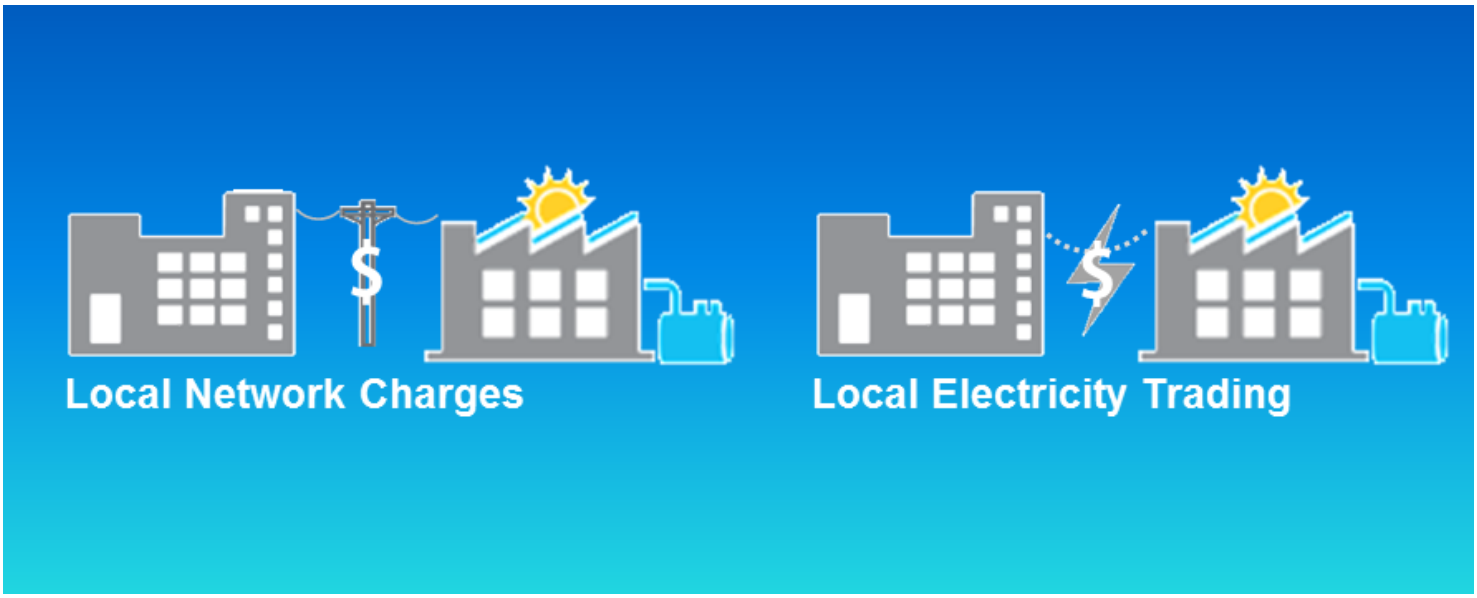

UTS: INSTITUTE FOR SUSTAINABLE FUTURES

VIRTUAL TRIAL OF LOCAL NETWORK CREDITS AND LOCAL ELECTRICITY TRADING: WANNON WATER

Case Study Report, July 2016

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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.

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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**

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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 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 Wannon Water trial aims to test the economic impact of Local Network Credits (LNCs) and Local Electricity Trading (LET) on local energy projects, and assess the real-world requirements for these two measures to be applied. The trial modelled the installation of a wind turbine, with potential export to Wannon Water sites and Glenelg Shire Council sites.

TRIAL KEY FACTS	
Proponent	Wannon Water
Network service provider	Powercor
Electricity retailer	AGL
Generator	800 kW new wind turbine
Location	Wannon Wastewater Treatment Plant (generation site); Wannon Water and Glenelg Shire Council sites (netting off sites)
Generation/customer model	Dual entity, 1-to-2 transfer between 17 Wannon Water sites, and 4 Glenelg Shire Council sites.
Project status at time of trial	Wannon Water is investigating installation of a wind turbine, to supply their own consumption at the generation site and remote sites.

