Regional and Remote Communities Reliability Fund Microgrid

MyTown Microgrid

Data Monitoring Deployment Report

Milestone 2.3 - June 2021 Version 1.0

wattwatchers DIGITAL ENERGY

Federation University

public interest ADVOCACY CENTRE

LATROBE VALLEY AUTHORITY

RMIT UNIVERSITY

community power agency

HEYFIELD COMMUNITY RESOURCE CENTRE

UTS

AusNet services

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Citation

McCoy, T., Dwyer, S. and Hogarth, M., 2021. MyTown Microgrid: *Data Monitoring Deployment Report* prepared as part of MyTown Microgrid project.

About the project

MyTown Microgrid is an innovative, multi-year, multi-stakeholder project that aims to undertake a detailed data-led microgrid feasibility for the town of Heyfield (Victoria), built on a platform of deep community engagement and capacity building.

The project received funding under the Australian Government's Regional and Remote Communities Reliability Fund Microgrids stage 1 funding round. It also received funding from the Latrobe Valley Authority as part of the Gippsland Smart Specialisation Strategy.

Executive Summary

This document is the report on the deployment of monitoring devices into the Heyfield community, which is being delivered as part of project milestone 2 under Work Package 2: Technology Deployment.

The data collection process for Heyfield MyTown Microgrid has undergone careful planning through the definition of a Sampling Design Plan (milestone 1.4). This plan was based on a target of 75 residential, 12 commercial and 2 school sites with a range of consumption profiles, solar generation and other characteristics that have guided the installation of Wattwatchers devices.

The Wattwatchers Auditor 6M is a compact and cost-effective energy monitoring solution that is installed in the customer's electrical switchboard to monitor the key circuits - including grid imports and exports, solar generation and other major equipment - with revenue-grade metering accuracy, and using integrated 4G/3G communications to provide access to near-real-time energy data.

A participant recruitment process was developed to allow participants to provide informed consent and to complete an energy survey (using the Ecologic platform). This survey captures information about property type, residents, major appliances and usage trends. This leads to a much richer set of information about the participants when combined with the energy data from the Wattwatchers devices. Ultimately this will help in understanding the value proposition for a microgrid or other local energy system utilising microgrid technologies.

Formal registrations opened to the public on the 30th of April 2021 and was ultimately open to participants in the areas of Heyfield and surrounds including Coongulla, Cowwarr, Denison, Glenmaggie, Seaton, Tinamba West and Winnindoo, based on the largest preliminary potential Microgrid boundary region.

80 participants completed the registration process including the Ecologic Survey by end of June 2021. An additional 8 (8%) participants had not fully completed this process with a further 2 (2%) removed as they were outside of the potential microgrid boundary region.

Installations have been completed at 48 residential sites and 2 school sites with a total of 57 Wattwatchers devices installed (some sites require more than 1 device). This has achieved the key milestone requirement to install at least 50 data monitor devices as part of the project. An additional 30 sites remain ready to install, including 18 residential and 12 commercial premises. The average installation cost was $350 per site with 1 out of every 6 sites requiring 2 devices.

Recruitment for additional participants to have a device installed has now moved into a waiting list phase as the original budget allocation for installations will be consumed by the current registration list. Installations will continue for residential and commercial sites until the main project installation budget is exhausted, and deployment is expected to be completed by September 2021.

The project has endured through a number of restriction periods, including the Victorian COVID-19 "Circuit Breaker Lockdown" in late May and early June 2021, resulting in 1 week lost during the key deployment window. These restrictions also prevented public gatherings and face-to-face engagement that was planned to engage more participants in the program. The overall impact of these restrictions meant that a reduced number of installations were completed due to the lost time before 30 June 2021.

The key lessons learned include limiting the changes to participant recruitment processes that may delay the research ethics approval process, starting participant recruitment as early as possible, and not to underestimate the effort required to engage with the community. The project team has also worked to simplify the offer to the participants and integrate the registration processes, whilst communicating with the participants as regularly as possible. Leveraging local community capability has also been key to the successful delivery of this device installation phase.

Contents

Introduction

The Heyfield MyTown Microgrid project aims to undertake a detailed data-led microgrid and energy solutions feasibility for the town of Heyfield (Victoria), built on a platform of deep community engagement and capacity building. Over the three-year duration, the project will also develop the knowledge and tools to make it faster, easier, and cheaper for other regional communities to understand microgrid and other energy solution propositions for their community. This project takes a novel approach to a community-based microgrid feasibility process by:

- Using multi-data source platforms to calculate demand, flexibility and supply.
- Undertaking deep community and stakeholder engagement
- Co-designing community-centric business models with enshrined benefits and consumer protections
- Wrapping technical, market, economic and regulatory analysis into fit-for-purpose decision support tools

This document is the report on the deployment of monitoring devices into the Heyfield community which is delivered as part of project milestone 2 under Work Package 2: Technology Deployment.

The data collection process for Heyfield MyTown Microgrid has undergone careful planning, involving the establishment of clear and concise goals, the development of a model process, and the definition of a sampling design plan.

The sampling design plan describes the number of monitoring units and targeted areas/customer types for deployment, including the process for opt-in confirmation. It also includes the goals for data collection and describes the data collection process.

The deployment has required extensive engagement with the Heyfield community and the methods and applications that were used to support participant recruitment are described in this report. Additional information on the broader community engagement activity is available in the separate Community Engagement Report.

This document should also be reviewed alongside the Phase 1 Community Engagement Summary Report (milestone 2.1) and the Data Sampling Design Plan (milestone 1.4) and the other relevant project documents that describe the broader details of the project.

Data sampling design plan summary

Site selection

The Data Sampling Design Plan delivered as part of the Milestone 1 deliverables defined the number, type and characteristics of the sites that were being targeted as part of the program. Participants were to be recruited to take part in the program based on accepting the installation of a Wattwatchers device into their home or business and to provide additional information on their use of the property through an energy survey.

The total number of devices that were planned to be completed are described in the table below.

Table 1 - Site selection breakdown

Type of participant	Total no. of sites in Heyfield	Targeted no. of sites for trial (stretch target)	Actual no. of sites with devices deployed	Actual no. of devices deployed (min. target 50 total)	Other targeted features
Residential	700	75	48 (additional 18 sites ready to install)	53	50% of non-solar 50% of solar Low energy users (<20kWh per day) Medium energy users (20kWh to 40kWh per day) High energy users (>40kWh per day)
Commercial	50	12	0 (12 sites ready to install)	0	Australian Sustainable Hardwoods and Gippsland Canningvale Timbers Sales as special key sites
Schools	2	2	2	4	St Michael's Primary School Heyfield Primary School

Note that the Data Sampling Plan contained an initial estimate that 15 commercial sites existed in Heyfield, but following additional research as part of this feasibility study this was found to be closer to 50 sites when considering the variety of small, medium and large businesses in the town.

The Site Selection Criteria list was defined as follows:

Distribution

- Distribution of sites centred around the Heyfield township and the local electricity network segments.
- Distribution of sites within the likley possible microrgrid boundary options.

Customer Type

- Different types of residential buildings
- Different types of small businesses
- Key energy consumers (e.g. ASH industry sites, hospital)

Distributed Energy Resources (DER)

- A mix of sites with and without solar PV installations
- A mix of sites with and without battery energy storage systems

Loads

- Variety (number & capacity) of measurable loads (heating/cooling, lights/appliances, etc)
- Variety (number & capacity) of controllable loads (water heating,battery systems, EVs, etc)

Monitoring devices

Data is being collected using Wattwatchers Auditor energy monitoring devices to help characterise residential and business sites for the purposes of modelling the Heyfield residents and to understand the feasibility of a microgrid.

The Wattwatchers Auditor range of Energy IoT devices is a commercially-proven solution suite, with over 50,000 units installed in the field, deployed across residential, commercial, industrial and utility use cases.

The Wattwatchers Auditor 6M is a compact and cost effective energy monitoring solution - that is installed in the customer's electrical switchboard to monitor up to 6 circuits, with revenue-grade class 1.0 metering accuracy and cellular (4G/3G) communications - to provide access to near-real-time energy data through the Wattwatchers Mercury platform and API.

Figure 1 - Wattwatchers Auditor and current transformer product range

Wattwatchers devices collect energy demand, consumption and power quality data in two types referred to as Long Energy and Short Energy.

Five-minute Long Energy data is captured for kWh, Voltage, Current and Reactive Energy, and is stored indefinitely (i.e. currently there are no time limits on availability via the API).

