Centre for Energy and Environmental Markets

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Renewable energy policy support in the Australian National Electricity Market: key challenges and opportunities

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Electricity Markets with a High Share of Renewables

Joint ZHAW / CEEM Workshop

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Three key 'pillars' to facilitate high RE

Comprehensive and coherent policy development process

1. Regulation

- Transmission network planning
- Distribution network planning
- Grid codes

2. Market Design

- Fundamental market design
- Spot market rules
- Ancillary service market rules

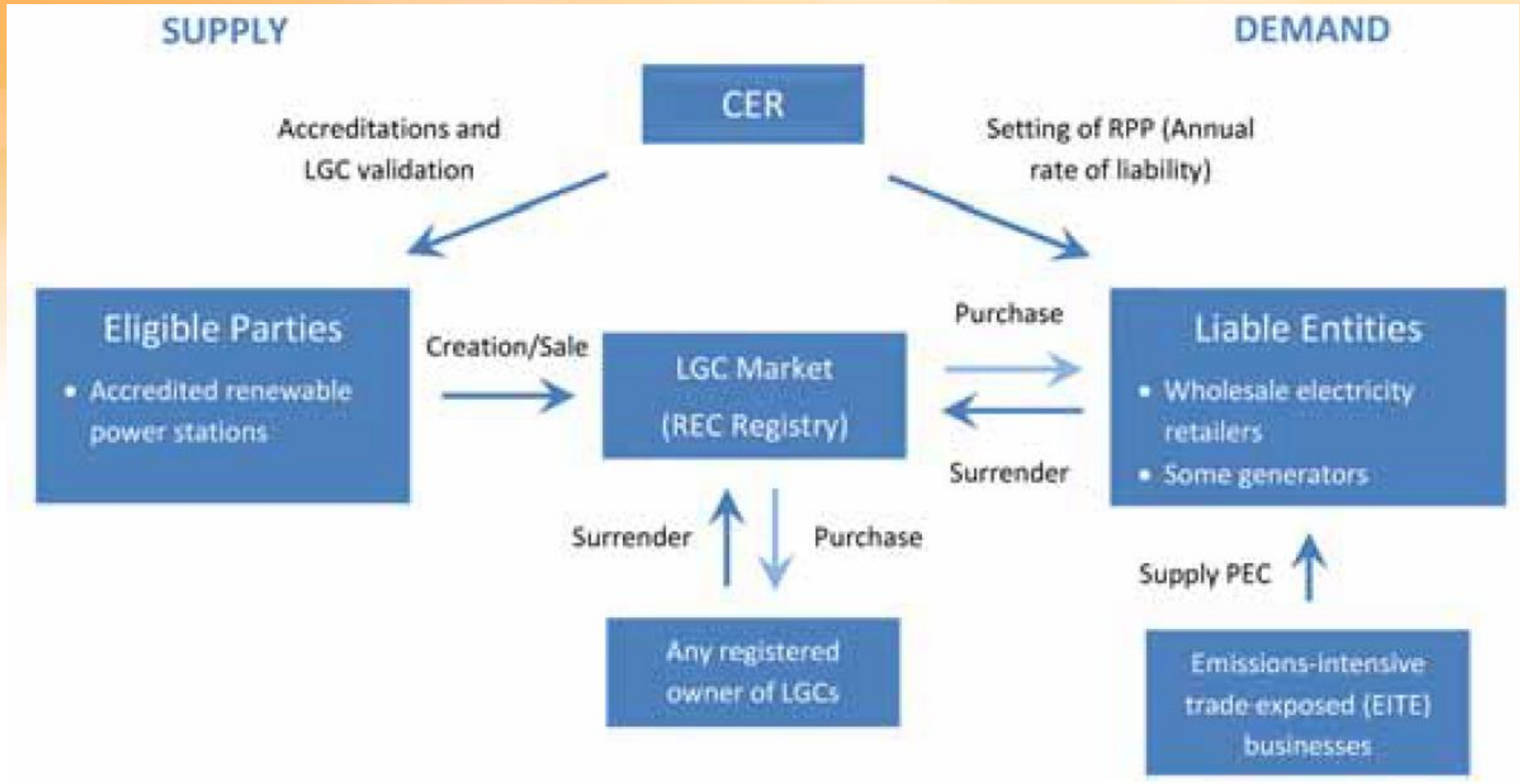
3. External Policy Drivers

- Carbon policies
- Renewable & energy efficiency policies
- Fuel policies
- Broader relevant policies

Robustness and Resilience: ability to perform reasonably well under a wide range of possible futures

