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ENERGY PRICING, TARIFFS AND REGULATION IN A DISRUPTED ENERGY MARKET

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Some conceptual questions to consider...

- > Are distributed energy resources such as solar, batteries, demand response and energy efficiency
 - Substitutes? Competitors?
 - Complements?
 - To each other, or to which element of the supply chain?
- > What is being disrupted?
 - a) Market structures?
 - b) Business models?
 - c) Regulation itself?
 - d) All of the above?

Implications for energy efficiency

- > Energy efficiency as a 'competing offering' in an increasingly dynamic and diverse market
- > Critical success factors
 - Can Australia develop a functioning distributed energy resource market?
 - Will the market provide diverse players able to enter and participate in offering consumers valued services?
- > The impact of future prices on signals for energy efficiency

First order priority, get prices working...

- > Network tariff reform essential to:
 - reduce exposure to highly volumetric tariffs which encourage inefficient duplication and higher costs to consumers
 - address current and growing cross-subsidies; and
 - incentivise efficient distributed energy resources
- > ENA workshops on tariff developments
- > Roadmap for tariff reform

Network tariff reform - the stakes

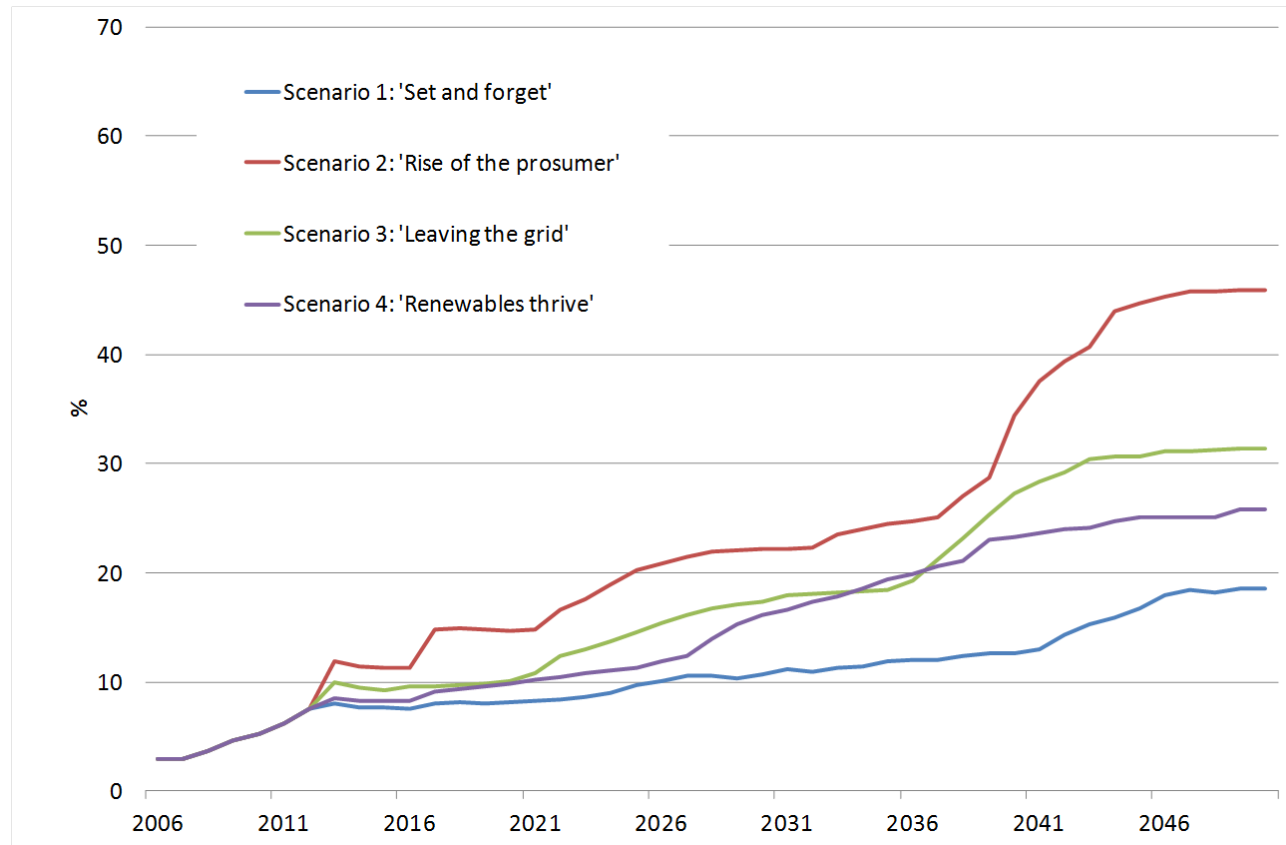
- > Customers saving up to \$17.7 billion by 2034 from more efficient investment in networks and distributed energy
 - Potential savings of \$250 p.a. on average residential bills by 2034
- > Lowering unsustainable cross subsidies
 - \$700 per year between peak air conditioner users and other customers
 - \$120 p.a. for NSW north facing solar customers and other customers
- > Lowering the risk of tariff structure driven stranding

