

The Connected Electric Car

Kristian Handberg

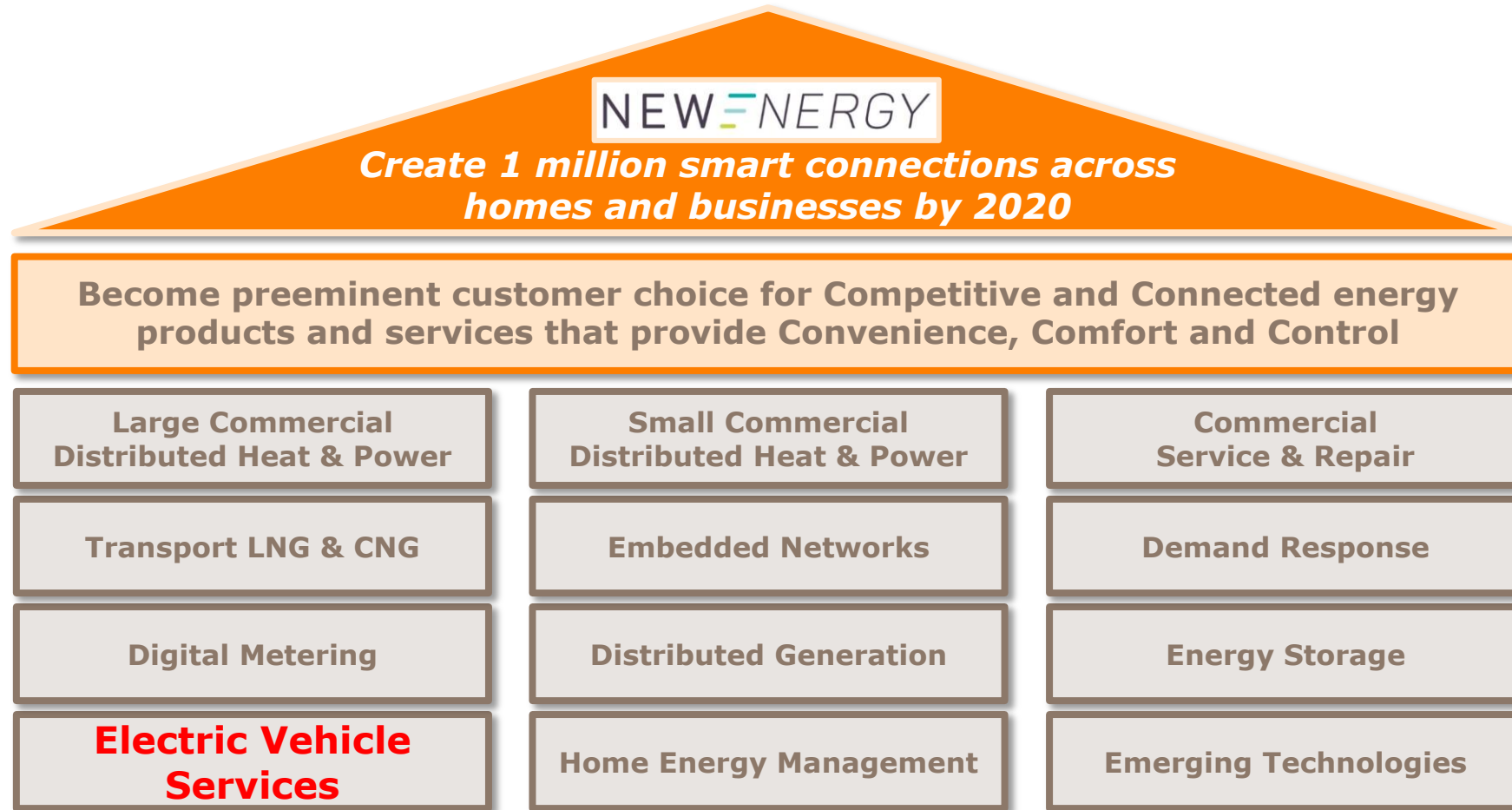
