The Case for Diversification and Electrification

SAA CPD Training Accreditation Course Number: CPD244

OpenSolar®

The Case for Diversification and Electrification

Future-Proofing Australian Solar Businesses

Alignment with National Goals
Australian government's net-zero target and renewable energy incentives are driving demand for electrification solutions.

Expanding Opportunities
Diversification into heat pumps, EV chargers, and batteries opens new revenue streams for solar businesses.

Technical Expertise Required
Electrification services require adherence to AS/NZS 3000 for electrical installations and AS/NZS 5141 for heat pumps.

The Benefits of Electrification for Your Business

Technical and Market Advantages

- **Increased Revenue Streams:** Services like EV charger installation and battery storage add high-demand, profitable offerings.
- **Meeting Regulatory Demands:** Future energy compliance will likely mandate electrification services aligned with AS/NZS standards.
- **Enhanced Customer Retention:** Bundled services improve long-term engagement, from solar installation to electrification upgrades.

Hot Water Heat Pumps: A Gateway to Efficiency

Standards and Energy Optimisation

Superior Efficiency
Heat pumps achieve up to 70% energy savings compared to electric resistance systems, reducing operational costs.

Solar Integration
Using surplus daytime solar energy maximises self-consumption and reduces curtailment.

Compliance with Standards
Heat pumps meet AS/NZS 5125 for energy efficiency and AS/NZS 5141 for installation requirements.

Estimated Savings per Year in kWh

Assuming a household of 4 people with a daily hot water usage of around 200L.

Hot Water System Type	Estimated Annual Energy Use (kWh)	Estimated Annual Savings (kWh) After Switching to a Heat Pump
Electric Resistance	3,500 - 4,500 kWh	2,500 - 3,500 kWh (around 70%)
Gas Storage	6,000 - 7,500 kWh equivalent*	4,500 - 6,000 kWh (around 75%)
Gas Instantaneous	4,000 - 5,000 kWh equivalent*	2,500 - 3,500 kWh (around 65%)
Heat Pump (New)	1,000 - 1,500 kWh	N/A

Heating and Cooling: Leveraging Solar for Comfort

Technical Integration and Efficiency

Reverse-Cycle Air Conditioning
Delivers up to 4x the energy efficiency of traditional heating systems, reducing annual energy consumption.

Solar Timing Optimisation
Scheduling usage during solar peak hours increases self-consumption and minimises grid demand.

Compliance Standards
Installations must adhere to AS/NZS 3823 for HVAC performance testing and AS/NZS 3000 for electrical safety.

EV Charging Solutions: The Future of Mobility

Integration with Solar Systems

Rising EV Demand
Australia's EV adoption is growing at 50% annually, requiring scalable charging solutions.

Smart Solar Charging
Integrated systems optimise EV charging during solar peak production to reduce grid reliance.

Standards and Certification
Installations must comply with AS/NZS 3000 (electrical) and AS/NZS 4777 for inverter compatibility.

EV Charger Sizes & Their Power Draw

Charger Type	Power (kW)	Approx. Charging Time (0-100%)	Peal Load Considerations
Level 1 (Trickle Charge)	2 - 2.4 kW	24+ hours	Low peak load, minimal impact
Level 2 (Single-phase 7 kW)	7.2 kW	6-8 hours	Moderate peak load
Level 2 (Three-phase 11 kW)	11 kW	4-6 hours	High peak load, grid interaction required
Level 2 (Three-phase 22 kW)	22 kW	2-4 hours	Very high peak demand, may exceed solar output
DC Fast Charging (50 - 350 kW)	50 - 350 kW	15-60 mins	Typical for commercial use; high grid dependency

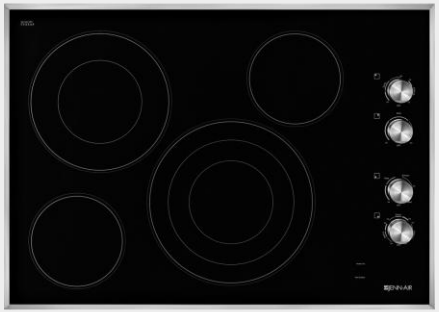
Electrifying Cooking: Induction Stoves as the Next Frontier

Efficiency, Safety, and Standards

High Energy Efficiency
Induction stoves convert 85-90% of energy into cooking heat, significantly outperforming gas stoves.