What are risks for consumers?

- > Paying more than necessary for valued services over time (productive)
 - Once in a generation scale societal overinvestment in distributed generation/storage
 - \$10 billion according to Smart Grid Smart City study
- > Loss of service innovation (dynamic)
- > Growing and inequitable cross-subsidies (allocative)
- > Less transparent and predictable prices

Potentially diverse future roles for networks ...

- > Very different scenarios possible
- > Opportunities as much as threats if agile

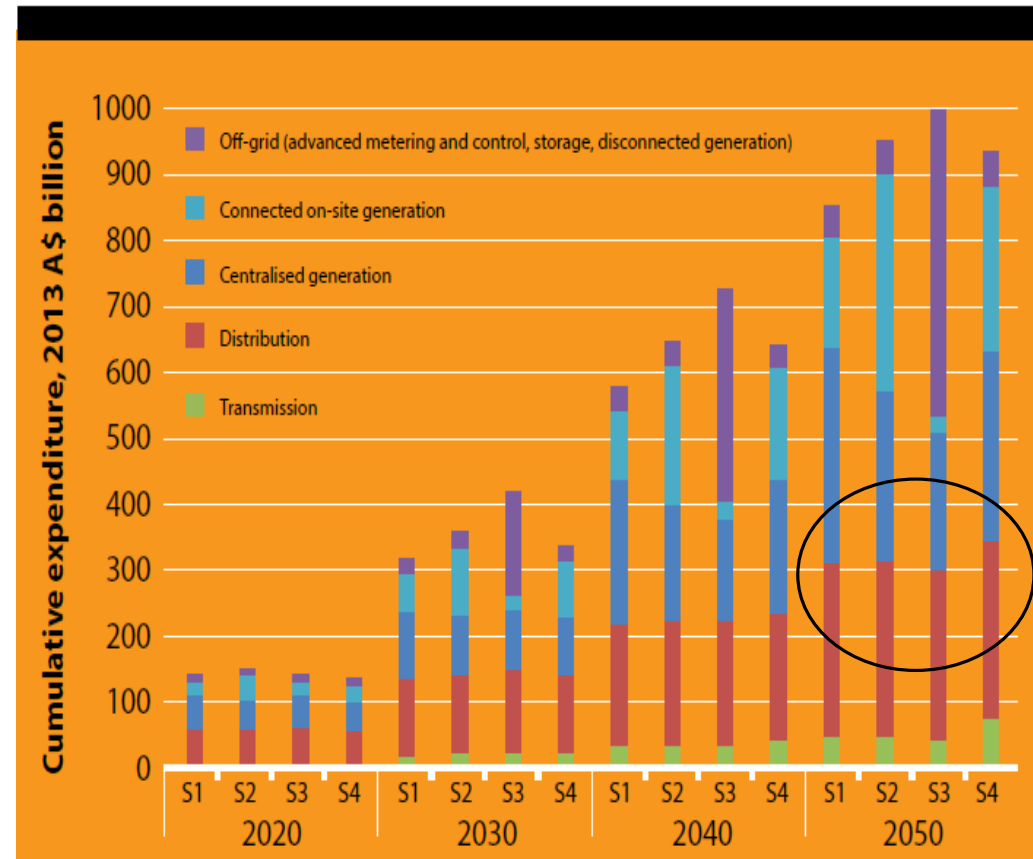


Future Grid Forum - % of Total Electricity from onsite generation

All scenarios require efficient access to capital...

- > CSIRO Future Grid forum scenarios all require significant capital investment
- > Cost of capital can be 50-70 per cent of annual network revenue, so customers have a direct interest in low risk investment environment.
- > Regulators currently are saying network risks are falling, and much lower than in the past
 - Does this risk assessment sound right?