Thirty-second Short Energy data is captured for Voltage, Current, Reactive Energy and Frequency. This data is a “best effort” transmission and may have “gaps”. This data is stored in the platform for 31 days.

The Wattwatchers Auditor 6M+3SW includes a switching option to provide control of up to 3 circuits for applications such as Hot Water, Pool Pump and Solar Inverters to allow for testing of microgrid control capabilities during the project. The installation of this option depends on the customer loads available and the acceptance of the customer to allow control of these loads, and will be reviewed as part of the deployment process.

Monitoring circuit selection

Up to 6 current transformers were installed at each site based on the following priority of loads for monitoring to ensure the largest and most relevant loads for consideration in the microgrid are monitored first.

1. Grid Connection
2. Solar Generation
3. Battery Storage Systems
4. Electric Vehicle Charging
5. Air-Conditioning
6. Electric Hot Water
7. Pool or irrigation pumps
8. Oven
9. Kitchen Power Circuits
10. General Power Circuits
11. General Lighting Circuits

Due to a range of factors, such as sites with two-phase or three-phase incoming supply, only some of these loads are monitored at each site, and this varies from site to site. The grid connection is always monitored at every site.

Participant recruitment process

Recruitment process overview

The participant recruitment process formed part of a wider community engagement program of activity led by the Heyfield Community Resource Centre team with face-to-face discussions, workshops, newsletters, emails, traditional media and social media activity. These methods were used to inform the community about the project as well as encourage participation and provide the necessary links and contact information for potential participants to register.

The Heyfield Community Resource Centre MyTown Microgrid website provided information on the project including

- Summary of the key project information including benefits to participants
- Link to the registration process
- List of frequently asked questions that was regularly updated
- Contact information for the project community liaison officers

This was the anchor for the recruitment process and provided a single page where participants could be directed before they commenced the registration process.

The participant recruitment process involved 3 steps for participants to record informed consent, respond to an energy survey and then the physical installation of the monitoring device was scheduled and completed.

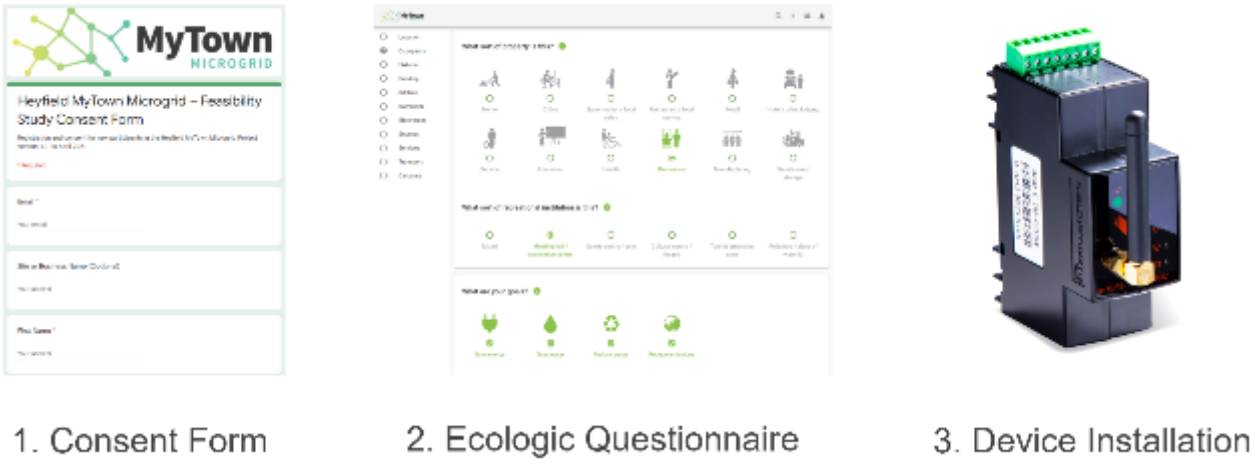


Figure 2 - Participant recruitment process

Step 1 - Consent Form

The consent form was implemented as a Google Form that allowed for distribution to a wide range of participants and supported both desktop and mobile users to limit any technology barriers to completing the step. Potential participants were provided a link to this form from the Heyfield Community Resource Centre MyTown Microgrid website, or sent via email in response to in-person, phone or email queries.

The Heyfield Community Resource Centre team also made this form available to be completed in person at the Resource Centre to ensure that those with limited access, understanding or ability with technology could also register with assistance and support.

The consent form captured the participant contact details and informed consent for the major components of the project regarding collection and use of personal information, the Ecologic survey, installation of the Wattwatchers device and preliminary information on a potential request for access to existing Smart Meter data.

Figure 3 – Participant consent form

This document formed a key part of the UTS Research Ethics approval process and was critical as part of the participant onboarding process and project records, which are being managed as per the project privacy and research ethics approval.

A copy of the consent form is included in Appendix 1.

Step 2 – Ecologic Survey

Ecologic[1] was chosen to provide the community survey solution to collect additional information about participants as it provides a unique web platform for also rapidly identifying, assessing and deploying tailored energy and climate solutions in homes and businesses at scale. The Ecologic survey was made available to everyone within the Heyfield area (within the largest likely microgrid boundary option). It costs nothing for residents and businesses to complete. Ecologic is a for-impact social enterprise based at EnergyLab, Sydney's hub of energy and climate innovation.

After completing Step 1 - Consent Form, participants were provided a link to the Ecologic platform that was specific to the Heyfield MyTown Microgrid project. Participants then responded to a series of questions about their property, energy goals, major appliances and total energy consumption to build up a profile for that household or business as well as provide them with analysis of their energy consumption relative to others with similar profiles.

[1] https://www.getecologic.com/

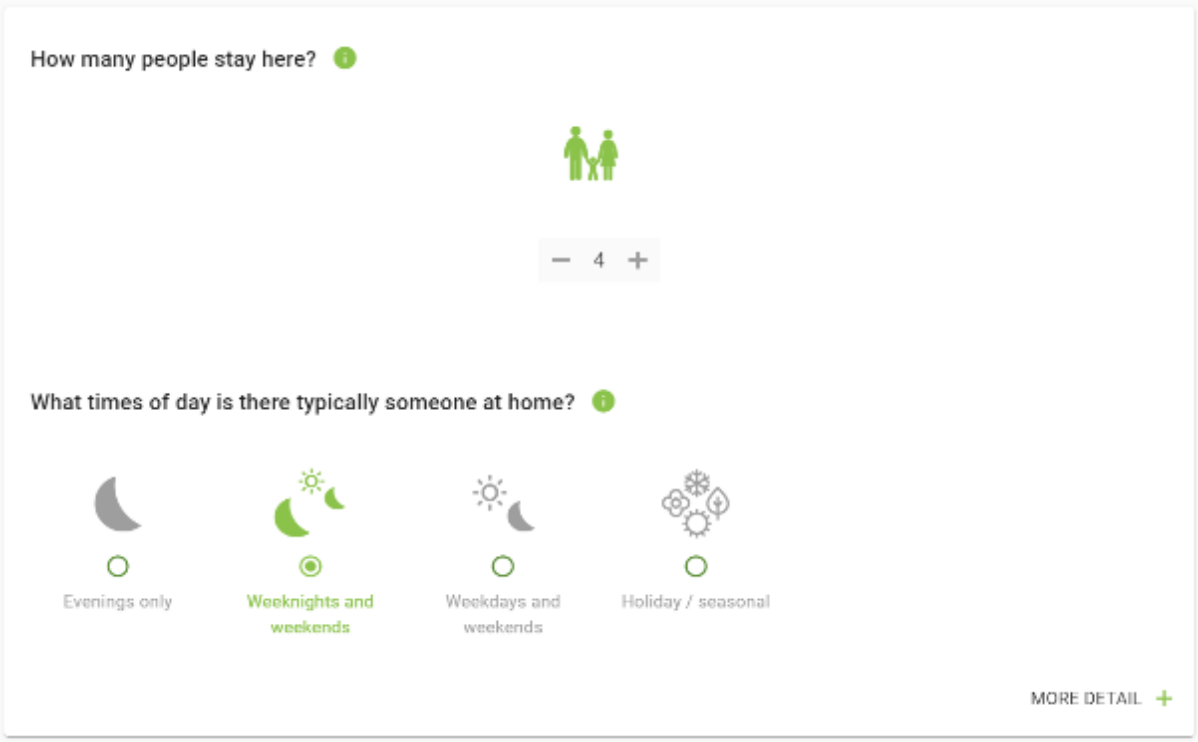


Figure 4 - Ecologic survey example question about home occupancy

The project team used this survey platform to capture additional information about the participants that can be used in the modelling and analysis of the energy use for the microgrid solutions by understanding much more about the range of participants, types and use of properties, and information on major appliances including existing solar systems.

