Pipes & Wires

Thought leadership of critical energy & infrastructure matters
Issue 239 – August 2026

From the editor's desk…

Welcome to Pipes & Wires #239 … this issue starts with a look at 3 regulatory decisions in New Zealand and Britain, and then looks at an electricity distribution concession agreement in Brazil. We then look at a range of primary energy issues in New Zealand, Australia and South Africa, before concluding with a look at geothermal power in England. So … until next time, happy reading…

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Significant client projects

Recent client projects include…

Transaction advisory ($12b and counting)

- Forecasting AugEx, RepEx and OpEx, advising on likely revenue cap implications.
- Identifying strategic, commercial and regulatory red-flags.
- Translating demand forecasts into AugEx.
- Reviewing procurement models and processes.

Climate governance and resilience

- Identifying the governance, strategy and risk programs required to align with TCFD.
- Compiling a client resilience framework for an electric distribution company.

Asset strategy and asset management practices

- Assessing the strength of an EDB's organizational culture, work process and asset management practices.
- Compiling a road map to guide an EDB on its asset management improvement journey.
- Identifying a range of structural and service delivery models for an electric company.
- Identifying best customer engagement practices on behalf of an Australian distributor.

Decarbonisation and energy transition

- Estimating the costs of DERMS (distributed energy resource management system) penetration for distribution feeders for a large US electric company.
- Identifying leading practices in behind-the-meter activities (eg. batteries, solar, smart data, VPP's etc) for a large US electric company.
- Identifying best Australian practices in EV charging for a large US electric company.
- Identifying key features of demand management in the Australian NEM for a large US electric company.
- Identifying best practices in grid-scale and community-scale batteries for an Australian distributor.
- Identifying best practices in EV charging on behalf of an Australian distributor.

Global trend and pattern analysis

- Identifying the global and regional trends facing transmission grid operators for a US client.

Regulatory analysis

- Reviewing the AER's recent treatment of network transformation expenditure.

- Providing an independent assessment of network condition and spend adequacy.
- Providing an independent review of asset condition and spend forecasts for a distribution company investor.
- Advising on the regulatory implications of an aging timber transmission pole fleet.
- Identifying the learnings from the RIIO – ED1 reset on behalf of an Australian distributor.

Cool multimedia stuff

This 2½ minute video of power line construction in the 1930's is worth a watch. Safe work practices have obviously progressed a long way since then…

Network regulatory decisions

NZ – Final Decision for the replacement HVDC cables

Introduction

The Commerce Commission recently published its Final Decision on Transpower's Major CapEx Proposal for the first stage of renewing the HVDC cables. This article looks at the key features of that Final Decision.

The process to date

Transpower is progressing the HVDC Link Upgrade Program in stages through the Commerce Commission's Major CapEx Proposal process. Stage 1 has received Final approval, and Transpower expects to submit a separate Major CapEx Proposal in 2027 to replace the HVDC control system (Stage 2).

Following feedback from consultation earlier in 2026, Transpower is further considering what happens to the existing cables once the new cables are installed. Further work will be undertaken closer to the time the cables are decommissioned to better understand the potential effects of either leaving or removing the cables, along with the costs of removal.

Recapping the preferred option for replacement

Readers may recall that the preferred Option was Option 3…

- Option 3 Increased capacity – replacement of the 3 existing cables with 4 new cables giving an increased capacity of 1,400MW.

This Option yielded the highest positive nett market benefits, and was therefore chosen as the preferred option.

Regulatory framework

The regulatory framework for Major CapEx Proposals is set out in the Transpower Input Methodologies Determination, which are made pursuant to s54S of the Commerce Act 1986.

Key features of Transpower's proposal

Key features of the proposal, the Draft and Final decisions are…

Parameter	Proposal	Draft Decision	Final Decision
Replacement	Replace 3 aging submarine cables.	Approved.	Approved.
Expansion	Add a 4th cable to increase capacity from 1,200MW to 1,400MW.	Approved.	Approved.
Renewals and enhancements	Replace cable termination stations on both sides of Cook Strait, spare cable storage facility, overload capacity for Pole 2.	Approved.	Approved.
Major CapEx Allowance	$1,138,6m.	$1,138.6m	$1,138.6m
Timing	Cable manufacture begins mid-to-late 2028, installation and	Approved.	Approved.

	commissioning in early 2030's.		

This concludes Pipes & Wires analysis of the HVDC cable replacement.