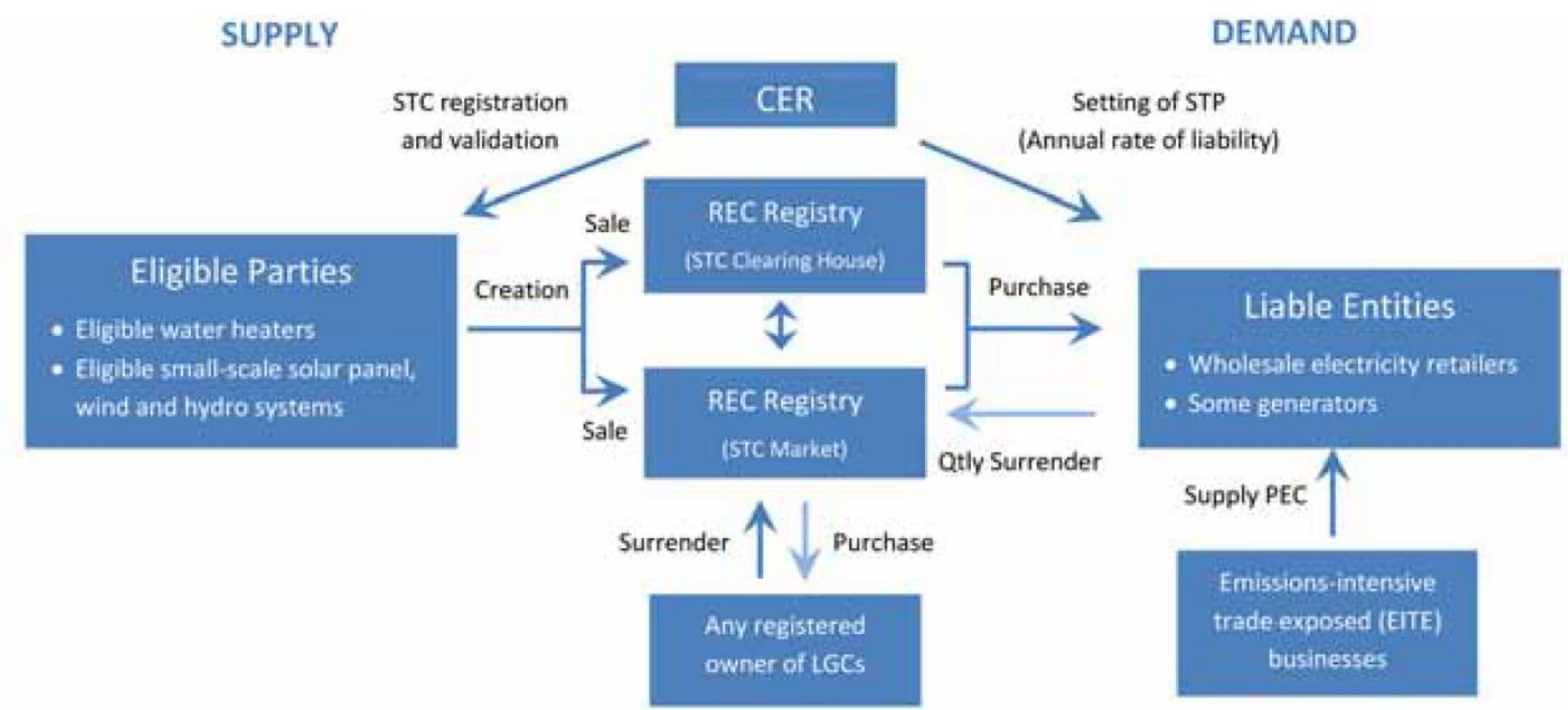
(Riesz, 2015)

RET – the world's first mandatory renewable electricity certificate scheme



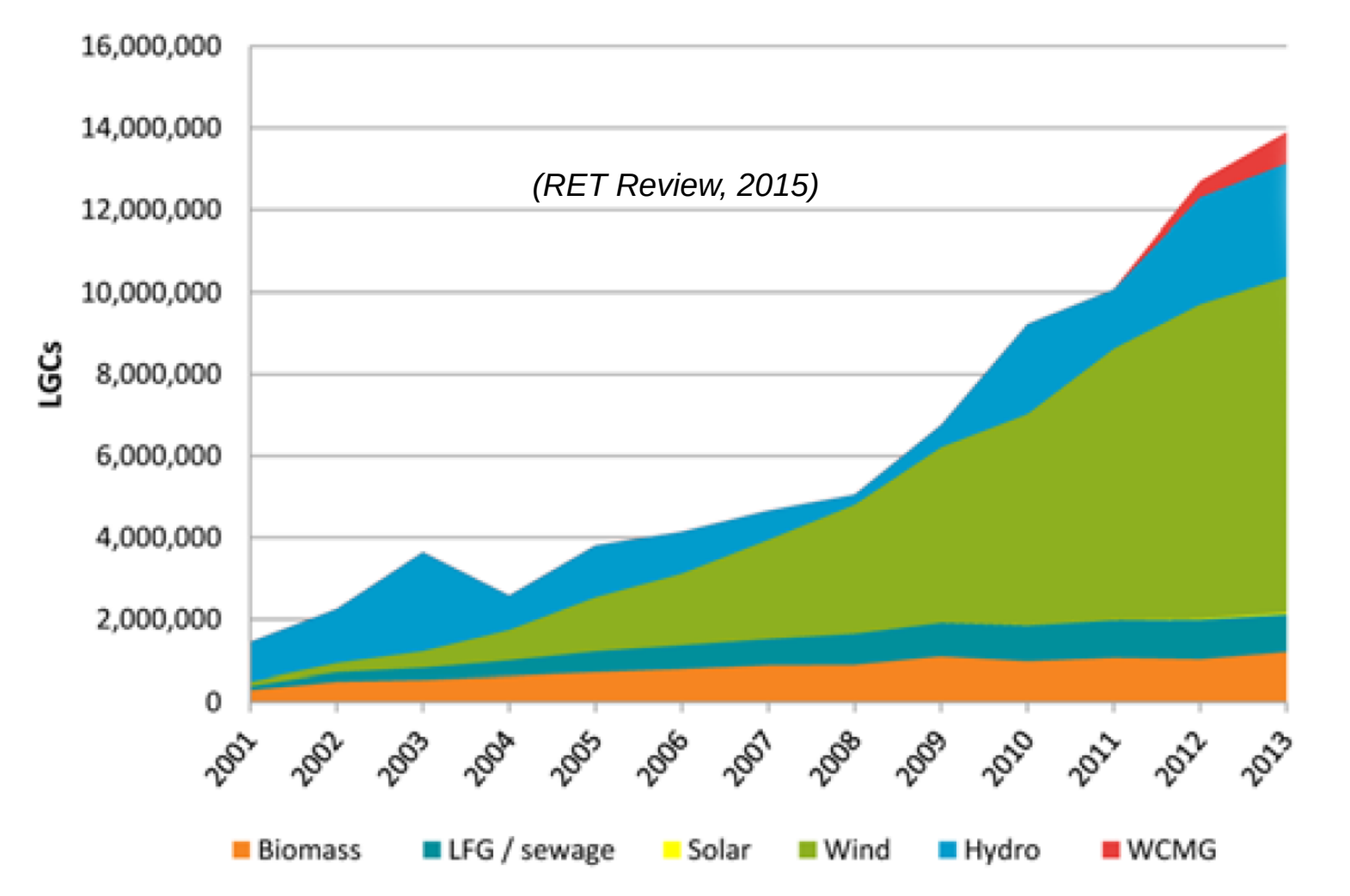
(RET Review, 2015)

