Total Environment Centre

Considering a NER 2.0

Conversation Tracker

30 April 2018

ThinkPlace

Table of contents

	Page
Introduction	3
Attendees	4
Welcome	5
Expectations	6
Warm-up exercise	8
Strategic Context	9
Visualising the future energy system	12
Defining rules	16
Approaches	25
Next steps	32

Introduction

About the project

The current National Electricity Rules are based on the historical model of a centralised energy system with one-way energy flows. Since their creation, this system has changed drastically and is expected to change even more, with increased distributed generation entering the market. The rules have been amended incrementally over time but there are increasing voices calling for a serious overhaul. This project is intended to answer the question, 'If the NER were to be designed from the ground up for a zero net carbon/high DER market, what might they look like?'

It does not assume the current NER are no longer fit for purpose, but assumes that the more the market strays from the old model, the more the current structure may struggle as it is incrementally reformed to accommodate a potentially radically different future system.

Insights may be drawn from other jurisdictions & sectors, but equally, there may be no progenitors for the rapid transformation of a service that has become essential to modern life (and which is likely to grow in importance).

Thus, the main value of the workshop may be less in proposing concrete reforms than in identifying different ways we might think about this issue; that is, in developing a shared language for how to address the issue in coming years.

Purpose of this document

The purpose of this document is to capture a synthesised summary of the conversations and activities that took place during the co-design workshop held on 30 April 2018.

Please note that this document does not capture the conversation verbatim, rather it presents a snapshot of key discussion points and activities.

Attendees

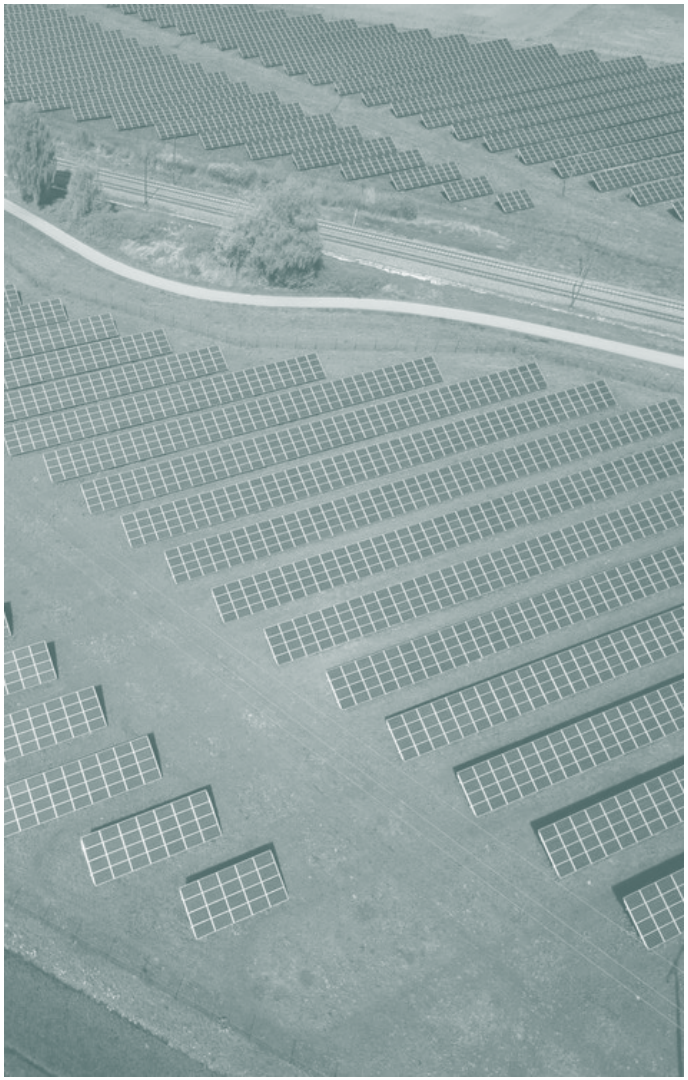
Industry	Academic	Consumer advocate
Mark Byrne, TEC	Iain Macgill, CEEM, UNSW	Lynne Gallagher, ECA
Natalie, Essential Energy	Chris Dunstan, ISF, UTS	Craig Memery, PIAC
Melanie Koerner, Cutler Merz	Penelope Crossley, Usyd	Adam Blakester, Starfish
Tony Pfeiffer, Enova Energy	Dylan McConnell, Melbourne Uni	Jo de Silva, SACOSS
Steve Blume, SEC	Anne Kallies, RMIT	Dean Lombard, ATA
Richard Owens, AEMC		Douglas McCloskey, NCOSS
ThinkPlace		
Danny De Schutter	Wai Ko	

Welcome

Mark Byrne, Total Environment Centre

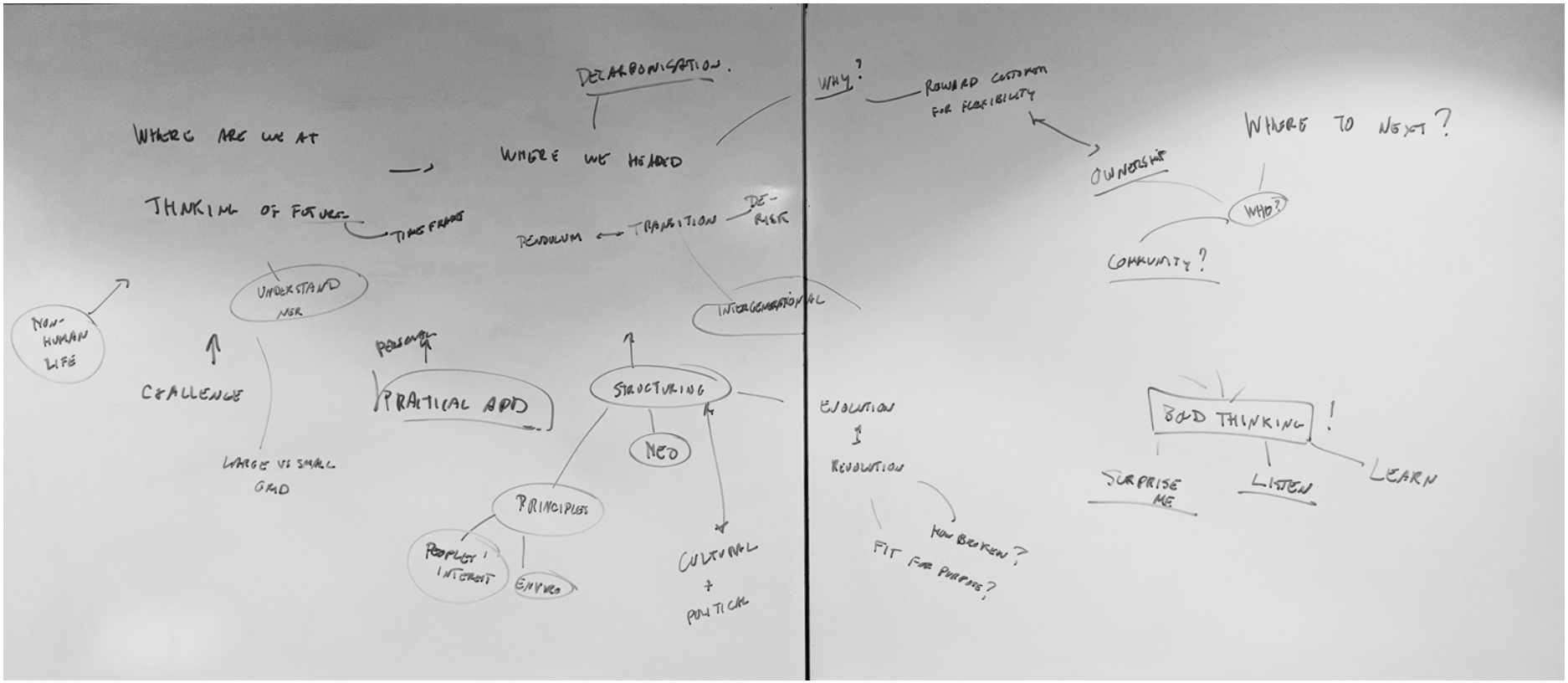
- Thanks everyone for coming for what should be a really interesting workshop today.
- We've got a diverse mix in the room – engineers, academics, regulators from different cities.
- The question we're trying to answer today is: how do we design a regulatory regime for an emerging energy system?
- We will operate by Chatham House rules and listen to the diverse voices in the room.
- Whether this workshop will lead into a broader piece of work is to be determined.

Focusing question: How do we design a regulatory regime for an emerging energy system?



Expectations

Participants were asked to share what expectations they have for themselves, others and the workshop today.



