Rethinking business models for network service providers

Shadow pricing against storage?

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Centralized supply

Decentralized supply

Disconnected

Carbon-intensive supply

Low-carbon supply

Current system

Current direction

CSIRO: ~100 c/kWh, 35-40c/kWh by 2030/2040?

Figure credit: Magnus Hindsberger, AEMO
• Complete transformation for electricity industry?

Energy service provider?

Customers

Stranded assets

System/Market Operator

Distribution network providers

Transmission network providers

Retailers

Generators
Low probability
+
“Catastrophic” consequences
↓
High Risk!

Worthy of a “thought experiment”
What is in the best interests of consumers?

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<thead>
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<th>Circumstance 1: Centralized scenario is lower cost</th>
<th>Circumstance 2: Disconnected scenario is lower cost</th>
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</thead>
<tbody>
<tr>
<td>Centralized supply continues</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Majority of customers disconnect</td>
<td>✗</td>
<td>Complicated by sunk costs in existing assets: need to facilitate a slow transition (no further capital investment, but continue to use existing assets)</td>
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Considerable uncertainty – how should policy makers respond?
Cost-reflective pricing

- Generally accepted to be a good idea, but...
- Highly non-trivial in practice
- What does it really mean?
  - Cost recovery? (including sunk costs?)
  - Providing accurate price signals to consumers?
    - O&M?
    - Augmentation?
  - Locational differences?
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<td><strong>Centralized supply continues</strong></td>
<td>Inefficient subsidies for centralized supply?</td>
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<td>NSPs implement pricing that reflects the lower cost of the centralized network, and establish customer trust</td>
<td>Temporary transition to disconnection?</td>
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<td><strong>Majority of customers disconnect</strong></td>
<td>Pricing reflecting higher costs of centralized network could cause rapid disconnection and stranding of existing network assets.</td>
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<td>NSPs are inefficient and don’t provide pricing that reflects their lower costs</td>
<td>Transition could be slowed with <em>shadow pricing</em> approach.</td>
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<td>(or fail to engage positively with customers?)</td>
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<td>(or inefficient government subsidies for DER + storage?)</td>
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Need to think beyond cost-reflective pricing.
Shadow Pricing

• **IF** cost effective DER + storage provides a realistic alternative to centralised network services
  – Disrupts the “natural monopoly” long held by NSPs (disruptive competition)
  – NSPs becoming part of a competitive industry
  – Price *competitively*, rather than cost reflectively
• *Shadow price* against the main competitor
  – Price just below the cost of storage + DER
• Necessitates write-down of network asset value
  – Acknowledge that full cost recovery is no longer possible, but facilitates maximum utilisation of existing assets
  – Government subsidy, in the case of government owned assets, *but still lower cost to consumers* than the alternative rapid disconnection scenario.
How can NSPs prepare?

• Commence careful tracking and sophisticated forecasting of storage prices
• Implement flexible tariff setting approaches that adapt to storage prices
  – IF storage cost is projected to become lower than centralised network cost-recovery prices, implement shadow pricing against storage
• Engage with AER to ensure this can be implemented
  – Extensive regulation may not be required in the long term (*only* in the case of a full transition to a competitive market)
• Consider offering a range of reliability levels to customers, at different prices
• Build trust with consumers
• Consider partnership with retailers
  – AER – what degree of vertical integration is desirable?
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