The participants also benefit from the survey as they receive a report of comparisons and insights into their current energy usage and are offered a downloadable plan of steps that can be taken to reduce energy consumption and environmental impact. Participants also can return to the platform and update their responses to generate new insights or validate the actions they may have taken in response to the suggestions provided.

Some example questions from the Ecologic survey are included in Appendix 2.

Step 3 – Device Installation

Once the participant completed Step 2 – Ecologic survey, they were added to the installation list for the electrical installation team to schedule appointments with each participant and complete the installations at each site. The electrical installation team was updated regularly when customers were added to the list as well as having access to the list.

The actual installation of each Wattwatchers monitoring device takes 30-45 minutes to install onto the participants' electrical switchboard, depending on the state and complexity of the site.

Participants were then able to register their account and device in the Wattwatchers mydata.energy mobile application immediately after the installation was completed using the in-app self-registration process. This has helped to ensure a smooth customer experience, especially when the device is first installed and people are most engaged and motivated. Participants can then start to monitor their energy consumption and will receive this benefit for 3 years with the option to continue this with a future offer.

Figure 5 - Wattwatchers mydata.energy mobile application

The electrical installer (Stuart's Electrical Contracting) updated the installation list with the information about the device installed at each property and notified the project manager as the jobs were completed.

Participant recruitment outcomes

Participant recruitment summary

Informal expressions of interest were open to the public from the project launch event held in Heyfield on the 25th of February 2021. These informal expressions of interest were used as a list of potential participants in the lead up to the formal registration process being available.

Formal registrations opened to the public on the 30th of April 2021, with recruitment initially focussed on the areas of Heyfield, Cowwarr, Denison, Seaton, Tinamba West and Winnindoo based on a preliminary potential Microgrid boundary region. This was then expanded in early June 2021 to include Glenmaggie and Coongulla as per a further expanded potential microgrid boundary as shown in Figure 6 – Maximum outer potential microgrid boundary.

Figure 6 – Maximum outer potential microgrid boundary (fifth option out of five)[2]

The following participant registrations were received by the 30th of June 2021.

Table 2 - Recruitment outcomes

Recruitment Status	Residential	Commercial	Schools	Total
Completed Registration	66	12	2	80
Waiting for Step 2 - Ecologic Survey	7	1	0	8
Removed (Outside Area)	2	0	0	2
Total	**75**	**13**	**2**	**90**

In the table above, the recruitment status items are described as follows:

Completed Registrations are those participants who completed all steps required to have a Wattwatchers device installed and includes both completed and pending installations.

[2] Edited image extracted from AusNet Services Rosetta Data Portal https://dapr.ausnetservices.com.au/

Waiting for Step 2 – Ecologic Survey are the participants that completed *Step 1 – Consent Form* but did not complete *Step 2 – Ecologic Survey*. Two (2) of these participants had devices installed in the final week of this Milestone period to maximise the number of installations completed.

Removed (Outside Area) were participants that completed at least *Step 1 – Consent Form* but their location was outside of the potential microgrid outer boundary, and thus they did not progress to the installation step.

Participant recruitment considerations

There was a substantial delay of around 8 weeks between the public project launch event and the formal registration process going live due to delays with the UTS Research Ethics approval process. This led to some confusion amongst potential participants regarding the registration and required additional support and communication from the Heyfield Community Resource Centre team, which was still in the process of onboarding the new community liaison officers during this time. This also led to delays in commencing installations, which required the formal registration process to be completed before installation was performed.

The technical solution of the consent form as a Google Form presented some limitations on the ability to automate emails to participants when registering and a manual step required to progress to the next *Step 2 – Ecologic Survey*. This confused some participants and resulted in delays between completing the steps as well as duplicate consent forms being completed so that participants could access the information and link to Step 2 again.

Some participants also appeared to defer completing *Step 3 – Ecologic Survey* 3-5 days or more after completing *Step 1 - Consent Form*. This was expected as the Ecologic survey required some additional preparation by the participants and 20-30 minutes to complete. However, this did not result in any material impact on the overall device installation schedule as sufficient registrations had been completed to match the available device installation bandwidth.

The project team received feedback that there was insufficient communication when participants completed the required registration steps, and additional steps to email participants with updates when they were added to the installation list were included in the process.

The effort required to recruit participants was underestimated and addressing this required substantial focus from the project team and particularly from the Community Liaison Officers at the Heyfield Community Resource Centre. These resources were constrained by the hours allocated to the project and required additional effort and support during the critical recruitment phase in April and May 2021.

Improvements were made to the recruitment process to reduce the complexity and improve the communication to participants throughout the registration steps and to provide updates to existing participants throughout the remainder of the project.

Participant recruitment next steps

Recruitment for additional participants to have a device installed has now moved into a waiting list phase as the original budget allocation for installations will be consumed by the current registration list. There may be some targeted recruitment for participants with load control opportunities in the next milestone period based on the available budget after completing the first round of installations.

Additional participants will be recruited to participate in a wider Ecologic survey-only phase (i.e. without a Wattwatchers device installation), which will also commence from approximately September 2021 onwards.

Device installation outcomes

Device installation summary

The following installations were completed by the 30th of June 2021.

Table 3 - Installation summary

Participant Type	Target Sites	Sites Installed	Devices Installed
Residential	75	46	53
Commercial	12	0	0
Schools	2	2	4
Total	**89**	**48**	**57**

Note that although the Sampling Design Plan had a stretch target of 89 sites, there was a minimum requirement to install 50 devices as part of the project agreements, which has been achieved in this milestone period. This was due to a variety of factors - including delays due to COVID-19, a major storm and flood event in the region, and delayed participant registration and availability. The installations for residential and commercial sites will continue into the next milestone period and 89 sites are expected to be completed by September 2021 pending no further delays.

Residential sites

Residential participants were recruited from all the target areas in Heyfield, Coongulla, Cowwarr, Denison, Glenmaggie, Seaton, Tinamba West and Winnindoo. This resulted in a wide range of types of sites from typical single-building domestic dwellings in the Heyfield town itself to larger rural properties with multiple buildings and sheds in the surrounding areas.

This also led to a range of electrical switchboards in various conditions, with 5 sites unable to be installed due to space or installation constraints or major works required (such as a full switchboard upgrade to remove older porcelain style fuses and replace them with a modern protected circuit breaker arrangement). However, a majority of participants had switchboards that were suitable for installation with some minor work.

The installation budget for residential sites was originally based on an installation fee of $255 per site to install the Wattwatchers device into the existing electrical switchboard. This value assumed that the participant's electrical switchboard was in good condition with sufficient space available to install the Wattwatchers device and did not include any additional work or modifications to the switchboard. Any additional costs would have to be accepted and paid for by the participants, which was recognised as a potential barrier to participation.

During preliminary site inspections, it was identified that there was a number of sites with insufficient space available that would require modifications to make room for the Wattwatchers device, such as removing older style Residual Current Devices (RCDs) protecting a group of circuits and installing new Residual Current Circuit Breakers with Overload protection (RCBOs). In some situations, an external enclosure may have been required as an alternative solution.

To limit barriers to participation and maximise the number of installations, these minor works were included in the project costs. This ensured a smooth installation process in a single visit whilst removing the barriers for participants to accept any additional costs.

In a number of cases, properties had solar generation systems installed on a second building at the property, such as a garage or shed. This required a second Wattwatchers device to be installed to directly monitor the solar generation to make this data available to the research team and the participant.

The following is a summary of the key insights from the residential installations completed:

Key insights from residential installations

- The average installation cost was $350 per site including the additional minor works.
- 7 devices were required for every 6 sites (an average of 1.15 devices per site)
- The average installation rate for an installer was 5-6 sites per day.
- 33 (71%) of the monitored sites have solar generation
- 2 (4%) of the monitored sites have battery energy storage systems

Commercial sites

The commercial sites that have applied to become participants in the project include a mixture of the small and medium businesses in Heyfield. These include cafes, a supermarket, other hospitality and retail stores and the key Australian Sustainable Hardwoods (ASH) sites.

The installation of devices at commercial sites has been deferred into the next milestone period to maximise the number of devices installed during this milestone period.

