

Appendix 1:

Benefits of Community Energy

This appendix summarises in detail the benefits of community energy identified through our community co-design process

Income for communities

The income from community energy projects benefits the local community because money is retained within a community rather than being directed to energy wholesalers, distributors and retailers. By securing ownership of an energy asset, a community derives an income stream from the sale of electricity either within the region or back to the grid. **Bendigo Sustainability Group** notes that:

Currently \$80M to \$100M leaves the Bendigo region annually in payment of electricity bills to retailers and energy companies located outside of our region, many with overseas head offices. A principal role of having community ownership of local energy systems is to retain revenue within the local area. The flow on effects will potentially lead to revenue redistribution 7 or 8 times locally before leaving the region as opposed to 1 or 2 times for electricity bills paid directly to a distant retailerⁱ.

Similarly, in their submission, **Enova**, based in Byron Bay, said:

In our region in Northern NSW alone, over \$300 million leaves the region annually in payment of domestic energy bills. Over \$80 million of that is attributable solely to operating costs and profits. A community-owned retailer facilitating local generation would progressively enable more of those funds and associated jobs to be kept in the region for a healthier local society. Retailing delivers much value beyond generation too.

Nationally, households in regional Australia spend \$3.8 billion paying their electricity bills and most of that goes straight out of the regions. If regional communities owned their own electricity generation, that's \$3.8 billion that would stay in regional Australia.

Moreover, our city cousins spend a further \$9.1 billion paying their household electricity bills every year. Given most electricity is going to be generated in the renewable energy zones of regional Australian, a significant proportion of that \$9.1 billion that could be going to everyday regional Australians. All up, this is a potential \$12.8 billion export opportunity for regional Australians.

Investment and Jobs

Community energy projects generate employment directly through construction, administration and maintenance and indirectly through jobs along the supply chain. The wind farm capacity already built in Australia has generated \$5.1 billion for regional communities and wind farms currently under development will contribute a further \$4.8 billion in the construction phase alone. Across their lifetime, this figure could reach \$18 billion injected into regional Australia.

This investment translates into job opportunities. Wind farms currently under construction have created an estimated 5,700 direct local jobs and a further 13,000 indirect jobs in local businesses.

Involving community often leads to more local jobs. One review found that employment in community-owned renewable projects is up to three times higher than for absentee-owned projectsⁱⁱ. Another study found that community energy source 12% of components and 92% of services locallyⁱⁱⁱ.

Renewables are set to be significant job creators for regional Australia. One recent report found we could create 76,000 new jobs in renewables this year with targeted economic recovery investments^{iv}. Involving community in every project is a way to ensure local communities can participate in that jobs boom.

Cheap electricity

By generating electricity themselves, communities can not only access low-cost electricity, but reduce the quantity of electricity purchased through the grid, thereby driving down their electricity costs. In fact, 80% of Australian councils are interested in the ability of community energy to reduce their electricity costs^v.

CSIRO analysis backs this up, estimating that proper integration of renewables could save every household in the country \$414 a year in power bills just from lower network costs^{vi}.

Communities across Australia are already seizing the chance to drastically lower their power bills through community energy:

- **Mitchell Community Energy Group** installed rooftop solar on the Seymour Community Nursing Home saving it \$30,000 in annual bills;
- **Totally Renewable Yackandandah** installed rooftop solar on the roof of the Yackandandah Hospital saving it \$1 million over 25 years;

Income for landholders

Community renewables present a huge income diversification opportunity for landowners. The **Clean Energy Council** argues that^{vii}:

Generally the landholders, who are private landholders, site bits of renewable energy project infrastructure, whether that be a substation, a transmission line or the actual solar panels or wind turbines. They are paid. When they are paid they can reinvest into their land, they can hire more people to work the farm, they can do whatever they want—it is their money.

In the wind industry alone, currently operating wind farms will pay an estimated \$27 million to several hundred host landowners each year across Australia through lease payments, and with wind farms currently under construction, that figure could rise to \$56 million each year^{viii}.

Skills and Training

Community energy provides opportunities for technicians to upskill, providing practical training for a wide variety of trades and professional personnel. The CSIRO indicates that with sufficient support from Government to adapt the education and training sector, the energy system of the future could create significant opportunities for skilled employment^{ix}.

Income for councils

Community energy projects create new income streams for local councils through rates or other schemes. Right now, around 16 Victorian rural councils receive payments from wind farms totalling millions of dollars each year:

- **Ararat Rural City Council** receives an around \$375,000 annually from three wind farms;
- **Golden Plains Shire** will receive around \$800,000 annually from Golden Plains Wind Farm.

In their submission to the co-design, the **Goulburn Broken Greenhouse Alliance**, representing 13 Victorian councils including the 9 Indi councils, argued in favour of community energy in part due to the ability to diversify their income streams and reduce pressure on rates.

Community development

Many community energy projects allocate a portion of revenues to a *community development fund* (sometimes called *community enhancement fund*) to finance local projects like facility upgrades and events.