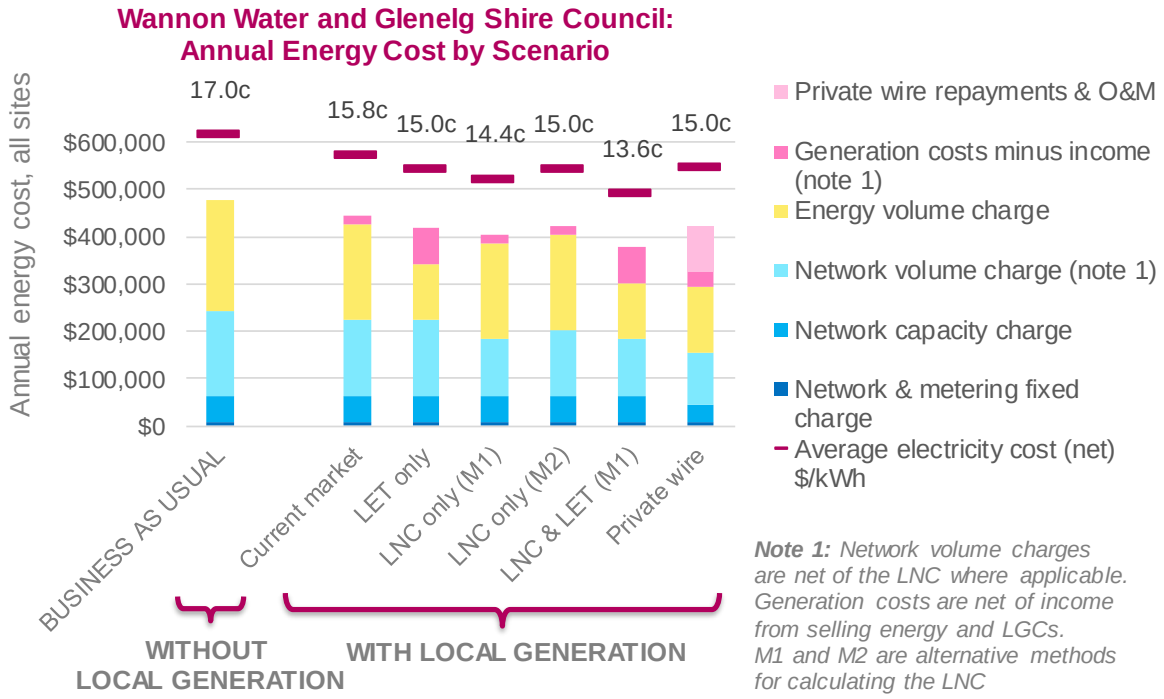
What the trial looked at

The trial compares the business case for new wind 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 regulatory and market framework as it is now.
- **LNC only**: includes new generation, with payment of a Local Network Credit.
- **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 sites connected together with a private wire so that there is a single network connection point.

Trial results

The total cost shown in the graph is the net energy cost for the 17 sites, including the energy and network charges, the capital repayments on any new infrastructure in each scenario (primarily the generator and the private wire), and any income the generator may receive, such as renewable energy credits, the new LNC, or buy back income from electricity which is exported and not used at the netting off sites.



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

Wannon Water and GSC	Current market	LET only	LNC only (M2)	LNC & LET (M2)	Private wire
Lifetime benefit	$814,000	$1,415,000	$1,396,000	$1,997,000	$2,088,000
IRR	7.8%	9.4%	9.3%	10.8%	9.1%
Effect on local network charges (annual)	-$18,500	-$18,500	-$41,500	-$41,500	-$88,500
Effect on retailer income (annual)	-$1,900	-$1,900	-$1,900	-$1,900	-$5,400
Greenhouse emission reduction (all scenarios with new local generation)					3,411 tons/yr

Conclusion

All scenarios result in a saving for the proponent compared to business as usual, so the project has a cost benefit with the set of assumptions used. The scenarios which include both measures have the best outcome for Wannon Water and Glenelg Shire Council, with an estimated lifetime benefit of $1,997,000. While the lifetime benefit for the private wire is somewhat higher, the investment cost is also higher, so the return on investment is greatest in the LNC and LET cases.

