

Consumer uptake of new technology

NZWEA Conference

2 April 2015

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Work to do ...

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I note that the commentary following your Vision Statement identifies two key challenges, which I agree are important:

- how to facilitate sufficient multi-party coordination to achieve national benefits not available to any one party acting alone, and
- maintaining acceptable reliability and supply quality in the face of emerging technologies and behaviours which the existing power system was not originally designed to accommodate.

I encourage the Forum to build on its early achievements and I look forward to receiving its next report. I expect that report to contain clear conclusions and strong evidence supporting any recommendations addressing the challenges identified above, and any other matters the Forum considers important.

Transform modeling inputs

- Effect of new and disruptive technology on the electricity network
- Inputs: 3 trajectories for:
 - Electric Vehicles
 - Solar
 - Wind
 - Heat pump uptake

Scenarios – High uptake

- High Uptake of New Technology
 - In early 2020s battery costs fall to levels that allow cost competitive mass market EVs and solar with storage
 - Time of use pricing assumed to drive battery use and smooth new technology impact

Test case 2

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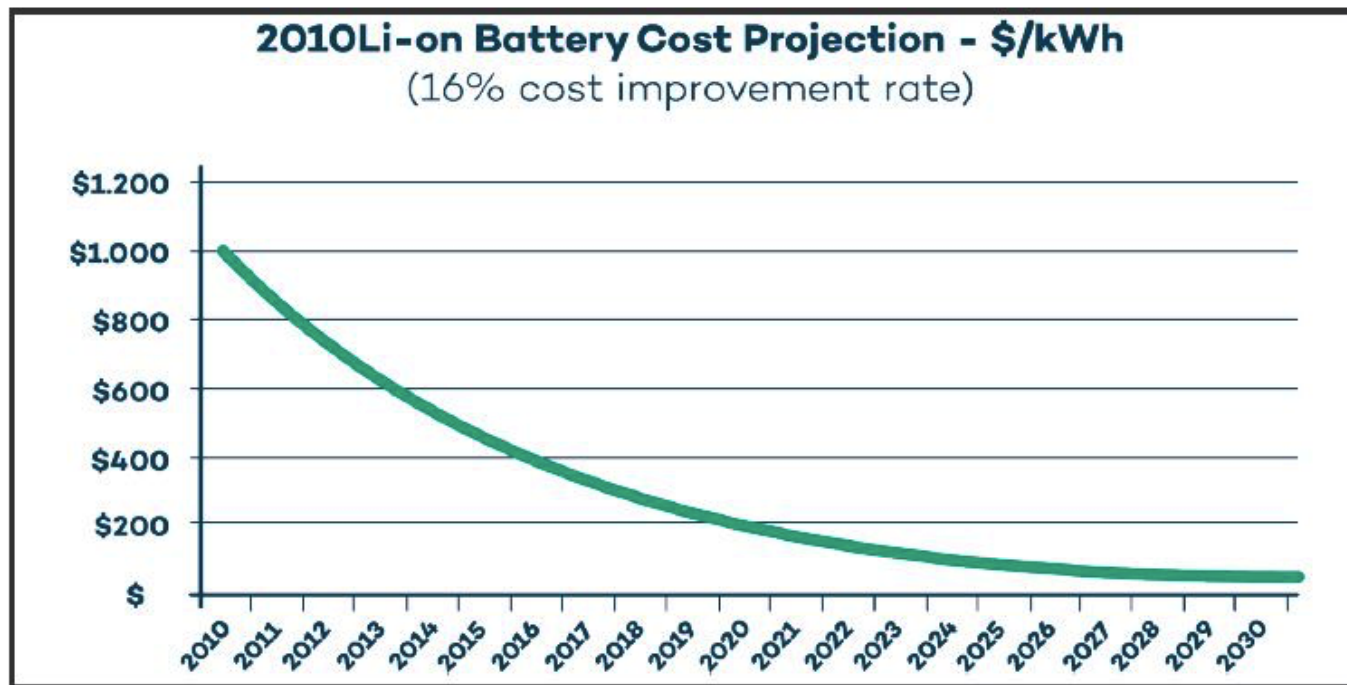
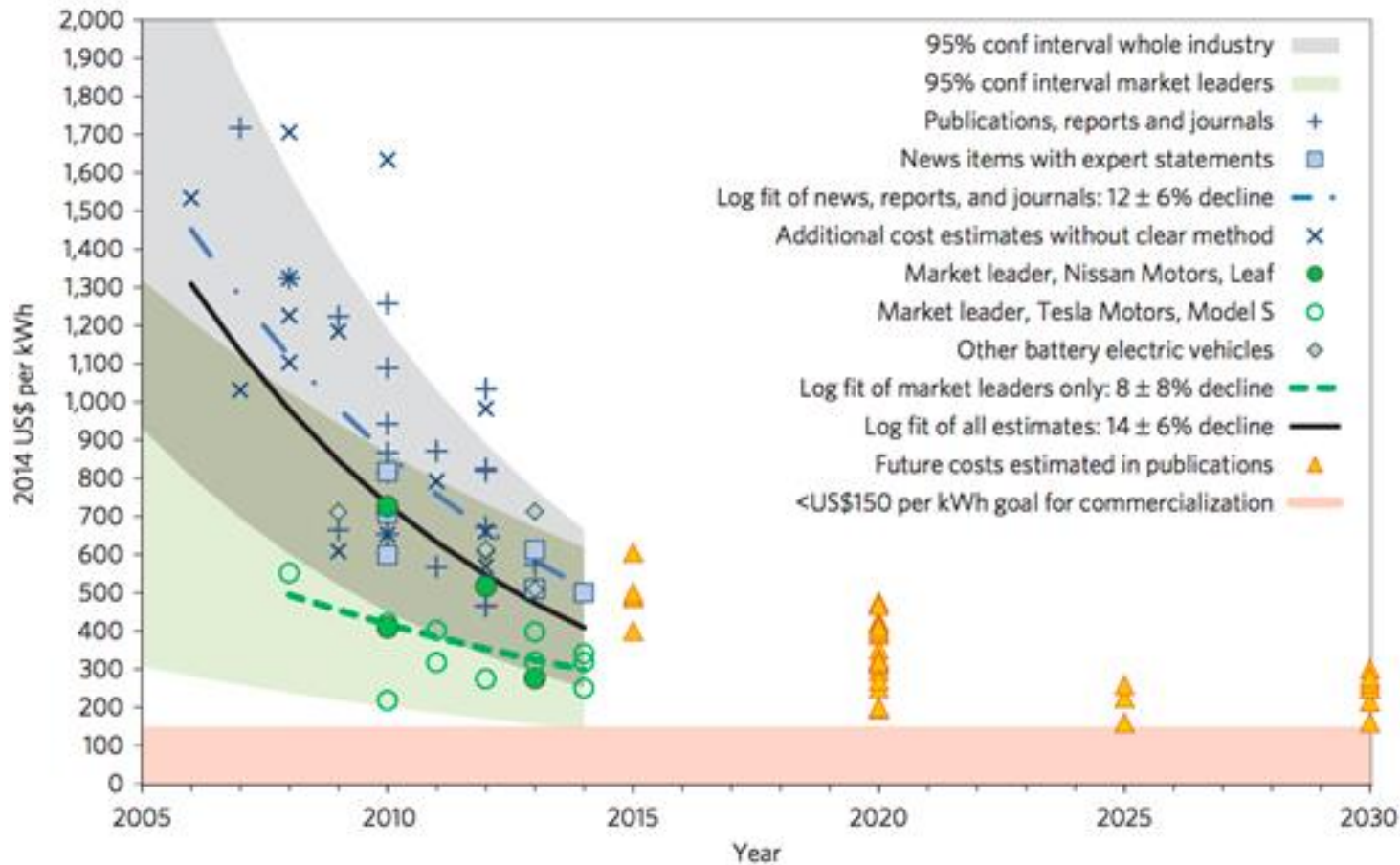


Figure 4.10—Electric vehicle Li-ion battery cost projection in \$/kWh. (Tony Seba)

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Cost (\$/kWh)	\$500	\$420	\$353	\$296	\$249	\$209	\$176	\$148	\$124	\$104	\$87	\$73

Table 4.1— Electric vehicle Li-ion battery cost projection in \$/kWh. (Tony Seba)

Radical or conservative?