At this stage, the devices for the Australian Sustainable Hardwoods (ASH) sites have not been installed but have been assessed in detail for the installation of 7 devices for grid monitoring and for potentially an additional 20 devices for sub-mains monitoring. The ASH market gate meters have already had monitoring devices installed by an energy retailer that may be able to provide data via an API. This is being investigated further before project funds are assigned for the installation of additional monitoring devices.

School sites

Installations were completed at both schools in Heyfield as follows:

- **Heyfield Primary School** – with around 195 students with an existing 27kW solar system installed
- **St Michael's Primary School** – with around 80 students with no solar system installed

The installation of devices at the school sites was supported by Solar Schools[3], a Wattwatchers business partner that provides an additional education and support package to the schools that forms part of the community education and engagement of the MyTown Microgrid project.

[3] https://www.solarschools.net/

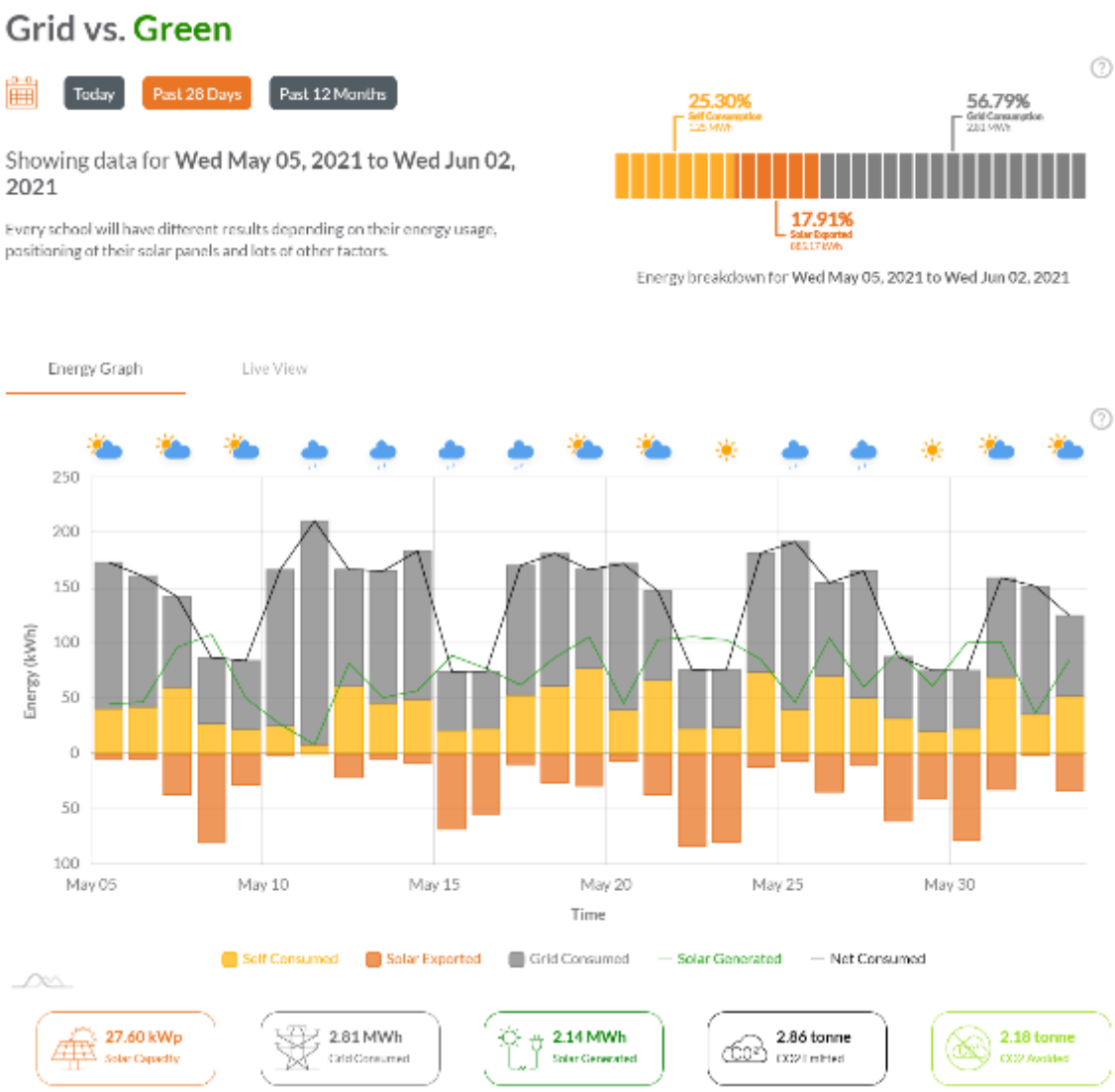


Figure 7 - Solar Schools Public Dashboard for Heyfield Primary School[4]

These schools received the Energy Hero Program package from Solar Schools that includes

- Installation of 2 Wattwatchers devices to monitor the incoming grid supply and solar generation
- School energy profile
- Customised display board readiness
- Energy Hero teaching resource suite
- Planet Watch educational app
- Web widgets
- Teacher refresher training
- API endpoint for direct data access

The energy education program training has been provided to one of the schools and will be delivered to the other school in the next milestone period. This training and the Solar Schools platform provides the basis for lessons for the students to engage in the energy profile of the school and help increase understanding of energy related issues in the broader community.

[4] https://www.solarschools.net/schools/heyfield-primary-school

Devices with load control capability

The Wattwatchers Auditor 6M+3SW includes a switching option to provide control of up to 3 circuits for applications such as Hot Water, Pool Pump and Solar Inverter control to allow for testing of microgrid control capabilities during the project.

As the research use cases and customer agreements to utilise this capability have not yet been defined, this has not been installed and has been deferred to a later stage of this project.

Device installation next steps

Installations will continue for residential and commercial sites until the main project installation budget is exhausted, and is expected to be completed by September 2021.

A budget for approximately 10 sites has been allocated for devices with load control capability and these may occur at a later stage of the project or be substituted with additional monitoring-only participants.

Impacts from COVID-19

The project has endured through several interruptions that have required some of the major events to be delayed or rescheduled, based on lockdown restrictions and other impacts from COVID-19. However, these did not directly impact the deployment until May 2021.

From 11:59pm Thursday 27 May 2021, the Coronavirus restrictions across Victoria changed to implement circuit-breaker restrictions in response to an increase in COVID-19 cases in the state.

This impacted the project during the key deployment ramp-up period and prevented any installations from occurring from Friday the 28th of May 2021 to Friday the 4th of June 2021, resulting in 1 week lost with a potential capacity of around 25-30 installations that could have been completed during this period.

These restrictions also prevented public gatherings and face-to-face engagement that was planned during this period as part of the recruitment drive to engage more participants in the program.

The overall impact of these restrictions meant that a reduced number of installations were completed due to the lost time prior to 30 June 2021.

As a further result of these impacts, additional installations will continue through to September 2021 but are within the original project budget plan.

Lessons learned

The following are the key lessons learned throughout this milestone period.

Avoid any changes to the participant recruitment processes that may impact or delay the research ethics approval.

The Ecologic participant survey was added to the participant recruitment process during the early stages of the research ethics approval process. The insertion of the Ecologic survey into the recruitment process also created an additional condition of participation.

The Community Liaison Officers were also required to manually monitor and follow-up potential participants to ensure the survey had been completed.

These impacts resulted in changes that extended the ethics approval process and delayed the commencement of formal participant registration and put additional pressure on the device deployment schedule.

Start the participant recruitment as early as possible

Recruitment did not progress as quickly as expected despite the $900 value of the package being received by participants. It is important to recognise there are multiple motivators for community members to participate in a project such as this, including financial, environmental, social and technological change, therefore promotional materials must be developed with such factors in mind.

The Heyfield experience seems to echo that of other projects as outlined in “DER Customer Insights: Values and Motivations” (July 2020). Recruitment on such projects are slow. However, Heyfield does have a strong sense of community and many participants have joined because of that or have previously participated in HCRC sustainability programs.

Another Wattwatchers project in the region may have already engaged and installed devices for the early adopters of such technology before the commencement of the formal MyTown Microgrid project. As a result of this, the formal MyTown Microgrid participant recruitment was to a broader section of the community that would take additional effort and different messaging to become engaged in the project. However, the positive aspect of this is that it may lead to greater community engagement later in the project when technological solutions and business models are being discussed.

Do not underestimate the effort required to engage with the community to explain the project and recruit participants.

