

Pacific Region Infrastructure Facility's project

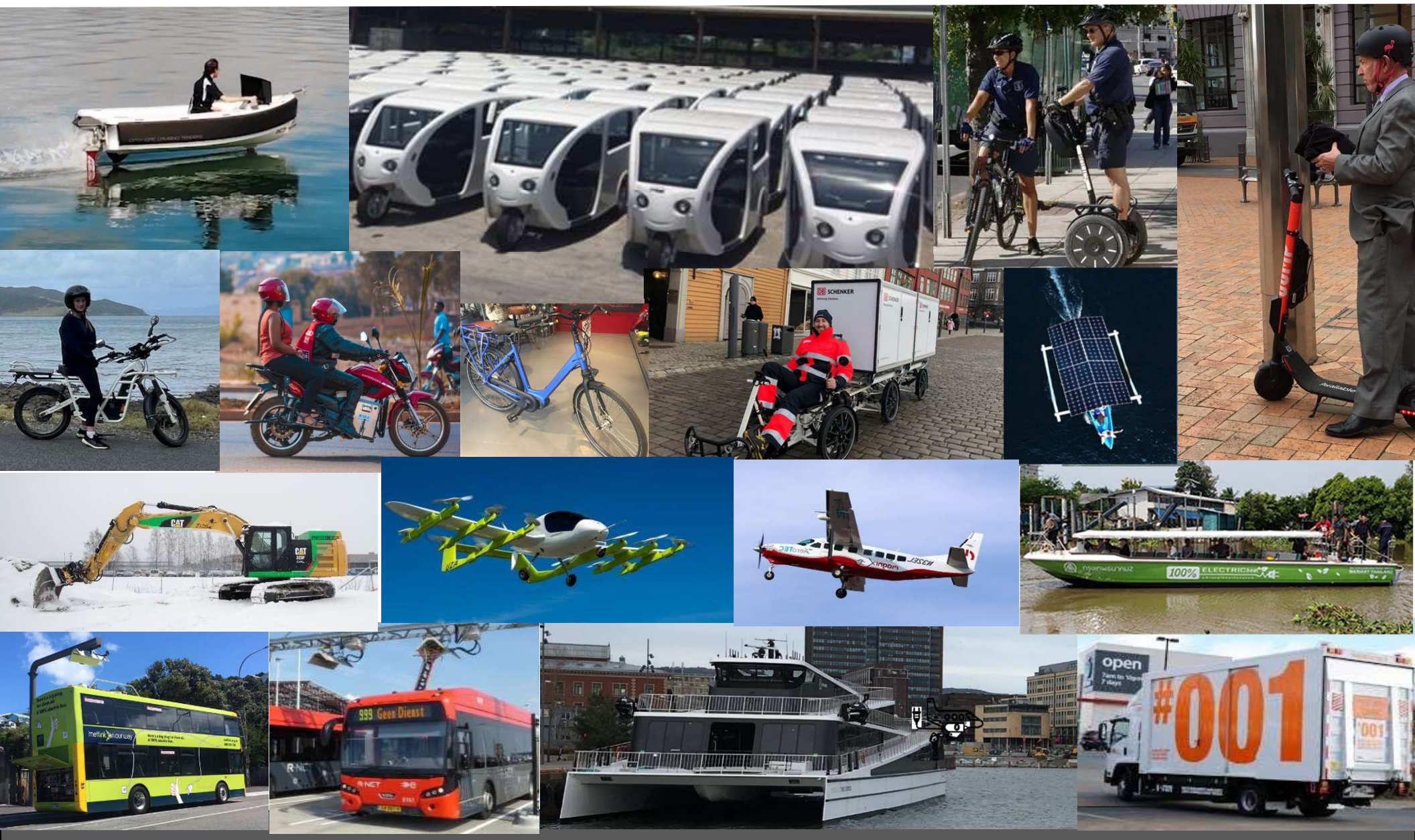
# Electric Vehicle Standards for the Pacific

Andrew Campbell

29 November 2022



# Access to modern batteries → many new vehicle types entering the market.





# Access to modern batteries

→ many new vehicle types entering the market.

