

Energy (Renewable Transformation and Jobs) Bill 2023

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Committee Secretary
Transport and Resources Committee
Parliament House
George Street
Brisbane Qld 4000

Via email: trc@parliament.qld.gov.au

Dear Committee Secretary

Re: Energy (Renewable Transformation and Jobs) Bill 2023

The Queensland Electricity Users Network (QEUN) appreciates the opportunity to provide a submission to the Transport and Resources Committee's Inquiry into the *Energy (Renewable Transformation and Jobs) Bill 2023* (the Bill).

About the Queensland Electricity Users Network

The Queensland Electricity Users Network (QEUN) is one of only a handful of energy consumer advocates based in regional Australia.

QEUN is active at a state and national level providing input to the Australian Energy Market Operator, Australian Energy Regulator, Australian Energy Market Commission, Energy Queensland and Powerlink.

QEUN represents small business and middle Australian residential consumers with a particular emphasis on energy consumers in regional Australia.

We advocate for affordable and reliable electricity from a resilient National Electricity Market where the pace of the transition to a renewable energy future is not at the expense of the economy, jobs or reasonable living standards.

The Bill will enshrine in law a flawed Queensland SuperGrid Infrastructure Blueprint

The aim of the Bill is to ensure an orderly transition to a renewable energy future.

To do this the Bill has as its main purposes:

- To increase the amount of electricity generated in Queensland from renewable energy sources
- To facilitate and support the efficient and coordinated augmentation of the national transmission grid in Queensland to accommodate the increased generation of electricity from renewable energy sources in a safe, reliable and cost-effective way
- To provide for the support and advocacy for workers in the energy industry and communities affected by the increased generation of electricity from renewable energy resources

The Bill is flawed.

Without significant amendments, the Bill will result in a weak Queensland economy with widespread job losses across multiple industry sectors including the energy sector.

The Bill completely removes protections provided to Queensland energy consumers through the National Electricity Objective (NEO) and the national electricity rules that support the NEO. The Bill effectively goes around the NEO and puts environmental objectives above all other considerations.

QEUN strongly believes there can be no orderly transition without a resilient national grid that can supply affordable, reliable and secure electricity to homes, businesses and farmers throughout Queensland and the other four states in the National Electricity Market.

The Bill would enshrine in legislation the popular catch cry *“there is no transition without transmission”*.

The most critical component of the energy transition is not transmission but energy storage.

An electricity system in an industrialised economy which is heavily dependent on whether the sun shines or the wind blows needs to ensure there is sufficient energy storage to meet demand 24/7, 365 days of the year - every year.

Crucially, Queensland needs energy storage that can recharge even if there is *low or no* wind and solar.

Energy storage is a net load ie it uses more electricity to charge than what it produces when it generates.

It is essential the Queensland electricity system and therefore the critical energy storage component is resilient to:

- Climate change eg wind droughts
- Geopolitical tensions eg conflicts with China resulting in trade restrictions
- Supply chain issues eg China’s dominance of key renewables like batteries, EVs and wind turbines
- Technological advances in generation and storage

The Bill mandates the Queensland SuperGrid Infrastructure Blueprint (QSIB) dated September 2022 will become the first infrastructure blueprint.

The QSIB is already a flawed energy plan.

The QSIB may deliver a cleaner decarbonised electricity system but it will not deliver a resilient electricity system that is affordable, reliable and secure – as stipulated in the National Electricity Objective.

Enshrining a flawed QSIB in legislation will result in a weak Queensland economy unable to fund essential infrastructure and services such as schools, roads, hospitals, dams and police.

The Bill mandates a review of the QSIB will occur by 31 May 2025 and then at intervals of 2 years. There is also a provision for the Minister to review the QSIB at any time.

The QSIB needs to be reviewed as a matter of urgency. It is already undeliverable due to funding, planning, equipment and workforce constraints.

The Bill stipulates that in reviewing the QSIB the Minister must have regard to the advice and recommendations of the proposed Queensland Energy System Advisory Board (QESAB) and the proposed Energy Industry Council.

Consumer input into any review of the QSIB is almost non-existent.

Yet the electricity system exists to serve energy consumers, especially the largest consumer of grid supplied electricity – small business. Small business is the largest private employer in Australia.

Any formal consumer input is limited to one of the 5 (or 7) members of proposed Queensland Energy System Advisory Board possessing qualifications or skills in relation to “advocacy or support for consumers of energy”. The QESAB board only has to meet four times a year. The addition of the QESAB will yield little benefit to energy planning and to energy consumers and therefore is not necessary or supported.

Without informed input from experienced energy consumer advocates the Minister will continue to implement the current QSIB which will not build an electricity system that is affordable, reliable, secure and resilient.

This is likely to result in a reoccurring expense item in the Queensland Budget of an electricity rebate to all Queensland households and small businesses ie not just the traditional vulnerable households.

In 2023-24 the electricity rebates provided to all Queensland households and small businesses cost the Queensland Budget \$1.483 billion.

The Bill will make electricity supply in Queensland unreliable

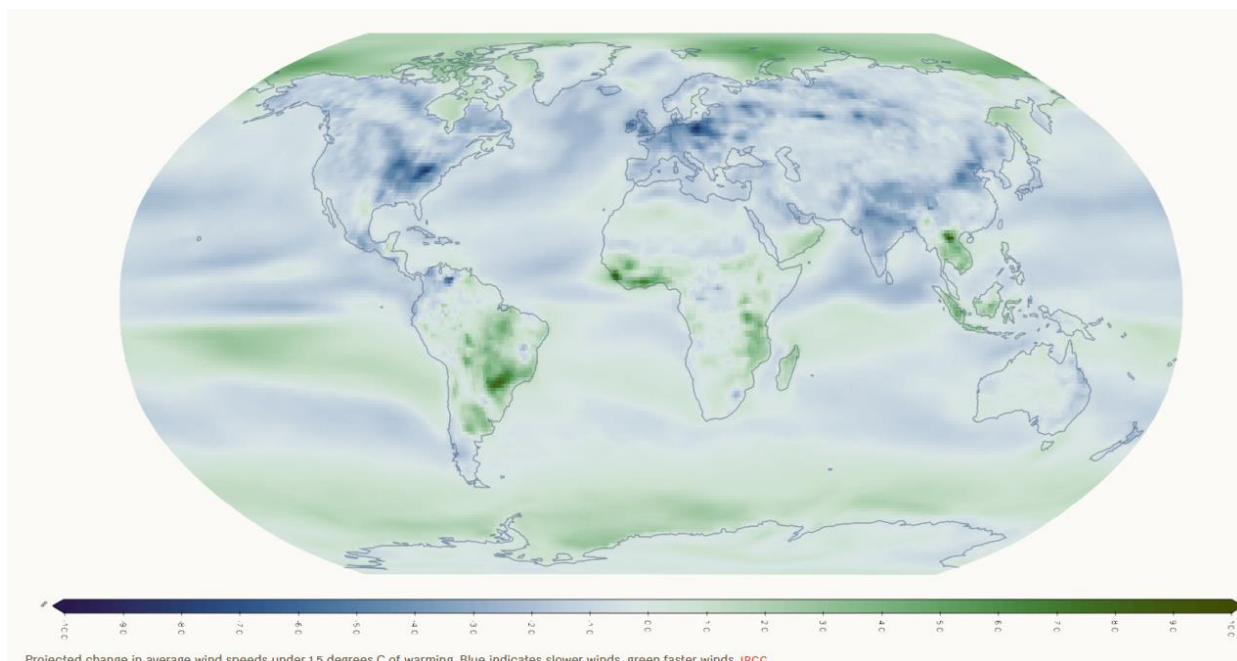
We all know the sun does not shine at night but little is known about the impact of climate change on wind.

