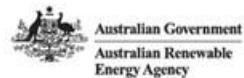# Networks Advisory Group
Meeting 7 Briefing Formation

Thursday 22 July 2021 | 2.30 – 4.00pm AEST

Agenda

Item	Lead	Timing
Welcome, Acknowledgement of Country and Safety Moment	John Theunissen	5 min
Project status, reflections from Meeting 6, and the focus of Meeting 7	John Theunissen	10 min
Further exploration of the local services exchange – network services to be tested and the surrounding process	John Theunissen / Sean Cumpston	20 min
Update and discussion on the Dynamic Operating Envelope work being done in the EDGE project	University of Melbourne - Nando Ochoa	25 min
Update on project Research Plan development and further consultation with the NAG	University of Melbourne – Pierluigi Mancarella	25 min
Review/Wrap up and the look ahead	John Theunissen	5 min

Acknowledgment of Country

We acknowledge the Traditional Owners of country throughout Australia and recognise their continuing connection to land, waters and culture.

We pay our respects to their Elders past, present and emerging.

Safety moment

Planning for safe outcomes
Reflections from preparing for a marine licence test

VICTORIAN RECREATIONAL BOATING SAFETY HANDBOOK

FREE

JULY 2020
transportsafety.vic.gov.au/msv

MARITIME SAFETY VICTORIA — A branch of Transport Safety Victoria

VICTORIA State Government

A key reflection from studying the Safety Handbook is that many of the actions that drive safe outcomes on the water relate primarily to *planning* activities.

This is no different in our energy networks industry, where safety needs to be upfront and embedded in design and development activities.

Project Status, reflections on Meeting 6 and the focus of Meeting 7

Project Status

Current position

- Integrated project plan – project market services roadmap being firmed up

- Project Research Plan maturing – stakeholder consultations underway

- Preparing next phase of customer engagement/recruitment (C&I)

- Procurement process in-flight for Cost-Benefit Analysis partner

- Detailed design activities being progressed

Key upcoming activities

- Research Plan development completion

- Appointment of Cost Benefit Analysis Partner

- Architecture build to support data flows and required functionality

- Progressive work on functionality development for Milestone 2
  (October 2021 – Demonstrate end-to-end data "pipework" and data transfer ability)

Reflections/summarised outputs from Meeting 6

Reflections

- *Active engagement on the initially framed research questions, further work needed to prioritise content, with consideration of the EDGE project scope and what could be realistically achieved – NAG open to further consultation*

- *NAG support for a DNSP "sub-group" to work with the project during the detailed design phase (est. 1hour /fortnight) – not yet established*

- *NAG sympathetic with constraining a prospective dynamic network tariff test activity within EDGE to ascertaining activity-based responses from Aggregators and Retailers to Network Pricing*

Key outputs/takeaways

- *Please refer to the separate Minutes document*

Further exploration of the local services exchange – network services to be tested and the surrounding process

Summary classification of local services

Demand increase / reduction

High Firmness
*(typically linked to a **network planning** capex deferral use-case, EDPR Augex funded)*

- **Trial example:** Feeder with high overloading probability/incidence – peak demand reduction service required

- **Future example:** Reverse power during solar PV generation peak causes sustained or regular network operation/asset issues – local generation reduction or load increase service required

- **Treatment:** Likely to require services over a prolonged period (>1year), hence suited to a longer-term contract with *guaranteed availability and agreed pricing*

Medium Firmness
*(typically linked to an **operational planning** use-case, weather related, EDPR Opex funded)*

- **Trial example:** Forecast asset overload as a result of heat wave activity or picking up additional customer load due to a planned temporary network reconfiguration - peak demand reduction service required

- **Future example:** Minimum demand system issue forecast - local generation reduction or load increase service required

- **Treatment:** Likely to require services on a seasonal basis, hence suited to a shorter-term contract with *negotiated availability and pricing*

Low Firmness
*(typically linked to a **spontaneous operational** use-case trigger, event related, EDPR Opex funded)*

- **Trial example:** Unexpected occurrence of abnormal local network loading as a result of a community event, or a combination of weather and special calendar days - peak demand reduction service required

- **Future example:** AEMO declared system contingent scenario – services required would relate to the event

- **Treatment:** Akin to NEM spot market - *no guaranteed availability, pricing is set by the market or negotiated earlier*, hence suited to a shorter-term contract with negotiated pricing

Opportunity to contract multiple services under one umbrella?

