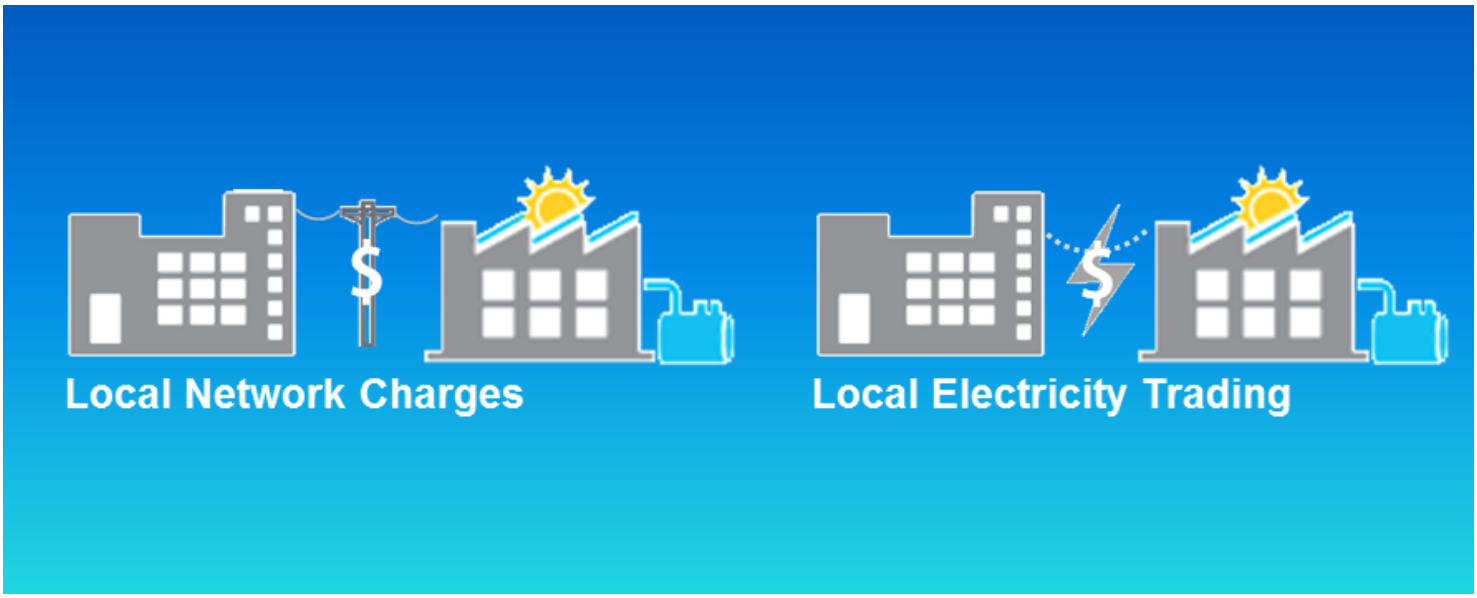



UTS: INSTITUTE FOR SUSTAINABLE FUTURES

# VIRTUAL TRIAL OF LOCAL NETWORK CREDITS AND LOCAL ELECTRICITY TRADING: WINTON SHIRE COUNCIL

Case Study Report, July 2016

UTS:ISF
INSTITUTE FOR SUSTAINABLE FUTURES

2016

## ABOUT THE AUTHORS

The University of Technology Sydney established the Institute for Sustainable Futures (ISF) in 1996 to work with industry, government and the community to develop sustainable futures through research and consultancy. Our mission is to create change toward sustainable futures that protect and enhance the environment, human well-being and social equity. We seek to adopt an inter-disciplinary approach to our work and engage our partner organisations in a collaborative process that emphasises strategic decision-making.

Authors: Jay Rutovitz, Alison Atherton, Dr Sven Teske, Lawrence McIntosh and Edward Langham,

## CITATION

Please cite this report as: Rutovitz, J., Atherton, A., Teske, S., McIntosh, L.& Langham, E., (2016) *Virtual trial of Local Network Credits and Local Electricity Trading: Winton Shire Council*. Institute for Sustainable Futures, UTS.

## ACKNOWLEDGEMENTS

The authors would like to thank Daniel Westall and Maitland Maltby of the Local Government Infrastructure Services, Don McPhail, Anthony Loveday and Glenn Dahlenberg of Ergon Energy for their hard work and support for this trial. We would also like to sincerely thank Winton Shire Council for agreeing to take part in this project and being one of the trial case studies.

## DISCLAIMER



This paper is prepared as part of the ARENA funded project ‘Facilitating Local Network Charges and Virtual Net Metering’.

