

CLEAN ENERGY FINANCE CORPORATION

Australian Institute of Energy Melbourne CEO Series

Oliver Yates, Chief Executive Officer of the CEFC



CEFC Mission

Accelerate Australia's transformation towards a more competitive economy in a carbon constrained world, by acting as a catalyst to increase investment in emissions reduction

Agenda

1. Overview of the CEFC
2. CEFC Case Studies in Victoria
3. Victorian Electricity Market overview
4. Opportunities for renewable energy investment in Victoria



Role of the Clean Energy Finance Corporation

Dedicated resources

- Private sector finance expertise with public purpose – to pursue energy efficiency and renewable energy across the economy
- Sector specialists focused on forming an in-depth understanding clean energy projects, technologies and impact on energy markets

Flexible and persistent

- Investment terms tailored to suit the unique characteristics and payback period of the project
- Willing to support projects banks find difficult, eg. smaller, more complex or new to the Australian market

Paving the way for others

- Facilitate the participation of private sector banks by sharing our expertise, acting as a co-financier and pioneering new solutions

How the CEFC works

- Adopts a commercial approach – with tight criteria and filtering of investment projects
- Seeks investments with externalities that benefit the economy:
 - Assisting technologies to move down the cost curve
 - Building skills and supply chain capacity
 - Providing a demonstration effect
 - Emissions reduction

Co-financing and private sector leverage is integral to the CEFC's strategy



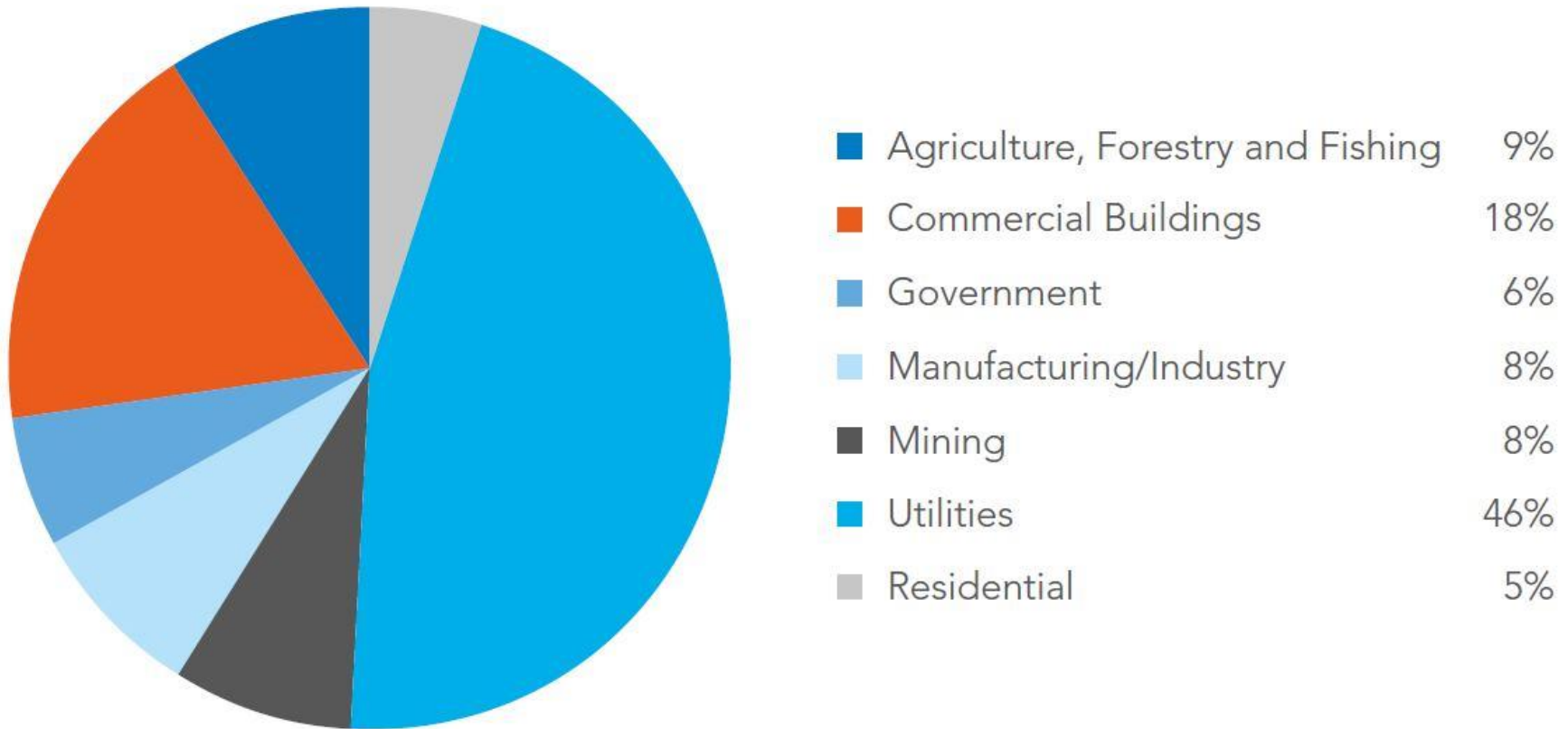
Outcomes after two years in operation

- Committed over \$1bn in investments for projects valued at over \$3bn
- Finance for over 70 projects
 - More than 40 direct investments
 - More than 30 under co-financing programs
- These projects are helping deliver lower energy costs for businesses – improving competitiveness as well as delivering 600MW of clean electricity generation capacity