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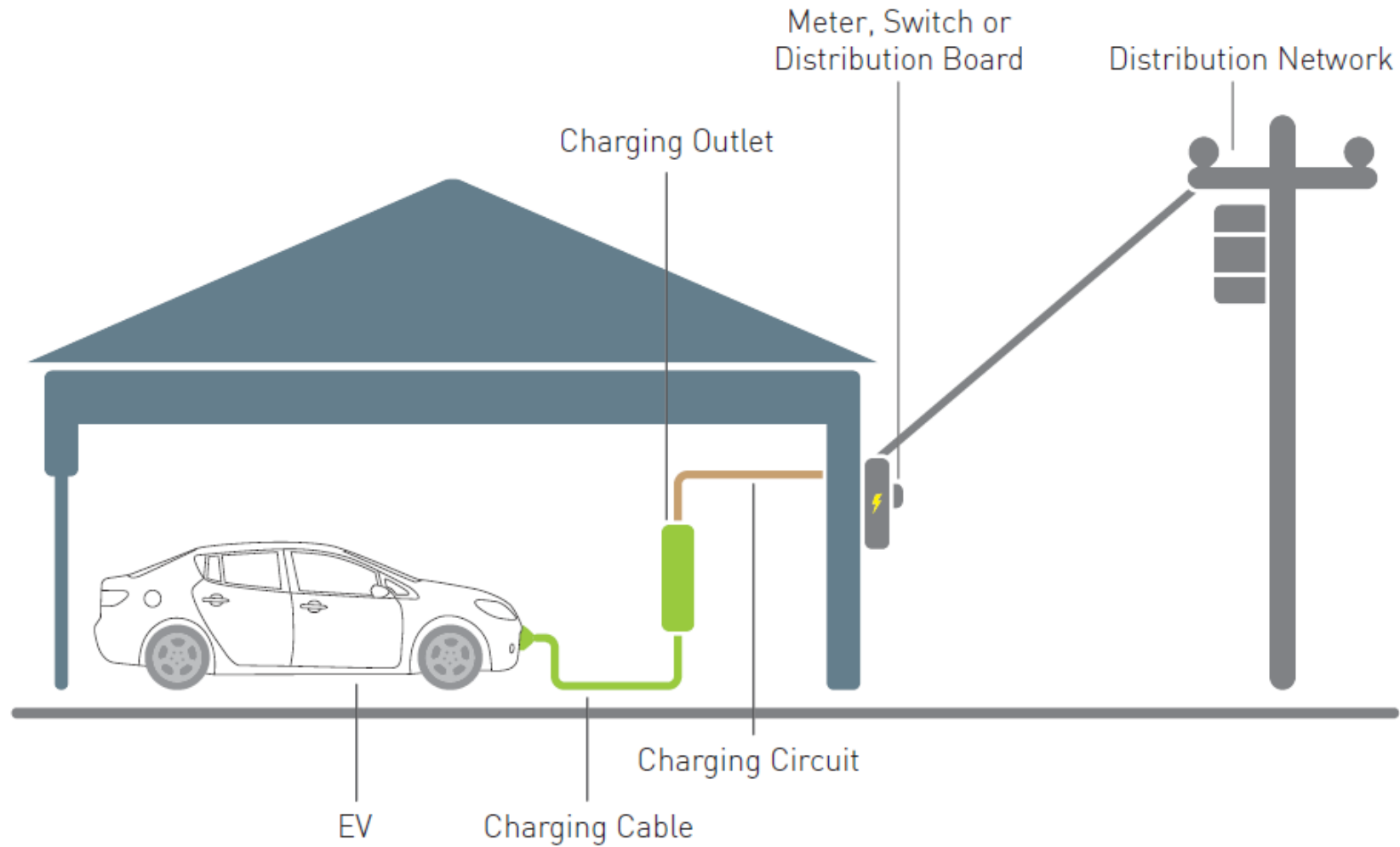