There are 51 such funds in the wind industry alone across Australia, which have delivered \$9.1 million into communities. Those numbers are growing fast, and by 2021, \$5 million will flow into community funds each year from wind farms alone^x. For instance:

- The **Hepburn Wind Community Fund** has contributed over \$90,000 to 43 local community projects and delivered an electric vehicle charging station in the main street of Daylesford;
- The new **Goorambat Solar Farm** will provide \$75,000 each year into a community fund for local projects as determined by the community.

Local empowerment

A key attraction of community energy is the ability for a community to make decisions about their own development, give people control over their own energy use and costs, and to build social cohesion around shared goals.

Many submissions to the community co-design process emphasised the benefits to regional towns of having community-driven projects to build social capital and resilience. These comments were particularly powerful from towns experiencing prolonged drought, economic difficulties and towns exposed to the dangers of bushfires. The **Surf Coast Energy Group** explained that:

Community energy groups and projects can enable people to collectively plan, implement and operate local renewable energy generation and storage facilities. The experience and relationships formed and developed in the process can build the capacity of local communities to identify and resolve issues that concern them. Empowered and resilient communities are better placed to respond to challenges as and when they arise. These attributes are valuable in the face of deteriorating environmental and economic conditions.

The sense that community energy projects can act as catalysts to bring community together especially through difficult times was palpable. Perhaps given the triple-whammy that many regional communities have experienced in recent years – drought, bushfires and now the pandemic – has underscored the importance of retaining empowered communities.

Disaster resilience

Locating energy generation and storage infrastructure close to or within communities improves the security of local energy supply by reducing the risk of disaster-related blackouts.

In the Black Summer fires of 2019-20, towns such as Corryong, Cudgewa and Mallacoota were isolated from the grid for several days after fires burned through the transmission lines connecting them to the grid. As a result, some of these communities are now actively exploring local power generation and mini-grid technology as a plank of their future disaster resilience strategy.

In addition, islandable mini-grids can act to reduce the risk of bushfires by enabling the system operator to isolate edge-of-grid or mini-grid enabled communities on days with high bushfire risk. This isolation means transmission lines are not running live electricity, significantly reducing the risk of transmission lines themselves sparking a bushfire.

The **Murrindindi Shire Council** noted that:

Many townships in Murrindindi Shire are increasingly vulnerable to bushfires and extreme weather events, and the resulting damage to network infrastructure. The ability to produce renewable energy locally and share it through a micro grid system could enhance community resilience and disaster recovery.^{xi}

The **Barwon Region Association for Community Energy** noted that:

Lorne and Apollo Bay have electricity supply lines traversing difficult and heavily forested terrain. In extreme weather events, AEMO has indicated it will cut supply to minimise the risk of starting fires. Also, in a significant bush-fire event, there is a real risk of damage to electricity supply lines. Either scenario would challenge many residents, particularly the elderly. Government can support such communities by making funds available to help them develop greater energy independence, especially during and after bush-fire events^{xii}.

Finally, the **South Coast Health and Sustainability Alliance** noted that:

We are currently dependent on a single high voltage supply with long runs through forest areas vulnerable to bush fires. This was highlighted during the recent bushfires when we experienced extended power outages which had a devastating effect on local services and communications. Significant local renewable energy generation and energy storage could greatly improve our resilience if significant assets and even whole communities could be islanded and supplied with energy from local generation and storage^{xiii}.

Energy reliability

Whilst the deployment of renewable energy presents technical challenges to securing the voltage and frequency specifications of the grid, all the research indicates that renewables with storage are powerful enough to meet Australia's electricity demands. The Finkel Review notes that:

International experience suggests that delivering a secure power system with a high [variable renewable energy] penetration is technically and economically feasible, while a number of studies have found that there are no technical barriers to a high VRE penetration in the Australian context^{xiv}.

One of those studies found that a fully renewable grid based on distributed and interconnected generators is more reliable than a grid based on large, centralised fossil fuel generators:

Hundreds of wind and PV farms are statistically more reliable than several large fossil fuel power stations because breakdowns of individual generators have only a small effect on overall output. Wide distribution of wind, PV and [pumped hydro] means that collapse of major transmission lines need not bring down local supply^{xv}.

Similar research conducted on the South-West Interconnected System in Western Australia came to a similar conclusion that the proper development of already commercial renewable technologies could achieve 90-100% penetration of renewables without compromising system security.

Practical climate action

Many community energy groups are motivated by taking practical action on climate change and reducing emissions in their local community. Many community energy groups have set themselves a goal of achieving 100% renewable electricity for their communities and see community energy as a pragmatic, local contribution to a global problem.

Whilst no comprehensive study has been done of the collective climate impact of community energy in Australia, many individual groups have demonstrated successful emissions reduction. For instance, the projects developed by the **Community Power Hubs** in Victoria save 1,839 tonnes of carbon dioxide every year^{xvi}. The **Denmark Community Windfarm** alone saves around 6000 tonnes of greenhouse gas every year.

