Virtual Renewable Power Stations - Final Report

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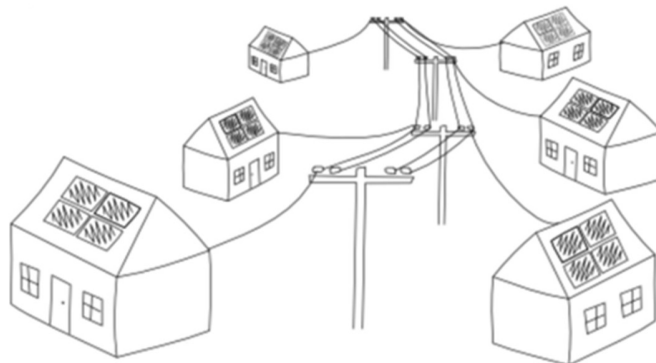
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Local Network Charges

Virtual Net Metering

Virtual Renewable Power Station

Version control

Version	Date	Author	notes
1	06/04/2017	Tom Brown	first draft
2	11/05/2017	Tom Brown	second draft
3	12/05/2017	Sam Steel	Third draft
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Contents

Acknowledgements

Virtual Renewable Power Stations project has been influenced by multiple elements throughout its delivery. Below are the individual acknowledgements of sources of inspiration or influence which were brought to bear on this project.

Indigo Shire Council – Mapping and Brokering Local Energy Solutions in Indigo
The previous project delivered by Indigo Shire Council with funding from the Victorian State Government called 'Mapping and Broking Local Energy Solutions in Indigo was a critical influence on the initial definition of the Virtual Renewable Power Stations concept. Particularly the findings of the Indio project relating to capacity constraints in regional electricity infrastructure significantly guided the concept of a virtual renewable power station.

Moira Shire Environmental Services Unit
Internal discussions and workshops with in Moira Shire Council's Environmental Services Unit were vital to the refinement of the Virtual Renewable Power Stations concept. These often time consuming brain storming sessions were ultimately the genesis of the project idea.

Moreland Energy Foundation Limited
Moreland Energy Foundation Limited was a real support to this project in its early stages. Through their support the project team's knowledge and capacity was significantly bolstered of what was at the time a very new space in Australia.

Institute of Sustainable Futures
The partnership created between Moira and Swan Hill Councils and the Institute for Sustainable Futures was a major bonus for this project. The peer support and collaboration from this relationship had a profound and beneficial impact on both the scope and quality of the projects outputs and outcomes.

Summary

Virtual Renewable Power Stations (VRPS) has explored the opportunities for two regional Victorian Councils to participate in distributed renewable energy generation in partnership with community. There was an expectation that these opportunities would be transferable across the local government sector. The project was born out of council discussions on how a council could use its annual electricity expenditure to leverage local renewable energy generation as opposed to purchasing electricity through existing mechanisms.

VRPS has looked at multiple opportunities potentially available to councils to make 'better' use of their annual electricity expenditure. The project commenced with an investigation of the concept of using regional community owned assets to host renewable energy generation infrastructure to create a virtual renewable power station and drive adaptation to and investment in decentralised electricity generation infrastructure. In theory this would have allowed council, using a model similar to an electricity retailer, to purchase excess locally generated renewable electricity from the local distribution grid. This concept has been termed a Virtual Renewable Power Station.

Through investigation, research and workshops the project has dismissed the viability of a virtual renewable power station in its original context due to regulatory, technology and financial barriers. Evolution of the project meant that with the original concept disproved the next viable option was explored.

This next stage of the project focused on understanding the barriers of regulation and solutions to them as well as focusing on a distributed renewable energy model more likely to succeed in the current regulatory and economic setting, which would be further supported by removal/modification of regulatory barriers. An intra-project partnership with the University of Technology Sydney and the Australian Renewable Energy Agency the project was able to refine the concepts of virtual-net-metering and local-use-of-system-charging as well as their contribution to support for a community solar garden. A community solar garden relies on the same mechanisms as a virtual power station but seeks to deploy generation assets in one central location.

Ultimately this project has enabled a profound investigation of a novel concept in the Australian context and refinement of council knowledge of opportunities to support and

participate in distributed renewable energy generation. The project has delivered the following specific outputs; an interactive solar garden investment model to enable would be investors in a community solar garden to see the financial benefit of doing so the initial business case of a 200kW solar garden and communication resources to share the projects findings, including written reports and a solar garden animation.

1.0 Introduction

1.1 Project background

Moira Shire Council and Rural City of Swan Hill are two northern Victorian regional Councils both municipalities are bounded by the Murray River to the north. Economies of these municipalities are agriculturally based. Tourism and manufacturing are also significant economic contributors. It is these geographical and economic similarities which contributed to the partnership project Moira Shire Council was the lead partner in this project.

At the time of project commencement both Moira and Swan Hill had not significantly invested in renewable energy to directly reduce GHG emissions associated with their electricity consumption. Both Councils realised that there was potential to improve the triple bottom line of their significant annual expenditure on electricity.

Throughout project implementation, partnerships have heavily influenced the direction and outcomes of the project. Of principle note is the partnership established with the University of Technology Sydney's Institute of Sustainable Futures and the associated Australian Renewable Energy Agency funded project "Facilitating Local Network Charges and Local Electricity Trading" had a profound influence on the second half of the project.

A project of this length and complexity was complemented by the contribution of both, partner Councils and their sometimes different and sometimes parallel perspectives, understandings and desired outcomes. Through challenging and enquiring conversations the project was shaped and guided to a mutually supported end point.

VRPS project is directly supportive of Victorian Government renewable energy target of 40% by 2025 (Victorian Renewable Energy Action Plan) and the Victorian Government greenhouse emission reduction target of zero net emissions by 2050 (Climate Change Act 2010 review recommendations). Realisation of the concept of virtual renewable

power stations and community solar gardens will enable an additional renewable energy generation model not currently active in the Victorian context to become active. Additional renewable energy generation realised through these models will directly contribute to Victorian Government targets. Locally the project also links to the Hume Regional Growth Plan and to both Moira and Swan Hill's Environmental Sustainability Strategies.

1.2   Project description

Virtual Renewable Power Stations was a project born out of Council discussions on how a Council could use its annual electricity expenditure to leverage local renewable energy generation. Council has used this project to examine the opportunities available to Council to participate in distributed renewable energy and where possible contribute positive local economic, social and environmental outcomes.

Principle project outcomes were:
- Increased knowledge of adaptation measures to reduce risk regional communities face from dependency on a centralised grid delivered electrical energy supply.
- Demonstrate new possibilities for regional communities by embracing the opportunities provided new and emerging technologies.
- An informed understanding of the economics of redistribution of electricity expenditure to local communities.
- Engagement and awareness with key stakeholders around regionally produced renewable energy.
- Stimulation of new regional economies based around renewable energy economies.
- Explore community interest for distributed community and renewable energy.

