Tonkin+Taylor

From energy poverty to energy resilience

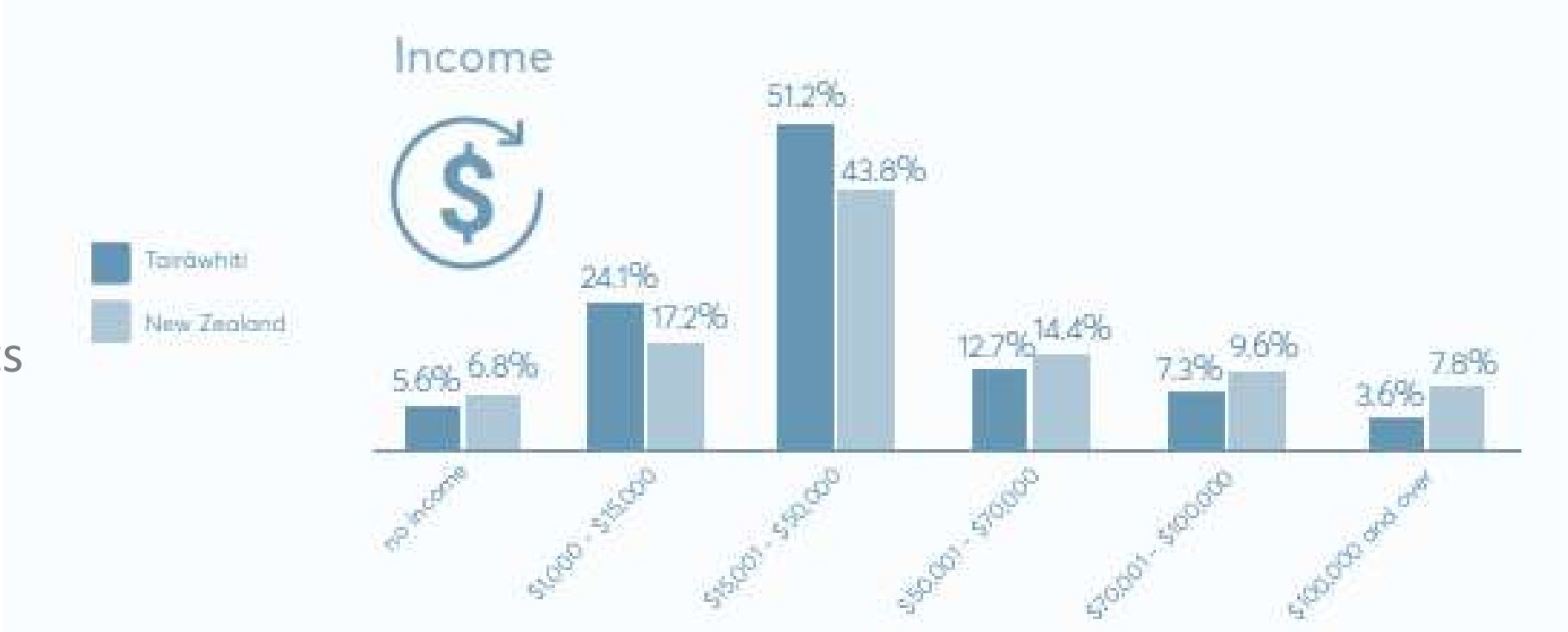
The Tairāwhiti Distributed Energy Programme

David Wyllie

Context + the energy challenge in Tairāwhiti

Why energy matters in Tairāwhiti

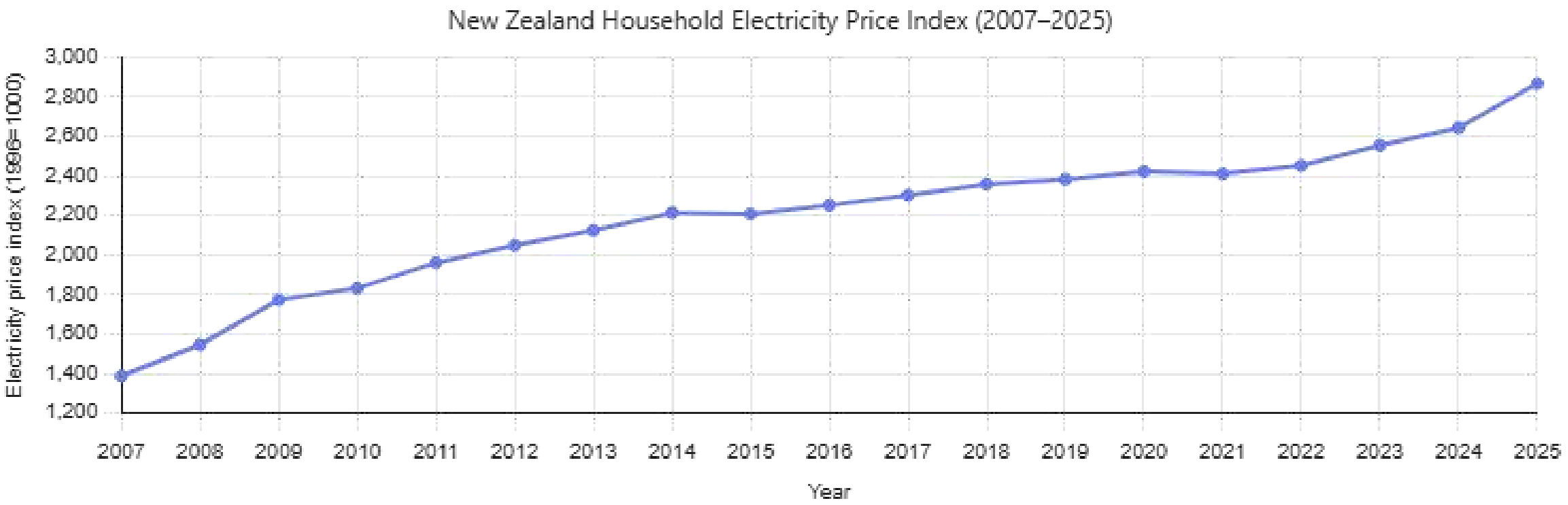
- Energy's impact on wellbeing
- Challenges of high costs and outages
- Energy + regional development



The **living wage of $27.80** per hour based on a 40 hour week would equal to $57,824 annually, meaning around more than 85% of people earn less than this in Tairāwhiti.