Network charges are the most significantly affected in the private wire case, with a reduction of $88,500 in charges paid by the proponents. This is between 1.5 and 1.9 times the reduction in network charges in case with an LNC payment, which is also preferable for Wannon Water. This reduction in charges is not reflected in additional value for the consumer, as the foregone network charges are instead used to pay for the private wire. As network businesses operate under a revenue cap, any reduction in receipts which is not matched by overall cost reductions will be recouped from all customers.

1 INTRODUCTION

This report provides results of the virtual trial undertaken for **Wannon Water and Glenelg Shire Council** on the effects of Local Network Credits (LNCs) and Local Electricity Trading on the viability of a proposed wind 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 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

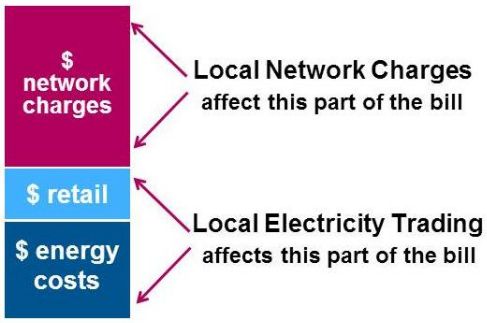
LET is an arrangement whereby generation at one site is "netted off" at another site on a time-of-use basis, so that Site 1 can 'sell' or transfer generation to nearby Site 2. The exported electricity is sold or assigned to another site for billing purposes. LET can be applied in a number of different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

- A single generator-customer can transfer generation to another meter(s) owned by the same entity (e.g. a Council has space for solar PV 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
- Community retailers can aggregate exported electricity generation from generator-customers within a local area and resell it to local customers.

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

The interaction of Local Network Credits and Local Electricity Trading

Local Network Credits and LET are independent but complementary concepts with different effects on a consumer's energy bills. In most cases, the LNC will reduce the network charge portion of electricity bills, while Local Electricity Trading may reduce the combined energy and 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 Credits and Local Electricity Trading;

b. Five 'virtual trials' of Local Network Credits and Local Electricity Trading in New South Wales, Victoria, and Queensland (see Figure 1);

c. Economic modelling of the benefits and impacts of Local Network Credits and Local Electricity Trading;

d. A recommended methodology for calculating Local Network Credits;

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 WANNON WATER TRIAL – KEY FACTS

Table 2 Trial description

Proponent	Wannon Water
Network service provider	Powercor
Electricity retailer	AGL
Generator	800 kW new wind turbine
Location	Wannon Wastewater Treatment Plant (generation site); Wannon Water and Glenelg Shire Council sites (netting off sites)
Generation/customer model	Dual entity, 1-to-2 transfer between 17 Wannon Water sites, and 4 Glenelg Shire Council sites.
Project status at time of trial	Wannon Water is investigating installation of a wind turbine, to supply their own consumption at the generation site and remote sites.

Table 3 Key financial and market inputs

Technology		Wind
Electrical capacity	kW	800
Generator cost/ kW	$/kW	3,000
Generator cost (total)	$	2,400,000
Generator O&M Cost (fixed)	$/a	60,000
Interest rate	%/a	5.0%
Discount rate	%/a	5.0%
Inflation rate	%/a	2.43%
Private wire capital costs	$	1,041,250
Private wire O&M cost	$/a	10,413
CO2 equivalent - replaced power	kgCO2/kWh	1.34
Other charges (AEMO, RET, SRES, VEET)	c/kWh	1.33
Large Scale Generation Certificates (LGCs)	$/MWh	50
LGC's credited until	Year	2030
Retailer buy back rate	c/kWh	5.00 [1]
Retailer margin	%	7.0% [2]
Network connection level	2 (direct connection to distribution sub)	

Note 1 The buy back rate of 5c/kWh is information from Wannon Water, and is not based on information from AGL

Note 2: The retailer margin is based on information from the Queensland Competition Authority 2015-2016 retail price determination, and is not based on information from AGL Note that it is 7% of the energy volume charge, not 7% of combined energy and network charges.