The Intergovernmental Panel on Climate Change (IPCC) – the entity governments around the world rely on for climate advice - has forecast a global stilling of winds in the decades to come. One of the countries forecast to experience a stilling of winds is Australia (Figure 1).

Worryingly, a 10 percent drop in wind speed can drop the generation from wind farms by 30 percent.

Stilling can mean slower wind speeds but wind droughts (which have already occurred in Australia and Europe) can mean low or no wind.

Figure 1- Projected change in average wind speeds under 1.5 degrees C of warming



Note: Blue indicates slower winds, green faster winds Source: IPCC

In a wind drought it doesn't matter how many wind farms are built to meet the legislated Queensland Renewable Energy Targets of 50% (2030), 70% (2032) and 80% (2035). Legislation does not make the wind blow. Without wind, wind farms do not generate electricity.

The geographic spread of wind farms helps to alleviate the impact of low or no wind. However, on 1st and 2nd April 2023 there was no wind generation anywhere in Queensland for a few hours.

Of great concern is that wind droughts in Australia are forecast to last for days or weeks.

The impact of wind droughts, especially at night time, can be lessened if there is sufficient energy storage to meet electricity demand.

Energy storage is often falsely regarded as generation when all it does is store and release.

Energy storage requires a source of electricity to charge in order to discharge/release electricity.

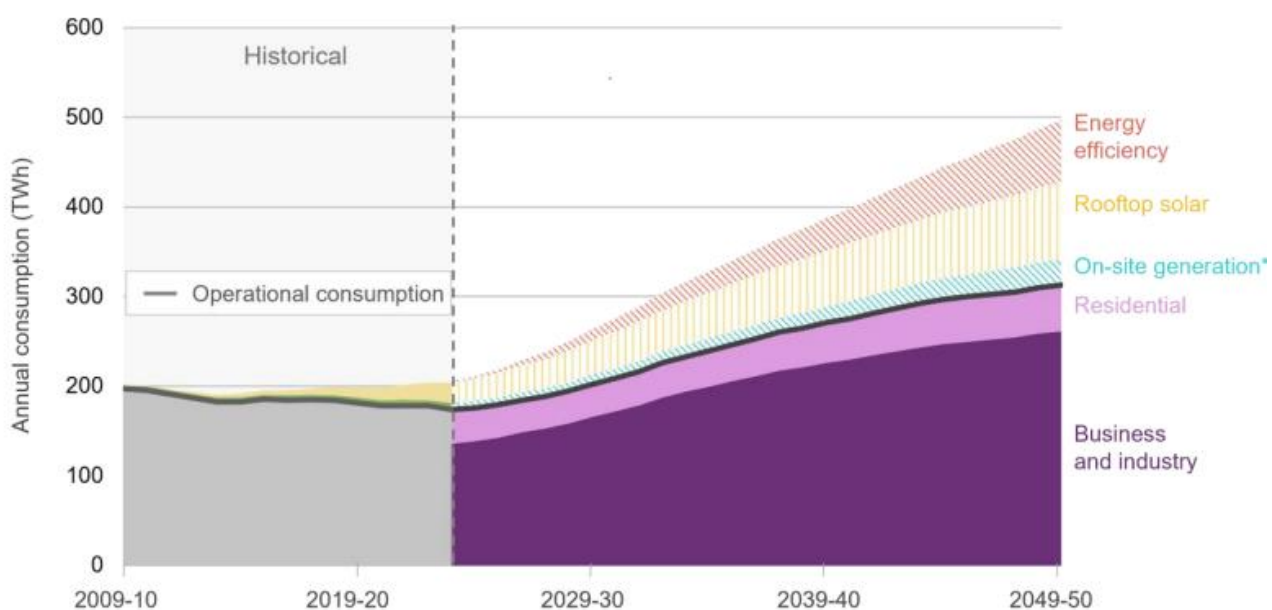
When coal-fired power stations have all closed and there is low or no overnight wind, batteries and the pumped hydro projects **currently** in the Queensland SuperGrid Infrastructure Blueprint, will be highly reliant on daytime sunshine, or gas-fired power stations, to "charge" ready to "release" electricity – usually in the next peak demand period typically 4pm to 8pm Monday to Friday.

(The 1,000 MW pumped hydro Koombaloo Energy and Water Project is not in the QSIB, it better utilises existing Queensland Government owned energy and water assets and can operate with low or no solar & wind)

Batteries and the current pumped hydro in the QSIB will not be alone in their thirst for electricity during daytime sunshine hours to charge.

Electricity demand in the National Electricity Market (NEM) is set to escalate (Figure 2).

Figure 2 Electricity consumption in the NEM (TWh, 2009-10 to 2049-50, Step Change Scenario)