- PICs seeing this change, albeit with a delayed response ...
- EVs present new technologies to the transport and energy sectors
  - new thinking required, new equipment, new ways of use, new ways they integrate.
  - technologies involved still developing.
- Many gaps in EV understanding, and many of these act as barriers to EV uptake.
- ... and some gaps risk safety





# Project foundation

- Fourth Pacific Energy and Transport Ministers Meeting, 2019: SPC directed to assist addressing barriers to e-mobility.
- PCREEE has been leading this work. With UNIDO → development of an e-mobility strategy and roadmap.
- That program identified the need to fill a gap in e-mobility-related guidelines and standards.
- The ADB-funded, PRIF-managed project  
**“Electric Vehicle Standards in the Pacific”**  
aims to support this gap filling.
- Project is to be delivered in close co-ordination with PCREEE.



Some knowledge gaps have potential to result in unsafe practices and/or poor (supplier) and consumer choices.

→ Role for guidelines and standards:



**Consumer Protection**



**Compatibility**



**Environmental**

- Safety in crashes
- Electrical safety
- To direct industry (e.g. connectors)
- Minimum performance
- Security
- Repair
- 1<sup>st</sup> responders
- Charging/grid integration
- Charging access
- User information
- Consumer/equipment info.
- ... and many others



**Safety**

From twitter feed [@ambuskar](#)