Health and Safety
Eliminates harmful indoor emissions from gas stoves, improving air quality and reducing fire hazards.

Compliance with Standards
Induction appliances align with AS/NZS 60335 for safety and performance.



Energy Efficiency & Savings

Cooktop Type	Efficiency (%)	Energy Use per Hour (kWh)	Cooking Time Reduction (%)	Estimated Daily Usage (kWh)
Standard Electric (Resistive)	~70%	1.8 -2.2 kWh per element	Baseline	~4 - 6 kWh
Induction Cooktop	~80 - 90%	1.2 - 1.5 kWh per element	30% faster	~3 - 4 kWh

Induction - Peak Load Considerations

Cooktop Element Size	Power (kW)	Number of Elements	Max Load (kW)
Small Element (1400W)	1.4 kW	2	2.8 kW
Medium Element (1850W)	1.85 kW	2	3.7 kW
Large Element (2300- Boost 3700W)	2.3 - 3.7 kW	1	3.7 kW
Total Load (Full Power Use)	-	All Elements	8-10 kW

Battery Storage: The Missing Piece

Maximising Solar Potential

Bridging Solar Gaps
Stores surplus solar energy for use during non-solar hours, increasing energy independence.

Peak Demand Mitigation
Reduces grid strain by providing stored power during peak usage periods.

Technical Compliance
Installations must meet AS/NZS 5139 for battery safety and AS/NZS 4777 for grid compatibility.

Benefits to Australia’s Unstable Electricity Grid

Stabilising with Distributed Energy Systems

Reduced Grid Strain
Electrification and distributed storage alleviate pressure during peak demand periods.

Decentralised Energy
Distributed solar and battery systems enhance grid resilience and reliability.

Supply-Demand Balancing
Smart systems dynamically match energy production with consumption, minimising grid instability.

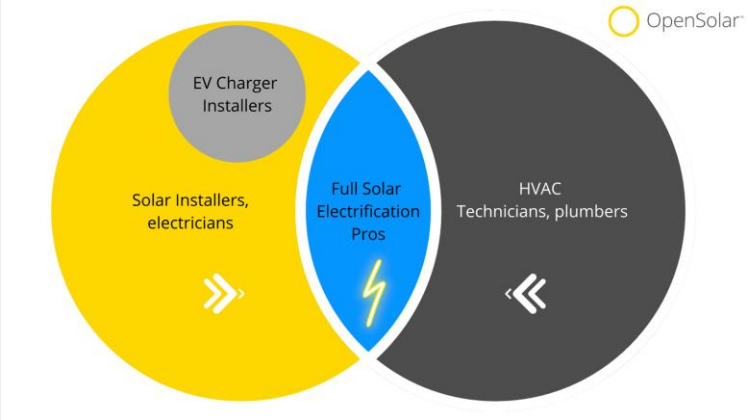
Cross-Training for Trades

Upskilling for the Electrification Market

Multi-Skilled Workforce
Training electricians, plumbers, and HVAC specialists to handle heat pumps, EV chargers, and batteries.

Compliance Proficiency
Upskilling teams to meet standards like AS/NZS 3000 (electrical) and AS/NZS 5141 (heat pumps).

Future-Ready Trades
Cross-training prepares businesses for market demands in Australia's energy transition.



Conclusion: Leading the Electrification Revolution

Positioning Your Business for Growth

Future-Proofing Your Business
Diversification into electrification aligns with Australia's net-zero goals and market demands.

Technical Compliance
Adhering to AS/NZS standards ensures quality installations and regulatory approval.

Industry Leadership
Embracing electrification places your business at the forefront of Australia’s energy transition.

Curtailment and Maximising Self-Consumption

Technical Strategies for Solar Optimisation

Understanding Curtailment
Occurs when surplus solar energy cannot be exported to the grid due to capacity limitations.

Electrification Appliances
Heat pumps, EV chargers, and induction stoves increase daytime self-consumption, reducing curtailment.

Minimising Backstop Mechanisms
Maximising self-consumption avoids penalties under AEMO's backstop mechanism for over-generation.

Diversification into Electrification Assessment

Scan the code below to complete the test

Scoring

- **13–15 Correct**: Excellent understanding of electrification and standards.
- **10–12 Correct**: Good understanding, but review specific technologies and standards.
- **9 or Below**: Needs improvement; revisit training modules on standards and technologies.

CPD Point certificates of completion will be emailed to participants who pass the knowledge assessment.