Significant time is required to support the community engagement and participant recruitment. It may also be necessary to ensure the Community Liaison Officers are available with sufficient hours allocated during the critical periods such as the participant recruitment stage of the project.

It is also important to mobilise the Community Reference Group members and map their networks as early as possible. Many are involved in other community groups and are connected on social media. These are proven ways of getting the message out and across a wide range of audiences, however more time is required for Community Liaison Officers to present and engage with other community groups.

Community Reference Group members were leveraged to test the process and provided their feedback on application bugs and to help improve the process. The Community Reference Group members should also be leveraged as project champions to actively recruit participants and promote the project through their extensive networks.

The recruitment process was heavily reliant on participants having access to the internet and being IT literate. Assistance has been provided to those who wish to participate, but do not have access to the

internet or device or do not feel comfortable with technology. This included a step-by-step guide on how to register.

Community feedback has been that many people either were vaguely aware of the project but not interested enough to find out more, or were not aware of the project at all. As the Community Liaison Officers engaged with more members of the broader local community in public environments, a majority of responses are very positive. This suggests that the relevant barrier is not lack of interest, but rather lack of enough awareness for a potential participant to engage in the project.

Time contingency should also be considered, as the time required to educate and engage in a new community could easily consume 6-12 months, or more.

Simplify the participant offer to focus on the benefits to the participants while providing additional information on the project as supporting information.

Potential participants may see the outcomes of the project as difficult to engage with or too far away for immediate benefit but are likely to be open to the benefits they may receive. Communications must be developed to appeal to a wide range of different segments of the community.

It also became clear that there were perceived barriers that did not exist, or could be easily overcome, that were resulting in community members excluding themselves from the project. For example, some people were hesitant because they thought they needed solar panels to participate, or thought they were outside the focus area, or were not comfortable with technology or microgrid concepts being discussed. Media to address these perceived barriers was circulated, and in-person engagement was effective to address them immediately.

It is also important to recognise that different people are motivated by different values; while in-person engagement is time intensive, it is so important because the Community Liaison Officers can identify quickly what interests and value might motivate a particular potential participant and target that in a discussion.

The project is working through a complex range of issues surrounding Microgrids and it is often necessary to clearly state it is only a feasibility study and not an implementation project. It has been very important to manage community expectations to clarify the scope and intent of the project.

Integrate the consent form and participant surveys into a single application

A lack of deep integration or automation between the consent form and Ecologic survey has required substantial manual intervention by the project team to ensure participants were supported during the registration process.

There were also some specific technical limitations around navigation and password reset processes that resulted in duplicated consent forms as participants tried to access the next step in the process some days after first registering their consent form response. This added significantly to the workload of the Community Liaison Officers to follow up outstanding responses and assisting participants to complete it. A more integrated consent form and participant survey process with automated reminders for completion could help streamline the process. However, the Community Liaison Officers supporting the community with the Ecologic Survey was an important part of the community engagement approach.

The recommendation is to ensure participants have a smooth registration process while balancing this with the benefits that face-to-face engagement on energy issues (via an energy survey app like Ecologic) within a community brings.

Communicate with participants to provide regular updates as they progress through the registration and installation process.

There was not enough communication with early participants when they had completed the registration process to provide them with updates on next steps such as when the device installations would occur. This resulted in enquiries to the Community Liaison Officers and had some impact on the time available to recruit new participants.

It is important to maintain flexibility of the project team members to adapt to feedback and add or modify processes as well as having the capacity to action them when follow-up is manual.

A technical solution such as a Customer Information System (CIS) or Customer Relationship Manager (CRM) with message and process automation capabilities should be considered for larger projects to enable key messages to be sent automatically to inform participants of their stage in the process and any next steps. However, maintaining a contact point (such as a knowledgeable Community Liaison Officer) who can provide in-person support to participants remains critical to build trust and encourage engagement.

Plan for additional costs for minor modifications required to customer switchboards when installing monitoring equipment.

Approximately 40% of the participant's electrical switchboards required some minor modifications to make room to install the Wattwatchers device. These costs were typically in the $200 to $300 range and were not originally budgeted into the project. However, the flexibility in the total installation budget allowed these to be completed to provide the best outcome to participants who were generally expecting a "free" installation, even if there were caveats.

The average installation cost of $350 per site is recommended for budgeting future projects with similar scope.

Leverage local community capability

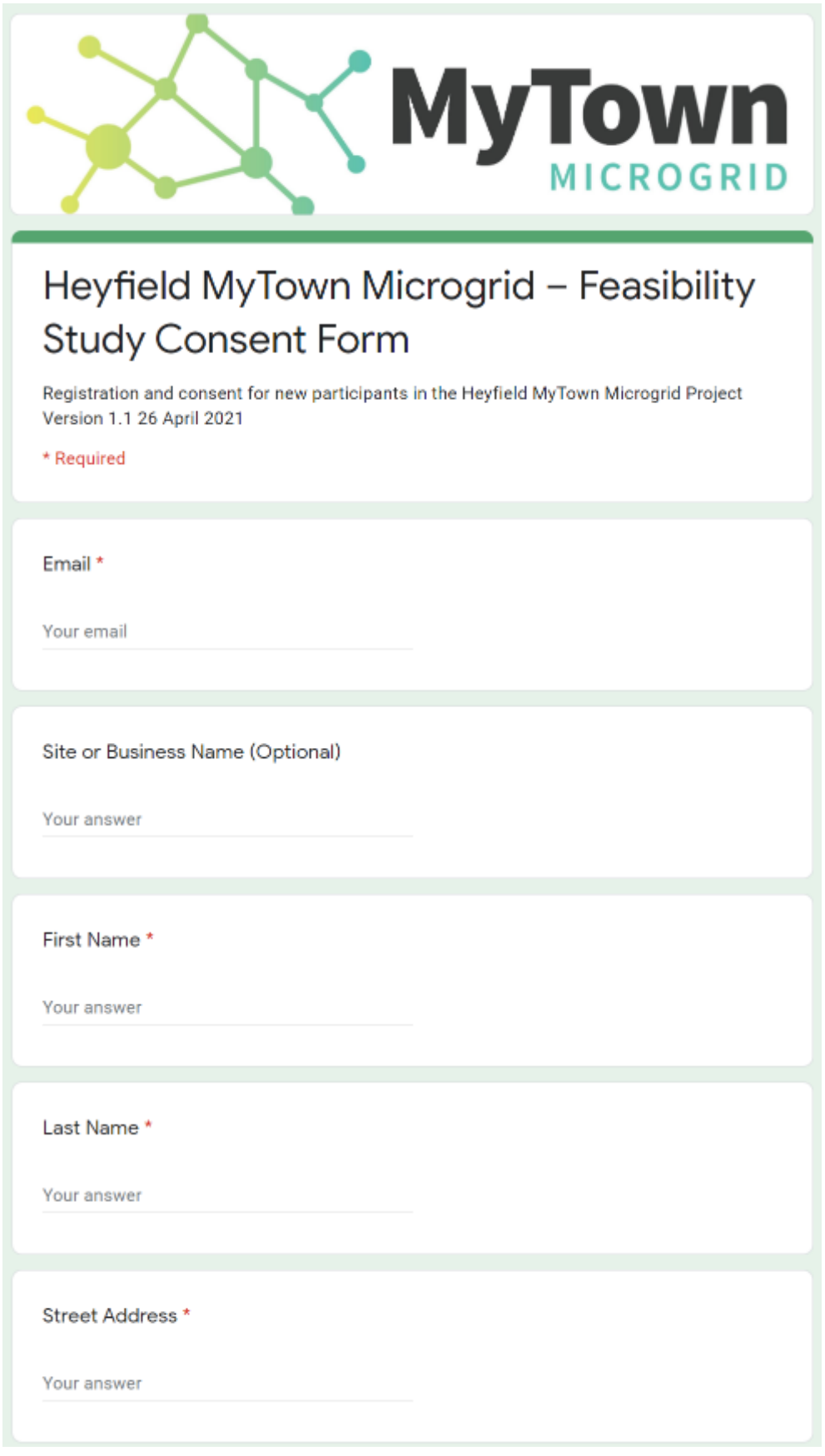
Local community members have proved essential to the success of the device deployment. A local electrician who was already well respected and established in the area was utilised for the installations, who also had access to a network of peers that formed part of the installation team. This ensured we were able to respond to the changing environment and various impacts to deliver the best outcomes possible.