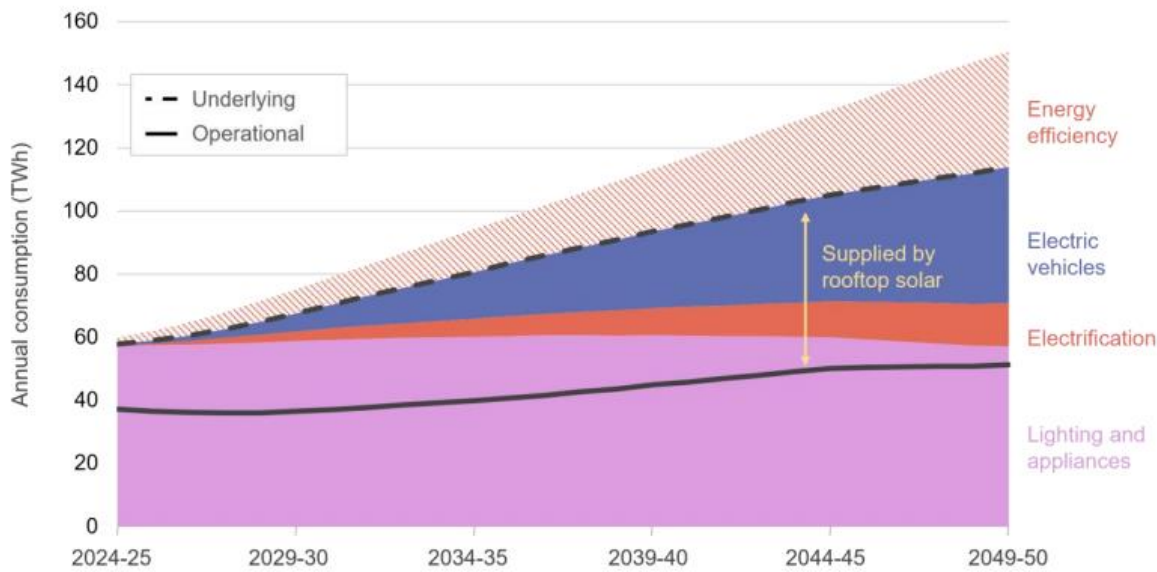


Note: On-site generation (or "non-scheduled generation") is non-utility generation that includes on-the-ground PV and small wind and biomass, typically for industrial use.

A concerted push by state and federal governments to electrify homes and businesses, support a green hydrogen export industry, build desalination plants, facilitate big data centres and electrify the transport system, will collectively constitute a substantial increase in electricity demand both during the day and throughout the night (Figure 3 and Figure 4).

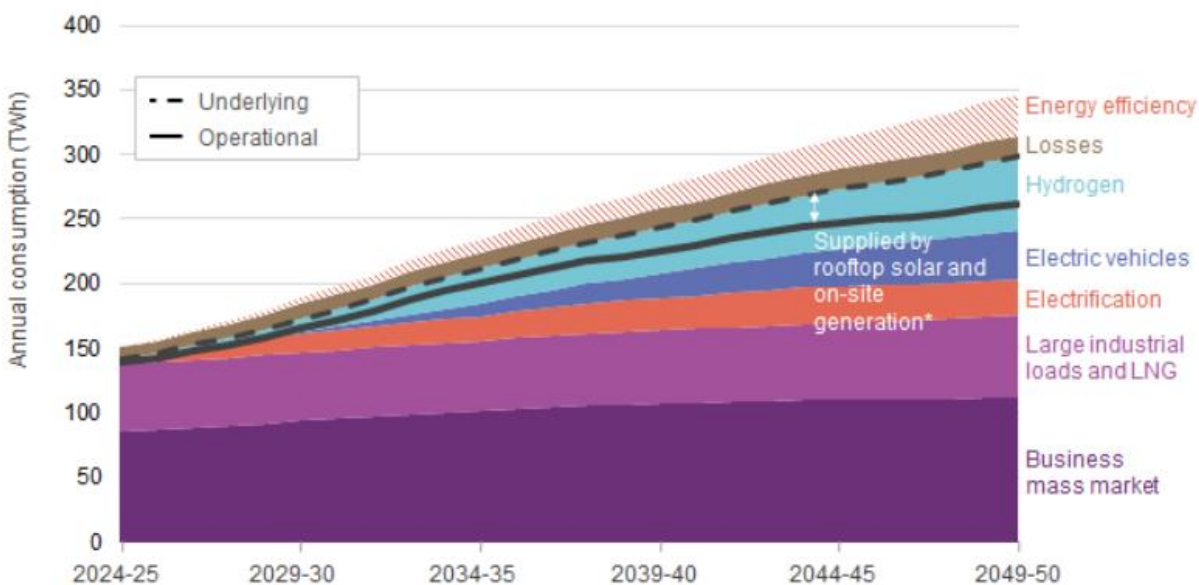
The Australian Energy Market Operator (AEMO) is forecasting business and industry demand to almost double, including a continued increase in demand from the business mass market sector which is dominated by small business – the engine room of the economy that employs around 5 million Australians.

Figure 3 Residential electricity consumption, NEM (TWh, 2024-25 to 2049-50, Step Change Scenario)



Source: Australian Energy Market Operator Draft 2024 Integrated System Plan, December 2023

Figure 4 Business & industry electricity consumption, NEM (TWh, 2024-25 to 2049-50, Step Change Scenario)



Note: On-site generation (or "non-scheduled generation") is non-utility generation that includes on-the-ground PV and small wind and biomass, typically for industrial use.

Source: Australian Energy Market Operator Draft 2024 Integrated System Plan, December 2023

One of ‘new’ demands contributing to the substantial rise in electricity demand is electric vehicles.

AEMO commissioned CSIRO to forecast the number of battery electric vehicles (BEV) and plug-in hybrid electric vehicles (PHEV) for its main national planning document – the Integrated System Plan (ISP).

In the Step Change Scenario (commonly referred to as the most likely scenario in the ISP), the number of EVs & PHEVs in Queensland is forecast to be 707,379 in 2030 and 1,849,435 in 2035 (Table 1).

That’s about 100,000 new BEV and PHEV sales per year in Queensland for the next seven years or collectively over 400,000 per year in the five NEM states of Queensland, NSW, Victoria, South Australia and Tasmania.

To put this in perspective, in June 2023 there was only just over 100,000 BEVs & PHEVs in the entire NEM and for calendar year 2023 new BEV & PHEV sales *in Australia* totalled just over 98,000 (87,217 BEVs and 11,212 PHEVs) or 8.1% of new vehicle sales.

In 2023 new vehicle sales hit a record *in Australia* of 1,216,780.

At over 15 million passenger vehicles, car ownership in Australia is one of the highest in the world.

However, the average age is increasing from 10.8 years in 2022 to 11.0 years in 2023.

In AEMO’s faster transition path, the Green Energy Exports Scenario, the number of EVs and PHEVs will increase from 982,250 in 2030 to 2,432,646 in 2035 (Table 1).

That’s about 140,000 new BEV and PHEV sales per year in Queensland for the next seven years or collectively over 570,000 per year in the five NEM states of Queensland, NSW, Victoria, South Australia and Tasmania.

In both scenarios, the ISP assumes Australians will embrace BEVs and PHEVs which will push electricity demand higher across the five states in the NEM.

QEUN believes that without government intervention (eg policy that bans the sale of new petrol and diesel cars after 2035), the forecast for BEVs is too ambitious due to purchase cost, range anxiety, potentially higher car and house insurance premiums and the cost of living crisis.