To achieve these outcomes the following key activities were completed:
- Scoping study to define the parameters of the VRPS concept including a literature review of work conducted in this area.
- Feasibility study (supported by the scoping study) on the concept of VRPS.
- Development of economic tools to support a business case to realise the concept of a VRPS.
- Peer review process of feasibility study and business plan.

- VRPS Implementation Plan, including communication and engagement resources.

These key activities generally culminated in a written report, and interactive excel spread sheet and an animation, these are available in the appendix of this final project report. Summary detail of these activities is available in section 2.2 below.

1.3   Project partners

Partnerships were critical to the delivery of this project. The complex nature of the VRPS concept really drove the requirement for several strong and effective partnerships throughout the project.

The project was originally borne out of internal discussions at Moira Shire Council centred on how council could support local distributed renewable energy generation. There was focus on how this could be done with limited or no net additional energy cost to Council.

Following initial project research Swan Hill Rural City Council came forward as an interested proponent of the project and became partner to the original funding application to the former VASP project.

The project steering committee of the project consisted of both Moira and Swan Hill Council Staff. They were as follows;

- Thomas Brown, Environmental Sustainability Officer, Moira Shire Council
- Sam Steel, Senior Environment Officer, Swan Hill Rural City Council
- Sally Rice, Manager Safety Amenity and Environment, Moira Shire Council
- Chelsea Cherry, Senior Project Officer Strategy and Innovation – Hume, Department of Environment Land Water and Planning

Thomas Brown and Sam Steel were the project managers and were intimately involved with all aspects of the project.

Due to relatively long time period of project delivery there were changes to the composition of the steering committee. Several other individual steering committee contributors during the delivery of project were;
- Erin Raggatt – Senior Environment Officer (former), Swan Hill Rural City Council
- Natalie James – Environmental Officer (former), Swan Hill Rural City Council

Although not official members of the steering committee the following individuals contributed significantly to the project, many of their contributions are reflected in the final outcomes of the project.

- John Mangan – Coordinator Waste Management – Moira Shire Council
- Jack Tennant – Environmental Technical Officer – Moira Shire Council
- James Walters – Environmental Technical Officer (former), Moira Shire Council

Several consultancies were established during the project to support delivery of key activities. The following organisations were central to these consultancies and worked collaboratively with the project managers to achieve their goals.

- Moreland Energy Foundation
- University of Technology Sydney – Institute of Sustainable Futures
- Urban Elements and Practice

1.4   Project budget

VRPS project had a total project budget of $96,500. Note in-kind contributions were significantly greater than originally budgeted for. Additional project budgets were enabled through the joint project with the Institute of Sustainable Futures, the cash and in-kind form this project are not recorded here. Following is a high level breakdown of this figure including budget to actuals,

VRPS project budget summary				
Source of funds	Cash contribution (budgeted)	Cash (actual)	In-kind contribution (budgeted)	In-kind contribution (actual)
Victorian Government	$80,000	$80,000		
Moira Shire Council		$11,034.7	$10,000	$24,263
Swan Hill Rural City		$1,100	$6,000	$12,529
Goulburn Broken Greenhouse Alliance			$500	$535
TOTAL	$80,000	$92,137.07	$16,500	$37,328

2.0   Project methodology and activities

2.1   Methodology

The principle approach used to deliver this project centred on evaluation of the VRPS concept and the selected use of 'experts' to both qualitatively and quantitatively determine its viability.

This approach was put into practice by the steering committee using the methodology set out below;

- Understand and define the original concept of a virtual renewable power station
- Review current knowledge of distributed renewable energy generation methodologies
- Modify original VRPS concept to suit regulatory and economic realities

- Develop novel enabling information on the modified VRPS concept
- Test institutional support of the VRPS concept

Please note that the acronym VRPS (Virtual Renewable Power Stations) was the original distributed renewable energy model that this project was designed to explore. As the project progressed the community solar garden model was substituted in place of VRPS.

In addition to this approach, partnerships were a critical element of the project methodology. Three individual consultancies were established during the project, and despite being fee for service arrangements, constantly the participating consultants sought to approach the work as a partnership, providing substantial in-kind contributions.

2.2   Project Activities

The below key activities were complete through this project. Below is a brief description of work done against each of the key activities:

2.2.1   Conduct in-house research to refine the concept of the VRPS

In-house research was conducted for this project both as part of the original funding application and subsequent project plan development as part of milestone one works. As this was the first project the two councils had undertaken in the renewable energy space the need for fundamental education on both the technical and regulatory nature of the Victorian electricity sector was critical. The following selected list of energy industry based literature was reviewed in-house as part of this initial learning and development phase;

- Change and Choice - The Future Grid Forum's analysis of Australia's potential electricity pathways to 2050'.
  CSIRO 12/2013

- Decentralised Energy – in the Victorian Context.
  Moreland Energy Foundation/Brian Robinson Foundation – 2007-8

- Think Small The Australian Decentralised Energy Roadmap.
  Institute for Sustainable Futures 2011

- The Australian Community Renewable Energy Sector – Challenges and Opportunities Final Report.
  Community Power Agency/Institute of Sustainable Futures 2012

- 'Smart City' – Intelligent energy integration for London's decentralised energy projects.

AECOM 2012

- Virtual Net Metering in Australia: Opportunities and Barriers.
  Institute for Sustainable Futures 2013

- Review of local use of system methodologies to value distributed generation – draft report.
  Institute for Sustainable Futures 2013

Of particular influence on the initial research for this project was the previous work done in 2013 by Indigo Shire Council in a project call 'Mapping and Brokering Local Energy Solutions in Indigo'. The exploration done by this project was ground breaking at the time and was the fundamental influence on this project's focus on the Virtual Renewable Power Station concept.

<u>2.2.2   Scoping Study</u>

Building on in-house research Moreland Energy Foundation was commissioned to prepare the 'VRPS Scoping Study'. This study was designed to provide a review of the original VRPS concept from the view of a decentralised energy expert and identification of critical considerations of this distributed generation model. The scoping study provided the first real critical assessment of the viability of a VRPS and informed the project team of the need to consider alternative models.

As part of the scoping study Moreland Energy Foundation also conducted a workshop with Moira and Swan Hill to support dissemination and understanding of the report's findings. The workshop supporting the written report was a very valuable activity. It encouraged strong Council staff engagement in the project, and influenced and built support for the remainder of the project.

The result of this report was that the two Councils chose to proceed with a distributed renewable energy model reliant on virtual net metering. This was an important decision for the project as it meant progressing with a higher risk distributed renewable energy model with significantly more technical, regulatory and financial barriers to surmount.

Moving forward from here the project focuses on the distributed renewable energy models of a One-to-Many 'Solar Garden' and Many-to-One 'Virtual Renewable Power Station'

2.2.3 Joint project with Institute of Sustainable Futures - 'Facilitating Local Network Charges and Local Energy Trading'

At this point in the project the project team had built a close working relationship with the Institute of Sustainable Futures (ISF) and the Community Power Agency. This relationship was bolstered through the project team's attendance at the inaugural Community Energy Congress in Canberra in 2014.