3 METHODOLOGY

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

An excel business case model was constructed to compare local generation projects under current market conditions with the same generation project 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 the 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, although this does not include implementation costs.

The trial projects were 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. Table 2 gives summary information for the Wannon 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 that can include up to 10 different demand profiles. As the Wannon trial had more than 10 sites, some sites were grouped based on the compatibility of the tariff package they were on.

The third step of the calculation involved detailed input of consumption tariffs and the Local Network Credit (LNC) tariff. The LNC tariffs were calculated from each network partner’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.

Due to “time-of-use” dependent tariffs and LNCs, the shape of generation and demand profiles have a significant impact on the trial results and whether or not a project is profitable.

Electricity sold to the grid is credited as receiving a retailer buyback credit, the 5c/kWh rate for this energy was supplied by Wannon Water.

Steps four and five processed all inputs of LG and LET sites in sub calculations, which are summarized in a comprehensive results overview for each scenario. Each calculation step can be traced and checked separately and assumptions can be changed. A specific module for cash flow calculations is included to produce a range of economic indicators. .

Finally, a standardised report sheet provides an overview to key results in the form of tables, texts and figures.

[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.

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 include the new local generation. 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. (exported electricity is valued according to the retailer buy-back rate).
- **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.
- **LNC (M1)**: includes new generation, with payment of a Local Network Credit using methodology 1 (volumetric only).
- **LNC (M2)**: includes new generation, with payment of a Local Network Credit using methodology 2 (combined volumetric and capacity payment)
- **LET and LNC (M1)**: new generation with both measures in place, using the LNC methodology 1.
- **LET and LNC (M2)**: new generation with both measures in place, using the LNC methodology 2
- **Private wire**: some of the project sites could be connected via a private wire, so that all generation would be 'behind-the-meter' on a single metering point.

The Wannon Water model was set up to examine a number of additional questions, namely whether the wind turbine should be connected behind or in front of the meter, and to test the effectiveness of three alternative turbine sizes.

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)

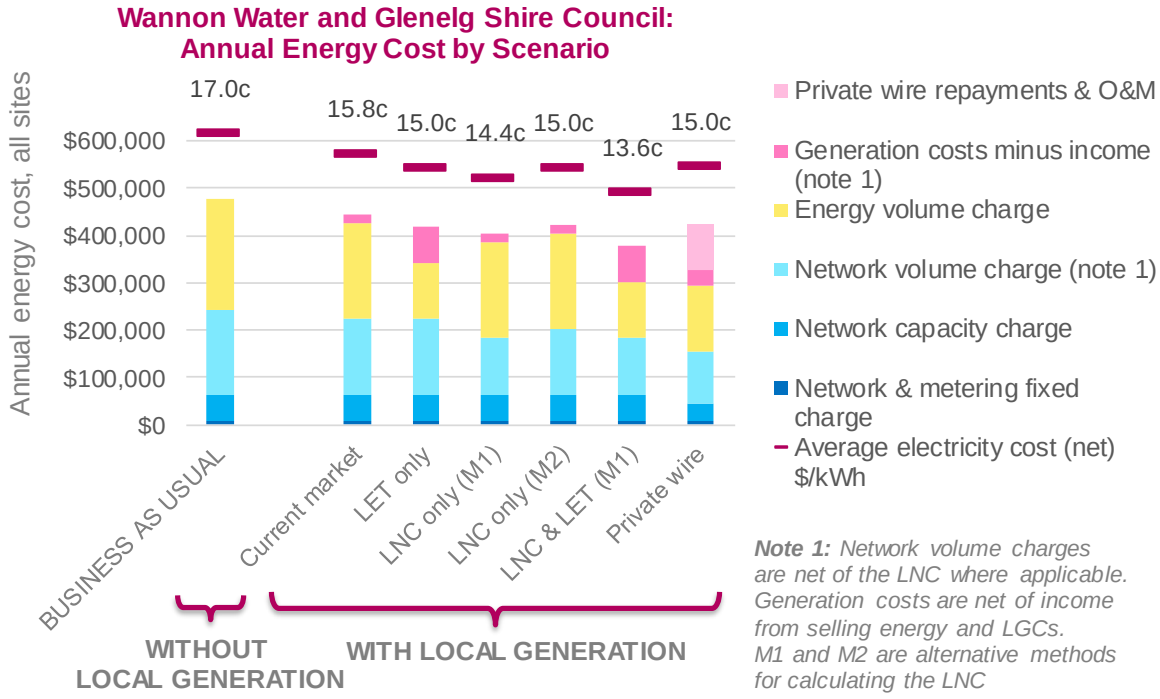
[3] Rutovitz, J., Langham, E., Teske, S., Atherton, A. & McIntosh, L. (2016) *Virtual trials of Local Network Charges and Local Electricity Trading: Summary Report*. Institute for Sustainable Futures, UTS.