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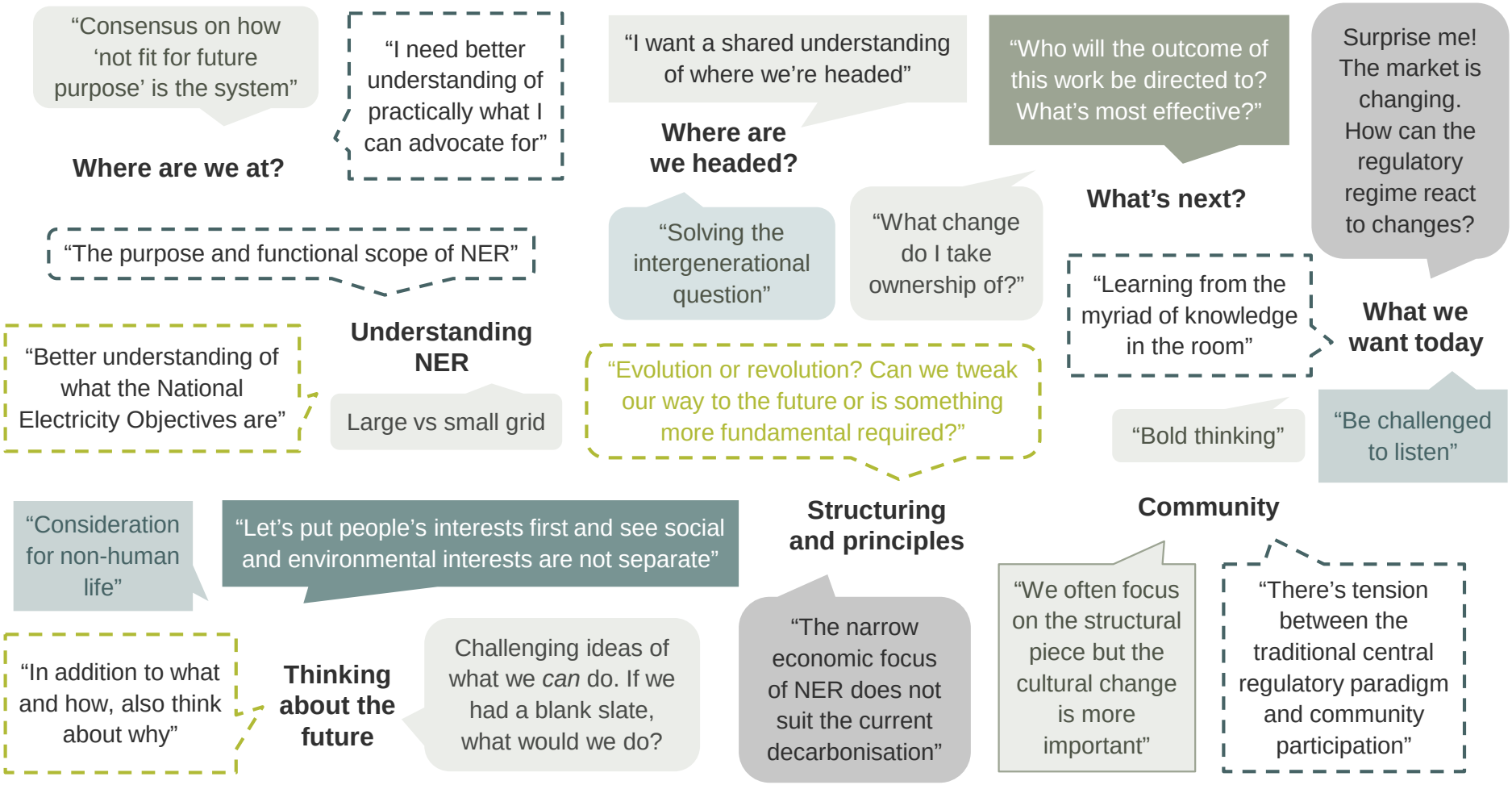


Warm-up exercise

In groups, participants were asked to brainstorm new traffic rules for a imagined future city of Melbourne where there are only electrical autonomous vehicles. They then shared with the rest of the room the rules they would establish.

Group 1

- What is the overall objective to guide everything? Governance and ethics
- How should vehicles be programmed if faced with the trolley problem? Would it be a decision based on age?
- A need to manage unforeseen consequences or opportunities such as changes to lifestyles

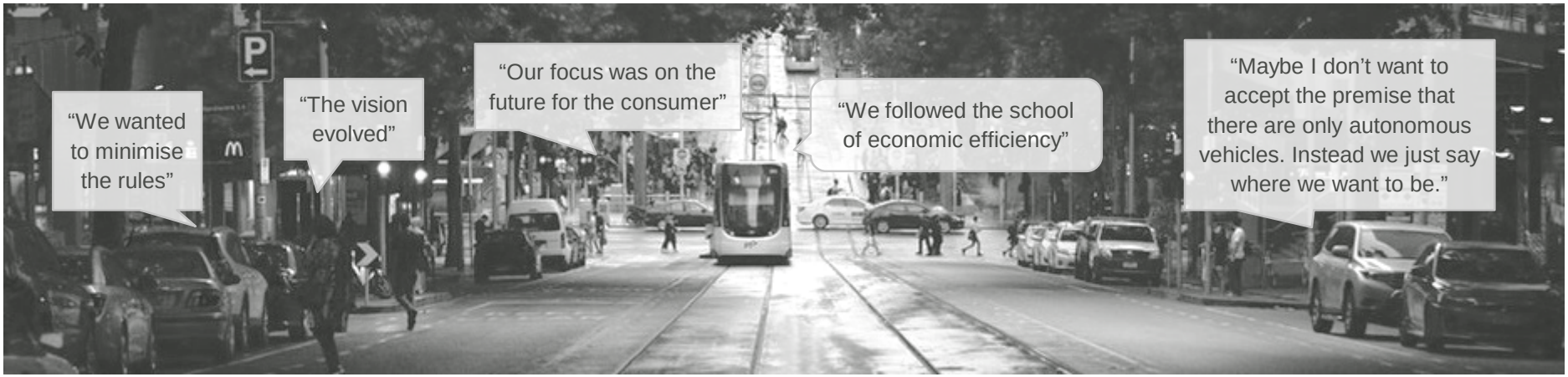
Group 2

- Order of priority: pedestrians then bikes and trams
- Autonomous vehicles would be banned from the city except for emergency vehicles, deliveries, and those with permits etc.
- Rules around charging, use and pay
- Drop and ride zones

Group 3

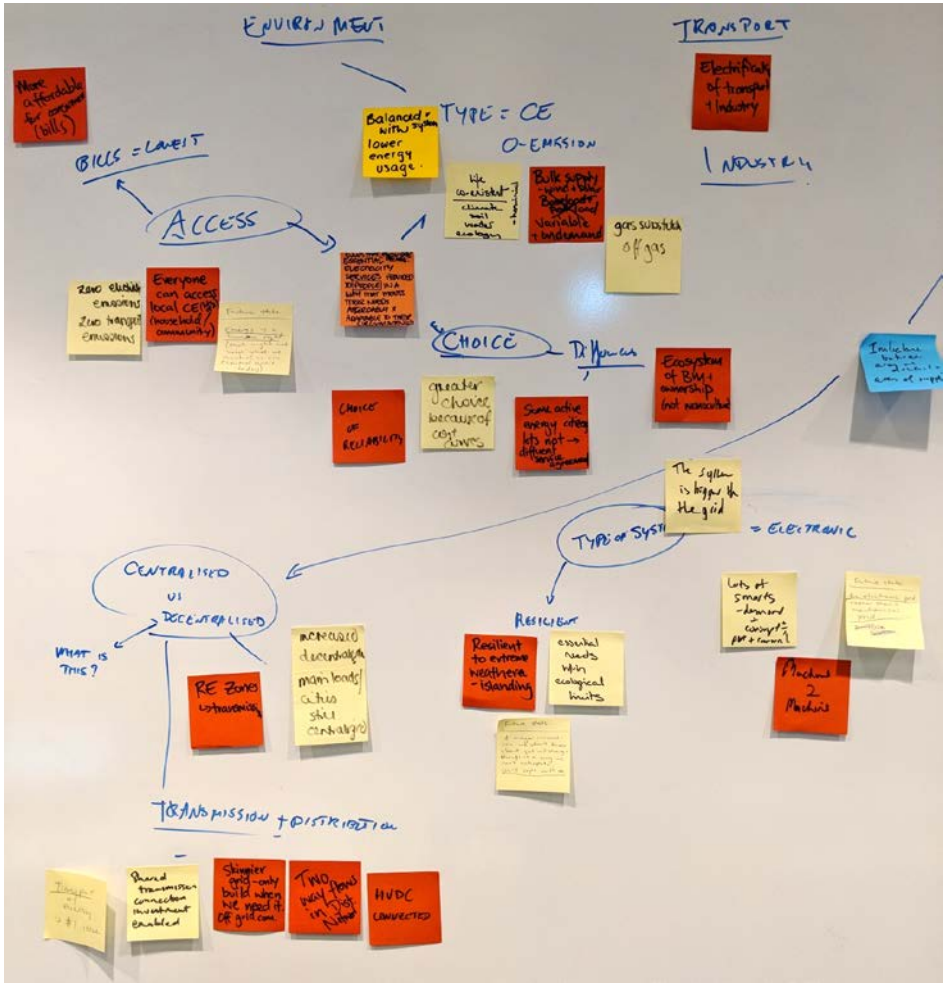
- Focus on safety and simplicity
- No trams in the city but they run around
- A conveyor-like, jump on jump off facility
- Probably no bicycles
- The rule for autonomous vehicles is whichever arrives first, goes first
- Slow, simple and not much choice

Participants then shared their thoughts on the process. How clear was the vision? What was the objective?