Moira Shire and Swan Hill were able to partner with ISF and a number of other agencies/organisations in a large collaborative project called 'Facilitating Local Use of System Charges and Virtual Net Metering'. This project was co-funded with $250,000 from the Australian Renewable Energy Agency and enabled this project to gain significant additional scale and resources above that achievable with the original $80,000 project budget. A project summary for the ARENA project can be found in the appendix of the report and [here](#).

The following key actives of this project were delivered by the ISF as part of the collaborative ARENA funded project. ISF acted as the project consults for the following key activities:

2.2.3.1 Renewable Power Options Enabled by Local Electricity Trading Report

This report referred to as the 'Options Report' built on the Scoping Study completed in milestone one. The Options Report enabled the project team to build their knowledge of the One-to-Many and Many-to-One distributed renewable energy model they were moving forward with.

Outcome of the Options Report was the project team's final section of which distributed renewable energy model they would focus on in the final stages of the project i.e. economic modelling and business case development.

The report presented an assessment of the two models including example precedents of each model in practice and a final determination on which model to move forward with. The end result of the Options report was the final selection of the One-to-Many distributed renewable energy model now referred to as a 'Solar Garden'.

This was an important step in the project and was the result of a significant research and development process. Section of the 'Solar Garden' enabled the remaining project deliverable to be focused and more easily managed.

Again this written report was supported with webinars to both Moira and Swan Hill Council coordinated by the Institute of Sustainable Futures to facilitate understanding of the report content and context.

2.2.3.2 Virtual Trial – Interactive Solar Garden Business Case Model

The virtual trial of the final distributed renewable energy model a 'Solar Garden' was undertaken by the Institute of Sustainable Futures with industry input from electricity distribution business Powercor and electricity retailer AGL.

Work undertaken during this virtual trial, enable the 'testing' of a 200kw solar garden. This testing included many input data sets including;

- Distribution charges
- Retail electricity tariffs
- Solar garden operational costs
- Impacts of 'local generation credits'
- Impacts of large scale generation certificates.

At the end of this activity the project team was delivered an interactive excel business case model. This business case model enables prospective 'generation shareholders' to review the financial benefits obtainable though investing in the modelled 200kW solar garden.

The end result of this business case modelling was that the 200kW solar garden was proven to be economically viable. Viability was measured against the base line of the unit cost of grid delivered non-renewable electricity. In other words a 200kW solar garden could deliver electricity to generation shareholders at a marginally lower cost compared to 'normal' grid delivered electricity from National Energy Market.

The interactive solar garden business case model is attached in the appendix of this report and here.

2.2.3.3 Peer Review of Business Case Model

The project team commissioned an independent third party to review the methodology, functionality and outcomes of the business case model. This quality checking activity was a step in the project which was directly inspired by the previous distributed renewable energy project by Indigo Shire Council in 2013, 'Mapping and Brokering Local Energy Solutions in Indigo' source: http://www.indigoshire.vic.gov.au/What_We_Do/Greener_living/Indigo_Shires_Local_Energy_Options.

Urban Elements and Practice were contracted to provide the peer review of the interactive business case. Urban Elements and Practice has an established track record in economic analysis of innovative energy projects as a local government / community level.

Urban Elements and Practice systematically reviewed the functional elements of the business case and detailed the findings in the peer review: Virtual Renewable Power Stations Business Case Report in June 2016. This report is available in appendix 5.

The written report provided by Urban Elements and Practice was valuable in its own right in terms of documenting the peer review process. The real value of the peer review process was the two consultation phone conferences between Urban Elements and Practice and the Institute for Sustainable Futures.

The first consultation between Urban Elements and Practice and the Institute for Sustainable Futures at the beginning of the peer process allowed Urban Elements and Practice to understand the data sources, assumptions and mechanics of the business case model. The second consultation allowed both Urban Elements and Practice and the Institute for Sustainable Futures to work through the business case peer review findings.

The peer review process was a positive experience for all parties and also for the quality of the business case, resulting in several important structure corrections to the business case spread sheet. These changes improved the accuracy of the business case outputs.

2.2.3.4 Develop a VRPS Implementation Plan, including communication and engagement resources

The final key activity of the Facilitating Local Network Charges and Local Energy Trading project with the Institute for Sustainable Futures was creation of a Virtual Renewable Power Stations Implementation plan and communication resources to support dissemination of the project findings.

It is important here to remind the reader that the initial concept of this project a 'Virtual Renewable Power Station' was not viable in its original model and throughout the collaborative project 'Facilitating Local Network Charges and Local Energy Trading' the model of a Community Solar Garden replaced it.

Two outputs resulted from this final key activity;

- Virtual Trial of Local Electricity Trading and Local Network Credits: A community Solar Garden report – case study and implementation plan.
- Virtual Renewable Power Stations project animation

These outputs are described below in summary, full details can be found in appendix 5

Virtual Trial of Local Electricity Trading and Local Network Credits: A community Solar Garden report – case study and implementation plan

This is a detailed report written by the Institute for Sustainable Futures to document the outcomes of the business case and virtual trial results of a Community Solar Garden and to identify an implementation pathway for the creation of a community solar garden.
This report is a key output of this project and is an excellent reference for detailed information on the model of a community solar garden, its economics and future steps.

In summary the report identifies that Community Solar Gardens could be established in Australia with a positive economic return capable of delivering lower household and business energy costs, compared to standing market offers at the time. Importantly this economic viability is possible within the existing Australian energy market rules.

Virtual Renewable Power Stations project animation

Through a number of Council and community workshops on the outcomes of the project the steering committee realised a need for a project communication tool to help explain the project and its findings.

From previous stakeholder workshop experience the steering committee found it was taking up to 30-40 minutes to help the workshop attendee's grasp the concept. This was often detrimental to the time available to discuss buy-in to the project and implementation risk analysis.

As a result a 3 minute project animation was commissioned. The key role of this animation was to succinctly present the process of the Virtual Renewable Power Stations project, its findings including the Community Solar Gardens model and to point stakeholders in the direction of more information.

The animation was also designed to be a community engagement tool for both Moira and Swan Hill Council's to use as they move forward with the work of establishing local Community Solar Gardens.