FIGURE 2: PROJECTED CUMULATIVE SYSTEM COST BY 2050



Data sourced from 'Change and Choice' Figure 23, p. 44

“Solar is not going to replace the utility in our lifetime or our children’s, and the grid is necessary. We need utilities to exist and coexist.”

Tom Werner, President and CEO of SunPower Corp.

Common elements of future scenarios

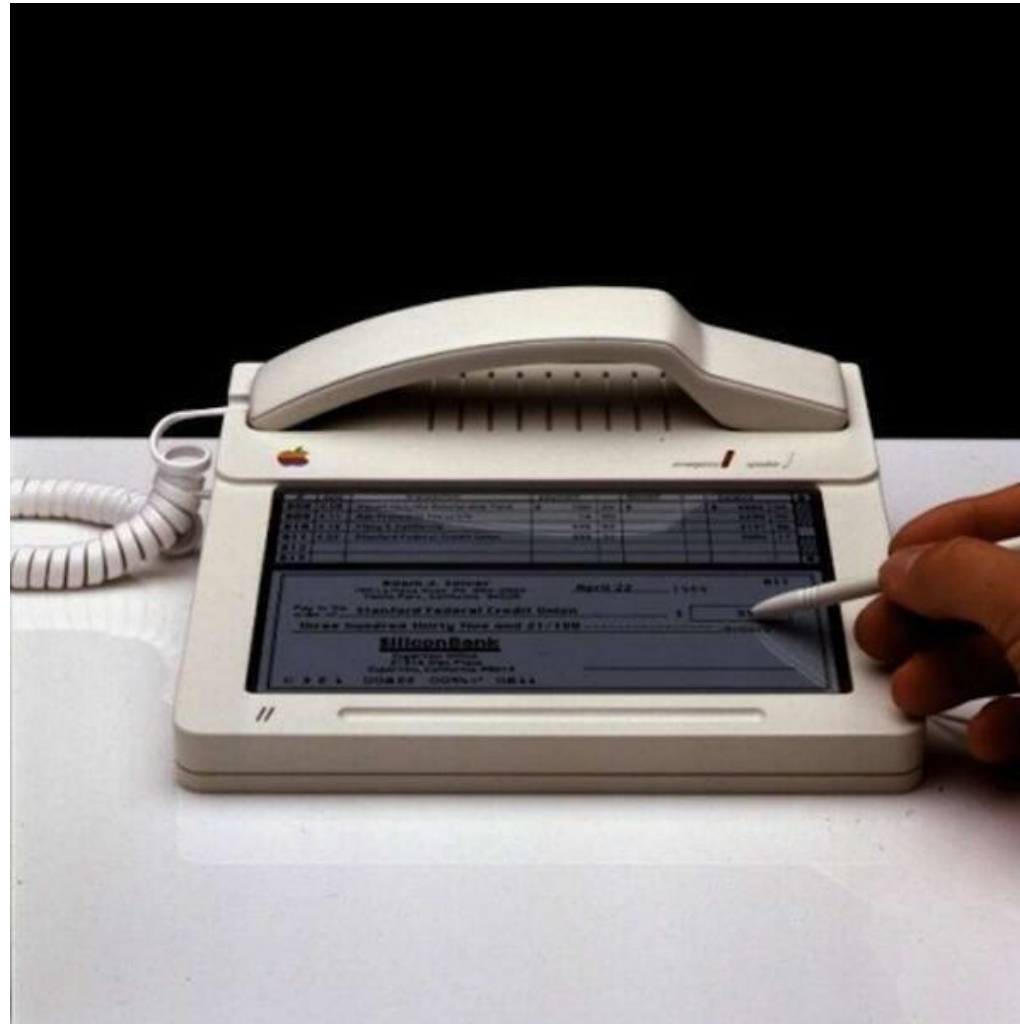
- > Average consumption on both a per household and aggregate economy-level may continue stagnate/fall
- > Continued photovoltaic or other distributed generation deployment changing the traditional 'one-way' distribution system model
- > Battery storage or rapid uptake of electric vehicles changing supply and demand patterns
- > Commercial development of micro-grid technologies, i.e. competitive entry into network services
- > Average network asset utilisation likely to fall, but grid will provide critical services consumers value

“Demand for electricity may be decreasing, but its value to consumers has never been higher”

Professor Tooraj Jamasb, Chair of Energy Economics, Durham University

Implications for network regulation

Make regulatory policy robust to technology predictions...