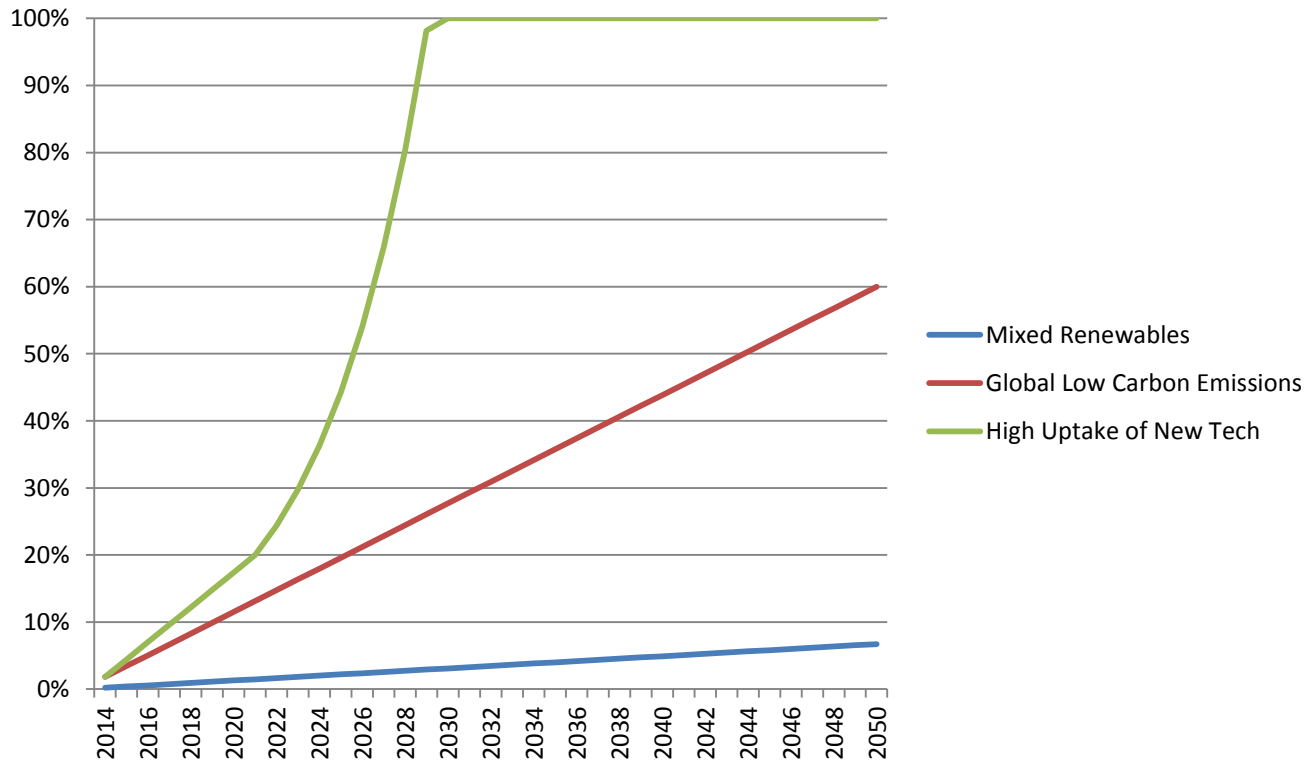
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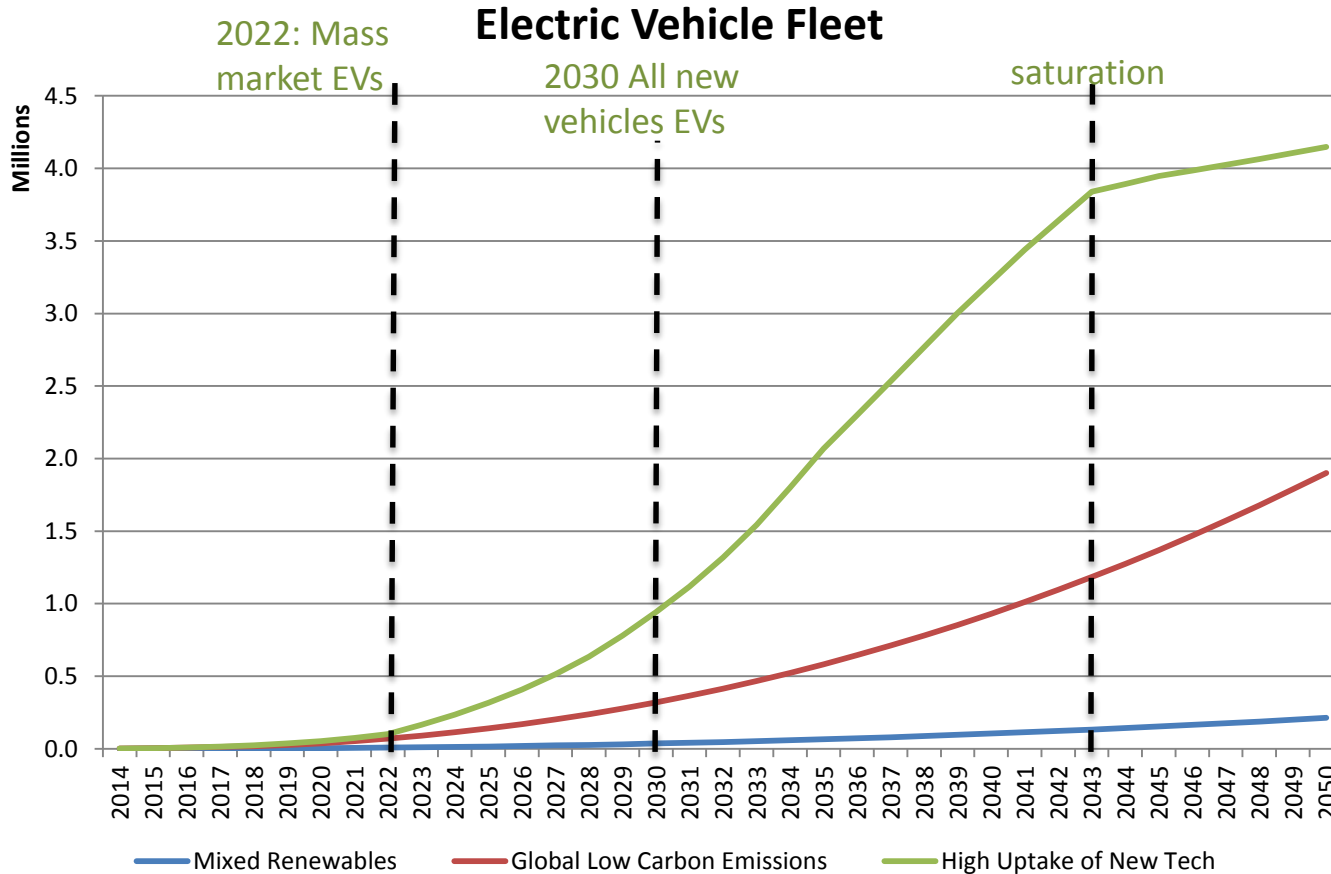
Source: Electric vehicle batteries 'already cheaper than 2020 projections', carbonbrief.org, 23 Mar 2015

