Small town big switch

Newstead's journey to renewable energy

Renewable Newstead
COMMUNITY POWERED

renewablenewstead.com.au

Contents

Looking ahead

It's 2023. Newstead has grown ... the population is beyond 900, there's more housing, more kids at the school and on the outskirts somewhere, there's a solar farm, generating energy for our homes and businesses.

Back here in 2018, Newstead has finalised its commercially viable model for switching our area to renewable energy. What happens next is unknown right now.

We have to find partners, get continuing government and industry support and do all the other things outlined in this report's next steps section.

With your support and encouragement (like our Renewable Newstead Facebook page, come to our meetings, read our website renewablenewstead.com.au), the RN team is committed to making this happen.

GLOSSARY

AER:
Australian Energy Regulator

CVSC:
Central Victoria Solar City

DEWLP:
Victorian Department of Environment, Water, Land and Planning

EFTP:
Energy for the People - Renewable Newstead's contracted energy advisor

kW:
kilowatt (1000 watts)

kWh:
measure of amount of energy used in an hour

MW:
megawatt (1 million watts)

N2021 Inc:
Newstead 2021 Incorporated

NRRT:
Newstead Residential Trial Tariff

RFQ:
Request for quote

RN: Renewable Newstead

STC:
Small-scale technology certificate

About this report

This report describes a project, funded by the Victorian Government from 2015-2018 and carried out by a committed group of people with their community's support in Newstead in central Victoria.

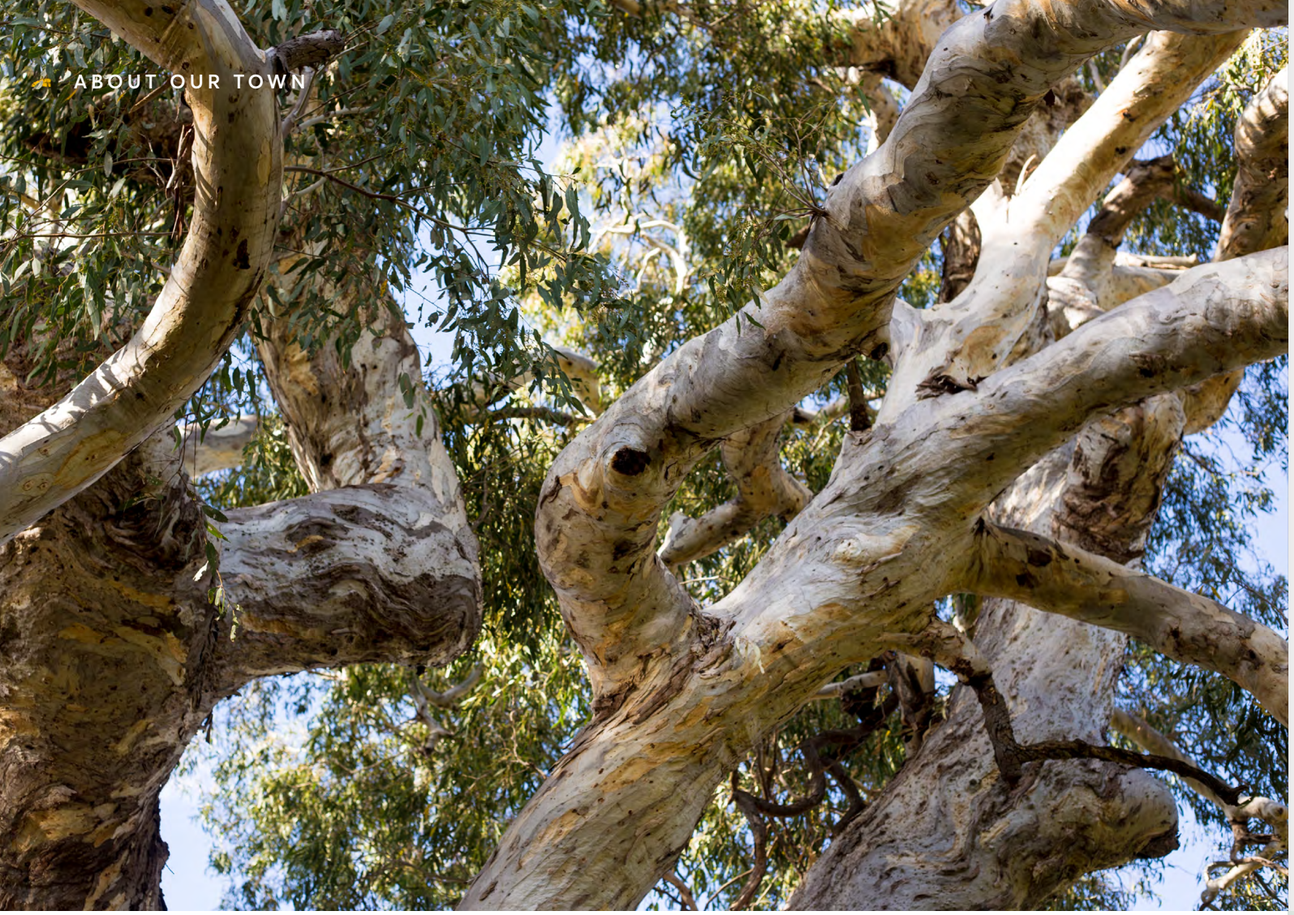
The project, called Renewable Newstead, investigated how to switch a small town to 100 per cent, locally generated, renewable energy in a commercially viable and socially acceptable way. It had to be fair to all, small-scale and enable all locals to participate regardless of income or rooftop constraints. It also had to be replicable in other small towns across Victoria and beyond. It had to identify the barriers and constraints to such an endeavour. The expected outcome – a business model ready to be implemented - was delivered to the Department of Energy, Water, Land and Planning, in June 2018.

The preferred model is for a 2MW solar farm with battery storage as an optional extra near Newstead with key associated conditions and parameters that are outlined in detail in this report.

This report covers what Newstead did, why and how. It identifies the details of the preferred model, the challenges a small town like Newstead faces when switching to renewable energy and the barriers that need to be overcome and the support that will be needed to do that. It also outlines what needs to happen next. This project addressed stationary energy only. It did not consider transport energy, however the RN team sees that this, too, could be addressed when our preferred model has been implemented successfully.