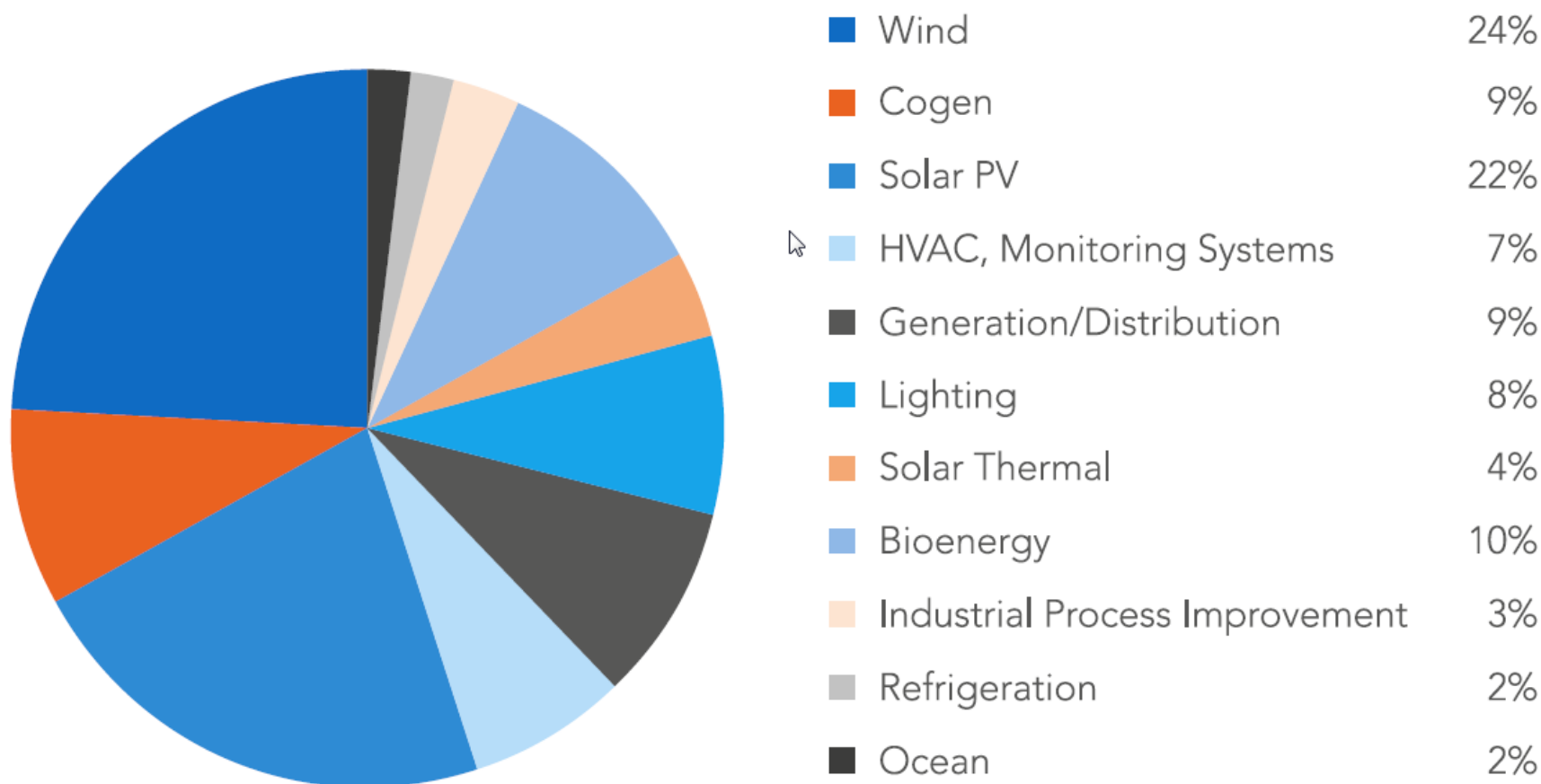
CEFC is working right across the economy

CEFC portfolio by sector type (CEFC AUD\$ funded in %)



Technology mix across the portfolio

CEFC portfolio by sector type (CEFC AUD\$ funded in %)



Case study: Financing energy efficiency in local councils

Baw Baw Shire Council (Vic)

- Street lighting upgrade, replacing 2,660 mercury vapour street lights, will cut emissions by nearly 20% and cut electricity bills and maintenance costs

"Doing nothing would have cost our Council about \$450,000 by 2020, but by taking advantage of the grant funding and using finance to improve the lights, we'll be saving ratepayers' money and reducing our impact on the environment for years to come." Baw Mayor Murray Cook



Case Study: Apple & Chestnut grower

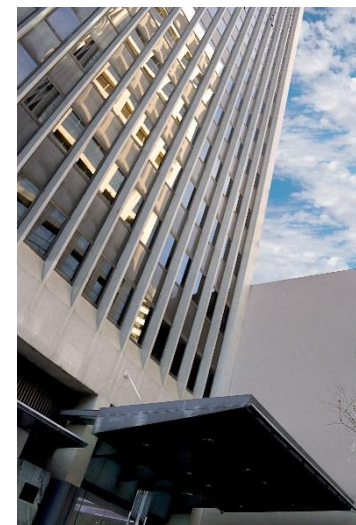
Refrigeration upgrade boosts productivity

- Victorian apple and chestnut producer, Nightingale brothers, replaced R22 refrigeration with a new ammonia water-cooled central plant and smart controls that will improve the energy efficiency of refrigeration operations.
- \$1.2 million upgrade and cut energy costs by just under 40%
- Save 488 tonnes of emissions p.a.



