



12<sup>th</sup> September 2023

Senate Economics References Committee  
Inquiry into Residential Electrification  
Parliament House  
Canberra ACT 2600

Dear Committee Members,

Thank you for the opportunity to provide a submission to the Inquiry into Residential Electrification.

### **About Dux**

By way of introduction, established in 1915, Dux Hot Water is the oldest water heater manufacturer in Australia. Overwhelmingly, our revenue is from Australian made products, manufactured locally in our Moss Vale factory in the NSW Southern Highlands.

Dux is one of the largest private employers in the area and since the closure of Electrolux Refrigeration plant in Orange in 2016, we're the only manufacturer of large appliances remaining in regional Australia. Dux has never sought nor received any type of Government support or assistance.

Dux manufactures or markets a full range of electric water heaters including Electric Storage, Gas Storage, Gas Continuous Flow, Solar, Heat Pump and Commercial water heaters. Dux strives to challenge the status quo to provide our customers with innovative products that save money and the environment.

### **Australian Water Heater Industry**

Multiple research studies conducted over the last 15 years have consistent findings. Water heaters aren't just low interest products, they are a no interest products. Most people can't tell you their type of water heater, let alone their brand of water heater. Knowledge of water heaters is generally very low.

The hot water replacement market is roughly 4 times the size of the builder market. In the replacement market, a customer turns on their shower once every 15 years or so to discover cold water instead of hot water. They call a plumber hoping that the water heater can be repaired. Where it can't be economically repaired, the plumber advises the best water heater for the application. The plumber considers things like local plumbing regulations, the size of the household and the best suited water heater for the application. A new water heater is a grudge purchase. Like for like replacement, gas to gas or electric to electric is usually the cheapest option and overwhelmingly the most common choice.

The builder market is different. The builder decides the type of water heater depending on the applicable regulations. High volume builders are usually motivated to achieve the lowest compliance cost and may have commercial rebates in place with manufacturers or resellers to minimise their costs.

## Our Submission

Dux will only make comment on the relevant terms of reference where they believe they can add value to the discussion.

Dux fully supports the Government's net zero emissions by 2050 target. Our employees and our customers are passionate about setting ambitious goals for emissions reduction.

## Renewable transformation of the electricity network

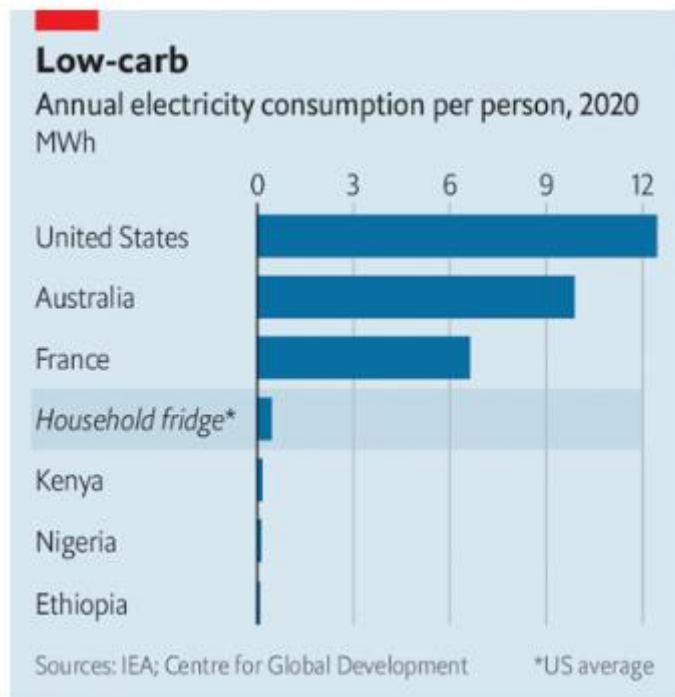
### **Demand for electricity will accelerate faster than current projections**

In June 2022, the Australian Energy Market Operator (AEMO) published the 2022 Integrated System Plan. Involving over 1,500 stakeholders, its most likely scenario forecast electricity consumption from the grid will nearly double by 2050 (AEMO, 2022). Dux believes it to be too conservative.