Summary classification of local services

Voltage management

High Firmness	Medium Firmness	Low Firmness
*(typically linked to a **network planning** capex deferral use-case, EDPR Augex funded)*	*(typically linked to a **forecast market need** use-case, high price related, funding to be clarified)*	*(typically linked to a **spontaneous market need** use-case trigger, event related, funding to be clarified)*

High Firmness

- **Trial example:** LV network with known regular or sustained Code voltage breaches – local voltage management service required

- **Future example:** Support of additional DER hosting capacity (e.g. for export / EV charging) where known voltage constraints exist – local voltage management service required

- **Treatment:** Likely to require services over a prolonged period (>1year), hence suited to a longer-term contract with *guaranteed availability, agreed pricing and autonomous operation*

Medium Firmness

- **Example:** LV network with known limited capacity for energy export/import – local voltage management service required to temporarily relieve network constraint for market economic benefit

- **Treatment:** Likely to require services on a seasonal basis or until constraints are remediated, hence suited to a shorter-term contract with *negotiated availability and pricing*

Low Firmness

- **Example:** Opportunistic expanded local DER export / import portfolio requires additional local network capacity (market motivated, voltage limited local network) – local voltage management service required to temporarily enable increased DER activity for for market economic benefit

- **Treatment:** Likely to require ad-hoc services, hence suited to a shorter-term contract with *uncertain availability, pricing is set by the market or negotiated earlier*

Market service related

Opportunity to contract multiple services under one umbrella?

A closer look at a couple of services

Demand increase / reduction - High Firmness Service

Define, Enrol and Engage stages occur well before trade of service

- *DNSP and Aggregator are both enrolled in LSE*
- *Demand High Firmness standard service is pre-defined (incl. contractual terms)*
- *Aggregator is pre-approved to deliver a Demand High Firmness service*

DNSP determines local service need according to service characteristics as follows (typically a recurrent need)

- *Location*
- *P/Q Required*
- *Availability Duration Required*
- *Activation Duration Required*
- *Reserve Price (WTP – noting both availability and activation)*

Aggregator reviews the posted service need details and assesses

- *Available P/Q capacity from their fleet at that location for that time period*
- *Stacked value w.r.t long term capacity to service need (e.g. does delivery of that service provide the capability to perform and capture the commercial value of multiple energy services at the same time)*

DNSP adds the details for this particular local service need

(according to standard service characteristics)

DNSP posts the service need to market

Aggregator decides that there is enough long term value to justify a local bi-directional offer, including:

- *Location*
- *P/Q Offered*
- *Availability / Activation Duration Offered*
- *Reserve Price (WTD – noting both availability and activation)*

