

Energy Safe Victoria's review of the Electrical Inspection Regime

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Summary

- ESV concludes that the electrical inspection regime in Victoria largely addresses safety risk, yet there is still room for improvement.
- ESV does not advocate for the scrapping of the current regime or large scale change. However improvements in training and assessment of LEIs, data collection and analysis, industry communications, technical support and enforcement are required and will be implemented.
- These improvements will provide ESV with sufficient information to offer insight into, and monitor high risk areas, changes in risk profile and industry safety and compliance trends. This data will enable and inform further decision making on education and enforcement.

Background

Inspection of electrical installation work in Victoria changed as a result of the privatisation of the State Electricity Commission (SEC) and the implementation of the Electricity Safety Act (1998) and the Electricity Safety (Installations) Regulations (1999). At this time two categories of electrical installation work were proclaimed:

- **Non-Prescribed electrical installation work** is less complex work, for example changing a socket outlet, and is self-certified by the Licensed Electrical Worker (LEW) performing the work. ESV audits between 5 and 10 per cent of non-prescribed electrical installation work performed to ensure it is safe and compliant.
- **Prescribed electrical installation work** is more complex or poses a higher risk if non-compliant and includes: household mains, earthing systems, parts of main switchboards that are related to the control of electrical installations or the protection against the spread of fire, sub-mains, electrical wiring and electrical equipment installed in hazardous areas, high voltage installations, control and protection equipment of standby generation or co-generation equipment (including solar and battery storage systems), electric fences, fixed electrical equipment installed in patient areas of hospitals, medical and dental practices, the electricity supply for emergency lifts, alternative design solutions installed in an electrical installation. The most common types are: consumer's mains & main switchboards for new buildings and solar generation systems.

Prescribed electrical installation work must be inspected and certified by an independent Licensed Electrical Inspector (LEI) prior to connection to supply to ensure it is safe and compliant.

To facilitate the inspection of prescribed work ESV licenses suitably qualified and experienced individuals as LEIs. There are several classes of LEI, the most common being G class. This licence allows a LEI to inspect nearly all prescribed works including consumers' mains and solar installations. Other classes of licence permit the inspection of more complex and hazardous types of prescribed work (V - High voltage, M - medical, H - hazardous areas).

The educational and experiential requirements to obtain each class vary. This regime can rapidly adapt to new demand as well as new and emerging technologies, and ensure the continued and timely certification of installations.

For example, the last two years have seen a massive increase in solar installations under the Solar Homes Program administered by Solar Victoria; this has led to an increase in data available to ESV to inform our regulatory response.

ESV does not support the training of LEI candidates to pass the assessments and will continue to focus on ways to ensure that training, experience and assessment ensures only competent people are licensed as LEIs.

Legislation stipulates that LEIs are required to attend the property, test and inspect the relevant parts of the electrical installation and then record compliance on the Certificate of Electrical Safety. The Registered Electrical Contractor (REC) that performed the work is responsible for testing the work

prior to inspection and then engaging the LEI (either as an individual or through an inspection company). The price and timing of an inspection is negotiated between the parties.

Reviewing the electrical inspection regime

In reviewing the electrical inspection regime ESV has:

- conducted detailed analysis of information provided by Solar Victoria's audit of domestic solar installations,
- reviewed Clean Energy Regulator information on compliance rates in Victoria and across Australia,
- examined the types of work found to be non-compliant as a result of incident and complaint investigations,
- assessed the information received from the ESV COES audit program
- engaged Nous to consider steps to improve safety outcomes in for the entire inspection regime, including solar installations.

The outcomes from this review build on work already being implemented and planned by ESV (see table below).

Nous was engaged by ESV to undertake a review of the electrical inspection regime in response to a small number of safety issues identified through the Solar Victoria audit program. Although safety related defects are low and improving, there was a concern there may be some risks present across other parts of the regime. The objective of the review was to identify the key issues underpinning these safety outcomes, and in response, develop a pragmatic program of reform.

