

The NI REV – Issues of Relevance

Lessons from GB, NY and E Australia

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New Thinking For Energy



Overview

- Changing energy systems
- BAU increasingly out of step with new drivers
- Where did the NI REV idea come from ?
- Lessons from NYS
- What needs to be in place to do it?
 - Get the governance right
 - Ideas from IGov
- What other lessons can be learn from around the world?
 - Australia
- Conclusions

Implications of Net Zero

- Decarbonisation has to accelerate around the world
- IPCC SR1.5 2018 gave a 12-44 yr time frame until the globe reaches a 1.5C warming
 - BUT we know that actual as opposed to projected emissions have always been higher than all IPCC AR high projections
 - Reaching 1.5C is therefore expected at the shorter rather than longer end of the spectrum
- The implications of this are
 - We need a new approach to climate change, but also to energy use which is the biggest source of emissions
 - we need to set up policy, infrastructure and regulatory processes to deliver timely emission reductions

Multiple new drivers are altering energy system characteristics to be more D4

- **Decarbonisation** across energy – electricity, heat and transport
- New technologies, resources and falling prices (many of them distributed energy resources (DER))
 - EVs; Smart grid; Decentralised heat – heat pumps, solar thermal; district heating; Renewables of multiple scales (including PV); Demand Side Response; Building energy efficiency; Flexibility; Storage
- Much of this is at the local distribution level – so **decentralisation** as the economic option
- **Digitalisation** allows new system operation and revealing of value, hence new energy economics
- New ownership and business models enabling, or being pushed by, greater involvement by customers

BAU Regulation, System Operation and Market Design is Increasingly Out of Step with Changing Energy System Characteristics and Drivers

- Despite drivers and changes, rules and incentives still reflect and give value to centralised SO and non-sustainable outcomes
 - Customers pay for this despite not delivering required / cheaper social outcomes
- Governance reform needs to incentivise the outcomes that society requires from the energy system, including security, rapid decarbonisation and social goals.
- The accessible value in the energy system has to be for what is wanted from that energy system
 - A smart, flexible, net zero system needs governance which provides value for flexibility, sustainability etc
- SO has to change, and needs new types of coordination
 - Across energy sectors, local dimensions (for energy efficiency, electric vehicles etc) and markets

Where did the idea of the NI REV come from?

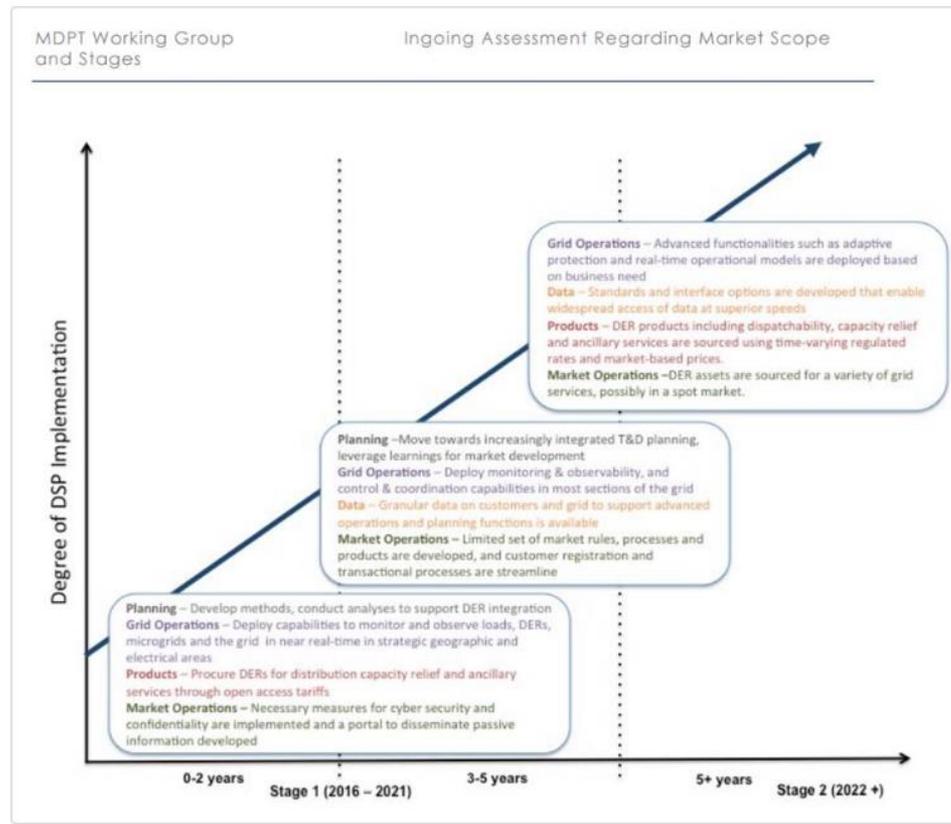
- New York State (NYS) was given mandate by people of NYS for the NY Reforming the Energy Vision (REV) after Hurricane Sandy 2012
- A programme of energy system transformation undertaken by NYS
- The Public Service Commission (PSC, the Regulator) proactively tore up the rule book to put in place a fit-for-purpose cost effective governance package
 - <http://projects.exeter.ac.uk/igov/primer-new-york-state-rev/>

Lessons from NY Reforming the Energy Vision (NY REV)

- Upfront argument (Vision [http://www3.dps.ny.gov/W/PSCWeb.nsf/96f0fec0b45a3c6485257688006a701a/26be8a93967e604785257cc40066b91a/\\$FILE/ATTK0J3L.pdf/Reforming%20The%20Energy%20Vision%20\(REV\)%20REPORT%204.25.%2014.pdf](http://www3.dps.ny.gov/W/PSCWeb.nsf/96f0fec0b45a3c6485257688006a701a/26be8a93967e604785257cc40066b91a/$FILE/ATTK0J3L.pdf/Reforming%20The%20Energy%20Vision%20(REV)%20REPORT%204.25.%2014.pdf) argued that conventional wisdoms of running energy system should be interrogated, and concluded many of them were no longer correct given the changing energy system:
- For example:
 - that a centralised, top down energy system operation was cheaper or more secure than a decentralised one, or
 - that customers should be passive