Aggregator makes the offer
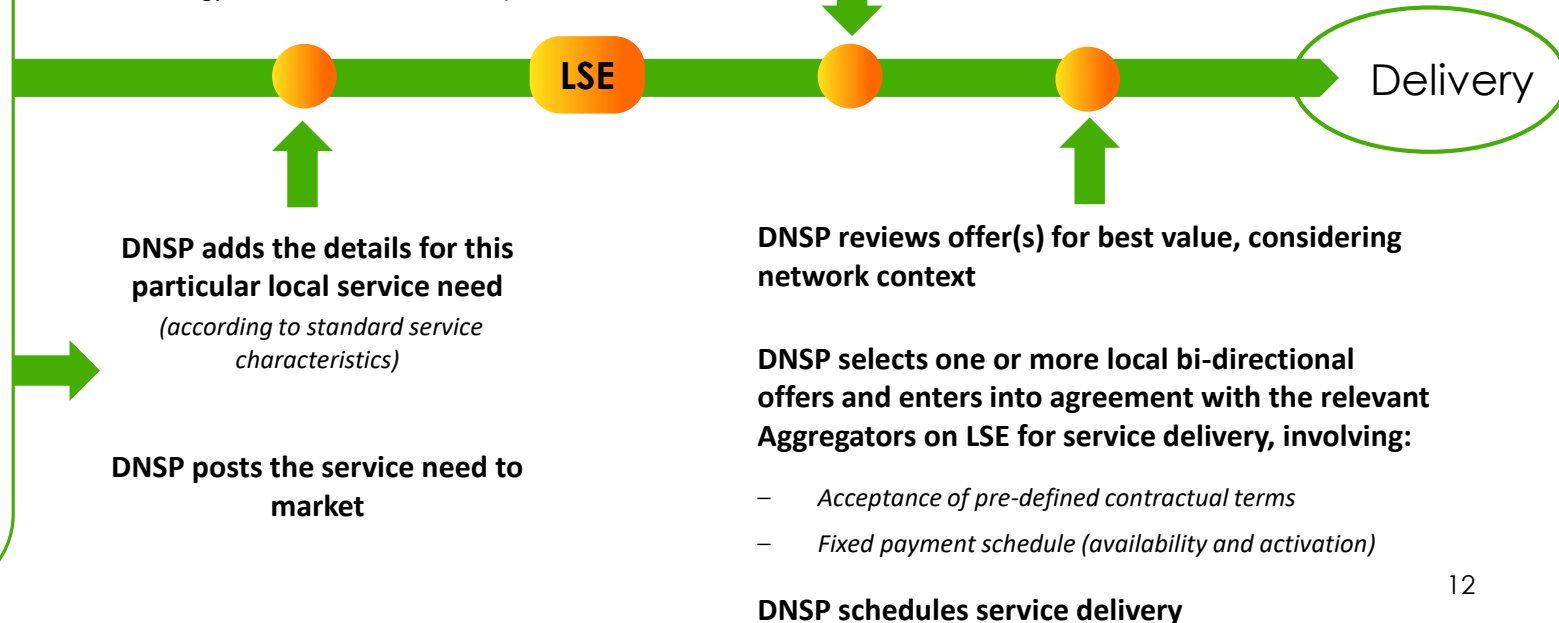
DNSP reviews offer(s) for best value, considering network context

