Hawkesbury City Council

attachment 2

to

item 048

Presentation from Ironbark to Sustainability Advisory Committee

date of meeting: 27 February 2018
location: council chambers
time: 6:30 p.m.

Ironbark Sustainability

Solar Options
Council Energy

This is Ironbark

Councils only

Real Action only

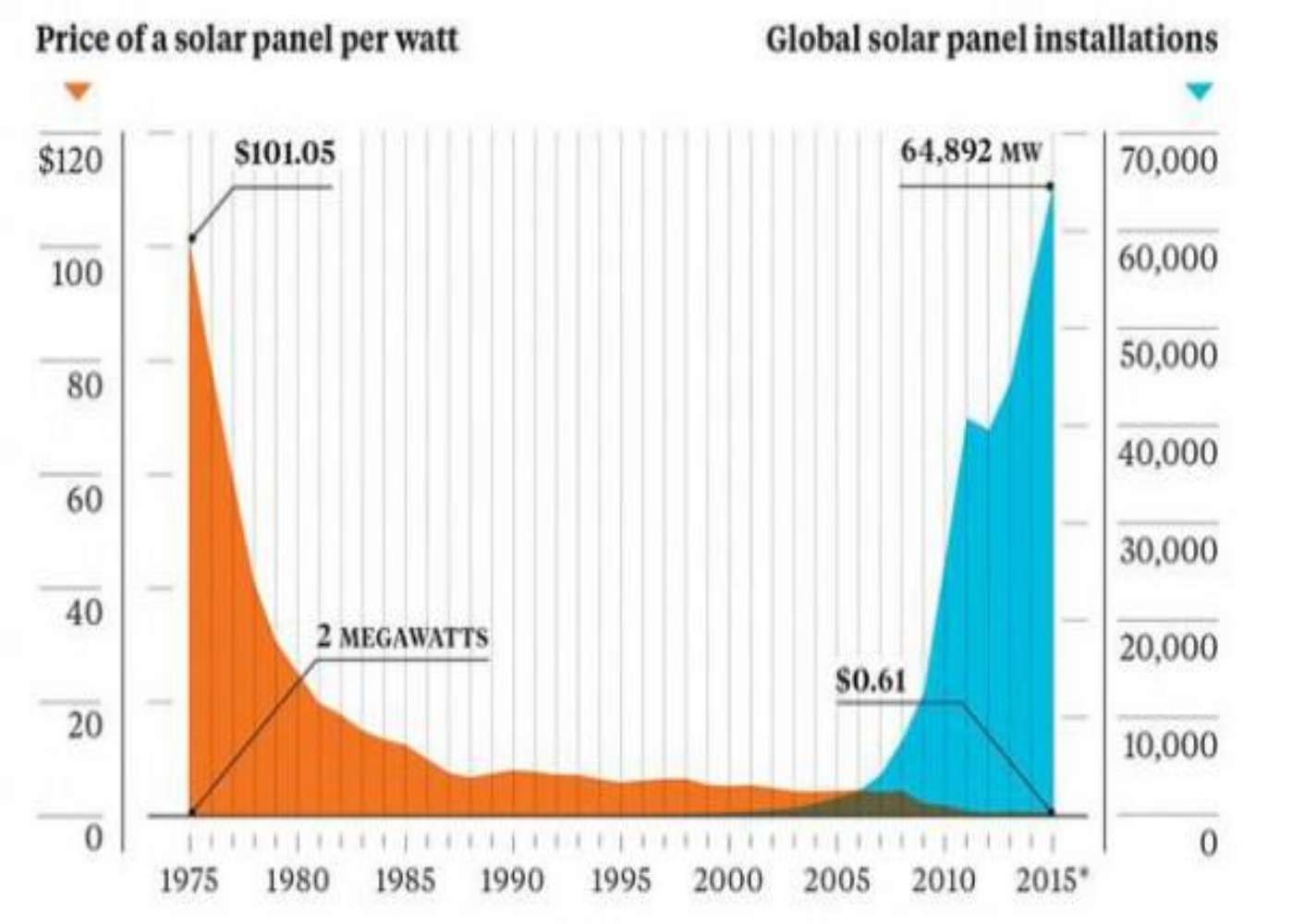
The Ironbark mission is to facilitate real sustainability outcomes for councils and their communities.