Further reading

Readers might find the following references interesting…

- Pipes & Wires #238 – Draft Decision for the replacement HVDC cables.
- Pipes & Wires #235 – Transpower submits regulatory proposal for new HVDC cables.
- Transpower link upgrade program.
- Pipes & Wires #231 – Transpower plans replacement HVDC cables.
- White Diamonds North by Peter Taylor (1990).
- Connecting The Country by Helen Reilly (2008) – chapter 8.
- Cook Strait HVDC Submarine Cable Replacement and Enhancement – Project Information and Consultation.
- HVDC Inter-Island (Wikipedia).
- High Voltage Direct Current: A History Of Innovation.
- The history of high voltage direct current transmission.
- HVDC history in New Zealand (Hitachi).

Britain – the RIIO – ET3 revenue controls

Introduction

Britain's 3 electricity transmission businesses were subject to the RIIO-T2 revenue control which expired on 31st March 2026. This article examines Ofgem's final RIIO - ET3 revenue controls that will apply to those electricity transmission businesses from 1st April 2026.

The 3 electricity transmission businesses

Britain's 3 electricity transmission businesses include…

- National Grid Electricity Transmission, which covers England and Wales.
- SP Transmission, which covers the south of Scotland (successor to the SSEB).
- SSEN Transmission, which covers the north of Scotland (successor to the NOSHEB)

Key features of the RIIO - ET3 Final Decisions

The RIIO – ET3 TotEx decisions are as follows…

Company	Business Plan	Draft Decision	Final Decision
National Grid Electricity Transmission	£5.919b	£4.155b	£5.215b
SP Transmission	£2.224b	£1.558b	£1.999b
SSEN Transmission	£4.025b	£3.096b	£3.461b
Sector total	£12.169b	£8.810b	£10.675b

This concludes Pipes & Wires coverage of RIIO – ET3.

Further reading

Readers may be interested in the following articles…

- Pipes & Wires #232 – the RIIO – ED3 revenue control.
- Pipes & Wires #218 – the RIIO – ED2 Final Determinations.
- Pipes & Wires #142 – reporting back on the first year of RIIO – T1.

NZ – cost of capital decisions

Introduction

The Commerce Commission recently released the cost of capital determinations that will apply to the following regulated infrastructure for the regulatory period ending on 31st March 2027…

- Electricity distribution businesses.
- Wellington International Airport.

This article examines the key features of those decisions.

Regulatory frameworks

The regulatory frameworks are set out in…

- Clauses 2.4.1 to 2.4.9 of the Electricity Distribution Services Input Methodologies Determination 2012 (noting that this version of the Determination does exclude some matters).
- Clauses 5.1 to 5.7 of the Commerce Act (Specified Airport Services Input Methodologies) Determination 2010 (noting that this version of the Determination does exclude some matters).

Key features of the WACC's

Key features of the electricity distribution WACC's include…

Parameter	25th percentile	Mid-point	65th percentile	75th percentile
Vanilla WACC	5.66%	6.39%	6.81%	7.12%
Post-tax WACC	5.05%	5.78%	6.20%	6.51%

Key features of the Wellington Airport WACC's include…

Parameter	Mid-point
Vanilla WACC	8.09%
Post-tax WACC	7.76%

As always, interested parties should examine the full Decision documents.

Industry reshuffling and capital allocation

Brazil – reconsidering Enel-SP's concession

Introduction

Pipes & Wires #236 examined the renewal of 19 of Brazil's 52 electricity concessions, and noted *inter alia* that the city of São Paulo was urging the electricity regulator ANEEL to recommend that the Ministry of Mines & Energy suspend Enel-SP's electricity distribution concession.

A bit about Enel-SP

Enel-SP is the electricity distributor in the São Paulo metro area, supplying 7,500,000 customers in 24 cities covering a distribution area of 4,526 km^2. Enel-SP operates this network under a concession that is due to expire in 2028.

Latest moves

Since the ANEEL's closer scrutiny of Enel-SP earlier in 2026, latest moves include…

- A unanimous decision by the ANEEL Board to commence an administrative process that could lead to suspension of the concession. It is noted that the commencement of this administrative process effectively blocks the automatic renewal of the existing concession which was originally set to expire in 2028.
- A response from Enel-SP, stating that (i) it will continue working to demonstrate compliance with all performance measures in the concession contract and in the recovery plan presented in 2024, and (ii) that the ANEEL's decision is only a decision to investigate further (and is not a decision to suspend).
- Enel-SP has met with ANEEL to seek alternatives to the concession revocation process.

Some wider concerns

Some wider concerns include…

- A downgrading of Enel Brazil's credit rating from AA+ to AAA by Fitch, which also applies to the subsidiaries Enel-SP, Enel Rio and Enel Ceara.
- Possible legal disputes.
- Possible operational disruptions if the concession is assigned to another network operator
- Possible impact on prices.

Pipes & Wires will continue this story as events unfold.

Energy mix and grid security

NZ – dwindling gas reserves

Introduction

Back in May 2026 the Ministry of Business, Innovation & Employment (MBIE) announced that gas supply would be under even more pressure than was previously announced. This article examines the details of that announcement, and reconciles that to previous known reserves presented in back issues of Pipes & Wires in what has become a bit of annual re-evaluation.