The animation can be found on the Moira Shire Council and Swan Hill Rural City Council websites

2.3   Communication and Stakeholder Engagement Plan

The length of this project and the partnership formed with the Institute of Sustainable Futures in the collaborative project Facilitating Local Network Charges and Local Energy Trading project, has meant the original Communication and Stakeholder Engagement Plan was delivered by both Moira and Swan Hill Council's and contracted consultants. Below is a summary of the main stakeholder engagement activities conducted through the project

Engagement level	Stakeholders involved	Tools/activities	Detail	Who's responsible	Start and finish dates	Date completed	End of project comments
Consult	Internal Council forums	Update reports at appropriate council forums	Provide on-going updates regarding progress of project and to seek advice as necessary	Project manager and SHRCC rep	Upon completion of each milestone, and as necessary	To project completion date	Internal reporting of project progression has been very important to the direction this project has taken. Agenda items at both internal council environmental working group meetings and community environmental advisory committees have shaped this project
Consult	Council Senior Management Team/ Councillors	Council Senior Management Team and Councillor reports	Seek direction on strategic direction of project	Project Team	After scoping study report and feasibility study	February 2015 and July 2015	Senior Management Team papers have been written for this project. In particular Moira Shire's Senior Management Team were instrumental in directing this project to seek innovation and create new knowledge.
Collaborate	Consultants	Formal meetings and on-going informal communication.	Work together to plan, structure and execute project and feasibility study	Project manager and SHRCC rep	From beginning of project	To project completion date	Four very productive consultancies were established during this project. Moreland Energy Foundation Limited, Institute for Sustainable Futures, Urban Elements and Practice, Rowena Crowe (animation)
Consult	Current electricity retailers	Formal meetings	Seed advice and direction on project	Project manager	As necessary, throughout project	To project completion date	AGL was engaged in this project through Moira and Swan Hill's collaboration in the Facilitating Local Network Charges and Local Energy Trading project.
Consult	NGO's & NFP organisations	Emails and meetings if necessary	Seek advice and direction on project	Project manager	As necessary, throughout project	To project completion date	Consultation independent of the above consultancies throughout the project included NGO such as Institute for Sustainable Futures (University of

Engagement level	Stakeholders involved	Tools/activities	Detail	Who's responsible	Start and finish dates	Date completed	End of project comments
							Technology Sydney), Moreland Energy Foundation, Community Power Agency and Community Service Clubs
Consult	Powercor	Meetings and email updates with relevant representative	Seek advice and direction on project	Project manager	As necessary, throughout project	To project completion date	Powercor was engaged in this project through Moira and Swan Hill's collaboration in the Facilitating Local Network Charges and Local Energy Trading project. Powercor were also engaged through the Scoping Report which was delivered by the Moreland Energy Foundation.
Empower	Community	Information sessions, media coverage, printed information	Educate around the project and start a conversation	Rep from MSC and SHRCC	Post feasibility study	To project completion date	Multiple community meetings were attended to disseminate the outcomes of the project and to gage community interest. Local service clubs such as Lions, Rotary were important. Of principle importance in these activities were the interactive business case and animation. Written report and graphics were also important.

3.0 Key findings

3.1 Key finding - Community Solar Gardens

The model of a community solar garden and its base line economics was the key finding of this project. This project was able to identify community solar gardens as the preferred distributed renewable energy model, from a very diverse starting point of many models.

The project proved the viability of community solar gardens in the Australian context drawing on international precedents. Evidence of this is the interactive business case model which underpinned the virtual trial of a 200kW solar garden. This work is detailed in the Institute for Sustainable Futures report: *Virtual Trial of Local Electricity Trading and Local Network Credits: A community Solar Garden report – case study and implementation plan.*

Subject to market forces the economic analysis of community solar gardens conducted in this project identifies they are capable of enabling communities to access cleaner and lower cost electricity supplies compared to many standing offers from the Victorian electricity retailers.

Community solar gardens also provide an important opportunity for individuals and businesses who are currently unable to participate in roof top solar the ability to participate in privately owned PV through investing in a solar garden.

3.2 Key finding - Regulatory barriers (energy networks)

In the community energy space there are real and perceived regulatory barriers to establishment of community renewable energy project. This project has clarified that many of these barriers are only perceived obstacles and can be overcome with the support of key stakeholders. Unfortunately there is the real and challenging barrier of network charge exposure for community solar gardens, which does put downward pressure on the models economics.

Importantly though this project has proven that Local Electricity Trading also known as Virtual Net Metering is completely viable and there are no regulatory barriers to its existence. Critically though support from the electricity retailer industry is vitally important in creating working examples.

The energy space, particularly new models of electricity retailing are moving so fast that in the time it took to deliver this project the electricity retailer market in Australia had already moved to bring Local Electricity Trading/Virtual Net Metering products to market.

It is these new electricity retail products that will facilitate and underpin the establishment of community solar gardens.

3.3   Key finding - Dreams v's Reality

The project commenced with the objective of investigating the model of a virtual renewable power station. This model aimed to aggregate the excess generation of electricity from local roof top solar PV systems and allow Council to procure this local renewable electricity as part of their electricity procurement activities.

Early scoping work for the project done by the Moreland Energy Foundation indicated this concept to be challenging in the current economic and regulatory environment and suggested a number of alternative models. Further work by the Institute of Sustainable Futures further refined the need to adjust the initial model.

Ultimately as a result of the early research and development phases of this project the Community Solar Garden model was identified as the best distributed renewable energy model to focus the project on.

The key findings here are;

- Design a project around a key initial concept but identify the project outputs and key activities to provide flexibility, and ensure very careful thought is given to the project outcomes. Appropriate project outcomes should be holistic enough to be achieved despite variations to individual project outputs, and unknown externalities.

- Project concept scoping and research work early in a projects timeframe is important to refine a project plan early and support stakeholder buy-in. This also reduces the need to subsequently adjust project outputs.

3.4   Key finding - Partnership are key

There are often many people/organisations trying to do the same thing as you. Pooling resources whether they are in-kind time and knowledge, cash or advocacy can dramatically increase the capacity of a project.

This project was bolstered in its outputs significantly by the partnerships within it. The key partnership has been between Moira and Swan Hill Shires. In addition to this partnership the combined forces of this project with the Facilitating Local Network Charges and Local Energy Trading project was a real strength. The University of Technology Sydney's Institute for Sustainable Futures as project leader for the Facilitating Local Network Charges and Local Energy Trading project became a critical partner to both Moira and Swan Hill Shire's.

Considering both local government partnerships and partnerships with other organisations such as universities, NGO's and private businesses should be considered in environmental sustainability projects.

3.5   Were the project objectives/outcomes achieved?

Over all the project outcomes have been achieved, on reflection some have been achieved to a high degree than others. This reality has resulted from the natural progression of the project and its learnings and growth in knowledge as it was delivered. Following is a brief commentary against each of the project outcomes

- Increased knowledge of adaptation measures to reduce risks regional communities face from dependency on a centralised grid delivered electrical energy supply;

    Community solar gardens provide a vehicle for regional communities to diversify their energy supplies. Where solar gardens can be coupled to household or large scale storage such as emerging battery technology, regional communities especially those at the end of the grid can benefit.
    Ultimately due to the larger regulatory environment solar gardens are unable to significantly reduce the risk of loss of continuity of supply for regional communities. Solar gardens provide an opportunity to reduce the financial risk regional communities face from increasing electricity costs.

- Demonstrate new possibilities for regional communities by embracing the opportunities provided new and emerging technologies;

  Emerging technology and changes in the Australian electricity retailer market mean there are new opportunities for regional communities. Solar gardens in particular present regional communities an opportunity their city cousins are not so lucky to have, that is space and sun shine. Regional communities have at their disposal larger resources of land on which to build solar gardens, as well as strong social fabrics to support the human capital required to their creation. The availability of space and social capital in regional Victoria also provides regional communities an opportunity to establish partnerships and capital raising with their city stakeholders. Partnership between regional communities and metropolitan communities will be mutually beneficial and support creating of community solar gardens.