The project is due to be completed by August 2016 and results and papers are publicly available on the project webpage: http://bit.do/Local-Energy

For further information visit: **www.isf.uts.edu.au**

Contact: Alison Atherton, E: Alison.Atherton@uts.edu.au, T: +612 9514 4909

Institute for Sustainable Futures
University of Technology Sydney
PO Box 123
Broadway NSW 2007
**www.isf.edu.au**

# CONTENTS



# FIGURES AND TABLES

# LIST OF ABBREVIATIONS

| | |
|---|---|
| AEMC | Australian Energy Market Commission |
| AER | Australian Energy Regulator |
| ARENA | Australian Renewable Energy Agency |
| ISF | Institute for Sustainable Futures |
| kW | Kilowatt |
| LET | Local Electricity Trading |
| LGC | Large-scale Generation Certificate |
| LGNC | Local Generation Network Credit |
| LNC | Local network charge or credit |
| LRMC | Long run marginal cost |
| NEM | National Electricity Market |
| PV | Photovoltaic |
| SRES | Small-scale Renewable Energy Scheme |
| TEC | Total Environment Centre |
| TOU | Time of use |
| UTS | University of Technology Sydney |
| VNM | Virtual Net Metering |

# SUMMARY RESULTS AND CONCLUSIONS

The Winton Shire Council trial tested the economic impact of Local Network Credits (LNC) and Local Electricity Trading (LET) on a proposed geothermal energy project, and assessed the real-world requirements for these two measures to be applied.

| TRIAL KEY FACTS | |
|---|---|
| Proponent | Winton Shire Council |
| Network service provider | Ergon Energy |
| Electricity retailer | Ergon Energy |
| Generator | 310 $kW_{electrical}$ new geothermal planned |
| Location | New geothermal plant (generation site) and 29 Winton Council sites (netting off sites) |
| Generation/customer model | Single entity, 1-to-1 transfer between a new generator and 29 Winton Council sites. |
| Project status at time of trial | Winton Council going out to tender for geothermal plant and private wire, but would prefer to use existing distribution infrastructure if suitable arrangements can be made. |

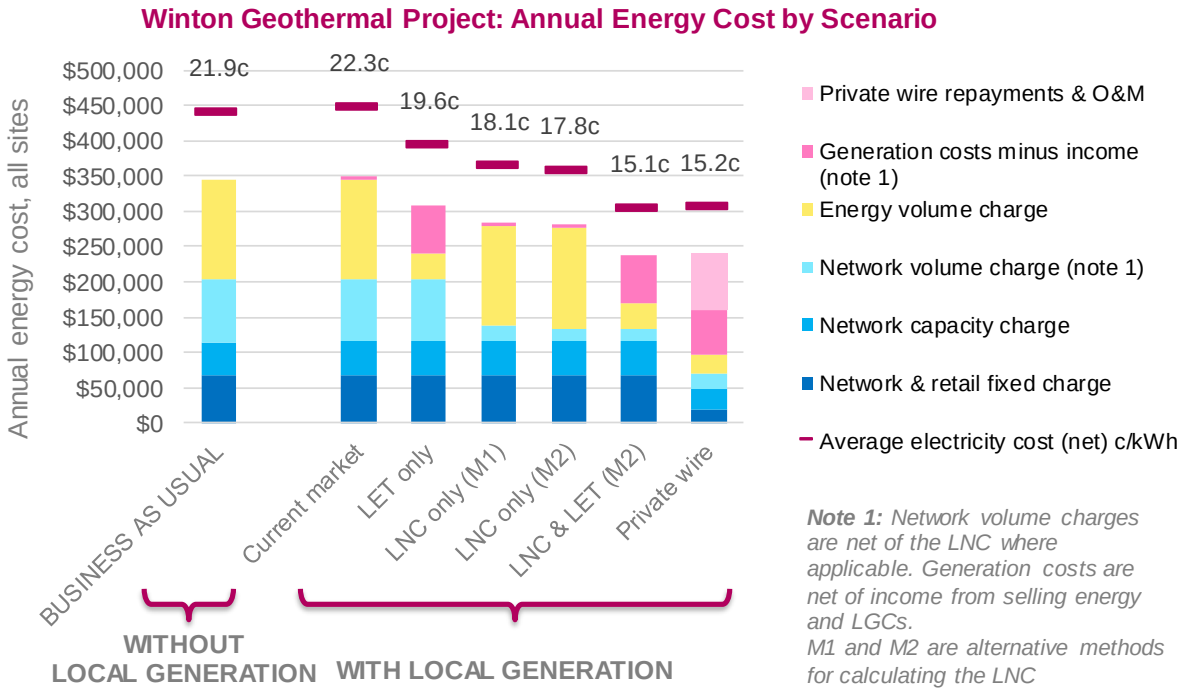
## What the trial looked at

The trial compares the business case for new geothermal generation in current conditions, as well as with and without a LET arrangement and an LNC. The trial scenarios look at the impact on the proponent, the network business, and the retailer. The different scenarios are:

- **BAU**: business as usual – current electricity and network charges, without any new generation.
- **Current Market**: installation of new generation, with the market as it is now.
- **LNC only**: includes new generation, with payment of a Local Network Credit. Two methodologies were tested for the LNC, a volumetric only method (M1) and a combined volumetric and capacity method (M2).
- **LET only**: new generation with Local Electricity Trading in place for the exported electricity.
- **LNC and LET:** new generation with both measures in place.
- **Private wire:** new generation, with the all sites are connected together with a private wire so they become the same meter point. This would in effect be a microgrid managed by Winton council

## Trial results

The total cost shown in the graph is the energy cost, net of costs and income, for the 29 Winton Shire Council sites. The table shows the results by stakeholder. The project has a positive payback for Winton Shire Council in all scenarios except the ‘current market’ as the only source of value for the generator in this scenario is exports. In the modelled scenarios, the private wire presents the only positive business case unless a new market mechanism is introduced.