Having local electricians as one of the 'faces' of the project was also reassuring to participants, and for some participants the electrician may have been the only project team member they ever meet in person.

This aspect was also true of the Community Liaison Officers and Community Reference Group who come from the greater Heyfield region and understand the local issues and opportunities that result in genuine personal engagement with every project participant.

Appendix 1 – Consent Form

https://forms.gle/ZL2byEuEGp2Lo548A



MyTown MICROGRID

Heyfield MyTown Microgrid – Feasibility Study Consent Form

Registration and consent for new participants in the Heyfield MyTown Microgrid Project
Version 1.1 26 April 2021

* Required

Email *

Your email

Site or Business Name (Optional)

Your answer

First Name *

Your answer

Last Name *

Your answer

Street Address *

Your answer

Suburb *

Your answer

Postcode *

Your answer

Phone Number *

Your answer

I agree to participate in the research project MyTown Microgrid - Feasibility Study (Heyfield) being led by Wattwatchers Digital Energy, Heyfield Community Resource Centre, Institute for Sustainable Futures (ISF) of the University of Technology Sydney, and funded by the Federal Government's Department of Innovation, Science, Energy and Resources and the Victorian Government's Latrobe Valley Authority.

I understand that the purpose of the research is to explore the feasibility of a microgrid and other local energy options[1] for the community of Heyfield. The project will investigate the community's appetite and the local situation, determine the level of impact for the stakeholder groups/ individuals in the community, gather ideas from local stakeholders, deploy energy monitoring devices, and undertake an assessment of the potential for a microgrid in Heyfield.

[1] A microgrid can be defined as a group of homes and businesses that use, generate, and share electricity. It may be able to function both as part of the grid, and autonomously.

I consent to provide my contact details for and participate in the following way (please select all of the following):

Contact Details Consent *

☐ A) I understand that my contact details will be used to send me further information about the project, event invitations and updates on activities (e.g. community survey) on a regular basis.

Energy Questionnaire Consent *

☐ B) I understand that my participation will involve the completion of a free energy questionnaire about my home using the MyTown Microgrid Ecologic online questionnaire myself, or with the assistance of someone from the Heyfield Community Resource Centre at no extra cost). This is so that the project can get a better understanding of when and how energy is typically used in Heyfield, assess the potential impact that energy efficiency improvement options could have on its overall energy consumption, and determine what types of local energy solutions could work best for the community.

Wattwatchers Energy Monitor Installation Consent *

☐ C) I understand that my participation will involve the installation of Wattwatchers energy monitoring & control device at no cost for a Standard Installation and will take approximately 1 hour of my time. Standard Installation includes the installation of the Wattwatchers Auditor 6M 4G energy monitoring device with up to six 60A Current Transformers (CTs) by a licensed electrician into your electrical switchboard with data and app subscription for 3 years. Sufficient space must be available in your electrical switchboard and this may not be available to all participants depending on the condition and complexity to install the devices at your property. Installation may still be available but additional charges may apply. If this is the case, you do not have to proceed and will still be entitled to your free energy questionnaire. Additional charges may apply after the initial 3 year term.

Smart meter (NMI) data *

☐ D) I understand that additional consent and authorisation may be requested to allow the project to access my smart meter (NMI) data for the purposes of detailed data modelling. This process will be optional and I understand that I only need to provide this authorisation if I wish to participate.

Researchers at the University of Technology Sydney and partner researchers at the Federation University will have access to the data from the monitoring devices and the linked data from the questionnaires or energy audits. This will be kept securely in the University of Technology digital file storage and will be shared with researchers as needed for the project. Anonymised data will be made available to other researchers and may be published to show the impact of different energy options on load profiles. Anonymised aggregated data (constructed out of several residential load profiles) will be made available to other communities in the form of typical load profiles in a decision support tool for local energy options.

Participants may opt out at any time, at which point the data monitor will be disabled remotely and the participant may also switch off the device. If participants withdraw within three months, any data already logged will not be retained or included in the project. After three months data already logged will remain in the project database, but no further data will be included.

I am aware that I can contact Dr Scott Dwyer (0451 596 030) if I have any concerns about the research.

I also understand that I am free to withdraw my participation from this research project at any time I wish without giving a reason.

I understand that my data is also being collected under the Wattwatchers Privacy Policy and mydata.energy application Terms and Conditions.
https://mydata.energy/privacy
https://mydata.energy/terms

I understand that the energy questionnaire data is also being collected under the Ecologic Privacy Policy and Terms and Conditions.
https://www.getecologic.com/privacy/
https://www.getecologic.com/terms/

Studies undertaken by the Institute for Sustainable Futures have been approved in principle by the University of Technology Sydney, Human Research Ethics Committee. If you have any complaints or reservations about any aspect of your participation in this research you may contact the ISF Ethics Coordinator, Federico Davila (0403 657 124) or the ISF Responsible Academic, Dr Keren Winterford (0418 910 800).

You may also contact the UTS Ethics Committee through the Research Ethics Officer (02 9514 9772, Research.Ethics@uts.edu.au). Any complaint you make will be treated in confidence and investigated fully and you will be informed of the outcome.

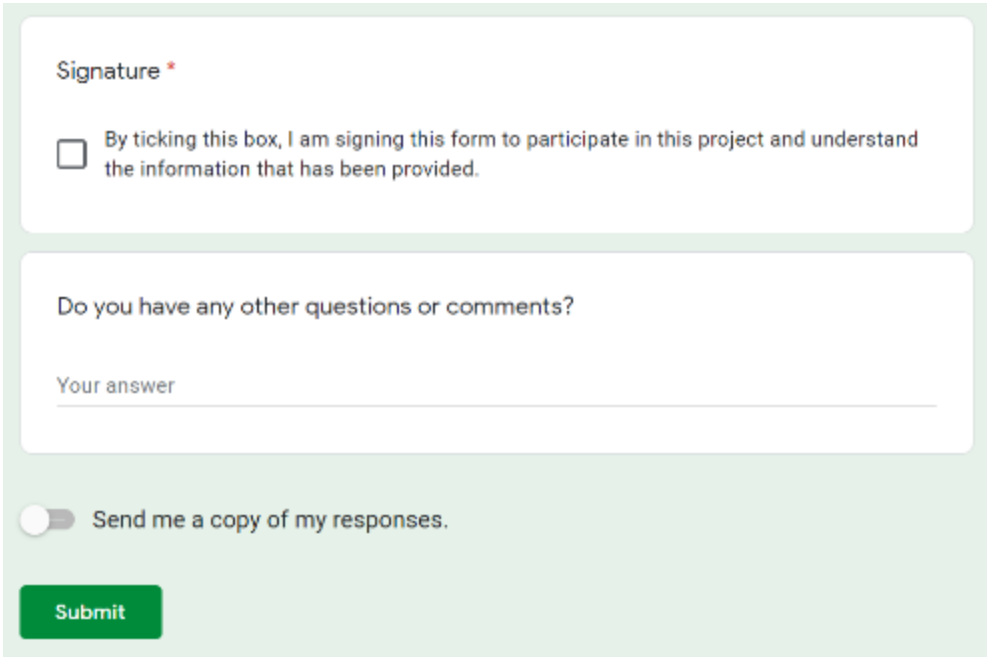
ISF Ethics Coordinator, Federico Davila
TEL + 61 403 657 124
Federico.Davila@uts.edu.au

ISF Responsible Academic, Dr Keren Winterford
TEL + 61 418 910 800
Keren.Winterford@uts.edu.au

You may also contact the UTS Ethics Committee through the Research Ethics Officer
(+ 61 2 9514 9772, Research.Ethics@uts.edu.au). Any complaint you make will be treated in confidence and investigated fully and you will be informed of the outcome.