Agenda

1. Solar Industry Snapshot (trends etc.)
2. Policy Context
3. What council has done to date
4. Options Costs and paybacks
5. Emerging technologies
6. Funding options
7. Case Studies
8. Recommended approach

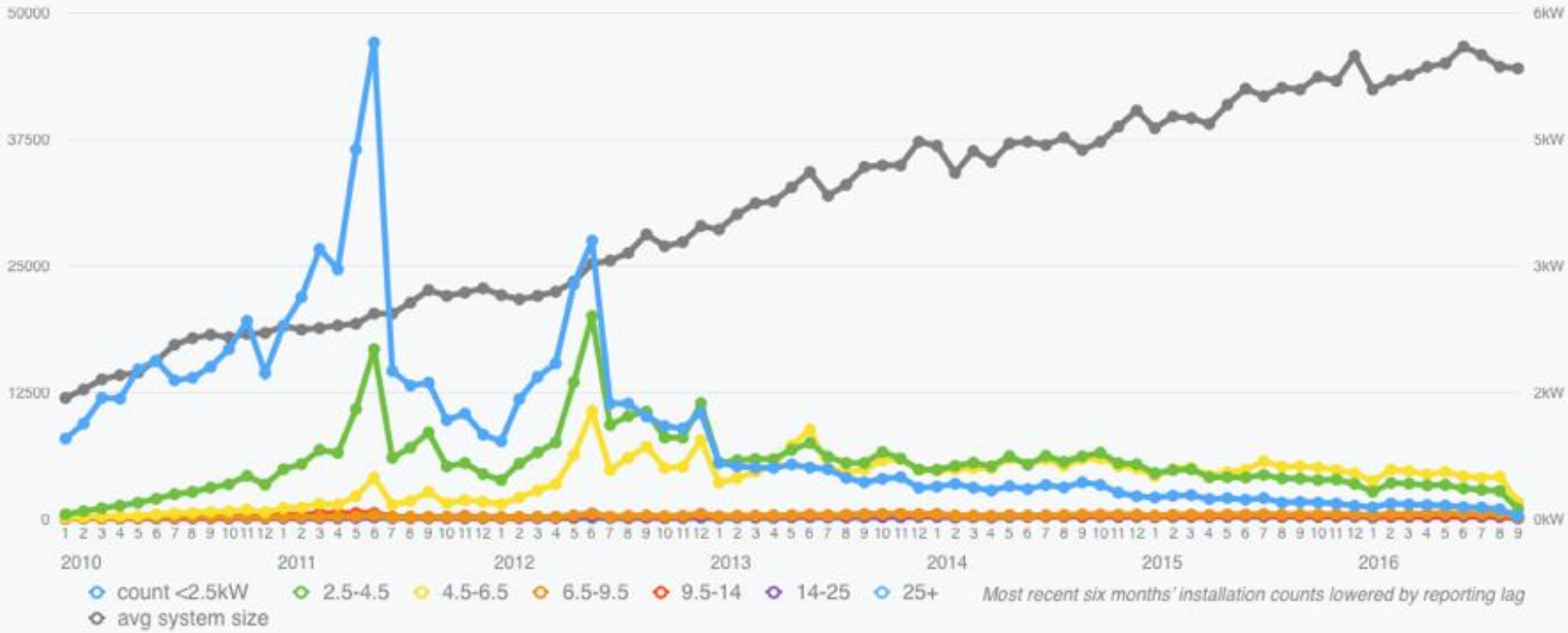
Key solar technologies

Sector Snap Shot



Source: Earth Policy Institute/Bloomberg

Sector Snapshot



Source: Australian PV Institute

Policy Context

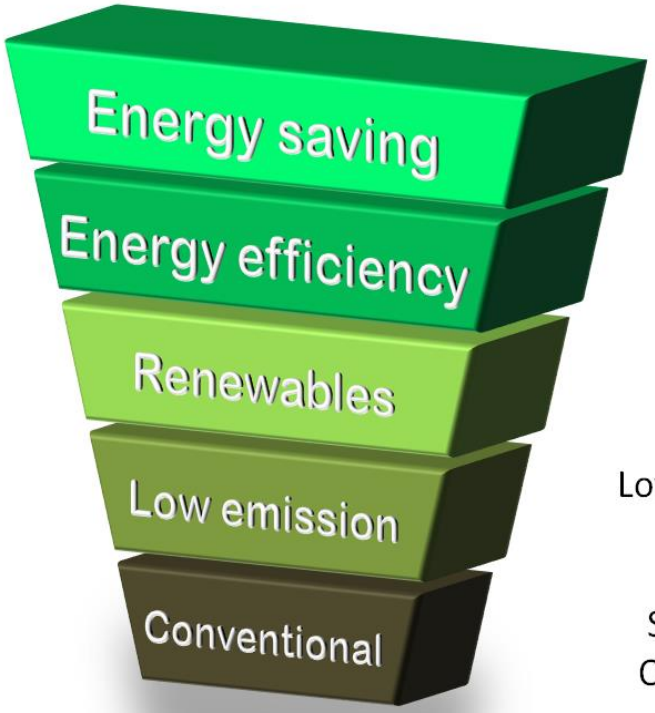
Climate Change Fund

The NSW Government released Draft Climate Change Fund Strategic Plan for public consultation. Up to $500 million of new funding between 2017–18 and 2021–22.

Community renewable energy

Through the Regional Clean Energy Program (RCEP), the NSW Government is helping communities to produce their own electricity locally, using renewable energy resources.

Carbon Hierarchy



Leaner	Switch off Eliminate waste
Keener	Better appliances Lower energy losses
Greener	Sustainable energy production
Cleaner	Low carbon generation Carbon capture
Meaner	Sources of last resort Offset to compensate

Council Action

RENEWABLES

- PV Systems to Admin Building (30kW) and Oasis Swim Centre (16kW)
- Solar water heating to Oasis shower and spa systems to reduce gas bills
- Solar pool Heating to Oasis to heat 50m and indoor pools

ENERGY EFFICIENCY

- Regenerative filter system to indoor pool at Oasis
- Variable speed drives to plant across portfolio
- 15 heat pump HW systems throughout portfolio
- Efficient makeup heat pumps to heat outdoor pool at oasis
- LED retrofit to Deerubbin precinct
- Lighting efficiency upgrades to Depot, Stadium, Community Centre and Halls
- Modern BMS and metering underway
- LED street light retrofit program

