including detailed information about:

- participant demographics;
- household demographics;
- dwelling location and type;
- dwelling construction;
- dwelling energy characteristics;
- appliances used in the dwelling;
- dwelling modification details;
- household energy behaviours; and
- attitudes towards energy efficiency.

Much of the data required to be captured about participants, in this baseline exercise, was specified by the Department in consultation with its data management partner, the Commonwealth Scientific

and Industrial Research Organisation (CSIRO). A list of data items (LIEEP database schema) to be collected by the grant recipients about each program and its participants was provided during the funding application phase and this was subsequently refined and extended throughout the first half of 2014, to address the needs of the different types of programs being implemented.

Due to the nature of the participants targeted for Skillset's trial program and the trial approach being employed, much of the desired detail specified by the Department was not able to be captured. This is because the project relied on participants conducting their own energy audit of their dwelling, rather than having a trained auditor visit their homes to conduct this audit. Skillset's program coordination team needed to weigh up the benefits of collecting the very detailed data specified by CSIRO with the costs of deterring registration in the program. This issue is discussed further in the Discussion section.

Commencement surveys were initially designed to be administered as paper-based surveys through Field Officer contact with the participants. The survey could be taken home to complete and then returned to the branch office for forwarding to the program coordination team. A separate energy information consent form was also required to be completed and a process for validation of the participant / account holder details (included on the energy information consent forms) was undertaken by Essential Energy. Due to difficulties in registering apprentices using this two-step method which led to a low uptake of the program and the eventual splitting of the program into two streams, data collection for the commencement survey was included in a single registration process and was able to be completed via an online registration site.

Ongoing - Quarterly update surveys

Data collection from participants occurred on a quarterly basis throughout the trial program period. The quarterly survey allowed participants to record any changes to the data elements collected at commencement. The survey also tested influences on energy management behaviour and purchases during the course of the program. Specific question areas included:

- participant attitudes to energy conservation;
- changes to energy management behaviours influenced by the program (in the last quarter);
- household modifications or purchasing decisions influenced by the program (in the last quarter);
- appliances removed or installed (in the last quarter);
- energy bill expectations; and
- PowerPlay program engagement.

If a participant had relocated to a new household during the program, a new set of records was required to be created for the new household, and a new commencement survey completed.

The quarterly update survey was developed by WRI in collaboration with Skillset's program coordination team. The intent was that quarterly data collection be administered either via a paper-based survey or an online survey, and that this ongoing data collection task be managed by Skillset's Field Officers to yield a high response rate to these surveys. However the expansion of the program outside Skillset's territory, to secure the required number of trial participants, meant that this method of survey administration was no longer feasible. The survey was then implemented as an online survey using Survey Monkey, and was distributed by email to registered participants by the Program Coordinator[1]. More recently it has been distributed as a link in an SMS alert.

Skillset offered an incentive for the completion of the quarterly surveys, for instance in one quarter those completing the survey were eligible for entry into a prize draw (for a $300 voucher to Boating Camping Fishing). The success of this approach was limited with response rates remaining low. WRI recommended that a highly managed approach to administering the quarterly surveys was required in order to boost participation. This managed approach was undertaken for Quarter 3 of 2015 (in August), whereby Skillset staff contacted participants via telephone and offered to conduct the survey

[1] Note: in order to be eligible to complete the survey, participants needed to have been registered for at least one full quarter (3 months).

over the phone. The resulting response rate for this quarter was much higher than for all other quarters .

Ongoing - Collection of data from the Facebook and Game

The collection of statistics from the Facebook page, the website and the game was intended to provide a comparison to the self-reported levels of engagement, reported through the quarterly surveys.

Metrics indicating engagement collected from the Facebook page included:

- likes
- posts
- daily people talking about
- reach including organic reach

In addition, a review of Facebook activity by Bravo was performed in the last two quarters to identify the main impetus for engagement.

Website measurement, using google analytics, was not deployed until late in the program following the development of the new website, with data available from the beginning of 2016 being included in this report. The original website had not been designed professionally with limitations in its reporting functionalities.

Despite efforts to secure a more detailed list of data elements related to game players from 2and2, the user data collected in the back end of the game was limited to participant name, email address and score. This data provides an indication of the participant's level of engagement with the game through recording the times when they played, the frequency of playing the game and their scores.

Ongoing - Provision of energy consumption data

An agreement was made with Essential Energy regarding the energy consumption data to be provided and the allowable use of that data.

As mentioned earlier, a subset of WDCD participants was established for whom data would be collected.

Participant data

Essential Energy provided consumption data for each WDCD participant. A unique residence identifier (in lieu of the National Metering Identifier) was applied to each participant and remained consistent for the associated residence over the life of the trial. Energy consumption data was provided at the end of each quarter, aligned to the reporting schedule. This data included previous billing data for each WDCD participant (for billing periods covering a period of one year prior to program commencement).

Establishing comparison groups

Skillset designed this program with the deliberate aim to extend influence beyond registered participants. The social media platform, on which the program is based, was designed to allow for feedback and influence mechanisms to widen the conversations and enhance the team based aspects of the PowerPlay game. In other words, it was expected that peer recommendation between registered participants and their friends would serve to eventually widen the influence of the program.

Therefore, the ability to develop a quarantined control group for this program for energy consumption comparison purposes was limited because:

- the program aimed to extend influence outside the initial participant group and any attempts to limit participation would serve to hinder the operation of the program as designed; and

- the size of the participant group would have been reduced considerably if a large group of Skillset's apprentices and trainees needed to be quarantined in a control group.

Therefore, in lieu of a 'control group', a comparison group was established for the geographic region in which the WDCD participants resided. As a result of program scope changes, only one comparison group was defined, for the Bathurst and Orange postcodes. The comparison group includes all residential addresses in the postcode for the region and excludes program participant addresses. Data provided for the comparison group includes previous billing data for each comparison group representative (for billing periods covering a period of one year prior to program commencement).

Consumption data provided

The Essential Energy data for both WDCD participants and comparison group residences includes the invoice period, the number of days in the invoice / billing period and the average daily usage for the period. From this, WRI was able to construct monthly consumption data for each residence and conduct comparisons of equivalent periods of time.

Throughout the program, energy consumption analysis was only performed for participants who:

- had been registered with the program for over one full quarter;
- for whom a complete billing cycle had been covered by the program; and
- who did not have a solar PV system installed at the residence.

In addition, only whole month consumption data was analysed, i.e. where only part month data was provided, it was excluded from the analysis.

WRI conducted data analysis on a quarterly basis, however, only the final energy data analysis, conducted in February 2016, is presented in this report. The final dataset provided by Essential Energy supersedes all other data provided throughout the program. This is because updates to billing data occur periodically, especially where some premises may have had estimates issued in lieu of actual readings. The latest data provided by Essential Energy in early February 2016, represents the most accurate data to date for both the participant group and the comparison group.

The analysis identified the number and percentage of program participants who had:

- reduced energy consumption in comparison to longitudinal data for the participant for the same month in the previous year (for instance, a comparison of June 2015 energy data with June 2014 energy data for each participant);
- increased energy consumption in comparison to longitudinal data for the participant for the same month in the previous year; and
- maintained stable energy consumption.

Relative (or percentage) changes in consumption were also assessed. Using relative changes provided some level of comparability to the comparison group and also aimed to account, to some degree, for differences in absolute levels of consumption and seasonal variation. This data was aggregated to determine the average percentage change in consumption across the participant group. The same analysis was performed for the comparison group allowing the participant group and comparison group results to be compared.

In addition, the net energy consumption changes across the participant group were calculated, as well as a per participant household (or average) change for participants. This was compared to the same calculations performed for the comparison group.

Qualitative - Focus groups

Focus groups were incorporated into the evaluation methodology in mid 2015 with the aim to uncover:

- issues inhibiting participation in the program;
- potential improvements to engagement strategies;
- how participants were engaging with the program and what they were learning from it;

- potential areas of focus for the program going forward.

Focus groups were determined to be an appropriate mechanism by which to tease out these areas qualitatively and to identify fine tunings to the program that could be implemented early to boost participation for the remainder of the trial. Furthermore, this information was sought to provide feedback on engagement strategies in the absence of solid response rates to many of the quarterly surveys.

Focus group guidelines were developed in collaboration with the PowerPlay project team. The guidelines are included in Appendix C.

Participants were recruited to the focus groups based on their location and their level of engagement in the program, with the first focus group targeting participants from Bathurst who had not been particularly engaged in the program, and the second targeting participants from Orange who had been assessed to be reasonably engaged in the program. All participants who met these criteria were invited to participate with the first six participants to each session accepted.

A $60 reimbursement for costs and time was provided to participants attending the focus groups. Bravo and Skillset's Program Coordinator attended the group discussions in order to hear first-hand perceptions of the program.

Qualitative - Case study development

Case studies were developed to demonstrate outcomes at the individual level and to showcase some of the largest successes arising from participation in the program. They were developed to explore:

- the factors motivating (or not motivating) individual participants to actively manage household energy consumption; and
- how individual participants are engaging with the program, including suggestions for improvement.

Two distinct groups of case studies were developed, one for participants who appear to have a low engagement with the program, and the other for a group who were deemed to be reasonably engaged. This qualitative work also aimed to uncover useful detail not captured in the regular quantitative surveys conducted throughout the trial period.

Case study guidelines were developed in collaboration with the PowerPlay project team. The guidelines are included in Appendix A .

Potential participants for the case studies were selected based on level of engagement in the program. Those participants who were able to give up some of their time to be interviewed were included in the case studies.

Final wrap-up survey

The wrap up survey was designed to capture a range of metrics about the program's efficacy and influence over the time period in which participants were registered. This included:

- Understanding their level of engagement with the program, and if not engaged:
  - finding out why; and
  - what could make the program more appealing
- For those participants who were reasonably engaged with the program:
  - identifying which elements of the program were most effective in terms of keeping them participating and educating them about energy conservation;
  - understanding the reach of the program beyond the participant;
  - understanding how the program has impacted on their level of interest in and knowledge about energy conservation;
  - understanding the influences of the program on household behaviours and purchasing decisions;
  - understanding household satisfaction with any changes made.

The survey was administered as a managed online survey, whereby program staff contacted participants by telephone to conduct surveys.

Financial viability of the program

Financial viability is investigated primarily in the Cost Benefit Analysis section of this report.

The authors have sought to provide analysis on the value achieved by this trial and to project the viability of a similar trial without the constraints of government funding and a formal, external research component.

Financial data was sourced from Skillset Finance and used actual expenditure at the time of writing this report as the basis to project full term program costs. This varies marginally from the program budget as approved in Variation 3 and is a truer reflection of costs.

3. PROJECT ADMINISTRATION

PROJECT ADMINISTRATION

Program Budget

The total program funding provided by the government was $1,248,342. The Skillset in-kind contribution was $392,635. There was a variation to the contract in June 2015 to provide funding for the implementation of the social marketing strategy and the focus groups during the final year of the program.

The budget breakdown and the variation are outlined in the following table

Table 1 Program Budget

Skillset Expenditure Item	**LIEEP Funding**	**Variation June 2015**	**Other Contributions (in-kind)**
Project Manager	~~$157,684~~	$176,000	
Project Coordinator	$241,871		$30,000
Development of printed energy efficiency information guide	$3,570		$2,800
Purchase of energy efficiency products	~~$150,000~~	31,000	
Participant recruitment			$900
Development of training program for field officers			$1050
Conduct training program for field officers			$6725
Quarterly Field Officer survey, online survey or phone calls with participants to collect data.			$315,000
Travel	~~$2208~~	5,000	$27,360
Baseline data collection and analysis	$23,040		
Power Play prize pool	~~$50,000~~	40,000	
Website development and maintenance	~~$100,000~~	$150,000	$4,300
Information texts	$7,000		
Risk management margin	~~$102,517~~	$4,145	
Questionnaire design	$13,500		$4,500
Data collection	$99,330		
Analysis and reporting	$186,975		
Project Management and Quality Assurance	$45,647		
Payments for potential participants	~~$50,000~~	70,000	
Short term staff to recruit participants	~~$15,000~~	5,000	
Total	**$1,248,342**		**$392,635**

Breakdown of budget reallocation

- Social Marketing Strategy $70,000
- Social Media content $41,580
- Focus Groups $12,000
- Advertising and promotion $12,000
- Events $5,000

Staffing Resources

- The overall project was managed by the Skillset Environment Manager supported by a dedicated Project Coordinator.
- Design, management and implementation of the social marketing strategy was contracted to Bravo Marketing By Design.
- The management of data collection, analysis and reporting was conducted by Western Research Institute.

Implementation of the Social Marketing Strategy

Following the closure of the registration process on May 30 2015, Bravo Marketing By Design, a social marketing company, was contracted to develop and implement a strategy that would engage participants in the program.

Two focus groups for engaged and disengaged participants were run by Western Research Institute to gain feedback on the program to improve communication with the target group. This resulted in striking new artwork being developed to promote the game which replaced the former artwork displayed on Facebook and the website. The artwork was also designed to promote the program's key elements: the game, the competitions and the retrofit kit.

The program's website, www.mypowerplay.com.au was redesigned to provide more quality information about the program, including a Game of Champions Gallery, video clips, energy saving tips, news and information about the competitions and a survey monkey voting poll that was embedded into the competitions page to run the household video competition which displayed the finalists' videos.

Videos also played an important communication role, helping to extend the organic reach on Facebook and creating more authenticity around the competitions by showing the quiz draws actually occurring and phone calls to participants to announce they had won the monthly Challenge to record their reaction.

Game of Champions Events

Another key element of the strategy was to create a series of high profile competition events to coincide with world environment days to communicate the link between energy saving and reducing Greenhouse gas emissions. These events were called the *Game of Champions* and were designed as a quiz show where Challenge winners competed against each other to get the highest score which was added to their game score.

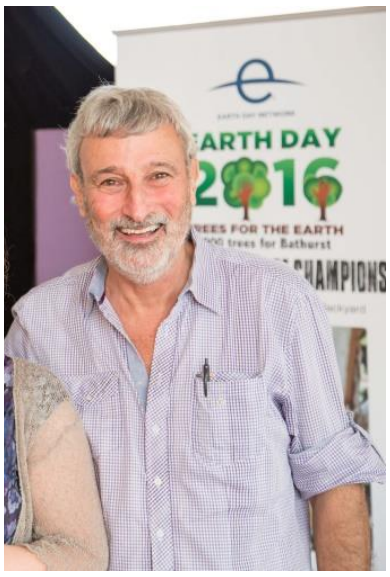
These events occurred on the following dates:

- World Habitat Day - 6 October 2015
- World Wetlands Day – 2 February 2016
- Earth Day – 22 April 2016
- World Environment Day – 5 June 2016 *(which has yet to occur at time of reporting)*

The events were also designed to publicise the benefits of energy saving to the wider community who were invited to attend and participate in the Energy Quiz Show to win a prize of a Retrofit Kit. The competition is based on PowerPlay Challenge winners gaining the total highest score from playing the game and answering the quiz. Fifty percent of their score is earned from playing the game before the event.

The messaging that was used to promote these events and reinforced by the guest speakers, provided a depth of purpose for the program that had been lacking in its communication. This also helped balance the focus on the financial incentives of the game with a focus on doing something in your household 'to reduce your footprint on this planet' while reducing the cost of the power bill. The questions in the fortnightly quiz and the quiz show were also developed to reinforce the key environmental messages of each of these events.

It is evident, when speaking with the three winners of the *Game of Champions* events, that they are proud of holding a 'PowerPlay World Title' and becoming advocates for the program. Jenny Milton, (pictured below) who was the recent winner of the Earth Day World Title, is already considering how she can share her story by contacting *That's Life* and *Take Five.* She not only won the World Championship but reduced her family's household energy bill by 40 percent over a 12 months period. She was also one of the first registered participants to play the game.



Pictured is Don Burke at the Earth Day Game of Champions Event.

The Household Retrofit Kit

A Retrofit Kit with energy saving products valued at $120 was introduced in December 2015 to address the low participation of WDCD households in the program and to announce the WDCD household #myenergysaver video competition.

All WDCD households were contacted by phone about the kit which was delivered by a courier to their homes before Christmas. They were later followed up by email about the video competition and contacted by phone as part of conducting interviews for the final wrap up survey.

The kits were also used as prizes and the content incorporated into the questions for the quiz show at the Game of Champions events.

The kit contained a number of energy saving products and a brochure (refer to following page) that explained how much each product would save on their household bill if properly installed. A video that gave more information about the products and their installation was produced and put on the PowerPlay website to further encourage households to use them.

The Retrofit A4 brochure.

The Household Video Competition

Only WDCD households who received the Retrofit Kit were eligible to enter the video competition and win the prizemoney of $2000.

The competition ran from December 22 until April 15 attracting three entries.

Reasons given by households for not entering were simply disinterest or that they didn't have the time or the knowledge to produce a 30 seconds video. Skillset offered to provide the services of its videographer to assist them but this offer was never taken up.

Despite the low interest, the three videos that were submitted enabled the voting to occur on the website and the prize to be awarded to a beekeeper from Orange. *Pictured below is the Mayor of Orange at the Earth Day Game of Champions.*

The fortnightly weekend quiz

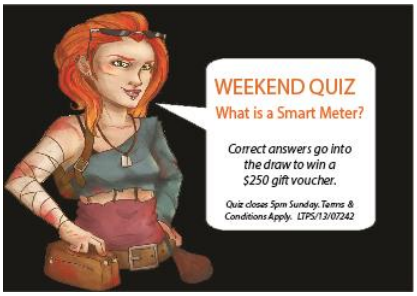
The quiz was reintroduced in June as a Facebook fortnightly quiz to be held over weekends so participants had time to respond. The quiz was trialled during week days but did not attract the same number of responses despite a comment being made in a focus group that it would. After the quiz was posted on Facebook an SMS alert was sent out to all registered participants.

Initially, there was a number of 'hostile responses' to the alert and a number of unsubscribes. This was partly due to the SMS using an unidentified mobile number. Once Skillset was used to identify who sent the text, the responses to the negative comments stopped and the unsubscribes reduced significantly. A total of 807 mobile phone numbers are currently listed in the SMS address book. Of this number, approximately 610 phone numbers are reported to have received the text alert.

The quiz questions focus on 'did you know?' providing information about different ways to save energy and how to reduce your carbon footprint. Respondents post their answer on Facebook and go into the draw to win a $250 gift voucher. It is a physical draw with a video of Skillset employees and contractors drawing a name out of a hat that is then posted on Facebook to announce the winner.

The quiz is also used to actively promote the government websites: www.yourenergysavings.gov.au, www.energymadeeasy.gov.au and the energy rating app on www.energyrating.gov.au.

www.yourenergysavings.gov.au



The Monthly Challenge

This game competition attracts the largest prize valued at $1500 where the winner is given a choice of a new mobile phone, an energy efficient television or a fridge earlier in the competition.

The competition is based on the player gaining the highest level score from playing the game for one hour. Their time of logging in and out of the game is recorded in the back end of the game's database with their email address to identify them. One competition was run to achieve the 'lowest' score.

The time limit was put on the competition after feedback from regular players who reported that the highest scores were actually being achieved because the player had remained logged to accumulate their score over a long period of time. This did not provide a level playing ground for those who worked and were time poor with the time introduced to provide more credibility around the competition.

Each month the winner of the Challenge is telephoned by the Skillset Environment Manager to announce that they have won the competition. A video is taken of the phone call being made and posted on Facebook to announce the winner.

Challenge winners are then eligible to compete in the Game of Champions events.

Other communication activities

To increase the response rate for the quarterly survey all participants were phoned as part of a concerted effort to get them to complete the survey form as numbers had started to drop significantly for the data collection.

These phone calls revealed that a number of participant phone numbers had been disconnected or did not answer. Those that could be reached were 'survey fatigued' from having to fill out the lengthy questionnaire that was emailed to them and expressed no interest in responding to it or entering the competitions.

The final wrap-up survey was done as a telephone survey providing more time to speak with the participants about the program and the retrofit that was delivered to the WDCD households.

Some anecdotal comments revealed that a number of participants had moved to find employment or to study at university; they did not have an internet connection at home to go on Facebook or play the game and that they could not remember what they had signed up for in the first place after receiving their $50 gift voucher.

These phone discussions were invaluable in understanding how to better administer the program through maintaining regular two-way communication with participants and to not assume that all young people were using or would respond to social media.

Game of Champions event invitations and media releases were also distributed to traditional media to raise wider awareness about the program with regular news posts occurring on the PowerPlay website to announce and promote the competition winners.

The following timeline outlines the key communication activities that have occurred during the trial program at time of reporting.

POWERPLAY SOCIAL MARKETING AND PROGRAM RESEARCH TIMELINE 31 July 2015 - 30 June 2016

	Task	Assigned To	Start	End	Dur	%
	PowerPlay Social Marketing & Research Strategy	Skillset/Bravo/WRI	6/12/15	7/20/16	289	
1	Game of Champions World Habitat Event	Skillset/Bravo	10/6/15	10/6/15	1	
2	Game of Champions World Wetlands Event	Skillset/Bravo	2/2/16	2/2/16	1	
3	Game of Champions Earth Day Event	Skillset/Bravo	4/22/16	4/22/16	1	
4	Game of Champions World Environment Day	Skillset/Bravo	6/5/16	6/6/16	1	
5	Monthly PowerPlay Game Challenges	Skillset/Bravo	6/12/15	5/29/16	251	
6	Weekend PowerPlay Facebook Quiz - held fortnightly	Skillset/Bravo	6/30/15	6/30/16	263	
7	Website WDCD Household Energy Saving Competition - Summer	Skillset/Bravo	12/22/15	4/11/16	80	
8	July Quarterly Survey	WRI	7/31/15	8/17/15	12	
9	October Quarterly Survey	WRI	10/30/15	11/16/15	12	
10	Focus Group One	WRI/Bravo	8/31/15	8/31/15	1	
11	Focus Group Two	WRI/Bravo	11/30/15	11/30/15	1	
12	Wrap Up Survey	WRI	12/22/15	1/20/16	22	
13	PowerPlay Website Redevelopment	2&2/Bravo	8/1/15	10/2/15	45	
14	PUBLISH FINAL REPORT	Skillset/Bravo	6/20/16	7/20/16	23	

Table 2 PowerPlay Social Marketing and Research Timeline

4. RESULTS

OVERALL RESULTS

Introduction

Combined, the elements of the PowerPlay program are designed to motivate the target participant group to engage with the issue of conserving energy and in doing so, achieve greater household energy efficiency. The research methodology conducted by Western Research Institute sought to test the success of the program in achieving these overall outcomes by assessing the ability of the program to:

- recruit participants;
- encourage active participation;
- deliver educational benefits;
- extend its reach beyond the participant group;
- influence behaviours and purchasing decisions;
- deliver cost savings;
- produce changes that impact positively on the household; and
- generate longer term impacts.