Table 1: Number BEVs and PHEVs in the NEM in AEMO’s Integrated System Plan

Step Change	2022-23	2023-24	2024-25	2025-26	2029-30	2034-35	2039-40	2049-50
NSW	40,952	62,249	104,030	205,356	1,063,740	2,675,801	4,314,105	7,509,097
QLD	22,467	34,583	60,028	129,051	707,379	1,849,435	3,042,849	5,368,922
SA	6,405	9,883	17,815	38,229	214,979	547,766	886,090	1,545,695
TAS	2,178	2,737	3,538	4,801	25,991	128,647	253,199	496,230
VIC	29,959	45,548	77,138	155,791	846,086	2,180,055	3,559,830	6,249,090
TOTAL NEM	101,961	155,001	262,549	533,228	2,858,175	7,381,704	12,056,073	21,169,034

Green Energy Exports	2022-23	2023-24	2024-25	2025-26	2029-30	2034-35	2039-40	2049-50
NSW	41,836	74,809	168,570	315,915	1,480,242	3,547,050	5,614,161	8,117,086
QLD	22,927	51,711	117,300	217,102	982,250	2,432,643	3,883,162	5,664,930
SA	6,520	9,568	24,235	51,132	282,328	717,801	1,153,289	1,649,023
TAS	2,225	3,317	7,673	15,437	82,855	222,285	361,708	509,927
VIC	30,581	57,590	128,650	245,251	1,170,958	2,902,548	4,634,303	6,803,811
TOTAL NEM	104,089	196,995	446,427	844,838	3,998,633	9,822,326	15,646,623	22,744,778

Source: Compiled by QEUN from AEMO’s Draft 2024 Inputs and Assumptions Workbook, December 2023

But the electric vehicle story is not just a story about how the electrification of private and public transport will increase electricity demand.

It is very much a story about how the national grid will be highly reliant on the energy stored in electric vehicle batteries to keep the grid reliable and secure ie the national grid will be reliant on the energy stored in electric vehicles to keep the home lights on and the wheels of industry turning.

The batteries in electric vehicles are part of what is termed Consumer Energy Resources (CER).

CER is generation or storage assets owned by consumers and installed behind-the-meter. These can include rooftop solar, batteries and electric vehicles.

There are two categories of CER storage – coordinated and passive.

Coordinated CER storage - includes behind-the-meter battery installations that are enabled and coordinated via Virtual Power Plant (VPP) arrangements. This category includes VPP-coordinated EVs with vehicle-to-grid capabilities.

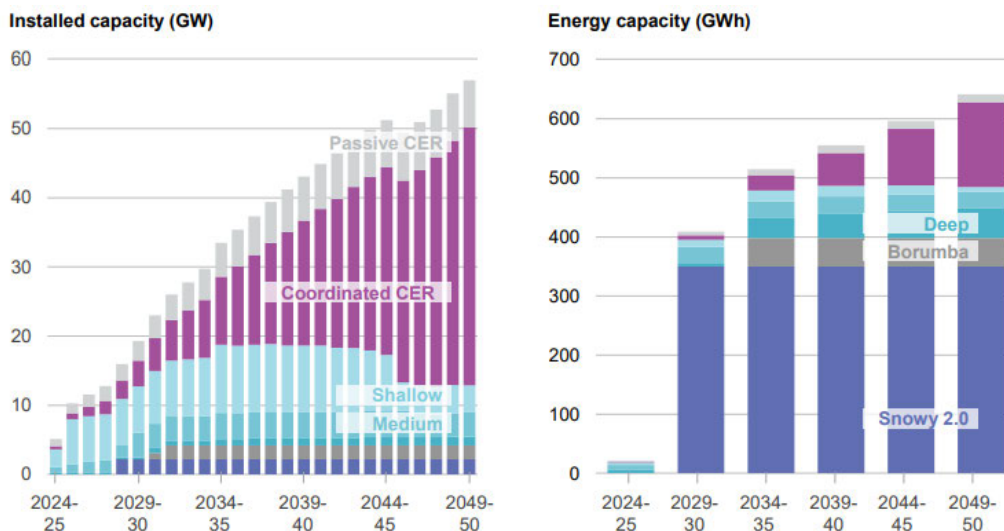
Passive CER storage – includes non-aggregated behind-the-meter battery installations designed to support customer’s own load ie their home or business.

Virtual Power Plant – an aggregation of resources coordinated to deliver services for electricity system operations and electricity markets. For the ISP, VPPs enable coordinated control of CER including batteries and electric vehicles.

According to AEMO’s Draft 2024 ISP “the capacity of coordinated CER storages is forecast to rise from today’s 0.2 GW to 3.7 GW in 2029-30 and then 37 GW in 2049-50 – by then making up 65% of the NEM’s energy storage capacity”. AEMO further state that while the combined installed capacity of coordinated and passive CER storage is large, they can only dispatch electricity for about two hours at full charge so their energy storage capacity is relatively small and deeper utility-scale storage is needed (Figure 5).

Figure 5:

Storage installed capacity (GW) & energy storage capacity (GWh), NEM, Step Change Scenario, 2024-25 to 2049-50



Source: AEMO Draft 2024 Integrated System Plan, December 2023

Due to the planned closure of dispatchable generation in the QSIB, Queensland needs sufficient energy storage of various duration (shallow, medium, deep and CER) to ensure an orderly transition.

The QSIB defines *dispatchable* generation as generation that can be scheduled on or off and increased or decreased on command to ensure supply always meets demand, it includes coal, gas and hydro generation.

Currently Queensland has over 8,000 MW of *dispatchable* coal generation, 3,000 MW of *dispatchable* gas generation and 160 MW of *dispatchable* run-of-river hydro generation.

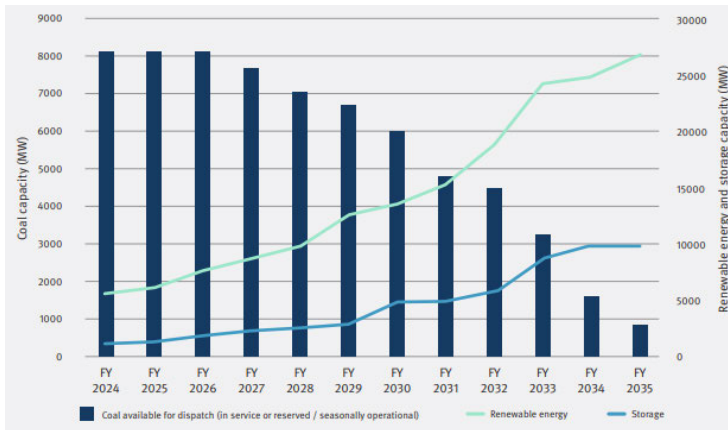
At present the peak demand for electricity is around 10,000 MW.