Get prices right, before potential disruption...



Be clear about transitions between rules...



Think twice about subsidises for technologies that are dramatically falling in cost...?



Solar battery rebates to be offered to Adelaide CBD homes and businesses

By Tom Fedorowytch

Posted Tue 23 Jun 2015, 1:47pm

Homes and businesses in the Adelaide CBD will be offered a financial incentive to install solar battery storage systems.

Adelaide City Council said its program was the first of its kind in Australia and would benefit both its ratepayers and the environment.

Electricity retailers are developing batteries to store power generated by rooftop solar panels so it can be drawn on at night.

Up to \$5,000 will be available for city residents and businesses which put in battery systems from July, along with ongoing grants of \$5,000 toward the cost of rooftop solar panels.

Lord Mayor Martin Haese said it would be money well spent.

"We are now seeing emerge a range of new smart technologies which present not only opportunities to improve our carbon footprint but also to improve our competitiveness on a commercial level," he said.

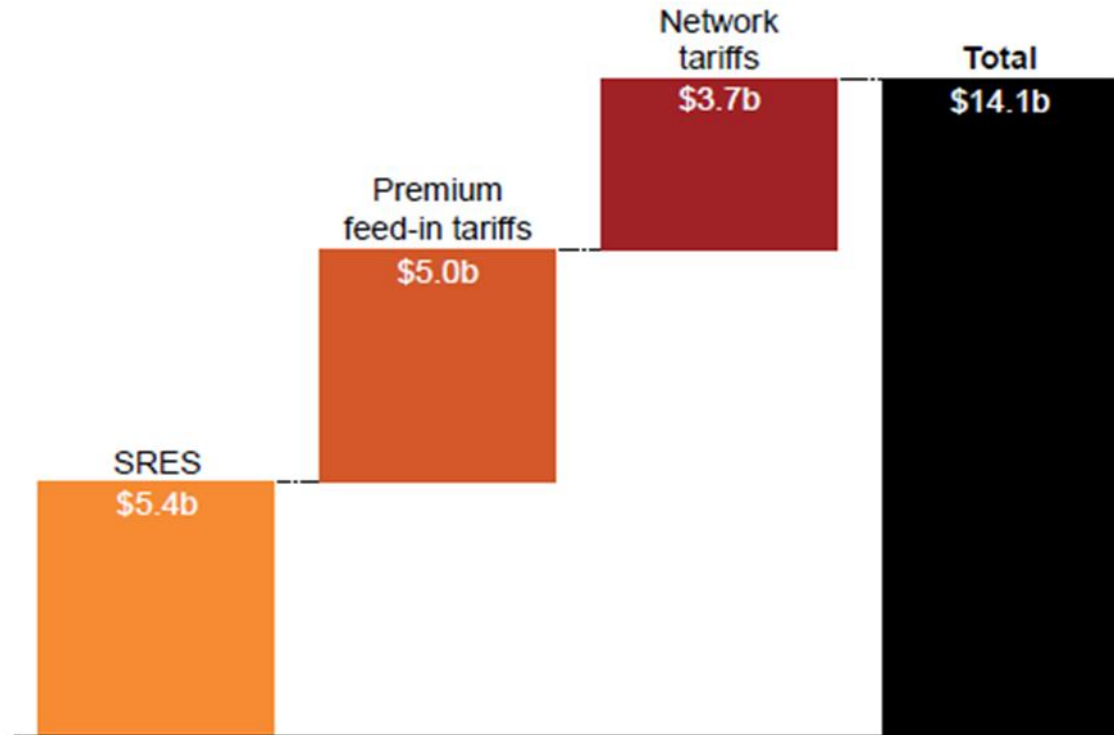
"The City of Adelaide can grow its credentials in this area, attract investment and attract more residents.