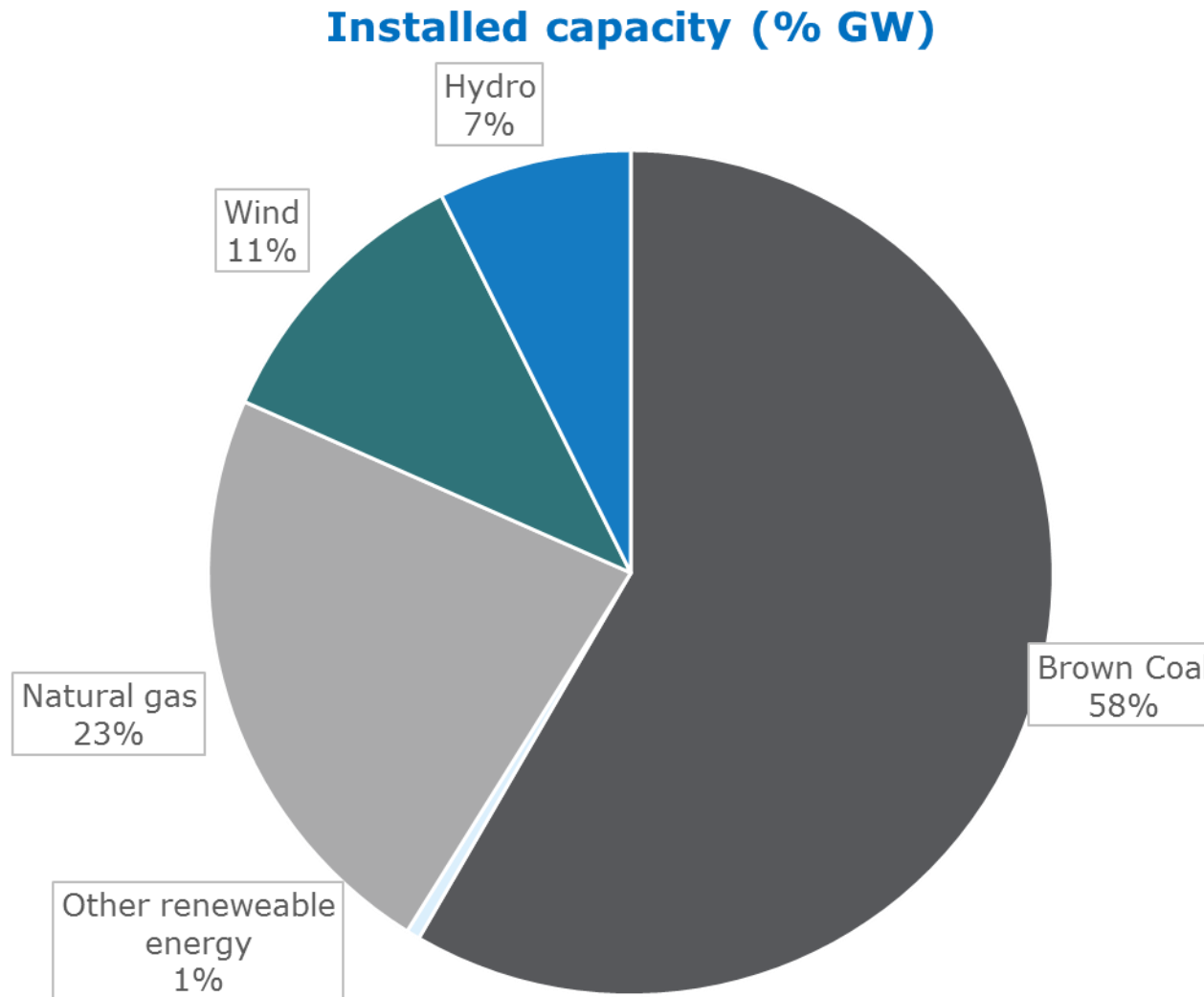
Case study: Improving building efficiency

- Environmental Upgrade Agreements (EUA) enable ageing commercial property to be retrofitted (e.g. lighting, HVAC, elevator upgrades).
- EUA is 3-way partnership between financier, local council & property owner
- Help overcome split incentives between building owners & tenants, by tying loans for energy efficiency to a building, rather than the building owner.
- Christie Centre on Collins St cut energy costs by 30% after EUA retrofit