- An informed understanding of the economics of redistribution of electricity expenditure to local communities;

  The economic modelling conducted in the project and recorded in the business case model and the report: *Virtual Trial of Local Electricity Trading and Local Network Credits: A community Solar Garden report – case study and implementation plan,* clearly established an economic reality for community solar gardens. Community solar gardens, subject to market forces have the ability to redistribute expenditure on electricity back to local communities.

- Engagement and awareness with key stakeholders around regionally produced renewable energy;

  This outcome has been one of the strongest achievements in the project. VRPS came into existence at a critical time in the evolution of the community energy sector in Australia. The project partnered with key stakeholder both with Victoria and nationally. Collectively the interaction this project has had with these stakeholders has contributed to the project's success and the progression of whole Australian community energy sector.

- Stimulation of new regional economies based around renewable energy economies;

Although not directly achieved as a current outcome of this project, the ground work and economic analysis completed through the project supports it. Wide distribution of the findings of this project and the sharing of its intellectual property freely will lead to regional economic outcomes.

- Explore community interest for distributed community and renewable energy; Community interest in solar gardens has been explored through this project. Presentations on the project to internal stakeholders, community groups, neighbouring councils and NGO's have been done consistently throughout its delivery. Anecdotal evidence from these activities highlighted the desire for community renewable energy projects and the need for new options for greater access to local produced renewable energy, and lower electricity costs.

4.0 Project monitoring and evaluation

4.1 Overview of evaluation findings

On reflection of the achievements and activities of the entire Virtual Renewable Power Stations project over its two and half years of delivery it has achieved what it set out to do. Of particular note the evaluation of the project has revealed strong achievement against all the board evaluation questions

The project has enabled two comparable regional Victorian Councils to increase their capacity to better utilise their annual electricity expenditure in a more valuable way, to support renewable energy and local economy development. Although the project set out with a slightly different objective to what was finally achieved the outcomes have remained largely unchanged and well supported by the project.

There are two areas of evaluation which warrant individual attention which are community engagement and partnerships. Community engagement was identified as an important aspect of the project and critical to its success. On reflection community engagement with direct future potential stakeholders i.e. local residents and business, has not been viable due to the way the project was delivered. Ultimately the project in delivery turned out to be a research and development project, rather than a community activation project, and the resources of the project budget were devoted to this

process. Consequently now that the project is completed both participating councils and the wider Victorian Local Government community have the materials and understanding to develop a future project focusing on stakeholder engagement and realisation of the community solar garden model.

In reality this is exactly what Swan Hill Rural City Council are doing in partnership with the Institute of Sustainable Futures and others in a collaborative funding application to the Australian Renewable Energy Agency to undertake the Social Access Solar Garden project. Significantly this proposed project addresses the key stakeholder engagement requirements that were unable to be undertaken within the VRPS project but without the learnings and outcomes of the VRPS project it would be extremely difficult to proceed with appropriate and strategic stakeholder engagement activities. The aim of the proposed project therefore is to de-risk future implementations of Social Access Solar Gardens by testing key assumptions relating to solar gardens business design. To do this extensive stakeholder engagement is required and the objectives of the project reflect this.

The objectives of the project are to:
- ✓ Develop a deeper understanding of what will motivate low income renters and other locked out electricity users to participate in a solar garden scheme (i.e. to understand what value they are looking for).
- ✓ Determine whether at least one retailer can implement the required billing changes and whether there is sufficient value for a retailer to do so.
- ✓ Learn how retailers and project proponents can invite customers to participate in a solar garden in a legally compliant manner.
- ✓ Explore with state governments whether solar gardens can enhance existing schemes supporting low-income energy customers and schemes supporting the uptake of renewables.
- ✓ Develop a limited set of tools, advice and templates that could help future Social Access Solar Garden proponents.

Secondly the other area of project evaluation which deserves individual attention is the lack of identification of partnerships creation as a project evaluation measure. As identified in section 1.3 and 3.4 the partnerships created through this project were vital to the success of the project and its capacity to support future work. In future projects establishment of partnerships as a formal evaluation measure should be considered.

4.2   Project evaluation findings

The following table presents a dialogue of evaluation findings against each monitoring question, in line with the project's board evaluation questions.

Evaluation	Monitoring		Evaluation findings
Broad Evaluation Questions	What do we want to know? (Monitoring Question)	How will we know it? (Indicator)	Detailed evaluation comments
How has the project allowed your council(s) to build skills, knowledge and capacity?	Were reports on the project generated and presented to internal council forums?	Number of reports generated, project directions impacted by report outcomes	Yes the project has built councils skills, knowledge and capacity. A critical strength of this project has been the internal reporting of project reports to multiple Council forums. In particular the utilisation of internal council forums including Environmental Working Groups and Senior Management Teams as critical decision makers in the project has built the capacity of the whole organisation. Regular internal reporting supported knowledge of the project and ownership through participation at critical decision point in the delivery of the project.
	How many Council Environmental Sustainability Strategy objectives were supported by the VRPS?	Number of Environmental Sustainability Strategy objectives supported	Over 12 environmental sustainability strategy objectives have been supported through delivery of this project. Supported objective themes include community engagement, capacity building, supporting renewable energy, embracing new technology.
	Were there additional related sustainability activities completed as a direct result of VRPS?	Number of additional 'related sustainability activities'	VRPS project supported both councils to participate in conferences and advocacy activities related to the theme of renewable electricity and electricity procurement. Activities have included participating at both Australian Community Energy Congresses, electricity procurement forums, three submissions to both state and national energy policy consultations. This has

Evaluation	Monitoring		Evaluation findings
Broad Evaluation Questions	What do we want to know? (Monitoring Question)	How will we know it? (Indicator)	Detailed evaluation comments
			included presenting to a Victorian Parliamentary Inquiry on community energy. Further activities will be delivered outside of this project time frame with a subsequent project funding application to the Australian Renewable Energy Agency in partnership with the Institute of Sustainable Futures and the Community Power Agency.
Has the project led to climate risk being taken into account in council decision making and planning? If so, how?	Has climate risk and sustainability been integrated into council policy/strategy/project as a direct result of VRPS	Copies of policy/strategy and project designs.	VRPS has contributed to a greater internal awareness of climate change action possible by local government. This growth in awareness has been also supported by other parallel projects. In Moira Shire's case climate change is now individually identified in the Moira Shire Municipal Strategic Statement, as well as being significantly bolstered in a review of the Environmental Sustainability Strategy. In the case of Swan Hill Rural City Council climate change is significantly bolstered in a review of the Sustainable Living Strategy including a commitment to reduce Greenhouse Gas Emissions through a range of mechanisms including furthering the development of Community Solar Gardens within the municipality.
Has VRPS provided the resources for council to participate in decentralised community energy as a response to climate adaptation?	Did the scoping study provide viable future pathways for the progression of the project?	Outcomes/pathways documented in the VRPS scoping study report	Yes, the scoping study was a critical point of decision for the project, and enabled both a future direction to be identified. Additionally the scoping report allowed both councils to make a critical decision on the future direction of the project from a number of options. Critically this decision allowed the project to explore emerging opportunities in the renewable energy space. The scoping report empowered the two councils to make the decision to 'push the boundaries' of what was possible under existing electricity regulations and try to establish new renewable energy model and knowledge.