The Renewable Newstead team behind this project believes this ground-breaking model has the potential to change the energy industry across Australia. Once implemented, it will demonstrate that small communities can switch to 100 per cent renewable energy and reduce their energy bills at the same time.

We are pleased to present this final report.



Newstead is in Dja Dja Warrung country about half way between Castlemaine and Maryborough in central Victoria.

The town straddles the Loddon River at the crossroads of forests, woodlands and volcanic plains country. Locals value highly the surrounding forests, creeks, river and farmland and the rich biodiversity of bird and plant life. To a degree, this drives community engagement in addressing greenhouse gas emissions.

Newstead is well serviced educationally by a local kindergarten and state primary school. There's a Steiner school nearby and secondary students bus to schools in Castlemaine (17km), Maryborough (31km) and Bendigo (52km). It is largely a commuter town. Mostly, people travel to Castlemaine, 15 minutes away, or Bendigo or Ballarat, both almost an hour away, for medical services and for work. The town and its surrounds are home to many artists and creatives.

Newstead was once at the centre of its own local municipality, the Shire of Newstead, which was originally formed in 1865, however it is now part of the Mount Alexander Shire. Community life is richly imbued with volunteerism.

Earlier generations raised funds to build the swimming pool, the fire station and to fund fire trucks. They raised funds for the school, the kinder, the recreation reserve and other services and facilities. Today's residents and businesses continue to do so with great community spirit. While not materially wealthy, the community is strongly connected and has a record of initiating and completing projects for the town's betterment. We have more than 30 active community groups.

Newstead at a glance

754 LOCAL RESIDENTS

54-65 year olds

Largest age group
(30-34 year olds Vic's largest)

50.3%

People aged 15+ reported being in the labour force full time
(57% in Vic)

11%

People working from home (Vic 4.6%)

50.5%

people who attended post secondary education
(37.9% Vic avarage)

4%

People working in sheep farming
(Vic 0.2%)

Source: Census 2016, Quick Stats

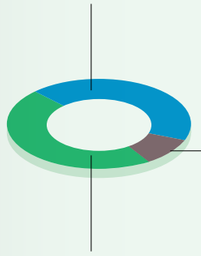
364 PRIVATE DWELLINGS

17%

Internet not accessed from dwelling
(13.6% in Vic)

43.9%

Dwellings owned outright
(32.3% Vic avarage)



13.2%

Rented
(28.7% Vic avarage)

$863

Median weekly household income

39.8%

Dwellings owned with a mortgage
(35.3% Vic avarage)

32%

Households earning less than $650 (gross) a week

Source: Census 2016, Quick Stats

Our path to beginning

2008

A seed is planted

The desire to address Newstead's future energy source and costs was first identified at a community summit in 2008.

The community saw this as an opportunity for positive and potentially rewarding change and to build resilience in the context of a changing climate and foreseen upheaval in the energy industry.

2011

A group is formed

Renewable Newstead (RN), was formally established as a group in 2011[1] to pursue future energy options for the town. That year, RN worked with Central Victoria Solar City (CVSC) on a project focused on energy audits and behaviour change. RN ran workshops on hot water systems and on smart meters.

Residents were encouraged to undertake household energy assessments to understand how they were using energy and to give them options they could adopt to reduce home energy use. More than 170 households and eight businesses took part. Newstead then had less than 300 houses.

Also in 2011, the town's householders jumped at an early bulk-buy solar panel scheme run by the Mount Alexander Sustainability Group.

A study offers hope

A feasibility study undertaken in 2011 showed solutions at household level could only go so far.

It considered the following methods of generating that energy: geothermal, solar, wind, biomass, offsetting or woodlot sequestering, micro-grids, behind-the-meter solutions.

The report identified three important factors.

1. Greenpower, i.e energy that produces no greenhouse gas emissions, was viable for Newstead but without having a local generation asset or source, residents would be exposed to likely energy price increases.
2. Newstead could get to zero net emissions using household measures such as retrofitting to maximize heating and cooling effectiveness, by building a local generator, buying the power locally and creating a tree planting program and community woodlot.
3. Newstead has a natural advantage in undertaking such a project with its high community spirit and sense of goodwill.

Importantly this report gave RN confidence to pursue a collective community solution.

"Putting it simply, it is difficult to believe that the goal could be achieved without a substantial contribution from a generation station (powered from renewable energy) in the district with the local residents choosing to purchase their power from this source (in the form of Greenpower) to ensure that the benefit is retained in the Newstead carbon accounting model."

–

NEWSTEAD ENERGY FEASIBILITY STUDY, 2011

2013

Community reiterates need for an energy project

Secure, low-cost, locally generated renewable energy was further endorsed as a goal in Newstead's Community Plan.[2] All this created fertile ground for the project. It raised energy awareness among residents and local businesses.

Local films were made, gatherings were held and online and social media channels were formed. It's estimated one in five premises in Newstead now have solar photovoltaic panels installed.

2014

Direction is set

By 2014, RN had clear direction and a goal. We wanted to develop, document and implement a plan for switching our small town to 100 per cent locally generated, renewable energy in a commercially viable way that would benefit everyone in our community.

We wanted to identify and break down the barriers, so that small towns like ours everywhere could do the same. We also faced industry and regulatory barriers. But with a cohesive team and a record of achieving goals for our community, we knew Newstead could achieve this goal. We began lobbying politicians for funds for this research.

2015

Vic Govt backs project

In February 2015, the newly appointed Victorian Minister for Energy, Lily D'Ambrosio, announced the Victorian Government would grant our project $200,000. The grant agreement[3] committed us to creating a partnership with our local energy distributor, Powercor, and also to assess the technical and commercial constraints of pursuing our goal. Our model had to have a business plan and at the end of those three years it had to be ready for implementing. It was largely about finding ways to break through existing policy, technical and regulatory barriers that would bring about a 100% renewable energy solution for Newstead.

