FlexForum: session V

Pre-reading for 31 March 2022 session

Shared 29 March 2022

Session overview – topics and decisions

Five items

1. Engagement and stakeholder input on topics A and B
    a) Approve engagement with stakeholders on topics A and B
2. Proposed high level requirements (workplan topic B)
    a) Decide if the high level requirements represent the draft output of topic B
3. Description of Flexibility Needs (workplan topic A)
    a) Decide if the outline of Flexibility Needs is the draft output of topic A
4. Workplan, engagement and communications
    a) Feedback on scope of workplan topics
    b) Decide webpage content
5. Administration – governance, budget and funding
    a) Update

Engagement on topics A & B – the approach achieves the goal and purpose

What – engagement on FlexForum & topics A & B

- Introduce the FlexForum
- Topic A – Flexibility Needs (the issues being addressed by the FlexForum)
- Topic B – high level requirements which provide the basis for transacting DER capability / integrating DER

Why – expected outcome of engagement

- build awareness and support for the process and eventual outputs
- to test the high level requirements and ensure they are practical / usable / sufficient

Who – key stakeholders

- Inform - all interested parties
- Get input from – people using the high-level requirements, eg, network planners & DER owners/flex suppliers

How – engagement approach

- Put session materials on Ara Ake on webpage – based on survey, the materials would be: the agenda, session notes (excluding administration), and pre-reading materials, plus presentations (with presenter agreement)
- Open webinar to introduce the FlexForum, step through outputs A & B, and ask specific questions
- Written comments via webpage or 1-1 feedback
- Follow-up with each key stakeholder group to obtain specific feedback (ie, targeted webinars)

When – 5 week process

- Preparation - 2 weeks before announcing webinar
- Announce webinar, circulating outputs / background material 2 weeks ahead
- Webinar
- 1 week for reflection
- Targeted webinars + written/verbal feedback

The FlexForum goal is to create a set of actions to integrate DER into the electricity system and markets to maximise the net benefits for Aotearoa New Zealand

The FlexForum purpose includes…to **build a broad consensus across the electricity sector and other interests** for the set of actions