The **current** Queensland SuperGrid Infrastructure Blueprint, the blueprint that this Bill will enshrine, states that:

*By 2035, the Queensland system is anticipated to have sufficient supply and storage to support zero regular reliance on coal generation. Figure 6 indicates the declining reliance on coal-fired generation as new storage and renewable energy capacity becomes operational. Privately owned power stations will make their own decisions in the context of growing renewable energy and storage, **but the system is being designed to operate without reliance on coal by 2035.***

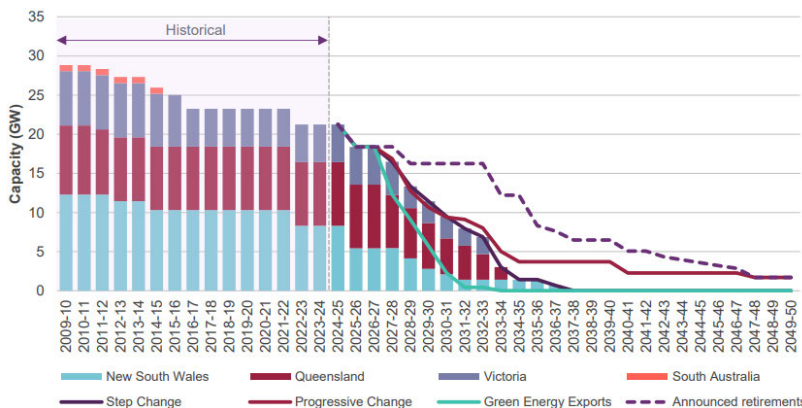
In the AEMO Draft 2024 ISP Step Change Scenario all Queensland coal generation is gone by 2034 (Figure 7).

Figure 6: Declining reliance on coal generation as new storage & renewable energy capacity becomes operational



Source: Queensland SuperGrid Blueprint, September 2022

Figure 7: Historical and forecast coal retirements, 2009-10 to 2049-50 (GW)



Source: AEMO Draft 2024 Integrated System Plan – Appendix 2 Generation and Storage Development Opportunities, December 2023

Two areas of particular interest to energy consumers in Queensland should be when the first coal-fired power station in Queensland is scheduled to close and the likelihood of the 2,000 MW Borumba Pumped Hydro being fully operational by 2031.

The Bill will legislate that the Queensland SuperGrid Infrastructure Blueprint published in September 2022 will become the first QSIB.

As per Figure 6 (above) from the QSIB, the first coal-fired power station in Queensland could close as early as 2026-27. The national electricity rules state generators must provide 42 month notice of closure to the Australian Energy Market Operator. June 2027 is only 41 months away. The notice of closure enables AEMO to adjust its ISP and other critical publications (eg Electricity Statement of Opportunities) to avoid a disorderly transition. A disorderly transition is not in the long term interest of energy consumers in Queensland nor the other four states in the National Electricity Market.

To maintain a reliable and secure national grid the Draft 2024 ISP is heavily dependent on the Federal Government owned Snowy 2.0 Pumped Hydro being fully operational by December 2028 and the Queensland Government owned Borumba Pumped Hydro being fully operational by September 2031.

To be fully operational also requires billions of dollars of investment in transmission to connect Snowy 2.0 PH and Borumba PH to the national grid. Transmission projects that have largely failed to gain social licence from regional communities expected to host the transmission lines.

The 2,200 MW Snowy 2.0 PH has been plagued with continuous cost blowouts (\$2 billion to \$12 billion and counting) and construction delays (from 2021 to 2028 and possibly longer). Most of the cost blow out and delays can be attributed to geotechnical issues.

In the QSIB the preliminary high level works program for the 2,000 MW Borumba PH has the project fully operational by June 2031 (Table 2). However, the geotechnical challenges faced by Snowy 2.0 PH could be encountered by Borumba PH. Work on the exploratory tunnel drilling is yet to commence. Work will only occur if and when Queensland Hydro receives all the necessary environmental and planning approvals. This means work on the tunnelling may not commence until November 2024 (or later if approvals are held up or rejected).

Any hold up in the geotechnical investigations will delay the determination of the project cost, which is already estimated at \$14.2 billion, making it one of the most expensive infrastructure projects in the history of Queensland (and even more expensive than the trouble-prone Snowy 2.0 Pumped Hydro).

There is also the issue of the 2 year filling time required for Borumba PH's two new reservoirs.

The existing Borumba Dam is not part of Seqwater's South East Queensland Water Grid (SEQWG) but it is in the same area and subject to similar weather patterns/climate risks.

With the uncertainty of future El Nino and La Nina events, construction and filling of the Borumba PH reservoirs could be delayed. This would be disastrous for AEMO's Draft 2024 Integrated System Plan which is heavily dependent on both Borumba PH and Snowy 2.0 PH to keep the national grid reliable and secure.

In April 2022 Seqwater wrote in its Water Security Status Report:

Did you know?

Prior to the extreme rain events experienced throughout the region at the end of **February 2022**, SEQ's largest storages, Wivenhoe and Somerset Dams, were at their lowest combined level since the Millennium Drought.

In May 2023 Seqwater wrote in its Water Security Status Report:

Did you know?

Nine of the ten driest winter–spring periods on record for eastern Australia occurred during El Niño years. Since 1900, the average winter–spring rainfall has been 28% lower than the long-term average, with severe droughts in 1982, 1994, 2002, 2006, and 2015 all associated with El Niño events. Two of Australia's warmest winters (2009 and 2002), springs (2006 and 2002), and summers (1982–83 and 1997–98) all occurred during El Niño years.

Table 2: Preliminary high-level works program for Borumba Pumped Hydro

Phase	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31
Detailed analytical report ¹	FEED/technical studies									
EIS ²	Environmental/technical studies									
Early works		Site access								
Civil works			Construct upper and lower dam, caverns, tunnels							
Transmission		Design and corridor acquisition			Build transmission					
Turbines						Install and commission				
Upper reservoir								Fill reservoir		
Final commissioning and handover									Operational	

Source: Queensland SuperGrid Infrastructure Blueprint, September 2022

As well as Borumba PH and Snowy 2.0 PH, AEMO's ISP is heavily reliant on coordinated Consumer Energy Resources and shallow & medium energy storage to keep the national grid reliable and secure once coal generation closes.

A higher % of renewable energy without sufficient energy storage does not support affordable electricity

The influence of energy storage ownership on wholesale electricity prices and electricity bills

With coal generation gone and the future of gas generation in Queensland and the NEM uncertain, the biggest influence on wholesale electricity prices is not necessarily the 50%, 70% and 80% renewable energy supplied by wind and solar generation, it is likely to be the wholesale electricity prices bid by owners of energy storage.

Shallow storage is utility scale energy storage with a duration of less than 4 hours.

Medium storage is energy storage between 4 and 12 hours.

Deep storage is energy storage over 12 hours.

The appetite for private investment in deep storage is low as evidenced by the Federal Government's Capacity Investment Scheme. Private investors understand that to finance a deep storage project with a cost in excess of \$10 billion requires a regular occurrence, and a sizeable difference, between the cheaper wholesale prices needed to charge and the more expensive wholesale prices needed to discharge. A regular occurrence of cheaper wholesale electricity prices cannot be counted on if the Queensland and Federal governments succeed in their ambition for Australia to be the green hydrogen export capital of the world.

