

Digital energy futures: a research agenda

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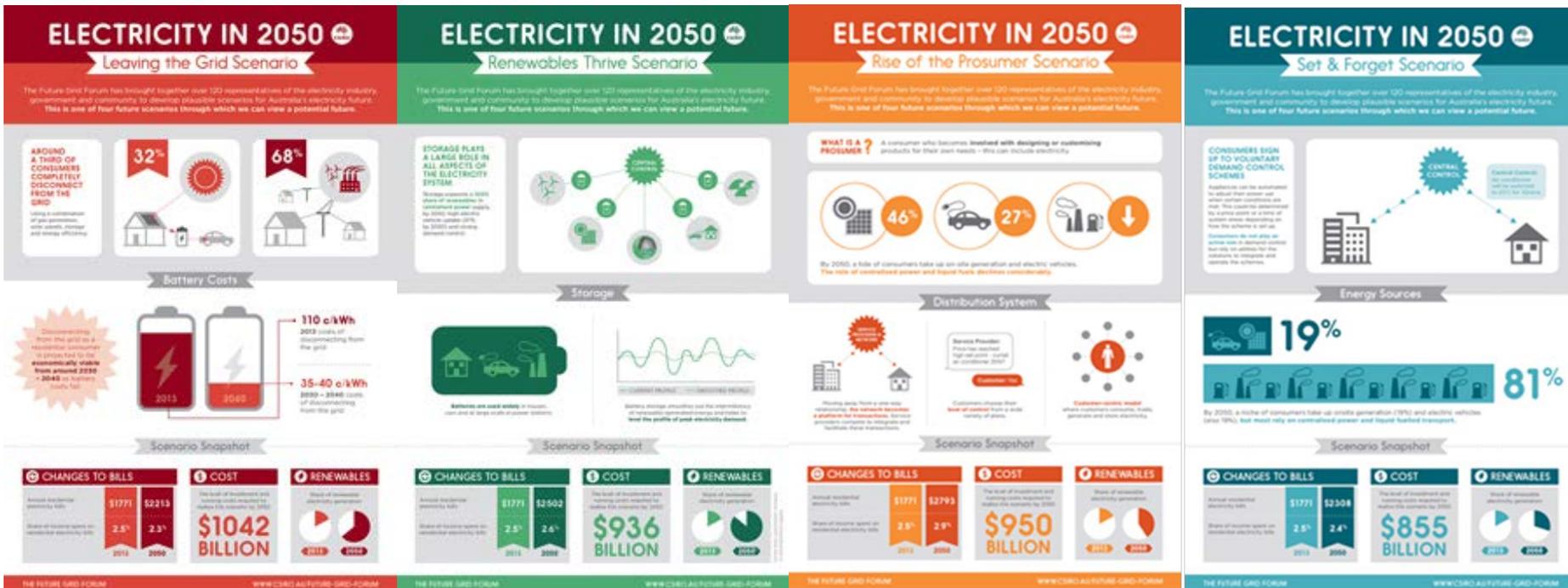


Forecasting Australia's energy future

- Dominated by engineering forecasting methods and economic modelling
- Focused on:
 - Projecting demand and supply based on engineering/ economic models
 - Consider broad-brush technological and demographic trends (e.g. population growth, appliance uptake, increasing cooling load, changing supply portfolio (e.g. increased rooftop PV).
 - Lack of social science
- Knowledge gaps/ inaccurate forecasting has resulted in under or over-investment in electricity infrastructure in recent decades
- Room for improvement to deliver better consumer outcomes

CSIRO Future Grid Forum

- 'What might Australia's electricity system look like in 2050?'
- How will consumers interact with new energy technologies/ systems?
- Technology scenarios + economic modelling
- Informing electricity sector planning (e.g. Electricity Network Transformation Roadmap)



Changing lifestyles

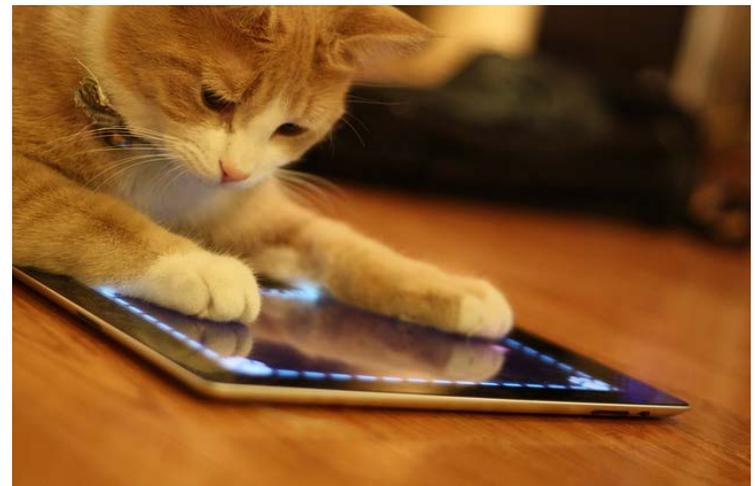
- What might Australian lifestyles look like by the near (2025-30) and medium-far (2030-50) future? (and what will that mean for energy demand?)
- How do we forecast digital and social trends likely to impact on electricity sector planning?
 - (e.g. changing expectations of air-conditioning)



Digital lifestyle trends & scenarios

- Heating and cooling
- Working from home and unemployment
- Caring from home
- Digital household entertainment and smart home technologies
- Transport
- Energy management

Focused on digital trends likely to impact electricity sector planning and demand forecasts





Three year ARC Linkage project

Understanding digital energy futures from the perspective of residential consumers/ households

- Australian Research Council industry-academic ‘Linkage’ project
 - Bold and nationally significant projects
- In principle partners: Energy Consumers Australia, Ausnet and Ausgrid
- Led by RMIT University: Yolande Strengers, Sarah Pink, Larissa Nicholls
- Mixed expertise: social science, demand forecasting, consumer engagement



Project objectives

- Understand how Australian household practices are currently changing in relation to new and emerging intelligent and digital technologies.
- Identify emerging future scenarios and principles that have important implications for the electricity sector in the near, medium and far future.
- Test and develop a theoretical and methodological approach to studying and anticipating changing trends in household practices.
- Develop a new industry-relevant forecasting model for tracking and anticipating peak electricity demand, and energy consumption more broadly, that incorporates insights from future-oriented social science research.
- Develop practical demand management solutions for Australian electricity network businesses to plan for efficient, cost-effective and reliable networks.

Research design

Stage 1: Digital and energy futures review

Stage 2: Digital ethnography research with six consumer groups

Stage 3: Survey supplement on digital futures (as part of the ECA Energy Consumer Sentiments Survey)

Stage 4: Twelve scenario innovation workshops with residential energy consumers

Stage 5: Modeling and scenario testing to develop forecasting methodology

Stage 6: Demand management innovation: identifying opportunities for better engagement