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The case for net metering, and a pathway to designing a solution which works for all stakeholders

Phase 1 Report: Creating a Power Sharing Grid

Project scoping, stakeholder engagement and confirmation of support to proceed further.

With funding support from Energy Consumers Australia

Presentation overview

1. What can a power sharing grid deliver and who supports this pathway?
2. What is net metering and why is it important?
3. What are the next steps we need to take?
4. Summary of consultation to date

What customer outcome could a power sharing grid help deliver?

"The Newstead Model" is built using a power sharing grid framework, for an unconstrained regional network zone*

- 8-10c/kWh for daytime energy
  - Supply curve better than rooftop solar due to single axis tracking
- 18-22c/kWh for balance of supply
  - this is where the "balance of supply" retailer makes all their margin
- $1.25 for "all you can eat" on the distribution grid
  - Powercor trial of $1/day, $2kW/mth (for peak capacity) and $0/kWh for usage - i.e. customers free to use more energy, with no additional distribution network charge

End result is likely 30% + saving on the bill - varies across customer types, and significantly enhanced by fuel switching (from gas or wood to electricity for heating, hot water, etc)

**Note: most network asset capital is tied up in unconstrained network zones*

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Is there support for what a power sharing grid can help deliver?

Is a 30%+ saving on the bill for all consumers, not just those with rooftop solar access, an outcome worth pursuing? Do we agree that net metering plus network tariff design is key to a power sharing grid?

Stakeholders say ‘yes’ - formal, written support from:

- Market institutions (AER, AEMO)
- Industry (Powercor, Impact Investment Group, Brave Energy, Our Energy NZ)
- Consumers - via the Community Housing Sector (CHIA-VIC, plus CHO’s representing over 10,000 tenancies)
- other...

Note: with more time, we are confident that additional network businesses, solar farm investors and community housing stakeholders could have been engaged, and would be supportive of the proposed model. Subject to Phase 2 funding, we will seek to expand the stakeholders involved in this project.

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Unpacking the problem: What do we mean by “net metering”?

“Net metering”: Is key to creating a power sharing grid

- Take the electricity production data from a generation asset, embedded in a segment/zone of a distribution network (front of meter);
- Overlay the production data with the demand data from a customer/customers in the same segment/zone of the distribution grid, that have signed a contract to purchase energy from that generator;
- Create a new customer load profile, adjusted for the production data;
    - In theory, net metering could occur before sending that load profile to the customer retailer via MSATS for settlement, OR, after wholesale settlement and before being sent to market retailers.
    - The key is that the customer retains retail choice for the balance of their energy supply to avoid locking in a single retailer to

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What stops net metering?

- Current market rules do not enable multiple trading relationships
  - Net metering would entail a customer having a supply contract with two entities
    - 1) the owner/operator of the generation asset in the distribution grid
    - 2) a market retailer who is responsible for the balance of supply
- Current market rules do not allow metering data files to be augmented or adjusted, before they hit MSATS.
  - Why? A reading of the rules suggests this is to maintain data integrity.
  - For example, in the event of a customer, or any other entity, challenging the accuracy of a bill, the original data needs to remain intact - a “source of truth” in the event of future disputes
- Historical proposals have implicitly or explicitly sought to “free-ride” on the network, by avoiding c/kWh network charges
  - Where production and consumption match, it has been assumed there is a network benefit, or at worst, no network cost, and so

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Why bother with net metering?.

Let's assume the issues caused by multiple trading relationships, data augmentation and network pricing can be solved… in that case, why bother?

1. Economic incentives: current market tariffs and metering/settlement procedures strongly encourage and reward behind the meter investment in generation and storage, over and above say front of meter generation in the distribution network
    a. Behind the meter generation and storage avoids distribution and other c/kWh-based charges and so inflates the savings gained by customers. *This skews the market to invest in rooftop/behind the meter assets, even where it is a higher cost pathway to (100% renewable) energy supply*
    b. These tariff, metering and settlement procedures at best *distort or at worst hide the value of the distribution network* - customers implicitly assume that where supply matches demand, or where generation exceeds demand, they have no need for the grid. Evidence of this is throughout rooftop solar campaign and advocacy, including customer feedback on feed in tariff charges

By not having a net metering procedure, we are locking in inefficient investment in new generation capacity, AND making it difficult for customers to understand the value of the distribution network

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2. Equity across customers: current market tariffs and metering/settlement procedures strongly benefit customers who have access to behind the meter generation and storage
    a. In unconstrained distribution network zones, it is likely that rooftop solar will shift network costs onto non-solar customers, without a proportional benefit
    b. Non-rooftop solar customers *should* have access to the benefits of local generation, on a *like for like* basis with rooftop solar customers

By not having a net metering procedure, we are letting a subset of customers (those with suitable rooftops, and access to finance) benefit from low cost renewables at the expense of others.