4 RESULTS

The net energy cost for the Wannon Water and Glenelg Shire council sites is shown in Figure 2 for each scenario. This includes the energy and network charges, capital repayments on any new infrastructure, such as the solar panels and the private wire, and any income the generator may receive. Income includes Large-scale Generation Certificates (LGCs) under the Renewable Energy Target, the proposed LNC, and any buy back income from electricity that is exported and not used at the netting off site. Detailed costs and incomes are given in
Table 5.

All scenarios result in a saving compared to business as usual, so the project has a cost benefit with the assumptions used.

Figure 2 Wannon Water and Glenelg Shire council sites, annual energy cost by scenario



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

Table 4 gives the annual savings, the lifetime benefit, and the Internal Rate of Return for the project in each scenario. The LNC and LET scenario results in the greatest benefit for the project proponent, with estimated annual saving of $92,200. The next most advantageous is the scenario with the LNC measure by itself, calculated by method 1

Network charges are the most significantly affected in the private wire case, with a reduction of $88,500, compared to $58,800 in the LNC case. This is 50% worse than the next best scenario from the network's point of view (namely, LNC M2).

The current market scenario shows a positive economic outcome, regardless of new measures being deployed. However, this is substantially driven by the LGC value and the retailer buyback rate. As such it should be considered risky given past volatility of the LGC market, and would require a firm offer for exported electricity.

If no LNC or LET measure was put in place, the private wire scenario represents the best business case for Wannon to pursue. This would also be a less risky option than the 'current market' scenario as electricity energy and network charges saved are a more stable source of value than LGCs and retail buyback offers.

Table 4 Summary effect on Wannon Water and Glenelg Shire energy costs by scenario (All sites combined)

	Current market	LET only	LNC only (M1)	LNC only (M2)	LNC[1] and LET	Private wire
Annual savings compared to BAU	$32,700	$56,400	$72,900	$55,600	$88,000	$54,800
Lifetime benefit	$814,000	$1,415,000	$1,835,000	$1,396,000	$2,216,000	$2,088,000
IRR	7.8%	9.4%	10.4%	9.3%	11.3%	9.1%

Table 5 Detailed effect on Wannon Water and Glenelg Shire Council energy costs by scenario (all sites combined)