***Note 1:*** *Network volume charges are net of the LNC where applicable. Generation costs are net of income from selling energy and LGCs.*
*M1 and M2 are alternative methods for calculating the LNC*

**Table 1 Results by stakeholder**

| | Current market | LET only | LNC only (M2) | LNC & LET (M2) | Private wire |
|---|---|---|---|---|---|
| Annual savings compared to BAU | -$5,500 | $36,900 | $64,600 | $107,000 | $105,400 |
| Simple Payback | 12 yrs | 10 yrs | 9 yrs | 7 yrs | 9 yrs |
| Effect on network charges (annual) | $400 | $400 | -$69,700 | -$69,700 | -$282,500 |
| Effect on retailer income (annual) | 0 | -$15,600 | 0 | -$15,600 | -$19,300 |
| Greenhouse emission reduction (all scenarios with new local generation) | | | | | 1,768 tons/yr |

## Conclusion

All scenarios **except** the current market conditions result in a saving compared to business as usual, so the project has a cost benefit with the assumptions used with either LET or an LNC, or with a private wire. The scenario with both Local Network Charge (LNC) and Local Electricity Trading (LET) results in the greatest benefit, with estimated annual saving of $107,000. The next most advantageous is the private wire scenario.

Network charges are the most significantly affected in the private wire case, with a loss of $282,500. This is 4 times worse than the next best scenario from the network's point of view. However, the effects for Winton Shire Council and the LET site portfolio are very similar in the two scenarios.

We recommend that in the short term Winton Shire Council explore the possibility of a LNC/LET arrangement with Ergon Energy as both the distributor and the retailer, or some other arrangement which could achieve similar returns and avoid the installation of a private wire. The private wire scenario represents the next best alternative and should be further explored in parallel.

# 1 INTRODUCTION

This report provides results of the virtual trial undertaken for **Winton Shire Council** on the effects of Local Network Charges and Local Electricity Trading on the viability of a proposed geothermal energy project.

The trial is part of a one year research project, *Facilitating Local Network Charges and Virtual Net Metering.* The project is led by the Institute for Sustainable Futures (ISF) and funded by the Australian Renewable Energy Agency (ARENA) and other partners, and is investigating two measures aimed at making local energy more economically viable:

- Local Network Charges for partial use of the electricity network; these are implemented as a credit paid to the generator, or Local Network Credit.
- Local Electricity Trading (LET) (previously referred to as Virtual Net Metering or VNM) between associated customers and generators in the same local distribution area.

The project includes five 'virtual trials' of the two measures in New South Wales, Victoria and Queensland.

## Local Network Charges/ Credits

Local Network Charges

Local network charges are reduced network tariffs for electricity generation used within a defined local network area. This recognises that the generator is using only part of the electricity network and may reduce the network charge according to the calculated long-term benefit to the network. The rationale for a local network charge is to address some aspects of inequitable network charges levied on a generator/consumer pair; dis-incentivise duplication of infrastructure (private wires) set up to avoid network charges altogether; and maintain use of the electricity network. Following previous work on the practicality of applying a reduced network charge for electricity sourced locally or paying a network credit to local generators, the latter was recommended as a means to deliver reduced network charges for local electricity[1], and was the mechanism investigated in this project.

## Local Electricity Trading (LET)

Local Electricity Trading

LET is an arrangement whereby generation at one site is "netted off" at another site on a time-of-use basis, so that Site 1 can 'sell' or transfer generation to nearby Site 2. The exported electricity is sold or assigned to another site for billing purposes. LET can be applied in a number of different ways:

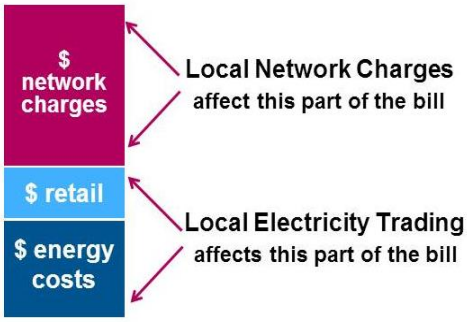
- A single generator-customer can transfer generation to another meter(s) owned by the same entity (e.g. a Council has space for generator at one site and demand for renewable energy at a nearby facility);
- A generator-customer can transfer or sell exported generation to another nearby site;
- Community-owned renewable energy generators can transfer generation to local community member shareholders; and

[1] Rutovitz, J., Langham, E. & Downes, J., 2014. Issues Paper: A Level Playing Field for Local Energy, Prepared for the City of Sydney

- Community retailers can aggregate exported electricity generation from generator-customers within a local area and resell it to local customers.