Hydrogen electrolyzers are able to ramp up and down in response to high electricity prices. However, it is highly likely that to meet the offtake agreements needed to finance multi-billion dollar green hydrogen projects electrolyzers will need to operate on a 24/7, 365 day a year basis.

Electricity demand from the green hydrogen industry combined with big data centres, desalination plants and electric vehicles who similarly operate on a 24/7, 365 days a year basis is likely to significantly slim what is commonly referred to as the duck curve.

The financial and operational viability of *pumped hydro* deep storage will be significantly affected by prolonged periods of low or no wind and solar eg a wind drought.

The proposed 2,000 MW Borumba PH and proposed 5,000 MW Pioneer Burdekin Pumped Hydro are key projects in the QSIB. Both have an asset life of 100 years. If the IPCC forecast of a global stilling of winds and slower wind speeds in Australia is right, both pumped hydro projects could become exorbitantly expensive giant flat batteries, not the insurance policy they were supposed to be for energy consumers.

The proposed Pioneer Burdekin PH would be the largest pumped hydro in the world. There is a reason why other countries have not invested in such large pumped hydro projects that would be largely dependent on intermittent wind and solar to operate.

For the near future, shallow and medium energy storage is likely to be dominated by lithium batteries manufactured overseas with an asset life of 20 years.

It is increasingly likely the Federal Government's Capacity Investment Scheme will be dominated by shallow storage owned by private and foreign owned companies.

It is also likely medium storage will be largely owned/controlled by private and foreign owned companies.

The Queensland SuperGrid Infrastructure Blueprint paves the way for shallow and medium energy storage to be built, owned and operated by private and foreign owned companies.

Although the QSIB mandates 100% ownership of deep storage and 54% of generation assets, it will be private and foreign companies that will be putting the final megawatt of electricity into the bid stack and potentially setting the wholesale electricity price. That means that despite the billions of dollars invested in publicly owned deep storage and renewable energy generation assets, majority public ownership as set out in the QSIB will not deliver cheaper electricity bills to Queensland consumers.

The Bill will not provide affordable electricity bills

When a commodity is in short supply the price goes up.

In 2015-16 the residential and small business retail electricity price was based on a wholesale electricity price of \$63.73/MWh. The *energy* cost component of an Ergon Retail electricity bill was 21%.

In 2023-24 the wholesale electricity price climbed to \$171.87/MWh. The energy cost component also climbed to 52.4% for a residential bill, 45.7% for small business and 43.5% for large business (Figure 8 and Figure 9).

The wholesale electricity price represents about 75% of the *energy* cost component of an electricity bill.

Therefore, to reduce electricity bills to both households and business, it is necessary to significantly reduce the wholesale electricity price - a wholesale price that in the future could be largely controlled by private and foreign owned companies that own the majority of Queensland's shallow and medium storage and control CER through being a Virtual Power Plant.

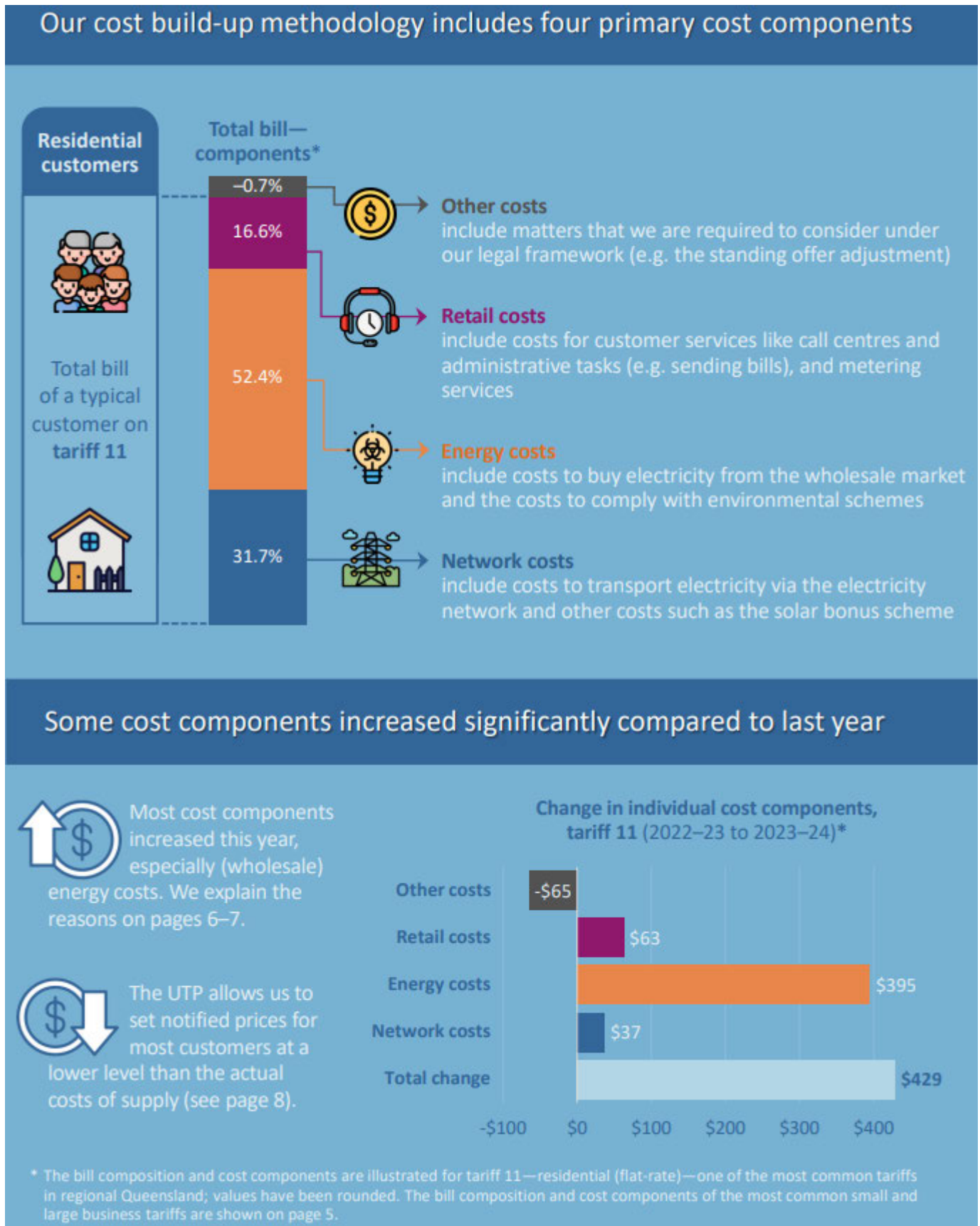
In practical terms how is 54% public ownership achieved?

