



Australian  
Competition &  
Consumer  
Commission

# Consultation paper on inclusion of single-wheeled scooters in the self-balancing scooter safety standard

Consultation paper

April 2017



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## Disclaimer

The Australian Competition & Consumer Commission (ACCC) has developed this consultation paper to seek the views of stakeholders about proposed changes to the mandatory safety standard for self-balancing scooters.

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## 1. Introduction

The Australian Competition and Consumer Commission (ACCC) is consulting on expanding the scope of the national safety standard for self-balancing scooters (also known as hoverboards, gliders, smart boards, sky walkers or mod boards) to include single wheeled self-balancing scooters (also known as electric unicycles or monoboards).

On 17 July 2016 a national safety standard for self-balancing scooters was made mandatory under the Australian Consumer Law (ACL).<sup>1</sup> The standard will expire on 16 July 2018. This safety standard does not currently include single wheeled self-balancing scooters.

Since June 2016 a self-balancing scooter, including a single wheeled self-balancing scooter, has been required to meet specific Australian or international safety standards before it can be sold in Victoria. However, the electrical safety regimes of the other states and territories do not cover these products. The ACCC is proposing to include single wheeled self-balancing scooters in the provisions of the national safety standard for self-balancing scooters ahead of the eventual regulation of this class of products by state and territory electrical safety regulators.

The state and territory electrical safety regime will be the most appropriate regime to regulate these products when the regulatory gaps in current electrical safety laws are addressed.

This review is taking place because:

- The ACCC is aware of two fires in the United Kingdom (UK) associated with single wheeled self-balancing scooters in 2015.
- Testing commissioned by the ACCC indicates that single wheeled self-balancing scooters may pose the same risk as two-wheeled self-balancing scooters.

**The consultation process outlined in this paper may be the only opportunity for you to provide input into this review.**

**You are encouraged to make submissions.**

## 2. Policy options

This consultation paper discusses two policy options:

- |          |  |
|----------|--|
| Option 1 | Keep the current safety standard, which does not include single wheeled self-balancing scooters (status quo) |
| Option 2 | Remake the safety standard to include single wheeled self-balancing scooters                                 |

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<sup>1</sup> Consumer Goods (Self-balancing Scooters) Safety Standard 2016, [www.legislation.gov.au/Details/F2016L01180](http://www.legislation.gov.au/Details/F2016L01180).



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## 3. Single wheeled self-balancing scooters

### 3.1. Background

Single wheeled self-balancing scooters were invented in 2010.<sup>2</sup> They became widely available in China in 2014. Generally, single wheeled self-balancing scooters are more expensive than two wheeled ones. ACCC market surveillance found the average retail price of a single wheeled self-balancing scooter is \$1240, compared to two wheeled self-balancing scooters, which have an average price of \$200. The product appears to be less popular than the two-wheeled type, and there are fewer products in the marketplace.

### 3.2. Fires associated with single wheeled self-balancing scooters

The ACCC is aware of two fires associated with single wheeled self-balancing scooters that occurred in the UK. One occurred on 11 October 2015,<sup>3</sup> the other on 7 December 2015.<sup>4</sup> In both cases, the scooters were charging when the fires started. The ACCC is not aware of any other fires associated with single-wheeled self-balancing scooters.

### 3.3. Testing of single wheeled self-balancing scooters

After commencement of the safety standard for two wheeled self-balancing scooters, the ACCC arranged testing for one single wheeled self-balancing scooter against the Energy Safe Victoria (ESV) requirements for self-balancing scooters (which include single wheeled self-balancing scooters within the definition of hoverboard)<sup>5</sup>. The ACCC did this to find out if single wheeled self-balancing scooters might pose any of the same electrical safety risks as two-wheeled self-balancing scooters.

The single wheeled self-balancing scooter failed sections 11.1 (excess temperature during normal use), 11.8 (normal use test) and some sections of 30.2 (specifying non-metallic material to be resistant to ignition and spread of fire) of AS/NZS 60335.1. Section 11 is referenced in *Consumer Goods (Self-balancing Scooters) Safety Standard 2016* but section 30.2 is not.

The ACCC referred the matter to ESV because it failed ESV's requirements for self-balancing scooters.<sup>6</sup> ESV negotiated a recall of the product.