Low Hanging Fruit

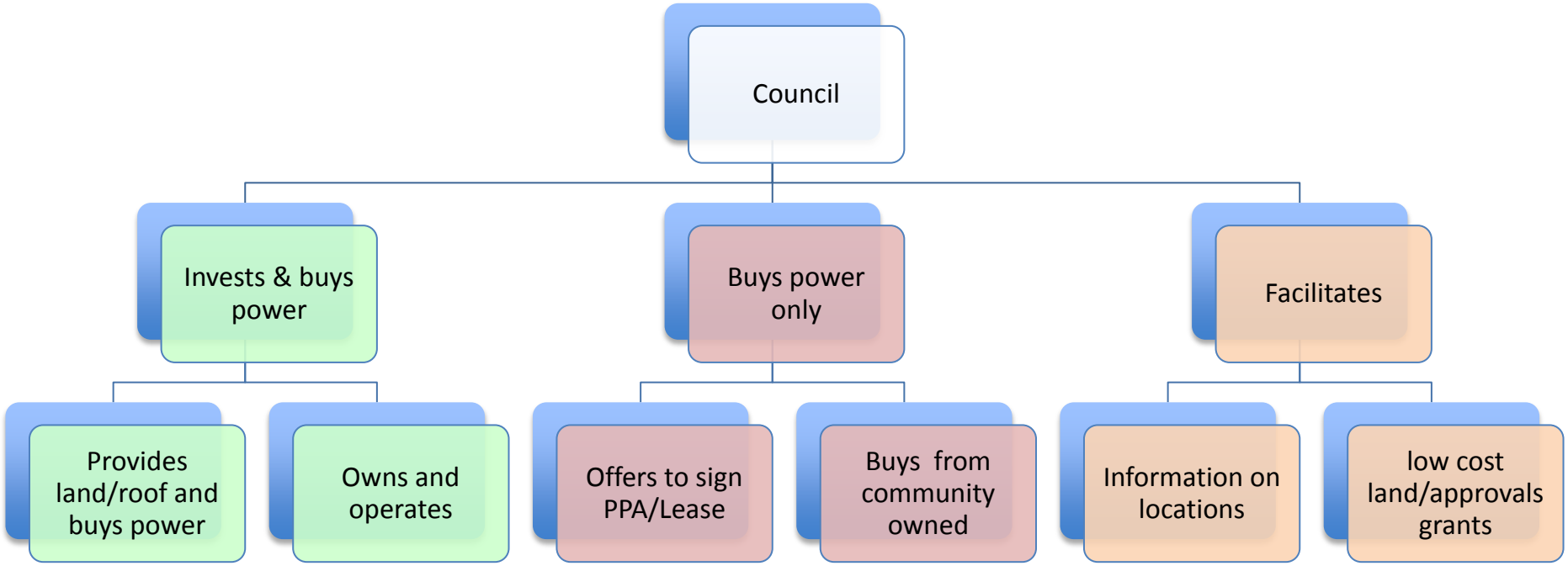
Low Hanging Fruit

Ongoing Energy Efficiency

Low Hanging Fruit

Location	System Size	Capital Cost ($)	Avg cost savings ($/yr)	Avg energy savings (kWh/yr)	Emissions Reductions (t CO2-e/yr)	Payback (years)
Deerubbin and Library	80	$76,166	$18,004	106,354	102.10	5.0
Baker St – Museum	52	$50,863	$17,397	72,552	69.65	3.8
Water Treatment Plant	250	$527,837	$61,392	378,490	363.35	6.4
Chambers and Function Centre	70	$64,705	$13,206	89,375	85.80	5.4
Oasis Aquatic Centre – Stage 2	36	$38,892	$6,273	47,969	46.05	6.5
BD -Child - Windsor Pre-School	10	$14,811	$3,429	14,219	13.65	4.4
McGraths Hill Sewage	50	$77,700	$14,183	78,000	74.88	5.5
Dog Pound	20	$26,024	$6,544	24,000	23.04	4.0
Depot	10	$17,942	2,635	14,219	13.65	6.9
Swimming Pool Richmond	30	$34,512	$5,891	38,177	36.65	6.2
Fire Control Building	30	$34,518	$8,448	41,146	39.50	4.7
Indoor Stadium	52	$53,010	$10,939	66,458	63.80	5.4
Hawkesbury Snrs Leisure and Learning Centre	52	$50,863	$17,397	72,552	69.65	3.8
	744	**$1,067,843**	**$185,736**	**1043510.42**	**1,002**	**5.2**