Electric Vehicles – % uptake

Percentage of new Vehicles that are EVs



EV uptake



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Solar assumptions

- Financial model
 - Variable costs, buyback rates, capital costs, % of generation consumed onsite, output used to find percentage of households where solar is economic
- Key uptake assumptions

	Residential households	
	Existing	New
MBIE Base Case	15%	30%
MBIE Global low carbon emissions	40%	45%
High Uptake of New Technology	80%	100%

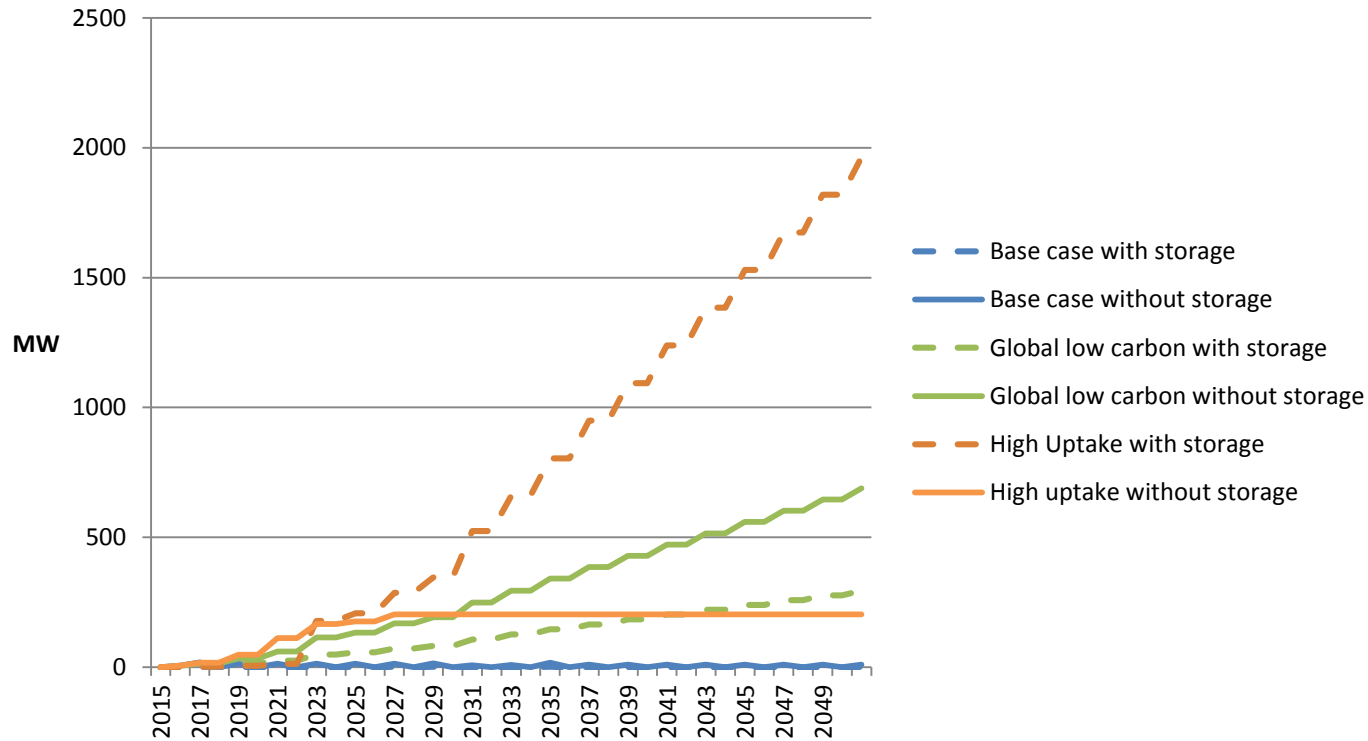
Solar assumptions

- Storage assumptions
 - Not modelled in MBIE scenarios

		With storage	Without storage
Mixed Renewables		10%	90%
Global Low Carbon Emissions		30%	70%
High Tech uptake	2015-2022	10%	90%
	2023-2028	75%	25%
	2028 onwards	100%	0%

Solar capacity

Installed capacity by scenario and storage type



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