## 4. Background

### 4.1. Regulation of two wheeled self-balancing scooters

In December 2015, the ACCC became aware of overseas media reports and social media posts of electrical fires associated with self-balancing scooters (then referred to as hoverboards). On 10 December 2015, the ACCC published an alert, warning consumers

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<sup>2</sup> J Kairman, *For Solowheel maker, a patent rights nightmare in China*, Los Angeles Times, 30 May 2015, [www.latimes.com/business/la-fi-china-counterfeit-20150531-story.html](http://www.latimes.com/business/la-fi-china-counterfeit-20150531-story.html).

<sup>3</sup> London Fire Brigade, *Brigade issues 'hoverboard' safety warning on Back to the Future Day*, 21 October 2015 [www.london-fire.gov.uk/news/LatestNewsReleases\\_BrigadeissueshoverboardsafetywarningonBacktotheFutureDay.asp](http://www.london-fire.gov.uk/news/LatestNewsReleases_BrigadeissueshoverboardsafetywarningonBacktotheFutureDay.asp).

<sup>4</sup> L Proto, *Family's Christmas ruined after electric unicycle explodes while charging and devastates home*, Evening Standard, 14 December 2015, [www.standard.co.uk/news/uk/familys-christmas-ruined-after-electric-unicycle-explodes-while-charging-and-devastates-home-a3136491.html](http://www.standard.co.uk/news/uk/familys-christmas-ruined-after-electric-unicycle-explodes-while-charging-and-devastates-home-a3136491.html).

<sup>5</sup> <http://www.esv.vic.gov.au/technical-information/guidance-for-compliance-to-asnzs-3820-for-hoverboards-or-self-balancing-scooters/>

<sup>6</sup> Details of ESV's requirements are available from the ESV website: [www.esv.vic.gov.au/Electricity-Professionals/Electrical-equipment-and-appliances](http://www.esv.vic.gov.au/Electricity-Professionals/Electrical-equipment-and-appliances).

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about the fires overseas and the risk of falls from self-balancing scooters.<sup>7</sup> In December 2015, the Australian Electrical Regulatory Authorities Council (ERAC) published guidance on the characteristics of an electrically safe self-balancing scooter based on the International Electrotechnical Commission (IEC) and Australian/New Zealand (AS/NZS) standards.<sup>8</sup>

In early January 2016 there was a house fire in Victoria from a self-balancing scooter that was being charged. This prompted the Victorian Minister for Consumer Affairs to ask the Commonwealth Minister to ban the products. On 12 January 2016, the Commonwealth Minister published a Safety Warning Notice, announcing the ACCC was investigating the risks associated with the use of self-balancing scooters.<sup>9</sup>

Since the fire in Victoria, the ACCC is aware of eight fires associated with self-balancing scooters. Five of these fires started while the scooter was charging, and fire authorities could not confirm whether the self-balancing scooter that caused one of the other fires was charging at the time the fire started. Another house fire started one hour after the self-balancing scooter stopped charging. The damage caused to three of these houses was so significant that the houses were irreparable.

The ACCC is not aware of any incidents of two-wheeled self-balancing scooters catching fire while being ridden in Australia; however there are reports of such incidents overseas.

Following the fires and investigation by the ACCC, the Minister imposed an interim ban on the sale of unsafe self-balancing scooters that did not meet specified safety standards.<sup>10</sup> The interim ban came into effect on 19 March 2016, was extended twice and came to end on 16 July 2016. On 17 July 2016, a safety standard for self-balancing scooters came into effect.<sup>11</sup> The standard will expire on 16 July 2018.

The standard defines a self-balancing scooter as a two-wheeled, ride on device with no steering grips, seats or handlebars, powered by a lithium-ion battery that is rechargeable via connection to a mains power supply.

## 4.2. Requirements of the safety standard for two-wheeled self-balancing scooters

The safety standard references sections of the International Electrotechnical Commission (IEC) Household electrical appliances general safety standard (IEC 60335) and the Underwriter's Laboratories (UL) self-balancing scooter standard (UL 2272). Both the IEC and UL standards provide the technical frameworks, metrics and specifications which regulations can refer to and make mandatory.

The IEC standard is a general voluntary standard applying to household electrical appliances. Under the current national standard for two wheeled self-balancing scooters, products have to be compliant with specific sections of the standard that are relevant. In Victoria, single wheeled self-balancing scooters must also comply with these provisions, but in the other states and territories there is no such requirement.

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<sup>7</sup> Australian Competition and Consumer Commission, *Stay safe on hoverboards*, MR 251/15, Canberra, 2015, viewed 9 December 2016, [www.accc.gov.au/media-release/stay-safe-on-hoverboards](http://www.accc.gov.au/media-release/stay-safe-on-hoverboards).