In addition, the evaluation project gathered feedback on potential improvements to the program.

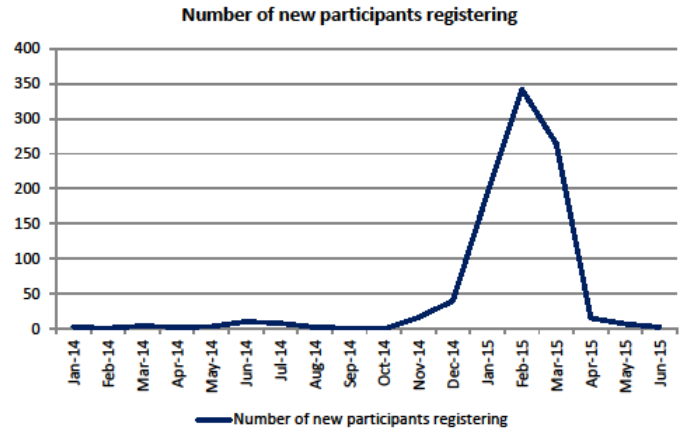
The data collected to assess achievement against each of these outcomes is provided in this section.

An assessment of the program's ability to deliver cost effective solutions through a Cost Benefit and Effectiveness Analysis is presented in the next section.

Recruitment of participants:

Ten percent of the final participant cohort was registered in the first 12 months of the program. The vast majority (87 percent) of participants registered between January and March 2015.

Chart 4.1 Participant registration



The recruitment strategies and the resulting registrations are outlined in Project Administration.

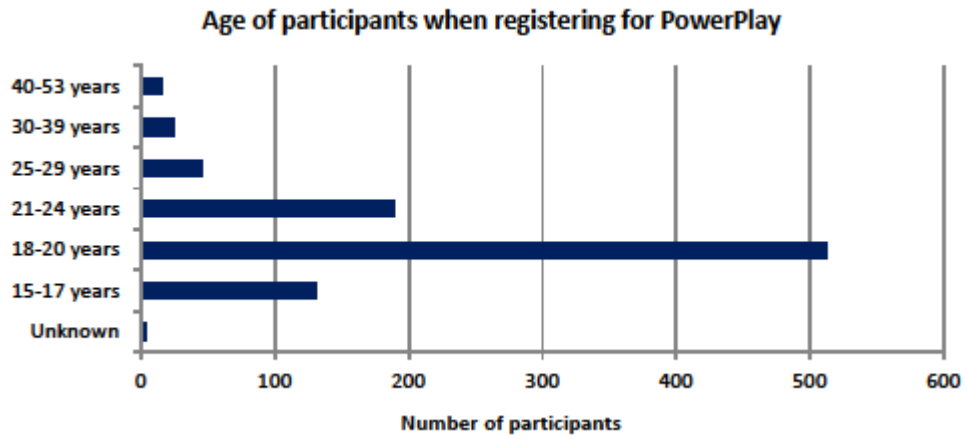
Profile of participants

Demographic information was collected for participants when they first registered for the program. The following profile of the participant cohort is based on this 'commencement' data.

- On closure of registration, the participants ranged in age from 15 to 53 years. Over half (56 percent) of the participants were aged 18-20, with a further 20 percent being in the 21-24 age bracket and 14 percent being aged 15-17 years. The average age was just over 20 years. The graph below shows the age spread of participants on registration.

Chart 4.2 Age on registration

- The participant group was 73 percent male and 17 percent female. A further 10 percent of the



participants did not have gender data recorded.
- Just fewer than 9 percent identified as Aboriginal and/or Torres Strait Islander.
- Nearly half of the participants had completed Year 12 (49 percent of participants). The next largest groups were those who had completed Year 10 (35 percent), and those who had completed a TAFE qualification (9 percent).
- Over two thirds of the participants (71 percent) had been employed on a full time basis in the 12 months prior to registering for PowerPlay. A further 9 percent had worked part time.
- The most common level of personal income reported was between $20,800 and $31,199 (31 percent of participants). A further 18 percent of participants earned between $15,600 and $20,799 and
  16 percent earned between $31,200 and $41,599. 10 percent of participants were either unsure of their income or unwilling to divulge this information.
- The majority of participants (58 percent) lived in a dwelling that was owned by someone in the house (two thirds of these were in the process of being paid off), one third was living in a rented dwelling, and the remainder were unsure of the dwelling ownership status.
- The average household size for the participant group is 3.5 people, with almost a quarter of participants (24 percent) living in four-person households. The next most common household sizes were three-person and two-person households (19 percent and 18 percent, respectively). A further 20 percent lived in households of five or more people. Only 5 percent of participants living on their own. Data was not recorded for 13 percent of participants.

Attitudinal Characteristics

Table 3 – Attitudinal Characteristics

	Strongly Disagree	2	3	4	Strongly Agree
Energy efficiency is too much hassle	24%	27%	39%	6%	4%
Energy efficiency means I have to live less comfortably	29%	29%	29%	9%	3%
My quality of life will decrease when I reduce my energy use	37%	29%	26%	6%	3%
Energy efficiency will restrict my freedom	38%	29%	23%	7%	3%
Energy efficiency is not very enjoyable	31%	29%	30%	6%	4%

The majority of participants expressed positive attitudes towards energy efficiency statements when they commenced participation in the program. Only 10 percent of respondents agreed or strongly agreed that energy efficiency is 'too much hassle', will restrict personal freedom and is not very enjoyable; 12 percent agreed or strongly agreed that energy efficiency means having to 'live less comfortably'; 9 percent agreed or strongly agreed that reducing energy consumption would reduce quality of life.

- 74 percent of participants reported being very interested or interested in conserving energy when registering for the program. Only 5 percent reported that they were not interested.
- 40 percent of participants indicated that they had become more interested in conserving energy at home in the 12 months prior to registering for the program.
- A majority of participants (53 percent) indicated they had a moderate level of knowledge about energy conservation, while 29 percent of participants reported having high or very high knowledge.
- 26 percent of participants reported having high or very high level of control over their energy consumption. The largest group was those that felt they only had a moderate level of control (45 percent).

See charts below.

Chart 4.3 – Interest in energy conservation

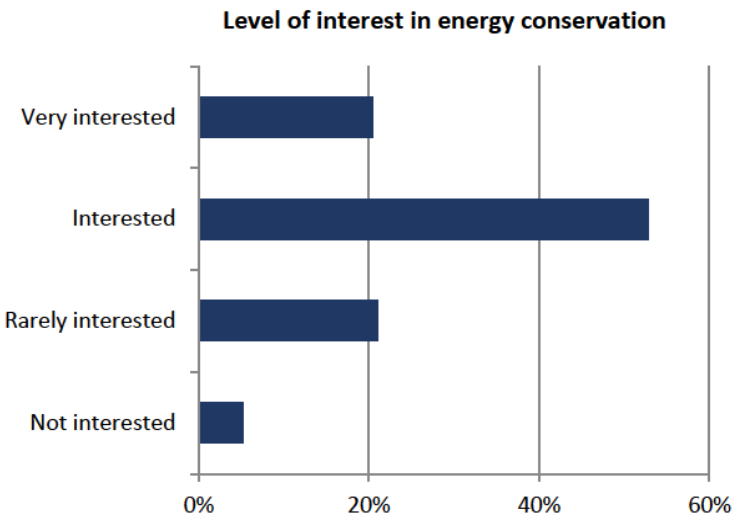


Chart 4.4 – Knowledge about energy conservation

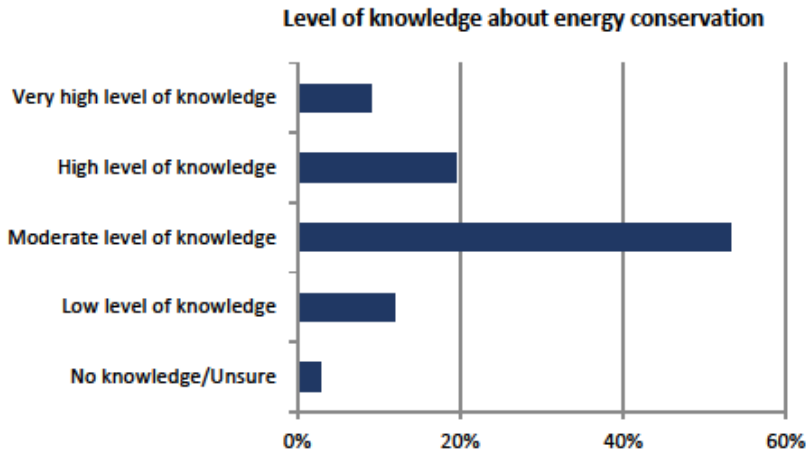
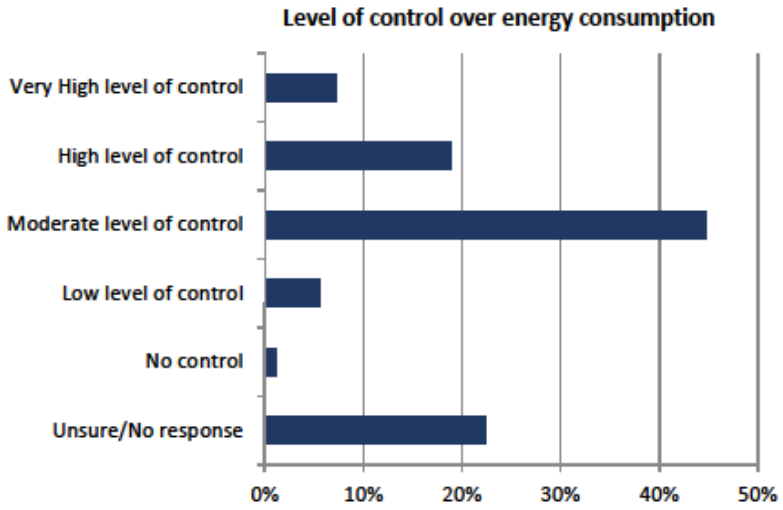


Chart 4.5 – control over energy consumption

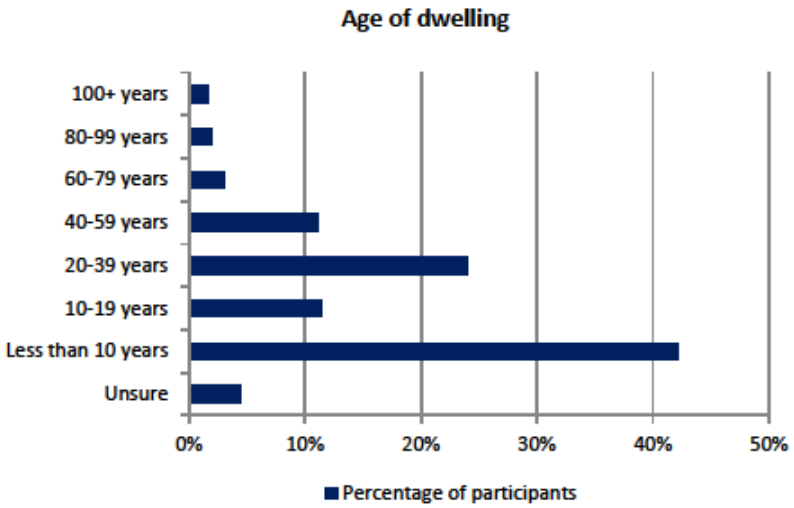


Dwelling Characteristics

Some basic information was collected from participants about their residence. Selected information is presented here.

- Dwelling age: the largest group (42 percent) of participants indicated that their residence was less than 10 years old. The next largest group (24 percent) indicated that their residence was 20 to 39 years old. A total of only 7 percent indicated that they were living in dwellings that were 60 years or older.

Chart 4.6 – Age of dwelling



- *Construction material:* the most common construction material was brick veneer (36 percent of participants), followed by double brick (24 percent), weatherboard (8 percent), and concrete/concrete block and fibro (both 6 percent). A further 11 percent of participants indicated that they were unsure of the construction material of their residence.
- *Number of key rooms:* as can be seen in the table below, most participant's residences had three or four bedrooms (36 and 38 percent, respectively), one or two bathrooms (41 and 48 percent, respectively), and one or two living areas (46 and 43 percent, respectively).
- *Energy source:* 90 percent of participant residences were connected to mains electricity, while only 32 percent were connected to mains gas. Solar electricity and bottled gas were both used by 14 percent of residences, and 10 percent of participants used wood.

Table 4 – Household statistics

Bedrooms							
No. rooms		1	2	3	4	5	6+
% of Participants		2.7%	8.4%	36.1%	38.4%	10.7%	3.5%
Bathrooms							
No. rooms	0	1	2	3	4	5	6+
% of Participants	0.2%	41.2%	48.2%	8.8%	1.1%	0.3%	0.2%
Living areas							
No. rooms	0	1	2	3	4	5	6+
% of Participants	1.3%	45.9%	43.3%	7.0%	1.8%	0.1%	0.5%

Note: some results do not add to 100 due to rounding.

Active participation:

Evidence of participation in the program has been gathered through:

- quarterly surveys conducted throughout the trial period;
- statistics gathered from the program's Facebook page;
- statistics gathered from the game; and
- the final wrap-up survey, conducted in January 2016

Results from each of these are presented overleaf.

Quarterly surveys

Quarterly surveys gathered information about how often survey respondents had visited or used the various elements of the program.

Table 5 – Elements of the Program

Visits in past 3 months	Q2 2015 (n=67)	Q3 2015 (n=118)	Q4 2015 (n=40)
MyPowerPlay website	49% (> once), 16%(>5 times)	19% (> once), 3%(>5 times)	43% (> once), 13%(>5 times)
PowerPlay Facebook page	42% (> once), 16%(>5 times)	19% (> once), 8%(>5 times)	43% (> once), 15%(>5 times)
PowerPlay competitions / conversations on Facebook	12% (> once), 4%(>5 times)	12% (> once), 2%(>5 times)	28% (> once), 18%(>5 times)
PowerPlay games through mobile device app	40% (> once), 22%(>5 times)	24% (> once), 8%(>5 times)	33% (> once), 13%(>5 times)

Facebook page statistics

Skillset's PowerPlay Facebook page is the main channel for participant engagement. It runs the Challenge and the fortnightly quiz and promotes the winners using video clips and 'selfies'.

Table 6 – Facebook Statistics

Facebook page statistics	Q1 2015	Q2 2015	Q3 2015	Q4 2015	Jan 2016
Total new likes	209	265	48	28	18
Unique user engagements per day (average)	23.6	67.3	8	5	7
Average daily reach	1978	1963	356	26	64
Daily organic reach (average)	55	38	47	26	64
28 days organic reach (average)	613	919	750	592	661

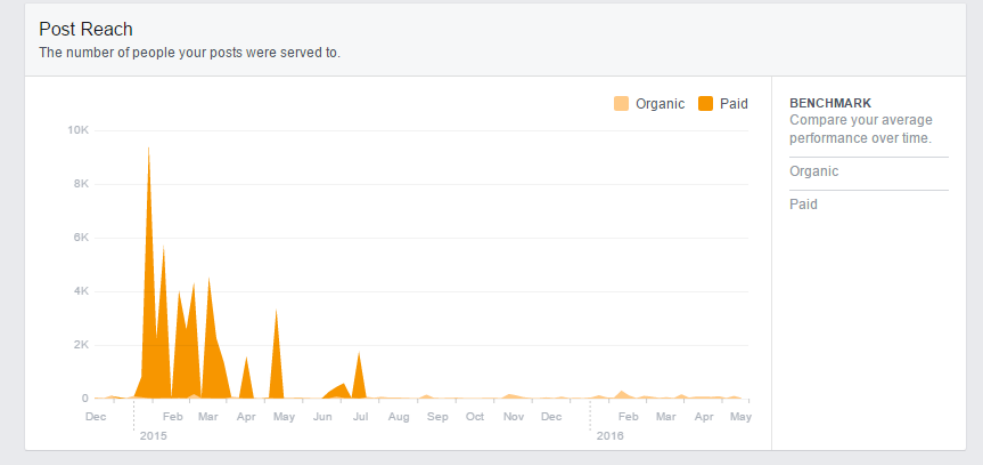
The initial Facebook strategy was based on using paid posts to attract the public to like the site resulting in a high spike in page likes from late 2014 to early 2015.

These were stopped in July 2015 to provide a more realistic measure of engagement from registered participants through measuring the organic reach. The paid posts had also created expectations that everyone from within the demographic group could compete for the prizemoney creating confusion around the Facebook communication.

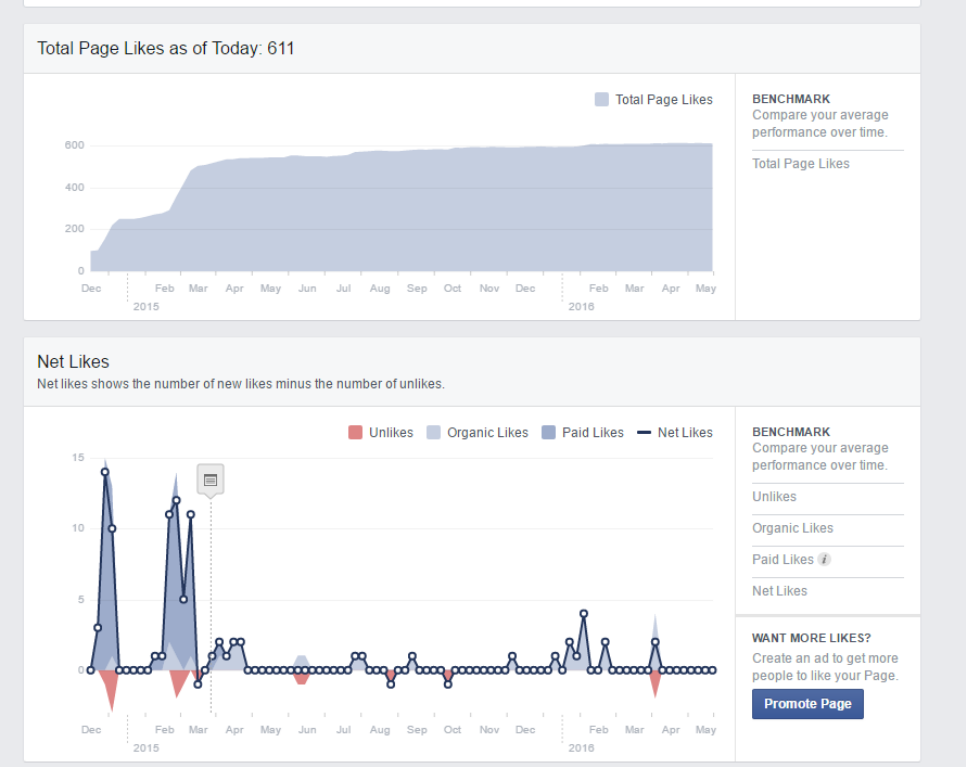
However, one unregistered player still participates in the quiz in the hope that registration will open again to allow other members of the demographic to compete for the prizes.

The redesign of the Facebook banner to target trial participants has resulted in a slight increase in page likes which has plateaued which is to be expected from the trial group.

Facebook reach after paid posts ceased.



Facebook likes after paid posts ceased.



Website analytics

Google analytics have only captured activity on the new website since the beginning of 2016. The audience overview shows significant activity in the first quarter of the year when the video competition was being run with 367 users, 763 page views and a 14 percent return rate of visitors. The bounce rate of the number of visits in which a person leaves the website from the landing page without browsing any further is 92.04%.

Game statistics

The game is not restricted to those registered with the PowerPlay program, therefore the total number of game users often exceeds the number of PowerPlay participants. In fact, players have been located across the world, with a large contingent from the United States of America.

Early data provided by the app did not identify players and therefore there was no way to identify how many program participants were playing. Amendments made more recently have allowed the capture of this data and are reflected in the statistics provided below.

Table 7 – Game Statistics

Game statistics	Q2 2015	Q3 2015	Q4 2015	Nov 2015 -Jan 2016
Number of unique identifiable players	31	23	16	17
Number of program participants playing		12	7	10
Average game sessions per participant		8.8	8.3	13
Cumulative scores for participants		1,109,776	759,184	2,157,423
Average game sessions per non participant		3.8	2.6	4.6
Cumulative scores for non-participants		283,382	213,847	478,181

The latest game statistics available (till 12th April 2016) identify 43 players who are registered program participants.

The fortnightly weekend quiz

The average rate of participation recorded to date was 12.4, maximum was 27 and minimum was 5. The quiz manages to reengage at least one registered participant each time it is run and it can be won multiple times based on the luck of the draw.

The monthly Challenge

The monthly Challenge, when redesigned with a time limit in September, attracted an average of five new players per month. Since March, 2016, this number has dropped to one or two players reflecting the low pool to draw from within trial group who have expressed interest in playing the game.

Wrap-up survey

The wrap-up survey sought to test the program's ability to generate active participation through a number of questions:

- by asking how frequently the respondent visited or participated in the different program elements;
- by asking how important a range of program features were in motivating the respondent to participate; and
- by asking which feature of the program had kept the respondent most interested in the program

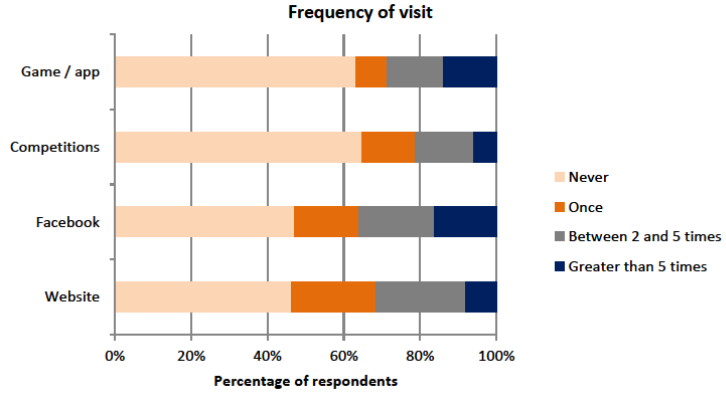
The results for each of these elements are presented below.

