Building (Virtual) Distributed, Clean Energy Power Stations With Data-Streams Over the Internet

Presentation to All Energy Australia by Murray Hogarth, Director, *Community Energy Networks,* Wattwatchers.

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Framing question:

What if the real power over electricity data moves to consumers, … and choice becomes a driving force for the grids of the near future?

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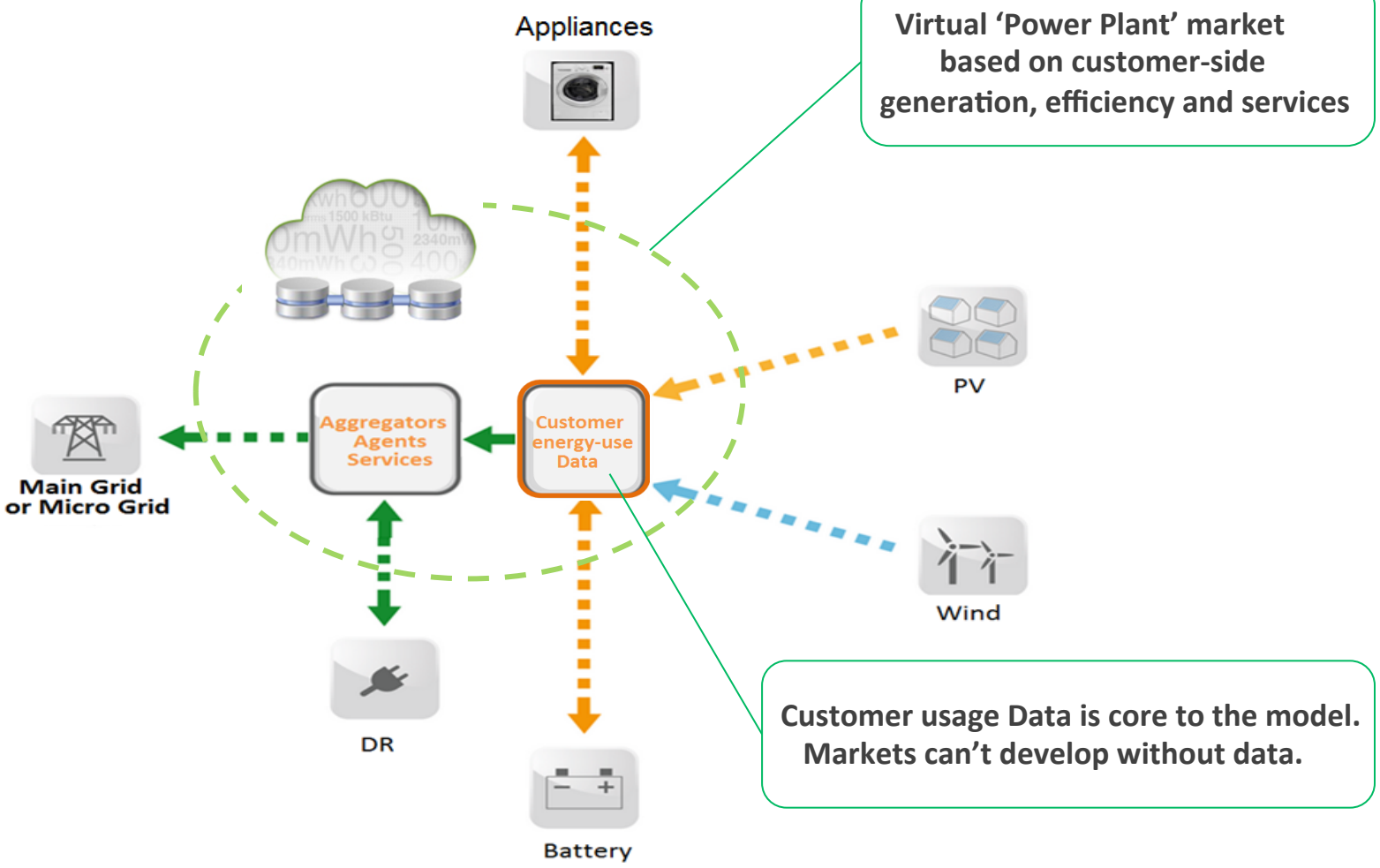
Illuminating view:

‘The key to the disruption of energy lies in the exponential cost and performance improvement of technologies that convert, manage, store, and share clean energy. The clean disruption is also about software and business model innovation.’

Clean Disruption of Energy and Transportation (published 2014 – by Stanford University’s Tony Seba)

Overall, a better model looks like:



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Problem is:
"Where do you get the data for that?"

- Data for energy observation and control is getting stuck 'behind the meter'. **Mains, circuits, machines, generation and appliances** comes mainly from a single source.

- This blocks specific, reliable, networkable and accurate data for M&V, Energy Services, aggregation, allocation of costs … **monetisation for new business models**

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So data is a solution, but from where?

Technology:	Smart Meters	OR..	Smart Data
Accuracy	**Class 1 or better**		**Class 1 or better**
Data delivery timeframe	Delayed, in time 'blocks'		**Real-time, granular**
Source	Utilities, Meter Data Agents		**Direct**
Data Presentation	Spreadsheets		**Apps & alerts**
Control	Wait for reports		**Anytime from anywhere**
Meters	Bulky, wired		**Compact, wireless**
Maintenance/updates	Manual		**Over- the- air**
Total Cost of Ownership (Hardware, install, commission, data & software)	**High** **$600 - $1,000/circuit**		**Low** **$150 - $200/circuit**

‘Smart Data’ collector

Three Class 1 meters with on-board communications
(3-phase OR 3 circuits)

Low-power, low data overheads

No data loss from network outages

One-sixth size, one-third third cost of Smart Meter

Utility-independent data in real-time

One product DIN install, configure off smartphone

Private key authentication & encryption

Power metrics data
(5 sec. or NEM timeframes)

- Real energy
- Reactive energy
- Voltage
- Current
- Frequency
- Power factor
- Real power
- Reactive power

supports multi- server, multi-client models

The Wattwatchers AUDITOR3®

How it works

Agents

2G/3G

Wi Fi

meter box

Auditor3

Any home or building with broadband

Apps or PC

1. Device hardwired into Meter box
2. Data relayed to Cloud for analytics
3. See and respond in real-time
4. Network across any number of locations, anywhere, anytime

Today's Smart Data Apps.

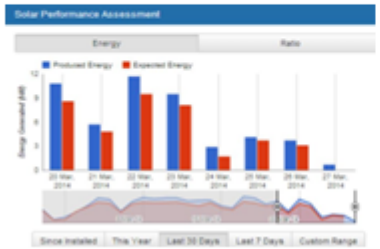
Residential Solar Business Commercial

our green home

solaranalytics

GRIDANALYTICS™

NRG INSIGHT



..or data-direct via an API

Tomorrow's App development.

Residential Demand Management	Solar Fleet Control	Appliance Recognition Software	Disaggregated Bills In Real Time
Remote Control Of Devices	Battery Storage Optimising	Electric Vehicle Integration	Do-It-Yourself Time-Of-Use Plans

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Summary points.

- Virtual, distributed, clean power plants ?
  think 'internet of energy' services
- Energy use data enables business innovation.
  think of 'the data dividends'
- Don't be limited by utility Smart Meters.
  think 'Smart Data'

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