Details of engagement process and timeline

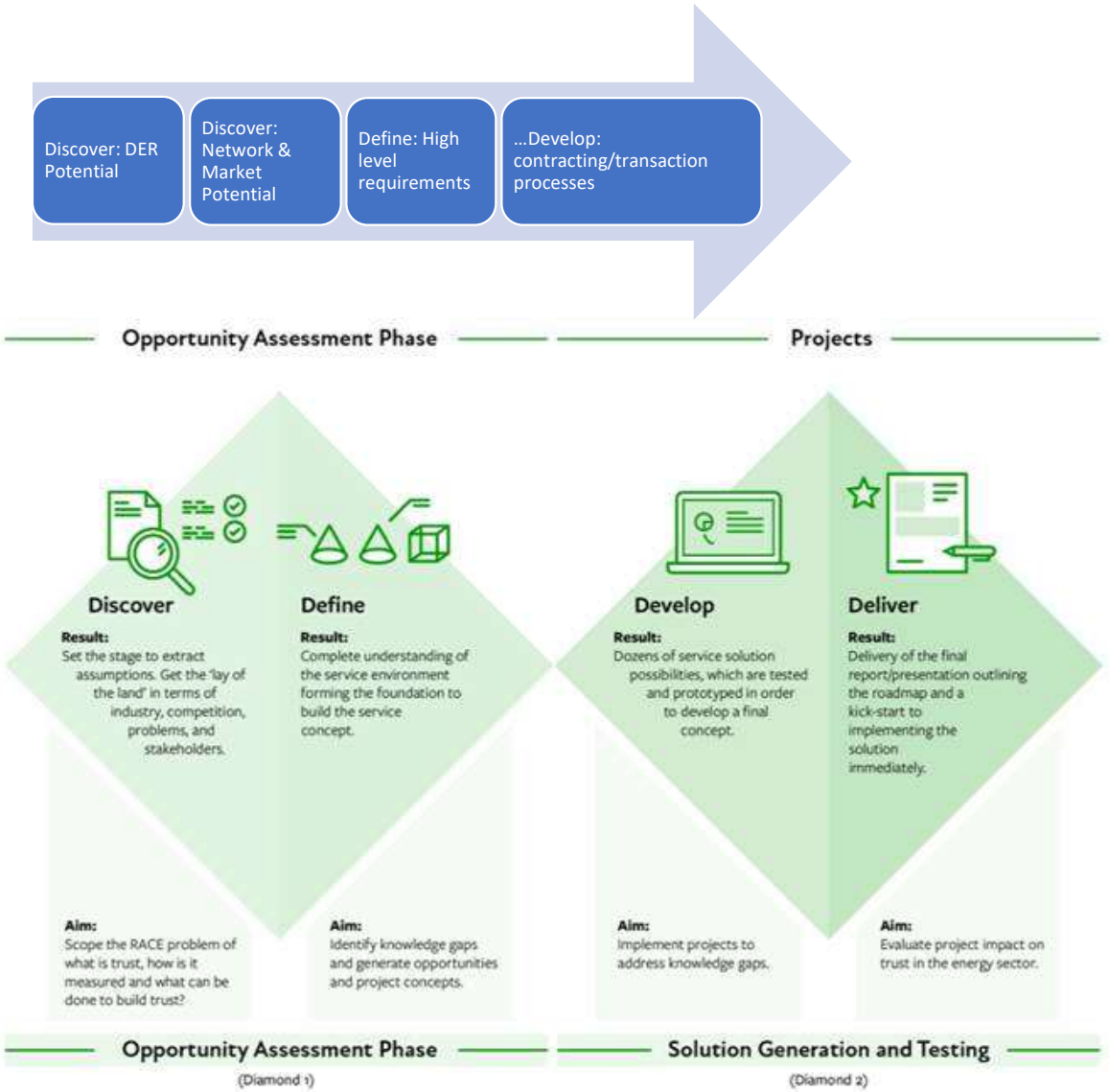
Date	Item	Target Output	Owner/Decision Maker
31 March 2022	**FlexForum session V**	Decision on what will be published on the website	FlexForum decision
		Approve engagement	
1 – 7 April 2022	**Webinar preparation (organisation)**	**What content will be in the webinar?**	
		Topic A: Flexibility Needs draft output	FlexForum decision
		Topic B: High-level requirements draft output	FlexForum decision
		Who are we engaging with?	
		Inform: all interested stakeholders Obtain input: distributors, DER owners, Flexibility suppliers	FlexForum (stakeholder mapping)
		Build stakeholder and contact list	Secretariat + Ara Ake + FlexForum
		Who will present the initial webinar?	
		Purpose of initial webinar is to inform the audience of the FlexForum and set out the questions / input required on topics A and B. Based on content and purpose, the indicative agenda is: introduction and process, DER owner perspective & Network/market perspective	Secretariat to coordinate
		When will the webinar take place – 27 April	Ara Ake
8 - 13 April 2022	**Webinar preparation**	**Pull together content for webinar**	
		Content and key questions	Secretariat
14 April 2022	**FlexForum session VI**	Confirm webinar content	FlexForum decision
15 April 2022	**Announce engagement**	Targeted communications to key stakeholders through email and website links	Ara Ake to deliver
		Provide link to relevant 'prep' content for target audiences	Ara Ake to deliver
26 to 29 April 2022	**Webinar**	Provide link for participants to provide feedback	Ara Ake to deliver. Secretariat to collate
28 April 2022	**FlexForum session VII**	Webinar debrief	FlexForum
29 April - 3 May 2022	**Gather responses from webinar and organise targeted sessions, if necessary.**	Summary of input and feedback	Secretariat
4 or 6 May 2022	**Targeted webinar session(s)**	If necessary given responses and requests	Ara Ake

Focus for this session is topic B and defining high level requirements of services

Workshop focus is defining high level requirements of services needed by the DER owner and for network, system and market operation

High level requirements are for:

- providing information needed by a DER owner/flex supplier for making decisions about investing in and supplying DER capability to respond to network/system/market conditions
  - What market and technical information does DER owner need?
- documenting the criteria used by businesses at each point of the electricity supply chain to decide the need for and nature of a response to network/system/market conditions
  - What are the characteristics of network/system/market conditions requiring a response?
  - What are the criteria of a response to a specific condition?