PHOTO: Rebates are on offer for Adelaide city businesses and homes that store solar energy for later use. (Supplied)

MAP: Adelaide 5000

Grattan: solar policies created a \$14 bn wealth transfer



*Note: cross-subsidies do not include those from consumers with solar PV to other consumers with solar PV. Includes all cross-subsidies between 2009 and 2030.
Source: Grattan analysis of CER (2015), Victorian Government (2014), AEMO (2015a), BOM (2015), ABS (2012), Energy Australia (2015), Origin Energy (2015), AGL (2015), ABS (2014), ABS (2011), IPART (2012), ESC (2014), QCA (2013), ESCOSA (2014), Synergy (2014), OTTER (2015).*

Source: Grattan Institute Sundown, Sunrise (2015)

“Start contemplating major reductions in regulation, now”

Professor Stephen Littlechild

Thank you



[@garth_crawford](https://twitter.com/garth_crawford)

AER perspectives on competition risk: 2013

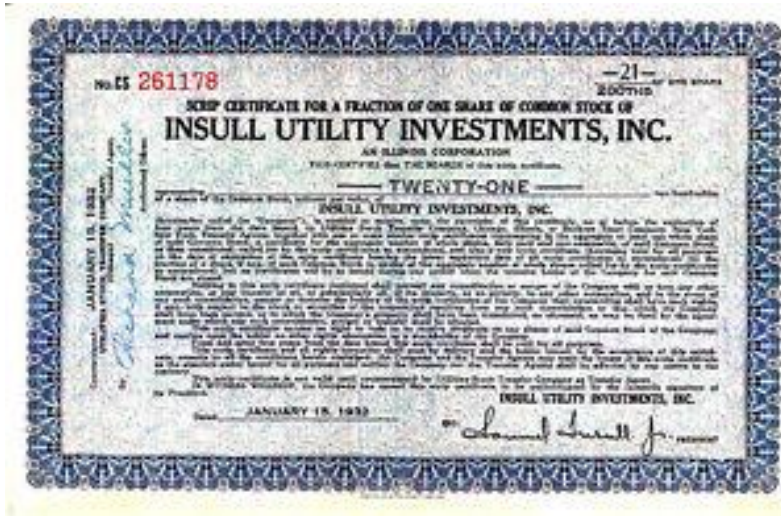
“The regulatory regime **mitigates demand risk through the form of control.**”

“To the extent that there are genuine risks of extreme changes in demand for specific service providers which present the potential for stranding of an asset, the **regulatory regime for gas and electricity can mitigate this risk...**”

“Both gas and electricity service providers face very limited competition risk by virtue of being regulated natural monopolies. **Generally, competition risks for regulated networks are very low....**”

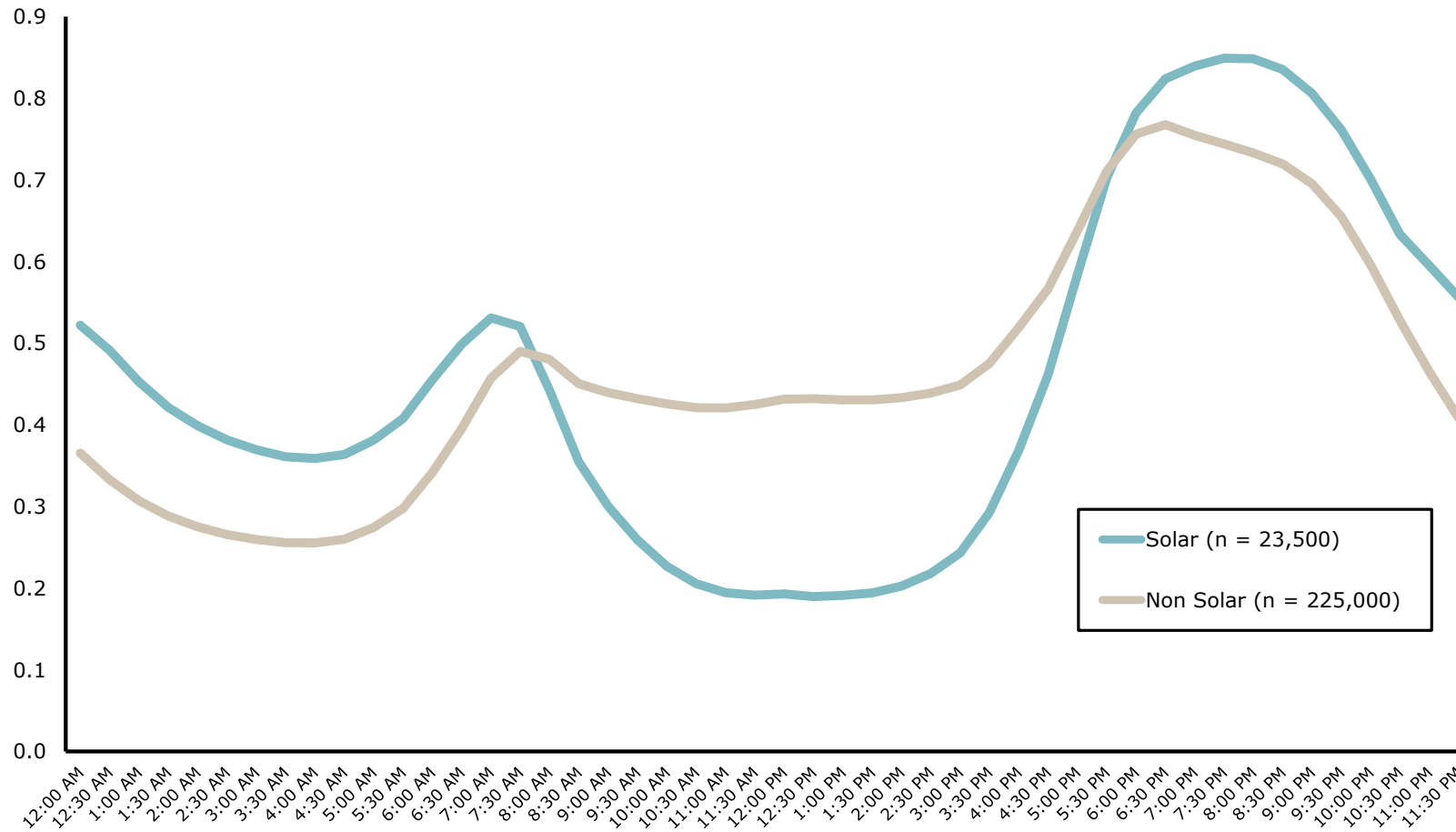
- AER *Rate of Return Guideline - Explanatory Statement*, (p.33) and *Equity Beta Issues Paper* (p.12)