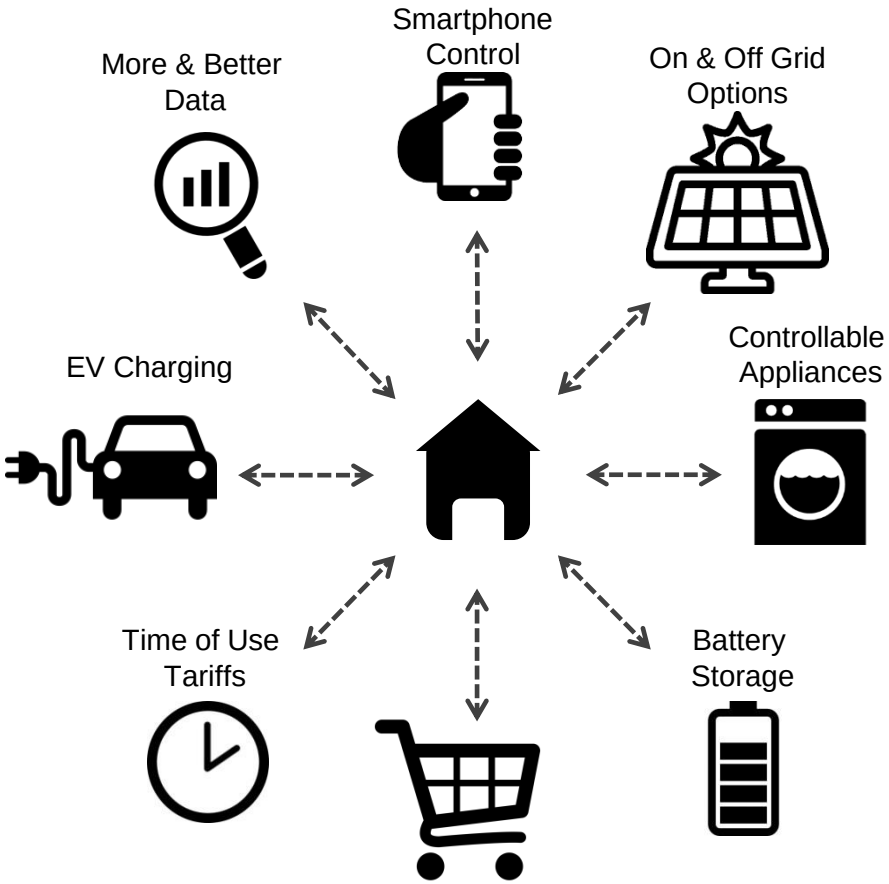
Options for larger scale



Cost considerations

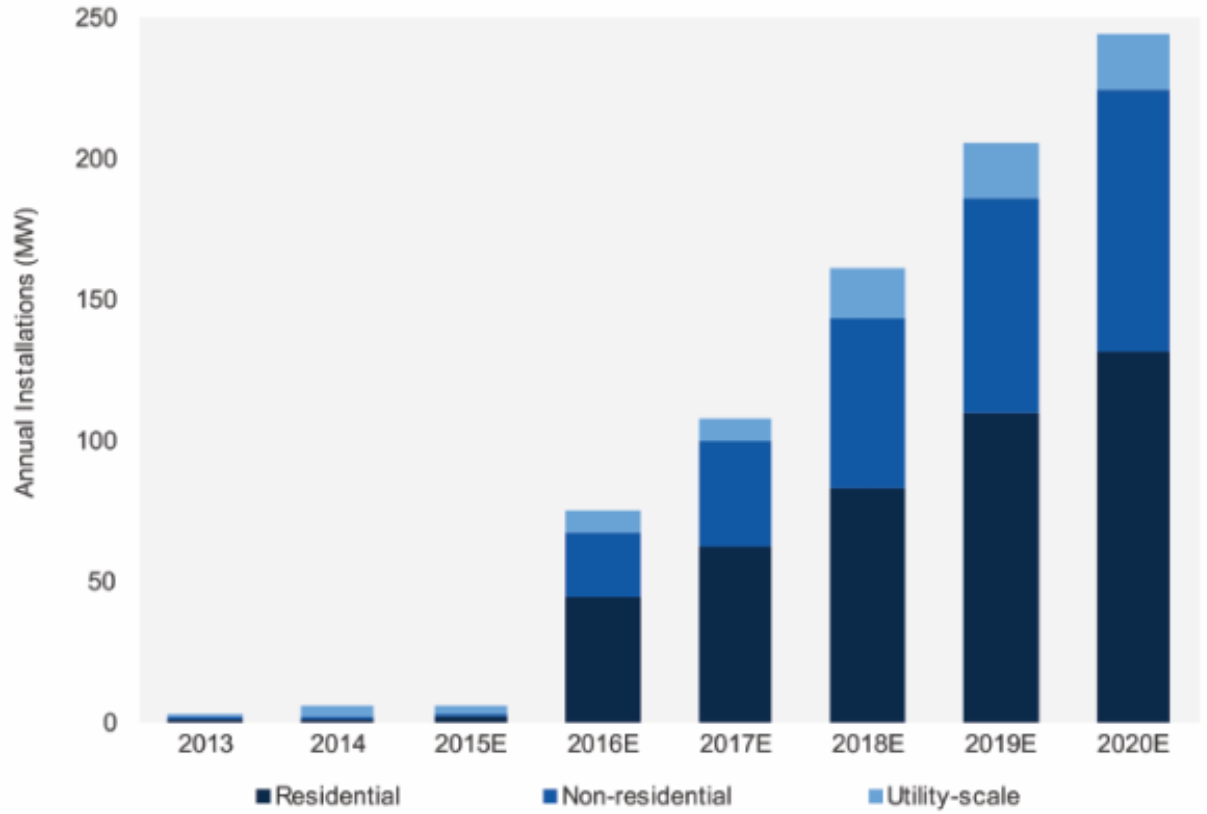
Solar System	Rooftop PV System (<1.5kW)	Rooftop PV System (<10kW)	Solar Farm (>1MW)	Solar Farm (>10MW)
Total cost ($/kW)	$2,660	$ $1,800 to $2,000	$1,2 $1,500 to $2,000	$1,500 to $1,700 (without profile margin only)
Example cost			$1.75M	$16M
LCOE ($/kWh)	$0.17	$0.14	$0.12 -$0.14	$0.10 - $0.13
Council Retail value ($/kWh)	$0.19	$0.19	N/A	N/A
Price Barrier ($/kWh)	N/A	N/A	TBC	TBC (government policy, investor confidence level to the market, interest rate etc.)
Wholesale value ($/kWh)	N/A	N/A	$0.10 - $0.17	$0.10 -$0.17
Wholesale price barrier ($/kWh)	$0.12	$0.12	Approx. $0.03	None (depends on location etc.)