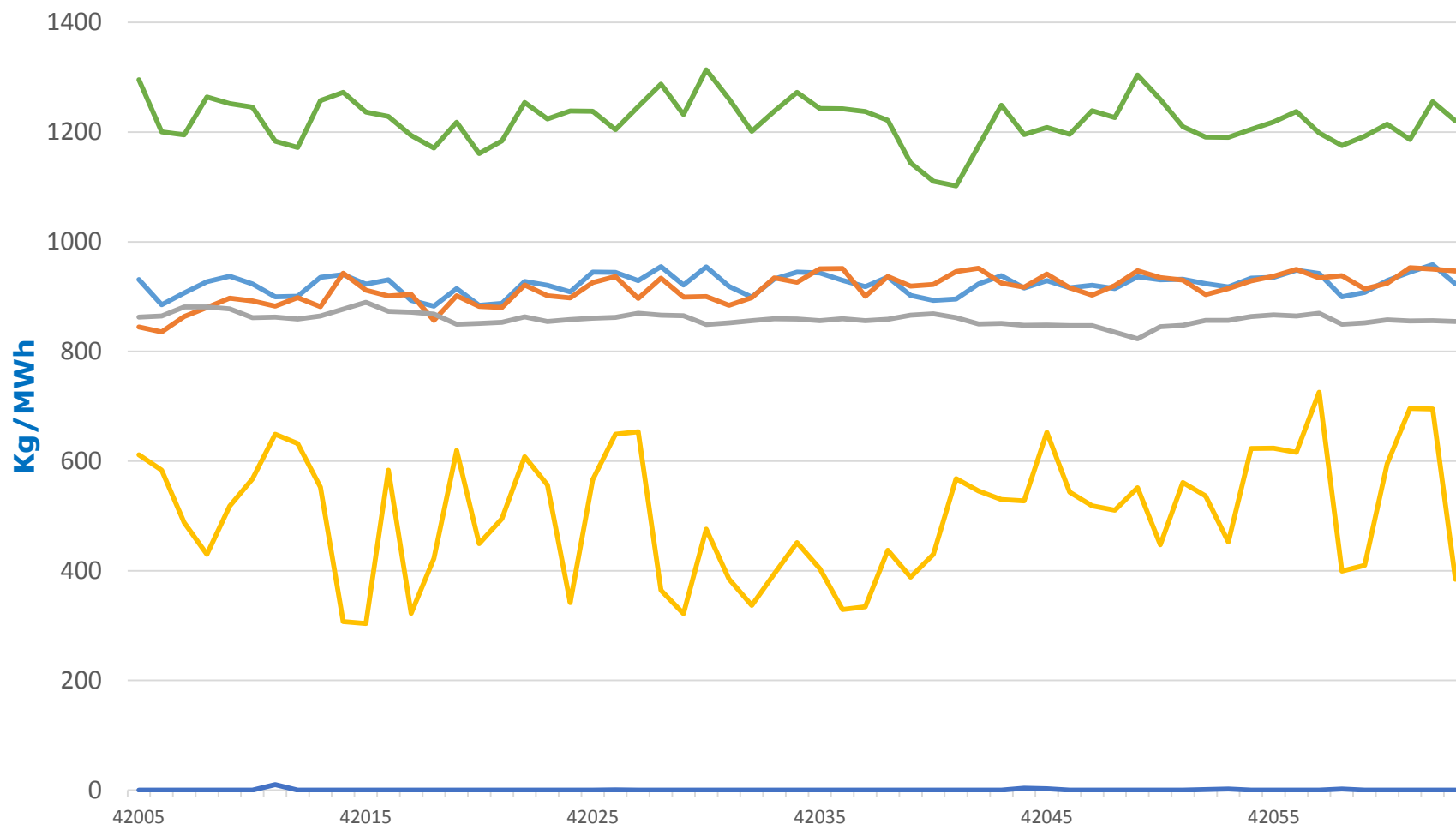
Courtesy of Sustainable Melbourne Fund

Victorian Electricity Mix



Victoria's electricity is the most emissions-intensive in Australia

Emissions-intensity of electricity produced by state



Renewables are becoming increasingly competitive

- In Dubai, ACWA Power is building a 200MW unsubsidized large-scale solar plant for ~AUD**\$73 per MWh** – fixed tariff over 25 years
- In the US, Crescent Dunes' 110MW solar tower plus storage is expected to be built for ~**\$169 per MWh**
- In South Africa, the 100MW Redstone solar thermal project is expected to be built at ~**\$155MWh**
- In the recent UK auctions, large scale solar PV bids ranged from ~**\$96 MWh-\$152 MWh** whilst wind reached as low as **\$147**
- In Australia, 3 solar farms were successful at the ACT auctions in 2012 with FiT ranging between **\$178-\$186 MWh** whilst successful bids in the 2015 wind auction ranged from **AUD\$81-\$92 p/MWh**