Source: https://www.racefor2030.com.au/wp-content/uploads/2021/11/E1-Trust-building-for-collaborative-win-win-customer-solutions.pdf

Proposed high level requirements of a response to an event

The high level requirements describe the technical requirements for an operational response to specific conditions – an event – needed by network operators, system operator and market participants

The purpose of completing the table was to define the key requirements for responding to network, system, and market events

The focus for this session is the column headings – these are the high-level requirements

Questions for the group to answer are:

1. Is the list of key requirements is complete? Does it provide the event-related information needed by a DER owner/flex supplier to make decisions about investing in and supplying DER capability to respond to network/system/market conditions
2. Does the description of the requirement make sense? Does it sufficiently describe the purpose and reason for having the requirement? Does it provide a starting point for agreeing standard terminology

Overview of need cases identified – from the tables

DER Owners

- Reduce cost of connection (ongoing opex / capex cost of connection)
- Reduce energy costs (manage against energy prices)
- Maximise return on investment (lock-in additional revenue streams)

Networks

- Capacity shortfall (Growth/Congestion management)
- Security of Supply (restoring load during contingency event)
- Power Quality (Supporting network voltage)

Market Participant

- Price Management (managing market volatility)
- Fuel Management (preserving gas/water)

Need case identification – from the tables

Condition / need case	*Description of the need case that can be resolved via a flexibility use* *Examples: Fuel Management, Response to high nodal pricing, growth driven capacity shortfall, connection driven capacity shortfall*
Value driver	*What are the financial or societal values that can be attributed to resolving the need case* *Examples: Affordability, Social (Community), Environmental, Reliability, Financial*
Condition characteristic	*Describe the impact of the condition persisting going unchecked* *Examples: Thermal / voltage constraints on network infrastructure; Peak Demand*
Location of condition	*Is there a specific geographic area or level of the electricity industry that this condition affects?* *Examples: Island, Network, GXP, Zone Substation, Suburb, Highly Locational (ICP)*

High level technical parameters – from the tables

Location of condition	*Is there a specific geographic area or level of the electricity industry that this condition affects?* *Examples: Island, HVDC, GXP, Distribution Network [Zone Substation, Suburb, Feeder], Retailers*
When need identified	*How far in advance of usage would a need case be identified?* *Examples: 3-5 years in advance (b/c of annual AMP reviews) ; 1 year in advance (because of weather/fuel cost forecasts); at time of connection request of a significantly sized new consumer*
When need communicated	*How far in advance of usage would procurement for a future response in a location be communicated?* *Examples: 3-5 years (due to procurement timelines and time required to deploy alternative solutions)*
When use communicated	*How far in advance of usage would notification for using a response be communicated?* *Examples: day ahead, hours ahead, minutes ahead, instantaneous*
Availability of response	*How long of a commitment is being made to be available for response (ie, I will be available to shed load for the coming 6 months or next 3 trading periods)?* *Examples: 1-3 year fixed contract, 6 monthly renewable commitments, trading period bids*
Response required	*The form of response* *Examples: **Shift** - moving demand sporadically in response to an external signal ; **Shed** - switching off load ; **Shimmy** - adjusting demand over very short timescales in response to an external signal; **Shape** - moving demand routinely according to a long-term pattern*
Response speed	*Speed of response required after receiving a signal* *Examples: <5 minutes, <1 minute, Instantaneous*
Response duration	*Duration of the response* *Examples: 1-4 Hours (length of demand period) ; 30 minute trading period ; sub trading period ; seconds*
Type of response	*KVA ↑↓ ; KVAR ↑↓ ; Voltage ↑↓ ; Frequency Regulation ; Shifting Energy*