Subsequent to its publication, the Victorian Government has banned gas connections in new homes and apartments from 2024. Victoria is Australia's largest gas connected market. Supply chains are shifting to electrical appliances sooner than was previously expected. The market is aware of a clear signal of electrification.

### **Australia is already the world's 2<sup>nd</sup> largest consumer of electricity per capita**

Australians already have an incredibly high demand for electricity. In November 2022, The Economist referenced an International Energy Agency report showing Australia to be the world's 2<sup>nd</sup> largest consumer of electricity in 2020. Australia's demand for electricity will accelerate with the replacement of gas appliances. (Economist, 2022)



The Economist

### **Extreme supply risk from closing coal fired power stations too soon**

Australia is still very reliant on coal fired electricity. In 2023, at least 50% but typically >60% of the National Energy Market is powered by coal. (data, 2023)

Electricity producers and their stakeholders are motivated to close coal fired power stations and justifiably reluctant to invest capital into their maintenance. Hazelwood power station in Victoria closed back in 2017 resulting in a huge spike in wholesale electricity pricing. “In Victoria, average spot prices for 2017 were up 85 per cent on 2016 and up 32 per cent in South Australia for the same period. New South Wales and Queensland were up 63 per cent and 53 per cent respectively.” (AER, 2018). The Australian Financial Review reports that since the Hazelwood closure wholesale prices have never fallen below these levels. (AFR, 2023)

Liddell power station in NSW closed in April 2023. Origin has provided the required regulatory notice to close Eraring power station in August 2025. This is Australia’s largest power station supplying 25% of NSW’s electricity. Similarly, AGL has announced the closure Loy Yang in Vic and Bayswater in NSW. The NSW and Victorian Governments are aware of the heightened supply risk and negotiating for some of these coal fired power plants to remain open at the cost of hundreds of millions of dollars.

### **Australian electricity prices are already very expensive compared to OECD**

In August 2020, the International Energy Agency reported that household electricity prices in Australia were the 9<sup>th</sup> most expensive of 36 selected OECD members and 78% more expensive than electricity in the USA. (IEA, Key World Energy Statistics 2020, 2020)

“The Australian Treasury forecasts a 56% hike in electricity prices over financial year 2022-2023. The Australian Competition and Consumer Commission (ACCC) confirmed that electricity bills have jumped by \$300 on average since April 2022. This is the equivalent of a 25% increase for the median residential household in the National Electricity Market (NEM) and \$1,500 for small businesses. The ACCC retail pricing inquiry of 2018 found that 30% of the lowest income households spend 8% on fuel, but this has greatly increased since. Judging by the United Kingdom fuel poverty definition (10% of lowest income households), energy poverty is becoming an issue.” (IEA, Australia 2023 Energy Policy Review, 2023)

### **Firming capacity at risk of delay and cost overrun**

Renewables like solar and wind energy are weather dependent, so Australia needs significant firming capacity for when the wind doesn’t blow or when the sun doesn’t shine. Sufficient firming capacity from batteries, gas fired power stations and pumped hydro doesn’t currently exist. Recent media reporting of Snowy 2.0 shows it to be 6 years behind schedule and likely 6 times the original price of \$2bn to \$12bn. (ABC, 2023)

### **Rewiring the energy transmission network needs to start without delay**

Australia’s current transmission network, especially in NSW and Victoria is based around centralised power generation in the La Trobe or Hunter Valleys. Renewable energy solar and wind farms aren’t in these same locations. They’re located in areas like Central West NSW, New England, Bendigo, Ballarat and require 10,000kms of new 500kV transmission lines to be connected in this decade.

Difficult land owner consultations, planning delays, skills and materials shortages have made for slow progress. (AFR, 2023)

## **Regulatory framework for water heaters**

### **Manufacturers need certainty to invest**

Manufacturing in Australia is already very challenging. Australia is a comparatively high-cost labour market. Other key inputs available in Australia lack either scale or competition, so they're comparatively more expensive.