This review was conducted in two parts:

Phase 1 – Interim Report (Solar)

Nous developed an interim report that made three short-term recommendations to improve safety outcomes in solar system installations. The recommendations were designed to provide 'quick-wins' and demonstrate a measurable positive impact within six to twelve months of implementation.

Phase 2 – Final Report

The final report makes comprehensive and strategic recommendations for short and long term responses to improve the entire inspection regime and provides further information to assist ESV's monitoring, enforcement and reform.

The review scope was limited to the inspection regime only. Noting that the inspection regime is one of several factors designed to ensure the safety of electrical installations. Other factors include appropriately skilled, trained and licensed electricians, clear and robust installation and product standards. The review did not explore or consider the availability and quality of electrician training, availability of LEIs, cost of inspections or adequacy of installation standards.

The report notes that it is possible that other jurisdictions may outperform Victoria in compliance and safety outcomes. However, like for like comparisons between jurisdictions are not always appropriate; Victoria's regime is unique and there are many variables between the jurisdictions, such as defined interpretations of safety risk measures, audit checklists and practices, and government incentive programs that influence demand.

The report recognises that the available evidence precludes the drawing of unequivocal conclusions. The final report made a further eight recommendations. The full report and interim solar report can be found at Attachment A.

The outcomes from this review build on work already being implemented and planned by ESV (see table below)

Action to improve safety – electrical inspection regime

Identified area for improvement	Detailed description of improvements	Status (March 2021)
Increased industry education/communication	<ol style="list-style-type: none"> ESV has provided and continues to develop updated guidance for LEIs, for example guidance on identifying mismatched connectors, earthing requirements and testing of earth systems in solar installations. ESV is working with Solar Victoria to establish solar specific training for LEIs. (Accords with solar recommendation 2 – NOUS Interim report) ESV is providing details to LEIs of the most common defects in installations. (Accords with recommendation 8 – NOUS Report) 	<p>Commenced February 2021</p> <p>Commenced on-track September 2021</p>
Training and assessment of licensed electrical inspectors (LEIs) Working with Solar Vic.	<ol style="list-style-type: none"> The G class LEI assessments has been upgraded; the theory examination, safe approach inspection and testing, and the practical assessment now include solar and RCD components. The minimum pass mark for each assessment remains at 75 per cent. (Accords with recommendation 1 – NOUS Report) As a matter of policy, ESV restrict the number of times, and the frequency at which, a candidate can attempt the LEI assessments. (Accords with recommendation 1 – NOUS report) With assistance from the Department of Environment, Land, Water and Planning (DELWP) assess the risks, benefits of the implementation of additional risk based classes of prescribed work requiring inspection. Create an additional class for renewable systems (e.g. solar systems), by seeking amendments to the Electricity Safety (Registration and Licensing) Regulations 2020.- (Accords with recommendation 2 – NOUS report) As an interim measure, pending the implementation of regime reforms, Solar Victoria is commissioning the development of training for LEIs specific to renewable energy and solar and will explore options for incorporating this into the Solar Homes and Solar for Business programs (Accords with solar recommendation 2 – Nous Interim Report). 	<p>Completed January 2021</p> <p>Completed-January 2021</p> <p>Commence June 2021 (12-18 Months)</p> <p>December 2021</p>
Requirements for continuing professional development (CPD)	<ol style="list-style-type: none"> CPD was introduced as a mandatory requirement in the remade Electricity Safety (Registration and Licensing) Regulations 2020. (Accords with recommendation 3 – NOUS report) ESV established a CPD Steering Committee comprised of ESV and key external stakeholders that provide advice on the content and format of CPD to the different classes of electrical workers, including LEIs. All 	<p>Complete – December 2020</p> <p>Commenced – on-track</p>