Frequency of visit/participation

Levels of engagement with the various program elements were tested in the wrap-up survey, though the metric gathered was slightly different to that captured in the quarterly surveys in that it asked for usage or visitation since registering with the program rather than in the last three months.

Results are presented in the following chart.

Chart 4.7 – Frequency of visit



Engagement status

At the end of this question, the interviewers conducting the survey were asked to assess the level of engagement of each respondent and flag them as either an 'engaged' or a 'disengaged' respondent.

The number of respondents identified as 'engaged' was 34 out of 136 survey respondents (25 percent).

An analysis of **engagement by bill paying status** was also conducted. The wrap-up survey asked respondents to identify their bill paying status as one of the following:

- I don't contribute to household bills at all (36 percent of all respondents)
- I'm solely responsible (24 percent)
- I contribute to bills (40 percent)

A significantly greater engagement rate was recorded for those participants who were in some way responsible for contributing to household bills:

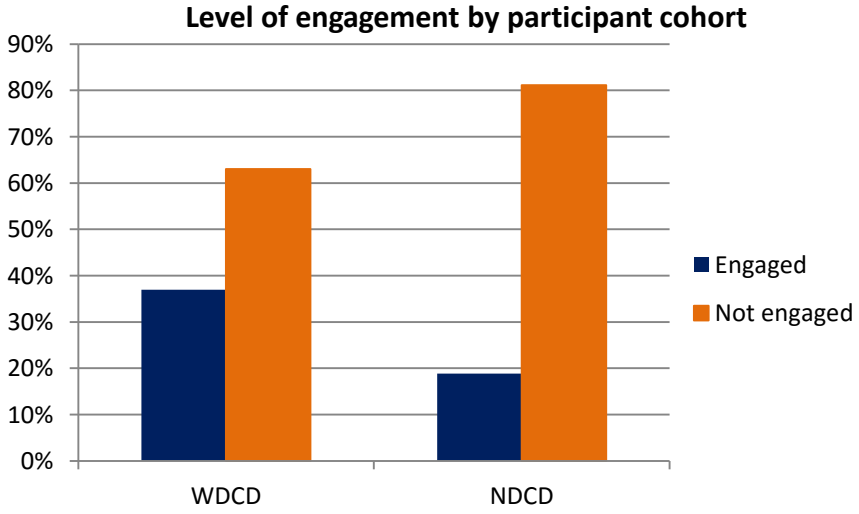
- I don't contribute to household bills at all (14 percent assessed as 'engaged')
- I'm solely responsible (33 percent)
- I contribute to bills (30 percent)

In addition, 79 percent of those who were assessed as being 'engaged', reported some level of responsibility for contributing to household bills.

An analysis of **engagement by WDCD status** was also conducted[2]. The survey interviewers identified those respondents who were registered in the WDCD stream (46 out of 136 respondents). Of the 46 WDCD respondents, 17 were deemed to be engaged (37 percent).

The remaining 90 respondents were NDCD participants and only 17 of this group were deemed to be engaged (19 percent).

Chart 4.8 - Level of Engagement



The engagement status of the respondent determined their participation with the remainder of the survey. Those respondents deemed to be 'disengaged' were asked only a few more questions about why they weren't participating, what improvements they would suggest and best methods of communication. Those respondents deemed to be 'engaged' continued through the remainder of the survey and for this group, aspects of motivation, educational benefit, program impact and program improvement were tested.

Reasons for low engagement

Those respondents identified as 'disengaged' (75 percent) were asked to briefly explain why they hadn't been engaging with the program. The main reasons for low engagement cited were:

- Forgotten about the program or lack of interest (38 percent).
- Too busy (34 percent).

[2] Results by WDCD status have been included for interest, though the sample sizes achieved are too small to be able to make inferences from the segment analyses to the broader population.

- Lack of communication about the program or confusion about communications (17 percent).
- Confusion over eligibility requirements (8 percent).

Information about potential improvements to the program was also sought specifically from this group of 'disengaged' participants (refer to Discussion section).

Motivation to participate

Those respondents who had been identified as 'engaged' were asked to identify how important a number of program features were in motivating them to participate. Respondents were asked to rate each feature on a scale of 1 to 5, where 1 is not important at all and 5 is very important. Results are presented in the table below.

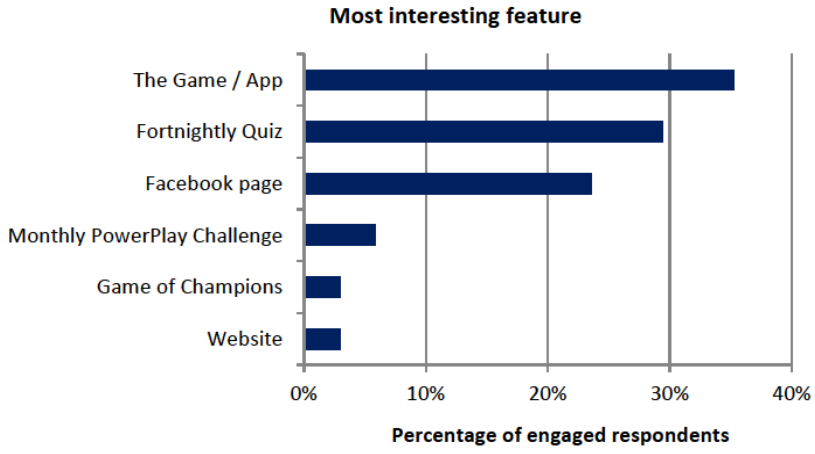
Table 8 – Motivation to Participate

Program feature	Rating 1-2	Rating 3	Rating 4-5	Average Rating
Sign-up money / voucher	9%	24%	68%	4.0
Prize money offered through competitions	6%	26%	65%	3.9
Being able to learn about energy conservation	6%	29%	65%	3.9
Being able to use the knowledge gained to help reduce household bills	3%	18%	79%	4.1

Generating interest

Engaged respondents were also asked to nominate which program feature had kept them interested (or participating in the program) the most. All results are shown in the chart below.

Chart 4.9 – Most interesting feature



Educational benefit:

Evidence of the educational benefit of the program has been gathered through:

- quarterly surveys conducted throughout the trial period;
- in-depth (case study) interviews and focus groups; and
- the final wrap-up survey, conducted in January 2016.

Quarterly surveys

Quarterly surveys gathered information about each respondent's level of interest in energy conservation, their level of knowledge about energy conservation, and the control they have over energy consumption. These metrics have been compared to the overall metrics produced on commencement to see how they have changed over the course of the trial program.

Table 9 – Quarterly survey education results

	Commencement	Q2 2015 (n=67)	Q3 2015 (n=118)	Q4 2015 (n=40)
Interest in energy conservation (interested, very interested)	73%	88%	82%	88%
Knowledge about energy conservation (high, very high)	29%	42%	36%	43%
Control over energy consumption (high, very high)	29%	37%	36%	30%

In depth (case study) interviews and focus groups

The full case studies are presented in Appendix A.

The reports produced for each focus group are presented in Appendix B.

Wrap-up survey

The wrap-up survey sought to test the program's ability to educate participants through a number of questions:

1. By asking whether or not the respondent's level of interest in conserving energy in the home had changed over the course of the program.
2. By asking whether or not the respondent's level of knowledge about conserving energy in the home had increased as a result of participation in the program.
3. By asking which feature of the program had taught the respondent the most about household energy conservation.

The results for each of these questions are presented below.

Level of interest in and knowledge about energy conservation

Engaged respondents were asked how their level of interest in conserving energy in the home had changed over the course of the program. Additionally, they were asked whether or not their knowledge about conserving energy in the home had increased as a result of participating in the program. The results are presented below.

Chart 4.10 – interest in energy conservation

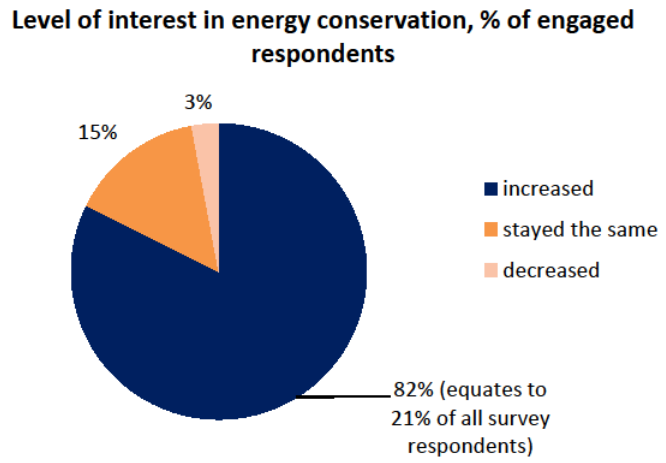
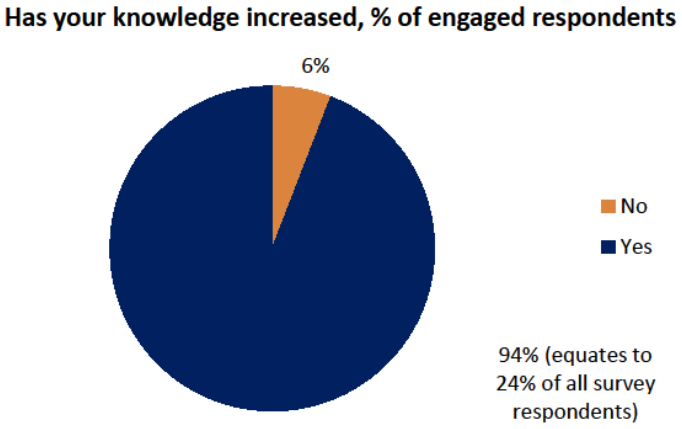


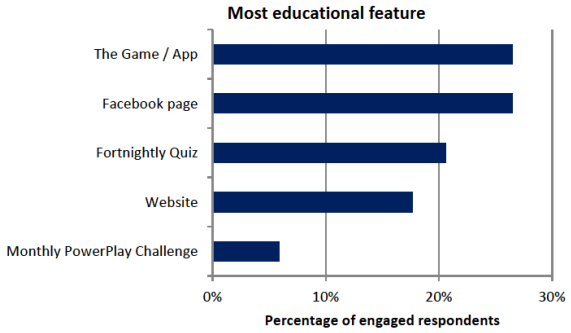
Chart 4.11 – knowledge about energy conservation



Most educational feature of the program

Engaged respondents were also asked to nominate which program feature had taught them the most about household energy conservation. All results are shown in the chart below.

Chart 4.12 – Most educational feature



Program reach:

Evidence of program reach has been gathered through:

- quarterly surveys conducted throughout the trial period;
- in-depth interviews and focus groups; and
- the final wrap-up survey, conducted in January 2016.

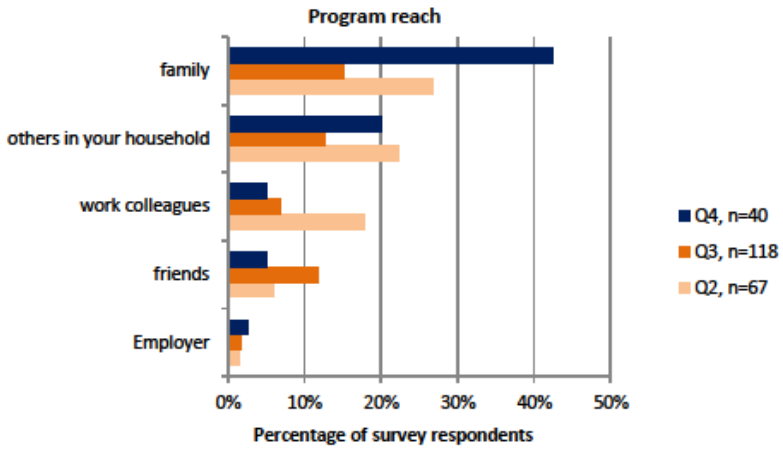
Quarterly surveys

Quarterly surveys gathered information about the sharing of information from the program. Specifically, respondents were asked:

- who they had discussed the program with; and
- whether or not they had recommended the PowerPlay game to any other people.

Over the course of the past three quarterly surveys, results relating to the extent of information sharing have been variable, though the primary focus of information sharing has been family and others in the household. Results from the three most recent quarterly surveys are outlined in the chart below.

Chart 4.13 – Program reach



The quarterly survey undertaken for Quarter 3 2015, identified that 31 percent of respondents had recommended the PowerPlay game to other people. Over the course of the quarterly surveys conducted for Quarter 2, 3 and 4 2015, respondents had spoken to, in the order of, 450 non-registered people about the program.

In depth (case study) interviews and focus groups

The complete case studies are presented in Appendix A.

The reports produced for each focus group are presented in Appendix B.

Wrap-up survey

Similarly, the wrap-up survey asked respondents who they had discussed the program with; and whether or not they had recommended the PowerPlay game to any other people. This survey, however, did not seek any quantification of the number of people to whom respondents had spoken.

The results indicate that 12 percent of participants are discussing the program with their families, 7 percent with others in their household, and 7 percent with friends. In addition, 6 percent of respondents had recommended the PowerPlay game to other people.

Influence on behaviours and purchasing decisions:

Evidence of the influence of the program on behaviours and purchasing decisions has been gathered through:

- quarterly surveys conducted throughout the trial period; and
- the final wrap-up survey, conducted in January 2016.

Quarterly surveys

Quarterly surveys captured the percentage of respondents:

- who had made behavioural changes as a result of the program; and/or
- where the program had influenced household modifications or purchasing decisions.

The results are presented in the table overleaf.

Table 10 – Change and Influence

In past three months	Q2 2015 (n=67)	Q3 2015 (n=118)	Q4 2015 (n=40)
Have you changed any of the ways you manage household energy consumption, % yes	60%	51%	68%
Has the program influenced any modifications or purchasing decisions, % yes	51%	26%	50%

Over the past three quarters the most common changes to energy management behaviour reported by respondents were:

- turning off lights when not required
- using blinds, curtains and shades to reduce heat in the house, to reduce heat loss from the house and to allow sun into the house
- blocking draughts around doors and windows to reduce heat loss
- shutting down rather than putting computers into sleep / hibernate mode at the end of the day

Over the past three quarters, the most common modifications or purchases reported by respondents were:

- installation of mains electricity (from the grid)
- installation of a ceiling and portable fans
- installation of compact fluorescent lights and LED lights
- installation of solar electricity (Photo-Voltaic system)

Participants were also asked to rate[3] each program element's influence on energy related behaviours in the household or purchasing decisions relating to energy management. Looking specifically at the results from the Q3 2015 survey, variable numbers of participants provided ratings for each element of the program. The table below summarises the reported influence of each of these elements.

[3] Rating scale 1= no influence 5 = major influence

Table 11 – Influence from Program Elements

Program element	Number providing rating	Average influence rating	% of respondents rating >= 3
Website influence on behaviours	36	2.79	13% (n=118), 42% (n=36)
Website influence on purchases	37	2.74	8% (n=118), 24% (n=37)
Facebook influence on behaviours	49	2.66	14% (n=118), 35% (n=49)
Facebook influence on purchases	43	2.49	8% (n=118), 23% (n=43)
Game influence on behaviours	58	2.60	7% (n=118), 14% (n=58)
Game influence on purchases	54	2.65	7% (n=118), 15% (n=54)

The average influence of the program elements was not reported as very high with all results under 3/5. Participants reported that the website had had most influence on their energy related behaviours and purchases.

Wrap-up survey

Similarly, the wrap-up survey asked respondents whether, over the period in which they had been registered with the program:

- they had been able to influence the use of energy in their household by changing any behaviours; and
- the program had influenced any decisions regarding the purchase of appliances for the house.

82 percent of engaged respondents (n=34) reported having made behavioural changes as a result of the program, whilst 53 percent reported that involvement in the program had influenced the purchase of appliances.

Together, 94 percent of engaged respondents had made changes as a result of the program.

The most common behaviour changes reported were:

- switching off appliances at the powerpoint or when on standby, and using powerboards and remote control devices to switch off appliances (close to one third of the reported changes made – 32 percent);
- switching off lights when not needed (9 percent); and
- draft sealing, regulating the use and settings of air conditioners, installing light bulbs and influencing the decision making process around purchasing (7 percent each).

The next section includes a table summarising the top two behaviour changes reported for all engaged respondents.

The most common purchases made were refrigerators (22 percent of reported purchases made) and washing machines (17 percent). The following section includes a table summarising the top two purchases made for all engaged respondents.

WDCD respondents use of the retrofit kit

In mid December 2015, the program coordination team distributed Retrofit Kits to all *active* participants registered as WDCD participants. The WDCD participants are located in the Bathurst and Orange region and whilst originally they numbered 114, a re-contact process undertaken by the program coordination team in early December, identified that 60 had remained active.

Inactive participants indicated that they become inactive as a result of moving residence or had left the region to find work or go to university. A number of participant phone numbers were disconnected with no response to the follow up emails sent by the project team.

The Retrofit Kits included a range of household energy saving products and a registration form for the #myenergysaver video competition. (refer attachment)

While it was too early to assess the household benefits from receiving this kit, the January wrap-up survey gathered evidence of the uptake / usage of the retrofit kit by WDCD respondents.

Close to half of the engaged respondents (47 percent, n=16) were identified as WDCD participants. Of the 16 WDCD respondents, 11 had made use of some of the components in the kit:

- the wireless thermometer and remote control powerpoint switches had been used by 7 respondents each;
- the energy meter had been used by 6 respondents;
- LED light bulbs had been installed by 5 respondents;
- the sealant had been used by 3 respondents; and
- the draft excluder had been used by one respondent.

Translation of behaviour changes and purchasing decisions into cost savings:

Evidence of the translation of behaviour changes and purchasing decisions into cost savings has been gathered through:

- quarterly surveys conducted throughout the trial period;
- the final wrap-up survey, conducted in January 2016; and
- an analysis of energy consumption data for the WDCD cohort.

Quarterly surveys

Quarterly surveys asked respondents to indicate whether the average daily usage consumption recorded in the last power bill received for their household was:

- Lower than expected;
- As expected; or
- Higher than expected

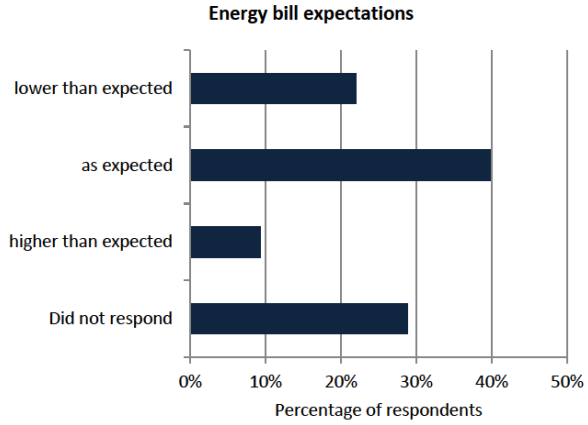
Note that the use of the descriptor "as expected" does not indicate whether or not the respondent expected his or her bill to be lower, higher or the same as in the previous period. As a result the results related to those who responded that their bill was "as expected" are not conclusive.

For the Quarterly survey conducted for Quarter 3 2015:

- 22 percent of respondents (n=118) reported that their average daily usage was lower than expected;
- 40 percent as expected;
- 9 percent higher than expected; and
- A further 29 percent did not respond to the question.

Results are presented in the chart overleaf.

4.14 – Energy bill expectations



The average daily usage results were further analysed to determine the proportion of respondents in each category who had also reported making changes to the way they managed household energy consumption within the previous three months:

- Of those reporting that their average daily usage was lower than expected, 73 percent had reported making changes in the way that they manage their household energy consumption within the previous three months.
- Of those reporting that their average daily usage was higher than expected, 27 percent had reported making changes in the way that they manage their household energy consumption within the previous three months.
- Of those reporting that their average daily usage was as expected, 49 percent had reported making changes in the way that they manage their household energy consumption within the previous three months. As outlined above, however, the use of the term "as expected" cannot be assumed to mean that no change in average daily usage has occurred.

Wrap-up survey

As previously discussed, the wrap-up survey asked respondents to nominate the top two behavioural changes, related to energy management within the household, which they had been able to influence over the course of the program. WRI has categorised all the behaviour changes reported by respondents, and has allocated a cost savings estimate to each behaviour change. As it was not possible to capture the actual cost savings resulting from specific changes made by participants, estimates of cost savings published by reliable sources were used. The cost savings estimates have been sourced from the Commonwealth Government's Department of Industry, Innovation and Science website yourenergysavings.gov.au[4]. A detailed explanation of how cost savings estimates were developed from this information is included in the Cost Benefit and Cost Effectiveness Analysis of this report.

Twenty eight respondents reported having made household behaviour changes. The total cost savings reported by respondents are estimated at $10,250. Table 12 overleaf summarises the categories of behaviour change and the estimated cost savings associated with each category.

Similarly, respondents were also asked to nominate the top two purchases that involvement in the program had influenced. Again, WRI has categorised these purchases and allocated an estimated cost savings to each one. Approximate appliance running costs have been sourced from AGL's Smarter Living Guide.

Further data upon which to base estimated cost savings have been sourced from the Commonwealth Government's Department of Industry, Innovation and Science website; Yourenergysavings.gov.au;

[4] http://yourenergysavings.gov.au/

Essential Energy's Energy Answers Appliance Guide[5] and Origin Energy's fact sheet on household appliance running costs for summer in New South Wales.

Eighteen respondents reported that involvement in the program had influenced the purchase of appliances (53 percent of engaged respondents and 13 percent of all respondents). The table below summarises the categories of purchase and the estimated cost savings associated with each category.