Grant agreement signed

In May 2015, RN signed a grant agreement with the Victorian Government to develop a master plan to transition Newstead to 100 per cent renewable energy through:

- an assessment of technical and commercial constraints to Powercor participation (the sole local electricity distributor for Newstead); an in-principle commitment from Powercor to engage as a partner in carrying out this transition;
- a detailed proposal to carry out the transition that is scoped and defined, including preparation of a detailed community engagement plan and signed-off by key relevant stakeholders;
- the development of a detailed business case and commercial model for carrying out the transition

"I hope that out of this project, we can decentralise power to our community. Big centralised power stations are not the way to go."

-

JOHN CLARKE, NEWSTEAD RESIDENT

Keeping our project on track

The project was managed by the Renewable Newstead team - volunteer residents operating under the umbrella of the community organisation, Newstead 2021 Inc.

The RN team steered the project, consulting the community for guidance and direction at public forums, in meetings, via surveys and in one-to-one conversations. The team also managed the budget and reported back to government as each milestone, set out in our grant agreement with the Victorian Government, was reached.

This team met at key points in the project rather than at set regular times. This accommodates the busy lives of volunteers in Newstead, many of whom are on multiple committees (as happens in small towns) and who also have families, jobs and businesses to attend to. Key meetings were held to plan the project and set our project values, finalise our Victorian Government grant agreement, negotiate with energy distributor Powercor, discuss major project steps, check on progress and to plan and debrief on community gatherings and project announcements.

Over the project, thousands of volunteer hours were expended.

The RN project is auspiced by N2021 Inc, an incorporated organisation with an ABN which was established in 2009 to support the development of a vibrant, informed and sustainable community in Newstead and surrounds. It comprises interested members of the local community who actively and collaboratively work towards this goal.

N2021 Inc auspices a number of local groups including Renewable Newstead, Newstead Community Garden and the Newstead Railway Arts Hub. Monies for the RN project were received by and expended through N2021 Inc.

"Newstead is a community I value and Renewable Newstead gives me an opportunity to participate"

-

LYN GROCKE, NEWSTEAD RESIDENT

Our volunteers include:

Gen Barlow - writer
Simon Beckett - branded content producer
Miranda Bone - dietitian
Shaun Britt - engineer
Michael Butler - energy technologist
Don Culvenor - businessman & former farmer
Gary Gibson - vulcanologist & academic
Saide Gray - social researcher
Meg Norris - graphic designer
Geoff Park - environmental scientist
Dave Schoen - software engineer
Andrew Skeoch – nature sound recordist
David Stratton - retired computer academic

Other community members provided support at specific stages of the project, including Denis Miller, Alan Davies, Janet Barker, Ryan Ford and the Newstead Enviroshop's Mick Harris and Frank Forster.

Consultants

Two key paid contractors were employed during the life of the project. Each was appointed by RN after expressions of interest were advertised nationally and locally for these roles.

They are:

Chief energy consultant and advisor – Tosh Szatow, Energy for the People.
Tosh and EFTP advised RN on strategy, helped with technical details and ultimately compiled the final Business Plan, including tender documents to make the project ready to take to market.

Communications and community engagement – Gen Barlow
Gen developed and managed communication and community engagement, including media (in print and online), responding to inquiries, consulting the people of Newstead at street stalls, in their homes and in fliers, addressing communities and organisations about the project and organised and promoted community gatherings.

The project was managed more closely by a core group of three - Don Culvenor, Geoff Park and Gen Barlow - with key input from RN's major consultant Tosh Szatow. This core group also met as needed.

Key stakeholders

The Newstead community
– guidance & advice

The Victorian Government
– funder & supporter

Powercor – energy distributor & partner.

Energy for the People
– advice, negotiation, report writing

Diamond Energy
– preferred partner to build & retail Newstead renewable energy

Working out what mattered

RN's core principles for our 100% renewable energy business model, worked out in consultation with the community, are that it needs to:

- **Be opt-in**
- **Do no harm***
- **Be 100% renewable**
- **Deliver community benefits**
- **Be grid-connected**

**That is, no resident should be financially or socially disadvantaged by the project.*

RN began by setting values and goals for the model and testing these in community consultations and surveys. These guided EFTP in negotiations and developing technical detail.

For example, an RN survey in 2016[4] revealed Newstead's significant energy spend on gas and wood especially among older people, that few households had money to add solar panels, that some were switching off heating and cooling to avoid high energy bills and that while some people were motivated to change by the need to address climate change, the need to address energy prices was common to all. The survey also found that many older people were too tired to consider any change. This was confirmed at community consultations.

Simpler methods were sometimes used to ascertain community values. For example, at the project's community launch on July 31, 2016, a show of hands from the 110-strong audience indicated overwhelming support for Newstead remaining grid-connected.

In some instances, community feedback indicated a preference but when costs were considered, this preference was adapted. For example, a Diamond Energy survey of the community in February 2018[5] showed people favoured installing rooftop solar and battery storage at individual premises over a solar farm, however install cost assessments by EFTP showed a solar farm with potential for additional rooftop solar and battery storage was cheaper and more commercially viable.

EFTP used RN's community feedback to further guide its stakeholder negotiations and in the development of technical detail.

In summary, RN developed the model based on extensive engagement with community, the local network distribution company and energy market stakeholders including regulatory authorities. Engagement occurred over two years and included many face to face meetings and forums, as well as survey work. The model represents RN's best effort to balance the needs and interests of all stakeholders as Newstead transitions to 100% renewable energy.

RN set out to understand the social and economic impact of changes in the energy industry and to manage that transition for our community in a way that was fair and equitable.

RN did not know what the the outcome would be when we started.

What motivated Newstead?

"I feel proud to be part of a community that's making Renewable Newstead a reality."

-

LISA GUNDERS, NEWSTEAD RESIDENT

Some community members were motivated to change by the need to reduce greenhouse gas emissions and to address climate change. Others were not. Some wanted an intellectual challenge, and felt our small community had the capacity to lead and innovate where bigger communities lacking a similar sense of community could not.

It's fair to say community pride in accomplishing big goals and the desire to care for those disadvantaged by change especially in our own community were key drivers. This was especially palpable when our community gathered to consider developments in this project.

One key factor united all residents and businesses. Regardless of income and status, age and household size, everyone was feeling the pinch of rising energy prices. This broadened RN's focus and offered a platform for engaging the entire community. This has been especially important.