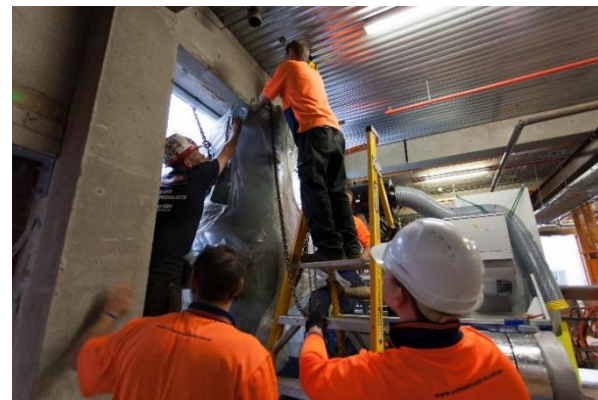


CEFC Victorian pipeline

Pipeline of \$400m in potential CEFC investments

Total project value over \$700m

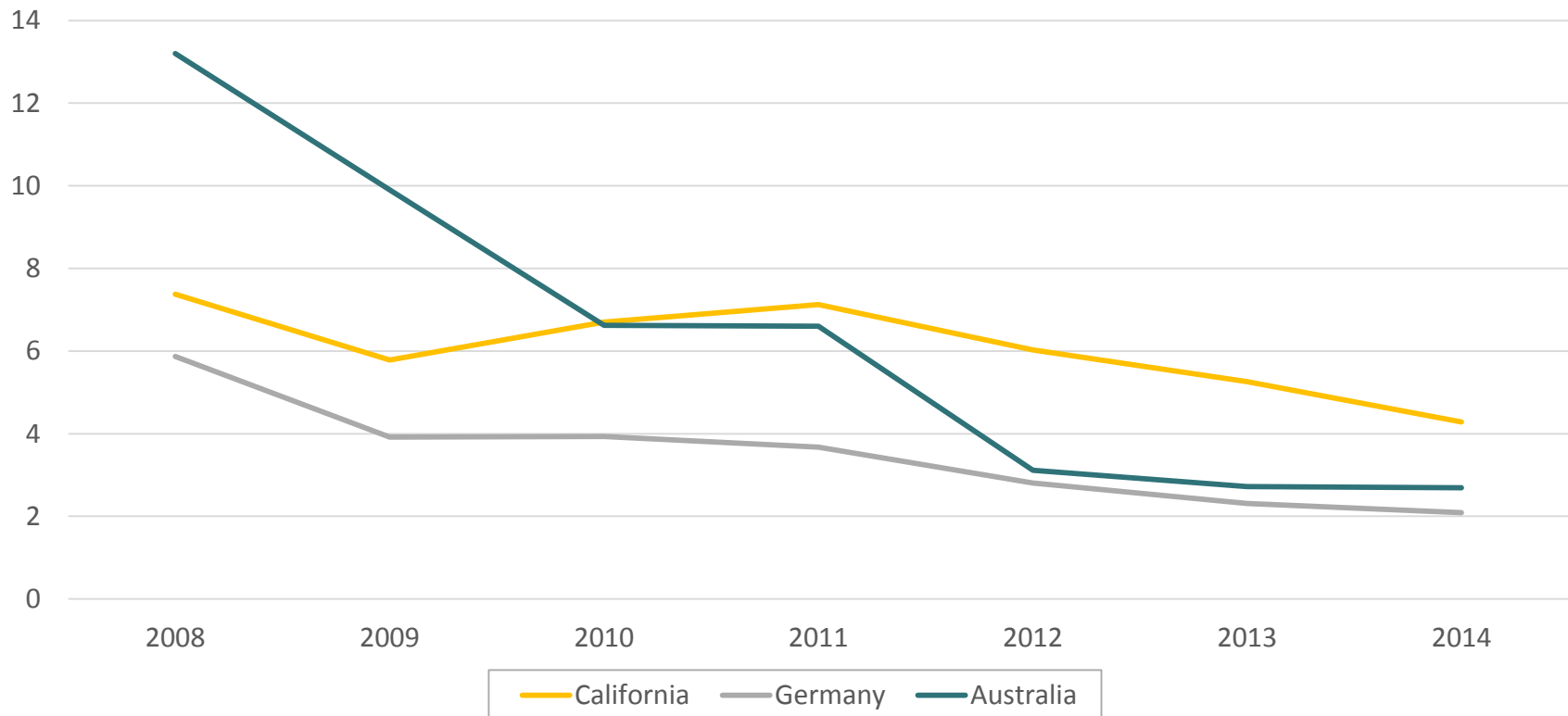
- Energy efficiency campus upgrade for Victorian university
- Wood waste to energy project
- R&D loan for new energy efficient technology for desalination/waste water treatment
- Solar PV and battery storage rollout for residential and business customers
- Energy efficient transport options
- Commercial solar for office buildings and manufacturing plants