Evaluation	Monitoring		Evaluation findings
Broad Evaluation Questions	What do we want to know? (Monitoring Question)	How will we know it? (Indicator)	Detailed evaluation comments
	Has the feasibility study/business plan and implementation plan provided council with the tool to realise the project outcomes	Delivery of feasibility study/business plan and implementation plan detailing the resources and processes to realise project outcomes	Yes the outcomes of the virtual trial and economic modelling, being the report: *Virtual Trial of Local Electricity Trading and Local Network Credits: A community Solar Garden report – case study and implementation plan*. This plan has directly supported both councils to understand the next steps in working towards the creation of solar gardens. This report has directly supported the Swan Hill Rural City Council to join a future partnership funding application to further define and progress research and development work on solar gardens that facilitate access by sections of the community currently locked out of participation in renewable electricity generation. Additionally the communication tools developed including the project animation will support articulation of project findings and future stakeholder engagement.
Is there capacity to deliver the VRPS Implementation Plan?	Did the business plan enable council to support the implementation plan	Council endorsement of business plan	The project outcomes including the implementation plan and business case have not formally been endorsed by Council. Outside of this two internal council workshops, one at each council, were held to update internal stakeholders on the final outcomes of the project and identify initial council perceptions on moving forward with the actions identified in the implementation plan. Consistently both Councils identified community solar gardens as a viable and positive opportunity for their respective communities. Once a future solar garden proposal is identified and quantified council has the appropriate corporate knowledge to consider endorsing a proposal. This in part has already been demonstrated by Swan Hill Rural City Council who have developed a further solar gardens partnership with the Institute of Sustainable Futures and the Community Power Agency.

Evaluation	Monitoring		Evaluation findings
Broad Evaluation Questions	What do we want to know? (Monitoring Question)	How will we know it? (Indicator)	Detailed evaluation comments
	Has a group of community members been identified as being interested in the project implementation?	Outcomes/puts of community meetings	No not directly. Indirectly community service clubs have expressed interest in playing a role in the local aspects of a solar garden development. Community engagement activities have been under delivered through this project, principally due to the time taken to develop a distributed community renewable energy project model. Without a identified model and a lineal process or 'offering' engagement directly with the community was not possible. The project has now identified a clear distributed community renewable energy project model including some economic investor orientated resources. These resources will enable community engagement moving forward.
	Are there additional funds available to support the Implementation Plan post VRPS.	Future council budget available for implementation	Swan Hill Rural City Council have identified a budget provision to support a collaborative funding application to the Australian Renewable Energy Agency in partnership with the Institute of Sustainable Futures and the Community Power Agency to support the enabling work required to support the community to develop solar gardens.
To what extent has VRPS promoted awareness of decentralised electricity in the wider local government community	How many request has the Project Team received for project information from additional councils	Number of requests for additional information from other councils. Number of presentations made on the project to councils forums	VRPS project has been the subject of many enquiries from Victorian and other states local government community. The project have given briefings to a range of local government forums, formal meetings and associated meetings including; - Council briefings - Council internal and external environmental advisory/working committees - Workshop contributions a both Community Energy Congresses (Canberra 2013 and Melbourne 2017) - ~15 Regional Greenhouse Alliance meeting presentations - Imperious phone and email enquiries

Evaluation	Monitoring		Evaluation findings
Broad Evaluation Questions	What do we want to know? (Monitoring Question)	How will we know it? (Indicator)	Detailed evaluation comments
			- Community renewable energy groups supported by councils - State Government renewable energy development teams - Federal bodies including a A-lab project development workshop with Australian Renewable Energy Agency - Victorian Urban Water Authorities who are looking for opportunities to collaborate with Local Government.

4.3   Key relationships formed during the project

Critical relationships formed through this project have been many, the critical ones are summarised below with a brief commentary on each;

Moira Shire Council and Swan Hill Rural City Council

This is the key partnership of the project and without this partnership maintaining momentum the delivery of the project would have been challenging.

This partnership enabled dual organisational perspectives to be shared on various aspects of project delivery, which resulted in increased confidence in critical decisions made throughout the project. The partnership also enabled two project champions, one form each council to promote the project internally and externally. Having these two champions enabled the project to be represented widely.

The one challenge with this partnership was the continuity of Council staff representation of the project. Due largely to the long time span of the project, staff changes at the partner Councils impacted on the project delivery schedule. A principle recommendation from experience in this partnership is to put in place inter-organisational institutional arrangements such as high level project governance agreements. In addition to these agreements promoting high level organisational awareness of the partnership is also critical. Utilising existing inter-council collaborative forums or communication pathways is also important.

University of Technology's Institute for Sustainable Futures

Next to the above Council relationship the relationship formed with the Institute for Sustainable Futures and their staff was critical to the strong performance of the project in terms of achieving its outputs. The Institute for Sustainable Futures held the role of principle consultant for the project. Given the nature of the institute and its collaborative nature this constancy relationship untimely took on the form of a partnership.

This relationship was cultivated through interpersonal connections established by the project team. The genesis of this relationship was the inaugural Community Energy Congress held in Canberra in June 2014.

This relationship and the personal networks resulting from it have served the project well and are directly contributing to the future application of the project outputs.

This critical partnership has continued with the Institute of Sustainable Futures and the Swan Hill Rural City Council now working together to further the concept of community solar gardens with the proposed Social Access Solar Gardens project. These existing partnerships have also enabled new partnerships to develop to critically explore the solar gardens concept further with the intention of bringing the concept into a reality.

4.4   Project legacy

Ultimately this project has enabled a greater understanding of the distributed renewable energy space and the role councils can play in it. Virtual Renewable Power Stations project has positioned both Moira and Swan Hill Council as leaders in the community energy space. This provides the two Councils the opportunity to build their 'green' credentials and support their communities to invest in renewable energy.

The project has made a special contribution in Victorian and nationally to the understanding of community solar gardens and their applicability, economics and prospects of success. This was the first project in Victorian and Australia to explore the idea of a community solar garden. The knowledge and materials created through this project are contributing to the progression of community energy projects in Victoria.

Community solar gardens are set to become a replicable community energy model and the VRPS project has directly been part of the development of this renewable energy model. The establishing new partnership between Swan Hill Rural City, Institute of Sustainable Futures, Community Power Agency and others in a joint funding application to the Australian Renewable Energy Agency in May 2017 is testimony to this.

Combining the knowledge generated through the Virtual Renewable Power Stations project, combined with the immediately future work it is supporting will lead to the establishment of community solar gardens over the next few years. Critically enabling solar gardens to become reality will increase the opportunities for individual and business to invest in solar power, as today there are many who are institutionally unable to do.

4.5   Alternative future if this project wasn't funded

Local Government participation in a project of this nature would not have been possible without direct financial support from the Victorian State Government.
State Government funding programs in environmental sustainability result in two critically important things occurring in local government.