DNSP selects one or more local bi-directional offers and enters into agreement with the relevant Aggregators on LSE for service delivery, involving:
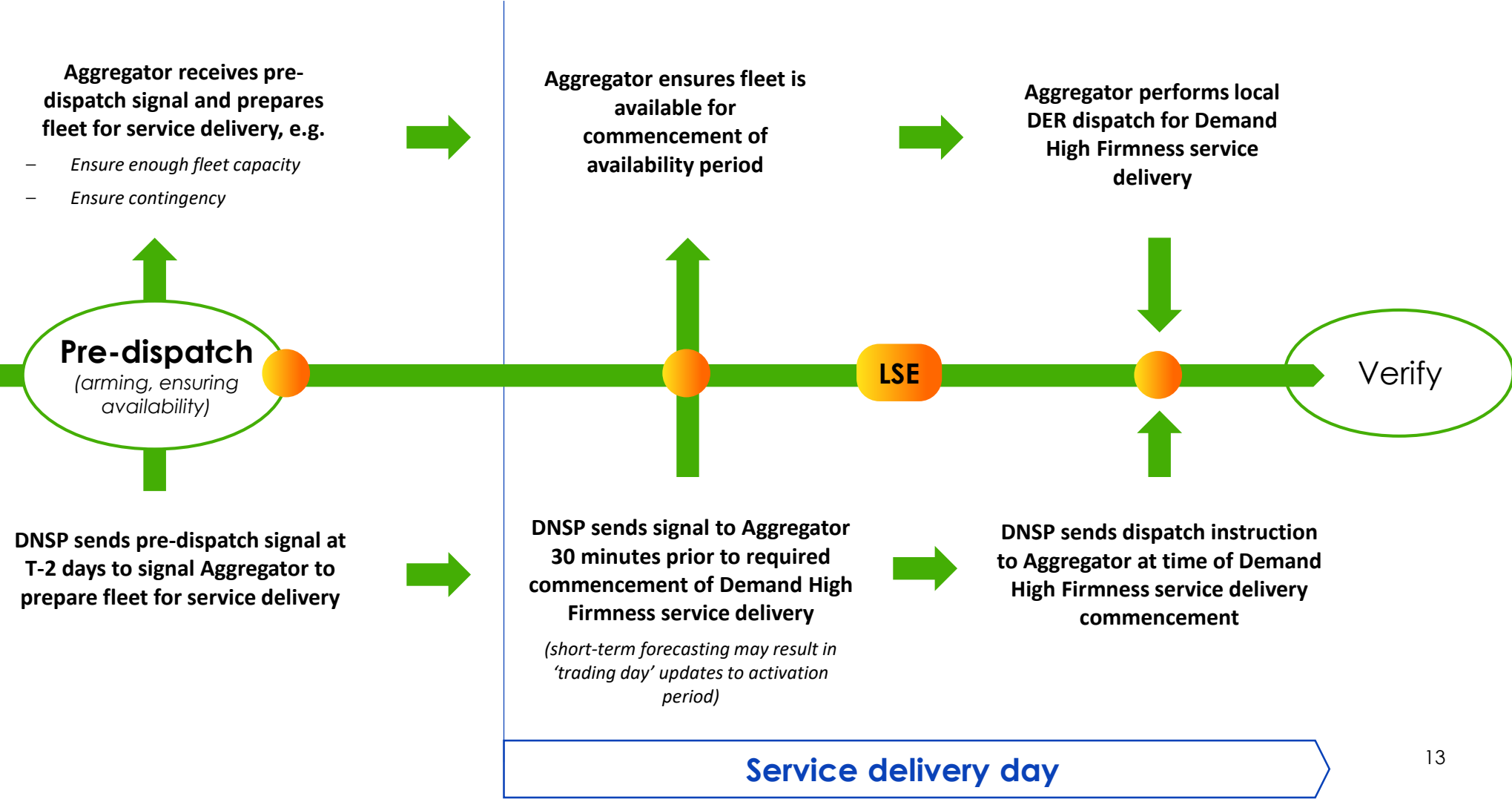
- *Acceptance of pre-defined contractual terms*
- *Fixed payment schedule (availability and activation)*

DNSP schedules service delivery

LSE

Delivery

12

A closer look at a couple of services

Demand increase / reduction - High Firmness Service

Aggregator receives pre-dispatch signal and prepares fleet for service delivery, e.g.

– *Ensure enough fleet capacity*

– *Ensure contingency*

Aggregator ensures fleet is available for commencement of availability period

Aggregator performs local DER dispatch for Demand High Firmness service delivery

Pre-dispatch *(arming, ensuring availability)*

LSE

Verify

DNSP sends pre-dispatch signal at T-2 days to signal Aggregator to prepare fleet for service delivery

DNSP sends signal to Aggregator 30 minutes prior to required commencement of Demand High Firmness service delivery

(short-term forecasting may result in 'trading day' updates to activation period)

DNSP sends dispatch instruction to Aggregator at time of Demand High Firmness service delivery commencement

Service delivery day

13

A closer look at a couple of services

Demand increase / reduction - High Firmness Service

After completion of availability period, Aggregator sends DNSP operational data for Demand High Firmness service delivery