Table 12 – Behaviour/Household change

Behaviour / household change	Instances reported	Estimated[6] Cost savings per instance ($)	Total savings ($)
Installation of insulation	1	600	600
Switch off appliances	14	300	4,200
Switch off lights	4	300	1,200
Implemented draft sealing measures	4	300	1,200
More efficient use of air conditioner	3	300	900
More efficient use of the oven	1	50	50
Installation of energy efficient light bulbs	4	50	200
Installation and use of window coverings	2	300	600
Implemented water conservation measures (rainwater tank / water efficient showerheads)	2	300	600
Cook more efficiently	1	50	50
Purchased energy efficient appliances	2	300	600
Use clothes dryer less	1	50	50
Total savings			$10,250

Table 13 – Appliances Purchased/Installed

Appliance purchased / installed	Instances reported	Estimated Appliance running cost	Conservative percentage gain	Gain
Air Conditioner	1	391	30%	117
Fridge	5	250	30%	375
Washing Machine	5	106	30%	159
Clothes Dryer	2	116	30%	70
Light Bulbs	2	50	100%	100
Portable Air Conditioner	1	11	30%	3
TV	1	152	30%	46
Pool Pump	1	380	30%	114
Generic energy efficient appliances	1	300	100%	300
Total savings				$1,284

Finally, the wrap-up survey sought to understand how household energy bills had changed over the program period. Respondents were asked to consider how their bills has changed on average over the program period, taking into account comparable seasons, the prevailing climate / weather conditions and other individual factors that could affect their energy consumption:

[6] Note the cost data presented in Tables 12 and 13 are estimates based on published energy ratings data. The costs presented are not based on actual billing data.

- Engaged respondents were most commonly unsure of the direction of changes in their bills (47 percent, 12 percent of all respondents).
- Just over two fifths of engaged respondents (41 percent, equating to 10 percent of all respondents) believed that their household energy bills had decreased over the period.
- 9 percent of engaged respondents (2 percent of all respondents) indicated that their bills had stayed the same.

Energy data analysis

The participant group included for energy consumption analysis is restricted to a subset of residents in the Bathurst and Orange postcodes and does not include participants who have a solar PV system installed. Of the 114 approved WDCD households, there were only 60 active participants available for energy consumption analysis for the June to December 2015 period.

Longitudinal and cross-sectional analysis

The processing criteria applied to both the participant group and the comparison group impacted the number of participants for whom data was available, for each month tested. Highlights of the energy consumption analysis follow. Further detail is provided in Appendix B.

Table 14 presents an analysis of the consumption changes reported by the aggregate participant group and the aggregate comparison group for a specific comparison period. For instance, the comparison period July 2014 to July 2015 measures the consumption reported for the month of July 2015 compared to that reported for the month of July 2015. In the example given, 59 percent of participants reported a decrease in consumption when comparing July 2015 to July 2014, whilst only 44 percent of the comparison group reported a decrease in consumption for the same period.

Table 14 – Energy Data Analysis

Comparison period	Group	Number of households assessed	Percentage reporting a decrease in consumption	Percentage reporting an increase in consumption
July 2014 to July 2015	Participants	17	59%	41%
	Comparison group	12370	44%	55%
August 2014 to August 2015	Participants	26	50%	50%
	Comparison group	22891	46%	53%
September 2014 to September 2015	Participants	45	53%	47%
	Comparison group	31309	49%	50%
October 2014 to October 2015	Participants	44	52%	48%
	Comparison group	29929	49%	49%
November 2014 to November 2015	Participants	26	54%	42%
	Comparison group	20939	48%	49%
December 2014 to December 2015	Participants	7	57%	29%
	Comparison group	8929	50%	48%

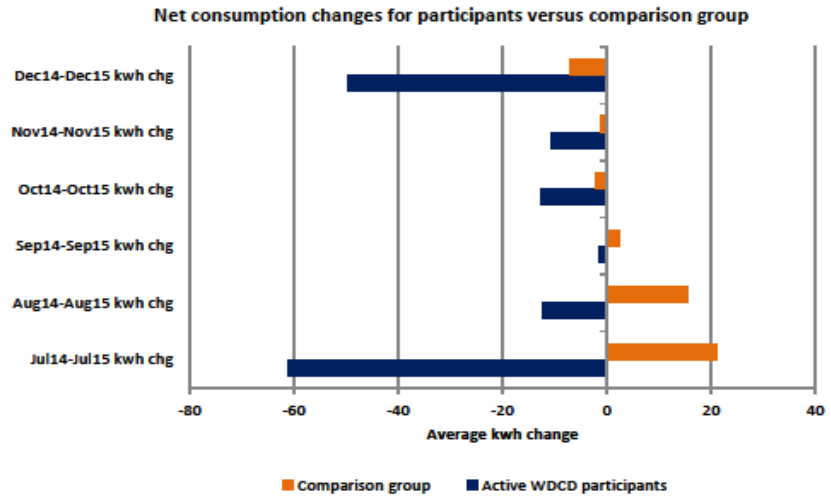
Note: figures may not add to 100 due to a percentage of households reporting stable consumption, as well as rounding.

The calculated net changes in consumption, across the active WDCD participant group and the comparison group, also show some positive results on a per household (or average kwh change) basis. The net changes in consumption have been calculated by adding the value of increases and value of decreases in kwh together to determine a net change for each period reported. To produce the net changes per household, this figure has then been divided by the number of households with available data for the period (participants or comparison group households). This has been calculated for non-solar participants and non-solar comparison group households.

The chart below shows net decreases in consumption for the active WDCD participants, as a group, over the past 6 months. Furthermore, the net decreases have been larger than any decreases recorded by the comparison group households.

Chart 4.15 Net consumption changes

Changes made by participants with reduced energy consumption



The evaluation task assessing energy consumption changes for participants was designed to allow for cross reference to quarterly surveys to identify the changes made by WDCD participants that may have had some influence over their energy consumption for the period. Unfortunately, poor response rates to the quarterly surveys meant that this analysis could only be performed for one survey (for Q3 2015).

Likewise, the wrap up survey was designed to capture the changes made by WDCD participants that could then be linked to the energy consumption changes recorded. Of the active WDCD participants who had recorded an overall decrease in energy consumption over the period, only eight had completed the wrap-up survey. Notwithstanding this small sample, the results provide some indication of the program's potential influence on the recorded changes.

These participant comments identify some of the most useful things learnt through participation in the program:

Little things can help - closing blinds, turning appliances off

Retrofit kit taught me a lot

Turning off appliances when on standby - that they are still using energy when off

More about the light bulbs, shutting the curtains and unplugging the appliances

Management of temperature for heating and cooling in my home

I've become smarter with my purchase of appliances and more aware of my usage

Use of curtains with thermal backing

Furthermore, the participants reported the following top two behavioural changes made as a result of participating in the program:

More diligent on closing the house up and turning lights off

Used the power board in the retro fit kit

Always onto my children about saving energy

Turn off powerpoints and appliances when not in use

Fully insulated the walls. Diverted all storm water into a big tank.

Bought my curtains and I've noticed a huge difference.

Satisfaction with changes made to the household

Evidence of participant satisfaction with changes made to the household has been gathered through:

- the final wrap-up survey, conducted in January 2016; and
- in-depth interviews.

Wrap-up survey

The wrap-up survey sought to assess satisfaction with changes made to the household. Those respondents who had made changes were asked to comment on their satisfaction with the changes and whether or not household members had any concerns about the changes.

Just over three-quarters of engaged respondents (76 percent) were identified as having made changes to their households as a result of the program. These respondents were then asked to rate how 'happy' they were with the changes and / or decisions they had made (rating on a scale of 1 to 5, where 1 is very unhappy and 5 is very happy). Respondents provided an average rating of 4.2/5, with:

- 46 percent rating it 5/5;
- 31 percent rating it 4/5; and
- 23 percent rating it 3/5.

In addition, these respondents were asked to indicate how the changes have impacted on household comfort levels, with 38 percent suggesting the household comfort had increased.

Finally, the survey asked those respondents who had made changes, whether anyone in their household was concerned about any of the changes or decisions made. Three respondents identified some concerns about the resulting changes in household temperature being of issue to some members of the family.

Looking at the reported impact on household comfort and the reported change in energy bills over the program period produces the following results:

Chart 4.16 – Impact on Household comfort

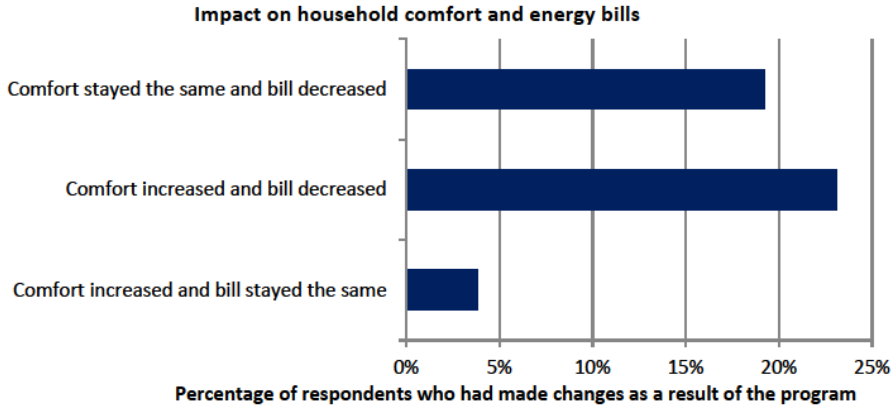
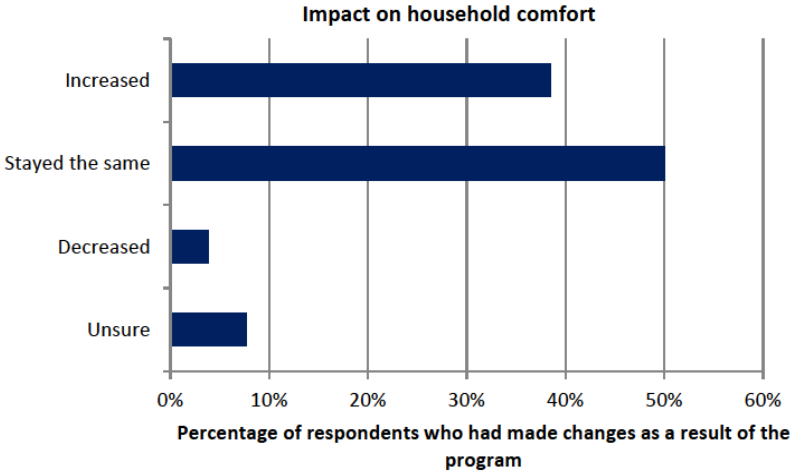


Chart 4.17 – Household comfort and energy bills



In total, 46 percent of respondents who had made changes to their household as a result of the program reported having experienced either an increase in comfort or bill reduction. The majority of respondents (50 percent), however, were unsure of the impact on their bills.

5. COST BENEFIT AND COST EFFECTIVENESS ANALYSIS

COST BENEFIT AND COST EFFECTIVENESS ANALYSIS

Simple methods of cost benefit analyses have been performed for this trial to create measures of cost benefit and cost effectiveness. Data has been recorded and analysed to provide an indication of the results of this trial but also, to illustrate how future programs of this nature may perform.

The cost benefit analysis (CBA) has relied on data from:

- The cost savings experienced by active WDCD participant households over the course of a period of involvement with the program.
- The cost savings associated with reported changes made by participants who responded to the final wrap-up survey.

The unit of measure in the above cases is ***dollars saved***.

The cost effectiveness analysis (CEA) has focussed on the following measures of effectiveness:

- Producing active participants
- Increasing interest in conserving energy.
- Delivering educational benefits.
- Influencing changes in household behaviour and purchasing decisions.

The unit of measure in the above cases is ***number of participants***.

Given that 25 percent of wrap-up survey respondents were deemed to be engaged, we can infer that, out of the total participant pool, 232 are engaged. The following sections perform cost benefit analysis on this population figure.

Cost Benefit Analysis

Direct Measurement

An analysis of longitudinal energy consumption data for the Active WDCD participant group has been undertaken to determine:

- the aggregate consumption changes experienced over a period of involvement in the program; and
- the cost savings, if any, associated with these changes.

It should be noted that only whole month consumption data was analysed to prevent the potential skewing of results where part month consumption was being compared to whole month consumption.

The Origin Energy Market Offer Tariff of 31.691 cents per kwh (current at the time of writing) has been applied to the resultant consumption changes to determine the impact on billing.

The table below outlines the aggregate consumption changes experienced by the active WDCD participants and the impact on billing over three different periods of program activity.

Table 15 Aggregated consumption changes

Period	Aggregate consumption changes (kwh)	Associated cost savings ($)
Jul-Dec 2015 – Jul-Dec 2014	119.63	37.91
Aug-Oct 2015 – Aug-Oct 2014	-530.82	-168.22
Sep-Oct 2015 – Sep-Oct 2014	-652.67	-206.84

In addition to the processing constraints outlined, a number of key factors influencing the operation of the program should be considered when evaluating the results achieved:

- The majority of registrations occurred in April 2015;
- The program underwent significant resourcing changes between April and June 2015;
- Low numbers of WDCD participants were able to be assessed for the November and December months of 2015 because of incomplete billing data;
- A comprehensive review of the engagement strategy was undertaken in June / July 2015, being implemented from August onwards; and
- September and October 2015 represented strong periods of engagement for the program. In addition the number of WDCD participants able to be assessed was consistently high across both periods.

An assessment of energy savings made has not been incorporated into the cost benefit framework as a valid set of data is not available for a whole year. This is primarily due to the fact that most registrations to the program only occurred in April 2015. The program coordination and evaluation teams considered that only the two month period of September – October is reflective of the potential of the program, however, it would be invalid to extrapolate this result to calculate the potential savings made over a whole year.

It is unfortunate to not have statistically significant indications of consumption change from meter data however it is encouraging to note a general downward trend for the most reliable period of measurement, particularly given that it represents a 'shoulder season' in which energy use for households in the Central West region is lower than both summer and winter as outdoor conditions are favourable to human comfort.

Implied Benefit

The design of this trial prevented measurement of actual cost savings resulting from specific changes made by participants, primarily due to the absence of home visits by trained assessors or by installation of monitoring equipment with this capacity. The mechanism for recording changes made by participants was the quarterly survey as presented in Results - section BBBBBBBBBB. Estimates of cost savings have been inferred from the behaviour or household change as disclosed by participants.

Respondents to the final wrap-up survey nominated the top two behavioural changes, related to energy management within the household, which they had been able to influence over the course of the program. WRI has categorised all the behaviour changes reported by respondents, and has allocated a cost savings estimate to each behaviour change.

Cost savings estimated for the respondent group have been applied to the entire participant group. This has involved the following steps:

- Determining the proportion of respondents who have reported behavioural changes;
- Categorising the reported behaviour changes and allocating each a cost savings estimate;

- Determining the cost savings per respondent (based only on those who had reported behavioural changes);
- Applying the per respondent savings calculated in c) to a proportion of program participants based on the proportion calculated in a).

Respondents were also asked to nominate the top two purchases that involvement in the program had influenced. Again, WRI has categorised these purchases and allocated an estimated cost savings to each one. The process outlined above was also used to derive total cost savings for the entire participant group.

Cost savings estimates (benefits) have been derived from the Commonwealth Government's Department of Industry, Innovation and Science website yourenergysavings.gov.au. This website listed a range of household energy management behaviours and categorised each according to a rating scale shown in the table below.

Table 16 Household savings estimates

Rating scale	Associated cost savings	WRI applied cost saving
	Some savings - less than $100 per year	$50
	More savings - up to $500 per year	$300
	Most savings - more than $500 per year	$600

WRI has applied a conservative cost saving to each category.

The yourenergysavings.gov.au website also provided cost savings for some types of household modifications such as installing energy efficient lights.

In addition, approximate appliance running costs have been sourced from AGL's Smarter Living Guide[7]. Further data upon which to base estimated cost savings have been sourced from Essential Energy's Energy Answers Appliance Guide[8] and Origin Energy's fact sheet on household appliance running costs for summer in New South Wales.

The following table shows the resultant average estimated $ saving for each participant.

Table 17 High level program cost benefits

Cost savings associated with:	Number of respondents reporting changes	Proportion of total respondents to wrap-up survey	Inferred number of total participants	Benefit per respondent ($)	Total benefits for whole participant group ($)
2a. Top 2 behavioural changes	28	21%	191	366.07	69,790.44
2b. Top 2 purchases	13	10%	89	98.76	8,741.58

[7] http://aglsmarterliving.com.au/site/wp-content/uploads/AGL-Smarter-Living-Guide.pdf
[8] http://www.essentialenergy.com.au/asset/cms/PDF/Appliance_Nov2011.PDF

Limitations:

While based on logic, the data presented above can only be tentatively relied upon as the limitations of self reporting being accurate are well known and the financial impact is purely theoretical. For example, while a person may receive a cost reduction due to installing a more efficient device, they may compensate for this with increased space heating or other behaviour changes.

Never-the-less, the figures are useful as a starting point for discussion and have been used in the cost benefit modelling that follows.

Indirect/Non-financial benefit

Participants reported a range of non-financial benefits. Refer to Qualitative Research, Long-term impacts.

Cost Data

Cost data used in the analyses have been drawn from full program projections based on actual expense incurred as at end of March 2016. These costs have then been segmented into 4 Levels as requested by the department.

Table 18: Cost data for the entire program

Cost level	Cost data	Basis for cost estimate	Cost ($)
Direct Trial Approach (Level 1)	Cost of delivering the trial approach to a participant.	Website / game	150,000
		Retrofit kit (E efficient products)	31,000
		Prizes	40,000
		Texts	7,000
		TOTAL	$228,000
Trial Component (Level 2)	Costs at Level 1 +	Level 1	228,000
	Costs associated with:		
	i. recruiting a participant, and	Advertising and promotion	12,000
	ii. maintaining a participant.	Social Media Content	41,580
		Social Marketing strategy	75,000
		Events	5,000
		Travel	5,000
		Short term staff to recruit	5,000
		Payment incentives	70,000
		Development of print	3,570
		Staff time	418,555
		TOTAL	$863,705

Total Business (Level 3)	Costs at Level 1 + Costs at Level 2 + Cost of running an organisation to do the above	Leve1 1,2 Equivalent annual costs per unit area of building, all inclusive ($25,000/yr x 3 years) in-kind TOTAL	863,705 75,000 $938,705
Total Trial (Level 4)	Costs at Level 1 + Costs at Level 2 + Costs at Level 3 + Cost of participating in a government funded trial	Level 1,2,3 Remaining in-kind WRI (evaluation) Essential Energy (consumption data) Risk management margin TOTAL	938,705 322,815 357,452 23,040 4,145 $1,646,157

Table 19: Cost data for specific program elements

Program element	Cost level	Basis for cost estimate	Cost ($)
Sign-up vouchers	Direct Trial Approach (Level 1)	Payments TOTAL	70,000 $70,000
	Trial Component (Level 2)	Level 1 2/3 of cost of delivery (863,705 – 228,000 – 70,000) TOTAL	70,000 376,760 $446,710
	Total Business (Level 3)	Level 1,2 2/3 of on-costs (75,000) TOTAL	446,710 50,000 $496,710
	Total Trial (Level 4)	Level 1,2,3 2/3 of additional Level 4 costs (707,452) TOTAL	496,710 471,163 $967,873
Competition prize money	Direct Trial Approach (Level 1)	Total prize pool TOTAL	40,000 $40,000

	Trial Component (Level 2)	Level 1 Proportion of level 2 costs (Prizes started in Dec 2014 = 7 month of 36 = 0.194) Level 2 costs minus incentives and recruitment = 0.194 x 788,705 TOTAL	40,000 153,009 $193,009
	Total Business (Level 3)	Level 1,2 Seven months of on-costs (0.194 x 75,000) TOTAL	193,009 14,550 $207,559
	Total Trial (Level 4)	Level 1,2,3 Seven months of Level 4 costs (0.194 x 707,452) TOTAL	207,559 137,246 $344,805
All measures with an educational component	Direct Trial Approach (Level 1)	Full level 1 costs minus Prizes (228,000-40,000) TOTAL	188,000 $188,000
	Trial Component (Level 2)	Level 1 Level 2 costs minus recruitment incentives (635,705 – 70,000 – 5,000) TOTAL	188,000 560,705 $748,705
	Total Business (Level 3)	Level 1,2 On-costs (75,000) TOTAL	748,705 75,000 $823,705
	Total Trial (Level 4)	Level 1,2,3 Level 4 costs TOTAL	823,705 707,452 $1,531,157
Game	Direct Trial Approach (Level 1)	Development and maintenance costs TOTAL	150,000 $150,000
	Trial Component (Level 2)	Level 1 Level 2 program costs minus payment incentives and recruitment TOTAL	150,000 560,705 $710,705

	Total Business (Level 3)	Level 1,2 On-costs TOTAL	710,705 75,000 $785,705
	Total Trial (Level 4)	Level 1,2,3 Level 4 costs TOTAL	785,705 707,452 $1,493,157

COST BENEFIT ANALYSIS

The table below presents simple ratios of benefit to cost based on the values presented above for each of the program levels, that is 279 participants receiving a benefit of $463.83 each in year 1 only.

Table 20 – Cost Benefit Analysis

Measure of effectiveness:	Basis for measure	Direct Trial Approach (Level 1)	Trial Component (Level 2)	Total Business (Level 3)	Total Trial (Level 4)
Energy savings	1. Energy consumption data	Not calculated due to insufficient data	Not calculated	Not calculated	Not calculated
	2a. Top 2 behavioural changes	3.27 (0.31)	12.38 (0.08)	13.45 (0.07)	23.59 (0.04)
	2b. Top 2 purchases	26.08 (0.04)	98.80 (0.01)	107.38 (0.01)	188.31 (0.01)
	2c. Total behavioural changes and purchases	2.90 (0.34)	11.00 (0.09)	11.95 (0.08)	20.96 (0.05)

Note: Cost : Benefit Ratio is presented. Benefit : Cost Ratio is presented in brackets.