The origins of the grid was distributed generation...



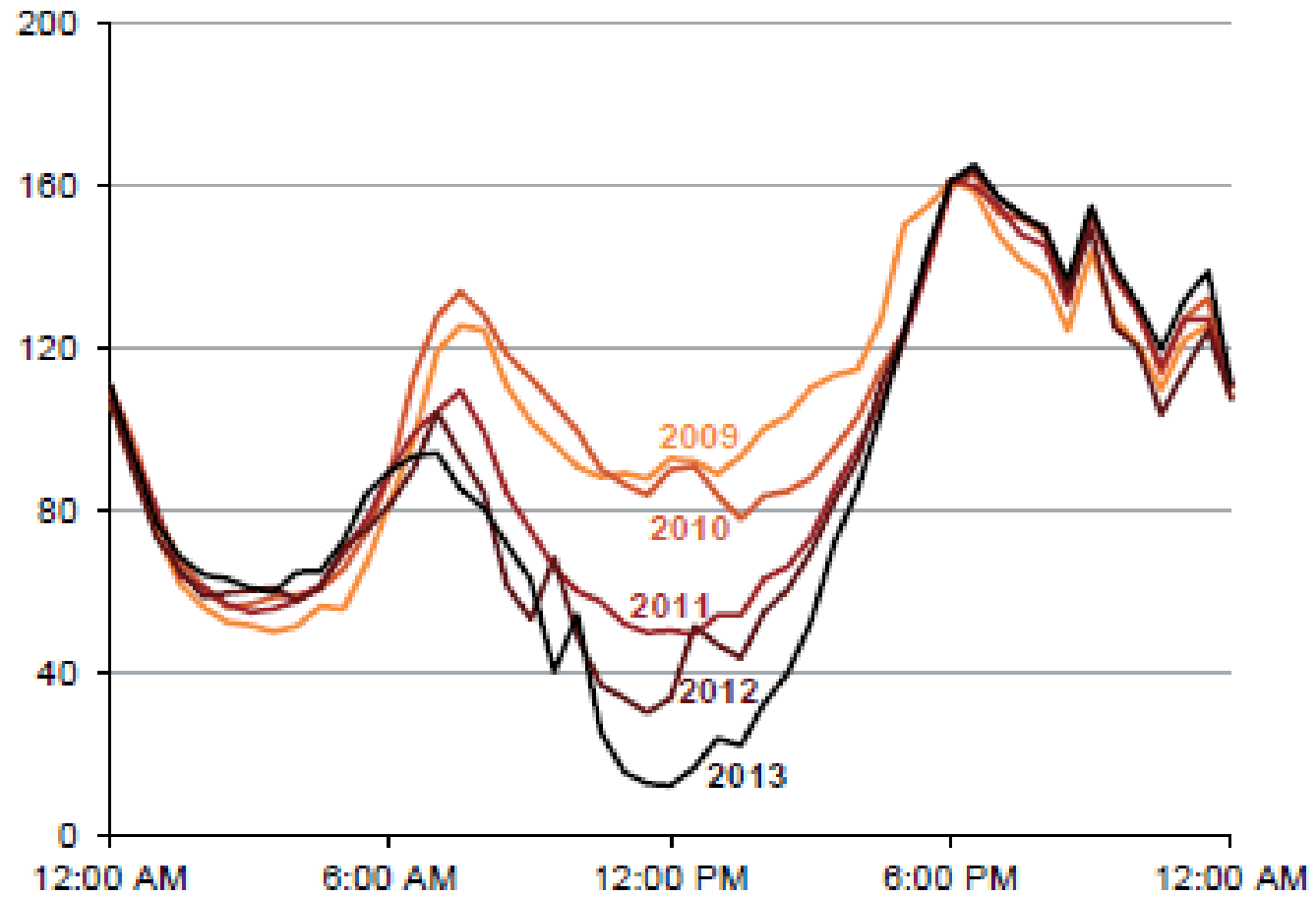
Differing load profiles – solar and non-solar

