Session IX

Pre-reading for 26 May 2022 session

Shared 24 May 2022

Workplan on a page (updated) – progress at 26 May 2022 and next steps toward finalising the Action Plan

		Before times	May	June					July				August				
Stage	**Topic**		23/05	30/05	06/06	13/06	20/06	27/06	04/07	11/07	18/07	25/07	01/08	08/08	15/08	22/08	29/08
Discover	**DER owner perspective**		Review input														
	Sector perspective		Review input														
Define	**Services & technical requirements** – What can flexibility be used for?		Review input	Workshops	Workshops	Workshops	**FF11 on 23/06** Finalise output										
Develop	**Commercial arrangements**		**FF 9 on 26/05** Comms & connectivity Terms of trade		**FF10 on 09/06** Valuing & rewarding flexibility Connection requirements		**FF11 on 23/06** Product templates	Webinar & workshops to get feedback on templates	Workshops	Workshops	**FF13 on 21/07** Review input Finalise output						
Develop	**Identify practical steps and actions** • flag barriers • specify research questions								**FF12 on 07/07** Barriers Next steps		FF13 on 21/07 Draft Action Plan Scope projects		FF14 Get feedback on Draft Action Plan	Workshops	FF15 Finalise Action Plan & Delivery Programme		FF16 Launch
Deliver	**Begin delivery** • Initiate projects • Assess / respond to barriers • Support iteration of Action Plan																

We are here...

These timeframes and deliverables are presented on a best endeavours basis. The main uncertainty relates to the time required to seek and address feedback

Workplan on a page (updated) – included in proposal to MBIE

		Before times	May	June					July				August				
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Develop	**Identify practical steps and actions** • flag barriers • specify research questions				**FF10** Scope Action Plan				**FF12 on 07/07** Draft Action Plan		FF13 on 21/07 Barriers & next steps, eg, scoping projects		FF14 Workshops Get feedback on Draft Action Plan		FF15 Finalise Action Plan & Delivery Programme		FF16 Launch
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Session overview – topics and decisions

Five items

1. Task 3 – connectivity and communication requirements
    a) For discussion. Terry, Matt, Quintin & Mike will lead a discussion on the minimum connectivity and communication requirements for identifying a condition, sending & receiving instructions, measurement and validation
2. Topics A & B – review & address feedback
    a) Decide response to feedback and next steps to finalise topics A & B
    b) Decide options to obtain more stakeholder input
3. Task 2 – minimum contracting arrangements
    a) Review options for minimum contracting arrangements
4. Insights from Piclo
    a) For discussion. Insights from Piclo and implications for work plan
5. Workplan, engagement and communications
    a) Update on progress with tasks 1, 2 and 4
6. Administration – governance, budget and funding
    a) MBIE discussion and proposal
    b) Budget update

Task 3 – connectivity and communication requirements

Terry, Matt, Quintin and Mike have been thinking about the minimum connectivity and communication requirements for identifying a condition, sending & receiving instructions, measurement and validation

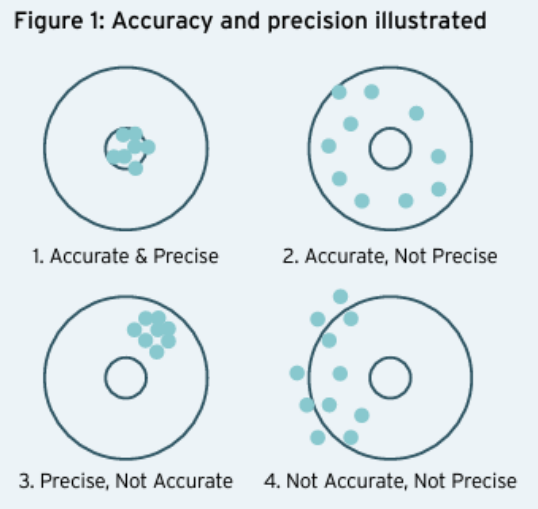
- Communications & dispatching flexibility (simply)
- Measurement and verification

Communications – dispatching flexibility (simply)

- Common dispatching terminology and structure
- Pre-procurement, Procurement, Pre-operation, operation
- Staged process for “best practice” communication, response & reporting
  - Manual (email, text, phone call) to activate predefined flexibility services
  - Integration to in-house systems
  - Interoperable open standards
- Core information (example)
  - Flexibility Event identifier
  - Start time, duration, ramp-up, ramp down
  - Type of instruction (based on Event type) - Load up/down (direct/relative), Simple DREDS type (0,1,2,3), Price at specific time intervals (trading periods) – Retailer providing flexibility services
  - Location - GXP, substation, feeder, ICP, geographic location (all preset as part of “pre-procurement”
  - Target resources - Flexibility service provider (or groups of), individual
  - Response
  - Reporting (measurement & validation)
- All applicable to Shift, Shed, Shimmy, Shape in the 5 product categories

Task 3 – Measurement and Verification

Some flexibility services cannot be measured directly and must be estimated by comparing actual consumption with a prediction of what would have occurred if the request for flex had not been made.