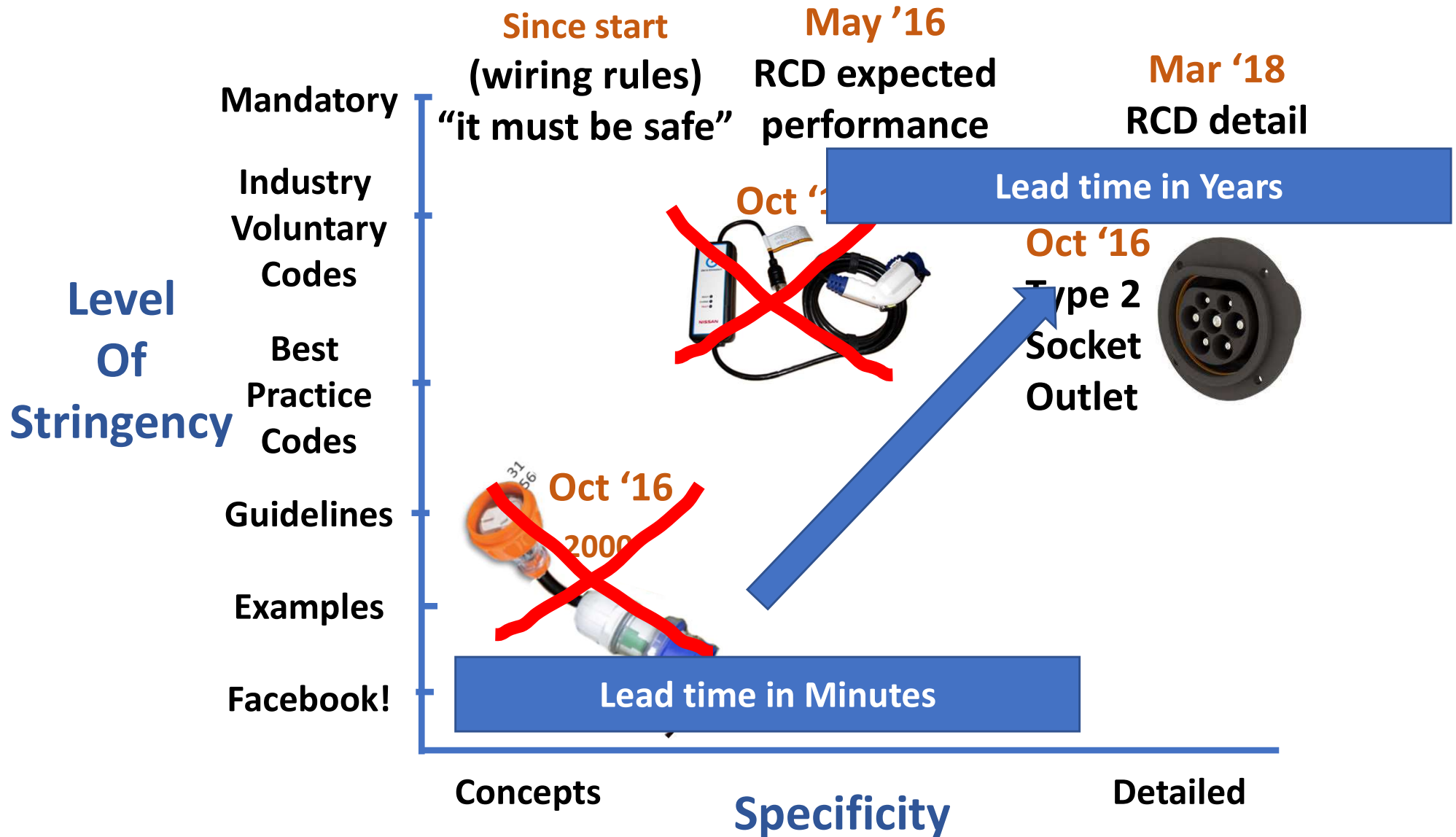
**Poor practices**



**Environmental**



# There are different forms of “standards”





## Other considerations

- **Standardisation yet to be established in some areas (and in fact introducing standards early risks introducing barriers to innovation).**
- **It is relatively easy to purchase and import “bargains” from overseas ... without appropriate due diligence/knowledge.**
- **PICs at times present ‘extreme marine’ environments.**
- **Globally, end of life management not well developed. Remoteness of PICs introduces another level ...**
- **Some local grid networks and home connections are low capacity. Electricity can be low quality in remote areas.**
- **There is a high proportion of used imported vehicles, and a high degree of ‘last-resort’ maintenance .**
- **There are differences between PICs ... → specific PIC calibration.**



## Other considerations

- Standardisation yet to be established in some areas (and in fact introducing standards early risks introducing barriers to innovation).
- It is relatively easy to purchase components overseas.
- P...
- G...  
Re...  
...  
→ Requires artful design and application of a set of “PIC-calibrated” guidelines and standards, then updated to take account of developments.
- So... and home connections are low capacity. Electricity can be low quality in remote areas.
- There is a high proportion of used imported vehicles, and a high degree of ‘last-resort’ maintenance .
- There are differences between PICs ... → specific PIC calibration.



# High level project components/stages:

- 1. A needs assessment of PIC-focused guidelines/standards.**
- 2. Review of global EV-related guidelines and standards.**
- 3. Identification of fitting guidelines/standards interventions for PICs and grouped:**
  - “no-brainers” – ready-now options recommended for immediate introduction.
  - High priority – highly desirable, may require development/recalibration work, aim to introduce in short term.
  - Medium priority – desirable, aiming for introduction in medium term.
  - Low-priority – not urgent in short term, but recommended for introduction.
- 4. → Development of a strategy and roadmap for introduction**
  - ... recognising country to country variations.
  - ... including vision, targets, information development and outreach, supporting policy requirements.



# The target “EV-system” components

## Vehicle Types to Consider

**Micro-format**



**Small-format**



**Medium-format**



**Large-format**



**Small-vessel**



**Medium-vessel**



**Large-vessel**



**Drones**

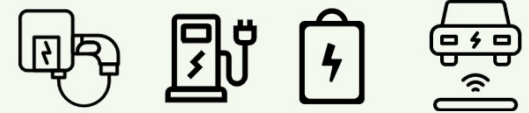


**Aviation**



## Supporting Systems

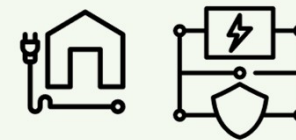
**Chargers**



**Connectivity**



**Elect supply**



**Based on the needs assessment:**

→ **Outputs will range from:**

- **Identifying recommended guidelines/stds**  
(e.g., expected for most of the land vehicles)  
to
- **Identifying the authority to work with**  
(e.g., expected for large vessels and aviation)