## The interaction of local network charges and local electricity trading

Local Network Credits and Local Electricity Trading are independent but complementary concepts with different effects on a consumer's energy bills. In most cases, the Local Network Credits will reduce the network charge portion of electricity bills, while Local Electricity Trading will reduce the retail portion of bills for local generation.




### About the project and trials

The objective of the project is to create a level playing field for local energy, by facilitating the introduction of Local Network Charges and Local Electricity Trading. The key outputs are:

a. Improved stakeholder understanding of the concepts of local network charges and Local Electricity Trading;

b. Five 'virtual trials' of local network charges and Local Electricity Trading in New South Wales, Victoria, and Queensland

c. Economic modelling of the benefits and impacts of local network charges and Local Electricity Trading;

d. A recommended methodology for calculating local network charges;

e. An assessment of the metering requirements and indicative costs for the introduction of Local Electricity Trading, and consideration of whether a second rule change proposal is required to facilitate its introduction; and

f. Support for the rule change proposal for the introduction of a Local Generation Network Credit submitted by the City of Sydney, the Total Environment Centre, and the Property Council of Australia.

The virtual trials aim to test the impact of Local Network Credits and Local Electricity Trading on local distributed energy projects, particularly the economic impacts, and to assess the real-world requirements for the measures to operate.

**Figure 1 The virtual trials**

# 2 WINTON TRIAL – KEY FACTS

**Table 2 Trial description**

| | |
|---|---|
| Proponent | Winton Shire Council |
| Network service provider | Ergon Energy |
| Electricity retailer | Ergon Energy |
| Generator | 310kW new Geothermal planned |
| Location | New geothermal plant (generation site) and 29 Winton Council sites (netting off sites) |
| Generation/customer model | Single entity, 1-to-1 transfer between a new generator and 29 Winton Council sites. |
| Project status at time of trial | Winton Council going out to tender for geothermal plant and private wire, but would prefer to use existing distribution infrastructure if suitable arrangements can be made. |

**Table 3 Key financial and market inputs**

| **Technology** | | Geothermal |
|---|---|---|
| **Electrical capacity** | kW | 310 |
| **Generator cost** | $ | 1,900,000 |
| **Generator cost/ kW** | $/kW | 6,129 |
| **Generator O+M Cost (fixed)** | $/a | 50,000 |
| **Interest rate** | %/a | 5.1% |
| **Discount rate** | %/a | 5.0% |
| **Inflation rate** | %/a | 2.43% |
| **Private wire capital costs** | $ | 890,000 |
| **Private wire OPEX** | $/a | 8,900 |
| **CO2 equivalent - replaced power** | $kgCO^2/kWh$ | 0.93 |
| **Large Scale Generation Certificates (LGCs)** | $/MWh | 50 |
| **LGC's credited until** | Year | 2030 |
| **Retailer buy back rate** | c/kWh | 4.5 |
| **Retailer margin** [1] | % | 13% -15% (large sites), 22-23% (26 smaller sites) |
| **Network connection level** | | HV |

*Note 1: the retailer margin includes headroom (approximately half of the value). Headroom, retail margin, and SRES are retained by the retailer when energy is netted of at trading site.*

# 3 METHODOLOGY

This section gives a brief summary of the methodology used across all five trial sites. For a full description of the methodology, please see the Trials Summary Report[2].

An excel business case model was constructed to compare local generation projects under the current market conditions with the same generator installed with the two measures under investigation in the trials, namely Local Electricity Trading (LET) and a Local Network Credit (LNC) using two methodologies. The measures are considered together and separately. In order to see the effect of these measures, eight different scenarios were defined.

The model calculates the changes in costs for the proponent sites as a result of the new generation, including the local generation site (LG site) and whatever trading sites are included in the trial (called the LET sites). The model also calculates the financial impact on the network business and the retailer (this does not include implementation costs).

The projects were generally at various stages of development, but all the installations are under serious consideration by the proponents, and it was expected that the trial would assist with decisions on whether to go ahead, as well as with project sizing. Table 2 gives summary information for the Winton trial, including the project status.

## 3.1 The model

In the excel business case model, all input data for the local generation side (LG) was arranged in one sheet, so specific parameters such as payback time or interest rate could be changed easily to test the influence on trial results.

Both the generation profile(s) and all demand profiles – from the local generation site (LG) as well as the LET "netting off" sites were uploaded in hourly steps. The netting off step includes a cascade which can include up to 10 different demand profiles.

The generation profiles were developed based on technical information for the planned geothermal power plant and possible loads from power plant operations such as pumps and cooling devices.