Starting concepts:

- Shed/Shift – Shorter Term Energy Related Products
  - Baseline built from a set of days before the event and compared to the day of the event (Transpower DR RFP Experience: Symmetric Additive Adjustment (SAA) baseline [PJM])
- Shape – Longer term energy or capacity products
  - Building baseline looking from year to year looking at coincident peak loading
- Shimmy – Short fluctuation products or ancillary services
  - Baseline is often better approximated by looking at the difference between the consumption level immediately before and immediately after the activation of the resources.

Still to go: Specify underlying data needs, identify preferred methodologies for specific need cases

Learning from others (Resources): DNV-GL Assessment of baseline methodologies in relation to UK services & EU study of Baselines & ARENA

Topics A & B – review and address feedback

Feedback on topics A & B has been received from 6 people/organisations by 23-05-22

- enel x
- Manawa Energy
- Independent Electricity Generators Association
- 3 individuals

Feedback has been collated by theme separately. See collated feedback document shared with the pre-reading

Suggested responses are provided on the following pages for feedback relating to **services and products** and **planning and operational information** – these are the immediate priority

- defining services
- planning and operational information
- use cases / desired outcome

Remaining feedback will be addressed through current work and when finalising outputs

Feedback was provided across these themes:

- Goal and purpose
- Expected role of DER
- **Defining services and products**
- **Planning and operational criteria**
- Flexibility resource participation
- Terms of trade
- Valuing and rewarding flexibility
- Coordination – Tx, Dx and markets
- Investment information
- Connection requirements
- Terminology
- Related considerations

Topics A & B – defining services

They said…	We should…
the technical requirements to deliver these (Table 1) appears to focus on the short term when operational information activation / deactivation speeds are in the seconds to hours…DER also provides a service which is the "opportunity to avoid transmission, distribution and generation costs by using these resources to shape the daily load curve such as reducing daily peaks"	• clarify the descriptions to reflect profile shaping is equivalent to the Shape form of response • confirm the services which can be supplied using the Shape form of response (currently flagged for the price optimisation and predictive congestion management services)
Portfolio optimisation: • Managing spot prices to reduce energy costs should also include the risk aspect. Risk reduction products could be a huge part of what DER brings (i.e. batteries to cover periods of peak prices). • Optimising network charges should really be minimising network costs for end users; the trigger is probably right (subject to charging basis), but it's more about if the network charges a very high fixed fee, then how can that fixed fee be reduced, and the solution to a high fixed fee will be quite different to a charge that is based on c/kWh • Managing fuel stocks …not sure what this actually means	• clarify the need & outcome for the portfolio/price optimisation service includes price risk management • clarify optimising network charges refers to price response. Optimising connection costs is covered under Predictive congestion management and Network planning
Corrective congestion management and Predictive congestion management • I think these sections should be called Transmission and distribution capacity adequacy – corrective and Transmission and distribution capacity adequacy – predictive respectively, to keep them using consistent language with Generation capacity adequacy • Both may require KVAR as well as it's not just thermal limits that cause congestion	• clarify terminology. At a minimum, targeted workshops are required to test terminology and meaning • clarify interaction between congestion services and balancing services
Generation capacity adequacy: • network reliability and network resilience both may need KVAR support in some situations; • network reliability and network resilience are also basically distribution level reserves? That would make sense, otherwise it doesn't really have a connection to generation capacity adequacy	• clarify terminology. At a minimum, targeted workshops are required to test terminology and meaning, including relevance of system-level meaning of reliability, resilience and security
Balancing. Balancing should only mean second by second flexibility to maintain certain parameters within predefined limits which are well justified • Reserves and elements of voltage management should be included in the capacity adequacy space • FK and elements of voltage management that relate to real time stability should be the only things that fall into the balancing bucket. Black start may require an additional category that covers "response when the lights go out" or "response when capacity adequacy fails"	• clarify terminology. At a minimum, targeted workshops are required to test terminology and meaning

Topics A & B – planning & operational information

They said…	We should…
The number of events (expected or maximum) is integral to some customers participating.	For discussion. Where does this information come from?
Other planning information required is how the events will be dispatched (what communication/technology platforms will be used, if any) and what baselines will be used to determine the counterfactual.	Ensure this information is defined under task 3
…an additional column along the lines of “Regularity of need/Does it suit market-based solution or ad hoc contracting?” in the sense it would be good to have a feel for where we might look at market platforms (managing spot prices or congestion management) vs ad hoc contracts (coverage for outages). Or could be framed from the point of view of payments: retainer type model (paid for always being available) vs. event payments only	Include this information in the product template output
Could you please explain the difference between peak shifting, gen adjustments and demand adjustments? Aren't the latter two just ways to achieve peak shifting?	Remove peak shifting as a type of response. It remains a form of response, ie, Shift

Topics A & B – use cases / desired outcomes

The responses to poll # 2 on other reasons for potentially using flexibility appear to align with the five categories. Is there an outcome listed here not covered under the five categories?