… including some small-scale options which now have own separate target and market

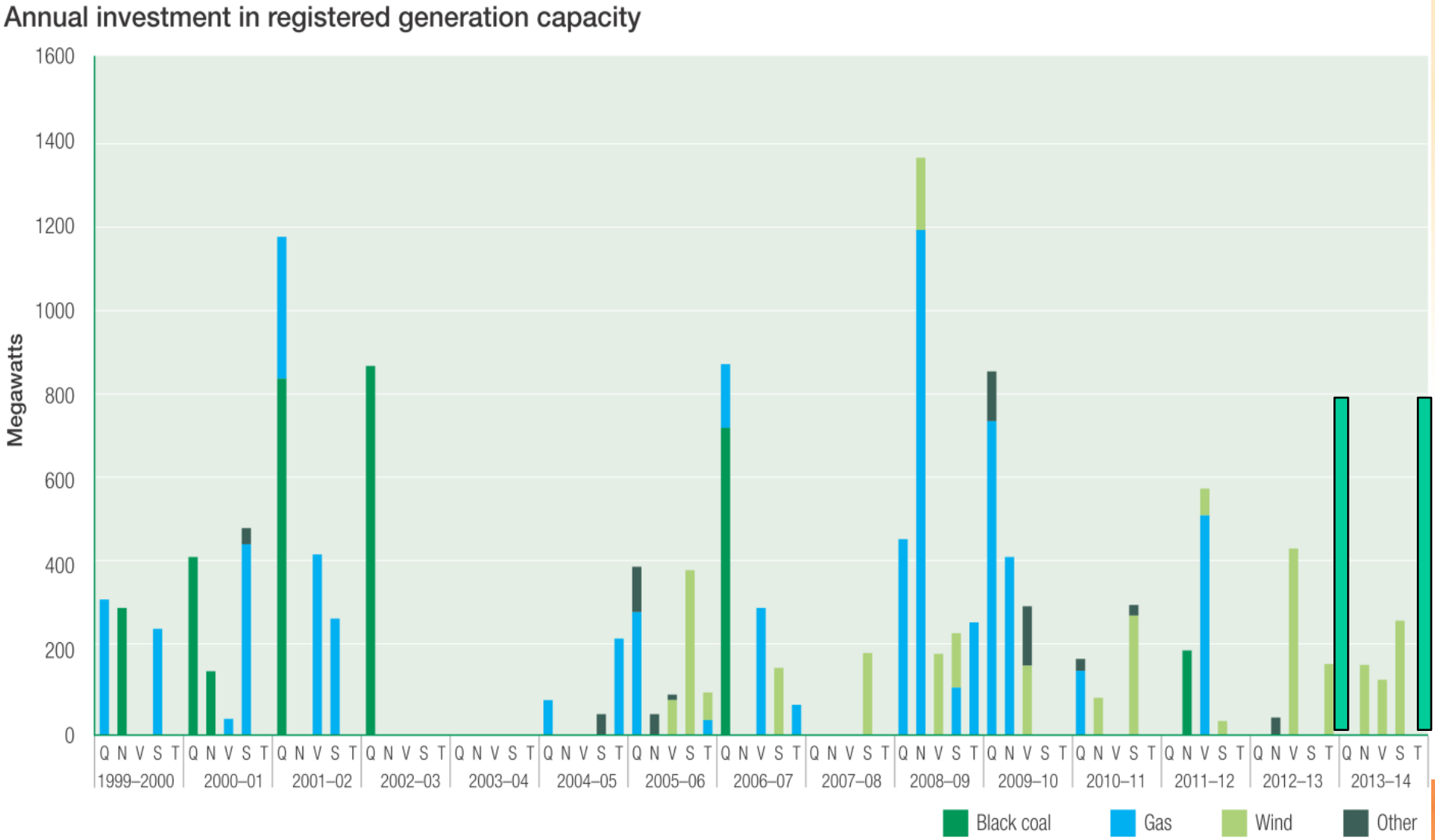


(RET Review, 2015)