NYS set out timelines to get to their desired outcomes (about 10-15 years) and inclusive working processes – but not how it should be done. The idea was to set up regulatory process which could be open to change and be adaptive

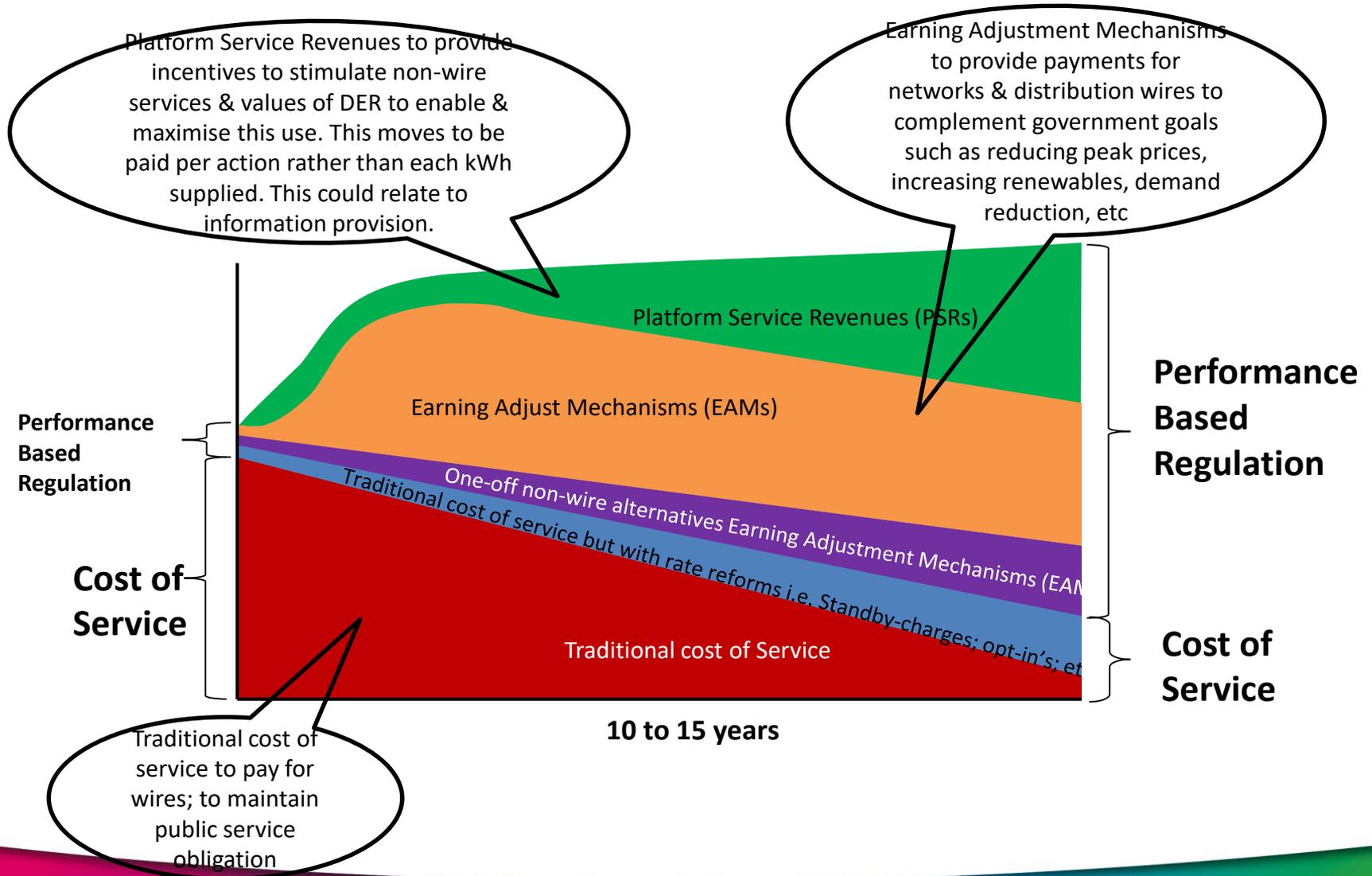
https://www.energymarketers.com/Documents/MDPT_Report_150817_Final.pdf