**Table 4 Numbers of sites and consumption for profile groups**

| | No of sites | Total usage (MWh) | Average annual usage (MWh) | Tariff |
|---|---|---|---|---|
| Group 1 | 10 | 58,943 | 5,894 | Tariff 20 |
| Group 2 | 8 | 89,622 | 11,203 | Tariff 11 |
| Group 3 | 4 | 85,132 | 21,283 | Tariff 20 |
| Individual sites | 7 | 1,479,092 | 211,299 | 3 x tariff 44<br>3 x tariff 20<br>1 x tariff 22L |

For the demand profiles, Winton Shire Council provided 29 site-specific profiles, and details of 6 different tariffs (in the end, all sites use one of four tariffs). The smaller sites were grouped according to their tariffs, so that the netting of profiles include three groups and

[2] Rutovitz, J., Langham, E., Teske, S., Atherton, A. & McIntosh, L. (2016) *Virtual trials of Local Network Charges and Local Electricity Trading: Summary Report*. Institute for Sustainable Futures, UTS.

seven individual sites. Details of numbers and consumption for the groups are shown in Table 4. The order of the netting-off cascade has been chosen based on the tariffs: the highest tariff LET will be supplied first, the second highest tariff follows etc. The chosen cascade order changes economic outcome and is therefore part of the optimisation process.

The calculation involved input of both consumption tariffs and the Local Network Credit (LNC) tariff. The LNC tariffs were calculated from Ergon's data, using the methodology developed for this project. The consumption tariffs include times for shoulder, peak and off peak, and the energy and network charges, including capacity, volume, and fixed charges where applicable. The shape of generation and demand profiles, and the specific tariff that operates at the sites, has a significant impact on the trial results and whether or not a project is profitable.

The generation and consumption profiles of the geothermal and the netting of sites were processed in sub calculations, with the specific tariffs used to calculate the costs and benefits. These are summarized in a comprehensive result overview and a standardised report sheet for each scenario. A specific module for cash flow calculations is connected to the above-described modules.

## 3.2 The scenarios

The trial compares the business case for the new generation in current conditions, and with and without the new measures. Costs are calculated for the generation site and any netting off sites included in the trial in all scenarios. All scenarios except BAU (no 1) include the new local generation. The different scenarios are:

1. **BAU**: business as usual – current electricity and network charges, without any new generation.
2. **Current market**: installation of new generation, with the market as it is now. (exported electricity is valued according to the retailer buy-back rate).
3. **LET only**: Local Electricity Trading in place for the exported electricity, but no LNC paid. Exports from the generation site are netted off at whatever LET sites are included, and any remaining residual exports are valued according to the retailer buy-back rate.
4. **LNC (M1)**: includes new generation, with payment of a Local Network Credit using methodology 1 (volumetric only).
5. **LNC (M2)**: includes new generation, with payment of a Local Network Credit using methodology 2 (combined volumetric and capacity payment)
6. **LET and LNC (M1)**: new generation with both measures in place, using the LNC methodology 1.
7. **LET and LNC (M2)**: new generation with both measures in place, using the LNC methodology 2
8. **Private wire**: 28 of the 29 project sites could be connected via a private wire, so that all generation would be 'behind-the-meter' on a single metering point. Current energy charges are included for the remaining site in this scenario.

The Local Network Credit methodology was developed as part of this project. The Trials Summary Report[3] describes in detail the LNC methodology and the calculations we performed for the various scenarios. All calculations were performed using the excel model.

Briefly, the calculation of the LNC has two parts:

1. Value setting (the base value of the LNC). We used the same value setting methodology that network businesses use for regular tariffs i.e. the Long Run Marginal Cost (LRMC) of the network.
2. Tariff setting (the application of a tariff structure to the base LRMC value). We applied two different tariffs:
    - Volumetric tariff (methodology 1)
    - Combined volumetric and capacity tariff (methodology 2)