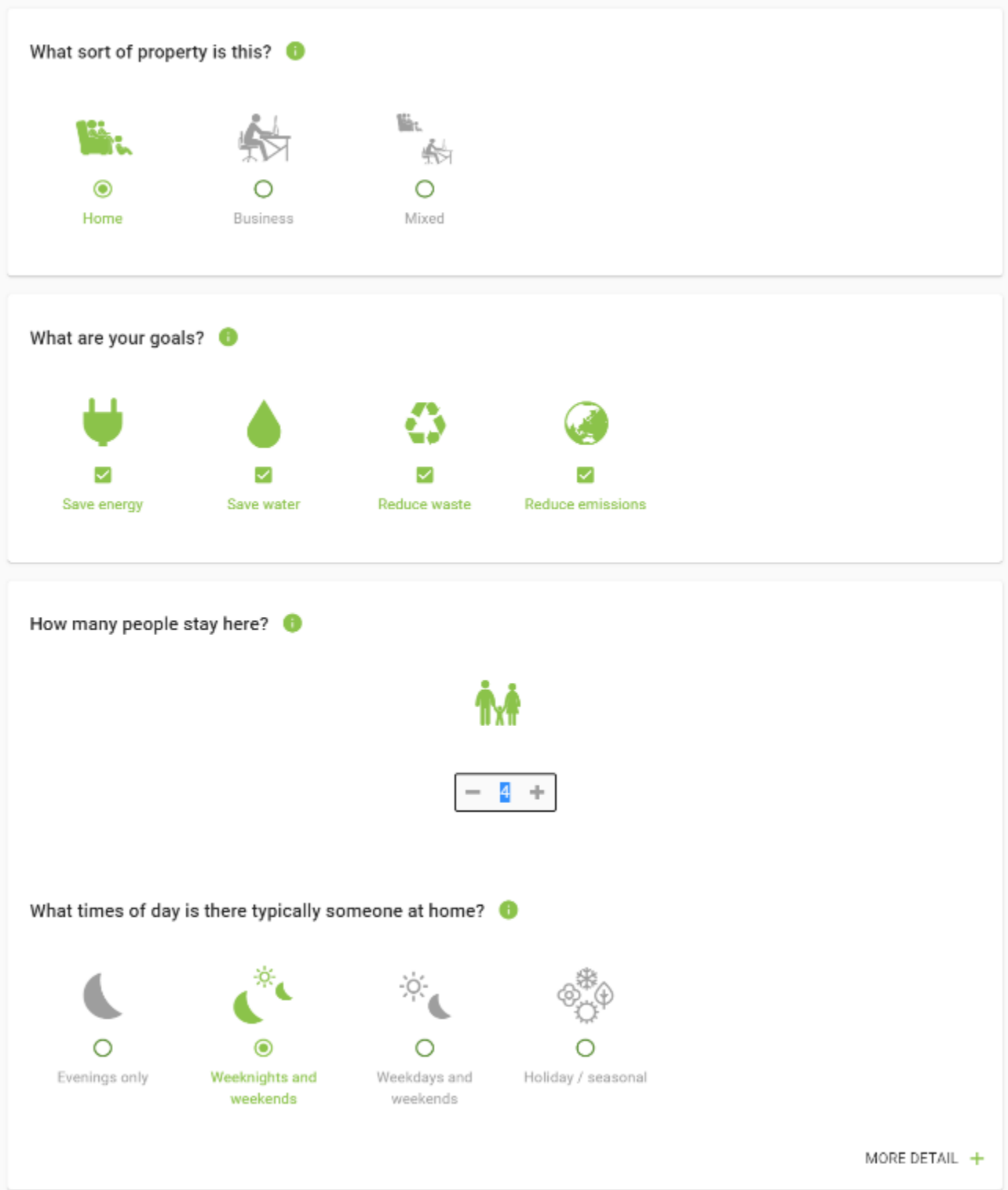
If you need to confirm the identity of the researchers or would prefer to discuss a complaint or reservation with an independent local contact their details are listed below. The local contact person will pass your comments on to the UTS contacts listed above.

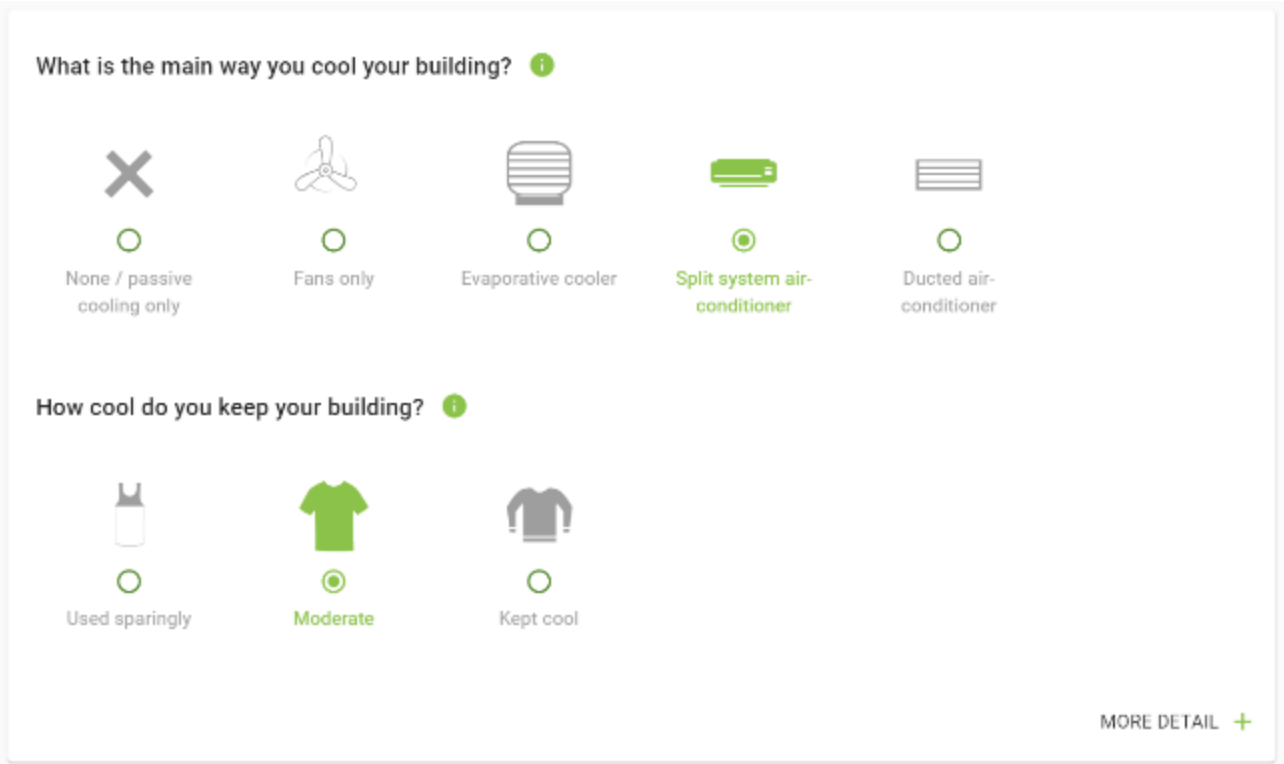
Heyfield Community Resource Centre
03 5148 2100