Renewable opportunities in Victoria

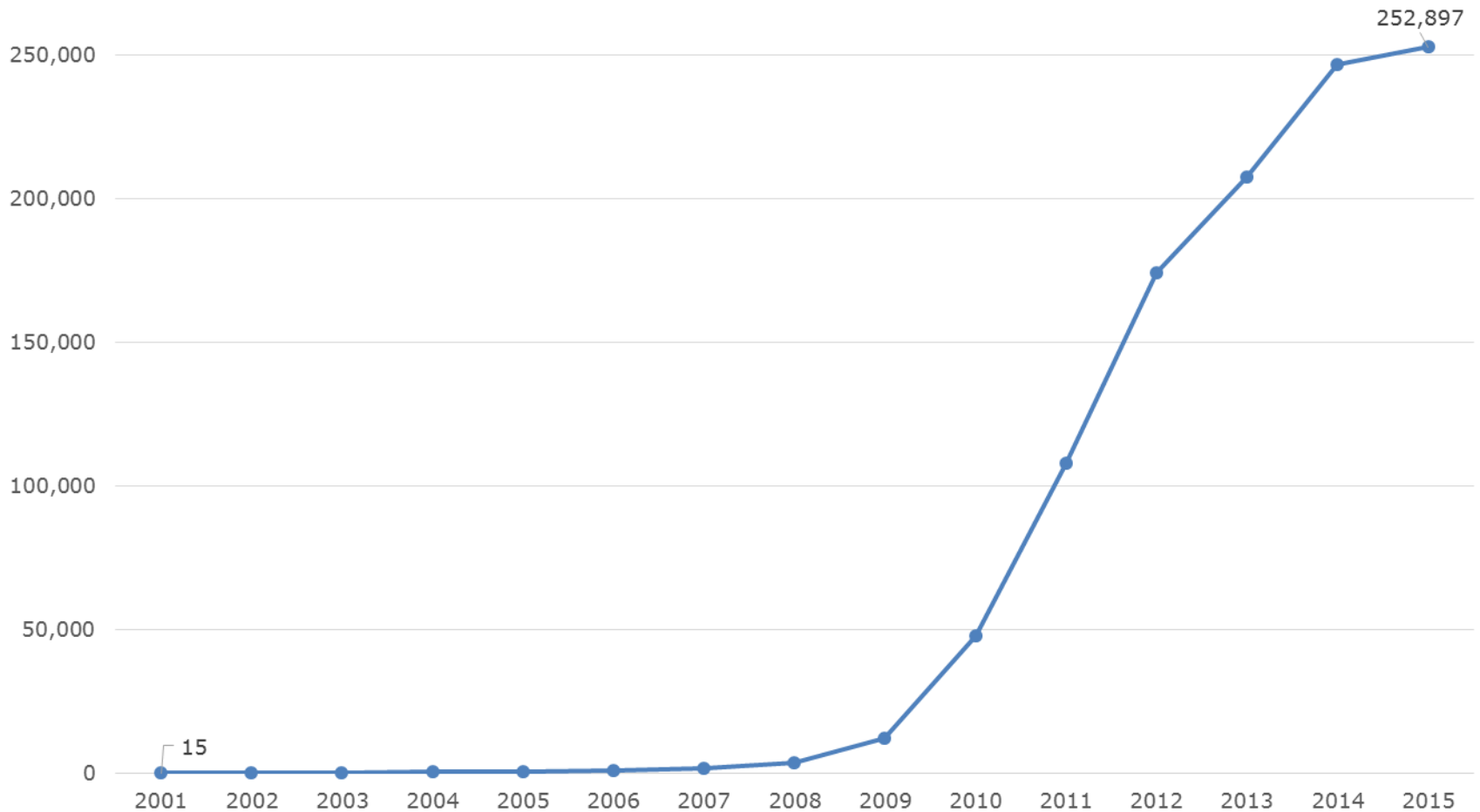
Solar PV

Solar PV System Price (Aud/W)



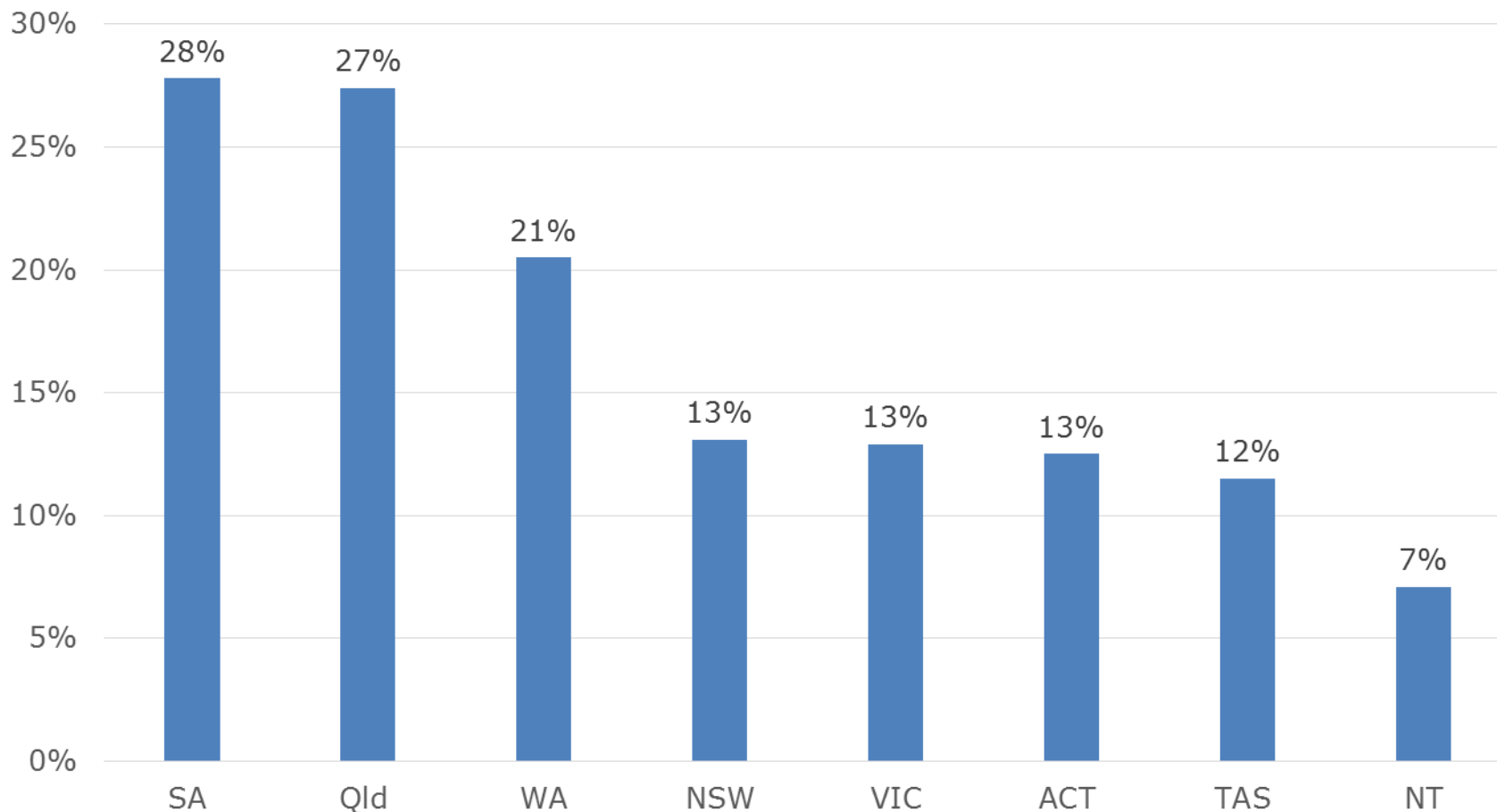
Solar PV in Victoria

Number of solar homes and businesses in Victoria (cumulative)