<sup>8</sup> Electrical Regulatory Authorities Council, Information Bulletin – Electrical safety of hoverboards and electric scooters, December 2015 [www.erac.gov.au/images/Downloads/Information%20Notice%20-%202013%20Electrical%20Safety%20of%20Hoverboards%20and%20Electric%20Scooters%20v1.0.pdf](http://www.erac.gov.au/images/Downloads/Information%20Notice%20-%202013%20Electrical%20Safety%20of%20Hoverboards%20and%20Electric%20Scooters%20v1.0.pdf).

<sup>9</sup> Product Safety Australia, *Consumer protection notice No. 1 of 2016 - Safety warning notice (Hoverboards)*, 12 January 2016.

<sup>10</sup> Australian Consumer Law Imposition of Interim Ban on Hoverboards that do not meet Specific Safety Requirements, [www.legislation.gov.au/Details/F2016L00357](http://www.legislation.gov.au/Details/F2016L00357).

<sup>11</sup> Consumer Goods (Self-balancing Scooters) Safety Standard 2016, [www.legislation.gov.au/Details/F2016L01180](http://www.legislation.gov.au/Details/F2016L01180).



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The UL standard was designed specifically for self-balancing scooters. Sections of this standard have also been mandated for two wheeled self-balancing scooters in the national standard, however have not been previously mandated for single wheeled self-balancing scooters. The sections from both standards specified for two wheeled self-balancing scooters are designed to prevent overheating while charging, during normal use and to prevent abnormal operation. The rationale for specifying these sections is detailed in full in the Regulation Impact Statement, which is available on the Federal Register of Legislation.<sup>12</sup> It is briefly summarised below.

Based on Australian and international evidence, it appears that fires and other incidents are most likely to be caused by self-balancing scooters with one or more of the following characteristics:

- they contain substandard lithium-ion batteries
- they are designed and manufactured with substandard mechanical protection for the batteries
- they are designed and manufactured with substandard electrical circuitry that does not include adequate over-current, over-temperature or over-charging protection for the batteries
- they have non-compliant electrical chargers.

To minimise risk of fire, the ACCC concluded that, as a minimum, self-balancing scooters should include appropriate components and electrical circuitry to safely manage each of the following:

- battery charging
- battery discharging
- battery temperature controls
- unbalanced charge in multiple lithium-ion battery cells.

## 4.3. Electrical Safety Authorities

In June 2016, ESV gazetted a prohibition notice to prevent the sale of self-balancing scooters in Victoria, unless ESV has issued a Certificate of Compliance for the self-balancing scooter.<sup>13</sup> This means that a self-balancing scooter has to meet specific Australian or international safety standards before it can be sold in Victoria.

Electrical safety regimes vary between the states and territories. The electrical safety laws in all states and territories apply to self-balancing scooter electrical chargers since they operate at mains voltage (240 volts AC).

However, the electrical safety regulators in most Australian states and territories cannot regulate self-balancing scooter batteries and battery control systems. This is because self-balancing scooters operate at a low voltage (generally below 50 volts), which is outside the scope of their laws.

ESV has advised the ACCC that the electrical safety legislation in Victoria allows it to adequately manage both charger and battery safety issues in self-balancing scooters.

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<sup>12</sup> Consumer Goods (Self-balancing Scooters) Safety Standard 2016 Explanatory Statement, [www.legislation.gov.au/Details/F2016L01180/Explanatory%20Statement/Text](http://www.legislation.gov.au/Details/F2016L01180/Explanatory%20Statement/Text).

<sup>13</sup> Details are available on the ESV website: [www.esv.vic.gov.au/Electricity-Professionals/Electrical-equipment-and-appliances](http://www.esv.vic.gov.au/Electricity-Professionals/Electrical-equipment-and-appliances).

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Regulatory gaps in electrical safety laws in most Australian states and territories mean that the Australian Consumer Law (ACL) is currently the most appropriate legislative regime to address immediate safety issues with self-balancing scooters in the interim. However, if state and territory electrical safety regulations are amended in the near future to include extra low voltage devices, such as self-balancing scooters, the state and territory electrical safety regime will become the most appropriate regime to regulate these products.

The ACCC will continue to work with all electrical safety regulators to achieve a suitable long term solution under the state and territory electrical safety laws. This was the rationale behind the safety standard expiring on 16 July 2018.