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Why bother with net metering?

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3. Economic power: current market tariffs and metering/settlement procedures strongly reinforce the market power of retailers, as a gateway between customers and investment in new generation and storage
    a. Rooftop solar and storage has, to some extent, eroded that power, but it remains entrenched for customers without access to rooftop/behind the meter generation
    b. The risk profile and current trading/generation portfolio of a retailer becomes a major constraint on investment in new generation

By not having a net metering procedure, we make it very difficult for customers, or third party aggregators to invest collectively in new generation and storage assets. They are limited by their ability to negotiate with a single retailer (no multiple trading relationships allowed).

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What are the (potential) risks of net metering?

Multiple trading relationships:

- How does a net metering customers retailer (and AEMO), maintain visibility over underlying customer demand? How do they plan for and manage scenarios where generation drops out, and their share of customer load profile increases accordingly? How does this impact on retailer costs (should it be any different to supplying a rooftop solar customer?)

Data integrity:

- How does a net metering procedure retain customer load profile integrity - i.e. a source of truth in the event a dispute arises over customer energy demand and billing?

Network revenue:

- How do we ensure a net metering customer does not free ride on network costs?

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What are overlapping design requirements of a net metering solution?

Customer contracts:

- Net metering would ideally be supported by a long(er) term contracting model for energy supply - i.e. sign up customers to a 10 year PPA akin to rooftop PPA models.
    - Need break contract/exit clauses and ability to property owner churn / relocation

Network pricing:

- Network pricing and how its recovered (i.e. from the local generator, or retailer supplying balance of energy) needs to ensure network revenue is retained and align to efficient investment incentives.

Energy pricing:

- How do you price supply of day time energy only for example? And communicate this to customers in a way that ensures explicit informed consent?

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Pathway to a solution

Taking an iterative, active research approach:

- Confirmation of stakeholder interest and commitment to ongoing engagement ✓

Phase Two: Subject to stakeholder engagement and ECA funding:

- Map out and gather stakeholder requirements in detail
  - Metering and settlement; retail contracts; pricing
- Develop plausible solutions to stakeholder issues identified
- Present an integrated solution to stakeholders
  - Test and iterate as required in a desktop environment
- Secure sign off on a “final design” to trial
  - Test and iterate in a “safe to fail” real world environment

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Phase 2: Stakeholder support for tackling these challenges

Phase Two: Subject to stakeholder engagement and ECA funding:

- Map out and gather stakeholder requirements in detail **(3 months):**
  - Metering and settlement (AEMO, software intermediaries, solar farm investors);
  - Retail contract design (AER, solar farm investors);
  - Retail and network pricing (AER, Powercor and other networks), Solar farm investors).
- Develop plausible solutions to stakeholder issues identified **(1 month)**
- Present an integrated solution to stakeholders **(2 months)**
  - Test and iterate as required in a desktop environment - multi-stakeholder workshops
- Secure sign off on a “final design” to trial (**3 months)**
  - Test and iterate in a “safe to fail” real world environment
  - Prove up benefits outweigh costs
- Advocacy **(6-12 months)**

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Consultation to date

CHIA and Community Housing Sector:

- Staff engaged
- Nature of discussion
- Issues arising
- Key outcomes

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Consultation to date

AER:

- Staff engaged
- Nature of discussion
- Issues arising
- Key outcomes

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Consultation to date

AEMO:

- Staff engaged
- Nature of discussion
- Issues arising
- Key outcomes

Consultation to date

Powercor:

- Staff engaged
- Nature of discussion
- Issues arising
- Key outcomes

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Consultation to date

Impact Investment Group:

- Staff engaged
- Nature of discussion
- Issues arising
- Key outcomes

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Consultation to date

Brave Energy:

- Staff engaged
- Nature of discussion
- Issues arising
- Key outcomes

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Consultation to date

Our Energy:

- Staff engaged
- Nature of discussion
- Issues arising
- Key outcomes

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