Strategic context

Participants were asked to describe what they thought were the main characteristics of future energy system that we would design the rules for. They discussed and defined the *desired* future state for a *decarbonised* energy system.



Strategic context

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Access

- Australia boasts the most affordable energy based on lowest cost for consumers
- Everyone has access to lots of clean energy through their household or community
- Energy is a human right. This may differ from what we consider as an essential service today
- Essential electricity services are provided to people in a way that meets their needs and affordability and are adaptable to their circumstances.

Choice

- People have choice of reliability
- People have greater choice because of cost curves
- More active energy citizens and different service agreements are required
- Ecosystem of ownership, not monoculture

Operation

- Demand follows supply and vice versa
- The system operates in a light, lean and agile way

Type of system

- Resilient system that can cope with extreme weather
- System that can accommodate any future innovation
- Essential needs are met within ecological limits
- Machine-to-machine
- Electronic
- There is an increased demand and consumption of smarts both privately and commercially

Clean energy

- There is a balanced system with lower energy usage
- Life co-existent
- Variable & on-demand solar and wind energy is bulk supplied
- System is off gas

Decentralised

- There is increased decentralisation. Main loads and cities are still centralised
- Renewable Energy Zones - transmissions

Strategic context

Participants were asked to describe what they thought were the main characteristics of future energy system that we would design the rules for. They discussed and defined the *desired* future state for a *decarbonised* energy system.

Markets

- Transactive markets
- Pricing matters may become a barrier
- There are many local markets with multiple market layers
- Open to all available means
- Wholesale market design pays for the services that are valued (e.g. energy capability and flexibility)
- Point-centric market arrangements instead of metric-centric
- Market vs nationalisation

Priced externalities

- Efficient use of resources but no barriers to new & emerging technology
- More responsive/flexible regulatory system

System scale

- Dynamics to consider for the future system: population, industry, infrastructure, energy culture, demand management, efficiency, city-centralised or distributed lifestyles

Uncertainties

- System is turbulent, disruptive and dynamic

People

- Better protection for consumers
- Optimised and individualised energy providers for people
- Level playing field
- Grid-scale generation and storage widely dispersed, distributed

Business risk

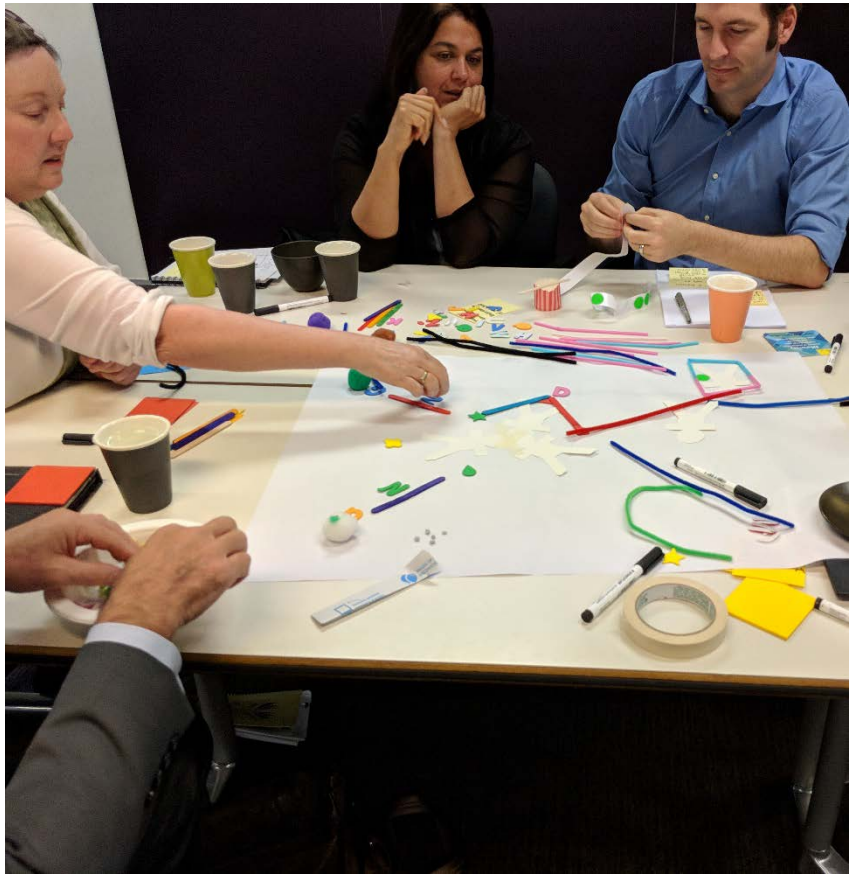
- Explicit cost transfers
- Energy businesses are entirely responsible for their investment decisions

Transmission

- Shared transmission connection investment enabled
- Skinnier grid-only built when we need it
- Two way flows in Distribution Neutral
- High Voltage Direct Current connected

Visualising the future energy system

Participants used props to create a prototype of the future energy system that defines the participants, systems, relationships and processes.



Visualising the future energy system

Participants used props to create a prototype of the future energy system that defines the participants, systems, relationships and processes.

- People are at the centre of everything
- System is robust to handle future innovations
- Wearable solar allow people to be fully integrated into the system
- Coal fire plant reappropriated to concentrated solar thermal
- System includes wind turbines, hydro, bio fuels and batteries distributed throughout
- Community owned wind turbine is contracted with the hydro and the system supports a lot of them
- Connected community in the centre and the green dots are sustainable, independent communities generating and consuming as they need and supported by the rules
- Different rules and governance – NER 2.0 – from today that values energy, flexibility and lower carbon emissions

Visualising the future energy system

Participants used props to create a prototype of the future energy system that defines the participants, systems, relationships and processes.

- Urban centre in the middle with lots of places that consume energy
- The network is thin but dense
- There are some microgrids, urban and rural, one completely disconnected with their own generation
- Large industrial space has its own generation and storage
- It's connected to the grid so it can take from or give to the grid as it also generates
- Unknown catastrophes could disrupt the physical grid like extreme weathering or cybersecurity
- Sun and wind are very important in this system
- There's a big wind farm that sends through HVDC to Indonesia
- The system needs to be controlled and there are some smarts in the system that keep it all in balance

Visualising the future energy system

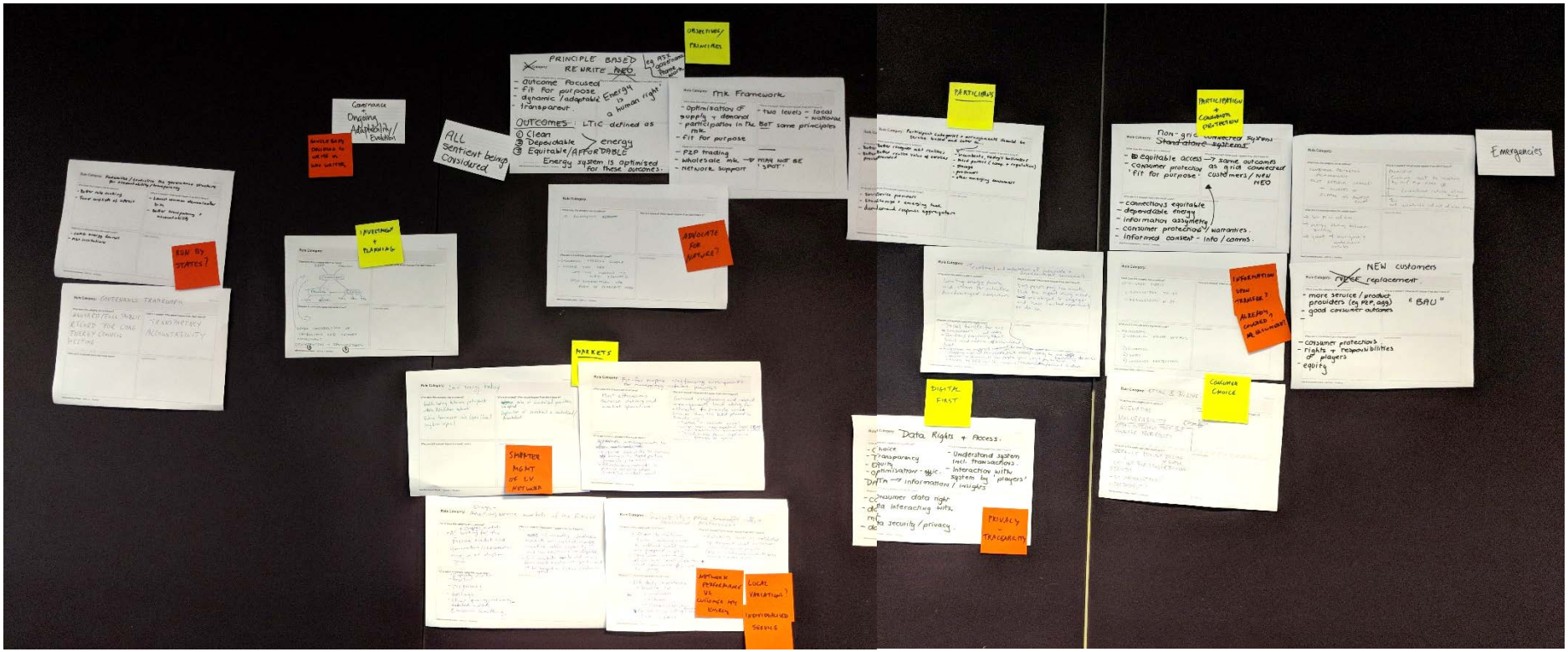
Participants used props to create a prototype of the future energy system that defines the participants, systems, relationships and processes.