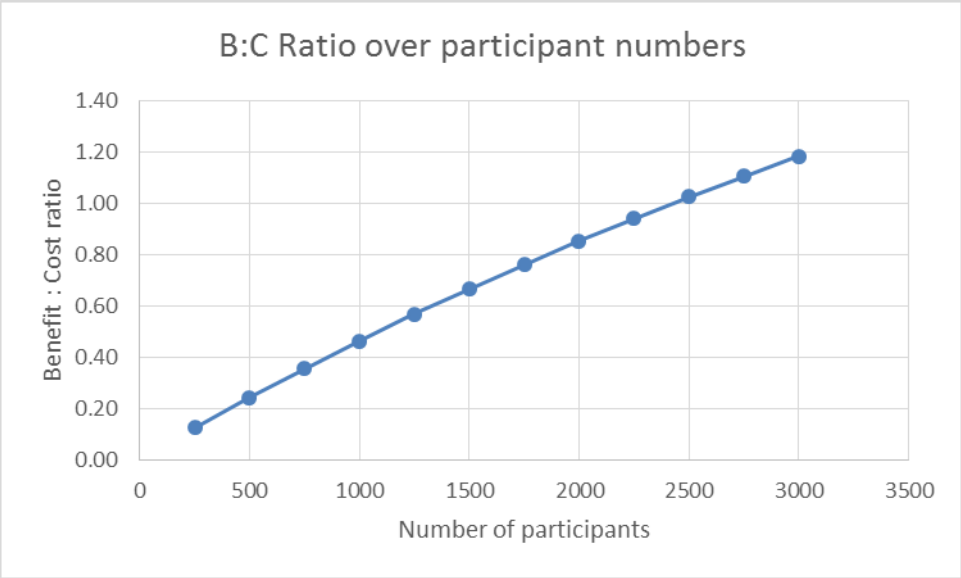
One inference of this analysis is that with a combined benefit: cost ratio of 0.34 it would take approximately 3 years to recoup the program costs in benefits to the individual, on the assumption that the benefits remain consistent for that period and ignoring any non-financial benefits.

It is not clear from this trial whether positive impacts would be realised in future years and, as previously discussed, the actual benefit attributable to the program is also unclear.

However, the actual delivery of a game-based program like PowerPlay would not be constrained in the same manner as this trial. The experience of Skillset was that rapid growth in participant numbers occurred after the sign-up process was modified. Indeed, recruitment was ceased at a point of exponential growth before the sample became too large to manage and represented a demographic that we could not confirm were the trial target (Apprentices based predominantly in the Central West region).

Given that this kind of program has relatively fixed costs and the potential for high numbers of participants, clearly the cost per participant reduces with increasing numbers. The following Figure is derived from Level 3 program costs and indicates that the ‘break even’ point for benefit: cost occurs at just under 2500 participants. That is, had this trial recruited 2,500 engaged participants, if the individuals realised a benefit of $465 each then the program would have ‘paid back’ the investment in year 1. This calculation includes a marginal increase in cost of delivery by providing $50 incentives to an additional 7,500 of recruits that do not become engaged.

Chart 5.1 Year One breakeven point for participant numbers at $465 benefit

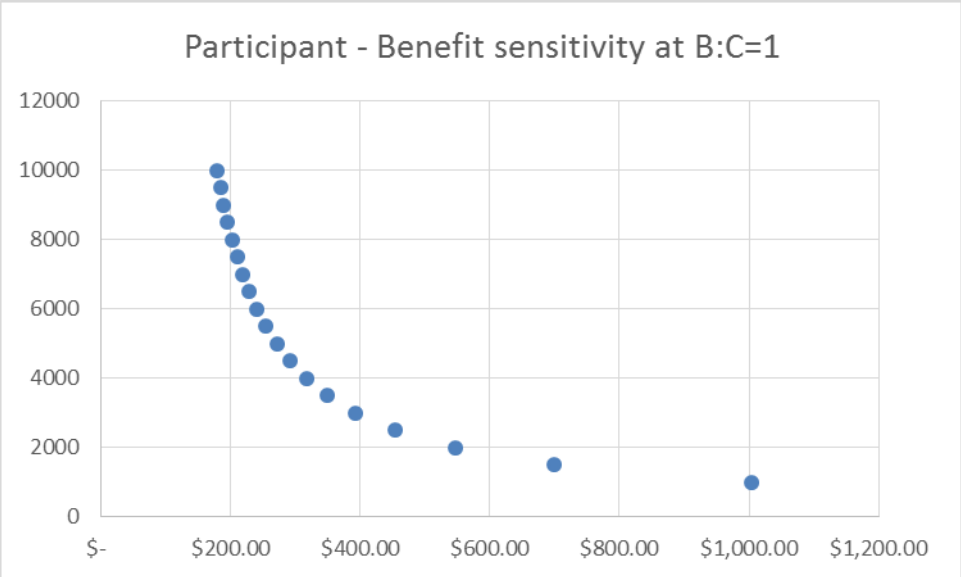


Given that we are not certain of the $ benefit derived through participation, Skillset sought to determine the sensitivity of benefit to participant numbers at a benefit: cost ratio of 1.0

The following Figure indicates the year 1 'break even' benefit required for individuals at various participant group sizes and at Level 3 delivery costing. It shows that for a participant group of 10,000 the required benefit is around $170.

While not displayed in the figure, the same calculations (and assumptions) show that for an investment of around $10 million, 110,000 engaged participants need only receive a benefit of $95 for the program to 'break even'.

Chart 5.2 Break even $ benefit for various participant group sizes



The above analysis does not factor in any cost saving benefits (or expenses) for future years.

Future Benefit

Assuming that the benefits of reported behaviour changes and purchases are maintained over the medium term (5-10 years), allows for the incorporation of future benefits into the analysis presented below. The future benefits have been discounted using a standard discount rate of 7 percent.

Table 21: Net present value of possible continuing benefit

Household behaviours + purchases	Year										
	0	1	2	3	4	5	6	7	8	9	10
Benefits per engaged participant per year	$ 465	$ 465	$ 465	$ 465	$ 465	$ 465	$ 465	$ 465	$ 465	$ 465	$ 465
Present Valua of Benefits	$ 465	$ 434	$ 406	$ 379	$ 355	$ 331	$ 310	$ 289	$ 271	$ 253	$ 236
Cumulative Present Value of Benefits	$ 465	$ 899	$ 1,305	$ 1,685	$ 2,039	$ 2,371	$ 2,680	$ 2,970	$ 3,240	$ 3,493	$ 3,730
Costs level 1 per engaged participant	$ 983										
BCR	0.47	0.92	1.33	1.71	2.08	2.41	2.73	3.02	3.30	3.55	3.80
Costs level 2 per engaged participant	$ 3,723										
BCR	0.12	0.24	0.35	0.45	0.55	0.64	0.72	0.80	0.87	0.94	1.00
Costs level 3 per engaged participant	$ 4,046										
BCR	0.11	0.22	0.32	0.42	0.50	0.59	0.66	0.73	0.80	0.86	0.92
Costs level 4 per engaged participant	$ 7,096										
BCR	0.07	0.13	0.18	0.24	0.29	0.33	0.38	0.42	0.46	0.49	0.53

COST EFFECTIVENESS

Cost Effectiveness Analysis

Cost effectiveness analysis has been undertaken to provide an indication of relative merit for selected components of the trial program. This aims to indicate which elements were most effective and which features might be recommended for inclusion in a new or future game.

Effectiveness in producing active participants

Respondents to the final wrap-up survey who had been identified as 'engaged' were asked to identify how important a number of program features were in motivating them to participate. Each of these features was rated on a scale of 1 to 5 (1 being not important at all and 5 being very important). The number of respondents who rated a feature 3 or above, provides an indication of the effectiveness of this feature.

The measure of effectiveness estimated for the respondent group has been applied to the entire participant group. This has involved the following steps:

- Determining the proportion of respondents who have rated each feature 3 or above;
- Applying the proportion calculated in a) to the entire participant group.
- The program features tested are:
- Sign-up money / voucher
- Prize money offered through competitions
- Being able to learn about energy conservation (whole of program)

Table 22: Engagement effectiveness

Basis for measure	Number of respondents rating 3 or above	Proportion of total respondents to wrap-up survey	Inferred number of total participants
Sign-up money / voucher	31	23%	211

Prize money offered through competitions	31	23%	211
Being able to learn about energy conservation	32	24%	218

The resulting cost effectiveness ratios appear in Table 27: Cost effectiveness ratios.

Effectiveness in increasing interest in conserving energy

Respondents to the final wrap-up survey who had been identified as 'engaged' were asked how their level of interest in conserving energy in the home had changed over the course of the program (whether it had increased, stayed the same or decreased). The number of respondents who indicated that their interest in energy conservation had increased over the course of the program, provides an indication of the program's effectiveness.

The measure of effectiveness estimated for the respondent group has been applied to the entire participant group, according to the method outlined above.

Table 23: Interest in energy efficiency

Basis for measure	Number of respondents reporting an increase	Proportion of total respondents to wrap-up survey	Inferred number of total participants
change in level of interest in conserving energy	28	21%	191

The resulting cost effectiveness ratios appear in Table 27: Cost effectiveness ratios.

Effectiveness in delivering educational benefits

Respondents to the final wrap-up survey who had been identified as 'engaged' were asked how their level of knowledge about conserving energy in the home had increased as a result of participation in the program (answering yes or no). The number of respondents who indicated that their level of knowledge about energy conservation had increased over the course of the program, provides an indication of the program's effectiveness.

The measure of effectiveness estimated for the respondent group has been applied to the entire participant group, according to the method outlined above.

Table 24: Educational benefits

Basis for measure	Number of respondents reporting 'yes'	Proportion of total respondents to wrap-up survey	Inferred number of total participants
change in level of knowledge about conserving energy	32	24%	218

The resulting cost effectiveness ratios appear in Table 27: Cost effectiveness ratios.

Effectiveness in influencing changes in household behaviour and purchasing decisions

The wrap-up survey asked respondents whether, over the period in which they had been registered with the program:

they had been able to influence the use of energy in their household by changing any behaviours (answering yes or no); and

the program had influenced any decisions regarding the purchase of appliances for the house (answering yes or no).

The number of respondents answering 'yes' to these questions, provides an indication of the program's effectiveness.

The measure of effectiveness estimated for the respondent group has been applied to the entire participant group, according to the method outlined above.

Table 25: Household behaviour and purchasing decisions

Basis for measure	Number of respondents reporting 'yes'	Proportion of total respondents to wrap-up survey	Inferred number of total participants
Influence on household behaviours	28	21%	191
Influence on purchasing decisions	18	13%	123

The resulting cost effectiveness ratios appear in Table 27: Cost effectiveness ratios.

Effectiveness of the game

The influence of the major program feature (the game) on household behaviour and purchasing decisions was also tested over the course of the program, through quarterly surveys.

Measures derived for the influence of the game are outlined in the table below.

Table 26: Influence of game

Basis for measure (based on survey from Q3 2015)	Number of respondents rating 3 or above	Proportion of total respondents to survey	Inferred number of total participants
Influence of game on behaviours	26	22%	204
Influence of game on purchases	23	19%	180

The resulting cost effectiveness ratios appear in Table 27: Cost effectiveness ratios.

The following table presents the cost of providing a given feature per participant based on the inferred number of total participants in the tables above.

Table 27 – Cost Effectiveness Ratios

Measure of effectiveness:	Basis for measure	Direct Trial Approach (Level 1)	Trial Component (Level 2)	Total Business (Level 3)	Total Trial (Level 4)
Active participation (cost incurred per active participant)	1a. Sign-up money / voucher	$331.64	$2,116.61	$2,353.26	$4,585.48
	1b. Prize money offered through competitions	$189.51	$914.42	$983.35	$1,633.58
Increased interest level in conserving energy (cost incurred per participant with increased interest)	2. change in level of interest in conserving energy - number reporting an increase	$1,195.93	$4,530.39	$4,923.78	$8,634.58
Delivery of educational benefits (cost incurred per participant with increased knowledge)	3. change in level of knowledge about conserving energy - number reporting 'yes'	$1,046.44	$3,964.09	$4,308.31	$7,555.26
Influencing change (cost incurred per participant reporting influence of the game)	4a. Influence of game on household behaviours	$735.17	$3,483.27	$3,850.86	$7,318.18
	4b. Influence of game on purchasing decisions	$831.06	$3,937.61	$4,353.14	$8,272.73

Note: the measure of effectiveness is the cost incurred per inferred number of total participants meeting criteria

The above table indicates that the sign up vouchers and prizemoney were cheapest elements of the program to deliver.

Assumptions and limitations

The following assumptions and limitations regarding the analyses performed should be noted:

- The degree to which cost savings identified in Measure 1 above can be attributed to the program is not able to be measured.
- The influence of other factors outside of the trial program, not captured by the evaluation surveys, are also likely to impact on the level of attribution that can be assigned to the program.
- The cost savings applied in Measure 2 above are only estimates based on the referenced sources. Clearly, the actual savings realised by the participant households could vary widely from these estimates.

- The highly integrated nature of the three main components of the program – the website, Facebook page and game, make allocating costs to each component difficult. For this reason, a comparison of the effectiveness of each of these components has not been conducted.
- The sample size for the wrap-up survey provided a confidence interval of +/-0.08 at the 95 percent confidence level. Whilst the confidence interval is a little wider than preferred, WRI has applied the sample results to the population in order to develop estimates of total cost savings and cost effectiveness numbers.
- The analysis focuses, as it only can, on the participant group. There is evidence that this program's influence has spread beyond the participant group and their households to friends, family (who may be living in other households), and even employers. Furthermore, the program's website and Facebook page are able to be accessed by the general public, and the game is also able to be downloaded and played by people not registered with the program. It is expected that there are benefits accruing to other households, not registered with the program.
- The analysis does not seek to quantify the co-benefits of improved household energy efficiency such as those relating to health and wellbeing outcomes. The Australian Council of Social Services report entitled Energy Efficiency and People of Low Incomes[9] identifies low income earners as being particularly vulnerable to poor health outcomes as a result of inefficient housing. Furthermore, the report identifies the benefits to these households of improving household energy efficiency:
  "New Zealand research showed that installing insulation in cold climate households resulted in: a decrease in electricity consumption of 5%; an increase of 1-2^{o}C in internal winter temperature (Grimes et al 2012); significant improvements in the health of occupants; and reductions in hospitalisations and pharmaceutical costs."
- It can be argued that, by nature of the trial and difficulties documented elsewhere in this report, the program did not reach its potential. Certainly, an additional 6 - 12 months would have allowed data uncertainties to be reduced. Conducting the cost benefit and effectiveness analysis at this point in time is likely to result in an under-estimation of the true potential of the program to deliver savings compared to delivering in a commercial context.
- Level 3 costs have been utilised for the cost benefit analysis as this amount is thought to be most indicative of the cost to a government or corporate body in delivering the program into the future. It is likely that organisational delivery costs would be lower however if the recommendations for changes to deliver a new program were followed there would be additional game development costs.
- Scenarios have been developed to incorporate expected future benefits over the medium term into the indicators developed. Whilst such ongoing savings are difficult to estimate, the modelling has assumed that the savings realised in the first year are replicated over the medium term. The Government website yourenergysavings.gov.au indicates that it is possible to save between 10-30% on energy usage just through behaviour and minor household changes, therefore, WRI considers the estimations of ongoing savings to be reasonably conservative.
- Qualitative research undertaken suggests that some of the savings will only be realised by participants once they have their own home or are in a position where they are largely responsible for paying bills.

[9] Australian Council of Social Services (2013), Energy Efficiency & People of Low Incomes (p.4)

KEY FINDINGS

The Level 1 measures estimated indicate the following:

The costs associated with generating behavioural changes for this trial are just over three times the savings estimated per person.

The costs associated with influencing purchasing decisions are significantly higher, at approximately 26 times the savings estimated (remembering that few participants have the ability to control this).

In terms of generating active participants, the return on investment was found to be greatest for prize money offered through competitions, followed by the sign-up money.

Generating an increase in interest in conserving energy, an increase in knowledge about conserving energy and an influence on household energy management behaviours required similar levels of investment per participant.

All measures calculated are extremely negatively impacted by the low level of active participation in the program. Should this type of program be operationalised at some stage in the future, there are several factors that would improve the return on investment measures calculated above:

Whilst monitoring and evaluation would form part of the operational program, the degree of overhead imposed by a trial scenario (including Departmental and CSIRO requirements) would be reduced. It is anticipated that in the order of $250,000 could be saved. In addition, an improved recruitment rate would be expected.

Learnings developed over the course of the trial have resulted in the implementation of significant changes more recently. Given that these learnings would inform the design of a new program, it is anticipated that significant improvements in the engagement rate could be achieved. If the rate of engagement increased from 25 percent to 50 percent, then in the absence of other cost savings, the return on investment would be doubled.

6. QUALITATIVE RESEARCH

Background

The research methodology for the program was primarily quantitative research, supported by a series of in-depth interviews. In the last year of the program, two focus groups were included to support the implementation of the social marketing strategy and new questions were added to the telephone wrap up survey to provide more insights about program design.

This qualitative research will now extend to Facebook and the PowerPlay website to gather user feedback for further development of the PowerPlay gamification model for commercial purposes.

The in depth interviews for case studies

Long term impacts:

Further evidence of the potential longer term impacts of the program has been uncovered in case study interviews and focus group discussions.

In depth interviews with participants revealed that the changes are having benefits on aspects of their lives other than their level of comfort. These include:

- time saving, through devices such as the remote control power point switch;
- increased security as LED lights can be left on at night at lower cost
- fewer small arguments about the use of cooling appliances;
- reduced feelings of guilt caused by the use of appliances;
- giving support to the parent's voice in managing household energy usage;
- a feeling of empowerment, regarding the ability to control household energy bills; and
- brighter lights resulting in less strain on eyes.

"his family is doing less by being more energy efficient"

"has become more responsive to my prompting"

"starting to believe you have some control"

The long-term impacts identified were:

- long term sustainable behaviour change for individuals;
- long term impacts through an influence on housemates; and
- long term impacts through an influence on future tradespeople.

Extracts from these interviews are included on the following pages with the full interviews included in Attachment A.

Case Study 1

Jennifer Milton started playing the game in December, 2014. She lives with her husband and nine years old twin boys in a three bedroom, weatherboard house, connected to mains electricity.
The household has two reverse cycle units installed for heating and cooling. Since registering, Jennifer has finished her traineeship and has been working in a temporary, full time role with the Department of Education and Training.
Involvement in the PowerPlay program has had a definite impact on her household's electricity bill resulting in a 40 percent reduction in cost over a 12 months period.
Jennifer is highly motivated in managing her household energy usage and is also an active information seeker when it comes to energy efficiency and is continuously looking to improve how the household uses power.
Jennifer prefers reading information in short, sharp formats, such as magazine articles or links that pop up in her Facebook feed containing energy or money saving tips.
She is one of our PowerPlay World Champions winning the Earth Day title in April, 2016.

Case Study 2

Steven is an electrical apprentice from Adelaide. He and his fiance live in a rented, three bedroom brick veneer home.
The house is connected to mains electricity and mains gas.
The house has ducted heating and has an old, industrial three phase air conditioning unit, which is in poor condition.
When he first got involved in the program, Steven made only a few changes which included changing light globes to energy efficient LED globes and installing an energy efficient washing machine and television.
He and his fiance have since made number of substantial changes to the way they manage energy at home which included purchasing a more enery efficient dryer, sealing doors and closing windows to control both heating and cooling. They also purchased a portable reverse cycle air conditioner with a reasonable star rating and use it on a lower setting to keep costs down.
As a result of these changes they have managed to reduce their bill by 10 percent compared to the previous year and feel happier about having some control over their bill.
Steven is one of our PowerPlay World Champions winning the World Habitat title in October 2015.

Case Study 3

Michael is the parent of PowerPlay participant, Eammon, who is 17 years old and registered with the program in December 2014, when he was working as an apprentice chef.
They live together with Eammon's mum and grandmother, in a six bedroom, double brick home in Bathurst, NSW.
The house is connected to mains electricity and mains gas, and the household has also invested in solar electricity.
The household has a number of appliances for heating and cooling spaces.
Since Eammon joined the program, Michael has reported that he has become more aware of energy efficiency and has increased his efforts at home by having shorter showers and remembering to turn off lights and fans when leaving a room.
Eammon does not currently contribute to household bills, but has a commitment to the ideals of preventing ongoing climate change and other environmental damage. Michael indicated that Eammon will become more energy aware when he moves out of home and becomes responsible for paying his bills.

Case Study 4

Sam is a 22 years old electrical apprentice working for a small electrician business in Perth. He rents a three bedroom share house with two flatmates, one of whom is also an apprentice, and the other who works in an office.
The fibro house has reverse cycle air conditioning and a fireplace for heating and cooling spaces. They are connected to electricity mains and also have solar water heating.
Sam feels that he is the only member of the household actively trying to reduce consumption. He does this by adjusting the thermostat on the air conditioner to 22 degrees, especially when he comes home to find his flatmates have set it to 18 degrees He also tries to remember to turn off the solar water heating booster.
Sam joined the program in March 2015. He found out about it when it popped up on his Facebook feed as a 'suggested post'. He found the offer of a $50 voucher for doing a quiz to be a drawcard. When asked about what kept him interested in the program he suggested that it was mostly about interest for him: the quizzes were interesting, and it was relevant to his work.

Case Study 5

Dean registered as a participant with the program in January 2015, when he was 19. He lives with his Dad and older brother in a four bedroom, brick veneer home in Orange, NSW. The house is connected to mains electricity and mains gas. The household has ducted gas heating and wall/window mounted air conditioning. Dean works full time for Orange City Council as an electrical apprentice, and at the time of interview was in his third year of his apprentice-ship.

The 'interest factor' in the game and competitions have played a substantial role in keeping him engaged in the program. In addition to having a personal curiosity about how electricity and electrical equipment works, the program ties into his career and training. Being an electrical apprentice, Dean found the program to be a source of information that is relevant to him professionally.

Dean has reported that changes made in his household have resulted in positive impacts on comfort and enjoyment at home with the main benefit being a reduction in the household electricity bill which makes his Dad happy.

Case Study 6

Scott, Bathurst NSW

Scott is a 40 year old electrical apprentice working for a sawmill in Oberon, NSW. Scott lives in Bathurst with his wife and their young daughter in a two bedroom unit, which they are renting. Scott's 11 year old son is also part of their household every second week. The family's unit is connected to both mains electricity and gas.

Scott is not interested in spending time on Facebook, and doesn't particularly enjoy using computers to look for information. He prefers information in pamphlets, or other short, hard-copy formats which he can look at while sitting in front of the television.

Scott says the PowerPlay program was 'worthwhile' because it got him thinking about energy efficiency.