Identified area for improvement	Detailed description of improvements	Status (March 2021)
electrical workers including LEIs	<p>licence classes will be required to complete a skills maintenance element of CPD prior to licence renewal, commencing 2023.</p> <p>3. Pilot courses will be run in 2021 as part of the development of the skills maintenance program.</p>	September/October 2021
Additional technical support to LEIs	<p>1. ESV is currently training Installation Safety Compliance Officers as LEIs to provide additional technical resources to LEIs.</p> <p>2. ESV is reviewing technical and COES advice processes to improve accuracy and timeliness of advice to industry. (Accords with recommendation 5 & 8 – NOUS report)</p>	December 2021 August 2021
Collection of audit data for inspections arising from submitted COES	<p>1. ESV is reviewing the audit sampling methodology and requirements for non-prescribed and prescribed electrical work undertaken on its behalf by a third party inspection company. This is to ensure ESV's regulatory activity is informed by data that allows it to focus on the highest risk, while providing ESV with intelligence regarding industry performance. (Accords with recommendation 4 – NOUS report)</p>	Commenced – with new auditing services to commence in the first quarter 2021/22 FY
Increased analysis and use of data extracted from COES	<p>1. ESV will continue to enhance its data-driven activities through the extraction and analysis of data from completed COES and audits to identify common defects, safety concerns, persons of interest, patterns of behaviour and other issues</p> <p>2. ESV will use this data to target education and enforcement actions to the highest risk areas and practitioners. (Accords with recommendation 6 – NOUS report and solar recommendation 1 – NOUS Interim report)</p>	Commenced – March 2021
Increased data sharing between Solar Victoria and ESV	<p>1. ESV has established a data sharing agreement with Solar Victoria and work closely to ensure proactive surveillance of installation practice, testing and inspection in real time.</p> <p>2. Established a renewables specialist team within Electrical Installation Safety to carry out investigations, surveillance and enforcement in renewable installations. (Accords with solar recommendation 3 – NOUS Interim report)</p>	On-going December 2019
ESV is strengthening compliance and enforcement approaches	<p>1. ESV has consulted with key stakeholders on an updated Compliance and Enforcement Policy that will be published in July 2021.</p> <p>2. The Electricity Safety (General) Regulations 2019 introduced a requirement that the electrician that carried out the work test the work prior to inspection, thus ensuring the inspection is a true 'third party verification'.</p>	Commenced – on track for July 2021 December 2019

Identified area for improvement	Detailed description of improvements	Status (March 2021)
	<p>ESV has provided guidance to industry on this requirement and has been actively enforcing compliance through the latter part of 2020 on this new obligation.</p> <p>3. ESV will develop specific compliance and enforcement guidance materials for electrical workers, including LEIs. It will also explain its enforcement tools and how and when they will be applied. (Accords with recommendation 7 & 8 – NOUS report)</p>	Commenced

Conclusion

Nous developed an interim report that made short-term recommendations to improve safety outcomes in solar system installations. The recommendations were designed to provide 'quick-wins' and demonstrate a measurable positive impact within six to twelve months of implementation. The reforms outlined above accord with, and enhance the Nous recommendations.

ESV's reform program will improve the electrical inspection regime and provide reliable data to demonstrate improved outcomes.

ESV is already implementing most recommendations.

About ESV

Energy Safe Victoria (ESV) was established by the *Energy Safe Victoria Act (2005)*. ESV is responsible for the safety and technical regulation of electricity, gas and pipelines in Victoria.

On 1 January 2021, ESV became the Victorian Energy Safety Commission. ESV will continue to be known as Energy Safe Victoria (ESV), the Commission replaces the role of Director of Energy Safety and holds all regulatory powers previously held by the Director. The Commission is responsible for providing leadership and strategic guidance for ESV and leading its transformation to a modern, fit for purpose regulator, capable of effective, best practice regulation to achieve the highest standard energy safety outcomes for Victorians.

ESV is committed to the safe, efficient supply and use of electricity and gas, to this end and following feedback from, Solar Victoria and an internal assessment of certificate of electrical safety (COES) audit results, ESV commissioned a review of Victoria's electrical inspection regime.