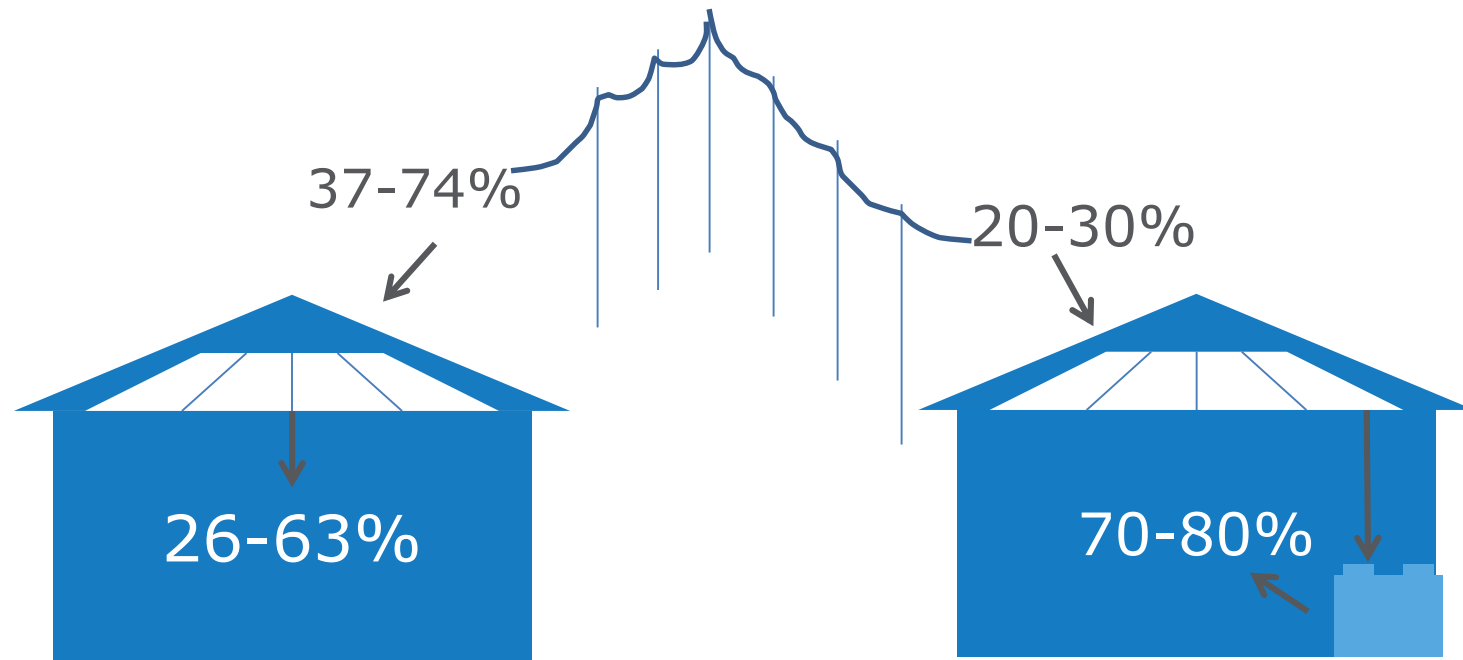
Renewable opportunities in Victoria

Percentage of dwellings with solar PV



Renewable opportunities in Victoria

Energy storage - How does it work?