- People are in the centre – it all starts with the consumer and spreads out
- Different shapes represent the array of service providers
- Some customers go directly to the market and don't have service providers at all
- System include community solar grid and centralised generators that are not technology specific
- There's one market that operates the entire system but there are many sub-markets that operate within the distributed system
- There are remote stand-alone customers who are not connected at all
- There are also micro-grids of a group of disconnected customers
- There's a HVDC line to Western Australia

Defining rules

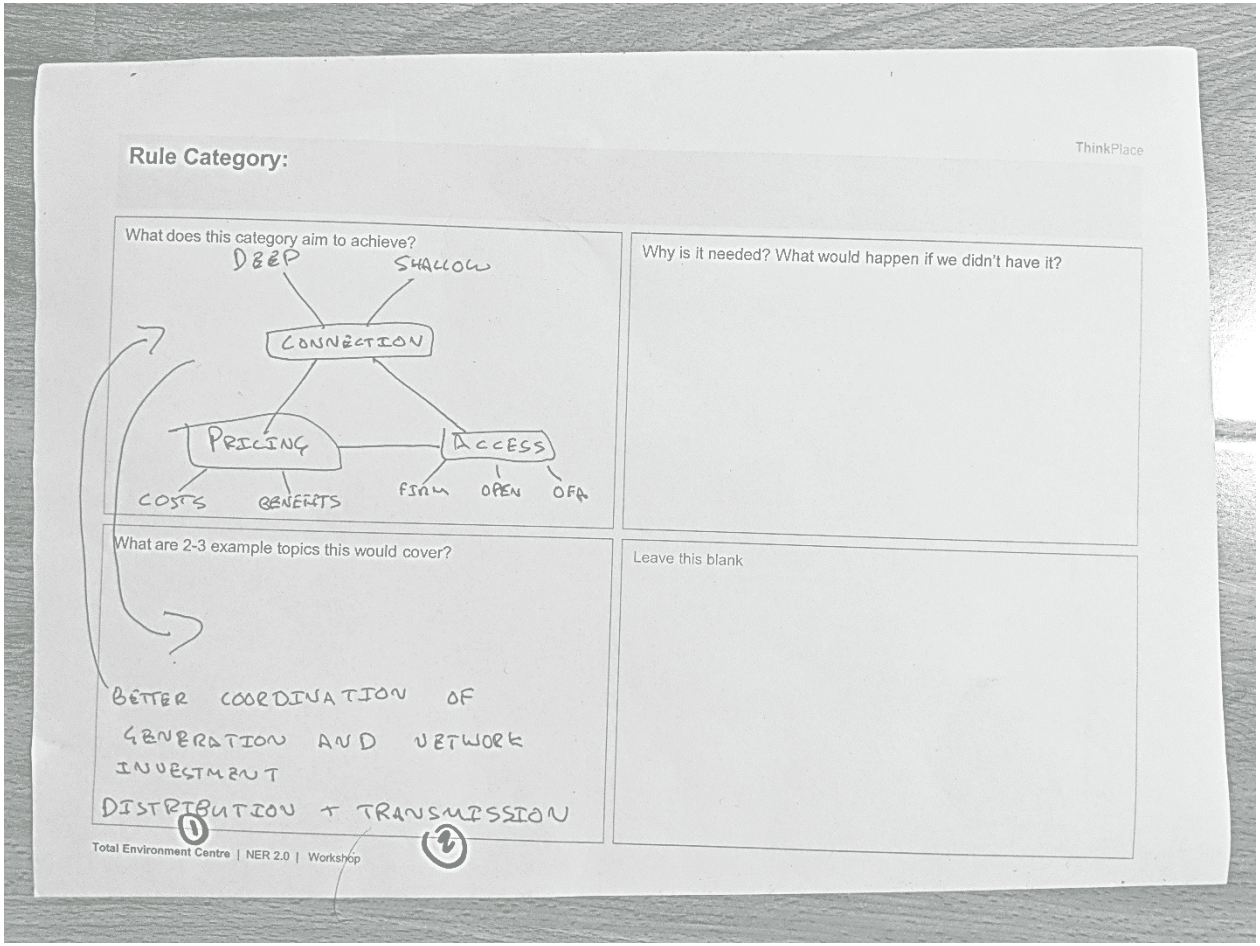
Participants discussed what categories of rules would need to be introduced to make the future system work and why they're needed.

- Investment and planning
- Objectives/principles
- Markets
- Participants
- Digital first
- Consumer choice
- Participation and Consumer protection
- Emergencies
- Governance and ongoing adaptability/evolution



