

A short history of electricity supply and management in New Zealand.



Just as PowerNet and our associated companies lead the way in best practice network management, Southland as a province was one of the leaders in public electricity supply, with Gore being the first town to provide public lighting in 1894.

This document outlines the history of electricity supply and management in New Zealand.

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The Early Days

The first area to officially supply electricity to the public in New Zealand was Reefton, on August 4, 1888.

Gore was the first town in Southland to provide electric lighting for public use by way of a private coal fired station in 1894.

The Southern Frozen Meat Company, based at Matura, had been producing power for the paper mill at the falls on the Matura River. In 1904 it began contributing its excess power to the township of Gore to help meet increased demand.

The Bluff Borough Council began generating electricity from a steam driven plant for ratepayers and businesses in 1903. Electricity was initially used for street lighting and to power the Southland Frozen Meat Company which had been generating its own power since 1885.

Around 10 businesses and 20 private houses paid to be connected and ten years later meters were installed to determine each property's usage.

In the Invercargill Borough Council area Thomas Fleming generated the first acknowledged electricity for private use in 1890. Electricity was generated at his flour mill to power his house. The Council had earlier invested in a gasworks to light the town. It began generating electricity in 1905 using a dynamo generator driven by a gas engine, initially just to light the Civic Theatre.

In 1912 the Invercargill Borough Council also began generating electricity using a coal fired power scheme for the town's tramlines. In 1913 the Council established

an Electricity Department, the origins of the Municipal Electricity Department (MED), which increased the reticulation to include the street lights, businesses and residents.

In 1914 a group of leading Southland businessmen and politicians established the Southland Progress League to promote and encourage growth in the region.

One of the ten committees formed, focused on the potential and development of the region's natural resources.

It was the work of this committee that later ensured the development of the Monowai power scheme. The League took the view that electricity reticulation should be made available for all, not just those in highly populated areas, and paved the way for providing electricity throughout Southland.

The League, on their initiative, wrote the legislation for the Electric Power Boards Act of 1918. This legislation gave the Power Boards the right to produce, reticulate and sell power to areas that the Government did not supply but also gave the Government the right to take over any Power Board area, at any time, without payment.

As a result of the legislation the Southland Electric Power Board (SEPB) was established in 1919. The SEPB was the first elected electricity board of this kind in New Zealand and became responsible for the rest of New Zealand being divided into power supply areas combining urban and rural areas.

Around this time the SEPB purchased most electricity suppliers in Southland at this time, except Bluff and Invercargill. Some West Otago districts also joined the scheme and in 1926 the Gore Council also entered into an agreement with the Board.

Customers in all areas contributed towards the capital costs if they wanted power supply to their home. In some cases this cost was prohibitive because of the distance from a main line. A Rural Electrical Reticulation Council fund was set up and levied j of 1% from the Southern Supply Authorities profits to subsidise the extension of the network to remote rural consumers.

1920- 1940 Onwards and Upwards

In 1920 the plans for the Monowai power scheme were designed and approved. A depot was established on site, estimates provided and tenders let and in 1921 1,000 tons of cement was ordered from London for the construction.



Roads and bridges were built for access to the site and initial staff were appointed. Adjustments were made to the design of the works and by 1923 much of the specialist equipment such as the turbines and switch gear, had been ordered. The dam was completed in 1923 and the canal and pipeline were completed a year later. Generators, turbines and other equipment were installed and commissioned in 1924 and in May 1925 the power station was officially opened.

The Southland Electric Power Board had built a good deal of the reticulation for the inner boundaries of Southland. SEPB built more 11kV lines and substations from the Lake Monowai Hydro Station site to enable distribution to a greater area when construction of Monowai was complete.

Monowai began distributing power throughout Southland in 1925 and the third and final generator was finished and put into service in 1928.

By 1921 over 1,700 Invercargill Borough Council ratepayers had been connected to the Council-run coal fired scheme.

Electricity had also been made available to the first electrically driven sawmill in New Zealand, as well as to communities outside the immediate Council boundary.