While **47.1%** of people work full-time, around **37.9%** are unemployed or not in the labour force.

Energy poverty + its impacts on whānau

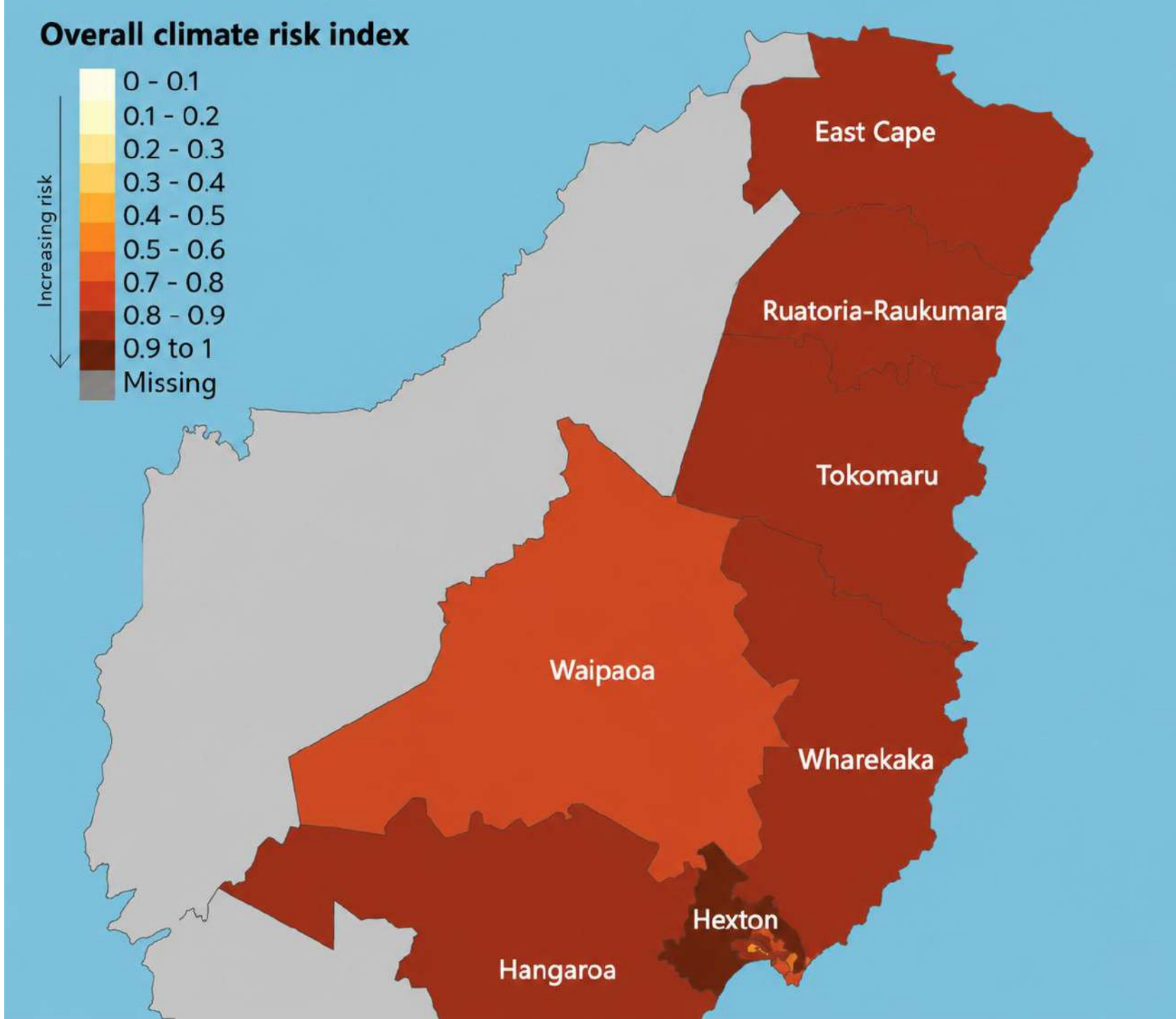


Grid vulnerability + climate exposure

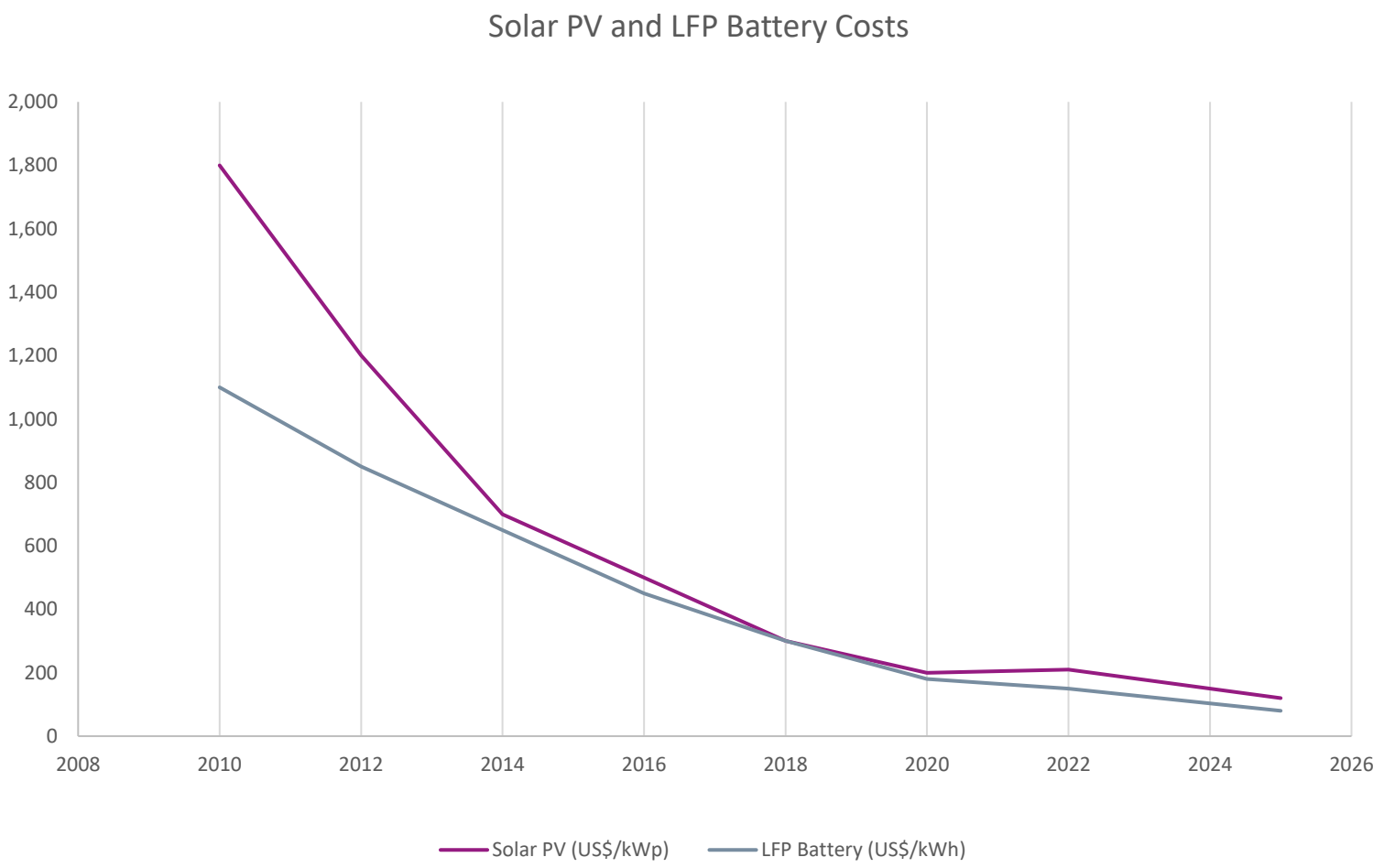
Grid structural vulnerability

Climate impact on infrastructure

Social and economic risks



Window of opportunity for change