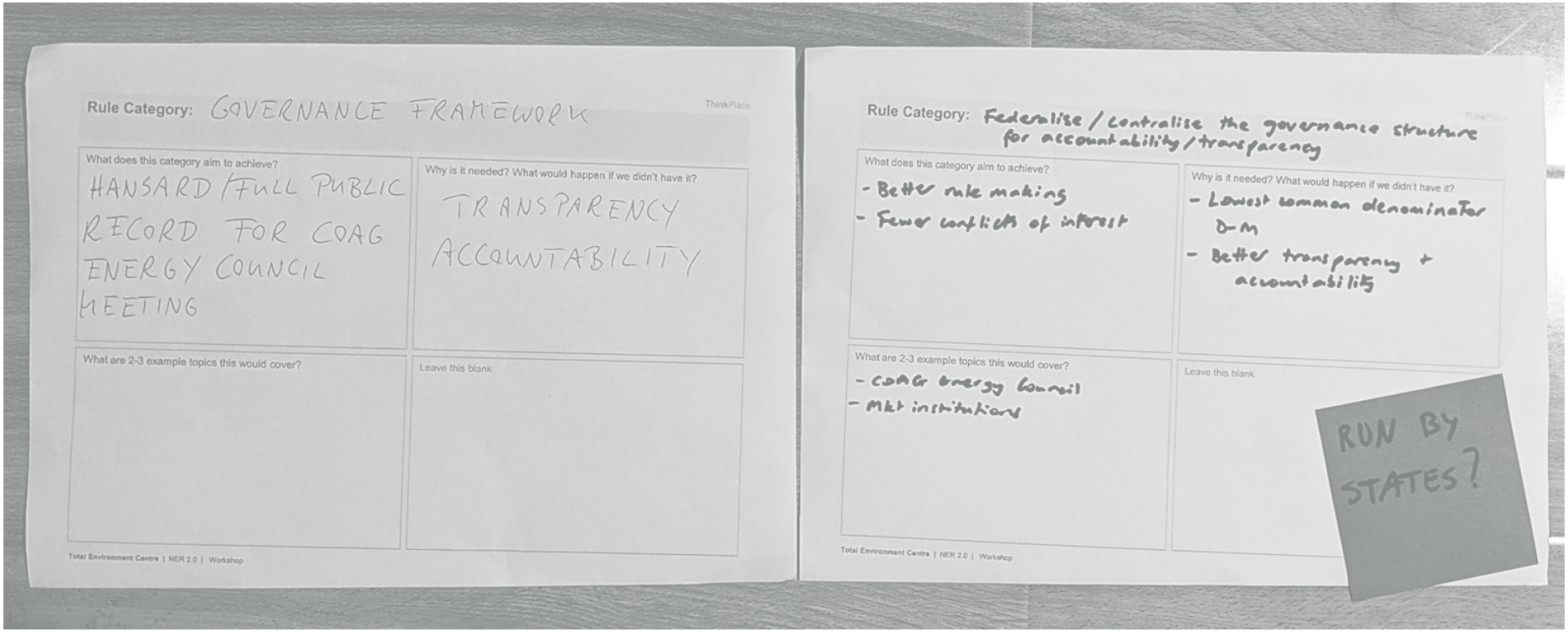
Defining rules

Investment and planning



Defining rules

Governance and ongoing adaptability/evolution

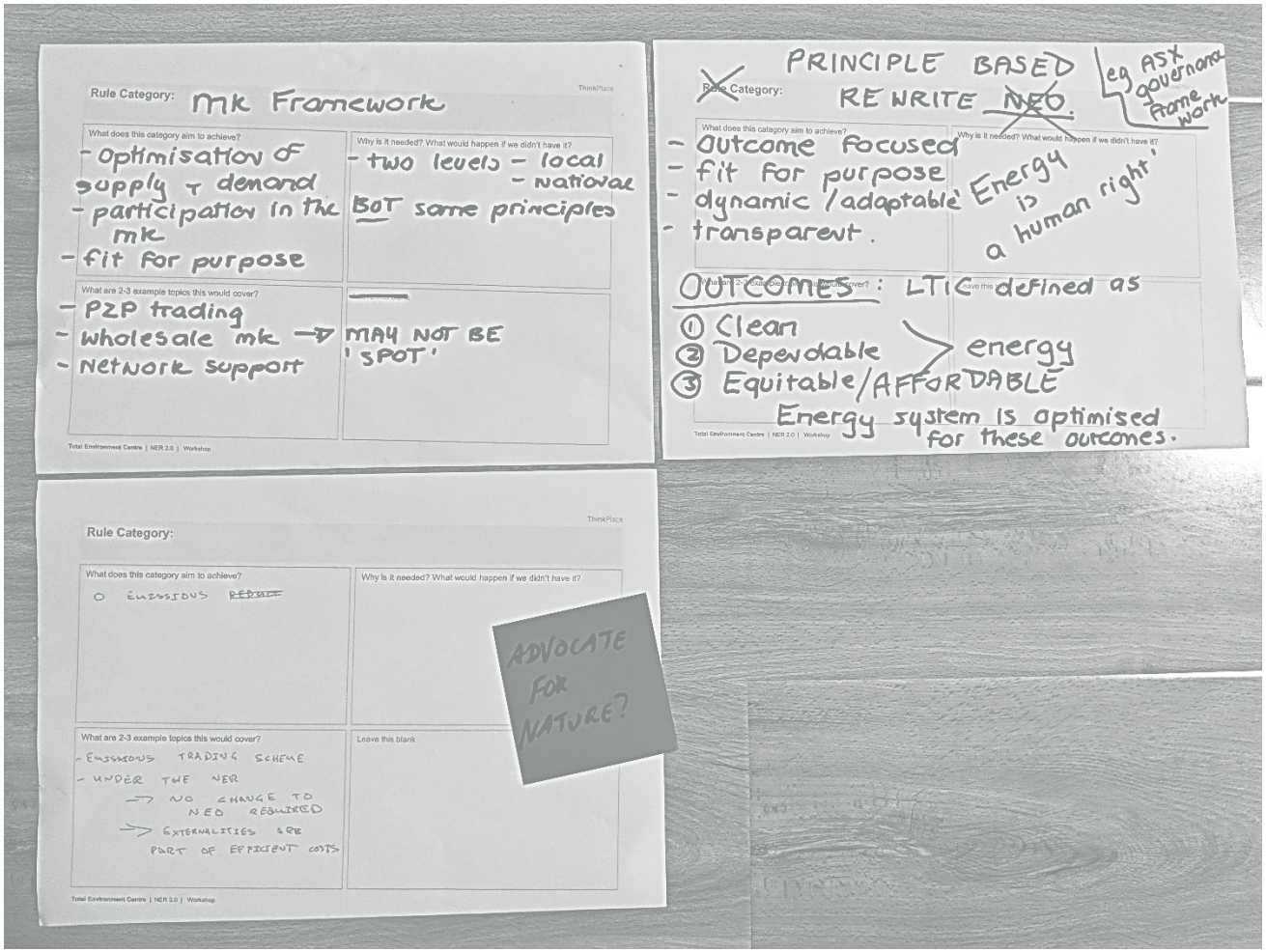


Questions

- Could it be run by states?

Defining rules

Objectives/principles

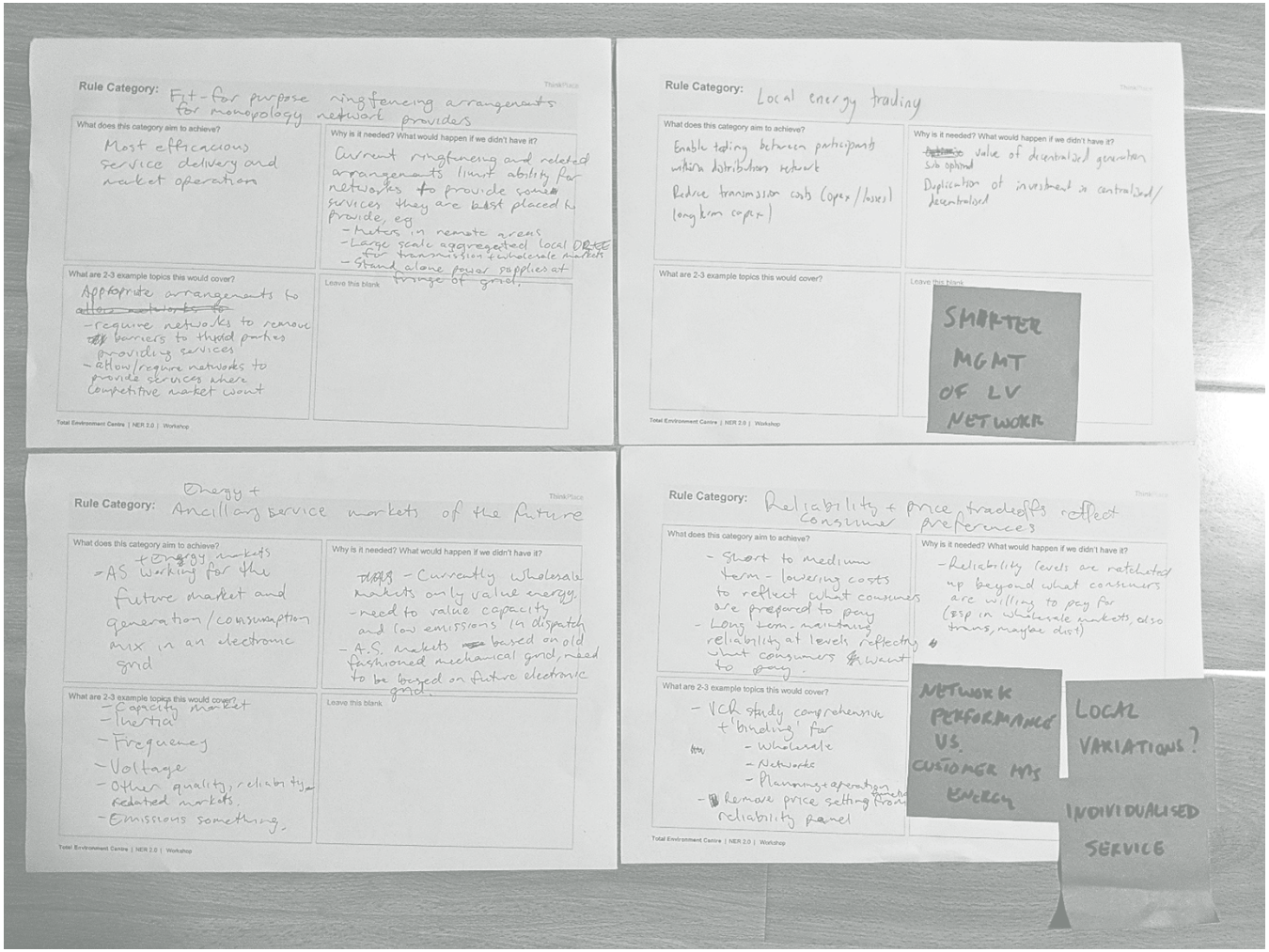


Questions

- Is there consideration for non-human life and advocacy for nature?

Defining rules

Markets

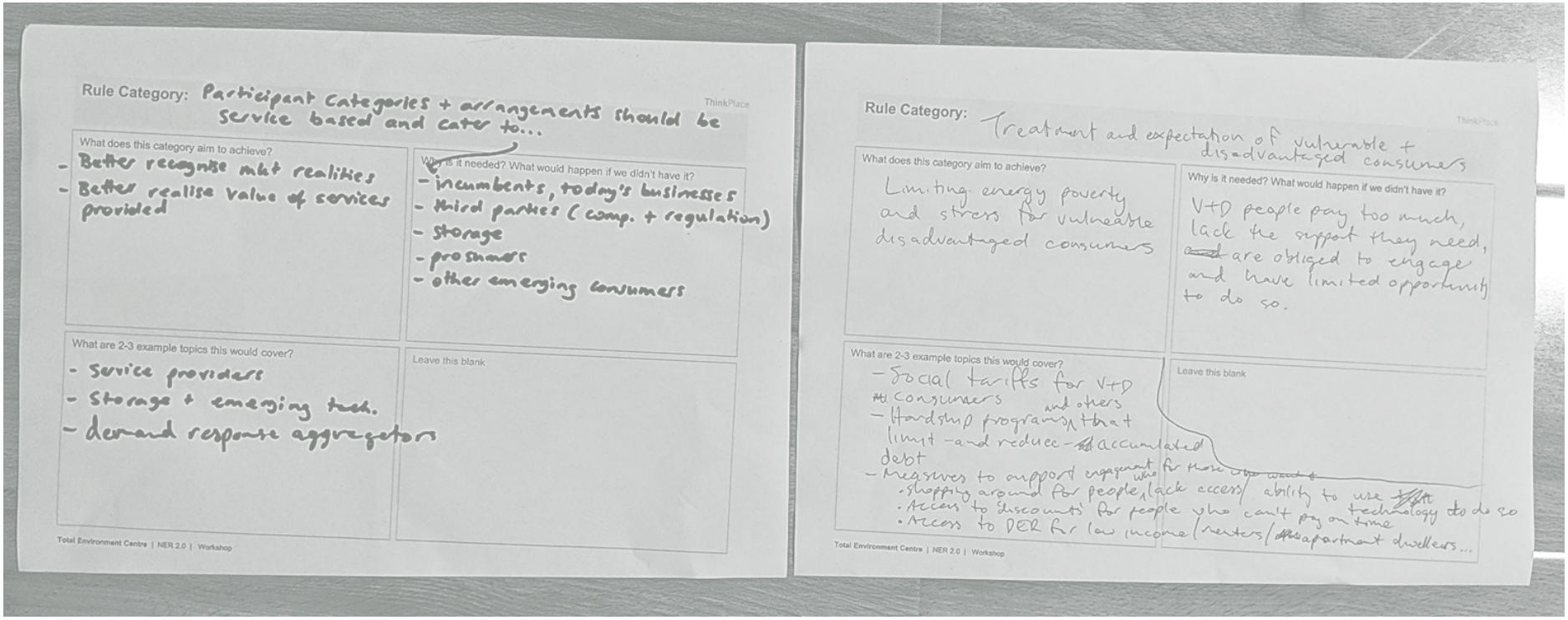


Questions

- Is there consideration for non-human life and advocacy for nature?
- How might local variations and individualised services be considered in defining the rules for the future system?