It was the opportunity to learn how to save energy at home which initially attracted him to the program. His interest was maintained through practical assistance with specific, simple modifications he and his family could make to reduce energy consumption. In addition to the house visit from the project coordinator, he also found the retrofit kit 'brilliant' for introducing simple changes to the family's energy use.

Social media qualitative research

In the final months of the program the Facebook page and the website will be used to gain participant feedback about the game and the competitions to provide more in depth insights that were not provided through the evaluation process.

Suggested program improvements:

Suggestions as to ways the program could be improved were gathered through:

- two focus groups held with both engaged and disengaged participants; and
- the final wrap-up survey, conducted in January 2016.

Focus groups

The reports produced for each focus group are presented in Appendix B.

Wrap-up survey

Those respondents who were deemed to be 'not very engaged' (n=102), were asked to provide suggestions for the improvement of the program. The majority of these respondents (59 percent) were unable to offer constructive suggestions, with 'none' and 'no idea' being common responses.

A further 23 percent suggested that improving all communications about the program was required, providing comments including:

- *'Not really sure about the program, barely remember signing up to it.'*
- *'Sending out more texts saying what is up for grabs.'*
- *'More information at the initial sign up.'*
- *'More advertising – Didn't know about the Facebook page.'*
- *'The text messages are unclear - he brushes it off thinking it's fake and random.'*

In addition, those respondents deemed to be 'engaged' were asked to suggest improvements. Once again, the majority (68 percent) could not suggest anything, many indicating that it was operating well in its current form. Improvements to the game were suggested by 15 percent of engaged respondents, whilst communication issues were identified by 12 percent.

A selection of suggestions is included below:

- *'Development of the app....more levels possibly.'*
- *'Need alternate scenarios or more levels.'*
- *'Instructions on how to use the app.'*
- *'I don't have Facebook - everything to be accessed through the website.'*
- *'Haven't had enough contact recently.'*
- *'Confusion between the name LIEEP and PowerPlay.'*
- *'The emails are a bit annoying that I keep getting.'*

7. DISCUSSION

DISCUSSION

Recognising the limitations of the trial

Investing in qualitative research as part of the overall program design and including a social marketing partner in the consortium would have significantly reduced the issues encountered in testing if gamification, based on Interactive Decision Theory, could influence the behaviour of the trial group of trainees and apprentices.

The coordination team always acknowledged the difficulties it would have in engaging with and motivating this vulnerable group, investing more research effort upfront could have developed a deeper understanding of how best to recruit and communicate with them to maintain their engagement to test the IDT model.

However despite these limitations, recruitment was hampered by a cumbersome registration process, much of it related to the nature of the trial program and the need to capture extensive qualitative data for program evaluation. Notwithstanding the fact that some level of evaluative data should be collected as a benchmark for all the trial programs, the level of paperwork required to access the data to support the design of this program evaluation was extraordinary and presented a significant barrier to participation and a created a level of distrust from within the target group.

Assumptions made about the demographic

The program was designed to primarily cater for the stereo-typical young person, with an assumption that they were involved in social media, enjoyed playing computer based games and were not highly interested in conserving energy.

However, both quantitative and qualitative evaluative data collected over the course of the program has identified at least a few distinct segments within the overall participant group. These segments are most obviously differentiated by:

- level of responsibility for bills;
- stage of life;
- whether there is some other area of interest that potentially drives them to be more interested in energy conservation issues (such as career-relevance and interest in environmental issues);
- whether they use social media; and
- interest in playing online games.

Whilst no program can aim to accommodate the entire range of participant motivational barriers and preferences for engagement, the program's initial design did not provide sufficient flexibility to better communicate with the different segments or the freedom to focus exclusively on one of few segments.

Restricting the trial group numbers after running an online recruitment campaign created a sense of unfairness amongst the unregistered participants who met the eligibility criteria, played the game and participated in the competitions that were advertised on Facebook and the website. A number of registered participants commented on Facebook that the program should be opened up to everyone who participated, especially when their friends started asking them how they could become involved. This also removed the opportunity to replace the large number of disengaged participants as they left the program.

Development of the game and competitions

Offering prizemoney as incentives

The payment of prizemoney as an incentive to participate in the quiz and competitions was a key motivating factor for a number of participants – including those already interested in reducing their energy bills.

Corporate sponsorship could help maintain this incentive in future program delivery adding monetary value to online recruitment activities that target participants from vulnerable groups.

The fortnightly quiz draw and the quiz show held as part of the Game of Champions events has the potential to attract a media partner and be incorporated into a popular quiz show where the viewer responds to answering questions around energy saving and reducing greenhouse emissions. Using the mass media would mainstream these messages influencing behavioural change as a result of increased knowledge and awareness of these issues.

The PowerPlay game

The use of gamification as the flagship for the program proved extremely beneficial in branding and promoting the program and attracting widespread participant interest online. It is a worthy of further development to address the following issues and opportunities:

- Ensure the game technology is more accessible to users in regional and rural areas that have slow internet connections
- More investment in research and content development to increase the depth and social interaction of the game for players and making it more appealing to different segments of the community
- Expand the platforms on which it can be played to include PCs and DVDs for those without internet connection in rural areas.
- Minimising the data usage for entering game competitions on mobile devices.
- Making the game accessible on all models devices and not just the recent Apple and Android models.
- Build in more game modules and challenges to maintain player interest.
- Make it available as an online environmental and energy saving educational package for teachers with fact sheets, teacher resources and student activity sheets.

Prioritising communication with participants

Significant issues occurred during the early stages of the program when the program coordinator's focus was on managing recruitment through using Skillset field officers as the first point of contact.

This detracted from the real issue of communicating regularly with the registered participants to keep them informed about the program and its purpose and why they should remain involved resulting in the following issues:

- a lack of consistency and quality around program communication, including the information provided to participants on registering;
- a lack of priority given to explaining the program, with some participants suggesting that the sign-up process was 'rushed' or 'tacked on' to other Skillset processes; and
- incomplete description of what the program entailed, i.e. the complete range of opportunities provided by the program, and the obligations for the participant (for instance the need to complete regular surveys)
- Confusion around participant eligibility to continue in the program if their employment circumstances changed.

Regular, personal contact with members of the participant group that started to occur with telephone calls, as part of the quarterly surveys, and follow up calls by the program coordinator and program consultant proved the most beneficial in bringing disengaged participants back into the program.

The evaluation process

The focus on completion of quarterly surveys as opposed to communicating with participants about the game and its competitions inhibited initial participation in the program.

The negative impacts of balancing the need to collect evaluative data that was based on completing privacy consent forms to obtain National Metering Identifier data was under-estimated.

This created a distrust relating to the collection of data generally for government purposes. The need for program coordinators to maintain a focus on the collection of evaluation data as opposed to other important program activities contributed significantly to the low levels of engagement in the program.

The burden placed on the survey process by departmental data requirements also impacted on the length and type of questions in the survey questionnaires. In particular some more relevant questions to gain feedback from participants about program implementation could have been included if not for the length of the survey.

It became apparent in the final year of the program that participants had 'survey fatigue' and were not interested in filling out the survey questionnaire that could take up to 20 minutes to complete!

Unexpected issues and outcomes

Issues

A number of unexpected issues impacted on trial outcomes which could not have been envisaged at the beginning of the program:

- A downturn in apprenticeships nationally which affected the size of the Skillset participant pool originally envisaged, and ultimately required the geographic scope of the program to be expanded. This in turn influenced the type of engagement strategies that would work with a more remote participant group with no existing links to Skillset as an organisation.

- The difficulty in securing the registration data required to obtain energy consumption data from Essential Energy. This issue was not foreseen, and also impacted on the program, timing and evaluation design.

- The unwillingness of the Department to review target participant numbers in light of the changed context of the program. This led to Skillset's program coordination team needing to focus exclusively on recruiting participants for an extended period of time, to the detriment of ongoing engagement with existing participants.

Benefits

- The need to extend the geographic scope of the program, has resulted in people from all over Australia being registered. The ability to engage participants over this large geography demonstrates the scalability of this type of program.

- Evidence gathered through qualitative evaluation tasks highlight the need for the program to overcome a 'renter's mindset, i.e. the perception that you can't influence your energy bills without making significant modifications to your house. Several participants interviewed expressed some degree of surprise in what they could achieve with relatively minor behavioural changes or relatively simple household modifications. As a large segment of the participant cohort rent their homes, this finding provides valuable guidance to the development of program strategies in the future.

- A few people who weren't registered participants remained very active on Facebook and are waiting for the program registration to open up again. They form part of the small developing peer group community.
- The ability of the program to act as an alternate 'voice' to that of a parent provided some relief to one parent who had not had much success in encouraging change in his household.
- The ability of the program to encourage conversation about energy efficiency was tested to some degree, however, understanding the character of those conversations uncovers some of the deeper benefits that are likely to arise from involvement.

8. CONCLUSION

OVERALL FINDINGS FROM THE EVAULATION PROCESS

In conclusion, the following have been identified and determined through the evaluation process operating over the course of the trial. The evaluation process was not straight forward, facing many challenges that have required changes in approach along the way.

Ultimately, this has impacted on the quality of data captured about trial outcomes, and this in turn has impacted on the level of confidence in drawing conclusions.

Notwithstanding these issues, there is evidence of real benefits accruing to those who participated in the trial. These are discussed below.

Appropriate target group

Several factors re-affirm that this group (apprentices and trainees) was an appropriate group to target for a program aiming to assist low income and vulnerable households to overcome barriers to energy efficiency and to better manage their energy use:

- Close to half of the participants (49 percent) were earning $31,999 or less in personal income.
- One third of participants were living in a rented dwelling, and a further 9 percent were unsure of the dwelling ownership status.
- Only 26 percent of participants reported having a high or very high level of control over their energy consumption.

Focus groups and in-depth interviews revealed a level of bill stress amongst participants, in some cases related to energy bills, but in other cases, related to other expenditures.

Participant satisfaction with changes

Participants are satisfied with changes that they've made to their households and the majority have experienced no negative impacts on household comfort. In addition, other key benefits have included:

- Time saving
- Increased security
- Improved relationships
- Health impacts

Achievement of the Trial's stated objectives

Skillset's funding application identified the following intended results:

1. evaluation of the effectiveness of applying Interactive Decision Theory to overcome motivation as a barrier to young apprentices and trainees engaging with energy efficiency for households in western NSW;
2. a decrease in energy consumption within the participant group in comparison to a control group for the same billing period, indicating adoption of the energy efficiency initiatives and the effectiveness of these initiatives;
3. identification of the most common behavioural changes reported by those with reduced energy consumption for the quarter;
4. an assessment of the financial viability of the program via a cost benefit analysis, in which the discounted benefits and cost savings of the program will become the benefit to be compared to the establishment and operational costs of the program.
5. lower energy consumption levels are maintained beyond the program, indicating continued behavioural change.

Effectiveness of IDT in overcoming the 'motivation' barrier

The implementation of Interactive Decision Theory (ITD)

As the program evolved, it had to deviate from its original design around IDT. The original outline of running a regular quiz communicated by SMS texts and using social media as prefaced in the application were not appropriate without participant interest and engagement in the government program.

Further research around game theory and gamification led to the development of the PowerPlay mobile device based application, nested within regular quizzes and social media based challenges.

As a result, PowerPlay became the brand identity for the overall program to attract participant interest and build a community. The IDT component of the game was partially explored through game features where players were able to interact with the game environment, make decisions to perform actions and receive information about energy efficiency. This learning pathway is more accurately described as 'gamification' where the use of game play is to impart a message or lesson in a non-didactic, interactive fashion.

IDT was also explored through the use of social media and the running of the competitions which provided information about energy saving and reducing greenhouse gas emissions to influence their preferences for energy efficient behaviours in the real world.

The significance of the PowerPlay game

The game has served its purpose to brand the LIEEP project and to create a level of appeal for the program amongst the demographic group. It was developed on a small budget with known limitations but despite this, it had an immediate and large response from players when the mobile app was initially launched to the wider community and still attracts a small number of new players each month from the demographic group who are not eligible to win a prize.

The game can evolve into a multiplayer online game that can be downloaded and played on widescreens TVs, PCs and laptops. The potential for increasing this gamification tool is unlimited both creatively and influencing behavioural change. The game has proven it can deliver influential messages about energy savings in an entertaining and informative way to a subset of the trial group.

The significance of the competitions

The competitions played a significant role in attracting people to the game and to the program by offering financial incentives to those who participated. These competitions can be launched to the mass media, for example, by becoming an integral part of a TV quiz show where both participants and viewers answer questions about energy saving and reducing greenhouse gas emissions by creating another segment of game questions for these shows. This would be a low cost investment for influencing a mass audience through use of the mass media.

Effectiveness of the learning pathways implemented

As discussed previously, the game and the Facebook page formed two key learning pathways for the program. Whilst engagement across program channels was fairly low, there is evidence of a small core group of participants who are actively involved in the program via these channels. In addition, despite only a small group of regular participants, these two features were cited as the most influential from an educational perspective.

Our research modelling shows conflicting evidence about the efficacy of competitions (including fortnightly quizzes implemented via the Facebook channel) as a mechanism for learning, given the reasonably low numbers participating in quizzes and lack of qualitative research to capture these

findings. It may be true that many of the study demographic already understand what they should be doing and simply require a non-threatening reminder to act.

Active participation

The level of active participation was impacted by the absence of program activity once participants were registered. In addition, it was found that specific online channels utilised by the program were of little interest to a sizable segment of the participant group. For instance many regional participants were not interested in Facebook or online games.

That said, for a program delivered largely via online channels and with few direct approaches, the 25 percent active participation rate achieved could be considered a solid result. More effective use of the existing channels in the past six months, augmented by direct contact (such as telephone calls) to re-engage with participants is an acknowledgement that the participant group is not homogenous and that it includes different groups of people, with different interests and motivators. This work is now starting to pay dividends.

An unexpected benefit of this trial approach is the scalability of the program due to its delivery primarily through online channels. This allowed for an expansion in geographic area and target group, necessary to increase registrations in the program.

Educational benefits

The program has delivered educational benefits for those participating actively. The game and the Facebook page are reportedly the most influential features from an educational perspective. Accepting that the influence of the game is uncertain, the numbers who played it regularly represent 25 percent of engaged participants.

Furthermore, the results indicate that improvements in interest in energy conservation and greater control over energy consumption are likely to have occurred over the course of the program. These two sentiments are important pre-cursors to action on energy management.

Cost savings outcomes

Cost savings have been generated as a result of the reported changes in energy related behaviour and household purchases influenced by the program. In addition, the energy consumption data provided for active WDCD participants over the last six months of 2015 shows positive changes in consumption compared to the same time in the previous year. Whilst it is not possible to attribute all of the savings realised to the changes influenced by the program, it is certainly plausible that a proportion can be attributed to participation in the program.

Notwithstanding the limitations of the evaluation data captured, it is valid to assert that the program did in fact influence changes in energy management behaviours and, to a lesser extent, household purchases related to energy management. 21 percent of all participants are likely to have made changes to energy management behaviours as a result of involvement in the program; and 13 percent of all participants are likely to have made purchasing decisions influenced by involvement in the program.

Behaviour and purchasing decisions

The program is influencing household behaviours and purchasing decisions. There has been a greater influence on energy efficient behaviours rather than purchasing decisions. This is understandable given the socio-economic characteristics of the participant group but it also points to the effectiveness of the program's focus on teaching participants about behavioural change and how

that, along with even basic DIY household modifications, can significantly influence energy consumption.

In the wrap up survey 82 percent of engaged respondents (n=34) reported having made behavioural changes as a result of the program, whilst 53 percent reported that involvement in the program had influenced the purchase of appliances.

As mentioned above, some of the channels through which the program operates are only just now starting to gain momentum in terms of generating active participation. It is possible that some of these other channels will have a greater influence on participants in time.

Most common behavioural changes associated with reducing energy consumption

As highlighted in the discussion of results, poor response rates to surveys designed to provide a cross reference between identified changes made by WDCD participants and resulting energy consumption results, have made it impossible to establish conclusively the types of changes most commonly reported by those with reduced energy consumption results. That said, the comments provided by survey respondents indicate that many are making relatively minor behavioural changes, sometimes supported by the use of diagnostic or facilitating devices (such as remote control powerpoint switches).

Return on Investment

Return on Investment ROI is primarily evaluated in this trial through the cost-benefit analysis section of this report. Unfortunately despite our best intentions to analyse the persistence of behaviour changes and energy saving post PowerPlay, recruitment delays have prevented there being sufficient time to record and study this. Consequently, estimates of savings in future years are uncertain.

We have attempted to provide a measure of cost effectiveness for the influence of the game itself, i.e. PowerPlay App, however this is problematic as it is difficult to separate the App from other interdependent components such as prizes, competitions, promotions and design elements. Of greatest impact on this figure though is the inclusion of costs relating to measures that did not work, such as the in-kind contribution of face-to-face sign-ups.

This report also does not attempt to quantify ROI from the participant perspective which would be likely to range from low-cost - low return to low-cost – high return. Case studies point to feelings of high return when participants are surprised at the level of reduction in their bills and also, not surprisingly, upon winning prizes.

We conclude that it is possible to create a high return with engaged participants for whom, as reported above, 82% make behavioural changes and 53% make purchasing changes. The trick then becomes how to cost-effectively recruit these participants. This project was implemented on a reasonably small budget over a three year period with the momentum of participant engagement rapidly gaining now as the CSIRO research window closes.

We are confident that with the appropriate marketing communications strategy, a tipping point can be reached that leads to exponential self-generating recruitment. Given that delivery costs remain relatively fixed (prize pool, ITC, staffing, etc.) the return on investment has the potential to spiral dramatically.

The opening up of selection criteria in response to slow recruitment during the first year of the trial quickly resulted in exponential growth to participant numbers which had to be capped. This peer recommendation, social media driven approach would dramatically reduce the acquisition cost per participant and potentially build a large sample size without detracting from the potential individual

impact of the program. In addition, the efficacy of this trial approach would be improved through not wasting resources recruiting people who are unlikely to genuinely engage.

Longer term impacts

In its funding application, Skillset identified the longer term impacts that it hoped would flow from participation in the program:

'Behaviours learnt through this project by this cohort of young people could create long-term sustainable behaviour change. The potential long-lasting effects of educating young people about the benefits of energy efficiency and nurturing behaviour change from the early stages of establishing their own household; combined with the high concentration of low income householders represented by this subset, make this a worthwhile audience to target for sustainable change.

Furthermore, many of the participants will live in share housing, the composition of which is likely to change as young people in the early stages of their working lives are often transient. Consequently, each of the 1,200 targeted participants is likely to influence numerous housemates who comprise their low income household during the three-years of the project, and who may also take their learned behaviours with them to new households.

Additionally, this group will become the tradespeople that will build, install and maintain energy efficient solutions for the next generation, creating a long-lasting legacy beyond 2016.

Finally, due to the large proportion of participants living in rental accommodation, the installation of energy saving products provided through participant packs will create sustainable energy efficiency within these houses beyond the tenancy period of the project's participants'

Evidence of longer term impacts

There is evidence of the potential longer term impacts of the program. The qualitative research conducted has highlighted numerous stories of the program's influence on changing perceptions, generating conversations, and normalising the practice of thinking about ways to conserve energy. Some participants interviewed acknowledged that this would be useful to them in the future, when they set up their own house and have responsibility for paying bills.

One aspect of the program expected to have sustained influence is the 'normalising' of the practice of thinking about ways to conserve energy through general awareness raising and conversation generation in the household.

This is expected to be beneficial to many of the participants in the future, when they set up their own house and have responsibility for paying bills. These specific impacts have not been verified through quantitative survey instruments, and therefore, the extent to which they apply to the entire participant group, remains unconfirmed.

Related to the previous point, is the sense of empowerment delivered by the program. Once again, a few participants interviewed suggested that they felt that they had greater control over managing their energy consumption, as a result of participating in this program. This is supported, to some degree, by an improvement in control over energy consumption, reported in the quarterly surveys.

In addition, a curtailed reporting period has meant that the collection of data, one period post program completion has been necessarily removed from the evaluation design. As the program is currently gaining momentum, with a reinvigorated suite of engagement and promotional strategies underway, the best time to measure the potential effects on longer term changes will be in several months' time. Further evaluation activity will be undertaken in May 2015 but there no plans to conduct further evaluative work after the trial has ended.

Benefits generated for Trial stakeholders

Program participants

A range of benefits have been identified for program participants. These include:

- Increased awareness / consciousness about energy management
- Normalising the practice of thinking about ways to conserve energy so that it becomes second nature and sustainable over the long term
- Reduced energy bills and empowerment to taking action effect to reduce the costs
- The importance of online communities for sharing practical information and learnings
- Health benefits through greater comfort, reduced anxiety about using appliances, and reduced stress on household budget
- Improved relationships within the household through engaging everyone in energy saving initiatives
- Finding out about devices that save energy and reduce the household bill
- Increased household security

Skillset:

- The importance of testing innovative ideas with focus groups before the implementation.
- Including a social marketing strategy as part of the overall program design.
- The benefits of working collaboratively and to scale up when necessary to meet challenges.
- Remaining open to new ideas and the importance of listening to the feedback from program participants
- A deeper understanding of the communication channels to build a community and increase engagement – especially with vulnerable groups.
- The knowledge that social media is not the only solution to consumer engagement in saving energy and reducing their households bills as part of their normal household behaviour.
- Appropriate budget allocation and expert staff to roll out the different elements of the program.
- The development of a game that is marketable and can be used as part of an overall campaign to influence behavioural change.

WRI:

Undertaking the program evaluation has provided the team at WRI with greater insights into:

- The range of barriers that need to be overcome to engage a diverse participant group, especially those that are imposed by the collection of evaluative data;
- The distrust that many have towards their personal data being shared with the Government;
- The level of operational resourcing required to manage the collection of evaluative data in order for it to be successful; and
- A range of issues regarding maintaining participant engagement in a relatively long term program.

The Government:

- Research outcomes that show the benefits of a relatively low cost, online approach to influencing behavioural change through the use of IDT gamification models.

9. KEY RECOMMENDATIONS

RECOMMENDATIONS

1. On the basis of the results achieved in this trial and analysis undertaken, the authors of this report recommend that IDT or gamification continue to be investigated and utilised as a mechanism for creating positive behaviour change, including for fields other than energy efficiency.

2. We recommend the future roll-out of a similar program at a national scale to increase energy savings and awareness including reducing greenhouse gas emissions.