I don't know that you could identify an appliance subjected to the heavy hand of Government more than a water heater. In 2007, the Australian Government announced a proposed ban on electric storage waters from 2010 in favour of gas. Electrification of products represents a u-turn in policy direction.

Hundreds of thousands of new homes have been built with gas appliances over the last 2 decades. The Grattan Institute notes that until recently, "it was mandatory for new homes in the ACT and Victoria to have a gas connection installed. This provided a strong nudge for home builders to install gas appliances, and locked large numbers of home owners into using gas." (Grattan, 2023)

### **Australian Govt committed to 82% renewable energy into National Electricity Market by 2030**

As recently as July 2023, Energy Minister Bowen confirmed that "we now stand ready with confidence that we can now deliver 82% renewable energy by 2030." (Bowen, 2023)

Similarly, the Australian Electricity Market Operator (AEMO) expects renewable energy to account for 83% of electricity supply by 2030. (AEMO, 2022)

If 82% of the electricity supply in less than a decade is going to be from renewable sources, why is the installation of electric storage water heaters still restricted in some states? Electric storage water heaters have much lower upfront capital costs and can easily become cheap latent batteries for excess solar PV production in homes.

### **Some states are still restricting the installation of electric storage waters**

Appliances that are installed in new homes today will likely be replaced like for like in the future.

In July 2008, South Australia became the first Australian state to enforce the phasing out of electric water heaters. Under South Australian regulations, many replacement water heater installations in existing homes in metropolitan and near surrounding areas needed to be either high efficiency gas, solar or electric heat pump systems.

Over 95% of the subsequent installations for the last 15 years were for continuous flow gas water heaters. In October 2020, Lloyd Harrington noted in a report commissioned for the Department of Energy and Mining that, "electric water heaters have become less prevalent in South Australia since around 2000. The rate of decline has been fairly steady over that 20 year period and this trend is also obvious in NSW, ACT, Western Australia and Victoria" (Harrington, 2020)

Whilst the SA Government recently updated their regulations to allow electric storage with AS4755 compliant demand control, uptake has been exceptionally low because of a protracted patenting dispute over proposed standard AS4755.2. To maintain a level playing field and to encourage investment, AS4755.2 must exclude water heaters. Alternately, only AS4755.3.3 or a suitable international standard should apply to water heaters.

The Grattan Institute notes “NSW planning regulations made it difficult to meet sustainability benchmarks for new homes with electric storage water heater, providing another nudge towards gas, because gas water heaters are much cheaper than solar.”

It further warns that, “changing physical assets to low- or zero-emissions alternatives is a slow process. If it doesn’t start today, there will be no hope of reaching Australia’s net-zero emissions targets.... Governments need to start changing asset replacement patterns now.” (Grattan, 2023)

There are currently no restrictions on the installation of electric water heaters in new homes in QLD, TAS and NT. Any and all restrictions on the sale of electric water heaters need to be removed as soon as possible

### **Electric storage water heaters banned in National Construction Code 2022 (NCC)**

A dysfunctional situation exists where gas products are being banned in some states but they’re still allowed in the NCC. Yet the NCC bans electric water heaters because electricity is bad for the environment. With the Australian Government committed to 82% renewables, the NCC should obviously be modified to allow electric water heaters in new homes.

### **No minimum energy performance for heat pumps**

Whilst electric water heaters are required to conform to strict standards, there is currently no MEPS scheme for heat pump water heaters. This allows for heat pumps to be sold that don’t meet any minimum standard.

### **Overlapping rebate schemes attract poor behaviour**

Federal STCs, Victorian VEECs and NSW ESCs are not Government funded rebates. Few people understand that these rebates are paid for by consumers in higher electricity prices. As detailed earlier, household electricity prices in Australia are already comparatively high. Rebates should never be allowed to overlap. Only the highest value rebate should ever apply.

Whenever a product is available at no cost or close to no cost, it attracts poor behaviour and is prone to abuse. We have seen door knockers and telemarketers swarm the industry with ‘free heat pumps’.

