Submission: Reducing Residential Water Waste Through Smart On-Demand Hot Water Recirculation Systems

Overview

This submission highlights a significant and largely overlooked source of water wastage in Australian homes: the loss of potable water while waiting for hot water to reach taps and showers.

This inefficiency occurs daily across all households, yet it is not currently addressed through building codes, water policy, or mainstream conservation programs. With increasing pressure on Australia's water resources, addressing this gap presents an immediate and scalable opportunity for reform.

The Problem: Everyday Water Waste at Household Level

In most residential properties, water sitting in pipes cools between uses. When a hot tap or shower is turned on, this cooled water is discharged before hot water arrives. "Water utilities tell households to take 4-minute showers but ignore the 1 minute wasted waiting for hot water.

That leaves just 3 minutes to shower making the target impractical while thousands of litres of clean water continue to go down the drain each year, unaddressed.

At the same time, public funds spent promoting these measures deliver limited real-world impact, as they fail to address the root cause of the problem water wasted before the shower even begins."

This results in:

- **5–20 litres of water wasted per use**
- Repeated multiple times per day across kitchens, bathrooms, and laundries

Estimated impact:

- **10,000–15,000 litres per person per year annually**
- Over **100 billion litres nationally each year**

This is treated drinking water that is wasted without any functional benefit.

Despite widespread awareness of water conservation, most households:

- Are unaware this loss can be prevented
- Assume it is unavoidable

Existing Verified Solutions

Technologies already exist to eliminate this inefficiency.

The Smart Drop Certified program Australia, independently verifies water-saving products that meet measurable performance standards. For reference, some of the **Hot Water Recirculation Systems** are Smart Drop certified solution that enables on-demand recirculation of hot water,

eliminating the need to run taps while waiting. Most homes require only 1 small system to be installed at the farthest point from hot water system (Tank or Tankless).
https://www.smartdropcertified.org/blog/prozrted

https://www.smartdropcertified.org/blog/aquareturn

These are not brand-specific recommendations. The products used in reference solely to demonstrate that independently verified, compliant solutions are already available in the market.

These systems:

- Deliver hot water instantly when activated
- Prevent unnecessary water discharge
- Operate only when needed, minimising energy use

National Context: Increasing Pressure on Water Supply

Australia's water systems are under growing strain due to:

- Declining and less predictable rainfall patterns
- Rapid population growth in urban areas
- Increased demand from water-intensive infrastructure, including data centres

As a result, several states are increasingly reliant on **desalination plants** to secure water supply.

While effective, desalination:

- Is **highly energy-intensive**
- Carries **significant operational costs**
- Contributes to **increased greenhouse gas emissions**

Reducing avoidable demand particularly at the household level offers a more cost-effective and sustainable as water is saved at the source.

Energy and Emissions Considerations

On-demand hot water recirculation systems are designed for efficiency:

- Typical power usage: **~25–60 watts during operation**
- Short run times per use

Estimated annual operating cost:

- Approximately **$10–$20 per household**.

Importantly, these systems:

- Reduce the volume of hot water wasted
- Lower the energy required to repeatedly heat unused water
- Deliver a **net reduction in emissions** when compared to current inefficiencies

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Policy Opportunity

There is a clear opportunity to address this issue through targeted policy intervention.

Recommended actions:

1. **Mandate installation** of **on-demand** hot water recirculation systems in:
    - New residential developments
    - Major renovations
2. **Introduce rebate or incentive programs** for retrofitting existing homes
3. **Partner with water utilities** to:
    - Promote awareness
    - Support adoption through conservation programs
4. **Incorporate into building standards** (e.g. National Construction Code)

Benefits

Adopting this approach would deliver:

Water savings

- Billions of litres saved annually
- Reduced pressure on reservoirs and supply systems

Infrastructure benefits

- Lower reliance on desalination
- Deferred need for major capital investment

Environmental outcomes

- Reduced energy consumption
- Lower greenhouse gas emissions

Conclusion

Australia continues to invest in large-scale water supply solutions while a simple, preventable source of water waste exists in every home.

On-demand hot water recirculation systems provide a **practical, proven, and low-cost solution** to this issue. With Smart Drop–certified technologies already available, the pathway to implementation is clear.

Addressing this overlooked inefficiency represents a **high-impact, immediate opportunity** to improve national water efficiency, reduce emissions, and support long-term sustainability.