3. Skillset intends to pursue commercialisation of this program in particular and application of the methodology to other subject areas.

APPENDICES

APPENDIX A - CASE STUDIES

Case Study 1: Jennifer's Story

Background

Jennifer registered as a participant with the PowerPlay program in March 2015. She lives with her husband and nine year old twin boys in Orange, NSW. Their home is a three bedroom, weatherboard house, connected to mains electricity. The household has two reverse cycle units installed for heating and cooling. Since registering, Jennifer has finished her traineeship and has been working in a temporary, full time role with the Department of Education and Training.

Energy is an important issue for Jennifer's household because, as Jennifer put it, "energy costs money".

Costs are a concern, and bills are something that need to be dealt with. Jennifer finds that she spends a lot of time thinking about how to be more energy efficient at home, commenting that "it's like having another job", spending an estimated 10 hours a week thinking about it.

Jennifer believes that "anything to do with heating" contributes to the largest proportion of energy consumption for the household, such as electric hot water, space heating and the oven. Jennifer reported she and the rest of her household manage this by:

- Avoiding using the oven as much as possible.
- Having quick showers instead of baths.
- Assessing whether there is enough washing to justify using the dishwasher, and just doing a load by hand if it is too small.
- Washing clothes using cold water.

Other big consumers of power for the household are things that cannot be switched off , such as the electric shutters on windows and the television.

It is mostly Jennifer who is actively trying to reduce energy consumption, although one of her sons also regularly mentions wanting to save electricity and money. He even expresses that he doesn't want to have a bath because he wants to save electricity and money. Jennifer is highly motivated to managing energy efficiency, and is also an active information seeker when it comes to energy efficiency, "continuously looking to improve" how the household uses power. Jennifer prefers reading information in short, sharp formats, such as magazine articles or links that pop up in her Facebook feed containing energy or money saving tips.

Jennifer has noticed that commencing full time employment has made the largest difference to household energy bills, especially over winter. Since being involved in the PowerPlay program, the family has also made a number of changes to reduce energy consumption at home, including:

- Trying to remember to turn off appliances, like the toaster.
- Using the fan instead of air conditioning.
- Setting the temperature on the reverse cycle units to appropriate temperatures which maintain "bearable" room temperatures while saving money

Jennifer indicated that these changes are "small inconveniences", which result in saving money on power bills, but haven't made noticeable impacts, either positive or negative, on things like comfort or enjoyment at home.

PowerPlay Program

Jennifer initially got involved in the PowerPlay program when she signed up through her Skillset Field Officer. The incentive for signing up was the main attraction for her at that point. Around the same time, Jennifer also saw a leaflet about the PowerPlay program on a counter at Skillset detailing some of the prizes available for participation, which was an additional attraction. Moreover, winning prizes in the program has encouraged her to promote the program, and energy efficiency, amongst friends, family and workmates.

One area of the program which could have improved Jennifer's PowerPlay experience was clearer communications. For example, when Jennifer first joined the program, there was not an obvious connection between the program sign-up process and the leaflet advertising. Again, when her traineeship finished, she was not aware that she was still eligible to continue as a participant in the program. It was not until she was contacted personally by the new program consultant that this issue was clarified. The role of personal communication and highly engaged program staff played a substantial role in Jennifer getting the most out of the program. Jennifer also found the SMS messages to be a useful reminder throughout the program.

The aspects of the program most appealing to Jennifer were the Facebook page and the PowerPlay game. She found the quizzes and surveys posted on the Facebook page to be useful ways of learning new information, especially where links were provided to specific websites. In addition, the Facebook page was useful for keeping informed about what was happening in the program. Both Jennifer and one of her sons played the PowerPlay game. Jennifer reported that she appreciated that the game was easy to understand and achievable, although she did note that it eventually got a bit predictable. The game was useful for raising her awareness of energy efficiency issues and information. For Jennifer, one downside of the game was not being able to gauge how well she was doing, relative to other players. Initially, Jennifer was "playing her heart out", but not winning prizes, so she assumed she wasn't doing very well, resulting in greatly reduced engagement. Again, it was communication from the program consultant, letting her know that she was actually doing quite well, and encouraging her to keep going which got Jennifer to reengage.

The PowerPlay website was less useful for Jennifer. She indicated that the Facebook page and game already provided most of the benefits from the website, and that the website didn't really offer anything to draw her in.

Involvement in the PowerPlay program has had a definite impact on Jennifer's energy efficiency. The program has made Jennifer feel more positive about managing household energy, "starting to believe you have some control" over household energy consumption. She indicated that, while she has always monitored the household energy bills in terms of overall cost, she is now better able to break down the bills to understand where money is being spent. The bills have reduced, and Jennifer has improved her skills in information gathering. This means that while changing energy rate may cause her some stress, she feels empowered to keep making efforts towards better energy efficiency.

Case Study 2: Steven's Story

Background

Steven was introduced in an earlier report on the PowerPlay program. A 27 year old electrical apprentice from Adelaide, Steven lives with his fiancé, Mel, in a rented, three bedroom brick veneer home. The house is connected to mains electricity and mains gas. The house has ducted heating and has an old, industrial 3 phase air conditioning unit, which is in poor condition.

Steven is our World Habitat PowerPlay Champion winning the first event in October 2015.

Steven and Mel are earning low wages at this point in time, so keeping household costs down is a priority. Steven suggested in his first interview that it's easy to become complacent about using energy and then end up with larger bills, so he feels that it's important to actively manage energy usage. In addition to this, he is also concerned about reducing his impact on the environment. When he first got involved in the program, Steven made only a few changes, mostly changing light globes in the house to energy efficient LED globes, and installing energy efficient washing machine and television. Since then, Steven and Mel have made a substantial number of additional changes to the way they manage energy at home, including:

- Upgrading to an energy efficient tumble dryer
- Sealing doors with a foam material
- Closing most windows in the front room to control both heating and cooling
- Purchasing a portable reverse cycle air conditioner with a reasonable star rating and using it on a lower setting to keep costs down.
- Using the portable air conditioner has meant less reliance of the fans.

As a result of these changes, Steven and Mel have noticed a number of impacts. In terms of changes to his enjoyment and comfort at home, Steven reported that the new air conditioning unit, in particular, has increased happiness at home. Being able to move the unit to specific rooms as needed makes rooms more pleasant to be in, while simultaneously reducing guilt that used to be felt using air conditioning and fans, because it is much more efficient. Using this new appliance, in addition to other temperature control behaviours, has made the house more functional and generally more comfortable. It is a reverse cycle unit, so Steven anticipates that they will use it to heat rooms in the cooler months, replacing an oil heater and small radiator.

Steven mentioned that these changes have had an impact on his relationship with Mel. When she started living with him, their bills increased, especially as Steven tended not to worry too much about the comfort of the temperature in the house when he was living by himself. He found that he experienced tension between wanting to take care of Mel's comfort, and wanting to reduce the use of less efficient methods of heating and cooling. With the new space cooling solution, Steven reported that Mel is definitely happier, and they are having less small arguments about turning on cooling appliances. They are even managing to save substantially on power bills, with their last bill being about 10% lower than the same time last year, when Steven was living on his own.

PowerPlay Program

Throughout the life of the Program, Steven has been identified as one of the most active and engaged participants. Steven was introduced to the PowerPlay program through his cousin who was already involved in the program (via a Facebook tag). Whilst the sign-up incentive was a drawcard at the outset, Steven was also impressed that he would be rewarded $50 just for doing a survey. Steven has some experience with other survey programs in which you accumulate points by participating in surveys. He felt that the cash incentive on offer with PowerPlay was much more appealing.

In addition to the incentive, Steven was also attracted to the program because he knew it was aimed at apprentices. Not only did he think he might be able to learn something useful, but he thought that

the research would be worthwhile in terms of providing the government with useful information about how those on lower wages (such as apprentices) cope with energy costs.

Being in the electrical trade, Steven was interested in learning about energy prior to joining the program, but he wasn't following it up. The features of the PowerPlay program, primarily the game and Facebook page, motivated him to find the information. He has participated in the competitions and appreciates the fact that the answers to the questions are attainable with only a little bit of Internet research. In addition, he feels that most of the content on the Facebook page seems relevant and useful, especially the links provided.

With regard to the game, Steven indicated that he enjoyed the game when he was first playing it. The elements of the game that he enjoyed include:

- Building the city
- Discovering properties
- Making strategic decisions and being challenged to make good choices

However, after a while, Steven reached a stage where the game became repetitive. He is not playing much now as there are no updates to get him interested, and he has moved onto a new game. According to Steven, there

According to Steven, there is a fair bit of interest in playing the game competition amongst his circle of friends. He indicated that many of them would love to play but because they are unable to register and are therefore not eligible to enter the competitions, they are not getting involved

is a fair bit of interest in the game amongst his circle of friends. He indicated that many of them would love to play but because they are unable to register and are therefore not eligible to enter the competitions, they are not getting involved.

Steven participated in the Game of Champions October 2015, ultimately winning. He indicated that he really enjoyed this event, being able to meet a lot of "genuine" people. It also made him feel obligated to keep going with the rest of the program. He was generally unsure about how ongoing advocacy roles might work, although he does see a benefit in having advocates to help people on low incomes to be conscious about energy and make savings. Steven indicated that he wouldn't mind a low-key advocacy role: talking to people, correspondence with emails, as long as he had been given the information. He feels he could spread the message "look it's not too hard" and share how he has benefited. He would also be interested in testing out products and giving the Program Coordinators feedback.

Before the program, when he was living on his own, Steven felt the energy bill would be the same all the time, and didn't realise how much his behaviours could change things. He noted that the PowerPlay program makes it look easy to be energy efficient, making him better able to be conscious about the environment and also saving money. He mentioned that he feels happier that he has more control over his bill.

Steven reported that most of the changes he has made to manage energy were influenced by the program. He was always conscious of lights, but not really of appliances. Steven said that he has changed his way of thinking, more routinely consider energy issues when choosing what to purchase. He also feels that costs encountered when purchasing energy efficient appliances are outweighed by the ongoing lower bills. In addition to the impacts on his relationship discussed above, Steven mentioned that participating in the program means that he and Mel are more aware of their power bills, and talking more about them. As a household, Steven and Mel are now making energy efficiency part of their decision making.

Overall, Steven praised PowerPlay as a good program, spreading the message about energy efficiency through products, which is appealing to people.

Case Study 3: Michael's Story

Background

Michael's story is one of a parent of a PowerPlay participant. Eammon is Michael's 17 year old son, who registered with the program in December 2014, when he was working as an apprentice chef. They live, together with Eammon's mum and grandmother, in a six bedroom, double brick home in Bathurst, NSW. The house is connected to mains electricity and mains gas, and the household has also invested in solar electricity. The household has a number of appliances for heating and cooling spaces.

Since joining the program, Michael reported that Eammon has become more aware of energy efficiency, and made increased efforts to be more energy efficient at home by having shorter showers, and remembering to turn off lights and fans when leaving a room.

With a 92 year old household member, temperature comfort is important. In Bathurst, where weather can vary from heavy frosts in winter to extreme heat in summer, this means Michael's household has space heating or cooling operating most days of the year, and cost of energy is a key issue. Michael feels it is important for the household to counter this use of power in other ways.

In addition to controlling ambient temperature, other big consumers of household energy are the hot water system, particularly when household members have long showers, and people forgetting to turn off lights or fans when leaving rooms. Since installing solar power, the family has undergone a "cultural change" in how they use major appliances to maximise the benefits of having solar power. This resulted in an approximate 50% reduction in energy bills over the last six months. Michael reported that they had to find out about these changes by doing their own internet research.

Eammon does not currently contribute to household bills, but has a commitment to the ideals of preventing ongoing climate change and other environmental damage. Michael indicated that Eammon struggles to translate ideals and intentions into energy efficient behaviours. Michael also mentioned that Eammon, who is currently looking for work, is considering moving interstate to pursue employment options. Michael suspects that moving out of the family home, and having responsibility for household bills is likely to significantly increase Eammon's energy efficiency.

It is mostly Michael who is actively trying to reduce energy consumption in the household. However, since joining the program, Michael reported that Eammon has become more aware of energy efficiency, and made increased efforts to be more energy efficient at home by having shorter showers, and remembering to turn off lights and fans when leaving a room.

PowerPlay Program

As the parent of a participant, Michael is not familiar with most aspects of the program. He is primarily aware of the Retrofit kit the household received as part of the program. Eammon and Michael talked about the contents, but it was Michael who installed some of the products. He reported that the Remote control powerpoint switches have already had an impact. He mentioned that the convenience of being able to turn off electricity at hard-to-access powerpoints, and all at once, rather than having to go around to individual appliances, meant that this product was much more likely to be used.

Michael noted that there was some material that came with the Retrofit kit which promoted other features of the program, such as the website, game and Facebook page. This material was unappealing to Michael, but it did not engage Eammon either.

Given the family's use of solar power, and the fact that they are on a bill smoothing plan, it is difficult to determine impacts of the PowerPlay program on energy consumption and costs. However, Michael mentioned that a recent gas bill identified that household gas use had dropped substantially in the previous quarter, suggesting that there has been some reduction.

From Michael's point of view, there were two big outcomes of the program for Eammon. The first, and most immediate, outcome was that Eammon became more responsive to his dad's prompting to be more energy efficient in his behaviours. Where Eammon had previously been somewhat dismissive of these reminders, Michael found that discussing the need to follow through on ideals and intentions with behaviours was more likely to result in changed behaviours. This suggests that the program functioned as a 'voice', different to that of a parent, promoting energy efficient behaviours to a young person at a stage of life when many young people are establishing their identity as independent from parents, but still living with parents. The second outcome is that Eammon is already thinking about the kind of financial responsibilities he will have if he moves out of home, but more importantly, he "will now have some strategies that work" to manage energy efficiency and household costs. This is potentially a long-term impact supporting low-income individuals avoid bill stress.

Case Study 4: Sam's Story

Background

Sam is a 22 year old electrical apprentice working for a small electrician business in Perth. Scott rents a three bedroom share house with two flatmates, one of whom is also an apprentice, and the other who works in an office job. The fibro house has reverse cycle air conditioning and a fireplace for heating and cooling spaces. They are connected to electricity mains and also have solar water heating.

Sam feels that he is the only member of the household actively trying to reduce consumption. He does this by adjusting the thermostat on the air conditioner to 22 degrees, especially when he comes home to find his flatmates have set it to 18 degrees. He tries to remember to turn off the solar water heating booster.

Sam reported that energy conservation is important to him, but that it is mostly about finances: "every dollar counts as an apprentice". He noted that bill management is similarly important to his flatmates, but that bills come so far apart it is difficult to be aware of energy use between bills. From time-to-time, the household gets a "massive" energy bill, which causes a fair amount of concern.

Sam is convinced that the air conditioner is the largest user of energy in the household, particularly during the summer period. The washing machine also uses a lot of energy, with Sam reporting that it "gets an absolute workout". The machine is about 4 years old, but with work clothes loads and normal loads being done separately by all three guys in the house, it is used a lot, and Sam suspects probably not very efficiently. The other big energy cost is when the air conditioning or other appliances are left on accidentally, particularly the solar water heating booster can be accidentally left on for days at a time.

Sam feels that he is the only member of the household actively trying to reduce consumption. He does this by adjusting the thermostat on the air conditioner to 22 degrees, especially when he comes home to find his flatmates have set it to 18 degrees. He tries to remember to turn off the solar water heating booster.

As an electrical apprentice, Sam gets most of his information through work and TAFE. For example, through work, he has become aware of all the potential benefits of solar panels. He noted that, despite the initial cost, he plans to "go solar panels one hundred percent" when he owns his own home.

Sam believes he is fairly motivated to be energy efficient, and has sufficient understanding of how to be energy efficient, but is constrained in what he can actually do because he lives in a rental property. He plans to implement a number of energy efficiency strategies when he owns his own home, in addition to installing solar panels, including using only LED lightbulbs, utilising shading and curtains, and using ceiling fans rather than air conditioning as much as possible.

PowerPlay Program

Sam joined the PowerPlay program in March 2015. He found out about the program when it popped up on his Facebook feed as a "suggested post". He found the offer of a $50 voucher for doing a quiz to be a drawcard. When asked about what kept him interested in the program, Sam found it difficult to pinpoint, but suggested that it was mostly about interest for him: the quizzes were interesting, and it was relevant to his work.

Most aspects of the program – the website, the Facebook page and the SMS messages – were not particularly memorable for Sam. He did report playing the game frequently, and finds it to be a "good time killer". He also noted that it was from the game that he had learnt a few things about "non-electrical" ways to be energy efficient, such as how shading and curtains can be used to reduce power consumption.

Case Study 5: Dean's Story

Background

Dean registered as a participant with the PowerPlay program in January 2015, when he was 19. He lives with his Dad and older brother in a four bedroom, brick veneer home in Orange, NSW. The house is connected to mains electricity and mains gas. The household has ducted gas heating and wall/window mounted air conditioning. Dean works full time for Orange City Council as an electrical apprentice, and at the time of interview was in his third year of his apprenticeship.

The "interest factor", as Dean called it, played a substantial role in keeping him engaged in the program. In addition to having a personal curiosity about how electricity and electrical equipment works, the program ties into his career and training. Being an electrical apprentice, Dean found the program to be a source of information that is relevant to him professionally.

Currently, Dean contributes to household bills, paying variable amounts, depending on the amount of the bill. Dean commented that power bills vary a lot for his household, based on seasonal changes in power use. In addition to the extremes of climate experienced in Orange, Dean keeps snakes as pets, which requires continual use of heat lamps during the colder months, but significantly less power use during the warmer months. Dean suspects that the energy use for his snakes is probably one of, if not the largest consumer of energy in the household, along with the air conditioning and the power tools in the garage. These tools are used by everyone in the household to make furniture and other items as part of their leisure activities.

Since joining the program, Dean has become much more active in seeking to be energy efficient at home. He acknowledged that prior to joining the program he was probably "making more of the problem than solving it" in terms of household energy use. Now, however, Dean has instigated a number of measures to reduce energy consumption at home, including:

- Changing all the lightbulbs in the house to lower wattage, higher lumen bulbs.
- Installing remote control powerpoint switches from the retrofit kit on bigger appliances, such as the washing machine and dishwasher.
- Washing clothes using cold water instead of hot.
- Upgrading the dishwasher to one with a much better energy rating.
- Doing a walk around the house to turn off appliances before bed most nights.

Dean has also tried getting the rest of his household more interested in actively managing energy use, albeit with limited success. One success on this front, according to Dean, is the decision they have made as a household to change some of their behaviours around using the four televisions in the house: if they are all watching different televisions, they won't have the air conditioning on; if they want the air conditioning on, they need to be in the same part of the house, and only using one

television. This means that the household has started having regular discussions about what they are using.

While the other members of Dean's household might not be as active in reducing energy consumption as Dean at this point, he reported that the changes have resulted in positive impacts on comfort and enjoyment at home for the whole household. Specifically, some of the benefits that the household has experienced include:

- Lower power bills – Dad is happier and all members of the household are able to allocate more of their money to leisure activities.
- A noticeable difference in having a quieter dishwasher.
- Having brighter lights means less strain on the eyes.

Dean reported that the largest, or most important, benefit of increasing energy efficiency at home was the money they are saving as a household. Looking to the future, Dean is committed to implementing all of the measures he has been at home when he moves out and has full responsibility for energy bills. He also sees the benefit in higher initial costs (such as the purchase price of upgrading the dishwasher) for longer term savings.

PowerPlay Program

Dean initially found out about the PowerPlay program through a friend who was already a participant posting about it on Facebook, and subsequent conversations with that friend about prizes he had won in the program. As a result of these conversations, Dean and a group of friends became curious about the program and joined up. For Dean, the aspects of the program that caught his attention were the PowerPlay game, the personal interest he has in understanding how electricity works, as well as the prizes on offer.

The "interest factor", as Dean called it, played a substantial role in keeping him engaged in the program. In addition to having a personal curiosity about how electricity and electrical equipment works, the program ties into his career and training. Being an electrical apprentice, Dean found the program to be a source of information that is relevant to him professionally. Dean referred several times to his personal and professional interest in being able to explore and understand electricity use and related products so that he can advise friends, family and, when fully qualified, customers or clients about how they can manage energy consumption and save money.

Dean has primarily been involved in the program through the game app and Facebook page. While he enjoyed the game, he thinks it needs to be upgraded to include additional levels or other ways to progress to maintain interest. He only found that there were "a few bits and pieces" of information provided by the game which he didn't already know. His suggested including pop-up boxes in the game containing additional information on how different things work, from appliances to substations.

Dean initially visited the website to find out about the program and sign up, but hasn't explored it extensively. He found the SMS messages to be a helpful aspect of the program, being a better way to reach him with reminders than emails, which were used early in his participation.

Dean also reported that he found the retrofit kit to be beneficial, having used most of the products in the kit. While Dean reported using most of the products for his own household, he also mentioned that he was able to help his grandparents when they moved into a new residence by installing the draft excluder and using the sealant, both of which came from the kit.

Dean was also invited to participate in the Game of Champions and was a competitor in the inaugural October 2015 event. Dean indicated that he enjoyed the event despite some technical difficulties, finding the quiz an interesting learning experience. The Game of Champions was another step forward into the program for Dean, who reported being interested in promoting the program, and sharing what he has learned with new or potential participants.

He indicated that he is interested in having a 'champion' role into the future, being involved in an information-sharing community, and participating in helping others to reap the benefits of becoming more energy efficient.

Case Study 6: Scott's Story

Background

Scott is a 40 year old electrical apprentice working for a sawmill in Oberon, NSW. Scott lives in Bathurst with his wife and their 22 month old daughter in a 2 bedroom unit, which they are renting. Scott's 11 year old son is also part of their household every second week. The family's unit is connected to both mains electricity and gas.

Scott is not interested in spending time on Facebook, and doesn't particularly enjoy using computers to look for information. He prefers information in pamphlets, or other short, hard-copy formats which he can look at while sitting in front of the television.

Scott's wife is a stay-at-home mum with a young child, so the comfort of the unit is important, especially given the extremes of temperature that can be reached in Bathurst. Running heating or cooling is the primary consumer of energy for the household, and Scott suspects that all the family's electronics combined, including phones, television, laptop and a PSP game console "would be a close second". Scott is the main person in the house who is thinking about energy efficiency, and reminds other members of the household about switching off devices.