- Affordable renewable technologies
- Digital coordination + virtual power plants
- Scalable + adaptive energy model

The Tairāwhiti Distributed Energy Programme Vision

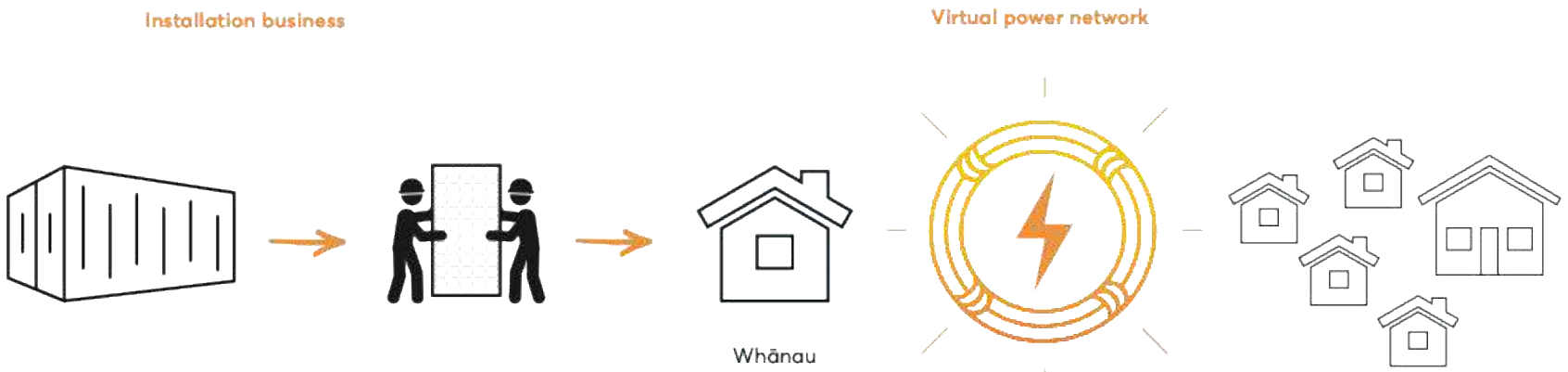
A community-led energy vision

Community-centric

Equity and resilience focus

Keeping the value in the region

Build out 5000 solar PV/ battery systems to reduce the energy costs for 15000 households