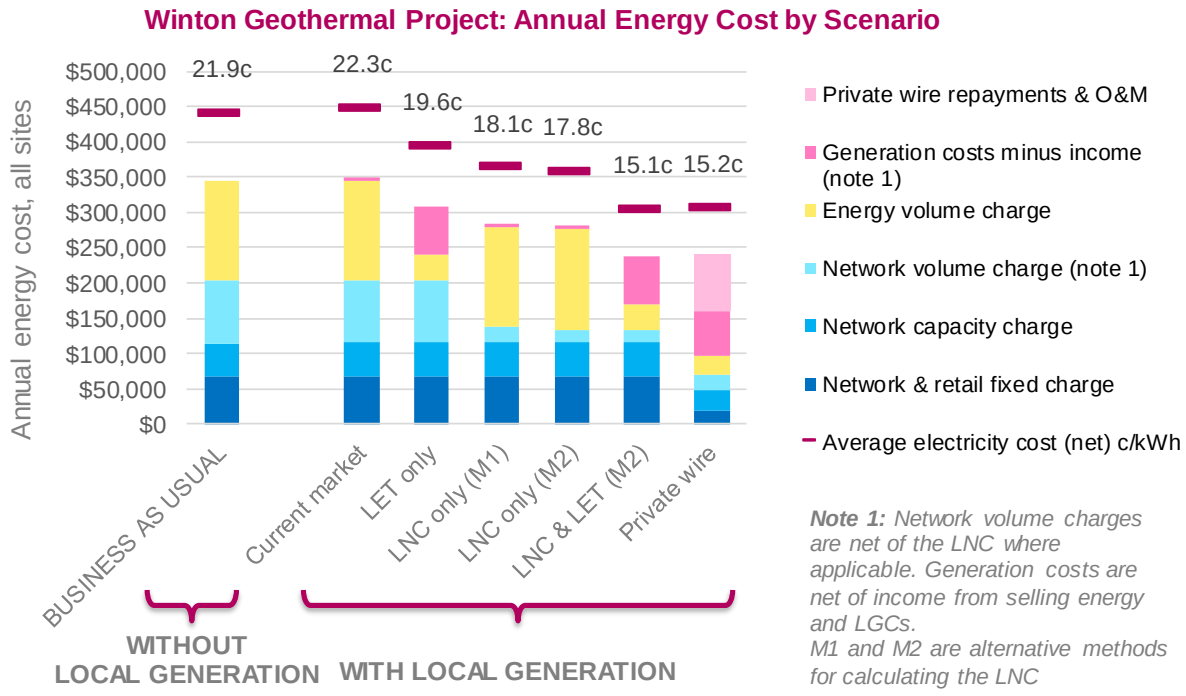
[3] Rutovitz, J., Langham, E., Teske, S., Atherton, A. & McIntosh, L. (2016) *Virtual trials of Local Network Charges and Local Electricity Trading: Summary Report*. Institute for Sustainable Futures, UTS.

# 4 RESULTS

The net energy cost for the portfolio of Winton sites is shown in Figure 2**Error! Reference source not found.** for each scenario. This includes the energy and network charges, capital repayments on any new infrastructure, such as the Geothermal Generator and the private wire, and any income the generator may receive. Income includes renewable energy credits, the new LNC, and any buy back income from electricity which is exported and not used at the netting off site. Detailed costs are given in Table 6.

All scenarios except the current market conditions result in a saving compared to business as usual, so the project would have a cost benefit with either of the new measures in place, or with a private wire, with the assumptions used.

**Figure 2** Winton Shire Council: combined site portfolio annual energy cost by scenario




*Note that costs are modelled, and may be different from actual project outcomes.*

Table 5 gives the annual savings, the lifetime benefit, and the Internal Rate of Return for the project in each scenario. The scenario with both the new measures, the Local Network Credit and Local Electricity Trading results in the greatest benefit, with estimated annual saving of $105,000 and an IRR of 13.2%. The next most advantageous is the private wire scenario with, which has slightly higher annual returns, but a lower IRR as the upfront investment is greater.

Network charges are the most significantly affected in the private wire case, with a loss of $282,500. From the network's point of view, this is four times worse than the next best scenario, with a reduction of $69,700 in the LNC case.

**Table 5 Summary effect on Winton Shire energy costs by scenario**

| | Current market | LET only | LNC only (M1) | LNC only (M2) | LNC[1] and LET | Private wire |
|---|---|---|---|---|---|---|
| Annual savings (1st year) | -$5,500 | $36,900 | $60,300 | $64,600 | $104,800 | $105,400 |
| Lifetime benefit | -$442,000 | $586,000 | $1,156,000 | $1,261,000 | $2,237,000 | $2,407,000 |
| IRR | 4.0% | 8.0% | 9.9% | 10.3% | 13.2% | 11.0% |

**Table 6 Detailed effect on Winton Shire energy costs by scenario (first year costs)**

| | BAU | Current market | LET only | LNC only (M1) | LNC only (M2) | LNC[1] & LET | Private wire |
|---|---|---|---|---|---|---|---|
| Network volume charge | 88,267 | 88,267 | 88,267 | 88,267 | 88,267 | 88,267 | 22,095 |
| Network capacity charge | 47,540 | 47,540 | 47,540 | 47,540 | 47,540 | 47,540 | 28,026 |
| Network & retail fixed charge [2,3] | 67,234 | 67,623 | 67,623 | 67,623 | 67,623 | 67,623 | 18,990 |
| LNC | - | - | - | -65,743 | -70,099 | *-67,921* | - |
| Energy volume charge | 141,998 | 141,998 | 36,518 | 141,998 | 141,998 | 36,518 | 26,442 |
| **TOTAL ENERGY BILL** | 345,039 | 345,429 | 239,948 | 279,686 | 275,330 | 172,027 | 95,553 |
| Private wire repayments & O&M | - | - | - | - | - | - | 80,923 |
| Capital repayment | - | 153,756 | 153,756 | 153,756 | 153,756 | 153,756 | 153,756 |
| Variable O&M | - | 50,000 | 50,000 | 50,000 | 50,000 | *50,000* | 50,000 |
| LGCs | - | -113,150 | -113,150 | -113,150 | -113,150 | *-113,150* | -113,150 |
| Buy back | - | -85,541 | -22,379 | -85,541 | -85,541 | *-22,379* | -27,394 |
| Average electricity cost (net) c/kWh | 21.4 | 21.8 | 19.1 | 17.6 | 17.3 | 15.3 | 15.2 |
| **Total Supply Costs** | 336,594 | 342,048 | 299,730 | 276,306 | 271,949 | 240,254 | 239,689 |

Note 1) This is the average outcome for LNC method 1 and LNC method 2

Note 2) The private wire case assumes 28 metering points are amalgamated to a single connection point, with the effect of reducing fixed ($/day) charges.