Congestion management – corrective & predictive

- Transmission / Network deferral
- Long-term demand reduction (e.g. seasonal)
- Short term fix before building something more stable
- defer investment
- More efficient usage of dry year firming resource
- reducing loading during equipment outages
- Ability to make constrained (managed) connection offers, with flexibility used to support when constraint binds?
- Construction risk management
- sharing infrastructure (e.g. batteries)
- Climate impacts will stress existing infrastructure. Dynamic adaptive planning potential in flexibility

Generation adequacy

- Back up power for consumers (can't remember if that was on there)

Balancing

- quality of supply in constrained areas

Customer propositions / price optimisation

- Community based solutions
- Unlocking decarb opportunities (I.e. transition of ff process heat with flex agreements)
- enabling new business models that deliver consumer benefit eg. sector coupling and bundling of electricity and end consumer appliances (eg "heat as a service")
- Community led solutions and participation
- Enables Peer to Peer trading.
- Mitigate climate change related risks

Other

- Improved mapping of energy allocation
- Land sparing
- A better question is: what is the nature and scale of the different flexibility uses?

More input is needed to finalise topics A & B

The feedback received does not provide a robust basis for finalising topics A & B

- 1 member has provided feedback – getting the input of member organisations, beyond your individual contributions, will support building broad buy-in
- the group cannot be confident the product and technical information in tables 1 and 3 is appropriate or useful

Targeted workshops are the easiest and effective way to get more input – these don't need to be a big deal. Just invite a few peers to a discussion

- Fiona and John have offered to lead a DER owner / community workshop
- a distributor workshop (probably several) is needed

Task 2 – common contracting arrangements - progress

Common and standard contracting arrangements, product descriptions and procurement processes are required to:

- make it easier for flexibility providers to supply flexibility, thereby enhancing market access and market growth
- reduce the cost of transacting flexibility for providers and buyers
- give providers confidence that contract terms are fair and reasonable by avoiding unnecessary variation in contract terms

Headline terms for five agreements to transact flexibility have been compiled

- Transpower demand response participation agreement
- Distributor agreements, Part 12A, Schedule 12.4, Clause 5 – load management
- Pacific Gas & Electric Distribution Services Agreement
- Western Power Distribution Flexibility Services Agreement
- ENA (GB) Flexibility Services Standard Agreement, version 2

Awaiting copy of Aurora and solarzero contract and of Powerco generic terms (based on Aurora contract)

What insights can Aurora and solarzero share on their contract development experience?

Task 2 – common contracting arrangements – initial observations

- Price-based flexibility contractual arrangements are simple – identify rights of access to load management, including by the distributor in emergency situations, and prohibiting interference with equipment
- Transpower agreement has similar technical and operational provisions as the PG&E, ENA and WPD contracts, yet fewer legal provisions
    - Transpower agreement was drafted to be accessible to consumers. PG&E etc contracts are drafted assuming sophisticated flexibility providers. **Is a standard contract for consumers needed?**
- The PG&E, ENA and WPD contracts appear quite similar, including using schedules to specify technical requirements. The ENA contract is specifically designed to be used for procuring distribution and system operator services, ie, one-off and frequent procurement
- The Product Templates – service definitions and technical requirements, communication, measuring and reporting etc – will be what drives the contracting arrangements and terms of trade

Insights from Piclo

Follow up to discussion with Piclo to share insights and implications for the workplan