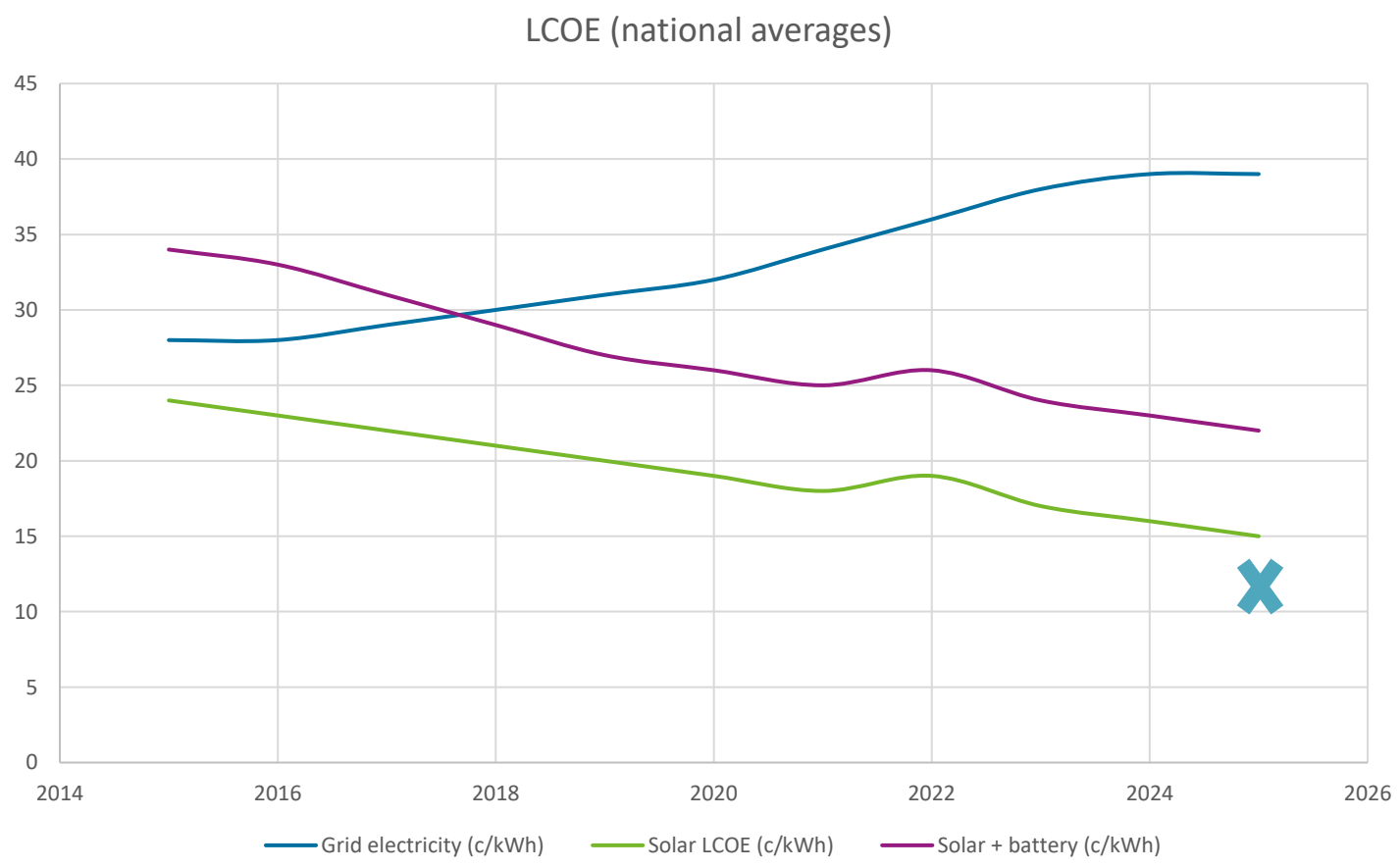


The installation company imports the components, packages them into kits, and its staff work with other local tradespeople to install and maintain the systems across Tairāwhiti.

Once the systems are installed and certified, whānau are connected to the virtual power network – and their power prices fall immediately, whilst the resilience of their power supply improves.

The virtual power network interlinks households, marae and businesses into a Tairāwhiti owned and controlled network, balancing supply and demand within the region, lowering prices and improving resilience for everyone.

What makes TDEP different



- After initial seed funding it is self funding
- Community-centric energy sharing
- Local governance and profits
- Local workforce development
- Scalable and sustainable model

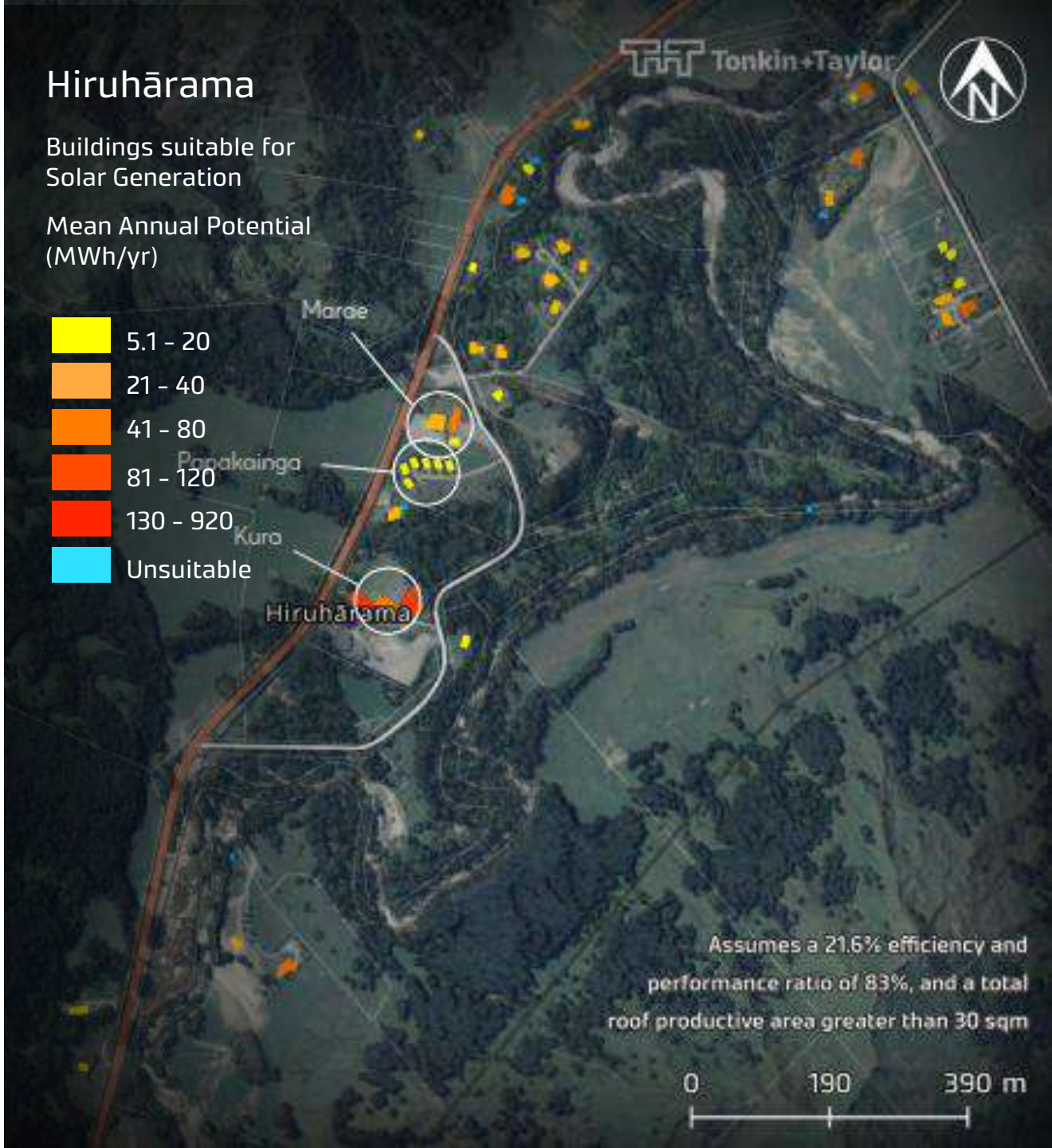
Community-centric rather than household-centric