Time in Life Cycle	Electric Vehicles	Charging Infrastructure	Electricity to the Plug/Charger
Design	Standards, tech development, meeting market	Standards, related hardware and IT, overall plan, compatibility.	Electricity supply system, planning, standards
Build	Capacity, market demand by vehicle class	Capacity, demand by different type	Gen Co.s/Line Co.s, standards
Supply	Availability, meeting demand, shipping, import, certification.	Availability, meeting demand, shipping, import, certification.	Gen Co.s/Lines Co.s, general information on
Purchase (and resell)	Awareness/information, experience, overcoming barriers, EV performance, fit for purpose, decision, available models.	Fit-for-purpose purchase decisions, future-proofing, grid-aligned, compatibility, available models	Gen/network upgrade, generation type switching ... company and country plans
Installation	Insurance, warranty, registration, identification, WoF	Approval, site works, certification, industry training.	Gen Co.s/Lines Co.s
In-service operation			
General use	Understanding, best driving practices	Access/restrictions, signage, availability, location App.	Awareness, controls (pricing and other), specification
Charging	Understanding of options, costs, best practice, standards	Understanding of, connectivity, time of charge, billing.	Connectivity, time of charging, billing
Servicing/maintenance	Understanding of, industry capability and capacity, industry training, standards	Inspection, certification, industry training.	Gen Co.s/Lines Co.s
Breakdown	Guidelines/best practice	Response, industry training, map.	Gen Co.s/Lines Co.s
Accident	1 <sup>st</sup> response, repair, fleet re-entry	1 <sup>st</sup> response, repair, re-cert.	Gen Co.s/Lines Co.s
Retirement	Decision to, reuse of battery/electrics through scrap/recycle, standards.	Decision to, re-use/upgrade through scrap	Gen Co.s/Lines Co.s, standards



# Review of information

- **Regulations:**
  - Motor vehicle acts and regulations
- **International Standards Bodies:**
  - Society of Automotive Engineers (SAE)
  - ECE (WP29) UN, IEC
  - The Interstate Renewable Energy Council (IREC)
  - The Institution of Engineering and Technology (IET)
- **Certification Advisors:**
  - Low Volume Vehicle Technical Association (NZ)
- **Consumer Information Bodies:**
  - EU and New Zealand Transport Authorities.
  - NZ Energy Efficiency and Conservation Authority (EECA).
  - “Consumer”
  - KPMG, Bloomberg
- **Papers:**
  - Academia.edu and other subscriptions ...
- **PICs involvement ... →**



