



A vision for our energy future

New Zealand's competitive advantage is water

An aerial photograph of a dam and a river in a lush, green forested area. The river flows from the top left towards the bottom right, passing through a concrete dam structure. The water is a vibrant turquoise color, indicating high flow and possibly some sediment or mineral content. The surrounding landscape is densely forested with tall trees. A road curves along the right bank of the river, and a small building is visible near the dam. The overall scene is a mix of natural beauty and human-made infrastructure.

The best battery of all is a lake

If we want a renewable energy future we need to have a mature discussion about water storage which will be a net positive for the environment

Active management of our water can clean waterways, and supports more investment in plant based proteins, green industry, and recreation opportunities

Our goal could be “the lowest cost renewable energy in the world”

A broken electricity market

We only store two months worth of water for hydro-generation (why not two years?)

Renewable share of electricity generation is 82.1% Remaining generation gap is met by coal, oil, and natural gas

Generators make most of their profit in dry years when prices are high

The market is optimised for shareholder return, not lowest prices

Energy policy has become “lost”

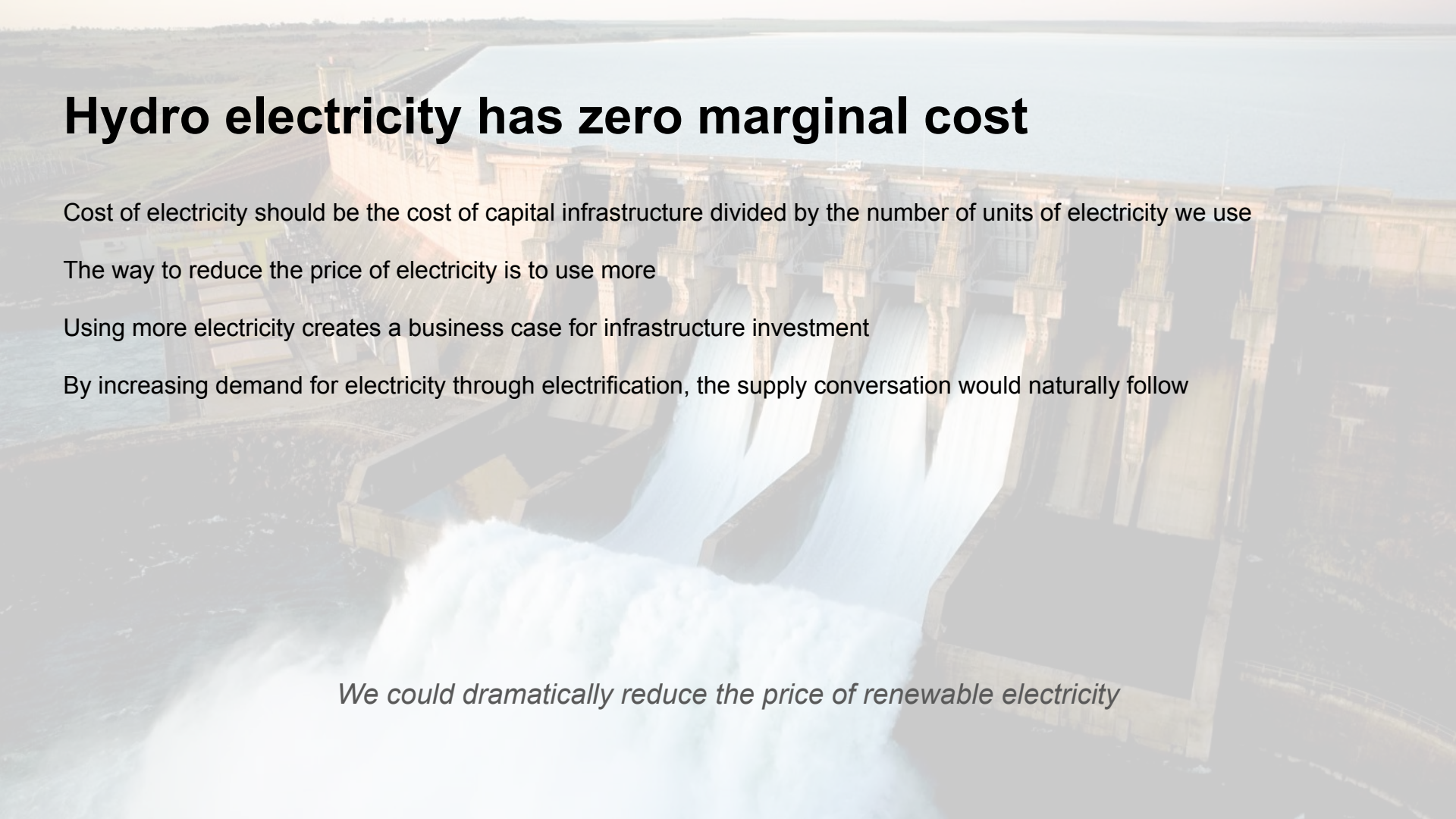
Projected that up to 8GW of new generation is needed by 2050 to meet demand growth - without interventions

Expected that households will pay twice as much for electricity within five years

Anticipated that \$22 billion of investment needed (in each of next three decades) in the electricity distribution system alone. Who is going to pay for it?