Small rural communities need to work together for their economic and social futures. We wanted to strengthen community relationships, not shatter them. Importantly this project was primarily about community.

Energy became the vehicle for a community project.

Our vision for Newstead's future energy supply

RN's recommended commercial model for delivering 100 per cent renewable energy to Newstead is as follows:

A solar photovoltaic farm preferably on the town's outskirts, with capacity to generate at least 2MW of energy.

Additional household rooftop solar and storage could be added. Rooftops with the lowest installation costs would maximize the project's viability. These would be rooftops in full sun (unimpeded by shade), north-facing and bigger than 100 square meters (able to accommodate greater than 10kW of solar panels). Smaller capacity rooftop solar and storage systems would not be excluded. Newstead premises could opt in or out of this, a decision likely to be influenced by install and energy retail costs on offer.

The model outlined in Renewable Newstead's business plan[6], is (preferably) for a single energy retailer, which is also a renewable energy generator (i.e. referred to in the energy industry as a gentailer) to finance and operate the solar farm at Newstead and retail the generated energy to local consumers. The farm needs to be 2MW in capacity to meet Newstead's energy requirements, will need a three-hectare site and would cost $2.7million. This includes $2.3m to build the farm, with the remainder being for associated studies (grid connection and environmental), development approvals, site preparation and actual grid connection.

It could be up to 10MW, requiring a bigger site, if the investor (preferably a gentailer) wished to make it this big. The gentailer/investor would be responsible for selling power generated by this extra capacity that's excess to Newstead's needs. The farm viability would be significantly improved if a retailer could sign up customers to long-term contracts, e.g. 10 years. There is an outside chance a third party investor will be happy to take on risk and build the farm without a confirmed customer buying the power, but that cannot be relied on.

Retail tariffs would be structured to reward daytime energy use as opposed to the former off-peak tariff model which was designed to match energy demand to coal-fired generators. New tariffs would match energy demand to solar farm output instead.

The solar farm's viability is strengthened by a local energy distribution or network tariff, offered through energy distributor Powercor and approved by the Australian Energy Regulator.[7] This Newstead Residential Trial Tariff lowers the c/kWh supply rate. Currently on trial, this tariff will need to be extended from two to five years (which will occur if 50 per cent of Newstead residents sign up for the trial via their electricity retailer), and then to 10 years to allow sufficient time for the solar farm investment to be recouped.

The model offers a six per cent return on the farm investment for either a gentailer or other investors. The model promises that loyal customers i.e. those signing up to buy energy from the farm for 10-15 years would reduce their energy bills by at least 10 per cent and by up to 30 per cent on current prices. It builds in loyalty discounts for customers.

The model is outstanding for its approach. It reduces energy bills while making renewable energy available locally, keeps the town grid-connected for supply security and makes more energy available at no additional cost to distribute it. It is a model that would benefit from a long-term local energy network tariff and long-term loyalty from consumers. Long-term retail contracts for domestic supplies of electricity are not the norm, however once implemented, Renewable Newstead believes this model will prove to be a groundbreaker in the energy industry nationally.

Should the project proceed, we can be confident that the proposed model is able to supply 100% renewable energy to Newstead customers and, at worst, domestic customer bills may decrease by 10%+, and, at best, domestic customer bills could decrease by 30%+.[8]

CURRENT MODEL:

Energy comes from the grid to Newstead homes (some with solar panels) where it's billed by various retailers charging different tariffs.

OUR PROPOSED MODEL:

Energy from Newstead's solar farm is fed into the grid and then to Newstead homes where it's billed by a retailer offering an electricity price that includes distribution costs charged at $1/day rather than by the kWh.

Benefits of the model

RN's preferred model has outstanding benefits. They are:

1. Newstead customers' power bills are expected to fall by 10 to 30 per cent.
2. Newstead customers will be able to use more energy without paying higher distribution network charges.
3. Sign-up is optional. No-one will be forced to switch to the Newstead solar farm energy retailer.
4. The model paves the way for long-term security of investment for small-scale community solar projects built locally.
5. Renewable electricity will be cheaper than bottled gas or wood, providing an alternative in Newstead which does not have piped gas and where wood is becoming increasingly expensive.
6. The model is grid-connected, maximizing commercial viability and back up security. The grid is socially important supplying services to all but is especially important for the socially vulnerable who may not be able to afford to opt out.
7. The model ensures everyone can participate and benefit equally, regardless of whether their rooftop is suitable for solar or not.
8. The model will generate as much clean electricity as Newstead consumes each year. Newstead's annual CO2-equivalent emissions would be around 3000tonnes if it used normal grid electricity.

Important elements of the model and why we chose them

1.

Outsourcing investment, construction and management

The farm is to be built and operated by a company with expertise and experience in doing so. RN does not see itself as having the expertise to build and manage a solar farm and does not see the need to take on this risk. Nor does it want to become an energy retailer. At community gatherings, the community of Newstead indicated it supported this approach. RN believes that, unless they have or can build local expertise in energy generation and retailing that can be sustained without risking community cohesion over long periods, small communities will need to work with commercial partners in creating projects like this.

2.

Building the solar farm locally

The farm will preferably be built near the town so the community can see it and claim it as their own. This will increase local connection and a local sense of 'ownership', and will motivate Newstead households to sign up as customers of their local solar farm. Community support for a suitable local site, chosen through an expression of interest process, would be sought by Renewable Newstead.

.

3.

Solar as our energy source

Solar was chosen above wind and bioenergy because it is the cheapest to install. The estimated capital expenditure for each energy source per kilowatt hour (cents/kWh) is as follows: solar farm 6.3, rooftop solar 8, wind 9.3 and bioenergy 12.[9]

Newstead's location is not suited to wind generation. Wind power is also difficult to scale up or down over time to accommodate changes in energy demand.

Bioenergy using crop waste has a relatively low energy value and is costly to collect and transport. There are too few local farms or industries that could provide fuel sources.

Pumping water to generate energy (hydro-storage) and pumping heat from underground to generate energy (geothermal) were dismissed as too impractical from the outset.

4.