MBIE's statements

MBIE's announcement included the following specific statements…

- As of 1st January 2026, natural gas reserves were 731 PJ.
- This is a reduction of 217 PJ since 1st January 2025, which comprises 108 PJ of actual gas extraction along with downward revision of 109 PJ from previous estimates.
- That downward revision of 109 PJ includes a downward revision of 113 PJ for Pohokura, offset by an upward revision of 39 PJ for Mangahewa.

Quantifying the gas reserves

The following table updates the table from Pipes & Wires #233…

Reporting date	2P Reserves (PJ)	Consumption during reporting year (PJ)	Estimated years' reserve
1 January 2026	731	Not available yet	6
1 January 2025	948	118	9½
1 January 2024	1,300	119	8½
1 January 2023	1,635	147	11
1 January 2022	1,967	145	13½
1 January 2021	2,074	155	13¼
1 January 2020	2,021	183	11¼

Further reading

Readers may be interested in the following back issues…

- Pipes & Wires #238 – NZ the end of Maui gas.
- Pipes & Wires #233 – NZ dwindling gas reserves.
- Pipes & Wires #229 – NZ gas under pressure.
- Pipes & Wires #221 – NZ are gas reserves dwindling ?
- Pipes & Wires #201 – NZ gas under pressure.
- Pipes & Wires #199 – Aus re-examining the gas exploration moratoria.

Aus – the Final 2006 Integrated System Plan

Introduction

The Australian Energy Market Operator (AEMO) recently published its Final 2026 Integrated System Plan (ISP), the road map for the National Electricity Market (NEM). This article examines the key features of the Final ISP against the key features of the Draft ISP, and notes the changes.

Regulatory framework

The ISP provides a whole-of-system plan for the efficient development of the NEM for the next 20 years, seeking to optimise investment in generation, storage and transmission. Section 49(2) of the National Electricity Law sets out the AEMO's specific obligations in regard to long-term transmission grid planning.

Key features of the Final 2024 ISP

A comparison of the Draft and Final ISP's are as follows…

Key features of the Draft ISP	Key features of the Final ISP
Australia is relying more and more on renewables… • Over 40% of all electricity in the 2024/25 year. • About 51% for the month of October 2025. • About 79% for a single half-hour on 11th October 2025.	Australia is relying more and more on renewables… • Around 45% of all electricity in the 2025/26 year. • Over 50% in the December quarter of 2025. • About 80% for a single half-hour on 11th October 2025.
Investment is shifting from kick-starting the energy transition to de-risking that transition by ensuring sufficient grid-scale infrastructure to off-set coal retirements.	Significant progress is being made to ensure the NEM can be ready for each coal retirement.
Renewables are being supported by other technologies including… • Extending transmission grids to connect new renewable energy zones. • Enhancing distribution networks to optimise voltage control and host roof-top solar and household batteries. • Declining battery costs, and emerging battery technologies. • New gas-fired generation with flexible operating modes. • Existing hydro and pumped storage generation. • More flexible operation of remaining coal generation.	No change.
The Optimal Development Path (ODP) out to 2050 would see the NEM having… • About 120,000 MW of grid-scale wind and solar. • A further 87,000 MW of rooftop and small-scale solar. • About 40,000 MW of grid-scale storage and hydro. • A further 27,000 MW of household and commercial batteries. • About 14,000 MW of flexible gas-fired generation. • A further 6,000km of transmission. The nett market benefits are expected to be $24b.	The Optimal Development Path (ODP) out to 2050 would see the NEM having… • About 120,000 MW of grid-scale renewables (no change). • A further 87,000 MW of rooftop and small-scale solar (no change). • About 50,000 MW of grid-scale storage and hydro (an increase of 10,000 MW from the Draft ISP). • A further 35,000 MW of household and commercial batteries (an increase of 8,000 MW from the Draft ISP). • About 17,000 MW of flexible gas-fired generation (an increase of 3,000 MW from the Draft ISP). • A further 6,000km of transmission. The nett market benefits are expected to be $28b (an increase of $4b form the Draft ISP).

This concludes Pipes & Wires coverage of the Final 2026 ISP.

South Africa – planning a second nuclear station

Introduction

Most of Pipes & Wires recent focus on South Africa has been the unbundling of Eskom's high voltage transmission grid business. This article notes emerging plans for a second nuclear station that will complement South Africa's one operating nuclear power station at Koeburg north of Cape Town.