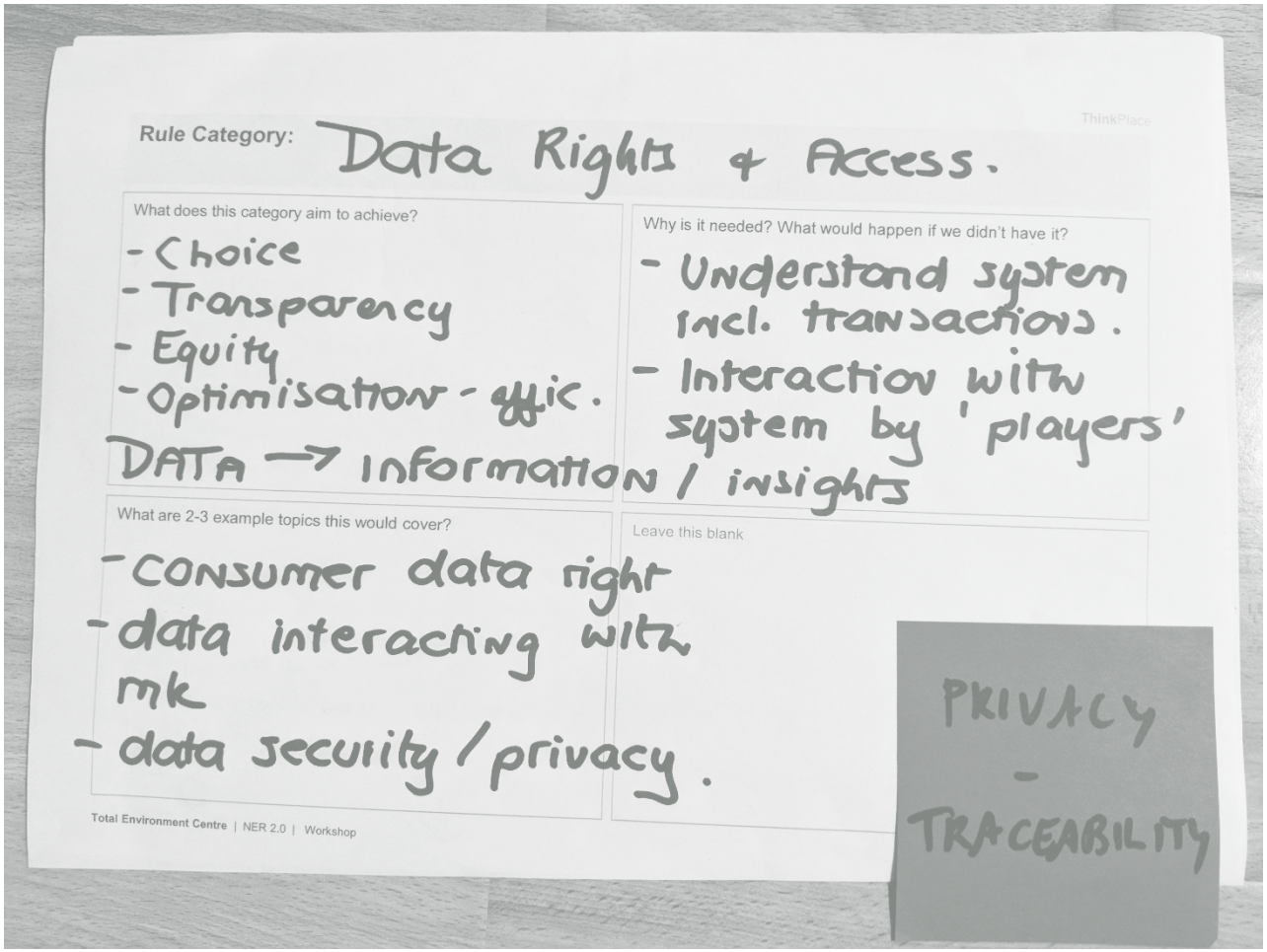
Defining rules

Participants



Defining rules

Digital first

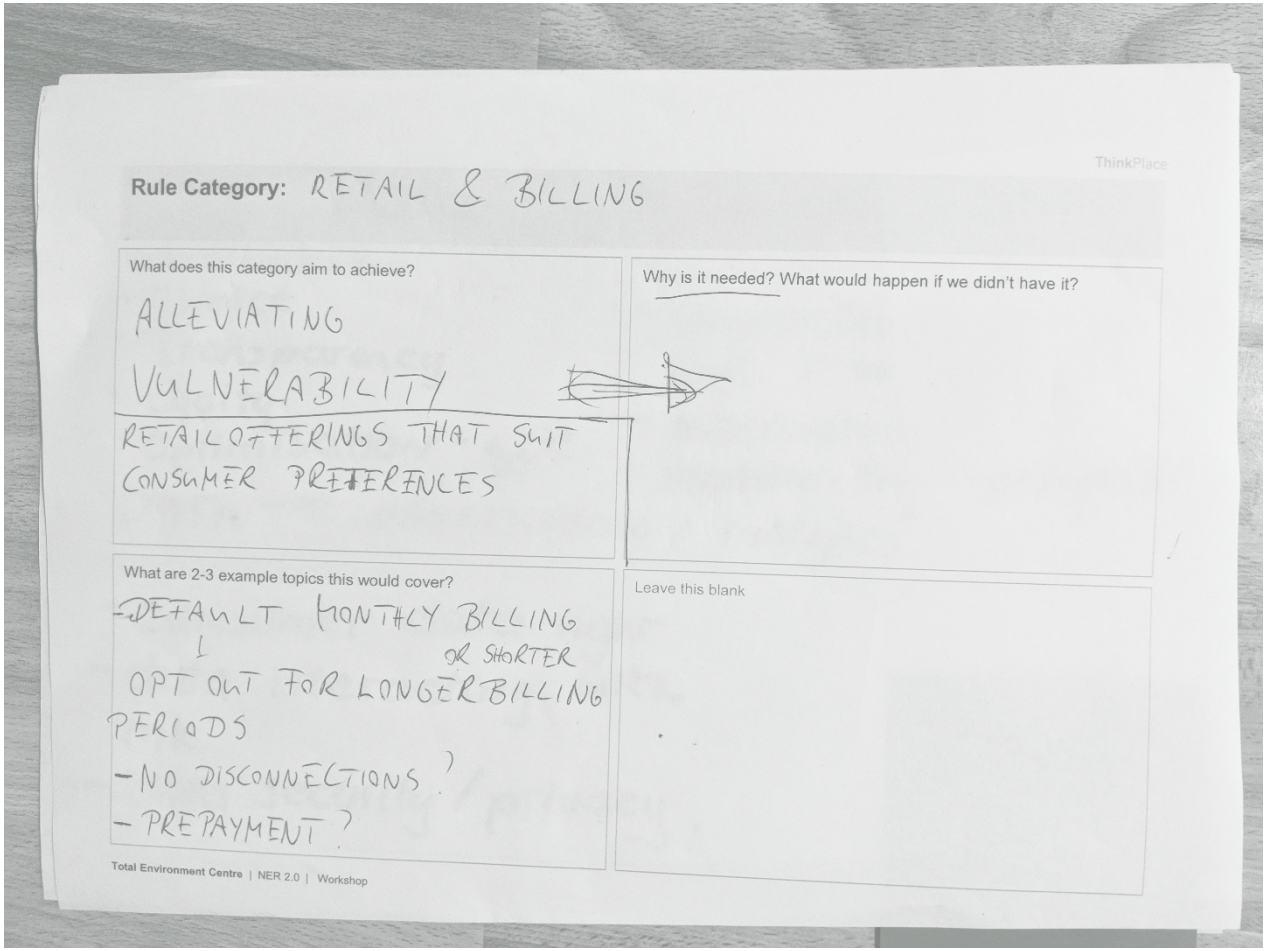


Questions

- Does this include privacy and traceability?