We are in a situation where we need to rapidly grow new generation and transmission capacity to support decarbonisation

Hydro electricity has zero marginal cost

A large concrete dam with multiple spillways, with water cascading over them. The dam is situated in a valley with a wide river or lake in the background. The sky is clear and blue.

Cost of electricity should be the cost of capital infrastructure divided by the number of units of electricity we use

The way to reduce the price of electricity is to use more

Using more electricity creates a business case for infrastructure investment

By increasing demand for electricity through electrification, the supply conversation would naturally follow

We could dramatically reduce the price of renewable electricity



KEY

Stations

- Wind Power Station
- Hydro Power Station
- Geothermal Power Station
- Thermal Power Station
- Substation

Transmission Lines

350 kV HVDC

- Double Circuit Towers
- Single Circuit Towers
- Double Circuit Poles
- Single Circuit Poles
- Submarine Cable

220 kV AC

- Double Circuit Towers
- Single Circuit Towers
- Double Circuit Poles
- Single Circuit Poles
- Underground Cable

110 kV

- Double Circuit Towers
- Single Circuit Towers

Make Southland Renewable Energy Abundant



Southland produces the majority of New Zealand's energy, but uses little of it

72% of energy is consumed by the North Island once shipped across the Cook Strait

Tiwai (uses 13% of energy produced) exit presents both a challenge and an opportunity

Queenstown is the gateway to the South Island

Carbon Zero 2030: Queenstown Lakes goal to become the first carbon zero visitor economy by 2030

Clear infrastructure challenges which have no articulated solutions - traditional thinking not working

High volume tourist destination where policy interventions and an innovative commercial energy strategy is required to achieve decarbonisation goals and long-term resilience

Electrification of tourism a clear intervention that could generate the revenue to fund infrastructure

Queenstown tourism of huge economic value to local and national economies -

Visitors add \$988 million–\$1.10 billion spend to the South Island's GDP, and add 9,600–11,600 jobs

Queenstown acts as a hub to a number of spokes including tourist destinations - Milford Sound, Wanaka, Bluff, the Caitlins, Fiordland National Park, Mount Aspiring National Park and Fox Glacier

A vibrant Queenstown will develop and sustain a healthy South Island

Queenstown is an ideal location as a test lab for innovation that benefits the rest of New Zealand and can be replicated nationally and globally

Queenstown challenges



Energy

Not enough electricity to meet regions needs

Single point of failure

Massive reliance on expensive diesel

Population

Population expected to grow from 44,000 to 63,000 by 2031

34 international visitors to every 1 resident (Auckland has 1:1, Christchurch 3:1)

Housing under-supply and unaffordability

Public Transport

Traffic congestion

Poor public transport

Current bus solutions do not support hospitality worker schedule

Waka Kotahi solution is 16 sets of traffic lights

A fragile reliance on tourism

Infrastructure pressures, capacity constraints

“Queenstown’s strong tourism growth has led to serious capacity constraints, and infrastructure pressures, which risk compromising the international visitor experience, constraining future growth, and negatively impacting New Zealand’s tourism industry.” (Sustaining Tourism Growth in Queenstown Report, p.9)

Disparity between those who fund Queenstown’s infrastructure and those who benefit from it

“At capacity, Queenstown Lakes has one local resident per 34 international visitors. This means that a very small cohort of Queenstown residents and local businesses are currently funding the infrastructure needs of 34 times its population. Queenstown’s ratio of residents-to-international visitors is unparalleled amongst New Zealand’s main tourist centres” (Sustaining Tourism Growth in Queenstown Report, p.3)

An urgent need to invest in energy infrastructure to achieve decarbonisation and diversification goals

“Queenstown needs to immediately build greater clean energy capacity and resilience if the economy is to decarbonise through electrification.” (THINK, Carbon Zero 2030 Discussion Paper p.6)



Increase capacity of Southland power network

Make renewable energy abundant in Southland by 'thickening' up the distribution network from generation to tourist destinations such as Te Anau and Kingston