Emerging Technologies



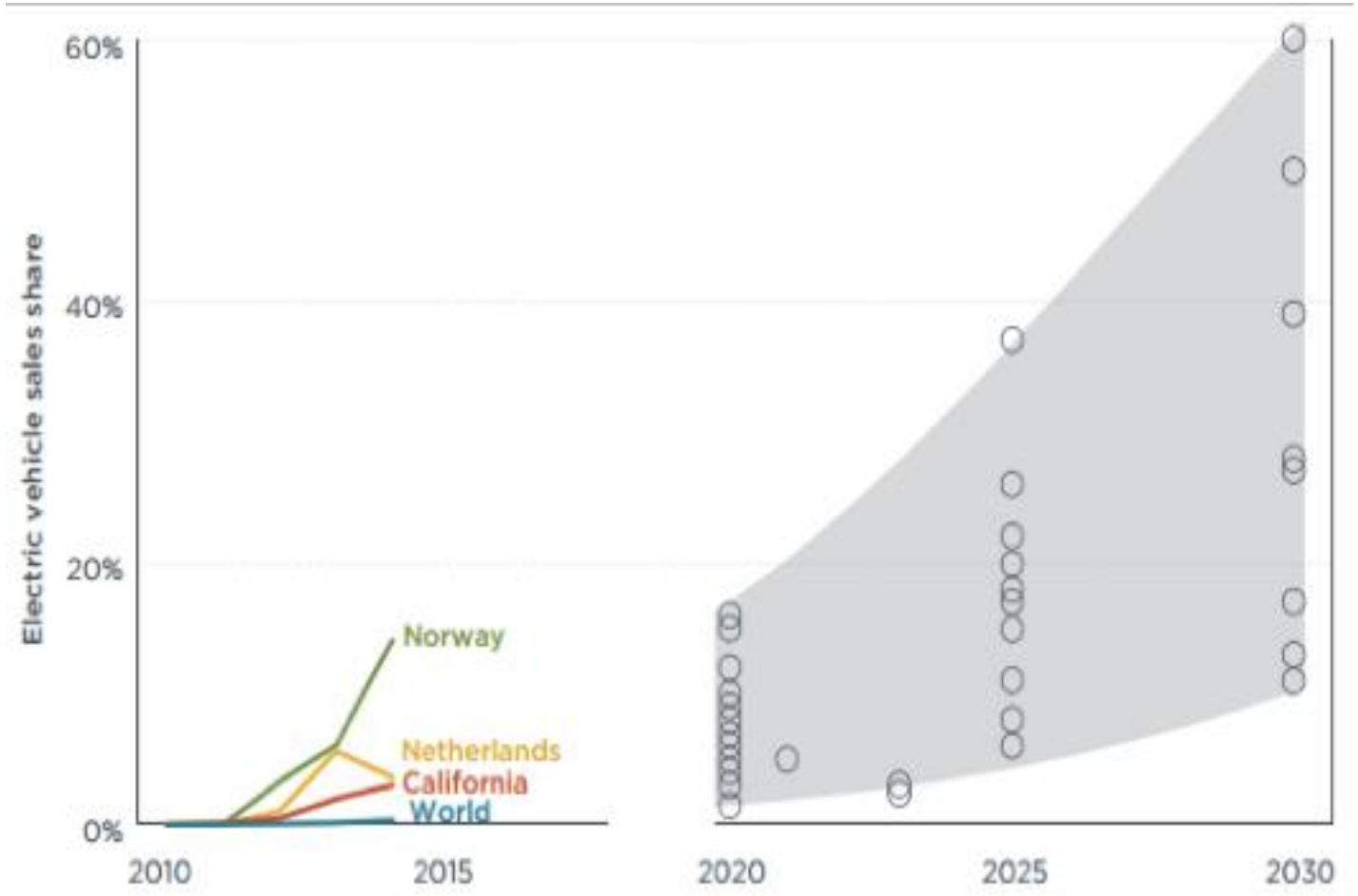
Energy Storage

FIGURE: Australia Energy Storage Forecast by Segment, 2013-2020E



Source: GM Research

Electric Vehicles



Source: Climate Works, Electric Vehicles, The Path Forward

Funding Options

Funding Option	Description
Capex	Funded out of councils annual capital expenditure – represents a very strong investment
Bank Finance	Councils can get highly competitive rates from their financiers - low risk client.
Clean Energy Finance Corporation (CEFC)	Funding for renewable energy projects (and energy efficiency) >$5M
Power Purchase Agreements	Agreed long term contract between developer and client for energy produced by system
Leasing	Fixed monthly fee
Community/Crowd Funding	Project funding from the broader crowd on the basis that they would receive a return on their investment
Grant Funding	Seek grant funding/subsidies from State or Federal Government

Case Studies

Sunshine Coast Council Solar Farm

- Building a 15 megawatt (MW) solar farm
- First local government to offset more than 100% of its electricity consumption across its facilities and operations.
- After exploration of options, including rooftop solar, Council determined this was most cost-effective way to meet their energy needs sustainably,
- Net savings of around $22 million in savings over a 30-year period.