Progress to date

Key steps included the following…

- September 2011 - Energy Minister Dipuo Peters signed off a proposal for 9,600MW of nuclear capacity that was to go to Cabinet for a decision by the end of 2011.
- November 2011 - Cabinet's approval to establish the National Nuclear Energy Executive Coordination Committee (NNEECC) at its meeting. There was media comment that the NNEECC would be authorised to approve construction contracts without further reference to cabinet.
- April 2016 – two site license applications are submitted to the National Nuclear Regulator for approval, one for Thyspunt (in the Eastern Cape) and the other for Duynefontein (in the Western Cape near Koeburg).
- Mid 2017 - that progress seemed to come to a sudden halt around mid-2017 when various lobby groups were upset with the process (ostensibly around the lack of debate, consultation and transparency) and took *inter alia* the Minister, the President, the Regulator and Eskom to the High Court in the Western Cape. Key features of the case include whether various documents and agreements were tabled in accordance with legislation. The ruling declared *inter alia* that…
    - Agreements with Russia, the United States and with South Korea were both unconstitutional and unlawful, and were to be set aside.
    - Various decisions around procuring new nuclear generation capacity made pursuant to the Electricity Regulation Act were unlawful and unconstitutional, and were to be set aside.

  Energy Minister Mmamoloko Kubayi decided not to appeal the High Court's ruling.

Latest announcements

As of mid-2026, the South African Government has selected Thyspunt as the preferred site (about 80km west of Port Elizabeth) from a short-list of Thyspunt, Bantamsklip (on the south coast of the Western Cape), and Duynefontein (adjacent to Koeburg). Key reasons for choosing Thyspunt instead of Duynefontein include…

- Land ownership – the land at Thyspunt is already owned by Eskom, and has zoning approval for a nuclear station.
- Grid access – Thyspunt is closer to emerging load centers in the eastern country, and also closer to a proposed 765kV line near Port Elizabeth.
- Economic growth – Thyspunt provides economic growth for the Eastern Cape, in contrast to the growth constrained areas around Duynefontein.

Eskom has been granted an environmental authorization for a 4,000 MW station following approval of the environmental assessment.

Next steps

Next steps include…

- Undertaking a full Environmental Impact Assessment, pending the outcome of a Scoping Report.
- Addressing heritage concerns
- Reviewing the Nuclear Installation Site License terms.
- Formalising the procurement framework.

Pipes & Wires will examine this further as progress occurs.

Engineering & technology

Britain – geothermal power in Cornwall, England

Introduction

Most of us are probably aware that Cornwall in England was built on mining firstly tin and then copper, so it seems fitting to now examine the recently commissioned geothermal electricity generation, heat and lithium extraction plant near Truro.

A bit about how geothermal works

A geothermal aquifer has two interdependent components…

- An underground aquifer, essentially a permeable geologic formation (eg. sand, gravel or fractured rock) that can store and transmit ground water. Aquifers are typically refilled by rain or snowmelt seeping into the ground.
- A heat source (typically in volcanic areas) that is close to the aquifers.

In the specific context of electricity generation, the steam conditions can be around 150°C to 300°C and about 20 to 50 bar pressure (which is about where Wairakei operates). This is obviously much less than the typical steam conditions of a coal-fired or gas-fired steam turbine (about 540°C and 180 bar pressure back when I was a boy).

The United Downs geothermal plant

Key features of the United Downs plant are…

- The geothermal fluid is sourced from deep fractures in the underlying granite that are about 5,200m deep.
- The specific technology will be an Organic Rankine Cycle (ORC) in which the geothermal fluid will heat the secondary working fluid. The ORC uses an organic fluid with a lower boiling point than water so that the working fluid ("steam") vaporises at a lower temperature than in a conventional steam turbine.
- Low temperature fluid (about 50°C) will be re-injected into the wells.

The United Downs outputs

United Downs is expected to produce the following…

- About 3MW of electricity, committed to a 10 year PPA with Ecotricity.
- About 10MW of community heating
- About 100 tons of Lithium Carbonate Equivalent per year.

General stuff

Guide to NZ electricity laws

I've compiled a "wall chart" setting out the relationship between various past and present electricity Acts, Regulations, Codes etc in sort of a chronological progression. To request your free copy, pick here. It looks really cool printed in color as an A2 or A1 size.

A bit of light-hearted humor

What if price control had been around in the 1920's and 1930's ? A collection of classic historical photo's with humorous captions looks at some of the salient features of price control. Pick here to download.

Extending the above, a second collection of classic historical photo's with humorous captions looks at some topical issues of regulating emerging technologies. Pick here to download.

A potted history of electricity transmission

I've recently compiled a potted history of electricity transmission. Pick here to download.

Wanted – old electricity history books

Now that I seem to have scrounged pretty much every book on the history of electricity in New Zealand, I'm keen to obtain historical book, journals and pamphlets from other countries. So if anyone has any unwanted documents, please email me.

House-keeping stuff

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