Mode shift to electric creates the business case for infrastructure investment

Funding from New Zealand and Australian Green Funds, Super Funds and Iwi (Ngāi Tahu)

Lines revenue directly scales with tourism





Frankton to Kingston power cable and cycleway



Milford cycleway and power cable

Electric Rental Fleet - mandate the mode shift



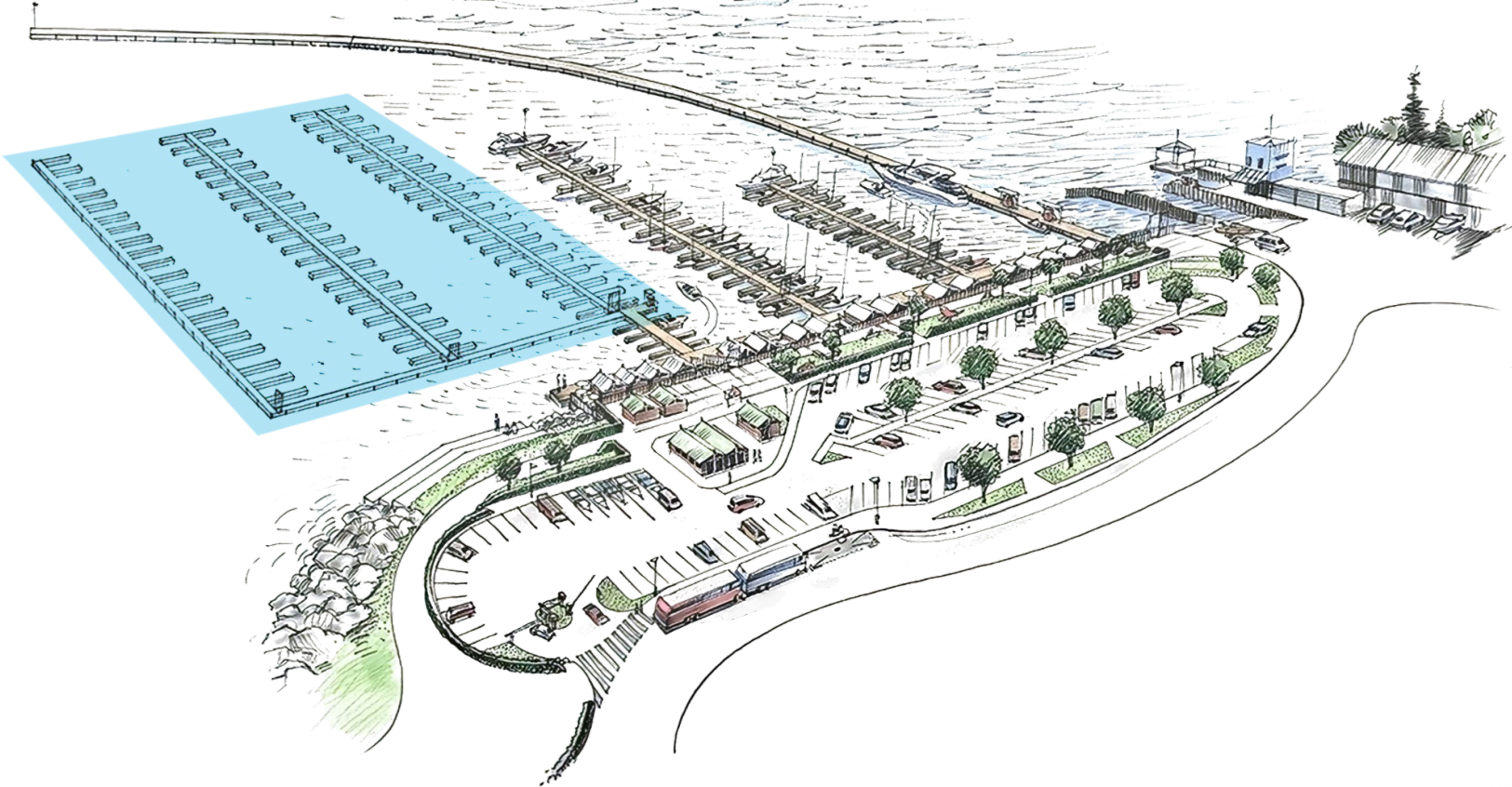
All rental cars in [3] years

All campervans in [5] years



Electric, Autonomous Transport

Electric Marina





Electric Foiling Ferry



Electric Wave



Wellness Activities

A scenic view of a river flowing through a lush forest towards a mountain range. The river is clear and fast-moving, with white water rapids. The forest is dense and green, and the mountains in the background are rugged and rocky under a clear blue sky.

Te Awa Hiko
Electric River