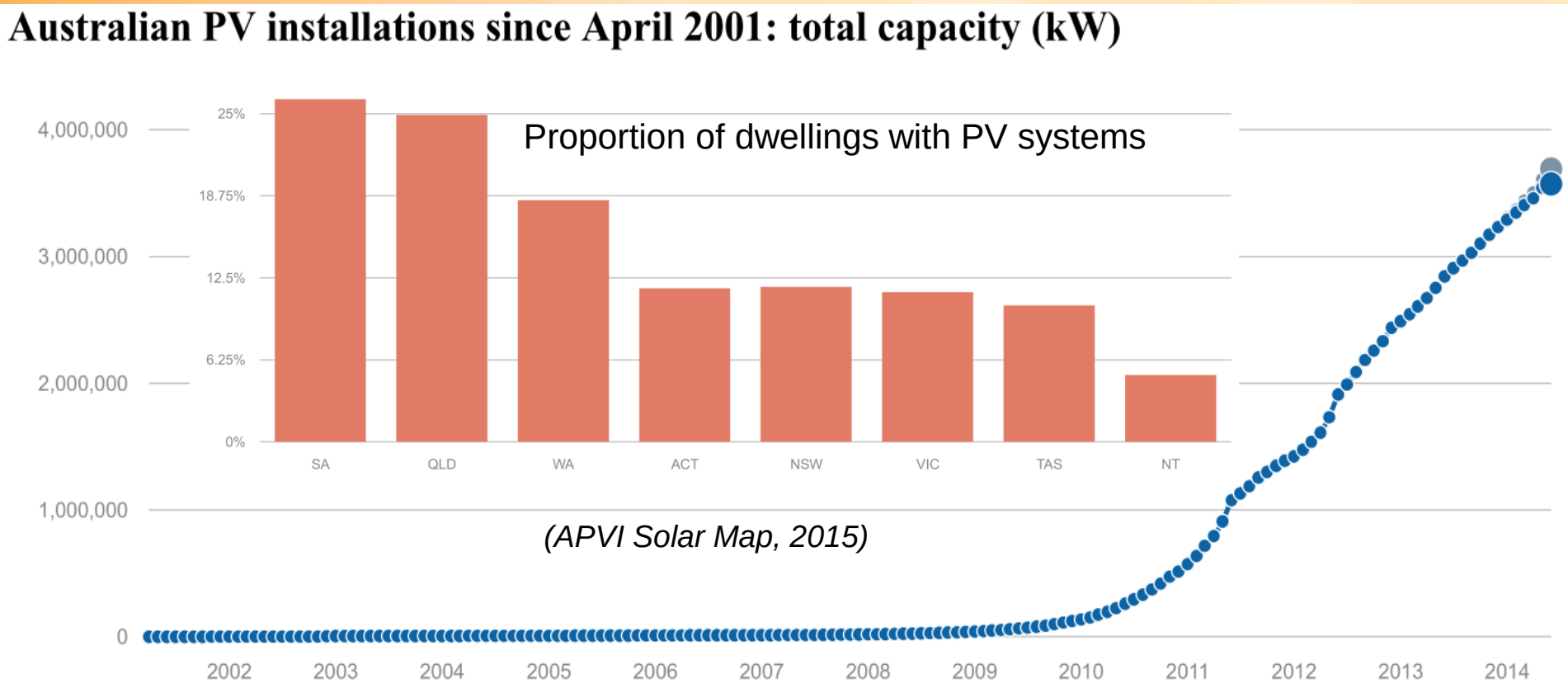
Large-scale RE deployment



NEM investment moved markedly to gas, wind



Small RE seeing even greater deployment



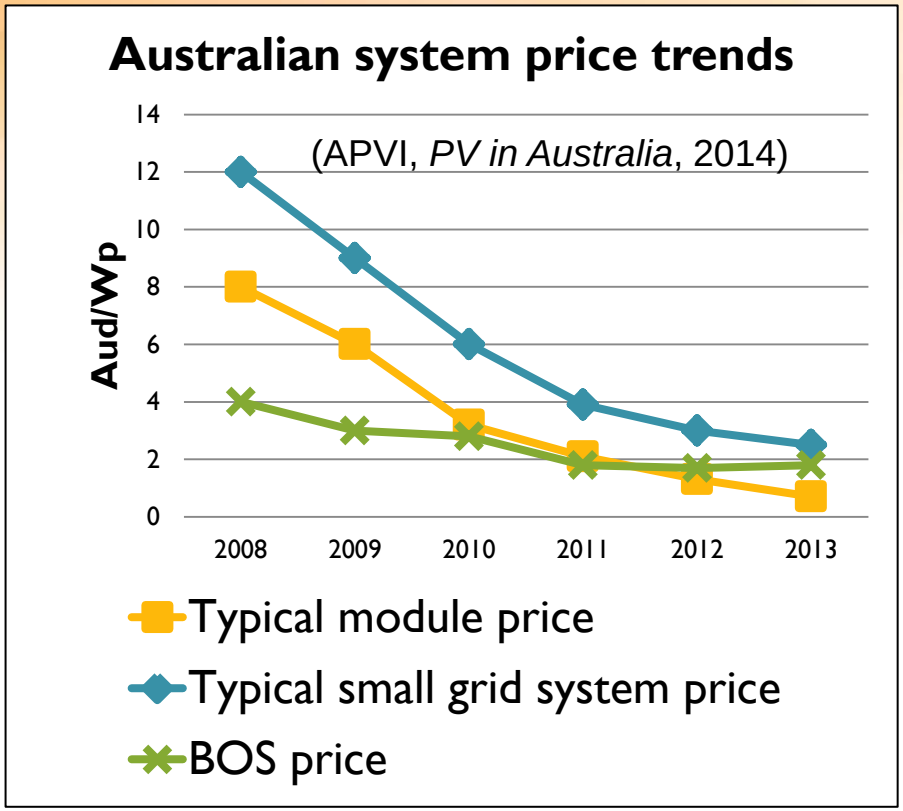
2014-06

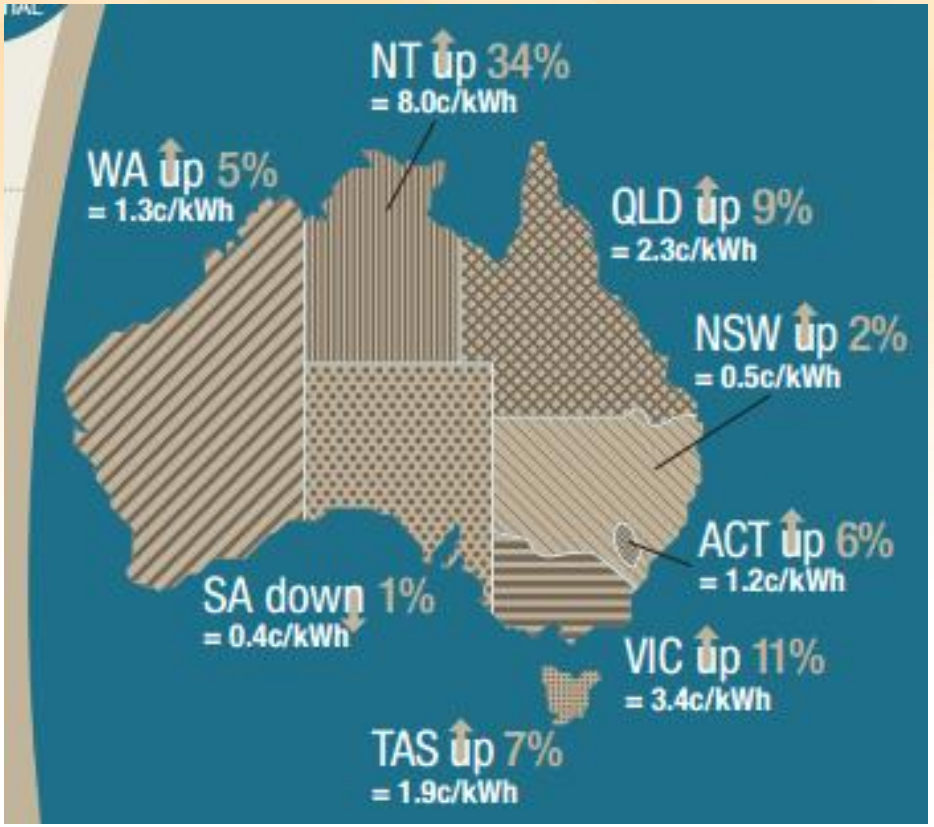
Reported installed capacity (kW): 3,572,520

Estimated installed capacity (kW): 3,690,858

Market drivers now key in driving uptake

- PV represents some 'real' retail competition





RET resides outside National Electricity Law: *Overall objective for the National Electricity Market (NEM)*

- *NEL Section 7:*
  - *The national electricity market objective is to promote efficient investment in, and efficient use of, electricity services for the long term interests of consumers of electricity with respect to price, quality, reliability and security of supply of electricity and the reliability, safety and security of the national electricity system*
- Lack of environmental and wider sustainability objectives is a **design choice**
- *If societal desire that NEM contribute to achieving sustainability objectives then governments have to implement 'external' policies that will drive such changes Not an imposition but an obligation for market participants…*
- …and the NEM needs to facilitate technical, institutional and behavioural change towards such changes

RET Review

Climate Change Authority Review – Dec 2012

- Operational - is the scheme working?
- Major lobbying – 8700 submissions, many seeking reduction
- But CCA recommended minor changes only