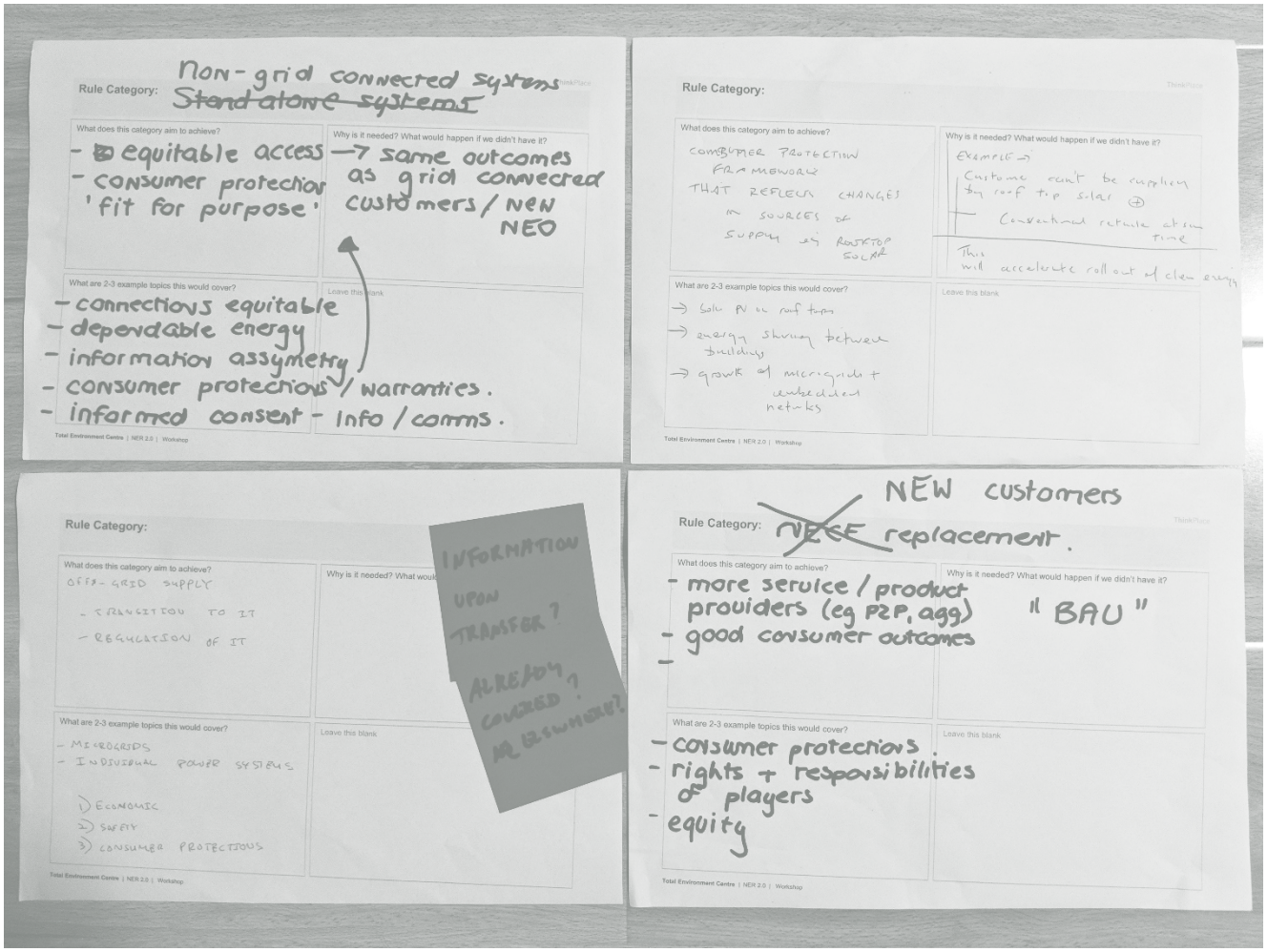
Defining rules

Consumer choice



Defining rules

Participation and Consumer protection

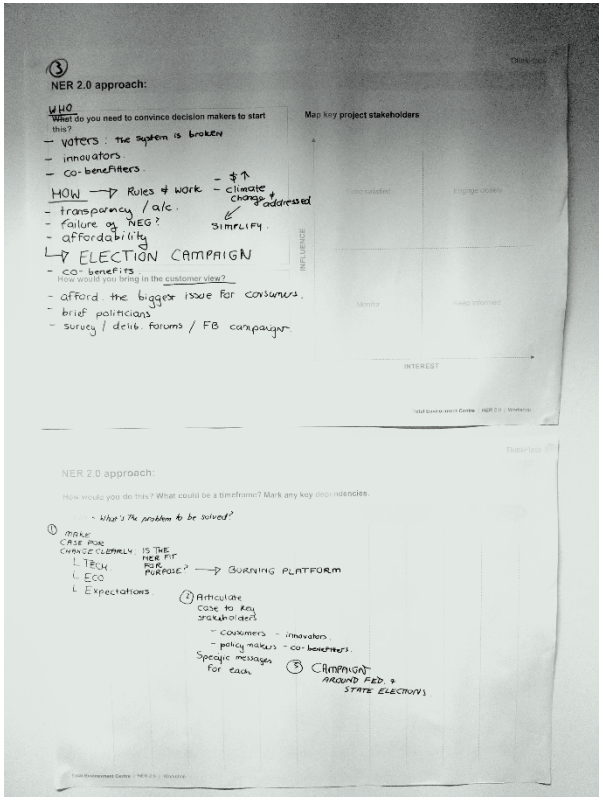


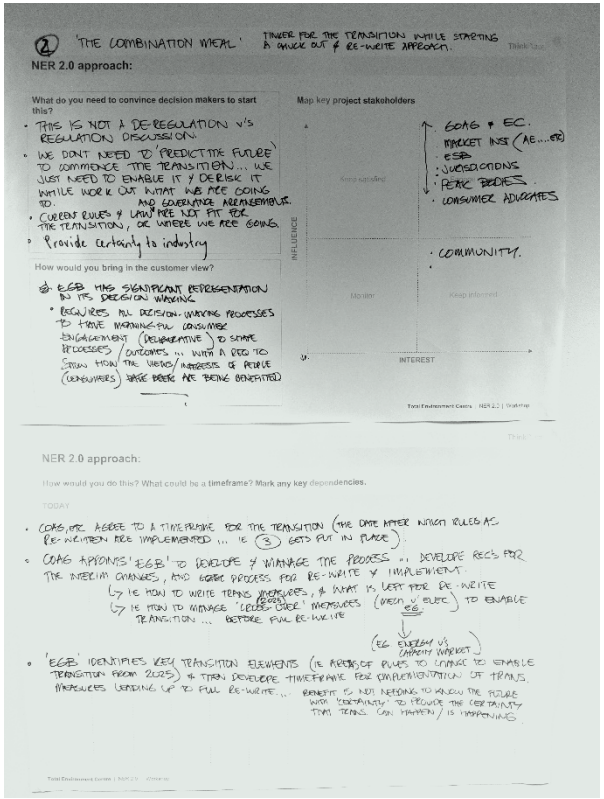
Questions

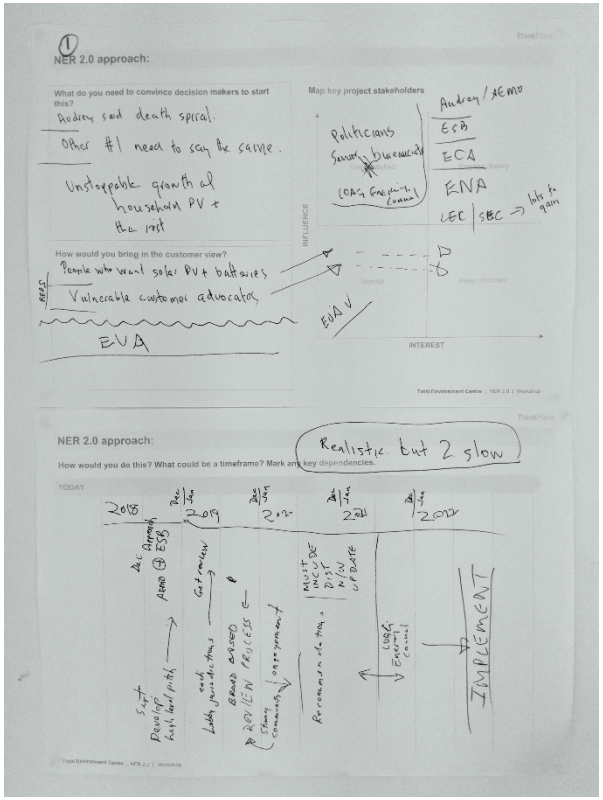
- Are rules on off-grid supply already covered elsewhere?

Approaches

Participants discussed what approaches they could take if they were to create NER 2.0. In groups, they then elaborated on how they might go about it, possible timelines, processes and involvement.