Household Load -
Weekday Avg (kW)



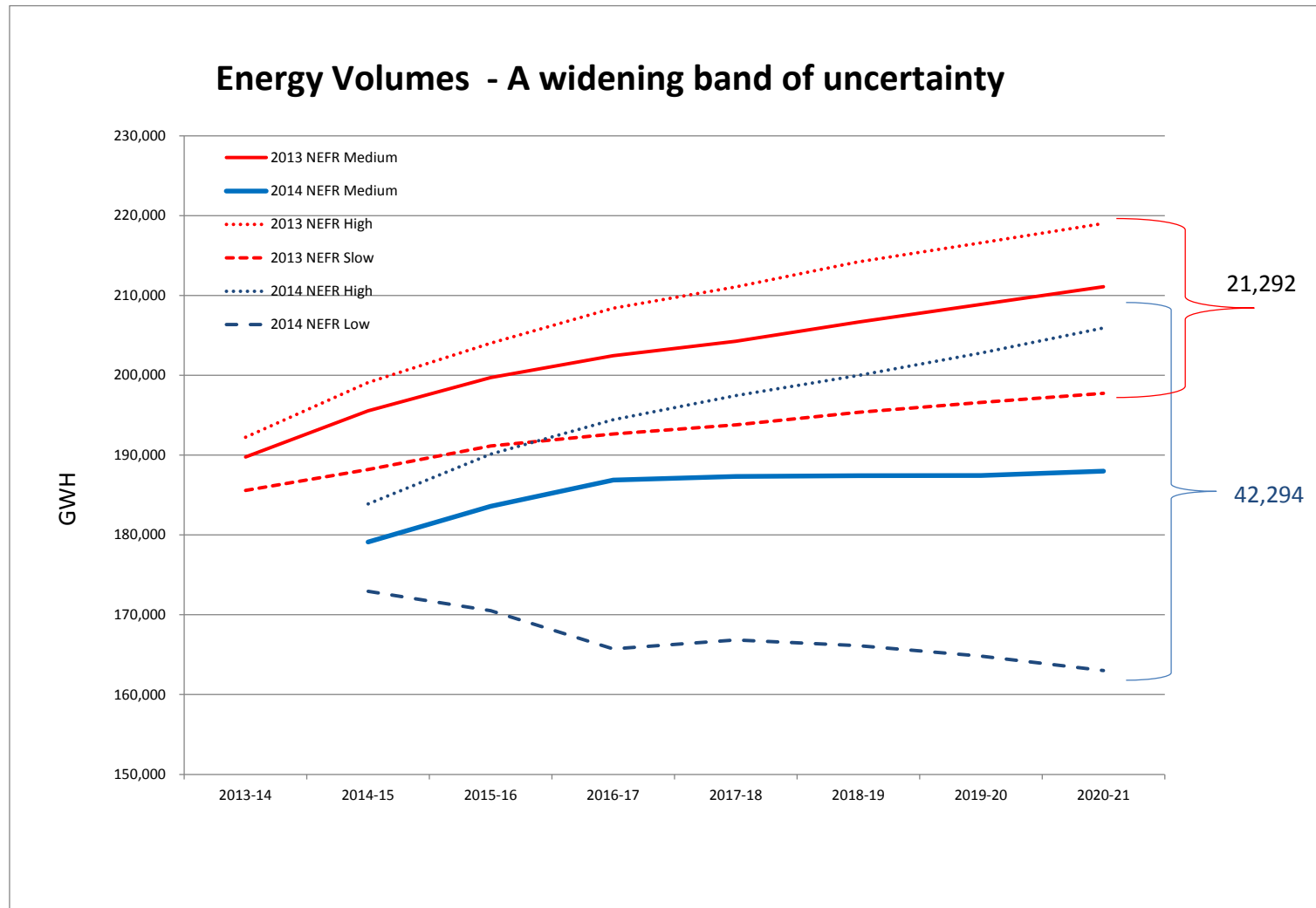
Source: AGL

Impact of solar PV at distribution feeder level



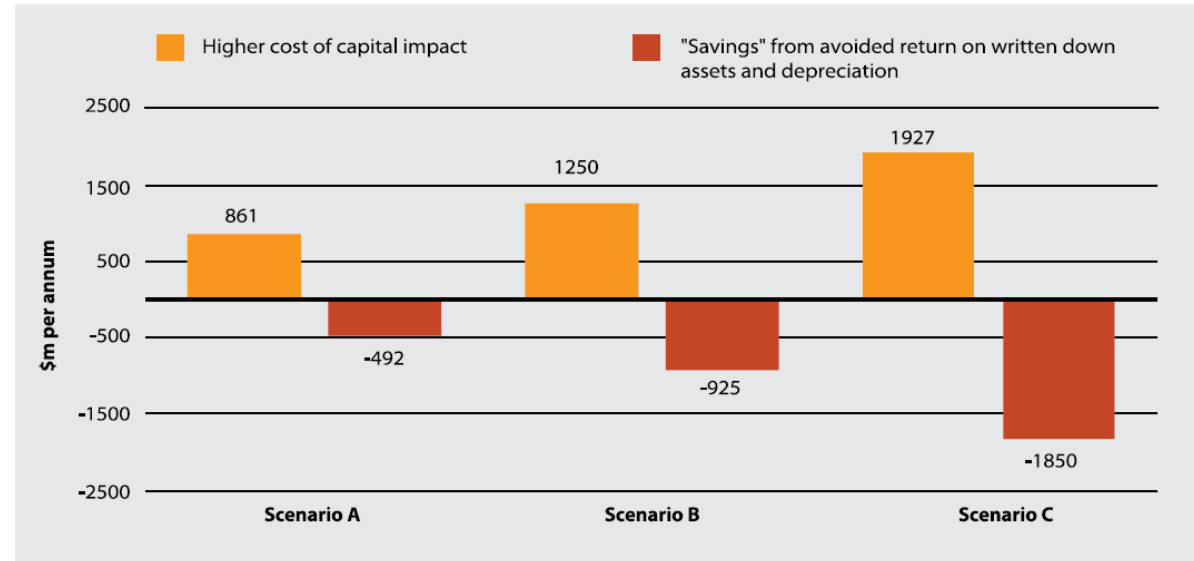
Note: recorded on second Tuesday in October of each year.
 Source: Energex (2013)

Demand forecasting is getting harder...



Importance of avoiding poor regulatory policy responses

- > Proposals for 'write down' of "stranded assets"
- > But:
 - Even a 0.5% increase in WACC offsets all the notional savings of a \$4.9 billion write-down
 - Australian consumers could pay over \$320 million in increased network charges each year,
 - Households would face unnecessary increases in average electricity bills of up to 2.4 per cent



For the modelling sceptics, some behavioural economics

“In order to get managers to be willing to take risks, it is necessary to create an environment in which those managers will be rewarded for decisions that were value-maximizing ex ante, that is, with information available at the time they were made, even if they turn out to lose money ex post”

Richard Thaler, Professor of Behavioral Science and Economics, University of Chicago Booth School of Business, *Misbehaving* (2015)