The Queensland Government wholly owns three generation companies: Stanwell Corporation, CS Energy and CleanCo. CleanCo was created to increase competition in the wholesale market and to be a supplier of renewable energy.

It is unclear how the Queensland Government can achieve 54% public ownership of the energy generation assets of Queensland when Stanwell and CS Energy assets are at present mostly fossil fuel generation.

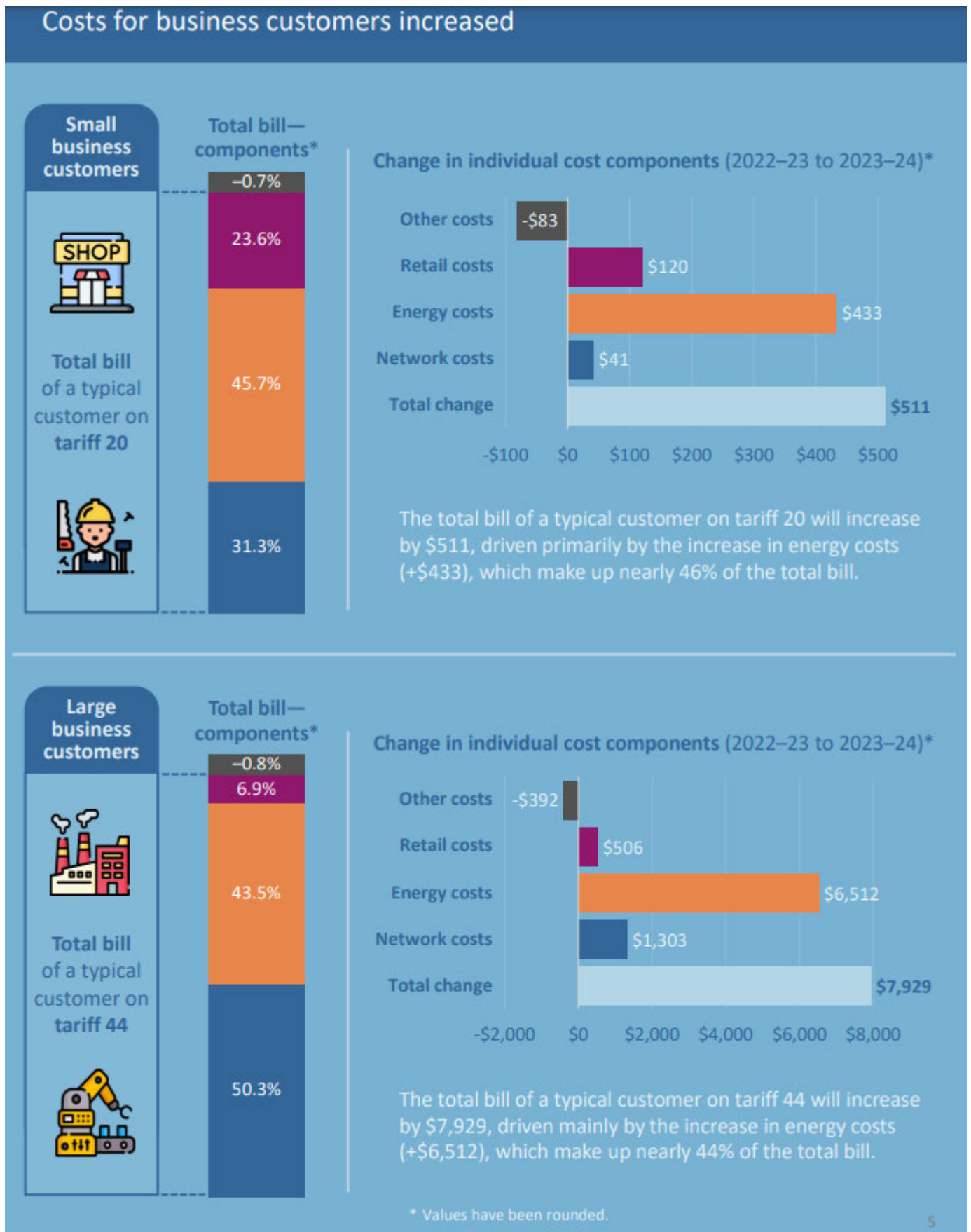
One of the ways Stanwell, CS Energy and CleanCo appear to be getting around the large capital cost of investing in renewable generation is by entering into Power Purchase Agreements (PPA) and Capacity Purchase Agreements (CPA) with private and foreign owned solar and wind farms. We strongly believe PPAs and CPAs do not constitute ownership and should not be counted towards the 54% public ownership of generation assets.

Figure 8: Cost components for a residential electricity bill for Ergon Retail in 2023-24



Source: Information booklet regulated retail electricity prices in regional Queensland 2023-24, Queensland Competition Authority, June 2023

Figure 9: Cost components for small and large business electricity bills for Ergon Retail in 2023-24



Source: Information booklet regulated retail electricity prices in regional Queensland 2023-24, Queensland Competition Authority, June 2023

In practical terms how are 50%, 70% and 80% renewable targets achieved with a 54% public ownership target?

In the Queensland Energy and Jobs Plan Update published in December 2023 it states:

Already more than half of the \$4.5 billion Queensland Renewable Energy and Hydrogen Jobs Fund has been allocated to support more publicly owned renewable energy projects and boost employment opportunities.

Around \$2.2 billion has been allocated to government owned corporations to develop key renewable energy projects as part of the plan. This includes \$192.5 million towards Stanwell's investment in the 252 MW Wambo Wind Farm near Dalby and \$776.1 million for Stanwell's 500 MW Tarong West Wind Farm outside Kingaroy.

This means half the funds have already been allocated with about a quarter of the funds being allocated to just two wind farms, one of which is a 50/50 joint venture.

This begs the question; how much money does the Queensland Government need to invest to achieve 54% public ownership of generation assets?

Queensland Government expenditure of \$969 million on two wind farms resulted in 752 MW of installed capacity.

As per the Queensland SuperGrid Infrastructure Blueprint, Queensland requires 25,000 MW without a green hydrogen export industry and much more should a green hydrogen export industry come to fruition.

The QSIB states:

Given the variable nature and capacity factors of renewable generation, around 25,000 megawatts (MW) of large-scale renewable generation (total) and around 7,000 MW of new rooftop solar generation is required to meet forecast demand in 2035 (without reliance on coal-fired generation). Significant large-scale renewable generation, beyond the 25,000 MW, will be required to support large new loads, including the emergence of an export-scale hydrogen industry or high electrification scenarios.

It would appear the only way the Queensland Government can achieve the 54% public ownership of generation assets is to count 50/50 joint ventures as public ownership. How can a 50/50 joint venture be counted towards the 54% public ownership when the Queensland Government does not have a controlling interest?