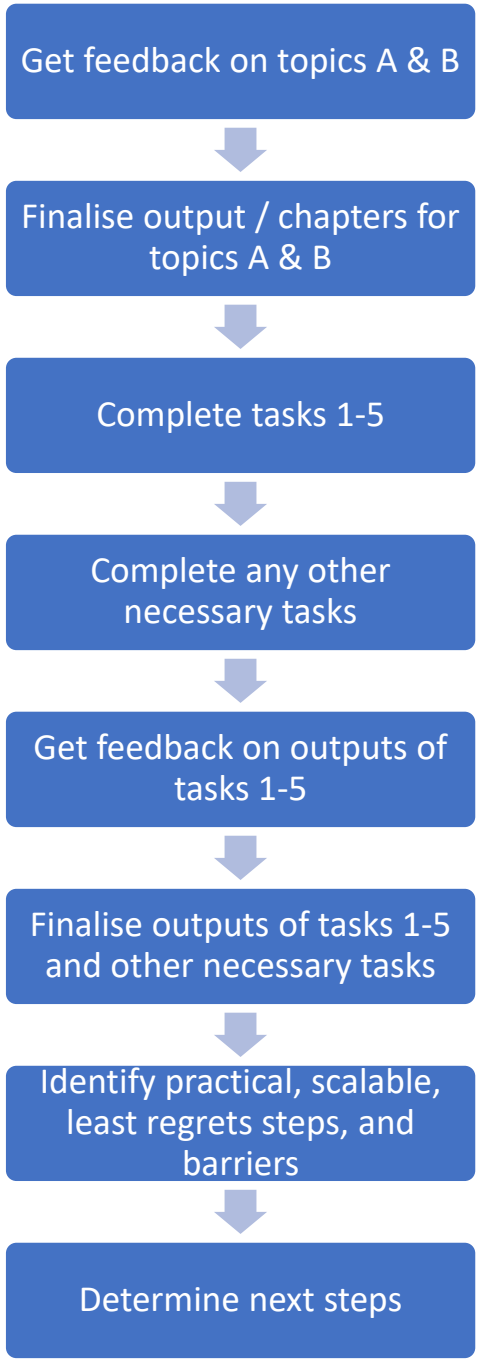
Workplan – progress on key remaining tasks

These are the key tasks the group is working on following decisions at session VIII

1. Valuing and rewarding flexibility
2. Minimum contracting arrangements
3. Sending and receiving of instructions, measurement and validation
4. Populating the commercial product templates for each service

An extra issue has been identified: connection requirements suited to DER and dynamic operating envelopes

- a primer on DOEs is being finalised, along with a description of connection requirements suited to DER



Key tasks, actions and timelines - update

Task	Description	Responsible	Timeframe
1. Valuing & rewarding flexibility	• How much is the buyer prepared to pay the provider? • How does the provider get paid for the service they are providing?	• Network perspective: Evie, Scott, James • Market perspective: Buddhika, Fiona, Jason, John • Review: Shay, Tom, Eric	Consider at 9 June session
2. Minimum contracting arrangements	Document insights from discussions and review contracts / identify minimum contract terms	Secretariat	26 May session
3. Connectivity & communication	Sending/receiving instructions, measurement and validation	Terry, Matt, Quintin & Mike	26 May session
4. Product templates	Develop and refine templates for each service	Secretariat	9 June session
5. Connection requirements and DOEs	Options and pathway for flexibility to maximise access to networks	Not specified	25 June

Five main services and three types of response to network, system & market conditions

Peak shifting to obtain…
- Portfolio optimisation
- Predictive congestion management
- Generation capacity adequacy

Demand adjustment to obtain…
- Portfolio optimisation
- Corrective congestion management
- Generation capacity adequacy
- Balancing

Generation adjustment to obtain…
- Portfolio optimisation
- Corrective congestion management
- Balancing

Characteristics of service
- Shift load
- Shed load
- Shimmy load (up or down) over short timescales
- Shape load (up or down) routinely over long timescales

Planning & operational criteria of service
- Detection & location
- Procurement & deployment timeframe
- Lifespan
- Speed & duration of response

Technical (topic B)

Exchange (procurement) mechanism
- Price flexibility (indirect)
- Contracted flexibility (direct via buyer or platform)

Services used to respond to a need
- standard specification (ie, the technical characteristics and criteria)

Counterparties
- who are the contracting parties
- who operates the exchange mechanism

Payment & compensation
- How is value calculated
- How is value signposted

Workplan topic D

Terms of trade
- Conditions on participation, eg registration
- Liability & non-performance
- Option to deliver

Commercial (topic C and D)

Communication & connectivity
- Sending & receiving instructions requesting delivery (type & timing)
- Performance & measurement of delivery

Coordination
- Tx & D interface
- Wholesale market

Operational (topic C)

Investment information
- Planning information. Actual or forecast demand for a need & response
- Connection requirements + DOEs
- Signalling information. Timing and location of need & response

Planning (Topic D)

Customer proposition
- Factors enabling or blocking creation of attractive and effective propositions for transacting flexibility

Implementation (topic E)

New

- Key tasks not yet started
- Tasks being completed by FF or others

Administration – governance, budget & funding

- Budget update
- Outcome of discussion with MBIE & detailed proposal