## 4.1 LNC outcomes and effects on network businesses

Table 7 shows the impact on the charges the Winton portfolio of sites would pay to the network business in each scenario. The LET only scenario is not shown as it is exactly the

same as the current market scenario from the network business point of view, and the LNC plus LET scenarios are not shown as they are identical to LNC (M1) or LNC (M2).

There is a small increment in the network revenue in the current market scenario as one additional meter point is added for the geothermal generator.

As soon as an LNC is paid, the LNC payment is added to the reduced charges, with a combined reduction of $65,300 in the LNC (method 1), and $69,700 in the LNC (method 2) scenario. The private wire results in a reduction in network charges of $282,500 approximately 4 times the effect using either LNC method.

**Table 7 Distribution and transmission network business - net impact (annual)**

| | Current market [1] | LNC only (M1) | LNC only (M2) | Private wire |
|---|---|---|---|---|
| Revenue effect (excluding LNC) | $400 | $400 | $400 | -$282,500 |
| Local network credit | | -$65,700 | -$70,100 | |
| **Net effect on NSP revenue** | **$400** | **-$65,300** | **-$69,700** | **-$282,500** |

*Note 1 The LET only scenario is not included here, as LET has no impact on the network business, so "LET only" is identical to "Current Market". The LET plus LNC scenarios are not included as they are identical to the LNC only scenarios for the same reason.*

LNC (method 1) results in a marginally lower payment than LNC (method 2). This is driven by the very high consistency of output from the geothermal plant. As the plant's output profile was modelled and is not the operating profile of an actual plant in the field, the results may differ if this scenario were put into practise.

## 4.2 Impact on retailer

Table 8 shows the effects on the retailer. There is no impact in current market conditions as there is no behind the meter load operating at the generation site. The impact is $15,600 if netting off is in place, and increases by approximately 23% if there is a private wire installed. The retailer margin, headroom, and SRES is still charged on the netted off electricity in our calculations.

**Table 8 Annual impact on retailer**

| | Current market | LET only | Private wire |
|---|---|---|---|
| Energy volume charges (change) | - | -$105,500 | -$115,600 |
| Estimated savings energy purchase | - | $89,800 | $96,200 |
| **Net effect on retailer revenue** | **-** | **-$15,600** | **-$19,300** |

## 4.3 Sensitivity

We undertook sensitivity testing on the results for generator cost, LGC price, retailer buy back rate, the LNC value, and the LRMC value. The most significant input to the Winton

outcomes is the generator cost, as shown in Table 9. We were not able to test for the effects of the consumption tariffs, but these would have a significant effect as well.