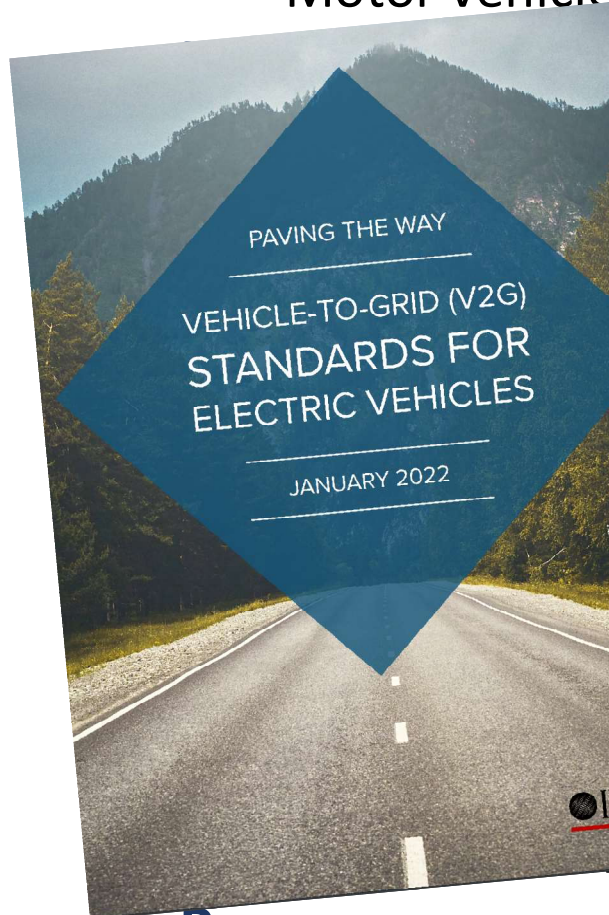
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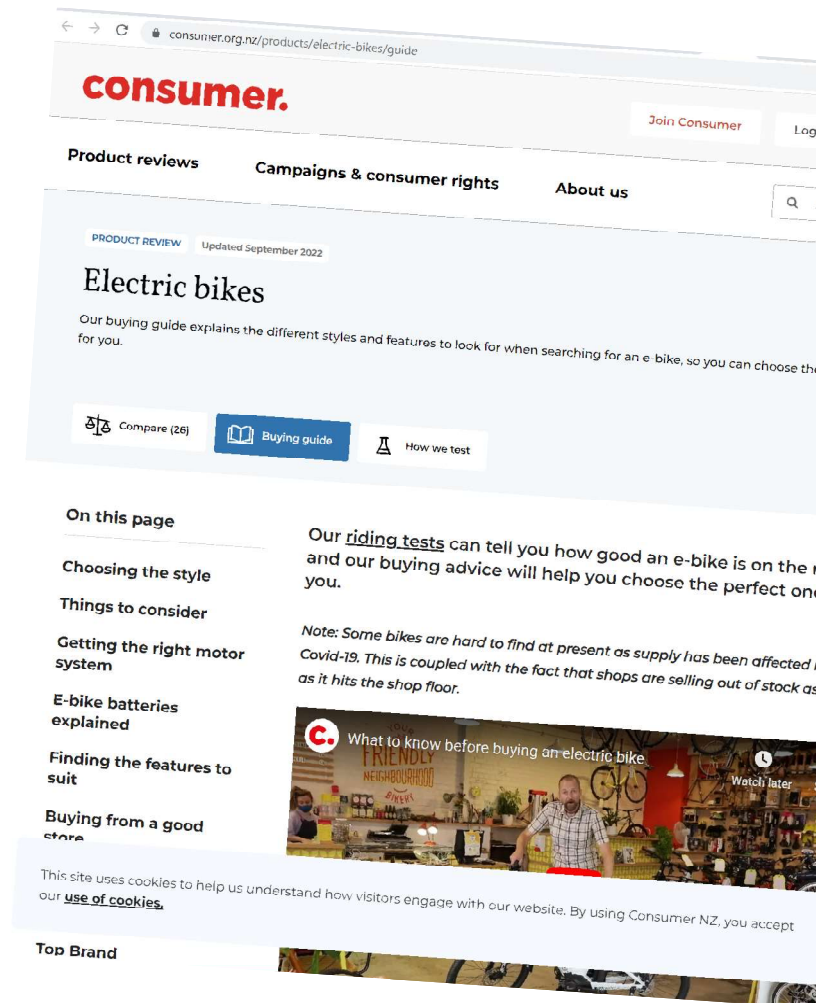


- **Papers:**
  - Academia.edu
  - PICs involvement →

## Regulations and safety for electric bicycles and other low-powered vehicles July 2017

J Lieswyn, M Fowler, G Koorey, A Wilke (ViaStrada Limited)  
S Crimp

NZ Transport Agency research report 621  
Contracted research organisation – ViaStrada Limited





## Requested involvement from PICs ...

1. What EV-related guidelines and **standards are already in place?** (and what are they for fuelled vehicles?)
2. What are the **current issues and barriers** that might be solved through providing EV-related guidelines and standards?
3. Which PIC agencies/**contacts to work with**? Especially when calibrating the recommended guidelines and standards for PICs ... contact names and details???
4. Preferred **communication during the project** and provide the outputs?
  - Webinar(s)?
  - Web-based portal/search vs downloaded document?
5. Other suggestions???



# Target project outputs and timeline:

- **28-30 Nov 2022 (PIC e-Mobility Workshop):**
  - Introduce project and begin working with interested stakeholders.
- **Dec '22 to March '23:**
  - Develop standard's needs assessment.
  - Guidelines and standards review and compilation.
  - Assessment for PICs (including Interest Group workshop(s)).
  - Develop roadmap (including Interest Group workshop(s)).
  - Draft reporting.
- **Late March 2023:**
  - Present project's draft report for validation to PRIF.
- **3 April 2023 (5<sup>th</sup> Energy & Transport Minister's Meeting):**
  - Present project's draft report and validation.
  - Follow up discussions and edits/additions.
- **May 2023:**
  - Presentation of Final Report



**Thank you**