In 1924 the Bluff Borough Council was struggling to cope with the increased load on its network, especially from surrounding businesses. One of the larger businesses, the Bluff Granite Works, made arrangements to have its electricity supplied by the SEPB, offering the Bluff Borough some supply relief.

An 11kV feeder from Invercargill to Bluff was established by the SEPB to supply the granite works. This line was later used to supply Bluff when the township was absorbed under the Invercargill City Council's authority.

The Invercargill Borough Council was also struggling to meet demand and in 1925 reached an agreement with the SEPB to purchase bulk electricity from the Monowai Hydro scheme.

Part of this agreement allowed for expansion of the Borough's boundaries by giving the Council the future right to purchase network assets from the SEPB for areas that could eventually be absorbed into the Council's ever-increasing boundaries.

In 1926 the Gore Borough Council negotiated with the SEPB to supply electricity to their ratepayers for a "penny-a-unit".

Invercargill continued to grow and was declared a City

in 1930. The Invercargill City Council superseded the Borough Council.

In 1934 the SEPB was running short of electricity and Monowai generation was at its maximum of 6MW. Southland had an increasing number of dairy farms that used vacuum pumps which placed considerable pressure on the network at peak times. An upgrade was proposed to increase capacity at Monowai to 11MW but the Board was short on funds and the Government was not interested in lending money for the upgrade at that time.

Much debate arose as a result and in 1936 a postal ballot of all SEPB consumers was conducted asking ratepayers to choose between SEPB and Government options. SEPB lost and ceased to exist.

Its functions and most staff were transferred to the State Hydro Department, part of the Government Public Works Department. The SEPB was renamed the Southland Electric Power Supply (SEPS).

Besides building Monowai SEPB had, at the time of the takeover, erected 2400 miles of lines and was supplying electricity to 10,200 consumers in rural areas as well as supplying bulk power to the Invercargill and Bluff Councils.

The Government refused to honour the 'boundary agreement' made between the then Borough Council and the Power Board.

As a result the original Municipal Electricity Department (MED) electricity boundaries have remained the same to this day, while Invercargill City's boundaries have increased.

In latter years this led to some confusion over disparate power supply and costs for Invercargill City Council ratepayers.

During this time the State Hydro Department built a main transmission line from Waipori to Gore to enable Government electricity to be distributed from Waitaki. Demand for electricity continued to increase, placing pressure on the Monowai system and the State Hydro lines that brought power from Lake Coleridge and Waitaki and restrictions were enforced. In 1939 SEPS was connected to the national grid.

1940-1970 Controlling the Load and Getting Tiwai Hooked Up

Attempts to control the supply load in Invercargill began in the mid 1940's and by the mid 1960's the Invercargill City MED had 'substantial control' over the water and



space heating load on their network.

This allowed the MED to make savings and use the funds to substantially upgrade the distribution system to ensure a safer and more reliable supply. The Council replaced the City's electric tramlines with diesel buses in 1952 and the undergrounding of lines began in 1959.

In 1956 the Roxburgh power scheme commenced generation and provided some supply relief to the region. In the same year the control of the main transmission lines throughout New Zealand were placed in the hands of the New Zealand Electricity Department (NZED).

The Ministry of Works began construction of the Manapouri Power Station and the first tailrace tunnel in 1964.

Drill-and-blast excavation methods were used to carve through rock to construct an underground cavern for the power station and the 10-kilometre long tailrace tunnel from the West Arm of Lake Manapouri to Deep Cove in Doubtful Sound, with several access and service tunnels.

Excavating was hard and dangerous work and sixteen men were killed during the project. The Wilmot Pass road was also constructed to provide access to each end of the tunnel.

Construction of the transmission lines linking Manapouri to the national grid began in 1966. Construction of the Manapouri Power Station was completed in 1972 and began supplying the New Zealand Aluminum Smelter at Tiwai Point, close to Bluff.

1970s-1998: Company Growth, Massive Regulatory Change, and PowerNet Is Formed

SEPS began computerising accounts in 1975 for its 27,000 consumers. Previously meter readers had prepared the bill on site after reading the meter.

