A TASTE OF POLICY AND REGULATION FOR ROOFTOP SOLAR PV IN AUSTRALIA

DR GABRIELLE KUIPER
DER STRATEGY SPECIALIST
ENERGY SECURITY BOARD

OCTOBER 2020
THE SCALE OF CONSUMER INVESTMENT IN ENERGY INFRASTRUCTURE AND SERVICES:

2020 – almost 2.5m household rooftop PV systems, total PV capacity: 18.5GW
The difference is the scale of consumer investment in generation
- and the technology that can enable real-time demand response
RENEWABLE ENERGY JOBS BY TECHNOLOGY, 2020 – 25,000 TOTAL

- Solar (14600) 56%
- Wind (7200) 28%
- Hydro (2500) 10%
- Batteries (1700) 6%
- Small-scale Solar (9700) 37%
- Large-scale (3400) 13%
- Solar Water Heating (1500) 6%
DER IS FUNDAMENTALLY CHANGING THE ELECTRICITY SYSTEM

Installed capacity in Australia, centralized vs decentralized

41% of capacity sits behind-the-meter by 2030

Source: BloombergNEF. Note: For more details see: Australia behind-the-meter PV and storage forecast (Web | Terminal).
DER: DISRUPTION, DIGITALISATION AND ‘DEMOCRATISATION’

Opportunities include: lower cost supply (in some cases), more flexible supply (when combined with stationary or mobile storage), use of DER for non-network alternatives, microgrids for resilience and remote communities
FEED-IN TARIFFS IN AUSTRALIA

- Retail tariffs include a wholesale, network (distribution and transmission), retail and other (usually energy efficiency state government programs) components.
- State government subsidies have varied dramatically over time – from 40-66c/kWh.
- Now generally retailer set – roughly 6-12c/kWh BUT vary greatly (and sometimes zero).
- Setting of FiTs depends on portfolio: customer base, risk appetite and generation ownership: The 3 largest retailers also own large-scale generation (coal, gas, wind, solar).
SETTING NETWORK REVENUE IN AUSTRALIA

- CPI-X (based on original UK RPI-X regulation): capex, opex and rate of return
- Revenue-capped (previously price-capped) – supports energy efficiency
- Set every five years using a propose-respond model
- For a mix of private and publicly-owned distribution network businesses
- Network tariffs are set annually through ‘Tariff structure statements’
**FEED-IN TARIFFS IN AUSTRALIA**

- New solar sponge **network** tariff in South Australia: 10:00am to 3:00pm 25% of normal rate (3.6c/kWh cf 18c/kWh peak)
- VADER (Value of DER) method being developed for network revenue regulation purposes (similar process used in Victoria for setting minimum tariffs):

<table>
<thead>
<tr>
<th>Supply Chain Segment</th>
<th>Value Stream/Benefit</th>
<th>Able to be considered by AER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wholesale Generation</td>
<td>Avoided generator short run marginal costs</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Avoided generation capacity investment</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Essential system services (e.g. reserve power)</td>
<td>Yes</td>
</tr>
<tr>
<td>Network</td>
<td>Avoided / deferred augmentation (T&amp;D)</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Avoided asset replacement / derating (D)</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Network losses (T&amp;D)</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Improved reliability</td>
<td>Yes</td>
</tr>
<tr>
<td>Environmental</td>
<td>Avoided carbon emissions</td>
<td>Yes, where there is a requirement for market participant to pay associated tax, levy etc or there is a jurisdictional requirement to consider the externality</td>
</tr>
<tr>
<td></td>
<td>Avoided health impacts of poor air quality</td>
<td></td>
</tr>
<tr>
<td>Customer</td>
<td>Intangible benefits (e.g. energy independence, sense of control)</td>
<td><strong>No</strong>, considered an externality</td>
</tr>
<tr>
<td></td>
<td>Change in DER investment costs</td>
<td>Yes, where the network investment changes DER adoption (and the benefits of the changed adoption are included)</td>
</tr>
<tr>
<td></td>
<td>Electricity bill management</td>
<td><strong>No</strong></td>
</tr>
</tbody>
</table>

*Source: SA Power Networks*
THREE DIMENSIONS OF DER INTEGRATION:

Technical and operational challenges
For system security and distribution network reliability, including DER visibility and standards – which potentially limit or reduce the value of DER for prosumers and consumers.

Regulatory and planning challenges
Include ringfencing regulation and integrated planning to optimise the benefits of DER integration.

Market and business model challenges
Electricity markets and DNSP business models need to be updated to support the benefits and minimise the costs of DER integration for all consumers.
DR GABRIELLE KUIPER
DER STRATEGY SPECIALIST
ENERGY SECURITY BOARD
GABRIELLE.KUIPER@ESB.ORG.AU
FOR DETAILS SEE:
HTTP://COAGENERGYCOUNCIL.GOV.AU/ENERGY-SECURITY-BOARD/DISTRIBUTED-ENERGY-RESOURCES
OPERATING ENVELOPES: VITAL ENABLING TECHNOLOGY

• How to maximise the use of DER within network constraints
• Dynamic – on 5-minute intervals, 24 hours in advance
• Needs regulatory support, including through consistency in APIs for information sharing
• Needs revenue allowances (but relatively small cf capex)

Source: SA Power Networks