A solar farm, rather than rooftop solar

A solar farm was chosen in preference to solar panels and batteries installed at the household level across the community for two reasons:

Small scale solar farms cost less. A single site solar farm costs less in c/kWh to install, than individual solar installations on many rooftops. Rooftop solar systems are typically installed for between $1200-$1800/kW, after small-scale technology certificate (STC) rebates, whereas a 2 MW solar farm can be installed for less than $1200/kW without any STC rebates.[10]

If everyone in Victoria installs solar and batteries, the unit cost of electricity charged for using the distribution grid for back-up power will go up. Electricity grids are a bit like toll roads or the sewer system - the more that people use these shared assets, the lower the cost of using the asset becomes for us all. Under current scenarios, if enough people use solar and storage, instead of the grid, c/kWh charges for those on the grid will eventually be forced up. Those people without solar and storage - generally those who can't afford it or who don't have the roof space or correct roof orientation - will be the worst off. Newstead wants all local residents and businesses to share the benefits which is why it's opting for the solar farm.

5.

Partnering with a retailer, rather than establishing a retail company

Any retail partner that helps finance the solar farm would have increased prospects of winning and retaining long-term Newstead customers. The community of Newstead does not have the expertise or technology to create billing systems and nor did we want the administrative humbug of seeking an exemption from having the required retail licence or the high compliance costs. An established retailer would have other customers to draw on, beyond Newstead, to make retailing energy to Newstead viable.

What does the Newstead Residential Trial Tariff mean for Newstead residents?

The NRTT[11] applies to the distribution cost which is only one part of a power bill. It means a customer could use more electricity without incurring a higher distribution cost and, in most instances, without incurring a higher electricity bill.

This makes switching from gas and wood to renewable energy especially attractive for low income households, pensioners and Newstead's many ageing residents. (36% are aged 60+ compared with 19% Victoria-wide), for whom organising supply and delivery of wood can be onerous. The peak use element of the NRTT (electricity distribution cost) means there is incentive for customers to use less electricity between 3pm and 9pm on weekdays. It is expected that once all parts of Renewable Newstead's renewable energy model including a solar farm are in place, people will be rewarded for shifting their energy use, including hot water heating, to the day time when the sun is shining. Participating residential customers' electricity bills are predicted to fall by 10 to 30 per cent.

The tariff includes the following:

- **A fixed supply charge of $1/day** = $360 fixed (annual) charge - 80% of the average network bill for a Powercor residential customer
- **A peak use charge of $2/kW/month** - recovers the remaining 20% of the average network bill for a Powercor residential customer.
- There will be no distribution charge for each kWh of power used.

This effectively means if the NRTT is adopted via their retailer, the distribution part of a Newstead customer's power bill would include:

- A $1/day supply charge
- A monthly demand charge or peak charge of $2 per kW.

  This $2 per kW would be charged for the highest half hour of energy used between 3pm-9pm on week days. For example, if in the highest half hour of the prescribed times for the month, a customer used 6kWh (which equates to 3kW for 30 minutes) the charge would be 3kW @$2/kW = $6

Once other costs for retailing are added, a customer's bill would include:

- A $1/day supply charge (distribution cost)
- A $2/kW peak use charge (distribution cost)
- Energy supply charge per kWh from solar farm (generation & retail cost)

Remember, distribution is only part of a power bill. Other processes like retailing will continue to be charged by the c/kWh.

POWERBILL COMPARISON

Pre NRTT	Post NRTT & Newstead solar farm installation
Distribution Network Charge: $125/pa fixed charge 7.18c/kWh no peak demand charge	**Distribution Network Charge:** $360/pa 0c/kWh $2/kW/mth peak demand charge
Retail: $290/pa fixed charge 17c/kWh supply from grid no local solar farm	**Retail:** $0/pa fixed charge 17-18c/kWh supply from grid 15c/kWh supply from local solar farm $2/kW/mth demand charge pass through
TOTAL = $1.15/DAY 23c/kWh (roughy)	**TOTAL = $1/DAY** $6/mth peak demand, 16-17c/kWh for usage

Matilda's story

Matilda lives alone in a three-bedroom weatherboard house in Newstead. The walls & roof are insulated but the cement slab is not.

She spent many years looking after her husband who has since died.

She receives an aged pension & has no superannuation. She has no spare money & is very frugal with energy use.

She heats & cools her home with an electric, split system air conditioner.

On really cold days, she plugs in an electric heater in her bedroom.

She wears more clothes in winter & sits in the coolest room (sometimes the bathroom in summer) to avoid power use costs associated with heating & cooling.

She would like to have solar PV panels on her roof but doesn't have the money to buy them.

The house is too hot in summer and too cold in winter. She would use more energy if it was cheaper.

After Renewable Newstead's plan is adopted & a solar farm is built on Newstead's outskirts Matilda will be able to heat and cool herself as much as she likes

AND

She won't have to pay by the kWh for getting her electricity via the grid's poles and wires (this is called a distribution cost). Note: she will still pay by the kWh for electricity generation & retailing.

SO

She can heat or cool her home more often and worry less about her bill.

Yay for Matilda. We hope she enjoys the comfort without the worry.

**Matilda is a pseudonym.*

KEY STEPS

Challenges ahead & how RN plans to overcome them

Significant, but not insurmountable, barriers lie in RN's path to achieving 100 per cent renewable energy for Newstead.

This is the case to do this in a way that's financially viable, replicable, affordable and offers energy at a price attractive enough to win and retain customers for the long term. Most involve changing industry norms around contract periods.

INDUSTRY BARRIERS:	SOLUTIONS:
1. **Energy policy and price uncertainty** which means it is difficult to structure long-term energy offtake agreements/ renewable energy sales because it is hard to agree on a fair price. For example, future policy changes may devalue that renewable energy. Daytime energy prices could also fall as more solar energy comes on line.	1. **It was not within this project's scope to address policy uncertainty.**
2. **Retailers can't or won't sign up customers for long contract periods** i.e. 10 years. The industry norm is to sign people up to 12 month, 24 month, or month-to-month retail contracts - similar to mobile phone contracts.	2. **A new 10-year energy retail contract model needs to be developed and trialled.** The contract would need to address what would happen if a customer or retailer broke the contract early. This is a solvable problem in Newstead's case, where clear benefits will exist for both parties: lower energy prices for customers and certainty of sales for retailers.
3. **Mismatched industry pricing periods** make investment risky. Normally in the energy industry, renewable generators sell their energy at a current price *and/ or* at a set price over 10, 15 or 20 years. Distributors set network prices for five-year periods. So there is a mismatch in timing between retail, generation and network. It's an issue for all renewables - small, large and everything in between.	3. **Network pricing periods need to align with renewables investment timeframes** i.e. move to 10-15 year cycles. This can be done at a small scale without needing approval from the Australian Energy Regulator (AER). However. at a larger scale, institutional reform is needed to change pricing periods. The Newstead Residential Tariff needs to be extended to 10 years.