Change of Government

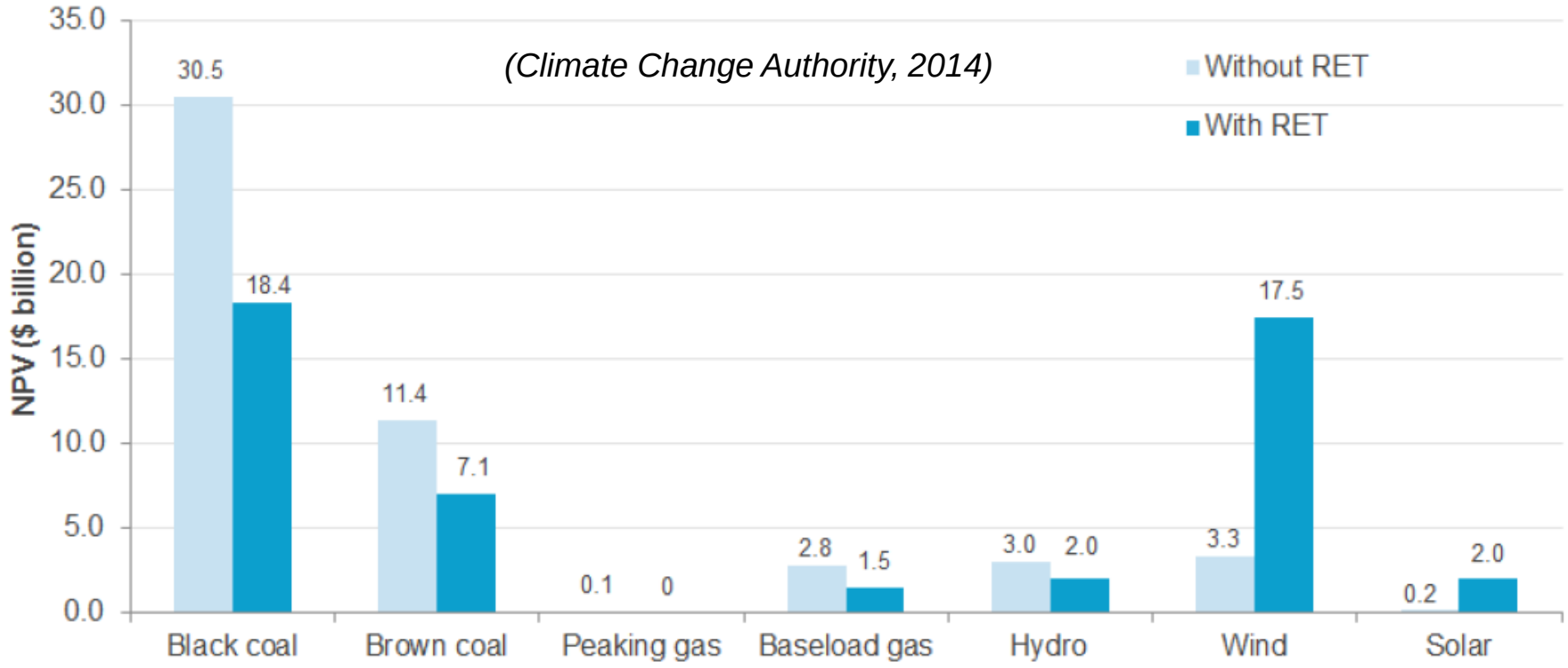
- Another review… which recommended abolishment or greater

Perpetual uncertainty

- Detrimental to investment
- …now seemingly resolved by bipartisan compromise on a reduced target

Widely expected to continue to reduce revenues for other generators

PROFIT BY GENERATOR TYPE WITH AND WITHOUT THE RET, 2015–2040



.. but merit order effect hits RE hardest

Financial year 2009-10	SA	VIC	NSW
Min/Max demand (MW)	814/3121	4082/10047	5692/13885
Installed wind generation (MW)	868	439	170
Wind penetration (% annual energy)	17.8	2.1	0.5
Volume weighted price for all wind farms	47.4	32.2	66.7
Volume weighted price for all other generators	90.1	42.1	52.4
Absolute price difference	42.7	9.9	-14.3
% Difference for wind below VWP_d	51.8%	23.7%	-27.3%

(Cutler, MacGill and Outhred, *Energy Policy J.*, 2011)

Current exemptions and retail market arrangements mean highly unequal burden sharing of RET costs

- All non-exempt consumers are estimated to have retail bills that are higher as a result of the LRET
- EITE businesses stand to benefit as a result of the LRET

(Cludius et al, Energy Policy, 2014)

2011-2012		Pass-through RET costs 100%	40%	10%
Pass-through merit order effect	0%	3.38	1.35	0.34
	50%	2.23	0.20	-0.81
	100%	1.08	-0.95	-1.96

2012-2013		Pass-through RET costs 100%	40%	10%
Pass-through merit order effect	0%	5.29	2.11	0.53
	50%	3.64	0.47	-1.12
	100%	1.99	-1.18	-2.77