Event related information required by DER owners

Urgency of event	*Urgency of event. Is the response optional, or an emergency?*
Price / compensation	*What is the payment / compensation for responding to the event?*
Start	*When is the event*
Duration / finish	*How long is the event for?*
Action / service required	*Response required: power increase or decrease & quality*
Reporting	*What is the reporting requirement*

Outline of output of Flexibility Needs topic

The output of the flexibility needs topic will be a list of flexibility 'needs' for DER owners, network owners and market participants describing:

- High level drivers for DER owners to invest in DER (ie, owner use case) and to invest in capability to supply flexibility services (returns / risks / trade-offs)
- High level drivers for network operators & market participants to integrate and use the capability of DER (ie, use flexibility services)

A 2 or 3-page chapter describing the flexibility needs is being written – provide the secretariat with feedback on the main conclusions after this session

The flexibility needs were identified through the discussions of DER potential and Network & Market potential. The main conclusions were:

- technical and market inputs required by DER owners to maximise the net benefits from DER – the flexibility need is information to enable decisions to invest in 'extra' DER capability and to invest in DER where it will be useful (ie, to supply flexibility services alongside the owner needs)
    - service definitions & performance criteria - what do you need to do to deliver the service, approach to evaluating delivery and what happens if you don't deliver (eg, penalties)
    - payment/price mechanisms for compensating supply of the service
    - localised network optimisation, automation and information on network/market conditions to enable the DER owner access to the input signals needed to deliver
    - network access and network use terms which reflect DER capability
- outputs (ie, services) required by network operators, system operator and market participants – the flexibility need is an operational response to network, system and market conditions
    - network operators require new capability to manage forecast electrification-related constraints & connection-related constraints and maintain/improve reliability and affordability
    - market participants and the system operator require new capability to manage changing market and system conditions, eg, more volatility in price and quality of supply, and maintain/improve reliability and affordability

Workplan timeline

Meeting	0 (17-12)	1 (03-02)	2 (17-02)	3 (03-03)	4 (17-03)	5 (31-03)	6 (14-04)		7 (28-04)		8 (12-05)	9 (26-05)	10 (09-06)	
Topic	**Dec**	**Feb**		**March**			**April**			**May**		**June**		
Governance	Draft TOR	Agree TOR and budget					Mid point review					Establish next steps	Wrap up	
Engagement			Stakeholder mapping				Workshop prep	Engagement workshop				Event prep		Dissemination event
A. Flexibility needs *What and why (drivers)*				DER potential (a provider view)	Network & Market potential (a purchaser view)	Value streams and capability		Seek feedback	Address feedback					
B. Product definitions *What and how (technical requirements)*					Need cases	High level requirements		Seek feedback	Address feedback					
C. Market access and participation *Who and how (commercial)*							Contracting principles			Seek feedback	Address feedback			
D. Market opportunities *Where and for how much*									Payment & compensation	Seek feedback	Address feedback			
E. Practical, scalable and least-regret steps											Implementation			
F. Support ongoing learning and collaboration												Establish next steps	Bring it together	Seek feedback

We are here...

Workplan topic A: Flexibility Needs

Flexibility 'needs'

- technical and market inputs required by DER owners to maximise the net benefits from DER – need is information to enable the DER owner to decide on and invest in capability, and to invest in DER where it will be useful (ie, supplying flexibility services & owner needs)
  - service definitions & performance criteria - what do you need to do to deliver the service, approach to evaluating delivery and what happens if you don't deliver (eg, penalties)
  - payment/price mechanisms for compensating supply of the service
  - localised network optimisation, automation and information on network/market conditions to enable the DER owner access to the input signals needed to deliver
  - network access and network use terms which reflect DER capability
- outputs (ie, services) required by network operators, system operator and market participants – need is an operational response to specific conditions
  - network operators require new capability to manage forecast electrification-related constraints & connection-related constraints and maintain/improve reliability and affordability
  - market participants and the system operator require new capability to manage changing market and system conditions, eg, more volatility in price and quality of supply, and maintain/improve reliability and affordability