A centralised system of taking fault calls for The Power Company area started in 1978.

Up until the mid 1980's generation, transmission and pricing of electricity continued to be controlled by the NZED, with distribution in Southland managed by SEPS and the MED.

In 1987 the NZED was restructured to form a State Owned Enterprise, the Electricity Corporation of New Zealand (ECNZ or Electricorp).

SEPS was managed by ECNZ under contract rather than being assumed into the new State Owned Enterprise.

In 1988 an Electricity Task Force was established to review the industry.

In 1991 the Government appointed a Board of Directors to a newly created company, The Power Company Limited, to manage SEPS on behalf of consumers. Transpower was also formed this year to own and operate the national grid as a separate subsidiary within the ECNZ.

In 1992 following an electricity supply crisis the Government appointed a Committee of Enquiry. The Energy Companies Act 1992 was introduced as a result, mandating that local electricity and retail bodies operate as profitable businesses.

SEPS traded as The Power Company and the MED became Electricity Invercargill Limited, owned by ratepayers through the Invercargill City Council.

In 1993 the Electricity Market Company (now M-co) was established to develop a market for the trading of electricity. Distribution and retail businesses were corporatised.

The Government resolved to divest its shares in those companies that were owned by trusts and the consumers became the beneficiaries.

United Electricity Limited was formed by Dunedin Electricity Limited and Electricity Invercargill Limited at this time.

In February 1994 The Power Company Limited and Timaru based Alpine Energy Limited joined United Electricity and the network companies continued to operate their networks as usual.

Five months later The Power Company Limited and Electricity Invercargill Limited merged their network operations functions to form PowerNet Limited as the network and asset manager. Three Directors from each shareholder made up the PowerNet Limited Board.

Later in 1994 Transpower separated from ECNZ to become a stand-alone state owned enterprise.

The Metering and Reconciliation Information Agreement (MARIA) was also introduced, enabling large electricity consumers (i.e. New Zealand Aluminum Smelter) to purchase directly from electricity generators (i.e. Meridian Energy) rather than through electricity retailers (i.e. United Electricity).

The Government split ECNZ in 1995 and Contact Energy was formed.

The New Zealand Electricity Market (NZEM) was



established to provide a framework for the buying and selling of electricity in a wholesale market.

In 1998 the Government passed ownership of SEPS, trading as The Power Company, to those people connected to the network.

The SEPS Consumer Trust was formed as the entity to exercise ownership rights of The Power Company on behalf of its consumer owners.

In 1998 the Government introduced the Electricity Industry Reform Act which demanded the sale of Contact Energy and the splitting of ECNZ into three competing state owned enterprises - Genesis, Meridian and Mighty River Power.

New Zealand's electricity companies had to separate their network and retail businesses and a year later, as a result, The Power Company sold the Monowai Power Station to Trustpower.

In 1997 Meridian Energy began work on the Manapouri Power Station to create a second tailrace tunnel, parallel to the existing one, to improve capacity.

In 1998 a huge tunnel boring machine 25 metres long and staffed by a crew of 25 working in shifts around the clock, began drilling through the rock face.

In 2002 this second tailrace was completed and the installed capacity increased to 850MW.

The 21st Century: A Reliable, Secure and Safe Supply Of Electricity

In 2002 Marlborough Lines Limited (51%), The Power Company Limited (24.5%) and Electricity Invercargill Limited (24.5%) purchased the network assets from Otago Power Limited shareholders to form OtagoNet Joint Venture.

A Governing Committee was formed and contracted PowerNet Limited to manage the assets on its behalf.

In 2004 the Electricity Commission assumed responsibility for the running of the New Zealand electricity market under the Electricity Governance Regulations and Rules and the NZ Electricity Market and MARIA no longer had responsibility for governing the market.

In 2010 the Electricity Commission was replaced by the Electricity Authority.

Key elements of its role as the New Zealand electricity market regulator involve a range of retail and wholesale market development, operation and compliance activities.

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