The NSW Government’s Office of Energy and Climate Change has just released a consultation paper seeking stakeholder feedback partly to address the “widespread complaints of high pressure sales tactics.” (OECC, 2023)

Dux has heard countless stories of unsatisfied customers subsequently complaining about their new water heater and seeking refunds, only to be offered their “free” money back and being forced to buy a new water heater.

If customers are unhappy, resellers should be forced to provide a full refund, which will drive better customer outcomes.

### **Minimum Energy Performance Standards (MEPs) for electric water heaters should increase**

Minimum Australian heat loss requirements in electric storage water heaters should be improved by up to 10% on current levels to further increase the energy efficiency of electric storage water heaters and reduce cost of living pressure on homeowners.

The same can't apply in NZ, which already has the most stringent heat loss requirements in the world. Due to the limited available space in NZ cupboards, which have been designed to store water heaters of a certain diameter, heat loss requirements can't be practically improved without relocating water heaters outdoors. Relocating a water heater would add a significant cost burden to the NZ homeowner without any net benefit.

### **Electric and Heat Pump water heaters**

#### **Heat pumps are being exploited for higher rebates despite poor customer experience**

Underlying assumptions in the TRNSYS modelling software is being exploited to maximise rebates. TRNSYS also has certain parameter limitations. As this submission may be published, I'm reluctant to detail the various scenarios for fear of exacerbating the situation. Dux always behaves ethically and refuses to participate in rebate exploitation at the expense of its customer's experience.

The NSW Office of Energy and Climate Change "has identified that the energy savings calculations for hot water system upgrades do not align with real world savings." (OECC, 2023) Energy saving calculations are being overstated by current methodologies. Rebates are overstated, real world savings are much less.

#### **Heat pump classifications are not mandatory**

Heat pumps are classified according to their suitability for certain climatic conditions. For example, low temperature Class A heat pumps operate without the assistance of an electric booster in reduced ambient conditions, like Zones 4 and 5. Yet there is no mandatory compliance for low temperature Class A heat pumps in Zones 4 and 5.

#### **Phone Apps can override tested heat pump settings**

Some heat pumps can be permanently boosted or if turned to boost mode, won't change back to heat pump mode unless there is subsequent human intervention. These water heaters are attracting rebates yet operating as electric (or combined electric + heat pump) water heaters.

#### **Consumer warranty risk on imported heat pumps**

Imported heat pumps are typically sold to resellers with no or very low warranty periods. These manufacturers don't have operations in Australia, so the warranty liability is with the reseller. When the rebates are gone, these resellers may choose to leave the industry, deregister companies and consumers will have no warranty.

Having tested a number of the imported heat pumps, Dux has serious concerns about the longevity of some heat pumps and their suitability for Australian conditions. Australia is a rare market where water heaters are installed outdoors and in very high UV conditions increasing the likelihood of product issues.

To create a level playing field with Australian manufacturers, imported heat pump manufacturers must be required to establish a service network in Australia and guarantee warranty coverage periods.

## Removing incentives migrates customers back to the lowest cost

In February 2010, when the Australian Government cancelled the former \$1600 rebate on environmental water heaters with very little notice, the market shifted very quickly back to lower cost water heaters. In the prior year (2009) over 72,000 heat pumps were installed. That dropped to 26,235 in 2010 and continued to fall to 9,923 in 2015.

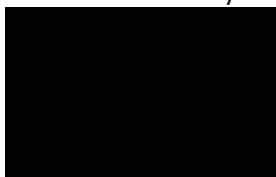
With overlapping rebates in place again in NSW and VIC, it's likely over 110,000 heat pumps will be installed in 2023. More than 90% are imported from China at the expense of the local industry.

## Challenges of emerging technologies

The National Construction Code doesn't recognise emerging technologies until the subsequent update, at best. An unlevel playing field is created when new technology, which may provide superior customer outcomes competes against a heavily rebated product, which may provide poor customer outcomes.

Dux thanks you for the opportunity to provide this submission. Should you have any queries or questions, please don't hesitate to contact me at your earliest convenience.

Yours sincerely



Simon Terry  
Chief Executive Officer

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