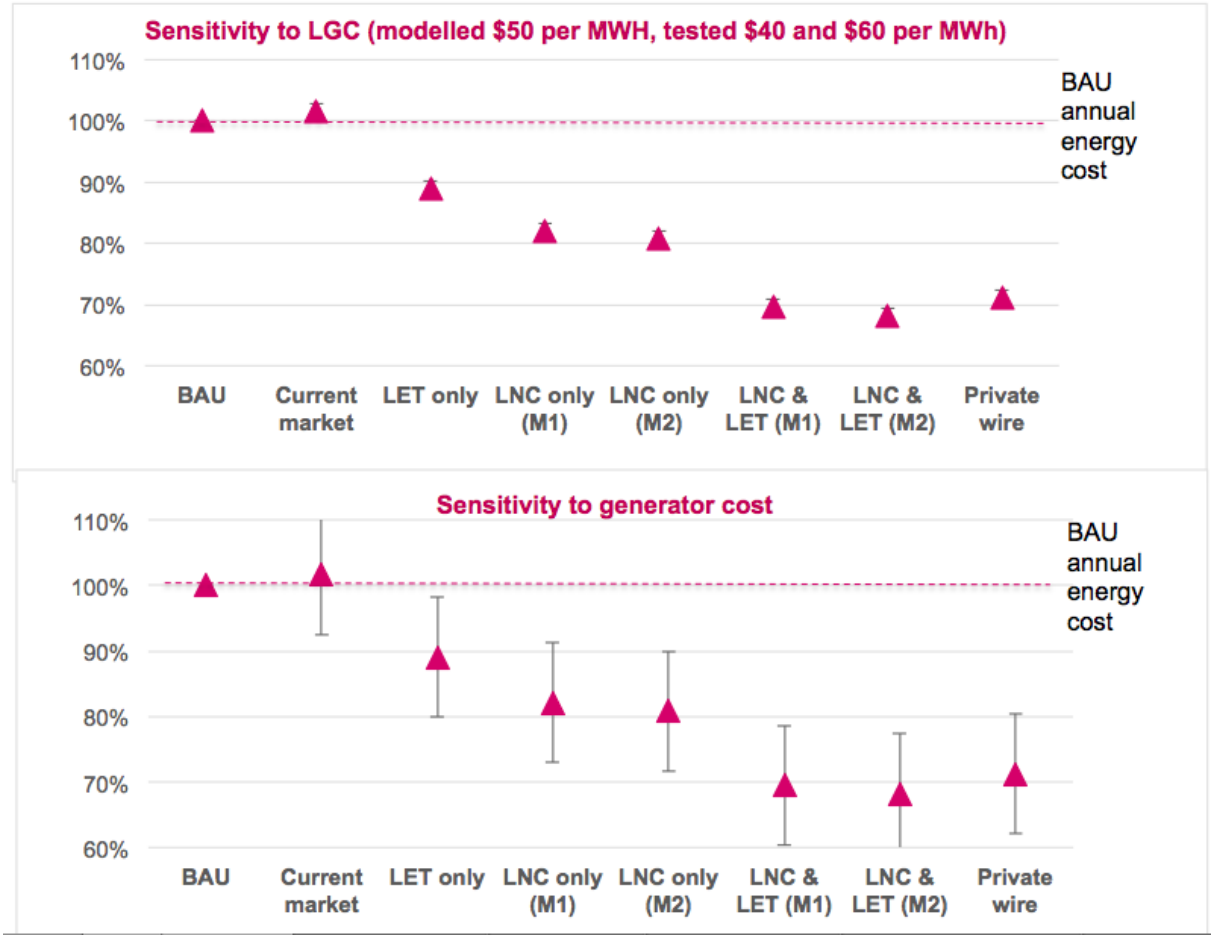
| | Variation tested | Effect on Annual Energy Cost |
|---|---|---|
| Generator cost | 80% and 120% of modelled cost | 9.1% |
| Large Scale Generation Certificates (LGCs) | Modelled rate $50/MWh; tested $40 & $60 | 6.7% |
| Retailer buy back rate | 80% and 120% of modelled cost | 5.1% |
| LNC | 80% and 120% of modelled cost | 3.9% - 4.2% |
| LRMC variation from modelled rate | 0.89 (based on Energeia modelling) | -2.2% |

**Figure 3** shows the effects of the LGC price and the generator cost.

**Table 9 Sensitivity testing results, Winton Shire Council trial**

| | Variation tested | Effect on Annual Energy Cost |
|---|---|---|
| Generator cost | 80% and 120% of modelled cost | 9.1% |
| Large Scale Generation Certificates (LGCs) | Modelled rate $50/MWh; tested $40 & $60 | 6.7% |
| Retailer buy back rate | 80% and 120% of modelled cost | 5.1% |
| LNC | 80% and 120% of modelled cost | 3.9% - 4.2% |
| LRMC variation from modelled rate | 0.89 (based on Energeia modelling) | -2.2% |

**Figure 3 Sensitivity to LGC price and generator cost: Winton trial**



# 5 DISCUSSION AND RECOMMENDATIONS

All scenarios **except** the current market conditions result in a saving to Winton Shire Council compared to business as usual, so the project has a cost benefit with the assumptions used and with either LET or an LNC, or with a private wire. However, neither of the two measures are available to Winton at the present time. The availability of an LNC is dependent on the outcome of the rule change proposal for the introduction of a Local Generation Network Credit submitted to the AEMC by the City of Sydney, the Total Environment Centre, and the Property Council of Australia, and currently under consideration at the time of writing.

The Local Electricity Trading (LET) and Local Network Credit (LNC) scenario results in the greatest benefit, with an estimated annual saving of $104,800. The next most advantageous is the scenario is the private wire scenario, this indicates there is considerable impetus for Winton to explore and implement a private wire solution unless new measures are implemented.

The private wire scenario, however, is the least advantageous scenario for both the other stakeholders, and in particular, the network business (Ergon Energy). The scenario results in the greatest reduction in network charges, with a reduction of $282,500. This is four times worse than the next best scenario from the network's point of view. However, the effect for the portfolio of Winton sites is very similar in the two scenarios. The retailer also loses the most income in the private wire scenario.

There are a number of factors that alter the financial outcomes for the project, including a reduction in the generator cost, that is, a lower price for the geothermal system. Also impacting the outcome is the availability of a LET arrangement, an LNC or similar payment from the network, and the installation of a private wire. Winton Shire Council would prefer not to install a private wire, as it is in effect a duplication of public infrastructure. However, it would be useful to gain firmer information on the cost of this option as it will represent a sound choice if the other measures explored in this study are not implemented.

In the short term, we recommend that Winton Shire Council:

1) Investigates the private wire option further, in order to develop well defined plans for its execution

2) Explores the possibility of a LET arrangement with Ergon Energy Retail

3) Continues to actively support a rule change to introduce an LNC.

UTS:ISF

INSTITUTE FOR SUSTAINABLE FUTURES