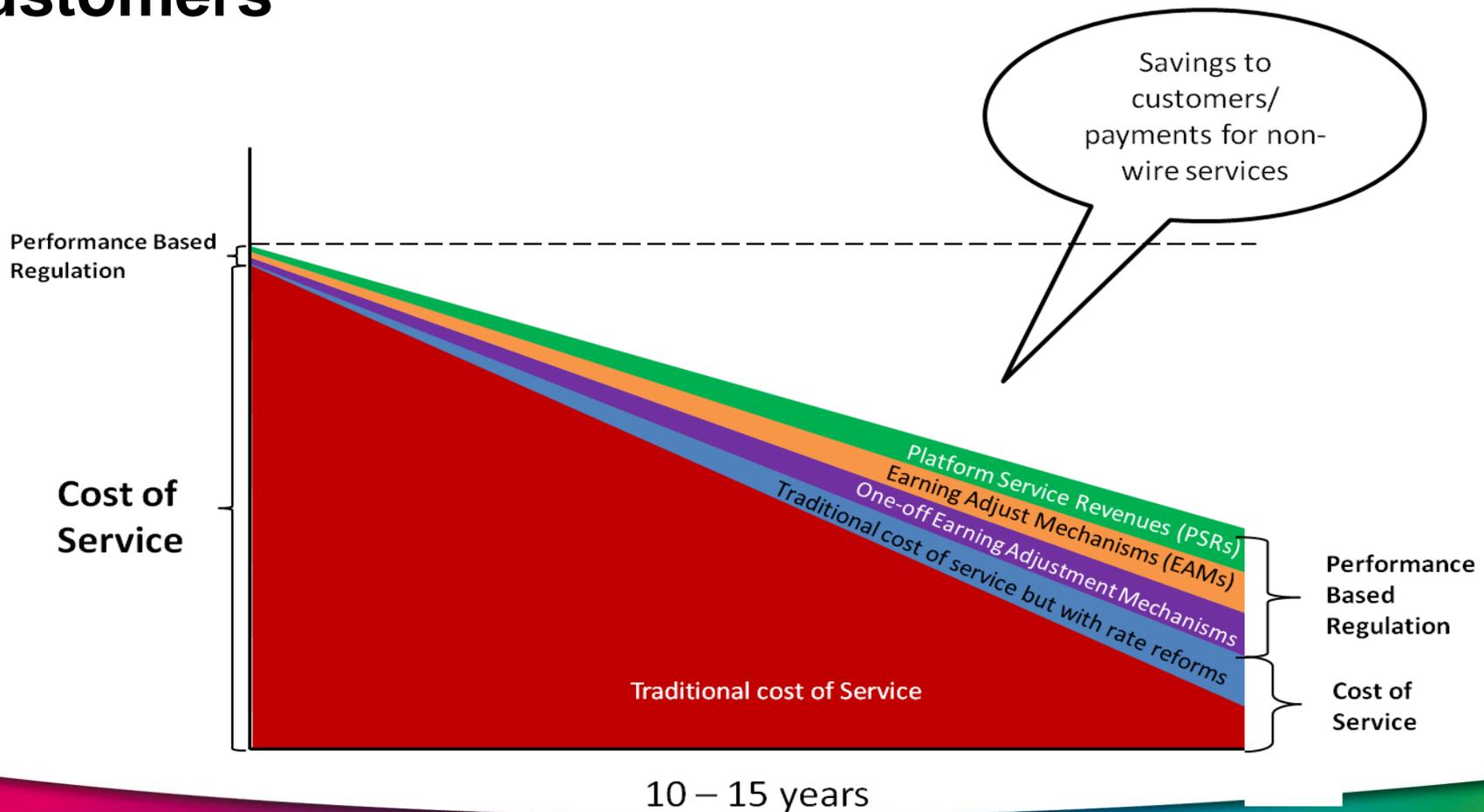
It is evaluating energy economics and value of distribution under different regulatory and market conditions

- It was agreed that a new energy system costing methodology was necessary to understand value of DER to system
- Distributed energy resource assessments (DERA), and a methodology to find that information was established (would be useful for NI (and GB))
- <http://projects.exeter.ac.uk/igov/new-thinking-reset-the-reset-1-we-need-institutional-governance-reform-and-we-need-it-now/>
- <http://projects.exeter.ac.uk/igov/new-thinking-reset-the-reset-3-der-walking-the-walk/>

It is undertaking regulatory Reform – more performance based regulation – iterative process (% of revenue)



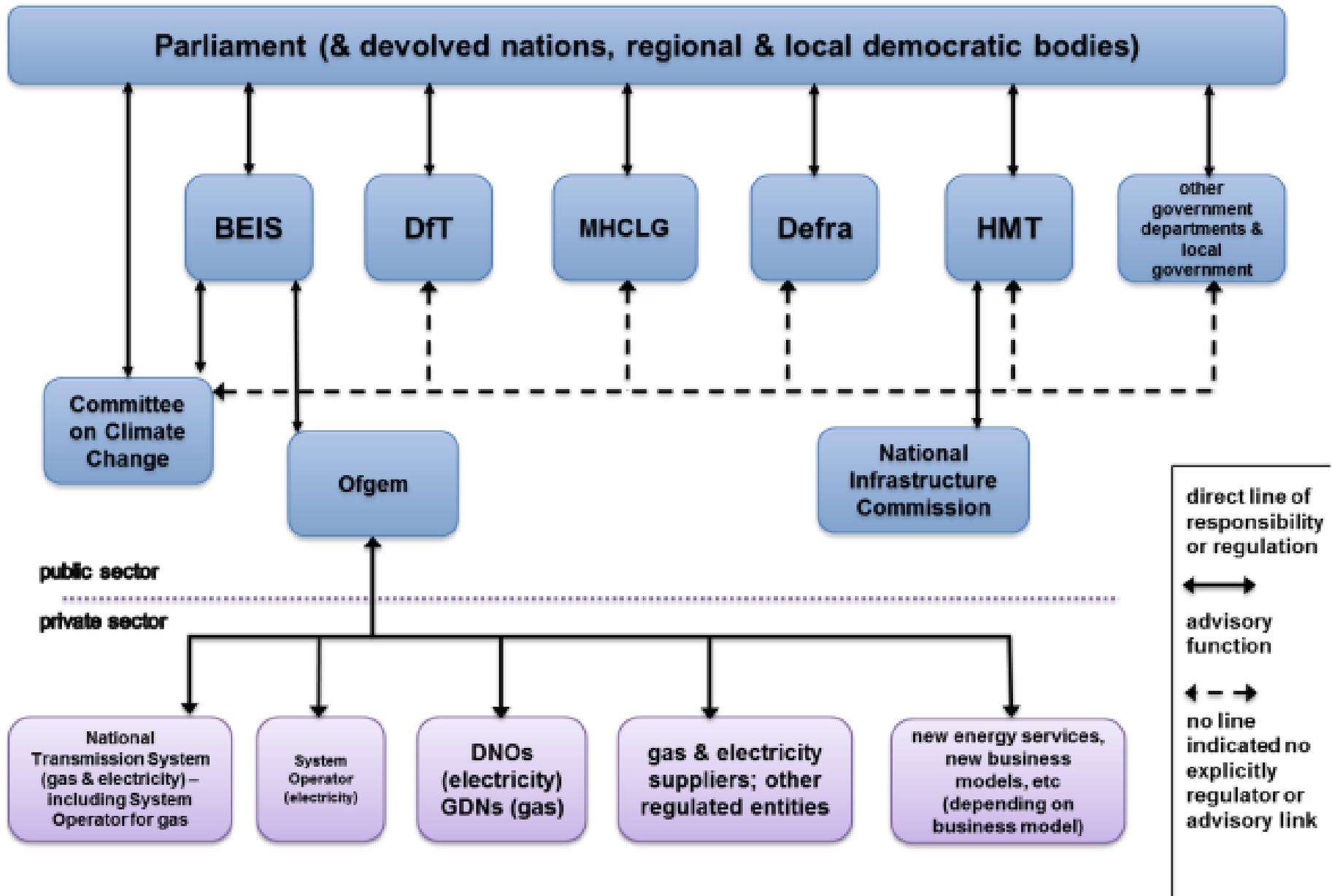
It has a goal to make energy system value for money for customers – including paying customers for the value they provide to the system : total return to utilities may go down – but more cost effective for customers