1. Provides financial support to councils who would otherwise find it difficult to internally resource these projects
2. Support the legitimacy of local government and encourage them to work on environmental sustainability programs

5.0   Recommendations and future directions

Virtual Renewable Power Stations provided a baseline for two regional Councils to progress the take up of distributed renewable energy generation models in their municipalities.

The outputs of this project especially the interactive business model and the virtual trial results and implementation plan should be embraced by all interested parties and used to start local conversations on establishing community solar gardens.

Critical to the eventual success of solar gardens in Australia will be identification of organisational business structures to provide the interface between community investors and ownership/operation of the physical assets of the solar garden. Such models that will prove valuable here include cooperative businesses, unitised trusts or smaller limited by guarantee private companies. Further support is required from the existing not-for-profit and community enterprise sector to support community energy groups establish the necessary organisational structures.

Partnerships or business relationships with the electricity retailers also need to be further explored and developed. Electricity retailers are one of the keys to the local electricity trading mechanism which underpins the operation of community solar gardens. Getting retailer support or demonstrating community demand for local energy trading retail products is essential. Especially the recent emergence of community energy retailers in Victoria should be followed closely and supported where possible.

The model of community solar gardens would also benefit from additional development and refinement of its economics and sensitivities. The pace of change in the electricity retailer industry and distribution network service providers is rapid and the sector has already changed significantly since the commencement of this project. Subject to the success of the collaborative funding application to the Australian Renewable Energy Agency for Solar Access Solar Gardens, of which Swan Hill Rural City is a proponent will facilitate this additional refinement to the model.

Appendices

1. Evaluation Framework

Evaluation	Monitoring						Evaluation		
Broad Evaluation Questions	What do we want to know? (Monitoring Question)	How will we know it? (Indicator)	Where will the data come from? (Data Source/Method)	Who will capture the data? (Responsibility)	When will data be captured? (Timeframe)	Estimated cost	Who will be involved?	How will it be reported?	When will the evaluation occur? (Timeframe)
How has the project allowed your council(s) to build skills, knowledge and capacity?	Were reports on the project generated and presented to internal council forums?	Number of reports generated, project directions impacted by report outcomes	Council report	Project Team	FY2015-16, FY2016-17	In-kind	Project Team	Final Project Report	May 2017
	How many Council Environmental Sustainability Strategy objectives were supported by the VRPS?	Number of Environmental Sustainability Strategy objectives supported	Moira and Swan Hill Councils environmental strategies	Project Team	FY2016-17	In-kind	Project Team	Final Project Report	May 2017
	Were there additional related sustainability activities completed as a direct result of VRPS?	Number of additional 'related sustainability activities'	Moira and Swan Hill Councils	Project Team	FY2015-16 FY2016-17	In-kind	Project Team	Final Project Report	May 2017
Has the project led to climate risk being taken into account in council decision making and planning? If so, how?	Has climate risk and sustainability been integrated into council policy/strategy/project as a direct result of VRPS	Copies of policy/strategy and project designs.	Moira and Swan Hill Councils	Project Team	FY2016-17	In-kind	Project Team	Final Project Report	May 2017

Evaluation	Monitoring						Evaluation		
Broad Evaluation Questions	What do we want to know? (Monitoring Question)	How will we know it? (Indicator)	Where will the data come from? (Data Source/Method)	Who will capture the data? (Responsibility)	When will data be captured? (Timeframe)	Estimated cost	Who will be involved?	How will it be reported?	When will the evaluation occur? (Timeframe)
Has VRPS provided the resources for council to participate in decentralised community energy as a response to climate adaptation?	Did the scoping study provide viable future pathways for the progression of the project?	Outcomes/pathways documented in the VRPS scoping study report	VRPS scoping study report	Project Team	Feb/March 2015	In kind + consultant fees	Project Team	Final Project Report	March-June 2017
	Has the feasibility study/business plan and implementation plan provided council with the tool to realise the project outcomes	Delivery of feasibility study/business plan and implementation plan detailing the resources and processes to realise project outcomes	Feasibility Study, Business Plan and Implementation Plan	Project Team	Sep-Oct 2016	In kind + consultant fees	Project Team	Final Project Report	March-June 2017
Is there capacity to deliver the VRPS Implementation Plan?	Did the business plan enable council to support the implementation plan	Council endorsement of business plan	Council reports	Project Team	FY2016-17	In-kind	Project Team	Final Project Report	March-June 2017
	Has a group of community members been identified as being interested in the project implementation?	Outcomes/puts of community meetings	Minutes of community meetings. Register of interested community members	Project Team	FY2016-17	In-kind	Project Team	Final Project Report	March-June 2017
	Are there additional funds available to support the	Future council budget available for implementation	Council budgets	Project Team	FY2016-17	In-kind	Project Team	Final Project Report	March-June 2017

Evaluation	Monitoring						Evaluation		
Broad Evaluation Questions	What do we want to know? (Monitoring Question)	How will we know it? (Indicator)	Where will the data come from? (Data Source/Method)	Who will capture the data? (Responsibility)	When will data be captured? (Timeframe)	Estimated cost	Who will be involved?	How will it be reported?	When will the evaluation occur? (Timeframe)
	Implementation Plan post VRPS.								
To what extent has VRPS promoted awareness of decentralised electricity in the wider local government community	How many request has the Project Team received for project information from additional councils	Number of requests for additional information from other councils. Number of presentations made on the project to councils forums	Project records	Project Team	FY2015-16 FY 2016-17	In-kind	Project Team	Final Project Report	March-June 2017

2. Communication and Stakeholder Engagement Plan

2.1 Objective/s

- Promote and increase community ownership for local energy production

- Promote project for its innovation and benefits

- Share outcomes of feasibility study and lessons learnt through the project to regional Councils and other groups in a position to execute a similar project

- Economic tools to drive climate change adaptation

- Educate stakeholders, community and any other relevant parties about decentralised electricity production

- Promote benefits of decentralised electricity production

2.2 Target audience

- Relevant Council departments – promote the project, shared benefits and impacts to other departments within Council
- Executive management– promote benefit of project and increase acceptance of this new, innovative way of thinking around electricity production and distribution
- Other regional Councils – knowledge sharing so that similar programs can be considered and implemented
- Industry bodies – knowledge sharing and increased acceptance of this project concept
- Community, including residents, businesses and community groups – promote the idea and benefits of taking ownership local energy production

2.3 Key messages
- How this project will look on the ground
- That our current system of centralised electricity generation and distribution has inefficiencies.
- That this project aims to present a new and potentially better opportunity for local energy.
- Cost to municipalities of their electricity consumption and flow of associated expenditure
- Triple bottom line approach to climate change adaptation
- Promote benefits of this new system – future electricity security and sustainability, cost benefits, community benefits
- Empowers local communities

2.4   Implementation and tools

- Stakeholder information sessions
- Community information sessions
- Media releases
- Printed media – brochures etc
- Information available on MSC & SHRCC website
- Upload project resources to MAV Sustainability Portal
- Summary reports to share lessons from project

2.5   Communicating project outcomes

Successful completion of project stages will be communicated internally to management and to other Council departments relevant to the project. This will be achieved through formal and informal meetings with appropriate representatives. Internal awareness and input into project outcomes will be essential in order to gain organisational support to roll out implementation plan. Project outcomes from VRPS may present as a challenge to the current operation understanding of council business, ensuring project buy in will be critical in promoting organisational wide project ownership.
Knowledge and lessons learnt will also be shared with other Councils and the wider community through information sessions at appropriate forums and the final project report.