Verify → LSE → Reporting

DNSP verifies service delivery outside LSE

DNSP checks the verification outcome against the contractual agreement

→

DNSP records verification outcome in LSE

(Settlement / Clawback)

A closer look at a couple of services

Voltage Management - High Firmness Service

Define, Enrol and Engage stages occur well before trade of service

- *DNSP and Aggregator are both enrolled in LSE*
- *Voltage Management High Firmness standard service is pre-defined (incl. contractual terms)*
- *Aggregator is pre-approved to deliver a Voltage Management High Firmness service*

DNSP determines local service need according to service characteristics as follows (typically a recurrent need)

- *Location*
- *P/Q Required or Volt/VAR curve*
- *Availability arrangements*
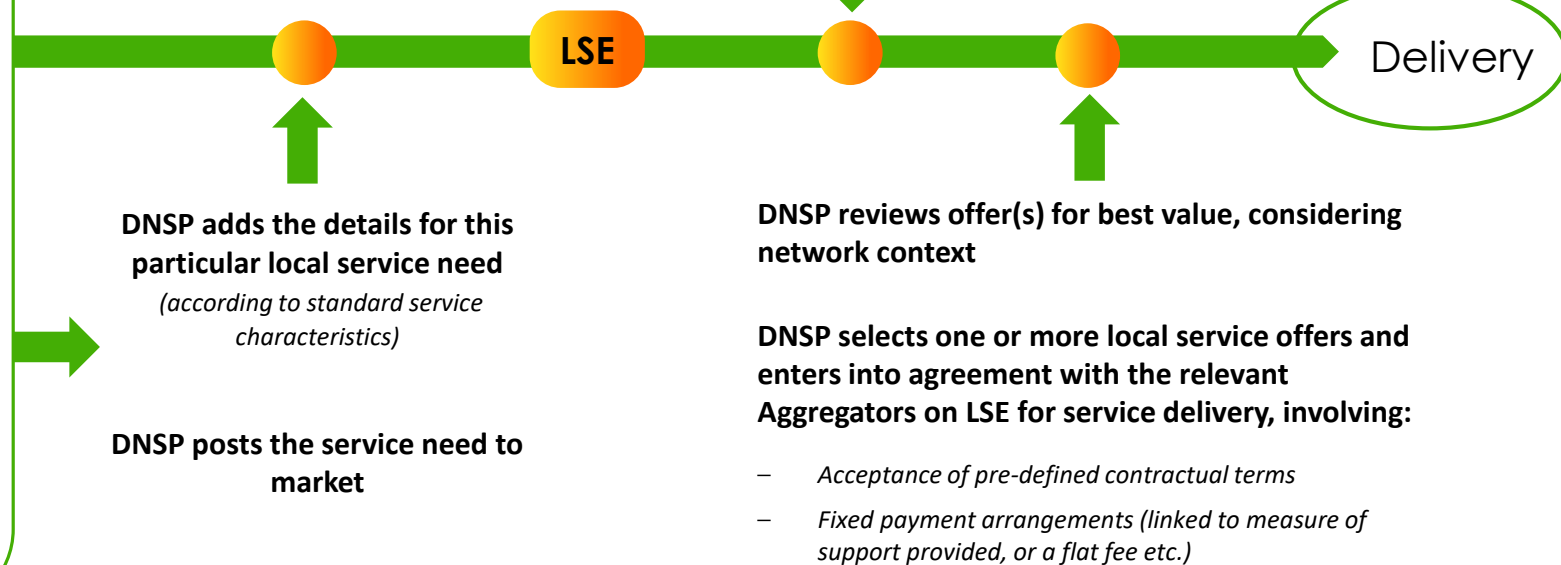- *Activation arrangements*
- *Pricing arrangements*