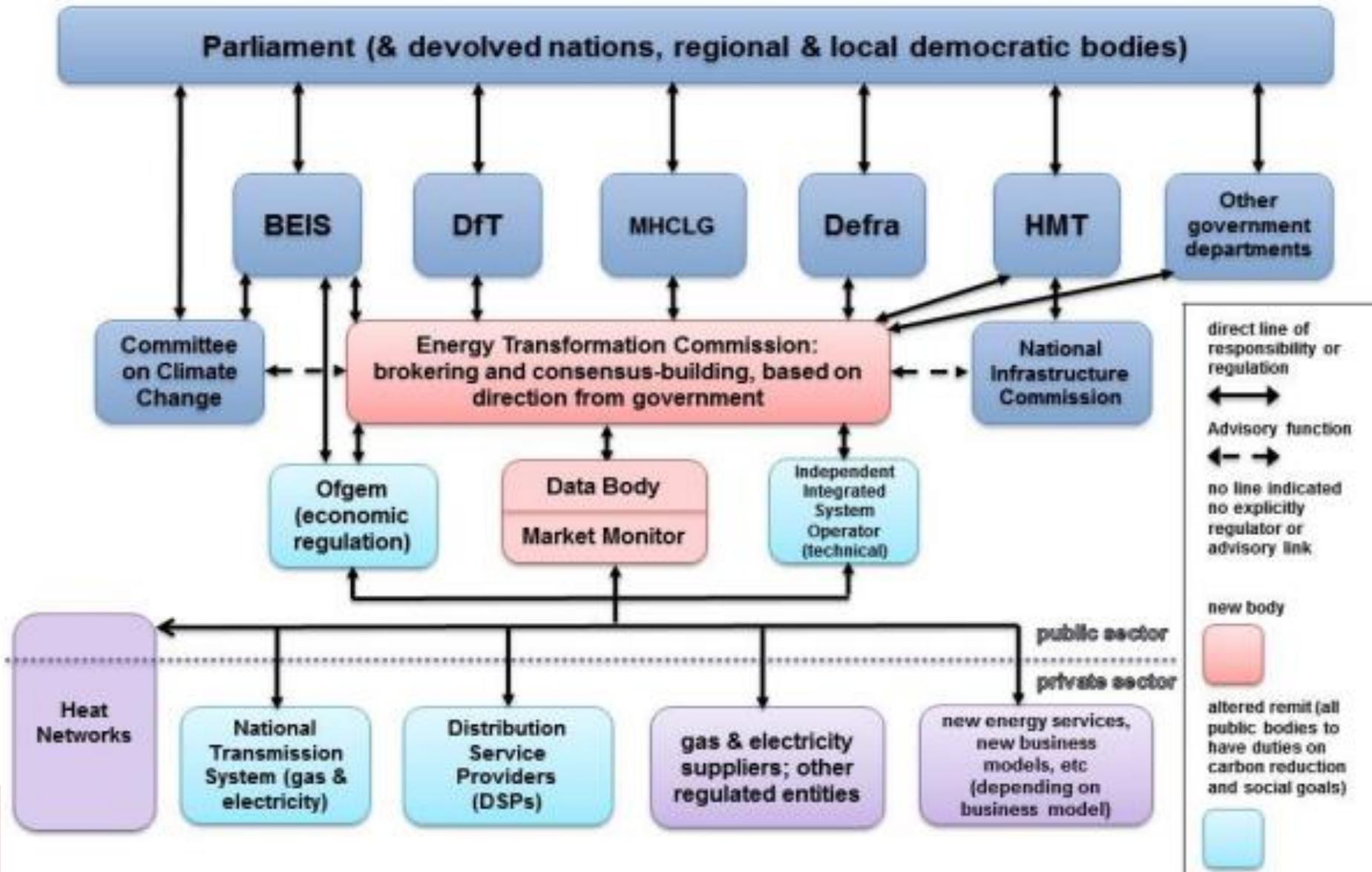
Arguments from GB:

- IGov Project (Innovation and Governance for Future Energy Systems 2012-2019)
- Governance needs to be coordinated
 - We argue for an Energy Transformation Commission
 - Need to think about linking direct energy governance with local authorities and markets
 - Need to fill the ‘distribution’ governance gap
- <http://projects.exeter.ac.uk/igov/>