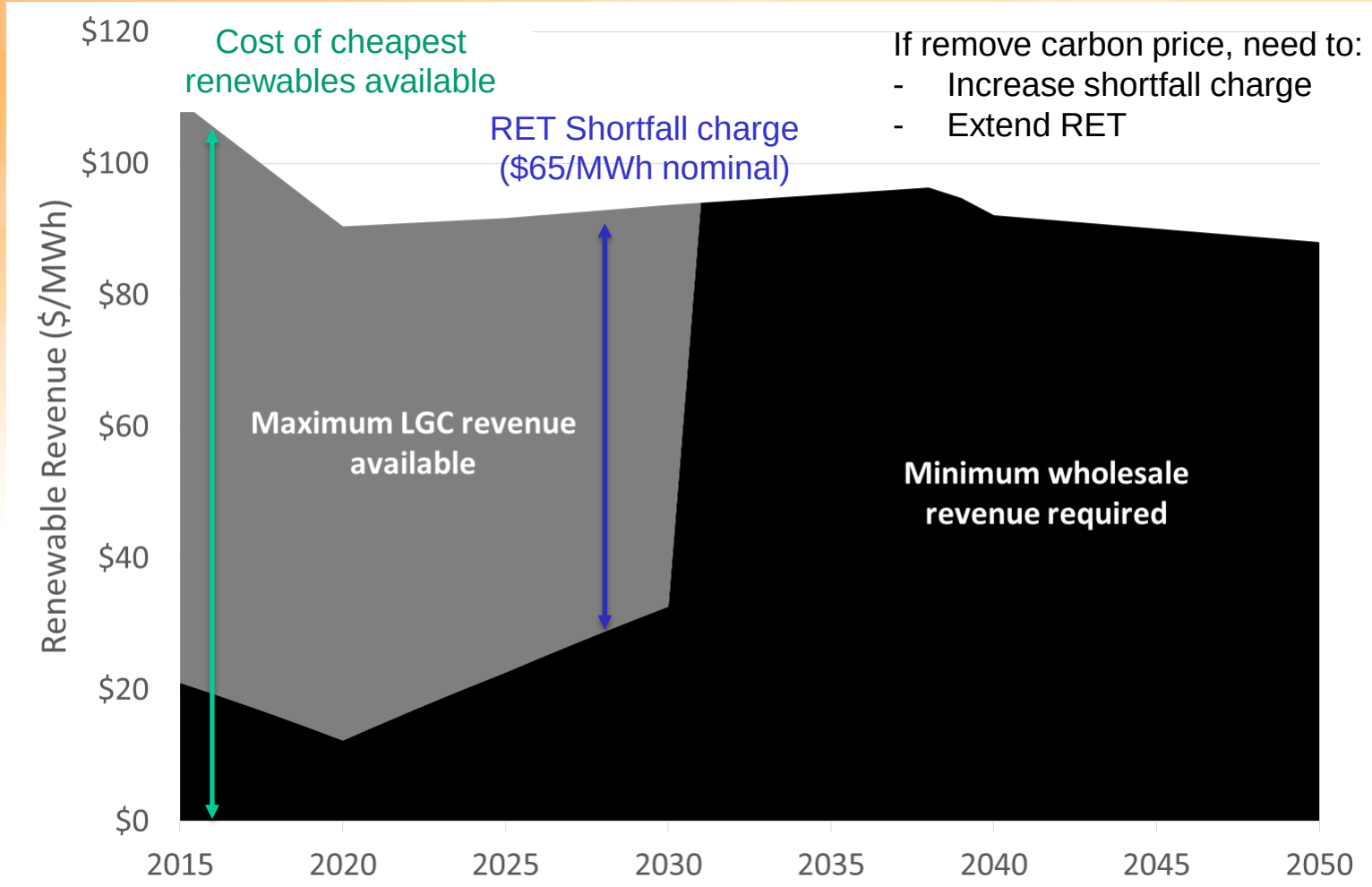
Significant market power to incumbent retailers… who also do RE projects

ClimateSpectator

Origin moves to optimism on RET while AGL won't invest unless coal shut down

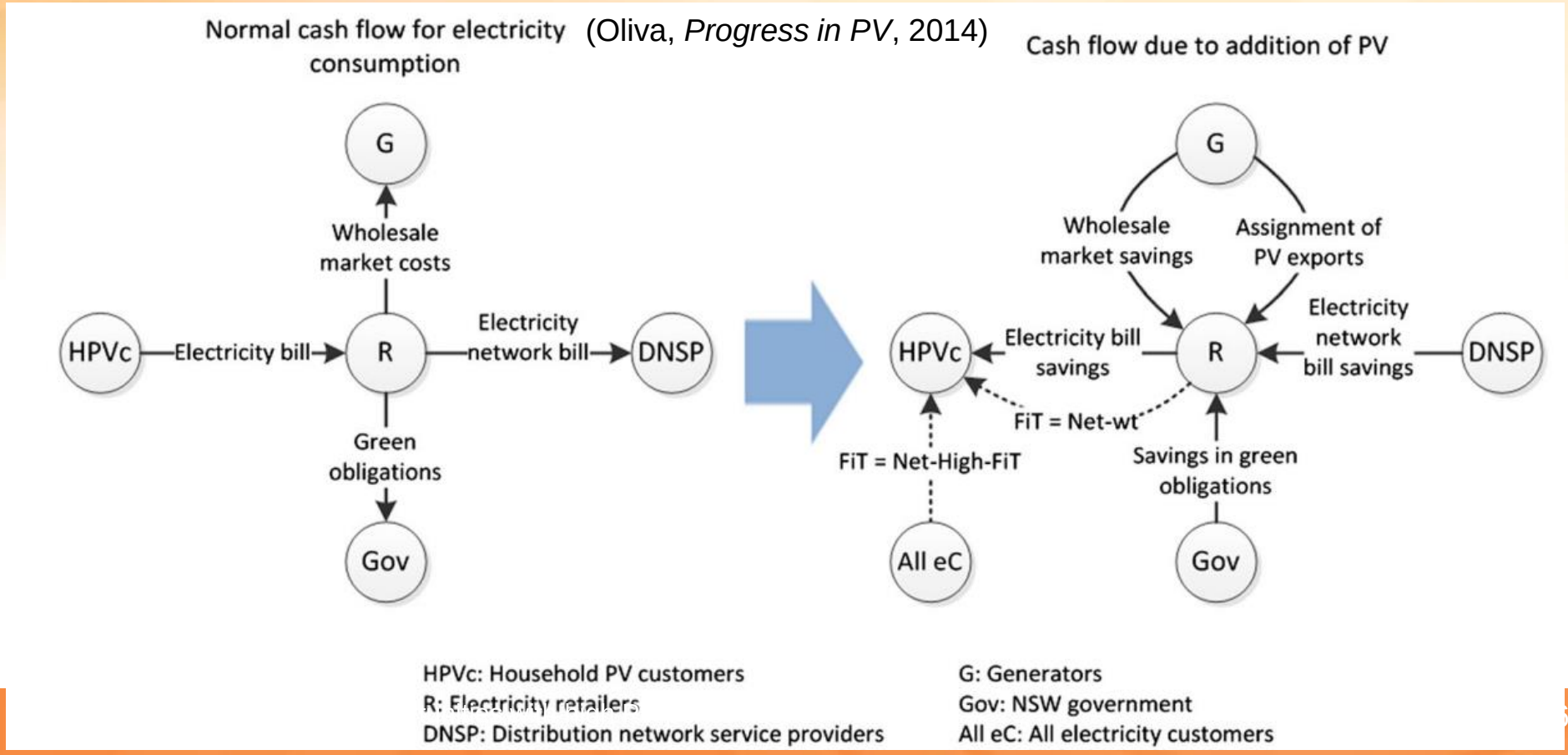
TRISTAN EDIS | 26 MAY, 5:04 PM |
CLIMATE | ENERGY MARKETS | RENEWABLE ENERGY | SOLAR ENERGY | WIND POWER