Aggregator reviews the posted service need details and assesses

- *Available P/Q or Volt/VAR capacity from their fleet at that location for service need duration*
- *Stacked value w.r.t long term capacity to service need (e.g. does delivery of that service provide the capability to perform and capture the commercial value of multiple energy services at the same time)*

DNSP adds the details for this particular local service need
(according to standard service characteristics)

DNSP posts the service need to market

Aggregator decides that there is enough long term value to justify a service offer, including:

- *Location*
- *P/Q or Volt/VAR service Offered*
- *Availability / Activation arrangements Offered*
- *Pricing arrangements Offered*

Aggregator makes the offer

LSE

Delivery

DNSP reviews offer(s) for best value, considering network context

DNSP selects one or more local service offers and enters into agreement with the relevant Aggregators on LSE for service delivery, involving:

- *Acceptance of pre-defined contractual terms*
- *Fixed payment arrangements (linked to measure of support provided, or a flat fee etc.)*

DNSP schedules service delivery

15

A closer look at a couple of services

Voltage Management - High Firmness Service

Aggregator applies settings to portion of DER fleet providing the service e.g.

- *Volt/VAR curves or*
- *Specific P/Q responses to measured voltage levels*

Aggregator provides measure of services delivered

- *Aggregated per network service location*
- *Accumulated over time period*

Aggregator applies settings to portion of DER fleet providing the service

Configuration
(DER settings align to service delivery)

Operation
(local detection, automated response)

LSE

Settlement

DNSP confirms required DER "parameters" for service delivery

DNSP evaluates effectiveness and efficiency of the service

(did the service achieve the required results and how did the costs compare to a network solution)
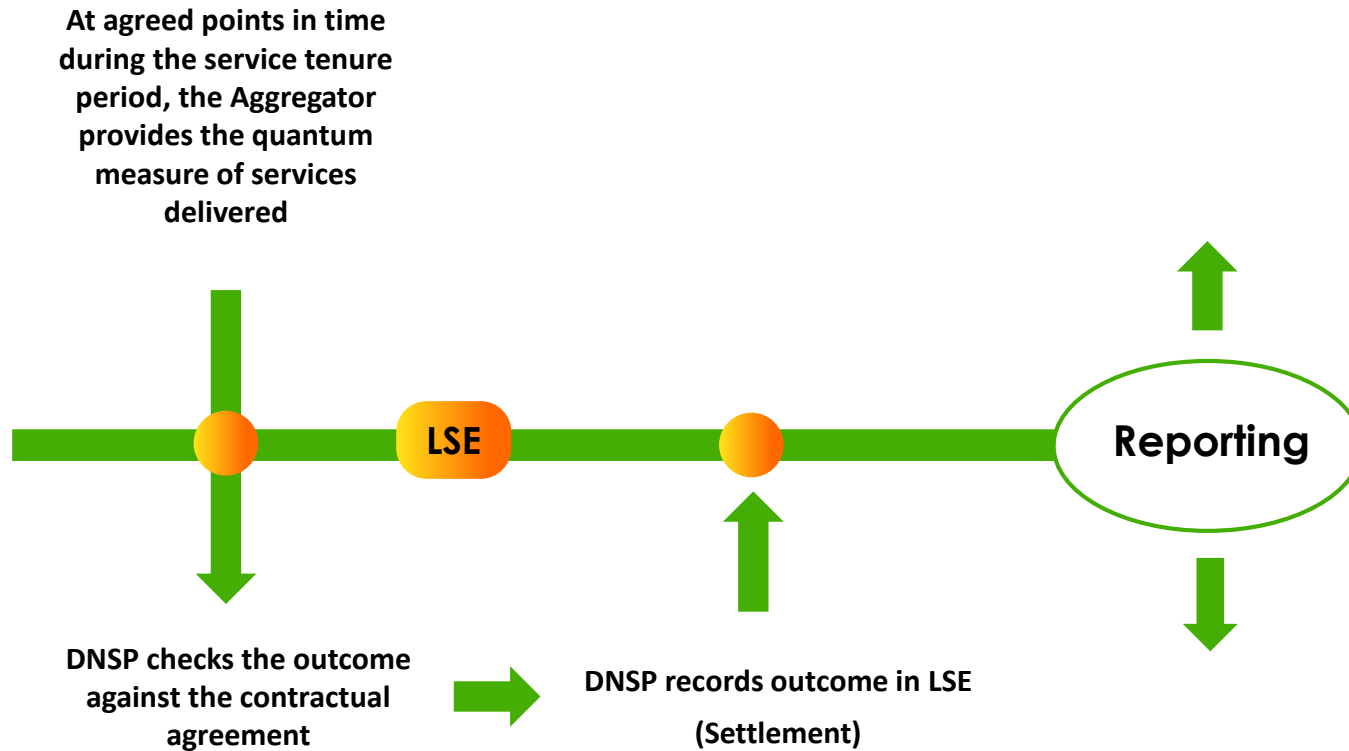
If needed, after review and analysis, DNSP confirms revised DER "parameters" for service delivery