GB energy governance: current institutions and responsibilities



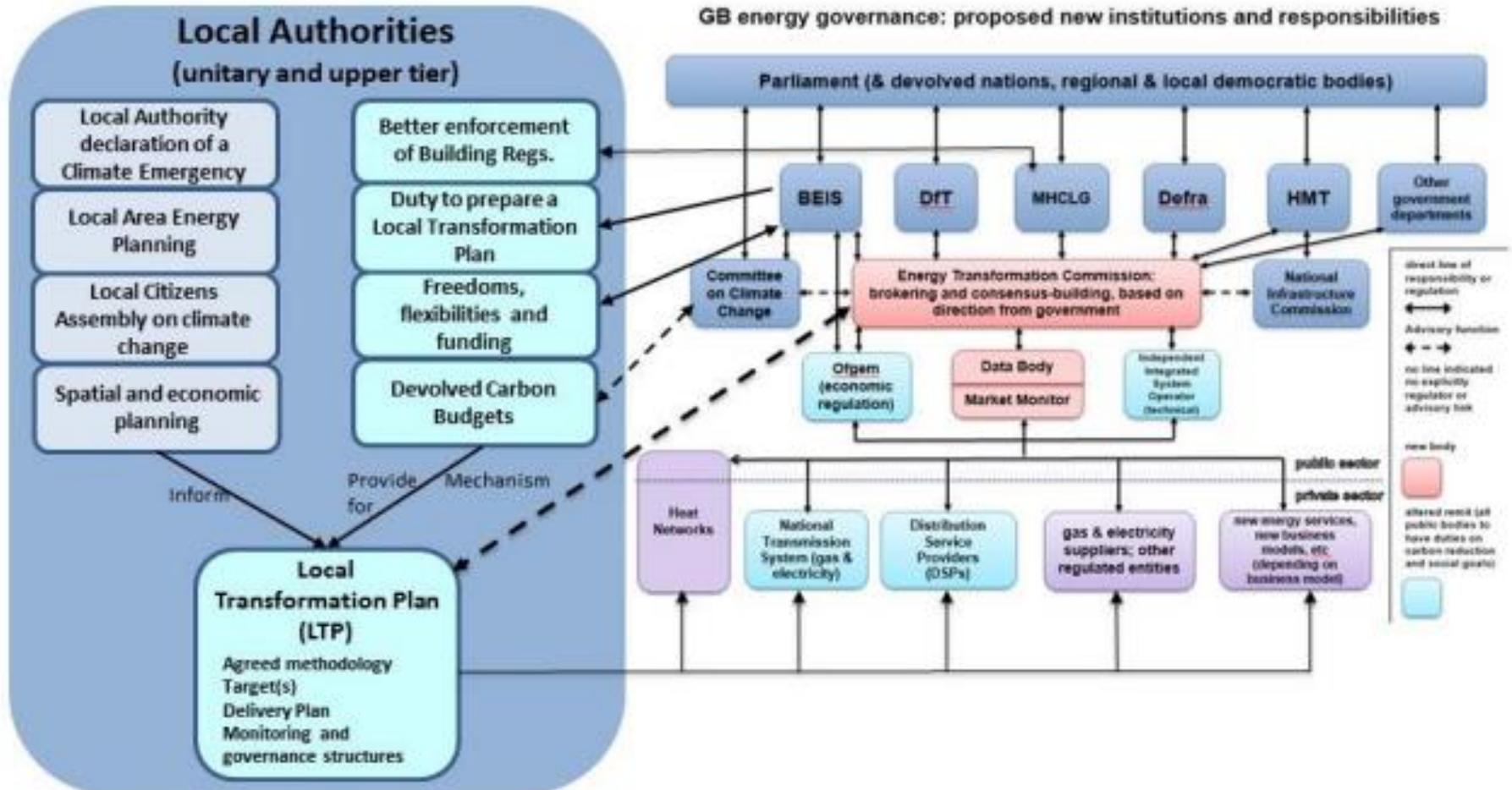
GB energy governance: proposed new institutions and responsibilities



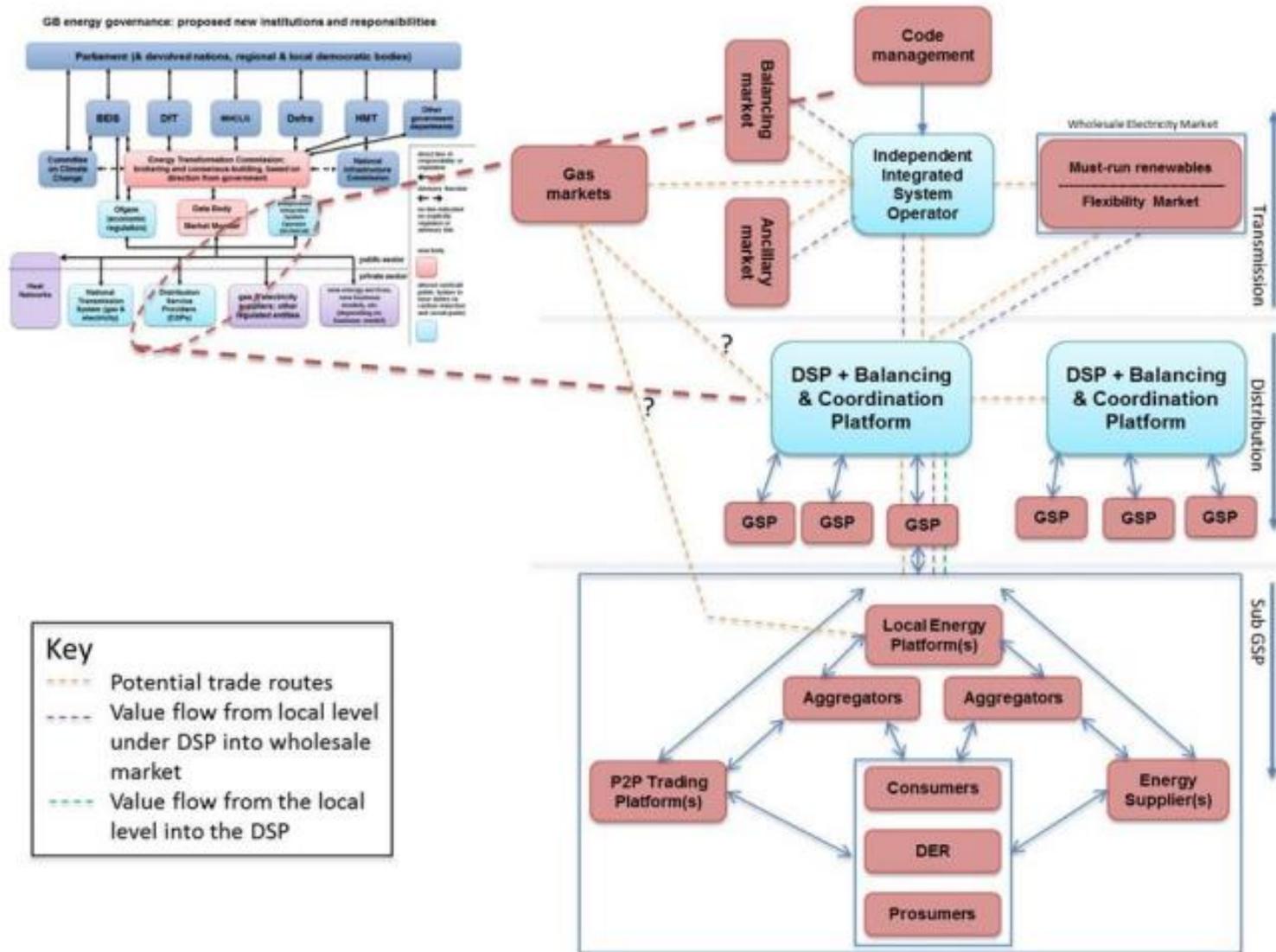
Local Government Dimension has to be coordinated:

<http://projects.exeter.ac.uk/igov/wp-content/uploads/2019/08/IGov-Getting-energy-governance-right-01-08-19.pdf>

Local and national energy governance

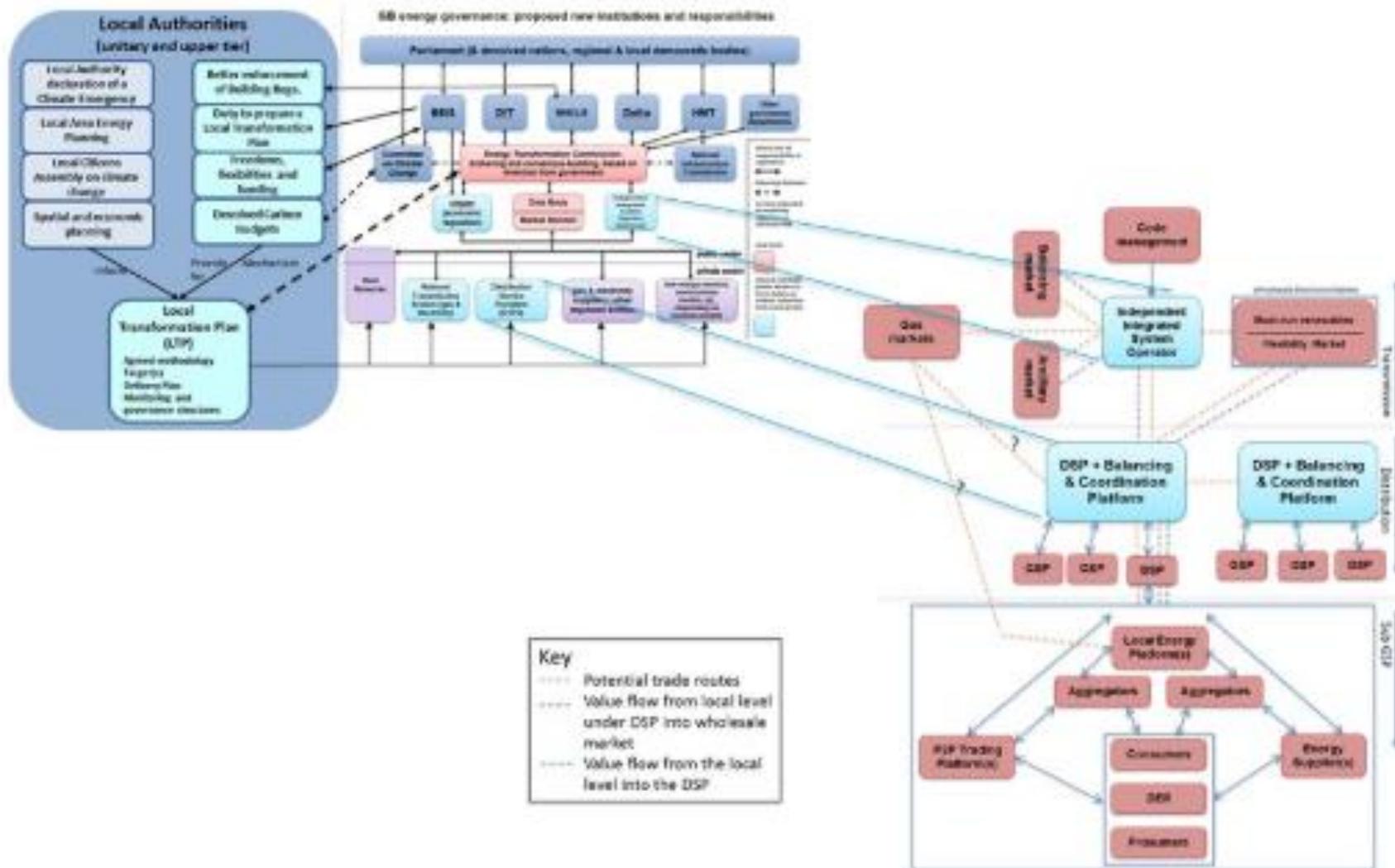


Market Dimensions as well: <http://projects.exeter.ac.uk/igov/wp-content/uploads/2019/08/IGov-Getting-energy-governance-right-01-08-19.pdf>