Both Scott and his wife have been putting in effort to manage energy consumption through adapting the way they use their air conditioner. Previously, the air conditioning would be set to a very low temperature to quickly cool down the residence, but then it would be too cold, so the temperature would be reset to take the chill off the room. This would then mean that whoever was home would soon get too warm. This constant readjusting of the air conditioner's thermostat would happen throughout the day, resulting in inefficient use of the unit. Maintaining a constant temperature is a way the household has changed their energy consumption. Other changes they have made include changing the way they recharge their devices, not leaving them on chargers all night, and turning off most appliances every night.

Scott reported that he has experienced no downside to being more energy efficient. Scott noted that the changes that have been made have not impacted on their comfort or enjoyment at home. In fact, with the air-conditioning now being set-and-forget, Scott feels that they are probably doing less now by being more energy efficient. The family are yet to notice a change in their bills, but Scott is anticipating that the changes will have an impact on bills in time, as well as having positive environmental outcomes, however small.

Scott is not interested in spending time on Facebook, and doesn't particularly enjoy using computers to look for information. He prefers information in pamphlets, or other short, hard-copy formats which he can look at while sitting in front of the television. This is particularly true at the moment as Scott has recently been working long days, six days a week. He finds that being busy and tired means that he is less conscious of being energy efficient, and having a small reminder such as a pamphlet is helpful.

PowerPlay Program

Scott joined the PowerPlay program in February 2015. He found out about the program through Skillset staff who attended the local TAFE campus to recruit participants. It at this time that the program was undergoing a major recruitment drive due to the underwhelming response, and Skillset staff was under immense pressure to think outside the box to improve the attractiveness of the program. One of the staff involved at the time was a trained energy auditor, who, having met and recruited Scott at TAFE, arranged to make a home visit to Scott's place to give some basic pointers

on how the family could save on their power bills. Although not a part of the program, it was this personal assistance that Scott found most useful. It was during this visit that Scott learned how to use air conditioning more efficiently.

It was the opportunity to learn how to save energy at home which initially attracted Scott to the program. His interest was maintained through practical assistance with specific, simple modifications he and his family could make to reduce energy consumption. In addition to the house visit, he also found the retrofit pack “brilliant” for introducing simple changes to the family’s energy use. In particular, Scott reported the following:

- Scott often leaves for work very early in the morning leaving a hallway light on as he goes, as both his wife and son are bothered by the dark. He has installed an LED lightbulb from the retrofit kit in the hallway to reduce energy consumption.
- Installing the remote control power switches has meant that it is easier to turn off appliances at night, adding to the feeling that his family is doing less by being more energy efficient.
- The energy meter means that Scott can check on the energy use of different appliances every so often.

Other aspects of the program were less appealing for Scott. He has no memory of ever looking at the website, he mostly ignored the SMS messages, and the Facebook page didn’t engage him. He indicated that he wanted to see more tips and practical information on the Facebook page. While he did report learning a few things about household energy use from the PowerPlay game, which he played quite a bit, it didn’t make him more conscious of energy efficiency on a day-to-day basis at home and he found the game itself “a bit cheesy”. Scott can see how the game might be more appealing to younger people.

Scott reported that the PowerPlay program was “worthwhile” because it got him thinking about energy efficiency. It is clear that the success of the program for Scott was to increase his consciousness of energy efficiency, and give him personally relevant behavioural changes, while not burdening him or his wife with additional busyness.

APPENDIX B - CASE STUDY DEVELOPMENT

Hi, my name is Danielle. I'm calling from the Western Research Institute on behalf of Skillset. I believe Meghan from Skillset contacted you sometime last week to let you know about my call.

I'm involved in evaluating the PowerPlay program that Skillset is running. As part of this, I'd like to collect some information about how you've been involved in the program, what you like about it and what you think could be improved. This will be used to develop a case study about your participation in the program, which will be published as part of program reporting.

The interview would take around 40-45 minutes.

Do you have time now to discuss the program?

If not now, when would suit you?

Ideally we'd like to be able to identify you in the case study. This would include the following information – your name, age, town in which you live, current employment (i.e. where you work, what you do for a living), a brief description of your household (i.e. live with your family, live with friends, live by yourself)

Are you happy to be identified?

If no, ask if they would be happy to proceed on the basis that the participant's name is not identified in the case study.

Interview guide for participant

Background of interviewee:

1. Name:
2. Age:
3. Location:
4. Current employment:
5. Brief description of your household:

Section 1: Energy characteristics of the household

When you joined the program, the main energy characteristics of your household were:

X

X

X

1. Has this changed? How?
2. Is energy conservation an important issue for you and those in your household? Probe – why / why not?
3. Does the cost of energy concern you? Is it an issue for your household?
4. What do you think are the biggest consumers of energy in your household? *(what do you think has the biggest impact on your energy bill?)* What do you do to manage this? Has this had an impact on your consumption?

5. Is anyone in your household active in trying to reduce energy consumption?

   If no, why not?

   If yes, how do they find out about it? *Probe specifically for: do they use the Internet or social media?*

   How do you/they prefer to find out about this type of thing?

Section 2: Changing household energy efficiency

6. What, if any, changes have you made over the past 12 months to manage your energy consumption?

   Probe: have you noticed any changes (positive/negative) in your comfort at home linked to the changes you've made?

   Probe: What about any changes (positive/negative) to your enjoyment in activities or lifestyle at home that are linked to the changes you've made?

   Probe: Any other changes you've noticed for yourself or others in your household linked to the changes you've made? (Prompt if necessary: changes in health, stress levels, wellbeing, how you use your time, finances etc.)

7. What do you feel is the biggest, or most important benefit of increasing energy efficiency at home?
8. What do you feel is the biggest, or most significant cost or downside to increasing energy efficiency at home?
9. Do you feel like you have sufficient understanding of how to be energy efficient? If not, how would you go about developing your understanding?
10. How motivated are you to start or keep managing your energy efficiency at home? What, if anything, would make you want to be more energy efficient at home?
11. Do you have preferred sources for learning information about household energy efficiency? (Probe: YouTube videos; TV; talking to a friend about something they've done or seen or read; blogs; other social media; technical or government websites … etc.).

Section 3: PowerPlay program characteristics

12. How did you find out about the program?
13. When did you join the program? (if not already known)
14. Why did you join the program?
15. What parts of the program have you used or visited? *(Reminder for the interviewer: PowerPlay website; game app; Facebook page; retrofit pack; SMS messages)*

    For each:

    - What did you think of it?
    - Was it interesting / enjoyable? What did you like about it?
    - Was it useful? How?

(If necessary, can prompt: Did it improve your understanding of managing household energy use? Did you physically change anything – behaviours, appliances etc.)

If nothing:

- What parts of the program are you aware of?
- Why haven't you used or visited them?

16. After you started in the program, what kept you involved? Is there anything that would have got you even more involved?
17. Have you been involved in any other programs to reduce energy consumption? If yes, how does the PowerPlay program compare? (Probe: better/worse; key differences).

Section 4: Program impacts on energy efficiency awareness and information seeking

18. When you first got involved, you were asked in the commencement survey about where you live, and energy use at home (house construction materials, appliances, type of energy characteristics, modifications etc.). How aware were you then of those types things? (Probe: did you tend to know the answers to those questions?)
    - Has your awareness of these things changed (i.e., increased, decreased or about the same)?
      If yes: did these changes happen as a result of some part of the program, or something else? What parts of the program made you more aware of these things?
19. Has your awareness of household energy bills changed? (Probe: do you have more conversations with the household bill payer? Does it concern you more or less than before?)
20. Do you believe that your energy costs have changed (increased/decreased/about the same) as a result of your involvement in the program? (Prompt if necessary: think in terms of average summer or winter bills)
21. Would you say you were interested in learning about energy efficiency before being part of the PowerPlay program?
    If yes: how did you go about finding energy efficiency information before you were involved in the PowerPlay program? Probe: was it easy/difficult to find information when you went looking?
    - Did you get anything out of the out of the PowerPlay program that helps you find information about energy efficiency now?
22. Do you think taking part in the program changed your understanding or knowledge of how to manage energy use at home? Probe: how did the program change your understanding/ knowledge?

Section 5: Program impacts on energy efficiency motivation

23. Do you think taking part in the program changed the way you feel about managing energy use at home? Probe: how did the program change the way you feel?
24. What kinds of activities would get you more interested in managing your energy consumption?

25. Was there anything in the PowerPlay program that got you promoting, or talking about household energy efficiency amongst friends, family, workmates etc.?

26. For participants who live at home or is not responsible for paying bills:

Imagine you move out on your own or into a share house, where you have some or all responsibility for paying the energy bills. Is there anything you got out of the PowerPlay program that you would want to do or put in place to reduce energy costs and maintain a comfortable home?

Section 6: Program Elements relevant to sub-sections of participants

27. ***For participants who have been involved in the Game of Champions:***

- Likes / dislikes?
- Did the Game of Champions encourage you to be more involved with the rest of the program in general?
- Do you see a role for people like yourself becoming 'energy efficiency champions'? (Prompt if necessary: by "champions", we mean someone who promotes energy efficiency and the program itself). How?
- Are you interested in continuing as an energy efficiency champion? What would you want to get out of it? (Probe for types of deeper engagement desired – do they want to feel like they're part of a community, or want to influence others?)
- Is there anything additional you would have liked to get out of the Game of Champions that you felt was lacking?

28. For WDCD participants – questions about Retrofit kit:

- Were you aware of all or some of the products included in the kit? If yes, which ones?
- Have you installed or used any of the products?
- Have you noticed any impact from using that/those product/s (at this early stage)?

Section 7: Wrap-up

29. Do you have any other comments or feedback about the PowerPlay program? Anything we've not yet talked about?

That's all the questions I have for you.

One last thing – do you have any photos of yourself, your house or anything related to your involvement with this program that you would be comfortable sending me for inclusion in the write-up of this interview? These would go into an evaluation report for the program.

APPENDIX C – 1. LIEEP FOCUS GROUP DISCUSSION GUIDE: AUGUST 2015 FOCUS GROUP

Research aim:

- To understand why participants are not engaging in the program very much or at all
- To understand what kinds of engagement strategies may work by identifying what activities participants are currently engaged in (outside of work) and how they get involved in that activity or receive information about that activity.

Target group:

- Participants from Bathurst who are not particularly engaged in the program, i.e. they have not visited the Facebook or website very much and have not played the game / app at all or very much.

Introduction:

- Why we are here: To discuss Skillset's PowerPlay program and your involvement in it in. Specifically, we're aiming to find out how it could be improved and what Skillset could do to increase involvement in the program.

- Explain the rules of discussion:
  - This is about having a round table discussion so it is important that we hear from everyone in the group
  - Explain questioning (no right/wrong answers, open honest responses etc.)
  - Explain video/audio recording - just for analysis purposes
  - Stress confidentiality - and that no individual answers will be disclosed beyond this room
  - The discussion will go for approximately 2 hours and you will receive a reimbursement for time and cost at the end of the group
  - Ask that mobile phones be turned to silent
  - Sign consent form / sign in sheet

We're going to divide this discussion into two parts:

In the first part we'll talk specifically about the PowerPlay program, why you signed up to it, what it's involved, your likes and dislikes and ideas for improvement.

In the second part, we want to understand your current concerns as well as the activities you're involved in outside of work, and how you receive information about these activities.

Part 1: Specific Questions about LIEEP and energy efficiency

You're all enrolled in Skillset's PowerPlay program which aims to help you become more energy efficient in your house.

1. How did you find out about the program?

2. How was it presented to you? *Probe, what were you told it would involve?*

3. Why did you sign up to the program?

4. Once you were signed up, what information and communications about the program did you receive?

5. Most of you are not involved very much in the program:

- Why do you think that is?
- What would make the program interesting to you?

Probe likes, dislikes and potential improvements for each element of the program:

Facebook

Website

Game / app

Competitions

- Are there other things the program should include?

Part 2: Current concerns, activities

In this next section, we want to understand your current concerns as well as the activities you're involved in outside of work, and how you receive information about these activities.

1. What are your main concerns at this point in your life?

   (Australia's Youth Matters report 2013, found that youth were most concerned about Housing affordability and availability – so the costs of running a house could be a concern for our participants)

2. How do you deal with these concerns?

   - Where do you find information to help you?
   - Who do you talk to?
   - Do you feel like you are listened to and your concerns are understood and taken seriously (by others, perhaps older people?)

   Probe: examples, how this makes them feel etc.

3. *Dependent on the response to the Q1:*

   No-one mentioned that household costs are a concern - is this an issue that concerns anyone?

   Probe why / why not?

4. If there was a way you could reduce the cost of your household's energy bills – perhaps significantly, would you be interested in finding out how?

   Why? / Why not?

5. What do you think would be the impact of reducing your energy costs / bills?

   Probe perceptions around this:

   Too much hassle to do it
   Make it less comfortable at home
   Means I can't do some of the things I like to do

6. Outside of work or study (and sleep), what occupies most of your time?

   Probe:

   Helping out at home - what do you do?

Hanging out with friends - what do you do?
Hanging out with family - what do you do?
Specific activities / hobbies?

For those with activities:

- How do you get involved in these activities?
- Who do you do these activities with?
- How do you hear about these activities / receive info about / communicate about these activities?

For those without activities / hobbies:

- Would you like to be involved in other activities (perhaps socially)?
- What's preventing you?

7. What are you most passionate about right now?

    - How do you get involved in this interest / activity?
    - Who is involved with you in pursuing this interest / activity?
    - How do you hear about this interest / receive info about / communicate about this interest?
    - Is there more you'd like to do with this interest? Anything preventing you from doing it?

APPENDIX C – 2. LIEEP FOCUS GROUP DISCUSSION GUIDE: NOVEMBER 2015

Research aim:

- To understand how participants are engaging with the program and what they are learning from it.
- To understand what the focus of the program should be going forward, how to improve the program to achieve higher levels of engagement and reach.

Target group:

- Participants from Orange who are very engaged in the program, including PowerPlay game champions.

Introduction:

- Why we are here: To discuss Skillset's PowerPlay program and your involvement in it in. Specifically, we're aiming to find out how you're getting involved in the program, what you're learning from the program and what you'd do to improve it.

- Explain the rules of discussion:
  - This is about having a round table discussion so it is important that we hear from everyone in the group
  - Explain questioning (no right/wrong answers, open honest responses etc.)
  - Explain video/audio recording - just for analysis purposes
  - Stress confidentiality - and that no individual answers will be disclosed beyond this room
  - The discussion will go for approximately 2 hours and you will receive a reimbursement for time and cost at the end of the group
  - Ask that mobile phones be turned to silent
  - Sign consent form / sign in sheet

We're going to divide this discussion into three parts:

In the first part we'll talk specifically about the PowerPlay program and why you signed up to it. We'll also discuss your level of interest in energy efficiency.

In the second part, we'll look at how you're getting involved in the program in detail, what you've learnt from it and how you've used this information.

In the third part, we'll be asking you for your opinions about how to run this program in the future.

Part 1: Specific Questions about LIEEP and energy efficiency

You're all enrolled in Skillset's PowerPlay program which aims to help you become more energy efficient in your house.

6. How did you find out about the program?

7. How was it presented to you? *Probe, what were you told it would involve?*

8. Why did you sign up to the program?

9. Once you were signed up, what information and communications about the program did you receive? *In hindsight, do you feel that this was sufficient?*

10. Generally speaking, how interested are you in information about energy efficiency?

    How receptive are you to information about this issue – do you think it's difficult to get people interested in it? Why?

    Also, how interested are your peers / friends in this issue?

Part 2: How are you involved with the program and what have you learnt?

In this next section, we want to understand how you're getting involved in the program including how frequently you're involved, and what you've learnt from the program.

Go around the group asking:

1. Which parts of the program do you get involved with?

   Facebook

   Website

   Game / app

   Competitions

   Describe how, how often, what you like about it, when you get involved

2. Have you discussed any parts of the program with friends / peers / family?

   a. If yes, what has been the reaction?

   b. If no, why not?

3. What have you learnt as a result of being involved in the PowerPlay program?

   a. How have you applied the things you've learnt in the home / workplace? Is it making a difference?

   b. What is the most useful thing you've learnt and how has it helped you?

Part 3: The future of the program

You may not know this, but this program is actually being funded by the Federal Government as a trial program. The trial of this program is due to end mid-2016, however, Skillset would like to continue running this program, beyond this time.

If you were given an opportunity to run the program, how would you change and improve the program to maximise participation and learning?

1. In your opinion what are the most important messages that need to come out of the program and be communicated to the participants?

2. What is the key feature of the program that has kept you engaged?

3. What would make the program more interesting to you?

   Probe likes, dislikes and potential improvements for each element of the program:

   Facebook:

What kinds of posts are you interested in?

Website:

What content are you interested in?

Game / app:

Is the game interesting and fun? How could it be improved?

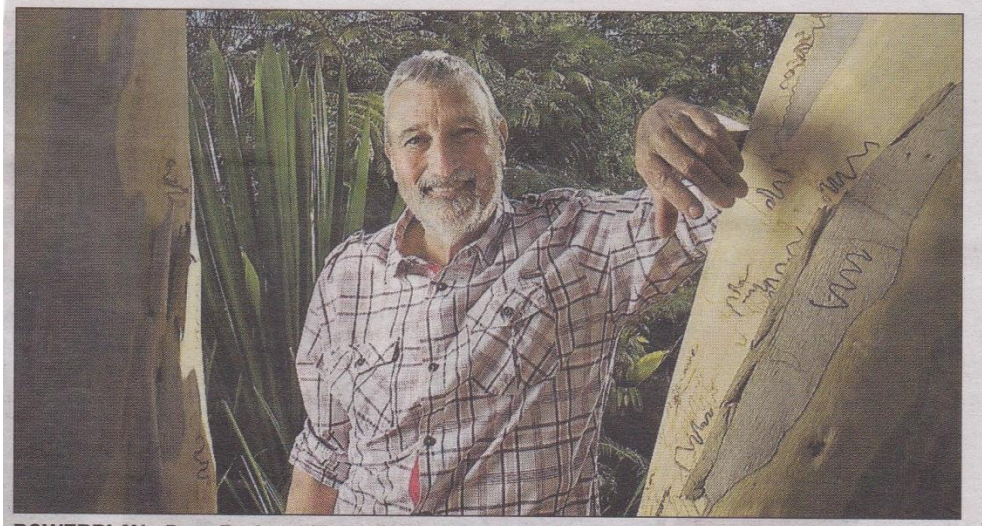
Competitions:

Are prizes important? Are the competitions interesting and fun? Can you suggest other types of competitions that you think would be appealing?

4. Who do you think the program should be available to? How would you reach them / get them involved?

APPENDIX D - MEDIA CLIPPINGS

April 21, 2016. P.6 Western Advocate



POWERPLAY: Don Burke will be in Bathurst on Friday co-hosting the latest Game of Champions playoff event at Skillset. 042016don2

Don pops in to our backyard

DON Burke of *Burke's Backyard* fame will co-host the next Game of Champions play-off event with local Skillset Environment manager Ashley Bland on Earth Day tomorrow.

The public event promises to be entertaining with an energy-based game show that involves a quiz and a 'Would I Lie To You' segment where PowerPlay champions must gain the highest number of points to win the championship prize of $1000 and the title of PowerPlay Earth Day Champion.

The champions represent apprentices and trainees from around Australia who have won the monthly PowerPlay Challenge with a prize valued at $1500.

They are then eligible to compete in a series of four playoff events held on key world environment days.

Competitors for Adelaide, Sydney, Bathurst and Orange will be competing in tomorrow's event. The public is also invited, with the chance of winning a PowerPlay Energy Saving Retrofit Kit that can help PowerPlay households reduce their usage.

Mr Bland said more than 800 young participants from around Australia registered for the PowerPlay program before registrations closed in May 2015.

Two Adelaide participants have already won the World Habitat and World Wetlands Days Game of Champions title and the $1000 prize money. The final event is on World Environment Day in June.

The Skillset PowerPlay gamification program is funded by the Federal Government's Low Income Energy Efficiency Program.

The mobile app is being trialled by Skillset to see if it has the potential to influence and change consumer behaviour towards energy use by making energy saving a normal, everyday household practice.

Mr Bland says research findings show that those engaged in PowerPlay have higher levels of awareness and understanding about how to save energy and some are now experiencing a real reduction in their household bills.

A smaller sample group of PowerPlay households in Bathurst and Orange, who are having their energy usage monitored by Essential Energy as part of the trial program, were also invited to participate in an energy saving video competition.

The winner of this competition will be presented with a cheque for $2000 by the Mayor of Orange, John Davis, at this Friday's event.

February 2, 2016. P. 5 Western Advocate

Powerful way to get energy message across

BATHURST'S Skillset will mark World Wetlands Day today by hosting the PowerPlay World Championship.

Skillset introduced the PowerPlay app to a trial group of 800 players to research how the use of games and social media could make young people on low incomes more aware about energy consumption in their households.

Registered participants from around Australia have access to a large pool of prizemoney as part of playing the game and entering the other competitions.

The game, played on mobile devices, is based on rebuilding a post-apocalyptic western NSW town that has been ravaged by the Elementals.

Participants must find more survivors, scavenge, save power and be as efficient as possible to build their energy supplies before the Elementals come at night to sap their power.

A number of Games of Champions events have been held across Australia and the six winners of each event will compete in Bathurst today in the World Wetlands Day Championship.

"Our preliminary research findings are showing that those engaged in PowerPlay have higher levels of awareness and understanding about how to save energy," Skillset environment manager Ashley Bland said.

The award-winning app, designed by Skillset and developed by 2and2, was launched in 2015.

It is supported by a fortnightly energy quiz and energy saving competitions that are run on Facebook and the www.mypowerplay.com.au website to maintain participant interest throughout the trial period.

■ The World Wetlands Day Game of Champions will be held from 6pm at the Flannery Centre, 341 Havannah Street. Details: www.mypowerplay.com.au or phone 6330 1400.

www.westernadvocate.com.au

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APPENDIX E –COST BENEFIT & COST EFFECTIVENESS ANALYSIS DATA

The excel worksheets used to analyse the cost benefit and cost effectiveness of the program are included as a separate file to this report.