	BAU	Current market	LET only	LNC only (M1)	LNC only (M2)	LNC[1] & LET	Private wire
Network volume charges	179,533	161,633	161,633	161,633	161,633	161,633	110,465
Network capacity charge	56,323	55,688	55,688	55,688	55,688	55,688	37,192
Network fixed charge	6,971	6,971	6,971	6,971	6,971	6,971	6,672
LNC	-	-	-	-40,252	-22,969	-31,611	-
AEMO, RET, Other	37,211	31,776	27,150	31,776	31,776	27,150	21,575
Energy volume charge	196,112	168,946	89,301	168,946	168,946	89,301	118,671
TOTAL ENERGY BILL	**476,150**	**425,015**	**340,744**	**384,763**	**402,046**	**309,133**	**294,574**
Private wire repayments & O&M	-	-	-	-	-	-	93,965
Generator repayments	-	192,582	192,582	192,582	192,582	192,582	192,582
Variable O&M	-	60,000	60,000	60,000	60,000	60,000	60,000
LGCs	-	-127,280	-127,280	-127,280	-127,280	-127,280	-127,280
Buy back [2]	-	-106,832	-46,247	-106,832	-106,832	-46,247	-92,484
Average electricity cost (net) c/kWh	17.0c	15.8c	15.0c	14.4c	15.0c	13.9c	15.0c
Total supply costs	476,150	443,486	419,799	403,233	420,516	379,546	421,358

Note 1 Average of LNC method 1 and LNC method 2

Note 2 The buy back rate of 5c/kWh is information from Wannon Water, and is not based on information from AGL

4.1 LNC outcomes and effects on network businesses

Table 6 shows the impact on the charges Wannon Water and Glenelg Shire Council 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 the impact on the network business is identical to LNC (M1) or LNC (M2) without LET.

The current market shows a small reduction in network charges, as some of the output from the Wind turbine is used behind-the-meter for water pumping equipment. This effect remains, and is amplified in the private wire scenario, as most of the export from the system becomes "behind the meter" in effect.

As soon as an LNC is paid, the LNC payment is added to the reduced charges, with a combined impact of $58,800 in the LNC (method 1), and $41,500 in the LNC (method 2) scenario. The private wire results in a reduction in network charges of $88,500, 1.5 to 1.9 times greater than the effect using either LNC method 1 or LNC method 2. As network businesses operate under a revenue cap, any reduction in receipts which is not matched by overall cost reductions will be recouped from all customers.

Table 6 Distribution and transmission network business - net impact (annual)

	Current market	LNC only (M1)	LNC only (M2)	Private wire
Revenue effect (excluding LNC)	-$18,500	-$18,500	-$18,500	-$88,500
Local network credit	-	**-$40,300**	**-$23,000**	-
Net effect on NSP revenue	**-$18,500**	**-$58,800**	**-$41,500**	**-$88,500**

LNC (method 2) results in a significantly lower payment than LNC (method 1). This is driven by two factors. Firstly, the volumetric method was intended to be used with quite narrowly defined peak periods, to act as an 'availability adjustment' on the credit value. However, all network businesses selected reasonably broad peak periods, which meant this adjustment was applied as effectively as it could have been. Powercor identified slightly over 800 hours of peak period which combines the times that the system level infrastructure was likely to peak as well infrastructure at the zone substation/feeder level relevant to that area and customer class. Powercor was the only network to select different peak times experienced on the system level and zone sub level of its network, this lead to potentially better targeting of payments to address both types of peaks.

The volumetric method LNC payment calculations may be higher than the true value of variable distributed generation to the network due to the relatively broad peak. Secondly, the characteristics on the capacity payment meant if local generation was *ever* not available during a very broadly defined period, it received no credit. However, there is evidence to suggest wind generation has an impact on network peak demand: winds are variable in any particular location but across a network area the generators can be considered as a portfolio. This means that the combined volume-capacity method as used in the trials probably under-rewarded the value of DG. In practice, the true value of variable DG may be somewhere in between the results for Methods 1 and 2.

Our recommended LNC calculation methodology is described in a separate report[4], and includes a structure based on the volumetric method but using less than 500 peak hours in the year.

4.2 Impact on retailer

Table 7 shows the effects on the retailer. The impact on energy volume charges in current market conditions is close to $30,000 annually, as a result of the increase in behind the meter consumption. However, the retailer can also be expected to save, in that it has not had to generator, purchase or hedge that energy itself. The net effect on the retailer is calculated as the (assumed) lost margin that it would have earned on these lost energy sales.