- > The Connected Electric Car
- > Aust Energy Productivity Summer Study
- > 26 February 2016

Plug-in Electric Vehicles

At least some energy from an external source of electricity

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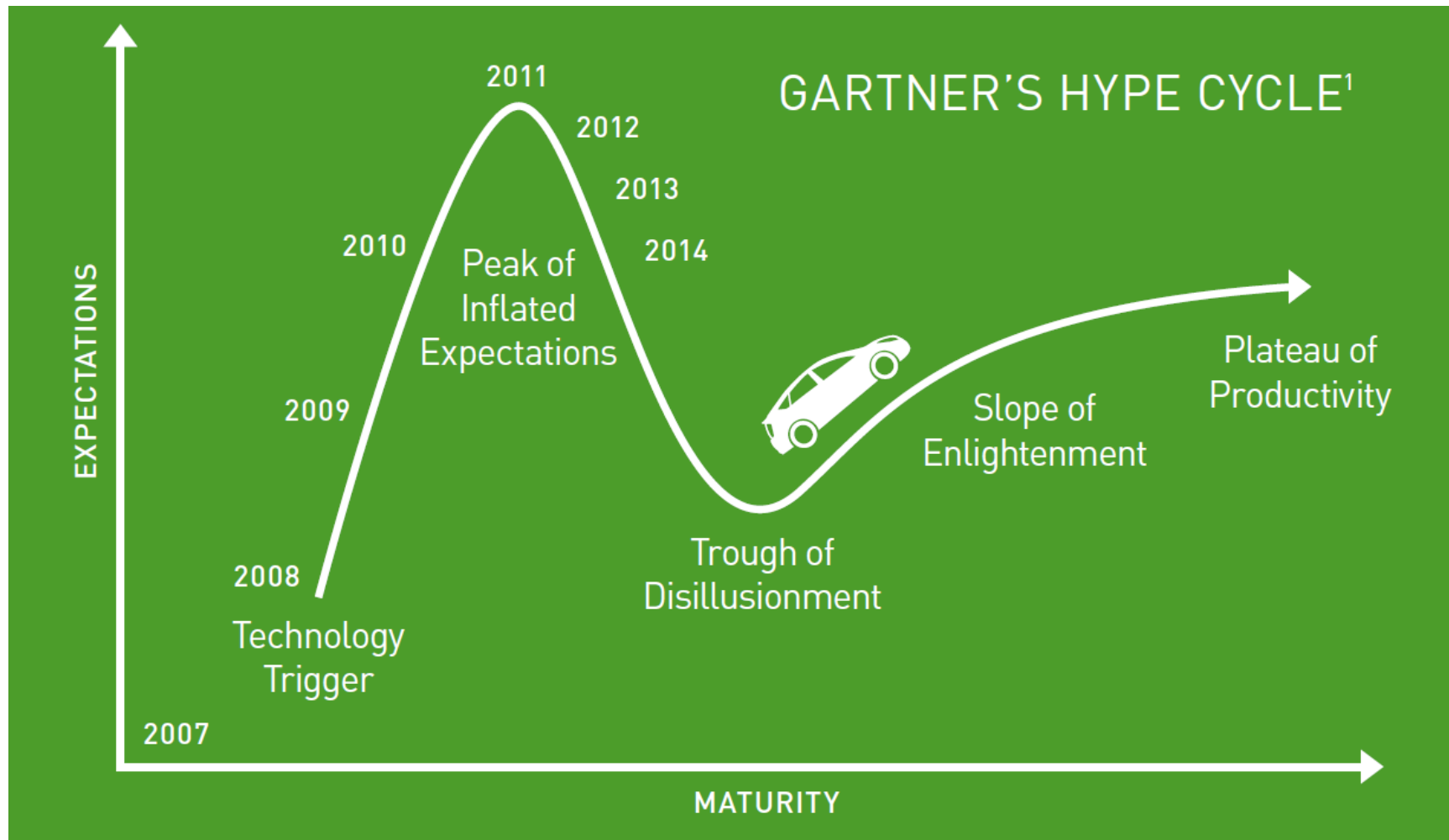
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EV market is heading in the right direction

