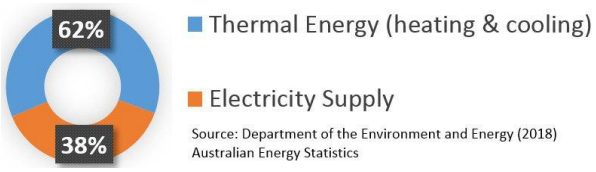
Solar Thermal Technology in Australia - 2019

Australian Energy Demand (Non-transport):

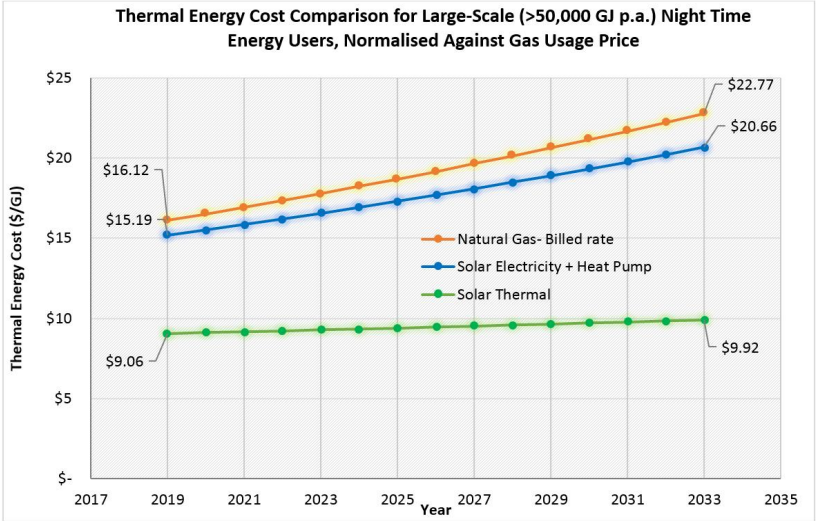


Solar Thermal Collector Technology: Flat plate collector with aluminum absorber, allowing hot water flow across the entire absorber surface area to achieve the World's most efficient solar collector.

Typical End Uses: Space/greenhouse heating, domestic hot water supply, solar thermal cooling, district heating and industrial process heating.

Industry Users: Any low temperature (<95°C) energy intensive business such as horticulture, industrial processing & manufacturing, mining and real estate (commercial, retail, large scale residential).

Life Cycle Cost Efficiency: Maximum efficiency compared with gas, grid electricity and solar PV for all three usage patterns: Daytime-only use, nighttime-only use and mixed daytime and nighttime use.



Payback Period: Typically 5 – 7 years in Victoria (without any subsidies). Other states that are closer to the equator, receive 10% to 40% more solar irradiation and can pay back in less than 5 years.

Performance: 73% solar efficiency (Tier 1 Solar PV – 14% efficiency).

Energy Generation Density: 1,100 kwh/m^2 p.a. (Tier 1 Solar PV – 200 kwh/m^2 p.a.).

Energy Storage Type: Insulated stainless steel hot water storage tank (can be installed above or below ground).

Energy Storage Cost: From $4.10 per kWh, with unlimited storage/discharge cycles, and no periodic replacement required.

Longevity: Collectors - 25 years @ 92% performance warranty. Storage Tank – lifetime.

Cooling: 7°C, via adding an absorption chiller (virtually no operating cost to run). As the ambient temperature rises, the solar thermal cooling efficiency increases (solar PV efficiency reduces with higher ambient temperatures).

Project Scalability: Unlimited maximum size, with multiple user distribution kilometers away from each other.

Backup: Any traditional heat source (e.g. gas boiler, electricity etc.).

Off-Centre Solar Incidence Performance: 98% @ +/- 50° from perpendicular.

Operational CO^2 Emissions: Nil.

Electricity Grid Impact: Nil

Off-grid Compatible: Yes. Electric demand is only to circulate water at 0.005 l/s per m2 of collector.

User and Installer Safety: No risk of electrocution or fire.

Recycling: Fully recyclable, with no industrial waste or hazardous/toxic materials.