RN's current options

To build the solar farm at Newstead, then *at least* one of the following first three options is required. The fourth is an alternative, more challenging option.

1.

Structure 10-year supply contracts with Newstead customers and extend the NRTT from the proposed two years to 10 years to give solar, finance and retail partners confidence there's enough long-term customer demand for the solar energy generated.

or 2.

Secure a grant, donation or zero-interest loan equal to about 30 per cent of the solar farm (i.e. $810,000). This could come from government, philanthropy or impact investment i.e. a zero-interest loan. This is needed at zero cost to neutralise investment risk on the project

or 3.

Secure a grant, donation or zero-interest loan equal to about half the cost of battery storage. Batteries enhance the financial viability of the solar farm and help de-risk investment however they are not currently commercially viable. About 2MWh of battery storage is needed. Again this could come from government, philanthropy or impact investment.

4.

An alternative to the first three options is to find a solar farm investor willing to supply energy from the solar farm into the wholesale market, rather than agreeing to sell it to a retail partner. This would require ensuring that at least 2MW of capacity from any solar farm that gets built, is available for supply to Newstead customers.

"Renewable Newstead and the partnership with Diamond Energy represents a powerful new way for communities to take responsibility for their ecological impact, social connectedness, family wellbeing and economic viability. Personally, the project makes my family want to live & invest here for the long term future, we are 100% behind it."

-

KATE TUCKER, NEWSTEAD RESIDENT

How we consulted our community

Encouraging the Newstead community to engage with this project and seeking their social licence to advance through each stage of the model's development was crucial to the Renewable Newstead team.

RN's intention is to ensure that Newstead switches to 100 per cent renewable energy, but we are mindful that this project was about creating a model, not about building the project itself, so managing community expectations around this was important.

Community engagement was vital to understanding our community's energy needs, preferences and factors affecting their choices about when they use energy, what for and what would motivate change.

Consultation & information channels included

- Four major community gatherings
- Two surveys
- Monthly updates in the local community-run news sheet the Newstead Echo
- Updates on the RN website
- Updates on the RN Facebook page
- Mailchimp newsletters to subscribers

Throughout the project we called the community together to offer project updates and seek community's input and feedback. Major community consultations included

Date	Event	Purpose	Attendance
July 31, 2016	Project launch & survey launch	To launch the project, explain objectives, engage the community, prompt conversation understand people's concerns & questions & launch initial energy use survey	110
April 20, 2017	Project update	Explain how the project could affect locals' energy prices. Call for people to register roof scape for solar panels	45
August 24, 2017	Project update	Progress report to community. Share concept about proposed distribution network tariff trial	55
February 11, 2018	Project update	Progress report to community. Introduced potential partner & launched a survey asking Newstead households about their energy use & renewable energy preferences. Also presented business case.	158

Other consultations included:

- Info stalls in Newstead's main street
- Addressing community groups ranging from the school council, historical society through to the men's shed, spinners & weavers and community lunch gatherings
- At-home interviews with 10 households to gather information for case studies on energy costs, use
- Major doorknocking and phone campaign for survey completion

Two major surveys were conducted

Survey 1 [12]

Newstead household and business energy use, solar systems, heating and cooling, insulation, future energy preferences.

Survey was available online and in hard copy at local shops and at the Newstead Rural Transaction Centre, a focal gathering point.

Opened July 31, 2016.
Closed Sept 9, 2016.
75 responses

What we discovered

- Energy use over both winter and summer varies hugely between households in Newstead.
- Energy use is very much lower in summer.
- Most people don't know how much energy they are using and many do not know how to read or understand their energy bills.
- Some businesses in Newstead operate in leased premises with high energy costs and there is little incentive for the premises owners to make changes.
- People spend a lot on bottled gas and wood for winter heating.
- There appears to be no spare finances to invest from within the community.
- People are very sceptical about energy companies.
- Financial self-interest is a very strong driver.
- People are looking to RN for answers or for more info.
- Many older people especially are too tired to consider any change.

Survey 2 [13]

Survey by preferred project partner Diamond Energy to assess Newstead household suitability and preference for renewable energy – buying renewable energy from the grid, building a solar farm, or installing rooftop solar and battery storage.

Survey was available online and in hard copy at local shops and at the Newstead Rural Transaction Centre

Opened Feb 11, 2018.
Closed March 26, 2018.
217 responses .

What we discovered

- Most people don't know how much energy they are using and many do not know how to read or understand their energy bills.
- About half the responders wanted a simple discount on energy and half wanted a super cheap daytime solar rate –i.e. a solar farm or rooftop solar and storage.
- Having a battery in the home had pretty strong appeal as it gave people an extra sense of energy security.
- Any investment in a local solar farm depends on confidence that Newstead locals will sign up and stay on a 100% Renewable Newstead offer for the long term.
- Any renewable energy offer will need to be compelling.

Consulting others

The RN team or its core representatives met with

- Powercor to negotiate and sign a Memorandum of Understanding
- Powercor and the Australian Energy Regulator (AER) to discuss the acceptability of changing network tariffs
- Victorian Energy Minister Lily D'Ambrosio for briefings
- State MP Maree Edwards for briefings
- Department of Environment, Water, Land and Planning to set a project framework, reporting timelines and to finalise reports
- Mount Alexander Shire Council for briefings
- Prospective energy retailers and solar farm builders
- Diamond Energy to establish relations as a preferred partner
- Local (Maldon & District) Community Bank to inform and assess interest in being a financial partner/supporter

Newstead's Energy Profile

500
No of electricity meters (National Meter Identifiers or NMIs) in the project area

2838MWh
Annual electricity demand

237 KW
Installed rooftop solar at June 2016 (11% of Newstead's energy needs)

49%
Households use of energy generated from installed rooftop solar

51%
Energy generated from installed rooftop solar and exported to the grid

60%
of demand occurs between 7am & 11pm

40%
of demand occurs from 11pm to 7am

The biggest demand for energy occurs in winter.