IGov Figure 6: Local market design

Local and national energy governance

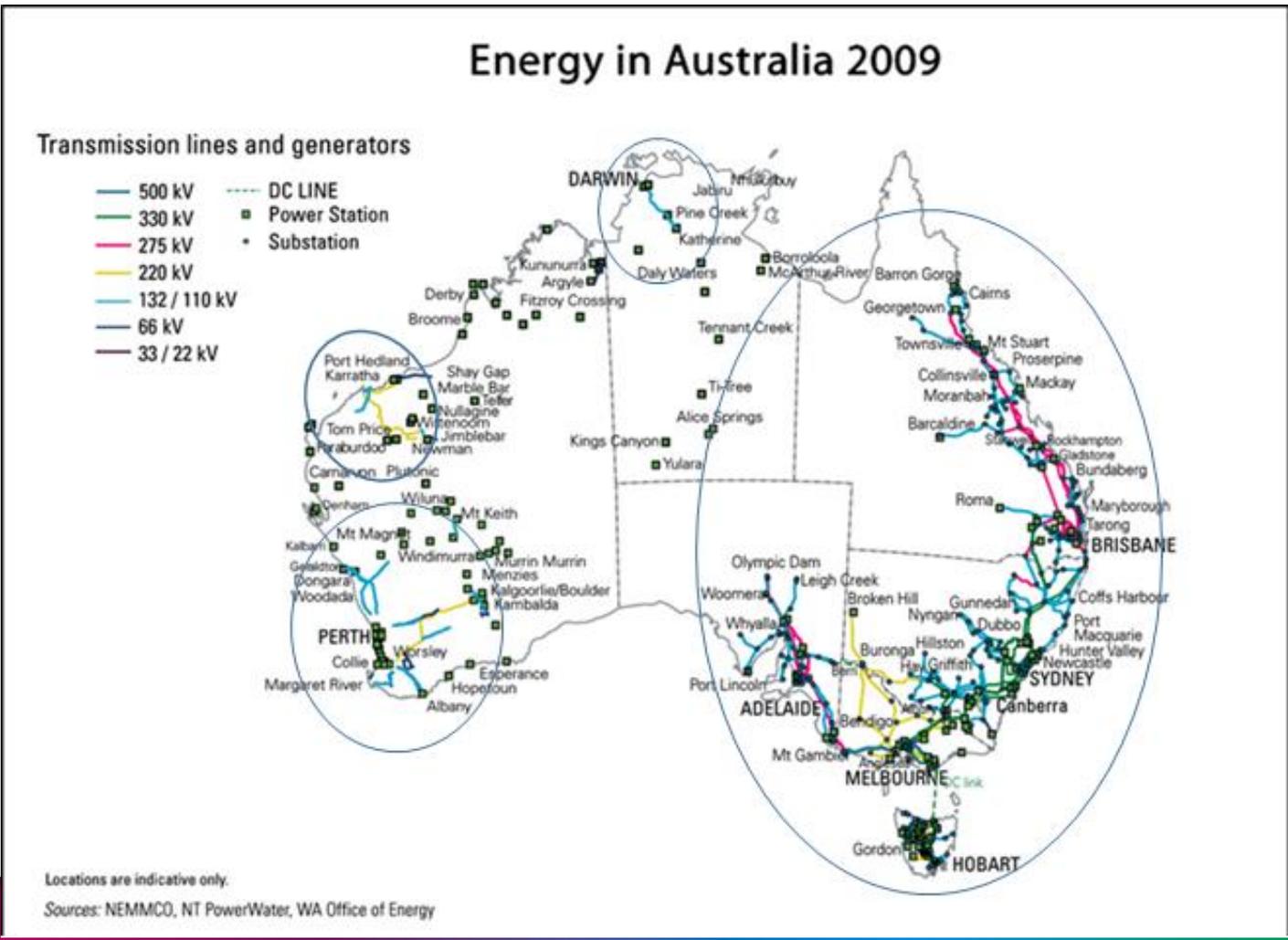


E Australia now is a case study of what to do – but for a time was an example of what not to do

- E. Australia has had 10 years of energy system problems but seems now to have turned the corner
- Came from one big mistake of traditional regulatory mechanism combined with technology cost reductions; Government / Regulator not waking up to situation / not taking action fast enough; plus inflexible governance
 - Now, trying to ‘leapfrog’ to frontier of energy system operation

Australia's 4 electricity markets – these slides focus on the National Energy Market (NEM) – the eastern States. Very complicated governance

H. Poulter Postcards from Australia series with Blog 1: <http://projects.exeter.ac.uk/igov/postcard-from-australia-sydney/>



The perfect storm – it could happen anywhere

<http://projects.exeter.ac.uk/igov/new-thinking-theses-of-the-unexpected/>

- Poor projections for electricity demand
 - Led to higher than necessary allowances for network upgrades (% of retail price 42-54% and rising)
<http://reneweconomy.com.au/consumers-got-burned-electricity-prices-started-networks-48000/> and <https://energyconsumersaustralia.worldsecuresystems.com/grants/807/AP807-accelerated-depreciation-paper-april2017.pdf>
- Early generous PV subsidies (stopped in 2012)
- Rapid fall in PV prices - PV now cheaper than retail price (when calculated on 10 year basis)
 - Highest % domestic PV installation in world
- Increase in gas prices leading to higher electricity prices
- Falling cost of storage (increasing use of PV + storage)