Service delivery tenure period

A closer look at a couple of services

Voltage Management - High Firmness Service

At agreed points in time during the service tenure period, the Aggregator provides the quantum measure of services delivered

LSE

Reporting

DNSP checks the outcome against the contractual agreement

DNSP records outcome in LSE (Settlement)

Point for discussion
Seeking NAG input

It is evident that the calculation and allocation of dynamic operating envelopes (DOE) influences local DER service potential.

The position adopted within the EDGE project is that there is a value proposition from active customer DER for the provision of local network services, and that the DOE ought not to deliberately constrain customer DER for a network benefit (i.e. eroding or eliminating the need for a network service from active DER via configuring the DOE such that there isn't any direct reward opportunity for the customer or Aggregator)

How should the application of DOE *within the context of local network services* be treated within the EDGE project so as to maximise the benefits of the trial activities for the industry?

Update and discussion on the Dynamic Operating Envelope work being done in the EDGE project

Material to be provided separately by the University of Melbourne

Update on project Research Plan development and further consultation with the NAG

Material to be provided separately by the University of Melbourne

The look ahead

Advisory Group focus

| Q1 2021 | Q2 2021 | Q3 2021 | Q4 2021 | 2022/3 |

Operating envelope allocation methods
What to test – coordination with other projects/work

Operating envelope calculation (engine)
Context of leveraging AMI data

Wholesale energy market services operating models
Aligning DSO functions to operating model designs

Local services operating model/s
Treatment of network services as well as local services that are energy market related (local procure/supply transactions to alleviate local constraints)

Local services definition and functionality
- *Services/scenarios to be considered*
- *Forecasting of need*
- *Valuing the service (setting the reserve price)*
- *Service performance evaluation/validation*

Consideration of Dynamic Network Pricing
- *Context*
- *Objectives*
- *Principles*
- *Design*
- *Measurement*

Research Plan input
- *What are the key questions to answer from a DNSP perspective?*
- *How might one go about designing test plans to provide the evidence that will be needed?*

Flexible customer connection contracts for active DER
How to structure and establish flexibility into customer connection contracts for DER that is actively managed

DER-Network-Market optimisation
How to achieve optimal outcomes from network-side activities that influence DER access and market conditions (dynamic voltage management, network reconfiguration etc.)

Check-in on end-to-end design within EDGE
Revisit pertinent aspects within the EDGE detailed design to enhance the value of the trial outcomes

Option analysis and cost-benefit assessment
- *Baseline market outcomes before market + DSO*
- *Incremental market outcomes under Dynamic OE*
- *Incremental market outcomes with wholesale integration (no local market)*
- *As above with whole integration + local market (single/multiple aggregators)*

Revisiting key areas relevant to DNSP community

To be shaped by Advisory Group member input