2.6   Timing

Communication activities outside of the project control group and project team will occur following the completion of the scoping study report and successive stages such as the options feasibility study and business plan. Timelines will also be dependent on the consultant engaged by the project and their communication requirements. For example, if it is deemed necessary to consult with the community as part of the options feasibility study and business plan, preliminary information sessions may be necessary.

3. Project Financial Report:

Income

	Victorian Adaptation and Sustainability Partnership Funds	Moira Shire Council cash contribution	Swan Hill Rural City Council cash contribution	In kind support - Moira Shire Council	In kind support - Swan Hill Rural City Council	In kind from other sources	Total
	$ 80,000.00	$ 11,034.17	$ 1,100.00	$ 24,263.30	$ 12,529.30	$ 535.00	$129,462

Expenditure

	Victorian Adaptation and Sustainability Partnership Funds	Moira Shire Council cash contribution	Swan Hill Rural City Council cash contribution	In kind support - Moira Shire Council	In kind support - Swan Hill Rural City Council	In kind from other sources	Total
Personnel							
Consultancy / contract costs	$ 80,000.00	$ 9,150.00					$89,150
Personnel Total	**$80,000**	**$9,150**		**$0**	**$0**	**$0**	**$89,150**
Project Management							
Materials and services		$ 1,575.34	$ 1,100.00				$2,675
Room hire				$ 1,500.00			$1,500
Catering		$ 308.73					$309
Meeting attendance				$ 337.50	$ 75.50	$ 105.00	$518
Workshop/seminar attendance				$ 1,575.00	$ 1,575.00		$3,150
Project officer time				$ 18,620.00	$ 8,610.00	$ 280.00	$27,510
Senior Manager time				$ 650.00	$ 600.00	$ 150.00	$1,400
Vehicle				$ 1,580.80	$ 1,668.80		$3,250
Project Management Total	**$0**	**$1,884**	**$1,100**	**$24,263**	**$12,529**	**$535**	**$40,312**
Total Project Budget	**$80,000**	**$11,034**	**$1,100**	**$24,263**	**$12,529**	**$535**	**$129,462**

4.   Work Plan

#	Task	Who	Start Date	Finish Date
1	**Milestone 1**		**01/03/2014**	**30/01/2015**
1.1	Establish Project Control Group	Project Manager	1/12/2013	1/04/2014
1.2	Establish Project Reference Group	Project Control Group	1/12/2013	1/04/2014
1.3	First Project Control Group Meeting	Project Manager	10/12/2013	10/12/2013
1.4	Complete and advertise consultants brief for scoping study report	Project Team	1/07/2014	8/10/2014
1.5	Completed scoping study report	Project Team/Consultant	8/10/2014	7/01/2015
1.6	Review scoping study report outcomes with DELWP representative for adherence with project outcomes	Project Team	28/01/2015	30/01/2015
1.7	Complete project plan and assimilate scoping study report outcomes into work plan	Project Team	7/01/2015	29/01/2015
1.8	Complete Milestone 1 report	Project Manger	5/01/2015	29/01/2015
1.8.1	Milestone 1 report endorsed by Project Control group and completed to the State's satisfaction	Project Manager	27/01/2015	29/01/2015
2	**Milestone 2**		**01/02/2015**	**30/09/2015**
2.1	Develop consultants brief for options feasibility study and business plan	Project Team	18/02/2015	20/03/2015
2.2	Advertise and recruit consultant for option feasibility study and business plan	Project Team	20/03/2015	10/04/2015

2.3	Completed options feasibility study for each council informed by scoping study report	Project Team/Consultant	20/03/2015	6/07/2015
2.4	Review options feasibility study report outcomes with DELWP representative for adherence with project outcomes		6/07/2015	30/07/2015
2.5	Complete Milestone 2 report	Project Manager	6/08/2015	30/09/2015
2.5.1	Milestone 2 report endorsed by Project Control group and completed to the State's satisfaction	Project Manager	30/09/2015	31/09/2015
3	**Milestone 3**		**30/09/2015**	**31/08/2016**
3.1	Negotiate with consultants to commission business plan as second stage of options feasibility study	Project Team/Consultant	30/09/2015	14/10/2015
3.2	Development of economic tools necessary to support a business plan to realise the concept of VRPS for each council	Project Team/Consultant	01/11/2015	30/05/2016
3.3	Development of consultant brief for peer review process	Project Team	1/06/2016	10/06/2016
3.4	Recruitment of consultant to peer review feasibility study and business plan	Project Team	11/06/2016	30/06/2016
3.5	Peer review process	Consultant	01/07/2016	05/08/2016
3.6	Review of peer review and adjustment of economic tools/business plan with consultant	Project Team/Consultant	01/08/2016	05/08/2016

3.7	Finalisation of business plan	Project Team/Consultant	06/08/2016	30/08/2016
3.8	Development of VRPS implementation plan	Project Team/Consultant	01/06/2016	30/08/2016
3.9	Complete milestone 3 report	Project Manager	22/08/2016	30/08/2016
3.9.1	Milestone 3 report endorsed by Project Control group and completed to the State's satisfaction	Project Manager	30/08/2016	30/08/2016
4	**Milestone 4**		**01/03/2016**	**29/03/2017**
4.1	Compile final project report	Project Team	1/02/2017	29/03/2017
4.2	Review of final project report by Project Team	Project Team	15/03/2017	28/03/2017
4.3	Upload project outputs to MAV Sustainability Portal	Project Manager	29/03/2017	30/03/2017
4.4	Complete milestone 4 report	Project Manager	15/03/2017	28/03/2017
4.5	Complete final financial report	Project Manager	29/03/2017	29/03/2017
4.6	Final project documents endorsed by Project control Group	Project Manager/Project Control Group	29/03/2017	29/03/2017
4.7	Milestone report endorsed by Project Control Group and completed to the states satisfaction	Project Manager/Project Control Group	29/03/2017	29/03/2017

5. Products

Below is a list of reports, spread sheets and an animation created as part of this project. These products are detailed in Section 2.2 Project Activities. These products are supplied a separate appendix and are also available from the Moira and Swan Hill website.

- Facilitating Local Network Charges & Local Electricity Trading – Project Summary

- Interactive Solar Garden Business Case Model

- Peer Review - Virtual Renewable Power Stations Business Case 2016

- Virtual Trial of Local Electricity Trading and Local Network Credits A community Solar Garden report case study and implementation plan

- Virtual Renewable Power Stations project animation