Community based

Village-level energy sharing

Inclusive access and local storage

Interconnected communities



How the Distributed Energy System Works

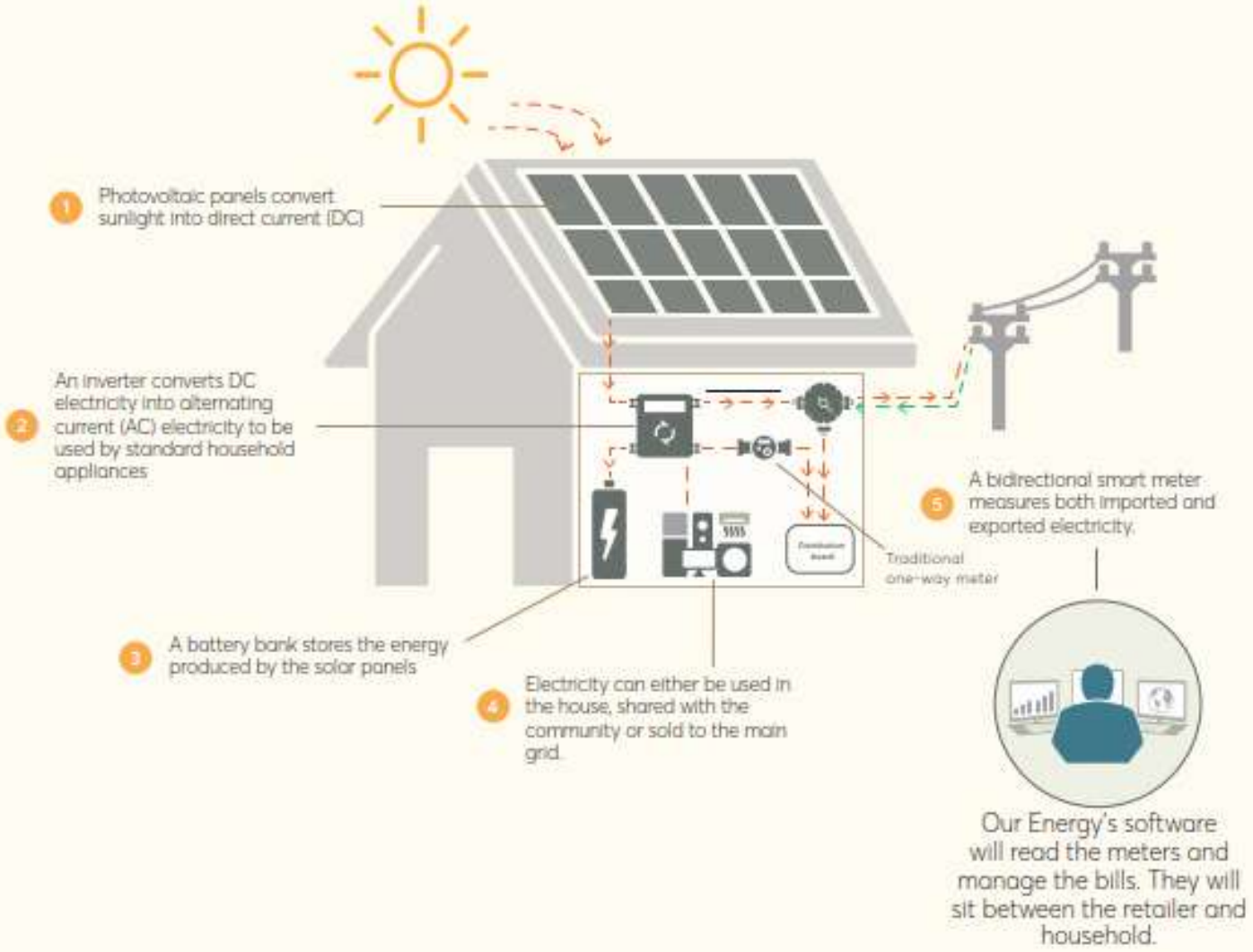
Solar + battery systems at the household level