The LET only scenario sees further retailer sales substituted for customer generated electricity. It should be noted that the retail margin is charged on netted off electricity, and so the effect on retailer is not altered despite the change in energy volume charges. We have assumed 2% for the margin based on published information from Queensland, as this is commercially confidential information. It is likely the retailer would construct a dedicated tariff offering for LET that would differ from standard tariffs, and the modelled outcomes may differ from how such a product would play out in the market place.

Table 7 Impact on retailer (annual)

	Current market	LET only	Private wire
Energy volume charges (change)	-$27,200	-$111,100	-$77,400
Net effect on retailer	**-$1,900**	**-$1,900**	**-$5,400**

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 Wannon outcomes is the cost of the wind turbine system, as shown in Table 8. We were not able to test for the effects of the consumption tariffs, but these would have a significant effect as well.

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

The LRMC variation was based on modelling conducted by Energia[5]. The variation between the two values (a factor of 2.1) is the result different methods to calculate the LRMC; Powercor's calculation does not include the ongoing augmentation or REPEX costs associated with new connections. Energeia's value may also include some non-demand driven augmentation expenditure that cannot be differentiated from RIN data, but is excluded from Powercor's LRMC trial calculation, such as bush fire related works. We note this

[4] Langham, E. Rutovitz, J., McIntosh, L. & Atherton, A. (2016) *Methodology for calculating a local network credit*.
[5] LRMC Methodology Paper. 2016. Prepared by ENERGEIA for The Institute for Sustainable Future.

difference is in the consumer's favour as it will result in lower consumption tariffs, but also a lower LNC for the Powercor network.

Table 8 Sensitivity testing results, Wannon Water trial

	Variation tested	Effect on Annual Energy Cost
Generator cost	80% and 120% of modelled cost	8.1%
Large Scale Generation Certificates (LGCs)	Modelled rate $50/MWh; tested $40 & $60	5.3%
Retailer buy back rate	80% and 120% of modelled cost	4.5%
LNC	80% and 120% of modelled cost	1.0% - 1.7%
LRMC variation	2.1x increase (the outcome of the Energia modelling)	5% - 9%

Figure 3 Sensitivity to LGC price and generator cost: Wannon trial

5 DISCUSSION AND RECOMMENDATIONS

All scenarios result in a saving compared to business as usual, so the project has a cost benefit with the assumptions used. The most favourable outcome is with the two new measures in place, the LNC and LET. However, 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 scenario with a LET arrangement in place is also advantageous. This would be subject to negotiation with Wannon Water's retailer, AGL.

The combined Local Network Credit and Local Electricity Trading scenario results in the greatest benefit, with an estimated annual savings of around $88,000. The next most advantageous is the scenario with only the Local Network Credit mechanism available, followed by the scenario with LET. If neither of the measures are available however there is considerable incentive for Wannon water to invest in the private wire solution.

The private wire scenario, however, is the least advantageous scenario for both the other stakeholders, and also for the customers of the network business (Powercor). As Powercor is on a revenue cap arrangement the decrease in revenue from one customer will be borne by other customers. The private wire scenario results in the greatest reduction in network charges, with a reduction of $88,500. This is between 1.5 and 1.9 times worse than either of the scenarios with LNC payments included. However, the LNC scenarios offer better outcomes for Wannon Water than the private wire scenario. The retailer also loses the most income in the private wire scenario.

There are a number of factors that affect the economics of the project. The generator cost has the most effect, but this can also be determined with the most certainty. The LGC price has a considerable effect on the project's outcomes, and scenarios that rely on savings or incomes steams other than the LGCs would be preferable to pursue. Wannon Water 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 represents the best outcome to Wannon in the absence of the LNC and LET measures.

In the short term, we recommend that Wannon Water:

1) Progress plans on the private wire option further, in order to establish a firmer project cost to assess this option against the current market, and for discussion with Powercor.

2) Explores the possibility of a LET arrangement with their retailer,

3) Attempts to obtain a firm offer for the exported power,

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

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