Case Studies

Lismore City Council – Community Solar

- Lismore Community Solar is to create two 100kW solarfarms through a partnership between local community members~ funding provided by local community 'impact' investors and energy purchase and operation of the solar-farms by Council.

- The two solarfarms are flagship projects for Lismore City Council's 2023 Renewable Energy Master Plan,

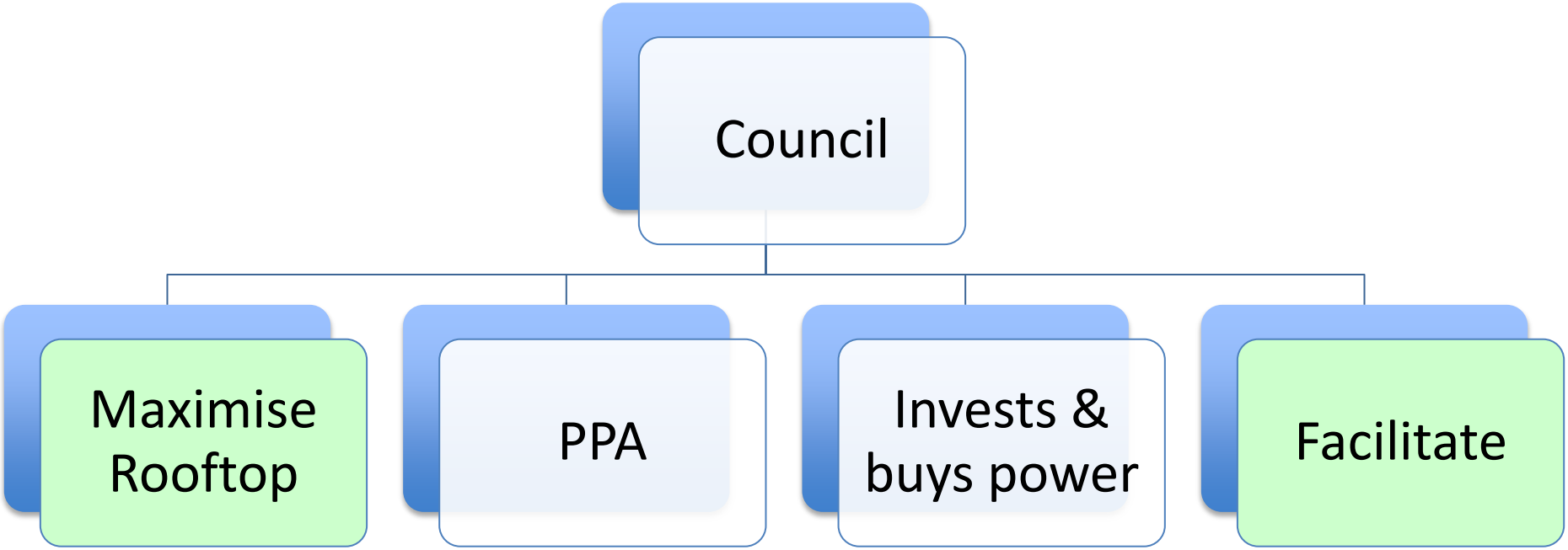
- As Australia's first ever council operated and community funded solarfarms

Case Studies

City of Melbourne and Partners Power Purchase Agreement (PPA)

- Competitive tender to purchase large volumes of renewable energy through group-purchasing model.
- Aiming is 110 GWh worth of energy from new large scale renewable energy facilities.
- Saving 138,600 tonnes of CO2 each year, enough energy to power 28,475 homes
- Group tender process through Procurement Australia,
- 10-year term, and to demonstrate a range of community and economic benefits.
- Soon to be announced.

Recommended Pathway



Recommended Pathway