Solar panels and battery

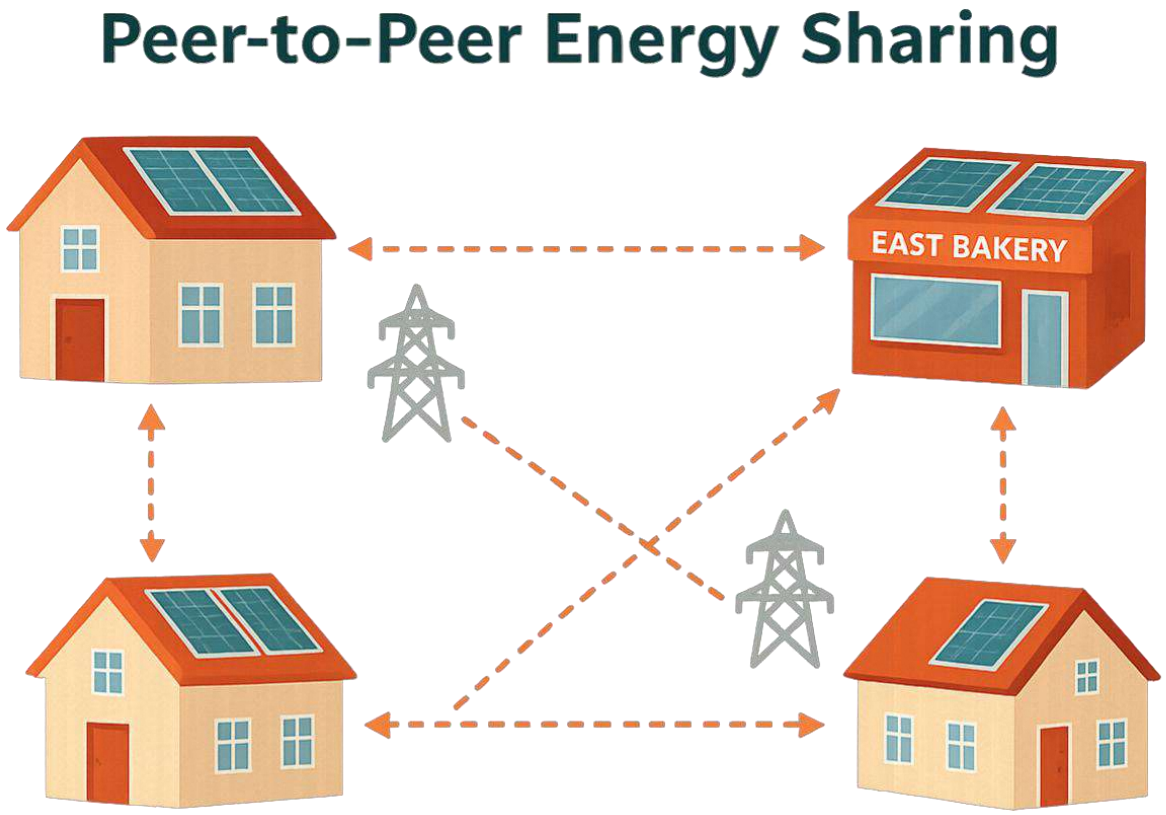
Grid connection

Household cost savings

Community energy sharing

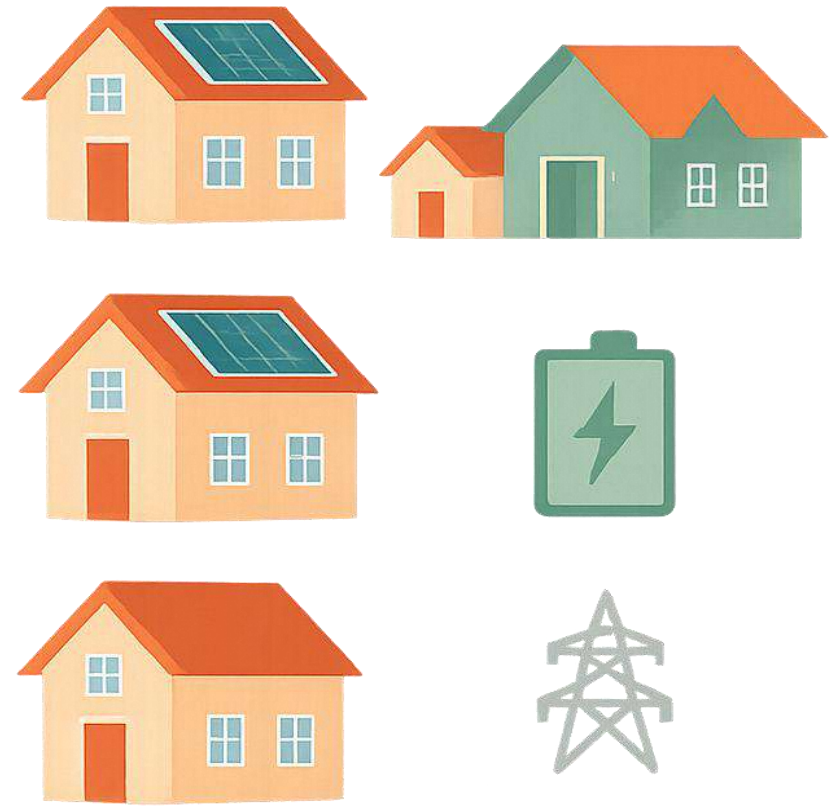


The virtual power PLANT explained



- Coordinated energy management
- Community benefits and resilience
- Peer-to-Peer energy sharing

Peer-to-Peer energy sharing priorities



Grid Export as Last Priourity

Household Energy Priority

Energy produced meets the needs of the household first before sharing surplus with the community.

Community Energy Sharing

Surplus energy is sharcd with nearly homes. community centres, and maree, supporting local wellbeing.

Energy Storage and Resilience

Energy is storediin batteries for resilience and to reduce future reliance on the national gnd.