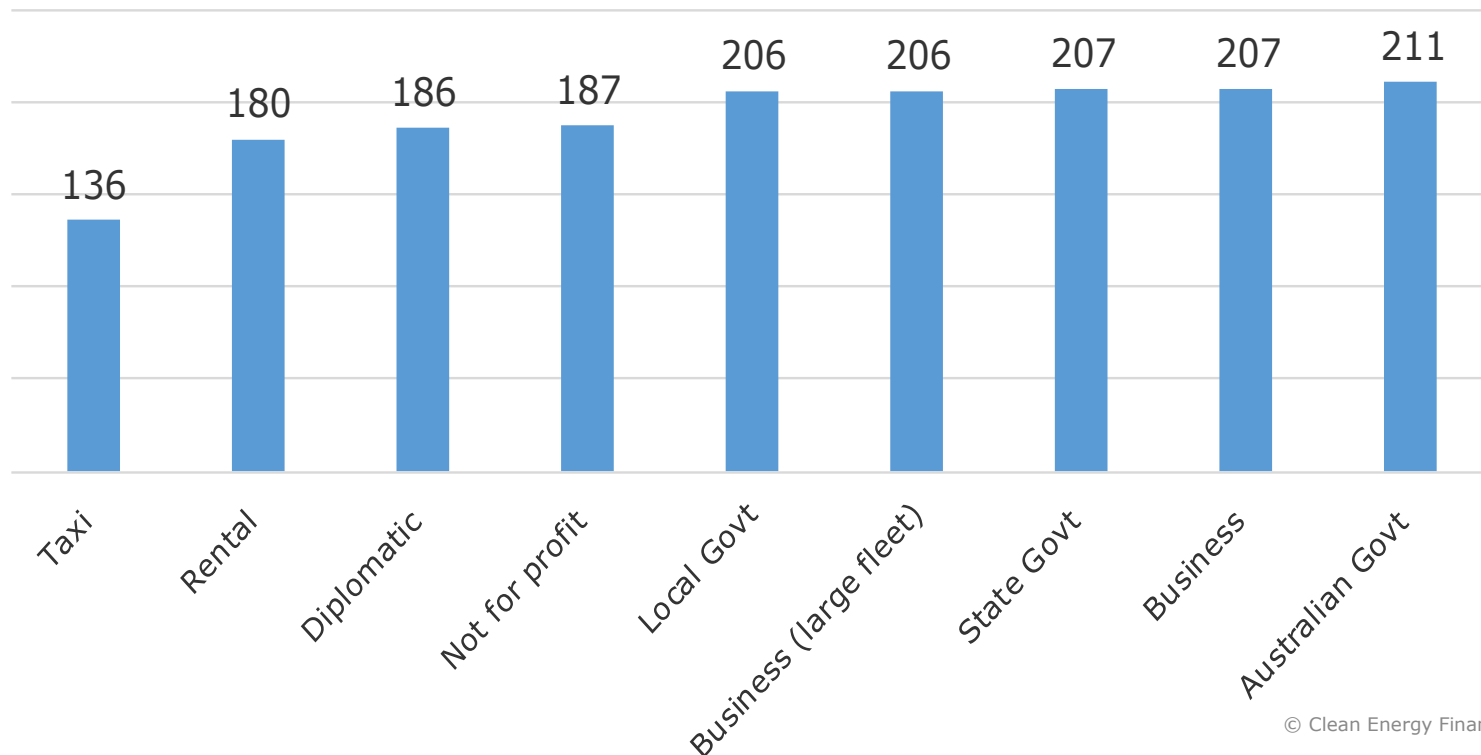
SOLAR HOUSEHOLD

SOLAR + STORAGE HOUSEHOLD

Cleaner transport options for Victoria

- National average carbon emissions intensity from new passenger and light commercial vehicles was 188g CO₂/km – 43% higher than in the EU
- If all Australians who purchased new cars in 2014 had purchased cars with best-in-class emissions, the national avg emissions intensity would have been reduced by 50%

Avg CO₂ g/km for vehicle fleets by buyer in 2014



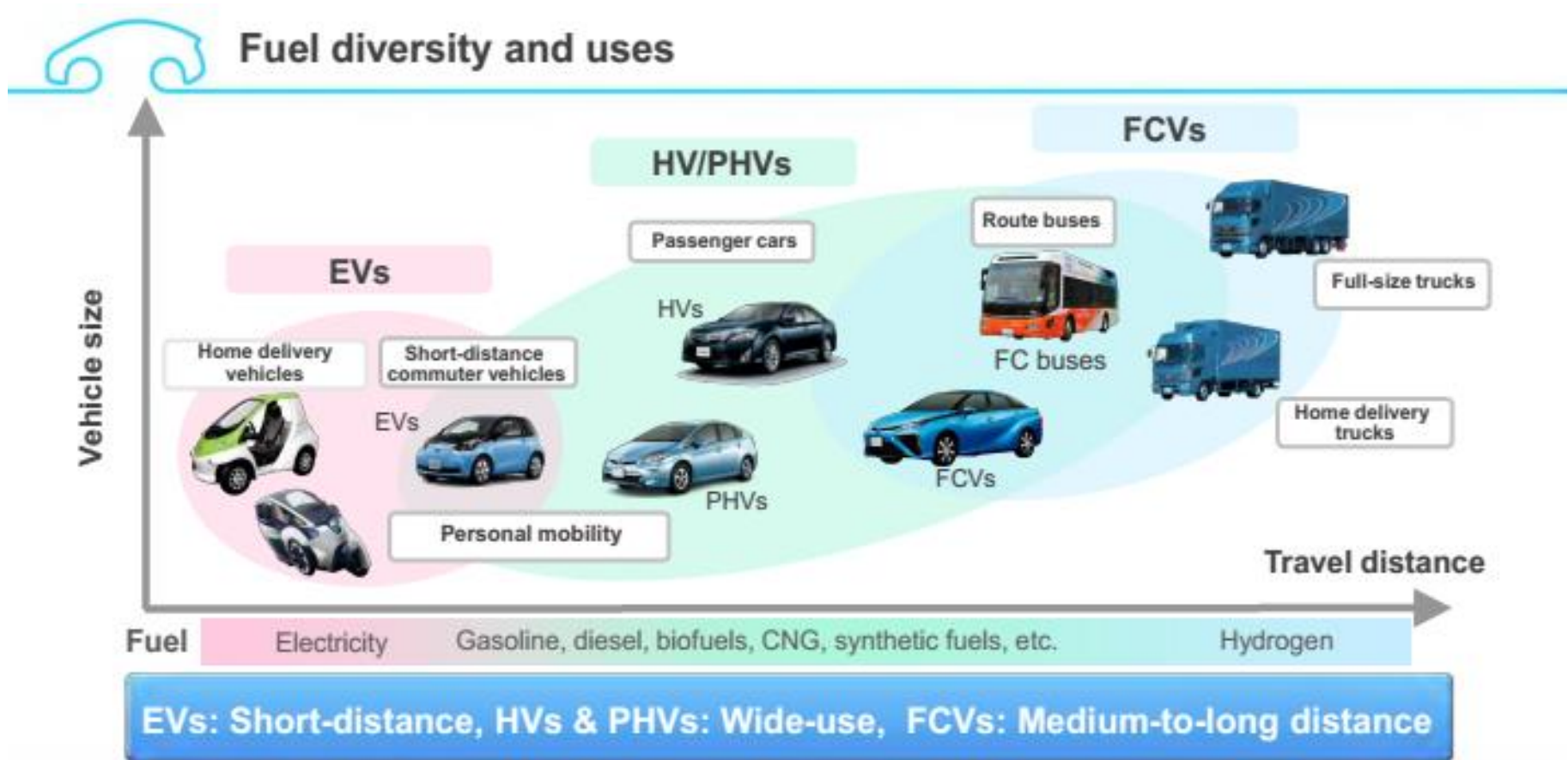
Cleaner Transport for Victorians

Exporting Renewable Energy ... really?

- Potential to generate hydrogen from solar for cars instead of petrol or use it for electricity generation instead of gas
- Hydrogen cars can be refuelled faster than electric cars and can often drive longer before refuelling
- Hydrogen doesn't emit CO₂ when combusted
- Ability to make "petrol" on site by combining renewable power and water is now available



Toyota's view of the future car market



Rewarded with a smile

TOYOTA

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