RET may function poorly without supporting policies



CEEM Working Paper – Payments for closure: Should direct action include payments for closure of high emissions coal-fired power plants?

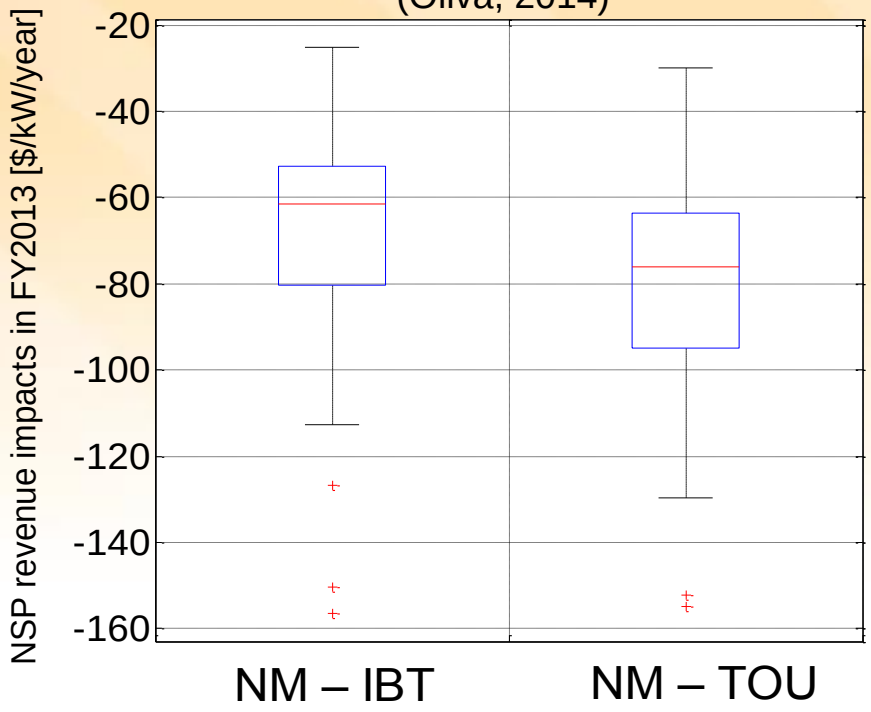
Another challenge – mismatch b/n economics and commercial incentives *follow the money….*



Potentially highly adverse revenue impacts on retailers, DNSPs

- Net metering favors household self consumption with volume based IB, TOU tariffs
- Major revenue impacts for key industry stakeholders

(Oliva, 2014)



(Ausgrid/IPART, 2012)

PV unit size	Median annual net exports (kWh)	Median daily net exports (kWh)	Median annual export ratio
1.0 kW	393	1.1	32%
1.5 kW	616	1.7	35%
2.0 kW	1,007	2.8	41%
3.0 kW	1,703	4.7	49%
4.0 kW	2,378	6.5	52%
5.0 kW	2,921	8.0	50%

Possible industry responses

- For DNSPs, monopoly economic regulation with revenue cap based on approved expenditure can correct revenue shortfalls over time… *death spiral?*
- Resetting tariffs – greater fixed charges, Solar specific tariffs and charges to address cross-subsidies between PV and non-PV households…

However, potentially discriminates against PV while allowing far greater cross subsidies b/n customers due to airconditioning, location to remain
Is this an appropriate incentive structure for an industry in desperate need of clean energy transition?

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Thank you, questions and discussion

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