Social Licence

Social licence is where a project has ongoing approval and broad acceptance within the local community and other stakeholders. Securing the social licence is critical to reducing costs and maximising benefits to all parties, and streamlining the development process.

Involving the community in the development and design of energy projects is crucial to securing this social licence. And so supporting community-based renewables can help accelerate renewables deployment to meet the technical needs of the grid and maximise returns for regional communities. Recent Australian research shows that^{xvii}:

The transition to a renewable energy future will almost certainly require high levels of social consensus and engagement, and community renewable energy can play a key role in building this.

A 2012 study of Australian wind farm developments found that local opposition to wind energy stymied the development of the Australian wind industry. The researchers found that energy projects were unlikely to proceed unless they won local trust, paid attention to distribution of benefits, had clear processes around approvals, and recognised people's attachment to place:

Without addressing these factors through integration into policy development and engagement approaches, wind energy is unlikely to provide majority of new renewable energy^{xviii}.

Indigo Shire Council has reported that compared to purely commercial projects, community energy projects tend to experience more support and less opposition from local community and planning authorities, both of which can streamline the development process for commercial partners.

In 2016, the **Australian Wind Farm Commissioner** found that wind developers that fail to meaningfully consult with neighbours and landholders leads to opposition to local projects, planning and approval delays and outright rejections, as well widespread negative attention^{xix}.

International experience suggests that countries that experiencing faster transitions to renewable energy are also those with high levels of community energy – through both widespread direct community ownership and other benefits-sharing models^{xx}.

Energy access

Developing new community-owned, low-cost electricity generation can increase access to electricity for low-income households who would otherwise struggle to ensure electricity supply. **Deakin University** researchers have found that:

[Renewable energy] will be an important strategy for maintaining sufficient supply to cater for the growing energy demands associated with the significant population growth occurring and predicted for Victoria^{xxi}.

Community renewables, by lowering the cost of electricity and enabling low-income households to invest in cheap, clean power, can help reduce disconnection rates. Electricity disconnections occur when a household has been unable to afford to pay their electricity retail bills and a retailer intentionally cuts off supply.

A major 2019 study of 395,000 electricity disconnections for non-payment across the NEM found that this problem disproportionately affects rural areas, people experiencing social disadvantage and areas with communities with large elderly populations^{xxii}. In Victoria, the most heavily affected regional communities included Mildura, Wodonga, Shepparton, Traralgon and Geelong. That same study recommended targeting these areas when rolling out distributed energy resources.

References

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- ⁱ Victorian Community Energy Inquiry, 2017, p.43
- ⁱⁱ Lantz, E. & Tegan, S., Economic Development Impacts of Community Wind Projects, National Renewable Energy Laboratory, May 2009.
- ⁱⁱⁱ Victorian Community Energy Inquiry, 2017, p.43
- ^{iv} Clean Jobs Plan, Climate Council, 2020.
- ^v May, F., Diesendorf, M., Macgill, I. (2016) Can local government play a greater role for community renewable energy? A case study from Australia, *Energy Research & Social Science*, Vol. 21, pp. 33-43.
- ^{vi} Electricity Network Transformation Roadmap: Final Report, CSIRO, April 2017.
- ^{vii} Inquiry into community energy projects, Parliament of Victoria, Clean Energy Council Submission, 2017
- ^{viii} Building Stronger Communities Report, Australian Wind Alliance, 2019, p. 20
- ^{ix} Electricity Network Transformation Roadmap: Final Report, CSIRO, April 2017.
- ^x Building Stronger Communities Report, Australian Wind Alliance, 2019, p. 15
- ^{xi} Murrindindi Shire Council, Submission to Community Co-Design Process, 2020.
- ^{xii} BRACE, Submission to Community Co-Design Process, 2020.
- ^{xiii} SHASA, Submission to Community Co-Design Process, 2020.
- ^{xiv} Independent Review of the Future Security of the National Electricity Market, Commonwealth of Australia, 2017.
- ^{xv} Blakers, A., Lu, B., Stocks, M. (2017), 100% renewable electricity in Australia, *Energy*, Vol. 133, pp.471-482.
- ^{xvi} Community Power Hubs Pilot Program: Final Evaluation, Jarra Hicks and Taryn Lane, August 2019
- ^{xvii} <https://theconversation.com/power-to-the-people-how-communities-can-help-meet-our-renewable-energy-goals-60702>
- ^{xviii} Hall, N, Ashworth, A., & Devine-Wright, P. (2013) Social acceptance of wind farms: analysis of four common themes across Australian case studies, *Energy Policy*, Vol 58, pp. 200-208
- ^{xix} National Wind Farm Commissioner (2016) *Annual Report by the Office of the National Wind Farm Commissioner*
- ^{xx} <https://theconversation.com/power-to-the-people-how-communities-can-help-meet-our-renewable-energy-goals-60702>
- ^{xxi} Inquiry into community energy projects, Parliament of Victoria, Clean Energy Council Submission, 2017
- ^{xxii} Households in the Dark, St Vincent de Paul Society, 2019