What counts as public ownership needs to be clarified.

Transparency needed on how the 50%,70% and 80% renewable energy targets will be measured

It is unclear in the Bill if the renewable energy target will be measured in installed capacity (MW) or electricity delivered (MWh).

The Queensland Audit Office has also sought clarification on how the Queensland Government is currently measuring its progress towards its 50% by 2030 Renewable Energy Target.

To date we are not aware if the Queensland Government has complied with the recommendations of the Queensland Audit Office.

Improving public reporting

To improve the transparency and accuracy of public reporting on the transition to renewable energy, we recommend the Department of Energy and Public Works:

3. publishes a detailed public statement of how Queensland's renewable energy target is defined and measured (Chapter 2)
4. updates its calculations of progress against the target to fully account for all relevant renewable energy, such as small-scale renewable, and non-renewable energy, such as diesel generation (Chapter 2)
5. reports more information on:
 - actual renewable generation including, for example, the amount of energy generated from wind, solar and other sources
 - the assumptions which support its renewable energy forecast (Chapter 3).

Source: *Managing Queensland's transition to renewable energy Report 5:2021-22, Queensland Audit Office, November 2021*

Will the 54% public ownership of generation assets skew public ownership to wind or solar investments?

Clarifying the methodology for measuring the renewable energy targets is necessary as it could affect whether the three Queensland Government owned generation companies invest in wind or solar farms.

If the public ownership is measured in installed capacity the calculation is simple eg a 100 MW solar farm and a 100 MW wind farm contribute 200 MW towards the 54% public ownership of generation.

However, if the methodology is measured in electricity delivered (MWh) then the calculation is more difficult as every wind and solar farm has a different capacity factor.

A solar farm has a capacity factor of at best 30% and a wind farm 50%.

Would a need to meet the 50%, 70% and 80% Renewable Energy Targets skew the investments of Stanwell, CS Energy and CleanCo to a more expensive technology/investment in order to meet the Renewable Energy Target?

The Bill should mandate that the Queensland Government pay all RERT costs

AEMO has an emergency response measure it can trigger if there is insufficient generation and insufficient energy storage to maintain a reliable and secure national grid.

AEMO can activate and dispatch Reliability and Emergency Reserve Trader (RERT) contracts.

The cost of RERT is passed through to consumers in the form of higher electricity bills.

QEUN believe the likelihood of more RERT costs is increasing due to a failure of the QSIB to provide insufficient *dispatchable* generation and energy storage to meet electricity demand.

The cost of RERT is significant as evidenced by the 1st February 2022 RERT event in Queensland that cost \$50.1 million dollars for just 331 MW of electricity for a few hours on one afternoon (Figure 10).

QEUN believe the Bill should make any RERT costs payable by the Queensland Government as it's the responsibility of the Queensland Government through the QSIB to have sufficient supply to meet demand.

Figure 6: Cost of Queensland RERT event on 1 February 2022**1 February 2022 RERT****Queensland**

On 1 February 2022, in Queensland, high temperature and humidity drove higher operational demand. At the same time, approximately 2,000MW of scheduled generation was unavailable, solar generation was reducing and wind generation was low. These conditions resulted in a forecast Lack of Reserve 2 (LOR2) and forecast Lack of Reserve 3 (LOR3) and subsequently an actual LOR2.

To reduce the potential for involuntary load shedding, based on the forecast LOR2, AEMO procured short notice reserves. AEMO instructed the activation of 331MW of RERT. The reserves were activated at varying levels for 4.5 hours over the evening peak.

The total cost payable by AEMO for this RERT event was \$50.1 million. The cost per MWh was \$35,428, which is less than the average Value of Customer Reliability (VCR) of \$41,520 per MWh for Queensland.

Source: AEMO RERT Quarterly Report Q1 2022, May 2022

There are ways to reduce the cost of RERT but AEMO has so far been reluctant to engage with QEUN and the Queensland Government on the QEUN initiated demand response program *the Traffic Light System*.

Exorbitant new transmission costs - the final straw that breaks the camel's/energy consumers' back

Powerlink is the Queensland Government owned transmission company that owns 100% of the transmission network in Queensland.

Part 5 Division 2 24 (3) of the Bill allows Powerlink to build new transmission at any cost even if the new transmission is a *negative net economic benefit* ie the transmission is not in the long term interests of energy consumers.

This completely removes the protections provided to Queensland energy consumers by the National Electricity Objective and the national electricity rules.

Transparency is key to energy consumers.

The Queensland Government has committed to the \$5 billion Copperstring 2032 transmission project without releasing the business case or carrying out a Regulatory Investment Test – Transmission (RIT-T).

A RIT-T would ensure Powerlink proves to the Australian Energy Regulator that the Copperstring 2032 transmission line is a net economic benefit to energy consumers.

The Bill appears to allow the cost of new transmission necessary for the green hydrogen export industry to be passed onto residential and business customers throughout Queensland.

The wider impact on regional Queensland communities is ignored by the Bill

Whilst we fully acknowledge energy workers impacted by the closure of coal-fired power stations require support, there is no consideration in the Bill for the wider impact on the business community.

The Queensland Government will invest to repurpose publicly owned coal-fired power stations into clean energy hubs.

However, the number of employees and contractors required for a clean energy hub eg a wind farm, is negligible compared to a coal-fired power station.

The closure of a coal-fired power station severely affects the local butcher, baker, pub, mechanic, chemist etc.

Towns in regional Queensland are already being torn apart by solar and wind farms and the false promise of a regional job boom. The job bonanza does not survive past the initial sugar hit of the construction phase of renewable generation.

The Bill needs to address the needs of the wider community that is impacted by the closure of coal generation.

Conclusion

The Bill will not support an orderly transition to a future with a higher percentage of renewable energy.

Much has changed since the Queensland SuperGrid Infrastructure Blueprint was published in September 2022.

Due to construction cost blowouts, planning delays, workforce constraints and cost of living pressures the QSIB is not deliverable and needs to be immediately reviewed, not enshrined in legislation.

The QSIB will not deliver affordable, reliable and secure electricity from a resilient grid.

The Bill takes away protections afforded to Queensland energy consumers by the National Electricity Objective and the national electricity rules. It puts decarbonisation above affordability, reliability and security.

This is not acceptable as the electricity system exists to serve energy consumers.

Yet the voice of the energy consumer is almost silent in the Bill.

We strongly urge the Queensland Government to consider our submission as we believe Queensland jobs, the Queensland economy and Queensland living standards are at risk should this Bill be passed.

We thank you for the opportunity to provide a submission.

We believe it is important for the Committee to hear from an energy consumer advocate active at a state and national level and based in regional Queensland where much of the direct impact from the transition is being felt.

Yours faithfully

[REDACTED]
Jennifer Brownie
Coordinator