If all of Newstead consumed normal grid electricity it would generate around 3000tonnes (CO_2-equivalent) of greenhouse gases annually

Source: Powercor, 2016

Presenting the RN model and gauging the community's response

Community buy-in and support for this project has been essential at every step of the way. RN could persist only with the Newstead community's social licence to continue which it sought via the consultation methods described in this report.

RN presented the business case for options to switch Newstead to 100 per cent renewable energy to the community at a gathering on Feb 11 which was attended by 158 people .

A PowerPoint presentation[14] was delivered by RN's consultant Tosh Szatow of Energy for the People and a verbal presentation was delivered by Tony Sennitt, Managing Director of Diamond Energy, our preferred partner in this project.

Broadly the business case presented two options and combinations of these:

- A solar farm
- Rooftop solar with batteries

The presentations prompted many great questions and comments from the audience reflecting deep curiosity and engagement including:

What will be the difference for those with or without current rooftop solar systems?

What would happen to my premium feed-in tariff under this model?

What will be the difference for those with or without current rooftop solar systems?

Wouldn't it be more sensible to be following the power lines rather than (having the Newstead area) being defined by postcode?

What would happen if something - the solar farm and or solar systems (inverter, panels, batteries etc) - break down?

What would happen on cloudy days?

I think the common good is more important and I would like as much of the stuff (for the solar farm or panels or batteries or inverters) to be made in Australia.

Why wasn't a wind farm considered?

Is there any prospect of pumped storage being included? Three to four months of the year we don't have good solar generation for our hot water service.

What happens to batteries and panels when they no longer work?

What are the implications for people who don't live in Newstead?

What is the process that led to this point of having three choices (as part of RN's business case)?

What incentive will there be for people to use less power, given that all energy use has environmental consequences?

Where might the farm be and what storage is planned for cloudy days?

Would people with solar panels initiate getting solar batteries themselves or is this something the company would fund?

What other retailers would come on board (and offer the Powercor tariff)?

Would people who already have solar panels get a battery?

Our house faces the wrong way. In this model if we build additional infrastructure (i.e. a house or shed) are we best to build something that will have our own solar and get the battery benefit or wait until the farm is built and just buy energy from the farm?

I am building a house at Clunes. Can this project be expanded to include Clunes?

A survey[15] was launched at this community gathering to seek people's feedback.

The survey, which ran for just under five weeks, also tested people's appetite for:

- Supporting a local solar farm
- Rooftop solar and batteries

Our preferred gentailer partner in this project Diamond Energy ran the survey and was seeking 448 responses. There were 217, a return rate of 40%. Diamond Energy was pleased with this result.

RN is satisfied that a 40% return rate offered a good sample for further analysis by Diamond Energy to structure billing to deliver renewable energy more cheaply than fossil fuel-generated energy to Newstead.

500
No of NMIs

217
No of survey responses

40%
response rate

WHAT THE NEWSTEAD COMMUNITY TOLD US?

1. About half the respondents just wanted a simple discount on energy, and half wanted a super cheap day time solar rate. So that gives RN food for thought when it comes to structuring a renewable energy retail tariff for Newstead.
2. Having a battery at home to store electricity has strong appeal and gives people an extra sense of energy security, but we would need to be delivered at a reasonable price.
3. Most importantly, about 10 per cent of responders didn't answer the survey's key and final question about which option they'd prefer for their circumstances. Many said they didn't understand enough about the renewable energy options to make a choice – more education is needed and RN is committed to doing this,

NEWSTEAD'S RESPONSE

I am very supportive of the renewable energy concept.

I am not sure which is the best option for me. I need more advice.

I have lived in the Northern Territory for 14 years where we only had solar power for our home and a gas fridge. Coming home and getting power bills has been a shock. I hope Newstead can get a solar farm.

Can we do better in price than our current peak rate of 37.6c/kWh or our off-peak rate of 17.53c/kWh?

We like to participate and help but will stay with our present retailer for now until we find out more.

What we learnt

This section of the report offers broad observations to other towns wishing to embark on transitioning their communities to 100% renewable energy.

- Getting industry players including commercial partners to take seriously & commit to working with a small community project is challenging. Industry players, including corporates, can take a while to convince that small communities offer unique value in energy innovation projects. Be focused & have deep intent. A good advisor can be helpful.

- Meeting the demands of a community and volunteer driven project is a challenge. If your project is volunteer driven, only meet when needed. The demands on volunteers of a project like this are enormous. Renewable Newstead met as and when needed rather than at regular dates.

- Allow for funding for a project manager. Grant reporting and co-ordination can be onerous for volunteers.

- Identify what's possible and its long-term implications. Unless small communities have or can build local expertise in energy generation and retailing, the risks to community harmony are probably too high for volunteers to take this on and manage sustainably for the long-term. Commercial partners who have such expertise are likely to be needed for any such project. Developing such partnerships involves a huge amount of relationship building and trust but there are companies who are keen to do this. Identify them by calling for expressions of interest widely.

- Unite your community. Renewable Newstead has not had to deal with a divided community because we made this our intent from the start, that the project had to unite our community. Research and understand your community's drivers and desires and choose what unites, not what divides people. Seek to address concerns common to as many as possible, not just sectors, in your community. Ensure your steering committee represents a cross-section of community views.

- Your community knows best. Trust your community. Their collective input is invaluable.

- Be prepared for a long haul. RN's three-year project, documented in this report, is the adult version of an idea born in 2008.

- Communicating complex messages about energy in a way that our community & the media understands is a specialised skill and any community able to access specialists in this field would be at an advantage.

- Don't re-invent the wheel. Look at what models are working elsewhere and what are not.

- Your local network or distribution company's involvement is critical.

- Ensure funding partners are really engaged and understand your project.