Approach 1: Chapter review

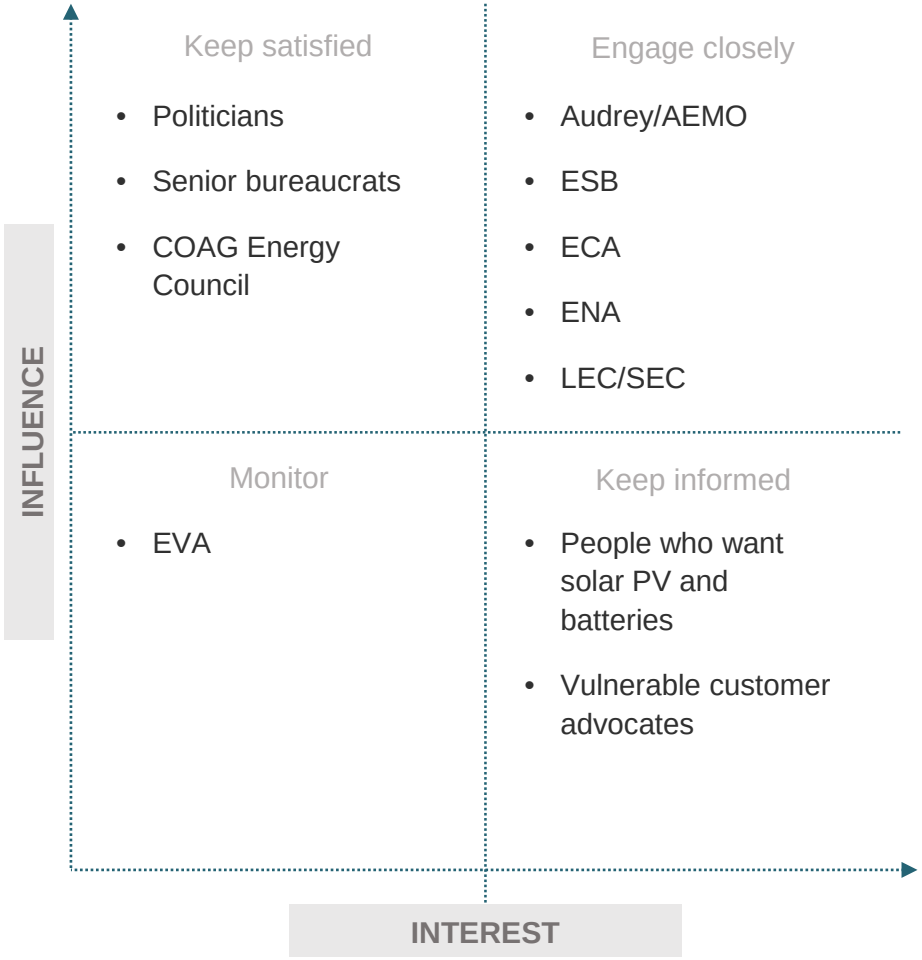
What do you need to convince decision makers to start this?

- Avoid the “death spiral”
- The unstoppable growth of household solar PV and the rest PV – it’s not something you can stop but you have to embrace
- Politicians can be seen to solve the clean energy issue in Australia at no cost

How would you bring in the customer view?

- People who want solar PV and batteries
- Vulnerable customer advocates
- EVA

Map key project stakeholders



Approach 1: Chapter review

2018	2019	2020	2021	2022
September Develop high level 2-4 pages evidence-based pitch	Lobby each jurisdiction and get review			
	Strong community engagement		COGG Energy Council	Implementation will start in 2022 – it'll buy time for people to adjust
December Approach AEMO and ESB	Broad based review process	Recommendations – must include distribution network update		

Approach 3: ‘The burning platform’

Who do you need to convince to start this?

- Voters – that the system is broken in order to convince ministers
- Innovators
- Co-beneficiaries

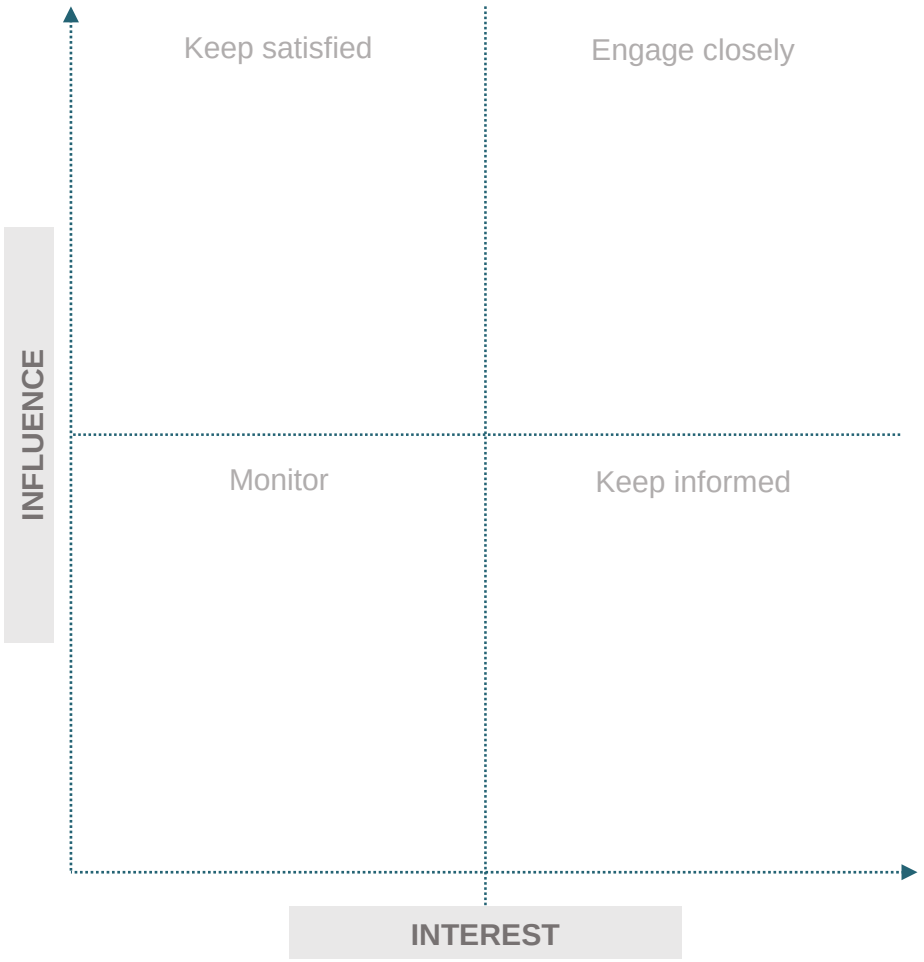
How would you convince them?

- Election campaign
- Rules don’t work, climate change isn’t addressed
- Transparency and accountability
- Affordability

How would you bring in the customer view?

- Affordability is the biggest issue for consumers
- We need to brief politicians
- Surveys, deliberative forums, Facebook campaigns
- Bring the burning platform to the fore

Map key project stakeholders



Approach 3: ‘The burning platform’

TODAY: What’s the problem to be solved?

1. Make case for change (in technology, economics, expectations) clearly: Is the NER fit for purpose?
   Create a burning platform
2. Articulate case to key stakeholders: consumers, innovators, policy makers, co-beneficiaries with a specific message for each
3. Campaign around federal and state elections

Approach 4: ‘The combo meal’

What do you need to convince decision makers to start this?

- This is not a de-regulation versus regulation discussion
- We don’t need to predict the future to commence the transition. We just need to enable the transition and de-risk it from the perspectives of investors to let them know of the transition
- Current rules and law and governing arrangements are not fit for the transition, or where we are going
- Provide certainty to industry

How would you bring in the customer view?

- EGB has significant representation in its decision making
- Requires all decision-making processes to have meaningful consumer engagement (deliberative) to shape processes/outcomes with a requirement to show how the views and interests of people (consumers) are being benefited.

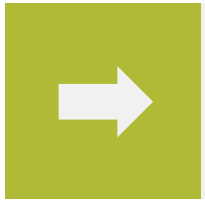
Map key project stakeholders

Approach 4: ‘The combo meal’

1. COAG etc. agree to a timeframe for the transition (the date after which rules as re-written are implemented i.e. when approach #3 gets put into place).
2. COAG appoints an Energy Governance Board (EGB) to develop and manage the process; develop recommendations for the interim changes; and develop process for re-writing and implementation
    - How to write transition measures and what is left for re-write?
    - How to manage ‘cross-over’ measures in 2025 (e.g. mechanical versus electronic; energy versus capacity market) to enable transition before full re-write?
3. ‘EGB’ identifies key transition elements (i.e. areas of rules to change to enable transition from 2025) and then develop timeframe for implementation of transition measures leading up to full re-write. Benefit is not needing to know the future with ‘certainty’ to provide the certainty that transition can happen or is happening.

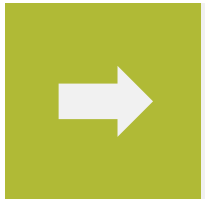
Next steps

At the close, participants were asked to think about who's in charge and what are the next steps as part of the process of today's workshop.



ARENA recently announced it will run a regulatory sandbox/sandpit for innovative ideas and today's workshop fits very nicely with that. A practical near-term step is to **submit the outputs of today to ARENA** and as a group, **say to ARENA that we're interested to participate in the A-Lab** and keep thinking about and finessing these ideas

There is industry interest in changing governance. If we are seeking to make changes to governance, we need to **form a coalition of people with a message**. Someone need to go and **think about what changes need to be made** instead of having another governance review



Elections are coming up and present an unique opportunity to **influence policy with campaigns**. We **need support from someone who's not just seen as 'green**' but holds commercial interest.

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