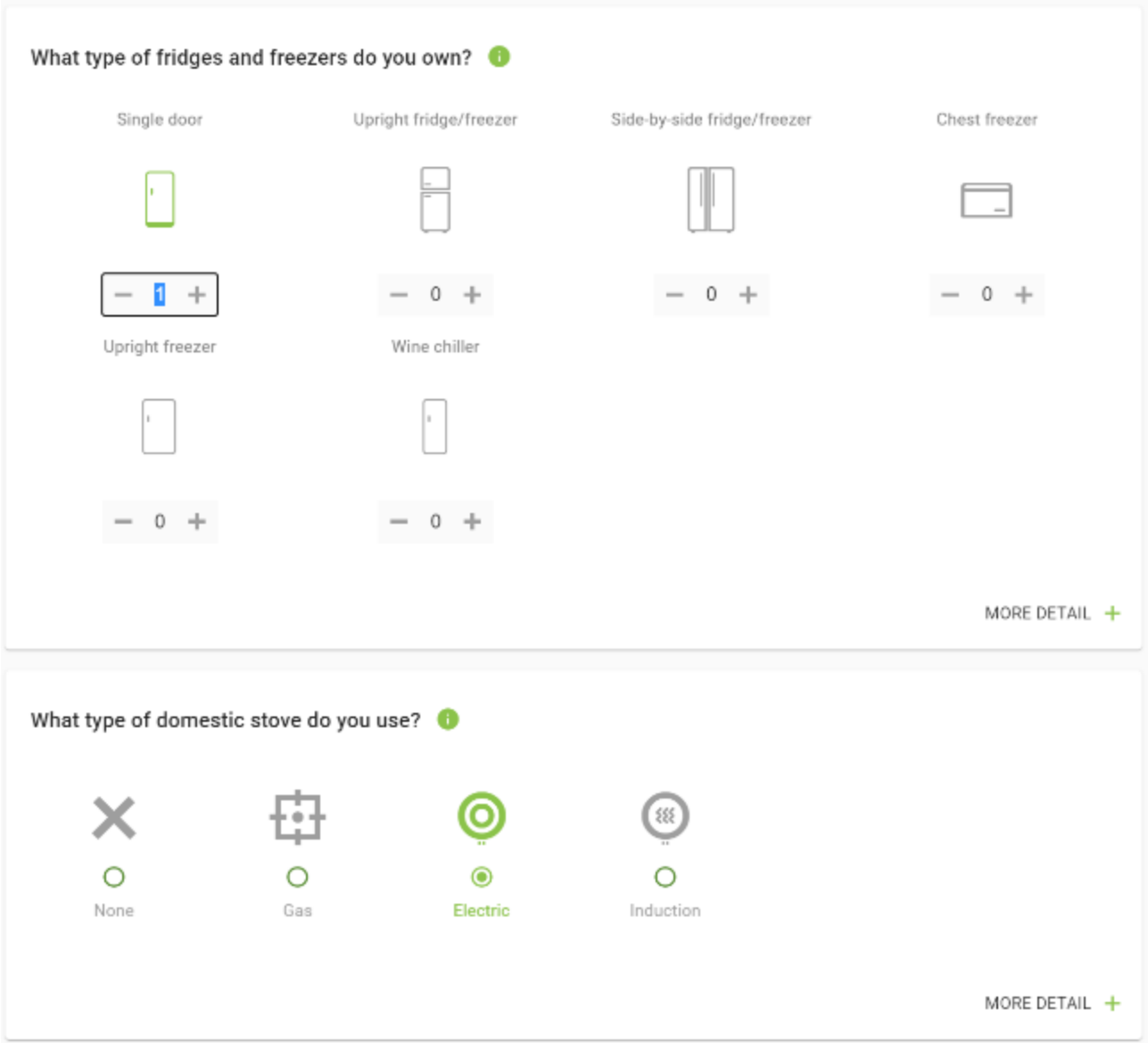

Signature *
By ticking this box, I am signing this form to participate in this project and understand the information that has been provided.
Do you have any other questions or comments?
Your answer
Send me a copy of my responses.
Submit

Appendix 2 – Ecologic survey example questions

Note that only a limited number of example questions are provided as examples only.




What is the main way you cool your building?
None / passive cooling only
Fans only
Evaporative cooler
Split system air-conditioner
Ducted air-conditioner
How cool do you keep your building?
Used sparingly
Moderate
Kept cool
MORE DETAIL


What type of fridges and freezers do you own?
Single door
Upright fridge/freezer
Side-by-side fridge/freezer
Chest freezer
1
0
0
0
Upright freezer
Wine chiller
0
0
MORE DETAIL
What type of domestic stove do you use?
None
Gas
Electric
Induction
MORE DETAIL

Do you have solar panels?

No Yes

What is the size of your solar panel system?

– 5 +

kilowatts

MORE DETAIL +

Do you have a battery storage system?

No Yes

Appendix 3 – Participant Frequency Asked Questions

Heyfield MyTown Microgrid Project

Frequently Asked Questions

Version 1.6 4 June 2021

What are the steps to register and participate in the project?

1. Complete the Consent Form. This will only take 5 minutes to provide your contact details and confirm you understand and accept the requirements of the project.
2. Complete the Ecologic energy survey. The link to this will be provided to you immediately after you complete the Consent Form. This will take around 15-20 minutes and you will need a copy of a recent electricity bill to help complete this step.
3. You will be contacted by our installer within 2 weeks to schedule the installation once you have completed steps 1 and 2.

Who can participate in the project?

We are seeking residential and business participants from Heyfield and the immediately surrounding areas.

Can I participate if I live outside of Heyfield?

Yes. Initial priority will be given to participants within the Heyfield town, but we will expand to the immediate surrounding areas as we seek to research where the boundaries of the Microgrid may be defined.

The areas currently included are Heyfield, Coongulla, Cowwarr, Denison, Glenmaggie, Seaton, Tinamba West and Winnindoo. Other areas may be added at a later stage of the project.

What do I get if I participate in the project?

Supply and installation of a Wattwatchers Auditor 6M energy monitoring device to monitor up to 6 of the major circuits (such as solar, hot water, air conditioner etc.) in your home or business. Access to your real-time energy data through the Wattwatchers mydata.energy mobile application and web dashboard for 3 years.

Do I need to have a solar or battery system installed to participate?

No. We will be installing devices on a number of different types of properties with solar or battery systems and those without any such systems in order to capture a variety of customers and consumption profile types.

Do I need a Wattwatchers device installed if I already have a smart meter installed?

Yes. The Wattwatchers Auditor device monitors the main connection to the grid as well as additional circuits in your home (such as solar, hot water, air conditioner etc.) to provide much more detailed data than is available from your existing smart meter.

How much does it cost to participate?

A standard installation is free of charge, if the device can be easily installed into your existing electrical switchboard and there are no significant complications. There may be additional costs if modifications or upgrades are required to install your device.

How much might the additional installation costs be?
The additional charges may be from $250 for minor changes to make room for the Wattwatchers Auditor device to around $1,500 for a major switchboard upgrade (which has additional safety and other benefits beyond installation of the monitoring device). These are entirely optional and will be discussed with you by the electrician during the installation visit. If you do not wish to proceed with the additional costs, then you can opt out of the program.

Can I have more than one device?
Yes. Most participants will only require one device, but in some situations we may need to install additional devices if there is a solar or battery system installed on a separate building or electrical sub-board.
If you have special requirements and would like more monitoring devices installed for other purposes then additional charges may apply.

Can I participate if I rent my property?
Yes. We recommend you seek permission from the owner of the property prior to registering as this project involves work on the electrical switchboard at the property. If any additional charges apply you may also need to discuss these with the owner of the property.

What happens if I move home?
It is recommended that the device will remain in the property where it was originally installed and the new occupants will be offered to sign up for the project. It is possible to move a device between properties, but this will incur fees payable by the participant to remove and re-install the device at the new property under our standard terms and conditions.

Can I participate if I have more than one property or connection to the grid?
Yes. We may accept participants for installation at more than one property, but initial priority will be given to occupied properties and individual participants.

Does it matter which energy company I am with?
No, choosing the energy company or companies you buy your electricity from is completely up to you. But with more data, you'll be in a stronger position to manage your energy, and you'll be better informed to choose the best energy supplier and tariff plan to match your needs.

What data will be collected?
The Wattwatchers Auditor devices collect energy measurements of power (kW), energy (kWh), voltage (V), current (A), frequency (Hz) and Power Factor every 30 seconds.
Other data such as participant address and contact information will also be collected as part of the project and information on how this data will be collected and handled will be provided in the Research Ethics information and consent form process.

How does the data get sent to Wattwatchers?
The Wattwatchers Auditor 6M device uses the mobile phone network to securely send the data over the internet to the Wattwatchers Mercury platform. No connection to your home internet or WiFi network is required.

How do I access my data?
You can access your data through the mobile application available at https://mydata.energy/ or a web dashboard application using a desktop or laptop computer.
You can download the mobile application before your installation and complete the app registration process inside the app on the day of your installation.
You can also see the detailed application user guide to understand how to use all of the features in the application.

How much is the Wattwatchers service at the end of the project?
The current subscription price is $60 per device per year, but this will be reviewed to make the best possible offer at the end of the project.

How long will you keep the data?
The data will be used by the research teams throughout the 3 year project and will be available to participants for the life of the product.

Can I opt out of the project?
Yes, though because of the cost of installation we hope to keep this to a minimum. We encourage you to review the terms and conditions before engaging to be sure you're happy with them, and to not participate if you are expecting to move house or opt-out of the project within the next 12 months.

Can I see the terms and conditions?
The Wattwatchers Terms and Conditions are available at https://mydata.energy/terms
The project-specific research ethics consent form will be provided to participants prior to installations commencing and is available at https://forms.gle/DwDMTvrga2CY8Gax5.

What if I already have a device installed, will this be included in the project?
Yes. Any devices already installed under the Wattwatchers My Energy Marketplace project have provided consent to share anonymous data, which includes the Heyfield MyTown Microgrid project.
We will contact these customers to re-confirm their acceptance through the new Heyfield MyTown Microgrid project consent form to share more detailed data with the project, and to be included in the customer survey process.

Who can I contact if I have any questions?
Please contact the Heyfield MyTown Microgrid team at the Heyfield Community Resource Centre by sending an email to info@mytownmicrogrid.com.au or call 03 5148 2100.