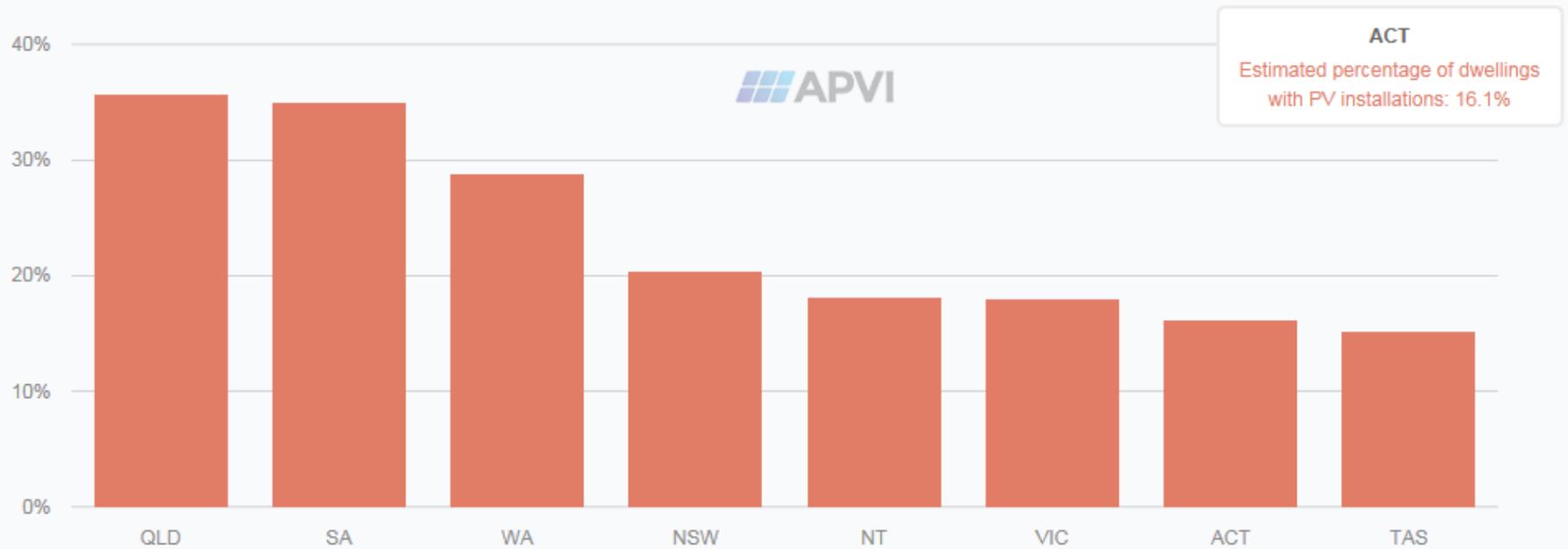
Some postcodes over 70%

<https://pv-map.apvi.org.au/historical#4/-26.67/134.12>



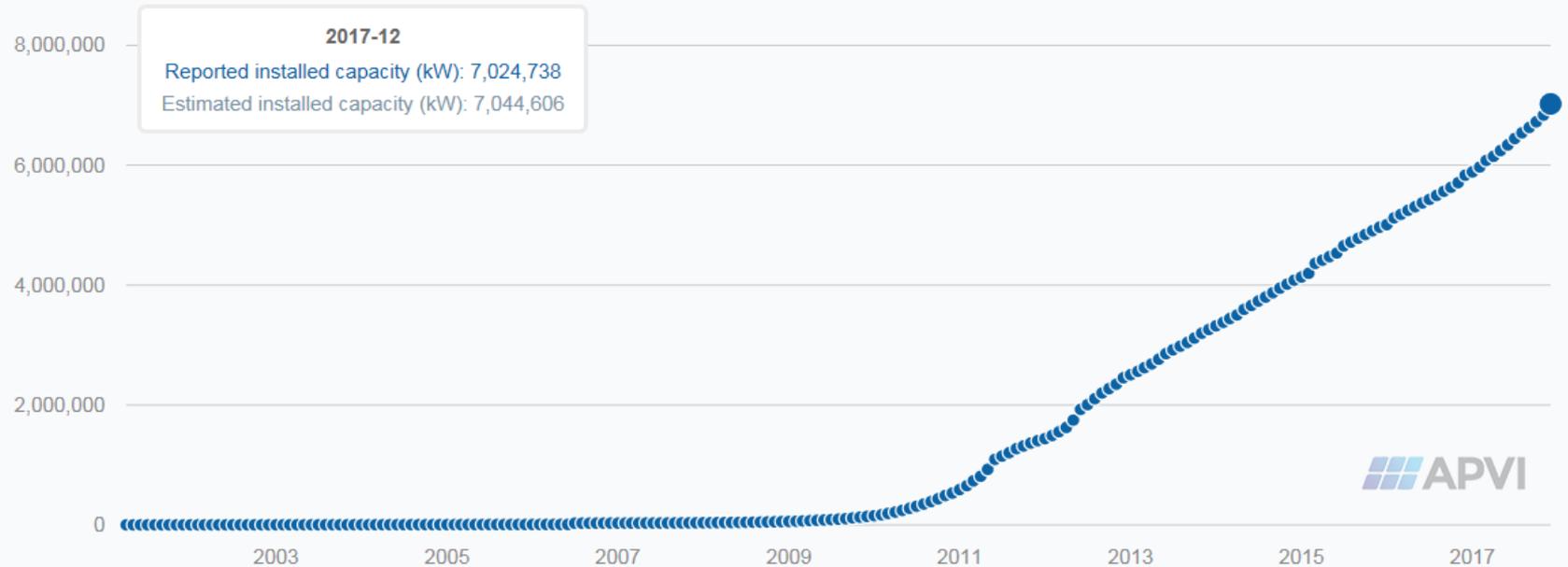
Compare the Status of States and Territories

Percentage of dwellings with a PV system by State/Territory



<http://pv-map.apvi.org.au/analyses> increase of PV – it happened quickly

Australian PV installations since April 2001: total capacity (kW)



Lessons to be learnt from Australia

- Original and continuing major problem was fall-out from poor demand and technology take-up projections
- Change can happen very quickly
- Economics now in favour of pv – and so pv customers have to be seen as part of the solution
- State governance complex and difficult to change
 - So vital governance became more adaptive
- Determination by AEMO to:
 - implement adaptive regulation, and
 - increase transparency of DER on system,
 - And include customer participation in network decisions
- may not have yet solved problem yet but moved to right course
- Now moved on to new market design

References

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- AER, 2018. New Reg [WWW Document]. URL <https://www.aer.gov.au/networks-pipelines/new-reg>
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- Ekistica, 2018. Lessons from the fringes: Australian fringe-of-grid projects in ARENA's portfolio. Connellan.
- <http://projects.exeter.ac.uk/igov/new-thinking-ales-of-the-unexpected/>
- <http://projects.exeter.ac.uk/igov/primer-energy-system-change-in-eastern-australia/>
- The COAG Energy Council 2019
<http://www.coagenergycouncil.gov.au/publications/post-2025-market-design-issues-paper-%20%80%93-september-2019>

Conclusions

- Energy system drivers, characteristics and economics are changing
- Evidence now available of cost effective system operation given current energy system drivers
- Essential that the values of an energy system is understand and can be captured by stakeholders providing that value (needs DERA)
- Needs new governance
- Coordination is vital
- BAU is more expensive, less sustainable and less efficient in SO terms