## 5. Detailed description of policy options

Option 1 - Keep the current safety standard, which does not include single wheeled self-balancing scooters (status quo)

### Description

The safety standard would not be changed and would continue to only apply to two-wheeled self-balancing scooters. Most consumer goods in Australia are not regulated by mandatory safety standards. However, suppliers still need to have regard to the consumer protection provisions of the ACL. The ACL provides consumers with specific protections for consumer transactions called statutory consumer guarantees every time they purchase goods or services.

Single wheeled self-balancing scooters are currently regulated in Victoria pursuant to the ESV prohibition notice but are not regulated elsewhere in Australia.

### Benefits

There would be no additional regulatory costs for suppliers, and no barrier to entry to new suppliers into the market.

### Limitations

Evidence suggests that single wheeled self-balancing scooters pose many of the same risks to consumers as those currently covered by the safety standard. Consumers using these products are not currently offered the same level of protection as those who use two-wheeled scooters, and may therefore be exposed to the risk of fires from single wheeled scooters. Consumers are unable to satisfy themselves that self-balancing scooters conform to the IEC or UL standards by visual inspection. A safety standard would reduce the impact of this information asymmetry in the market.

Option 2 – Remake the safety standard to include single wheeled self-balancing scooters

### Description

The safety standard for two-wheeled self-balancing scooters would be remade to include single wheeled self-balancing scooters. The requirements of the standard would remain the same.

Regulation of single wheeled self-balancing scooters in Victoria would remain under this option.



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## Benefits

While all electrical safety regulators may eventually regulate these products in the future, expanding the safety standard for two-wheeled self-balancing scooters to include single wheeled self-balancing scooters will improve protection for consumers who may buy these products in the interim.

Suppliers can continue to sell single-wheeled self-balancing scooters provided they meet the requirements of the safety standard.

Safety standards are a proactive method of protecting consumers against hazards, compared to reactive responses such as a voluntary or compulsory recall to reduce the risk of fire.

## Limitations

The safety standard will not improve the safety of products that consumers have already purchased. The ACCC or electrical safety regulators can negotiate recalls where a hazard is identified. Where a supplier has had their self-balancing scooter tested and finds that it does not comply and is unsafe, they should contact the ACCC and initiate a recall.

The safety standard includes requirements for self-balancing scooters that electrical safety regulators identified as being particularly important in reducing the risk of fire while charging. However there may be residual risks that become evident during use or misuse that the safety standard does not address. These risks would be better addressed by State and Territory electrical safety regulators, who have the technical expertise to assess and develop a more comprehensive response.

## 6. Preliminary position

The ACCC is currently of the view that Option 2 provides the greatest benefit to consumers, suppliers and regulators. Stakeholder submissions to this consultation will assist in testing this position.

## 7. Consultation questions

1. Which policy option do you support? And why?
2. Do suppliers of single wheeled self-balancing scooters already design scooters to conform to a voluntary standard? If so, which one?
3. If option 2 was chosen, what is the minimum time frame that would allow sufficient time for suppliers to comply with the safety standard? Does it differ between product types and suppliers? And why?
4. Are there alternative options not discussed in this consultation paper?
5. Are there any other issues the ACCC should consider?
6. Is the market going to change?
  - a. Are there products being developed that might fall outside the proposed safety standard that should be included?
  - b. What other characteristics should the ACCC have regard to?

7. Do you agree with the hazards identified as risks arising from single-wheeled self-balancing scooters? Are there other hazards not addressed in this paper?
  - a. Is action required to reduce the risk of incidents? Can you provide reports assessing the risk, past incidents or prevalence of such incidents?
8. Is there technology available to reduce the risk posed by these products?
9. If option 2 is implemented, what products and what proportion of existing products would not be in compliance?
- 10.

## 8. Have your say

The ACCC invites stakeholders and interested parties to comment on these policy options.

Consultation is open from xx April to xx May 2017.

The ACCC prefers submissions via the ACCC consultation hub at [consultation.accc.gov.au](https://consultation.accc.gov.au).

The ACCC will alert stakeholders and interested parties to the consultation through the Product Safety Australia website [productsafety.gov.au](https://productsafety.gov.au) and [consultation.business.gov.au](https://consultation.business.gov.au)

Alternatively, email submissions to [productsafety.regulation@accc.gov.au](mailto:productsafety.regulation@accc.gov.au) or via post:

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## 9. Glossary

Term	Definition
AS/NZS	Australian/New Zealand Standard
ERAC	Australian Electrical Regulatory Authorities Council
ESV	Energy Safe Victoria
IEC	International Electrotechnical Commission
UL	Underwriters Laboratories Inc.