Market drivers and indicators are on track

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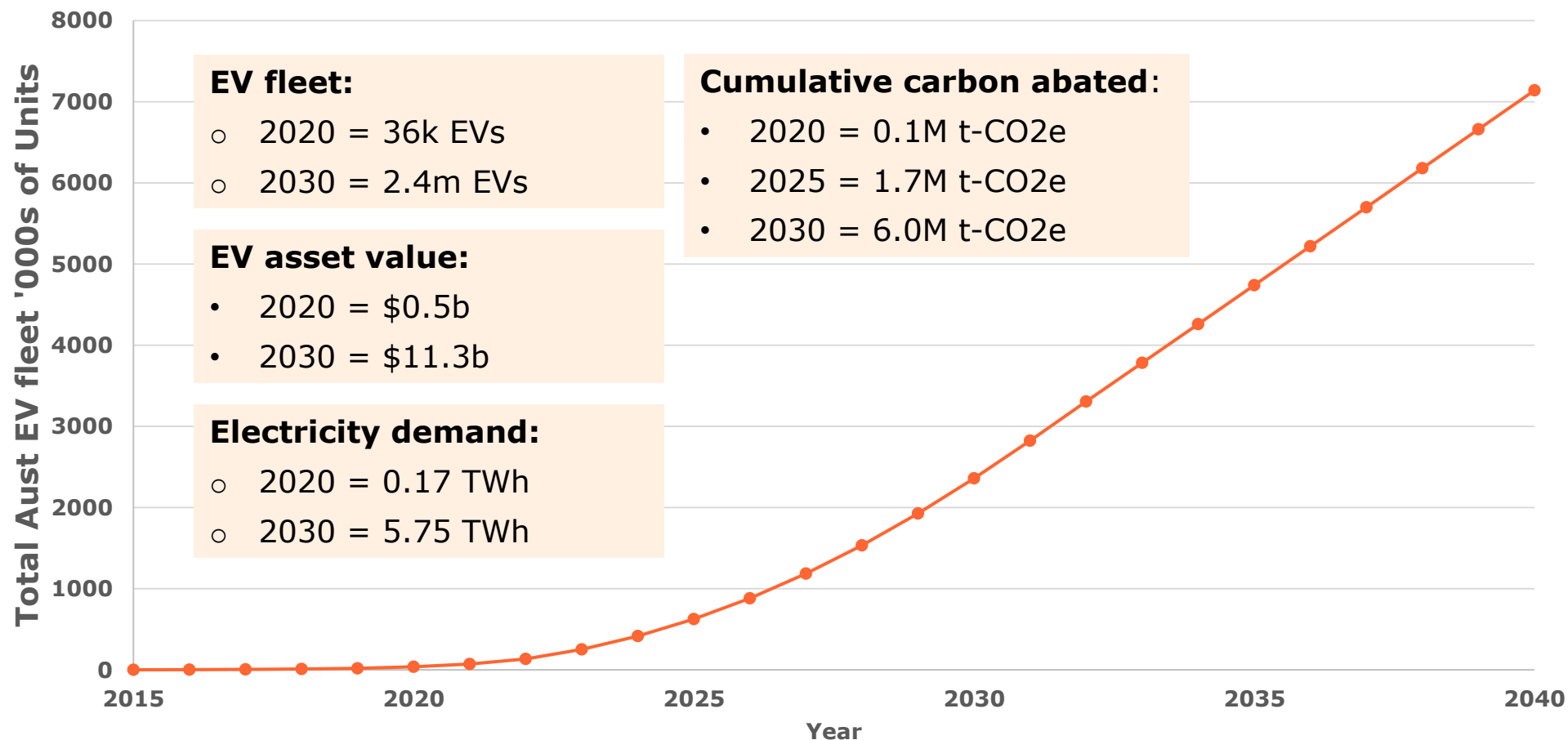


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Australian EV market will be large by 2030

Early-adopter phase now but asset value will grow to \$11 billion

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Source: Brown, CSIRO, AECOM, ESAA, AGL Modelling

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Near-term outlook for Australia

Supply-constrained but improving nonetheless

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MAKE	MODEL	PHEV	BEV	RRP (\$ 000)	FORECAST EV SALES 2016	FORECAST EV SALES 2017	FORECAST EV SALES 2018
Mitsubishi	Outlander PHEV	x		47-52	1000	2500	3000
Tesla	Model S		x	100-200	500	500	500
Tesla	Model X		x	100-200	200	200	200
Mercedes-Benz	C350e	x		80	150	300	400
BMW	i3 BEV & REX	x	x	64-70	150	150	150
BMW	330e	x		75-80	100	200	300
BMW	X5 40e	x		120-130	100	200	300
Renault	ZOE		x	25-30	50	200	200
Mercedes-Benz	GLE350e	x		120-130	50	100	150
Renault	Kangoo ZE		x	40-45	20	20	20
Audi	A3 e-tron	x		62	30	60	90
Volvo	XC90 T8	x		123	30	60	90
					2380	4690	5600

Government fleet electrification case study

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Transition modelled across 3 years

- 7,500 vehicles in total fleet
- Fit-for-purpose substitution model
- Based on Aust EV make/model mix

Attribute	BAU	LOW	HIGH	Unit
No. Electric Vehicles	0	2,479	4,958	Vehicles
Total Fleet Emissions	25.8 kt	19.0 kt	12.2 kt	kt CO2-e / yr
Total Carbon Abated via EV	0	6.8 kt	13.7 kt	kt CO2-e / yr
Total Liquid Fuel Volume	10.6m	7.7m	4.9m	L / yr
Total Fuel Running Cost	\$11.6m	\$9.2m	\$6.5m	\$ /yr
Total Fuel Cost Savings from BAU	-	\$2.4m	\$5.1m	\$ / yr
Electrical Load	0	9.9 GWh	19.9 GWh	GWh / yr
Energy Productivity Improvement	0	17%	34%	rel. to BAU

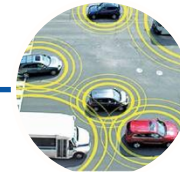
Connected EVs

System integration across multiple domains will yield productivity dividends

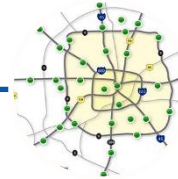
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User



Transport system



Charging network



Energy system



Carbon market

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khandberg@agl.com.au

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