Key stakeholders

Seek input

- network operators
- DER owners / flexibility suppliers

Inform

- electricity market participants, including traders, metering providers and generators
- government officials and regulators

Outputs / Deliverables for topic

- List of flexibility 'needs' for DER owners, network operators, and market participants outlining
  - High level drivers for DER owners to invest in DER (ie, owner use case) and to invest in capability to supply flexibility services (returns / risks / trade-offs)
  - High level drivers for network operators & market participants to integrate and use the capability of DER (ie, use flexibility services)

Out of Scope

- Quantifying net benefits of DER
- Market Designs
- Proposing Regulatory Changes

Workplan topic B: High-level requirements for managing network, system, and market conditions

High level requirements

- the high-level technical parameters for an operational response to specified conditions – an event – needed by network operators, system operator and market participants
  - the high-level requirements should provide the event-related information needed by a DER owner/flex supplier to make decisions about investing in and supplying DER capability to respond to network/system/market

Outputs / Deliverables

- a list of specific network, system and market conditions – events – and underlying value drivers which prompt an operational response (potentially using the capability of DER)
- the technical parameters and requirements of a operational response to an event, eg, physical, locational, temporal and duration requirements
- Standard descriptions and terminology for each condition/event, the technical parameters and requirements

Key stakeholders

Seek input

- network operators
- Traders/market participants
- DER owners / flexibility suppliers
- System Operator

Inform

- other electricity market participants, including metering providers and generators
- government officials and regulators

Out of Scope

- Market related information (will be covered in topics C and D)

Workplan topic C: market access and participation…identifying market mechanisms for flexibility services

Scope of topic – identify the practical requirements for transacting flexibility services

The high level requirements represent the technical parameters for 'services' which could be supplied by DER

For the service to be transacted between the buyer (ie, network operator, system operator, market participant) and the seller of the service (ie, the DER owner of flexibility supplier), there needs to be:

- an agreed mechanism for completing the exchange for each service, eg, bilateral contracts, trading platforms, price response
- basic terms and conditions for the exchange

Out of Scope

- Approach to calculating the value or compensation for supplying the service (will be covered in topic D)

Key questions

1. What is the product/service/need to be exchanged and is there a marketplace and agreed mechanism for exchange for that product/service/need?
2. What is the mechanism for exchange of the product/service/need? Is the mechanism the minimum viable product? Is evolution likely?
3. Who manages the mechanism for exchange? Is it the buyer of the service or a common platform? Who has the relationship between the DER owner (which includes households and businesses)?
4. How is the product/service/need procured? Is the product procured well ahead of the need or in in 'real-time'?
5. What are the practical requirements for participation? For example, are there requirements relating to the location, size, capability etc of the supplier of the service?
6. How does the exchange of value practically occur given the laws of physics?
    a. How does the buyer tell the DER owner to provide the service or respond to a specific instruction? How does the DER owner receive the instruction?
    b. Is there a benefit of having a record of DER, its capability and who is accessing that capability for what purposes? What is the benefit?
7. How do the buyer and seller determine the service has been delivered according to any specified performance criteria?
    a. What are the consequences of non-performance? What is the relationship between the consequences of non-performance and the risk of non-performance? How is risk shared between the supplier and the buyer? Is the assessment of risk based on robust and agreed criteria?

Workplan topic D: market opportunities…calculating the value of flexibility services

Scope of topic – identify the principles for calculating the value or compensation for supplying flexibility services

The capability of DER will be made available to respond to network, system and market conditions because the flexibility is valued and remunerated. Flexibility is currently not consistently or transparently remunerated

Out of Scope

- Determining value or payment

Key questions

1. How is value or compensation within each mechanism determined? Can a standard methodology or criteria be produced?
    a. What is the indicative value and variation between services by location and time?
2. How is value exchanged or made available to the supplier? What is the relationship between the product and the value exchange mechanism?
3. How is value/compensation signaled to potential suppliers? How is need and value signposted? How transparent are procurement outcomes?
4. What factors might prevent a DER owner from stacking multiple value streams from supplying multiple services?

Administration – governance, budget & funding

Update. No specific content