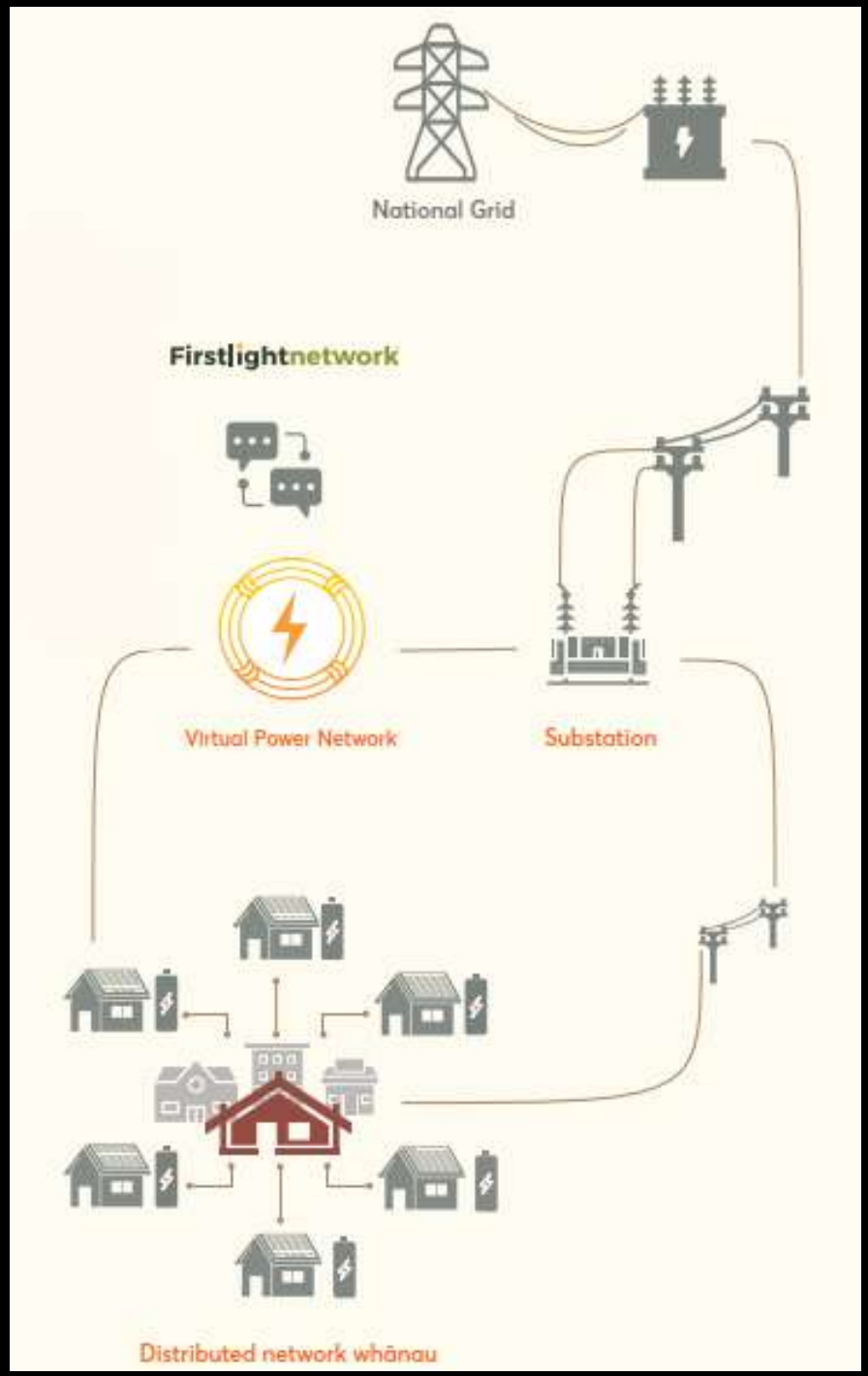
Working with retailers and the grid

Partnership for compliance

Digital platform for energy sharing

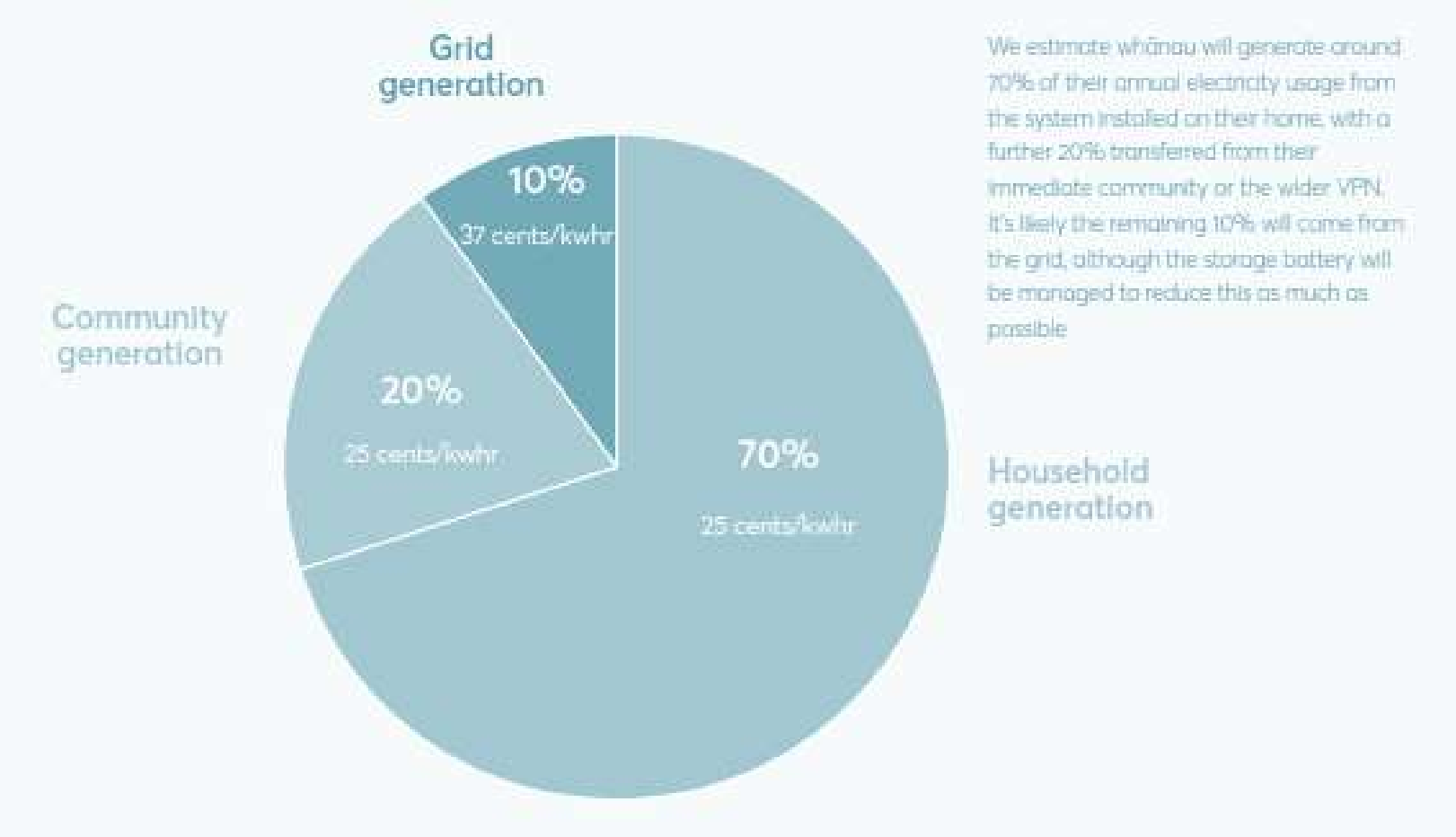
Grid stability and optimization

Future innovation



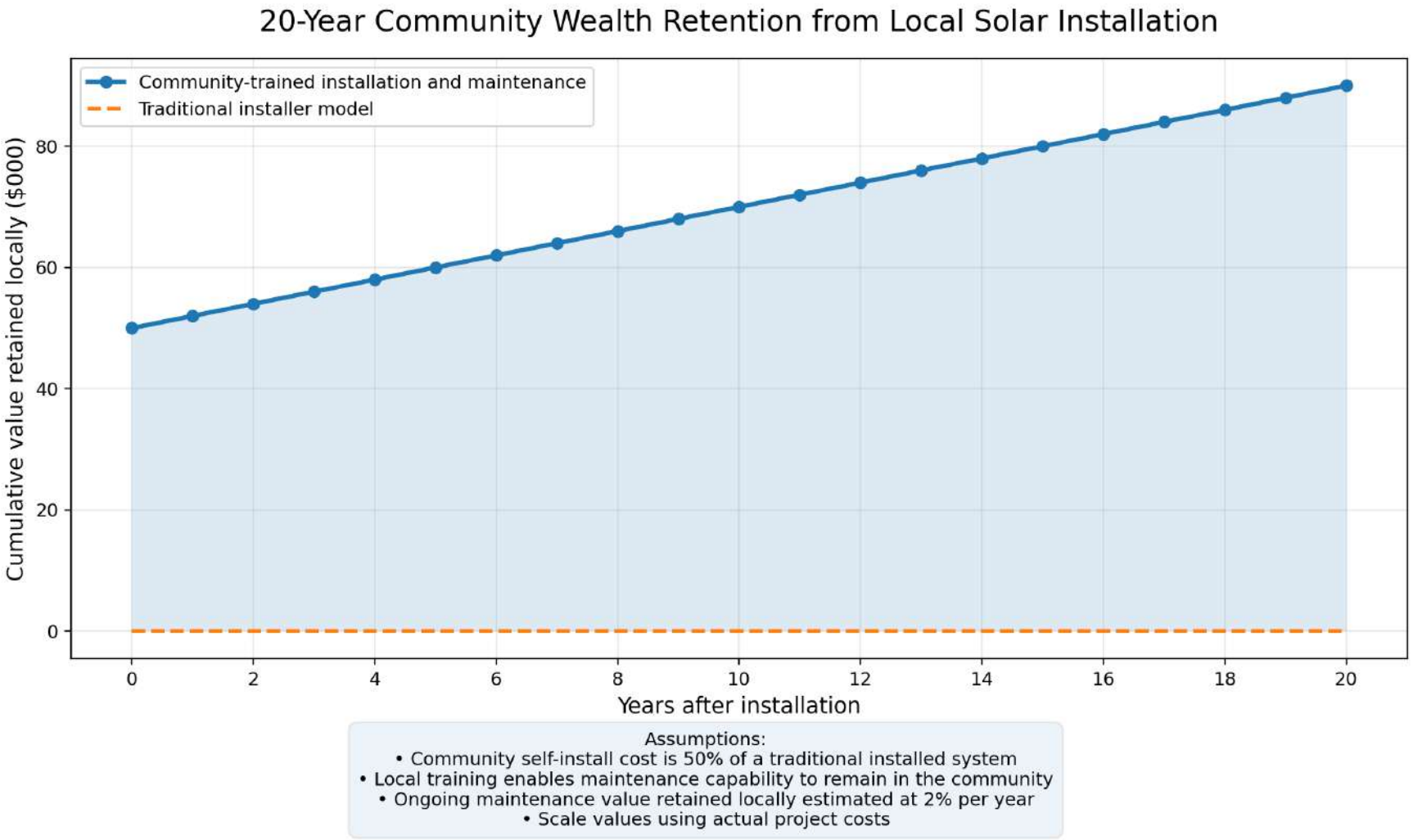
Affordability, finance, + economic impact

Lower power prices for whānau



- Significant cost reduction
- Fixed long-term pricing
- Accessible to all households
- Addressing energy poverty

Keeping value in the region



Local economic benefits

Employment and training

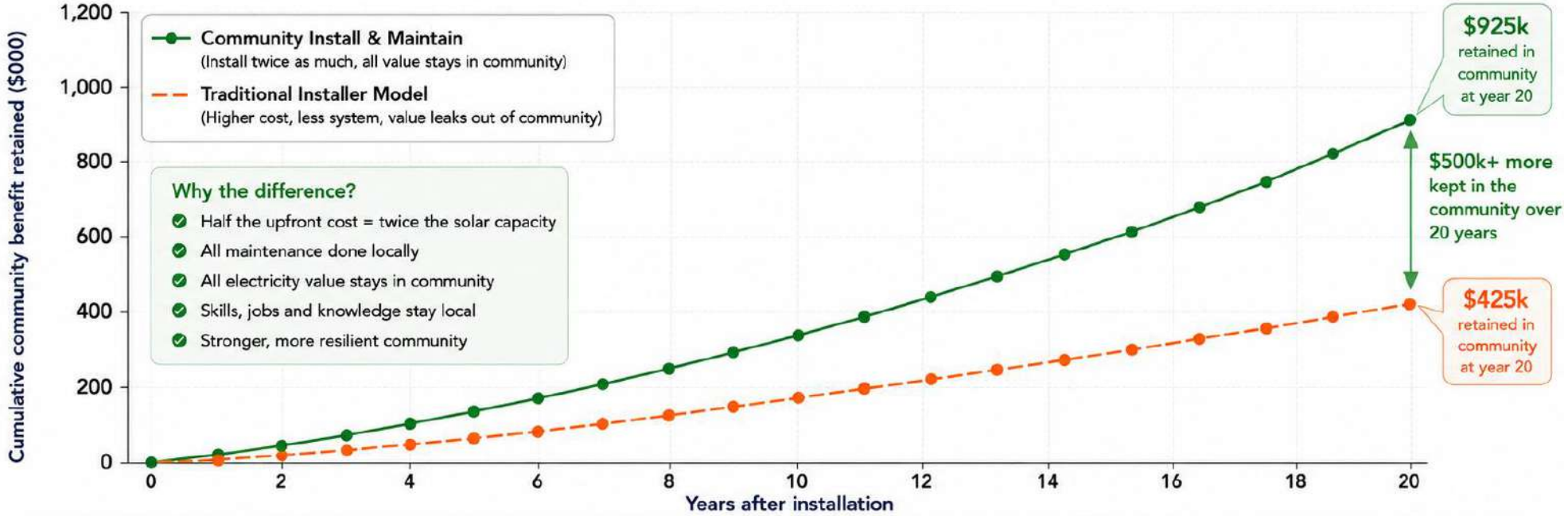
Governance for wellbeing

Regional resilience and prosperity

Compare Traditional to Community Installed

20-Year Community Benefit Comparison: Solar Installed by Community vs Traditional

All values represent cumulative benefit retained in the community (in today's dollars)



Community Install & Maintain (Self-Reliant Model)

Upfront Cost: $200,000 *(installs twice as much)*	20-Year Benefit: $925,000	Average Annual Benefit: $46,250	All Value Retained Locally

Traditional Installer Model

Upfront Cost: $200,000 *(installs half as much)*	20-Year Benefit: $425,000	Average Annual Benefit: $21,250	Much of the Value Leaves the Community

Assumptions

- Electricity value: $0.30 per kWh, 200 MWh per year
- Electricity prices increase 2.5% per year
- Maintenance value retained locally: 2% of system cost per year
- Discount rate: 3% (values in today's dollars)
- System lifespan: 20+ years
- All costs are installed costs (no financing)

Note: Figures are estimates for illustrative purposes based on typical community solar project costs and energy production.

Conclusion

From energy poverty to energy resilience

Community-centered

Affordable and resilient energy systems

Economic and social transformation

Value stays in the community/region

Iwi-led initiative

Transferable to other communities

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