RN will continue to:

Work with our community to maximise further understanding of the project

-

Find partners in government and industry willing to work seriously and effectively with us to encourage and implement industry changes.

-

Identify and secure government, philanthropic or impact investment funds to build a small-scale solar farm locally.

SPECIFIC STEPS ARE:

1.
Present the model to the community of Newstead (via community gathering, online and in other media) to seek community approval to go ahead with implementation.

2.
Continue discussions with Powercor to extend the NRTT beyond two years to 10 years.

3.
Secure a partnership with a gentailer to finalise a retail electricity price offer that would facilitate investment in a local 2MW solar farm with potential to grow.

4.
Complete final market testing and confirm model's viability.

5.
Pursue complementary funding from government, philanthropist/s or investor/s – to re-risk the project.

6.
Identify land - RN to call for expressions of interest from local landholders with suitable land - and negotiate a lease for the solar farm.

7.
Complete environmental study on the site.

8.
Complete network connection study to determine what's required to connect the solar farm to the grid.

9.
Secure environmental, network connection and development application approvals.

10.
Finalise the retail offer and solar farm investment package.

11.
Start solar farm construction and launch electricity retail offer to the community of Newstead.

12.
Launch arrival of locally generated renewable energy to Newstead. Celebrate!

Meeting our objectives

This section of the report considers whether N2021 Inc through RN met the objectives of this project set out in the grant agreement between the Victorian Government and N2021 Inc.

The objective was to develop a master plan that establishes a commercially viable and socially acceptable model for the delivery of 100per cent renewable energy in Newstead through utilisation of a community scale network.

RN has developed a master plan for a commercially viable model to transition Newstead to 100 per cent renewable energy. The master plan is outlined in the report Renewable Newstead: Commercial Model and Business Plan for 100% Renewable Energy, produced by EFTP and delivered to the Victorian Government on June 25, 2018.[16]

The model has been tested for social acceptability in our community as described earlier in this report. Actual electricity price offers and contracts will be presented to the community when a partner or partners are secured.

The site for a solar farm is also yet to be identified. Renewable Newstead is committed to calling for expressions of interest from among local landholders with suitable sites. This process will be made transparent via Renewable Newstead's website and in local media.

Is it commercially viable for a small town like Newstead to switch to 100 per cent, locally generated, renewable energy in a way that reduces electricity prices and maximizes local buy-in?

Our model shows it can be. Industry barriers exist. Our report shows they can be addressed but support is needed.

The future is constantly evolving. Our model accommodates this.

Government and/or investor support plus a long-term commitment to Newstead's distribution tariff will enable this innovative, ground-breaking approach to transitioning a small community to renewable energy to prove itself in practice. And open the way for significant change for small rural communities to have a go, adopt renewable energy locally and bring their electricity prices down at the same time.

There is so much financial and community benefit in making this happen that we are optimistic this project will proceed and our small-scale solar farm will be built.

N2021 Inc and Renewable Newstead look forward to working with partners to make this happen..

RN would like to thank our partners, funders and supporters in this project especially:

The people of Newstead

Tosh Szatow

The Victorian Government and the Minister for Energy, Environment & Climate Change, Lily D'Ambrosio

Member (MP) for Bendigo West, the Hon Maree Edwards

Staff in the Community Energy section of the Department of Environment, Land, Water and Planning.

Powercor & their staff, especially Mel O'Neill, Jana Dore, Mark de Villiers and Ian Gillingham

The Australian Energy Regulator

Michael McCartney

Diamond Energy

Cathy and Tony Sennitt of Diamond Energy

Newstead photographers Carmen Bunting & Janet Barker

N2021 Inc treasurer Kylie Richardson

Videographer/photographyer Simon Beckett

Signage Ryan Ford

Janelle Brown & Jenny & John at the Newstead Post Office

Logo design Meg Norris

Local businesses especially The Enviro Shop (Mick Harris & Frank Forster), Newstead Supermarket & Bakery (Cheryl & Darren Gervasoni), Dig (Robyn Lynn) & the Newstead Butcher (Shane McNabb)

RN's website hosts & designers Greengraphics, Castlemaine

RN & N2021 Inc members including: Gen Barlow, Simon Beckett, Miranda Bone, Shaun Britt, Michael Butler, Don Culvenor, Gary Gibson, Saide Gray, Meg Norris, Geoff Park, Dave Schoen & Dave Stratton

RN would like to especially acknowledge Geoff Park and Don Culvenor for the enormous number of hours and commitment they gave to this project.

Credits

Writer/editor: Gen Barlow

Graphic design & layout: Vincent Casey

APPENDICES

1. Newstead Energy Feasibility Study, Michael McCartney, September 2011
2. Newstead Community Plan, 2013
3. Renewable Energy Grants Program Funding Agreement, Newstead 100% Renewable Energy Master Plan
4. Powered by You, A Renewable Newstead survey, July 2016
5. Diamond Energy survey of Newstead, 2018
6. Renewable Newstead: Commercial Model and Business Plan for 100% Renewable Energy, EFTP
7. Powercor, 2018 Pricing Proposal
8. Renewable Newstead: Commercial Model and Business Plan for 100% Renewable Energy, EFTP
9. Renewable Newstead: Business Case for 100% Renewable Energy Master Plan as at May 23, 2018 (submitted as milestone 6 report to Vic Govt)
10. Renewable Newstead: Commercial Model and Business Plan for 100% Renewable Energy, EFTP
11. Powercor, 2018 Pricing Proposal
12. Powered by You, A Renewable Newstead survey, July 2016
13. Diamond Energy survey of Newstead, 2018
14. Renewable Newstead: On Track To Be 100% Renewable, EFTP & RN powerpoint presentation
15. Diamond Energy survey of Newstead, 2018
16. Renewable Newstead: Commercial Model and Business Plan for 100% Renewable Energy, EFTP

* Available for download at www.renewablenewstead.com.au/want-to-know-more/resources or call 0427 762 633

Renewable Newstead
COMMUNITY POWERED

renewablenewstead.com.au

Small town big switch

Newstead's journey to renewable energy

Renewable Newstead
COMMUNITY POWERED

renewablenewstead.com.au