Energy Transformation Implementation Unit

Transformation Design and Operation Working Group Meeting 22

28 August 2020

Ground rules and virtual meeting protocols

- Please place your microphone on mute, unless you are asking a question or making a comment.
- Please keep questions relevant to the agenda item being discussed.
- If there is not a break in discussion and you would like to say something, you can ‘raise your hand’ by typing ‘question’ or ‘comment’ in the meeting chat. Questions and comments can also be emailed to TDOWG@energy.wa.gov.au after the meeting.
- The meeting will be recorded for minute-taking purposes. Please do not make your own recording of the meeting.
- Please state your name and organisation when you ask a question to assist with meeting minutes.
- If there are multiple people dialling in through a single profile, please email TDOWG@energy.wa.gov.au with the names of the attendees to be recorded in the minutes.
- If you are having connection/bandwidth issues, you may want to disable the incoming and/or outgoing video.

Agenda

9:30	Opening remarks – Chair
9:35	Issues Paper: Distributed Energy Resources Orchestration Roles and Responsibilities – ETIU
10:50	Network Access Quantities Framework: Final Design Parameters – ETIU
11:20	Storage Participation in the Reserve Capacity Mechanism: Final Decisions - ETIU
12:00	Meeting Close

DER Orchestration: Issues Paper

Dora Guzeleva
Specialist Markets

Brad Smart
Principal Policy Analyst, DER

What this session covers

- Where this work fits – Transformation and the Roadmap
- Proposed responsibilities of new roles
- Other issues
- How to provide comments

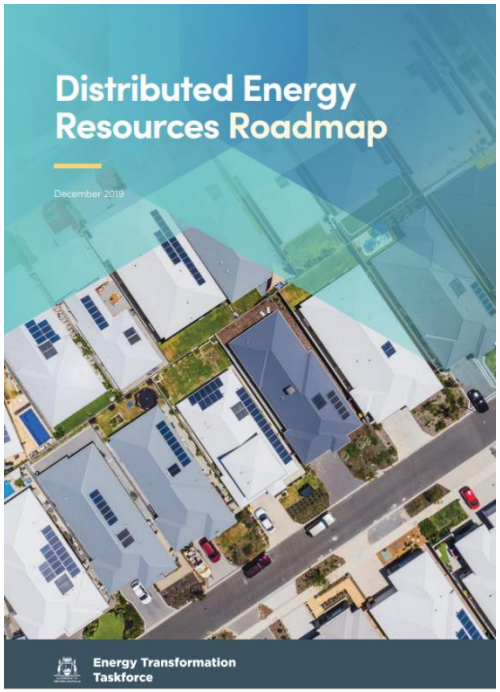
Where does this work fit?

The WA Government's **Energy Transformation Strategy**

A two-year program of work across three interrelated workstreams

Whole of System Plan (WOSP)

October 2020

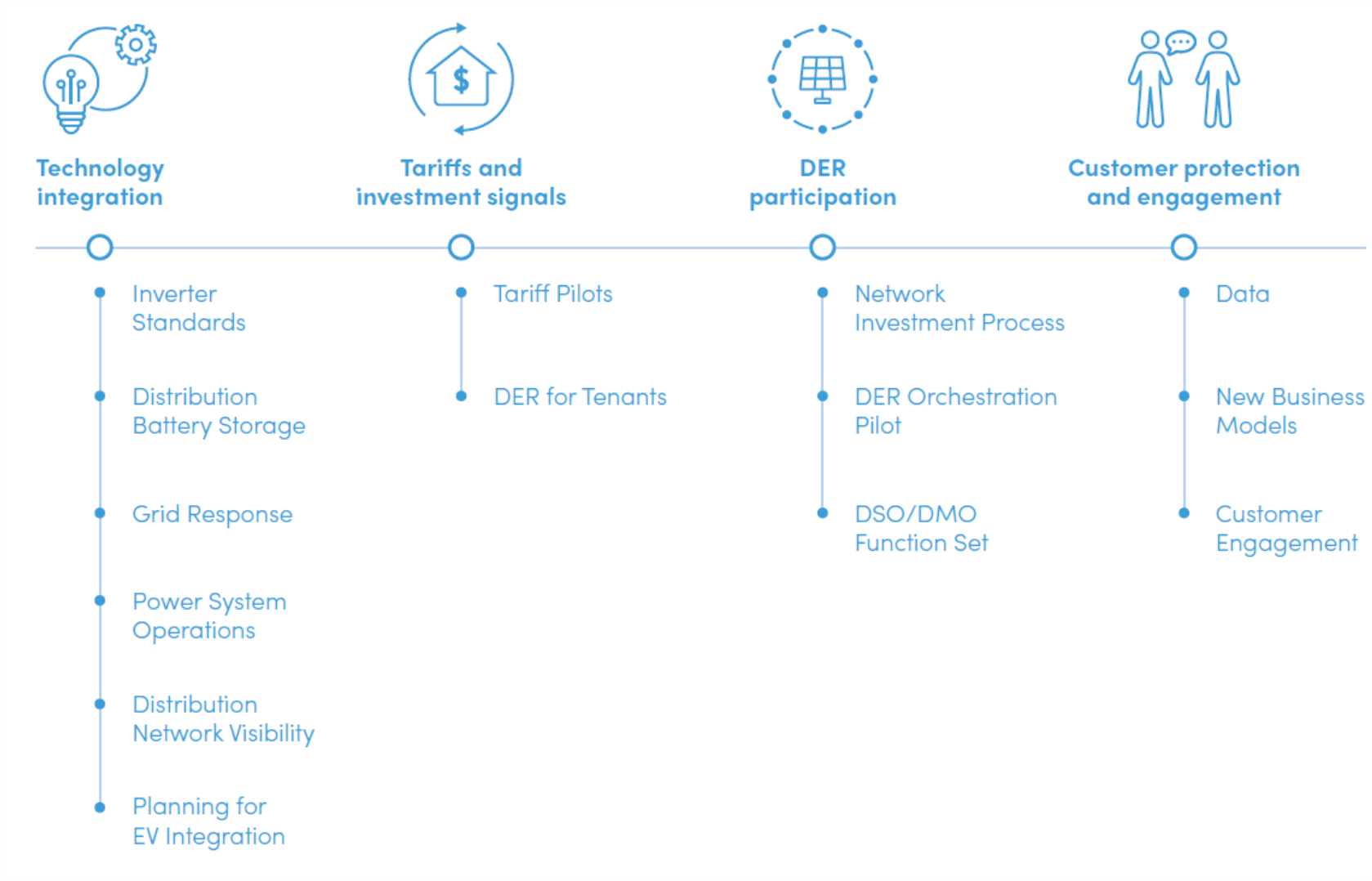


Wholesale Market Redesign

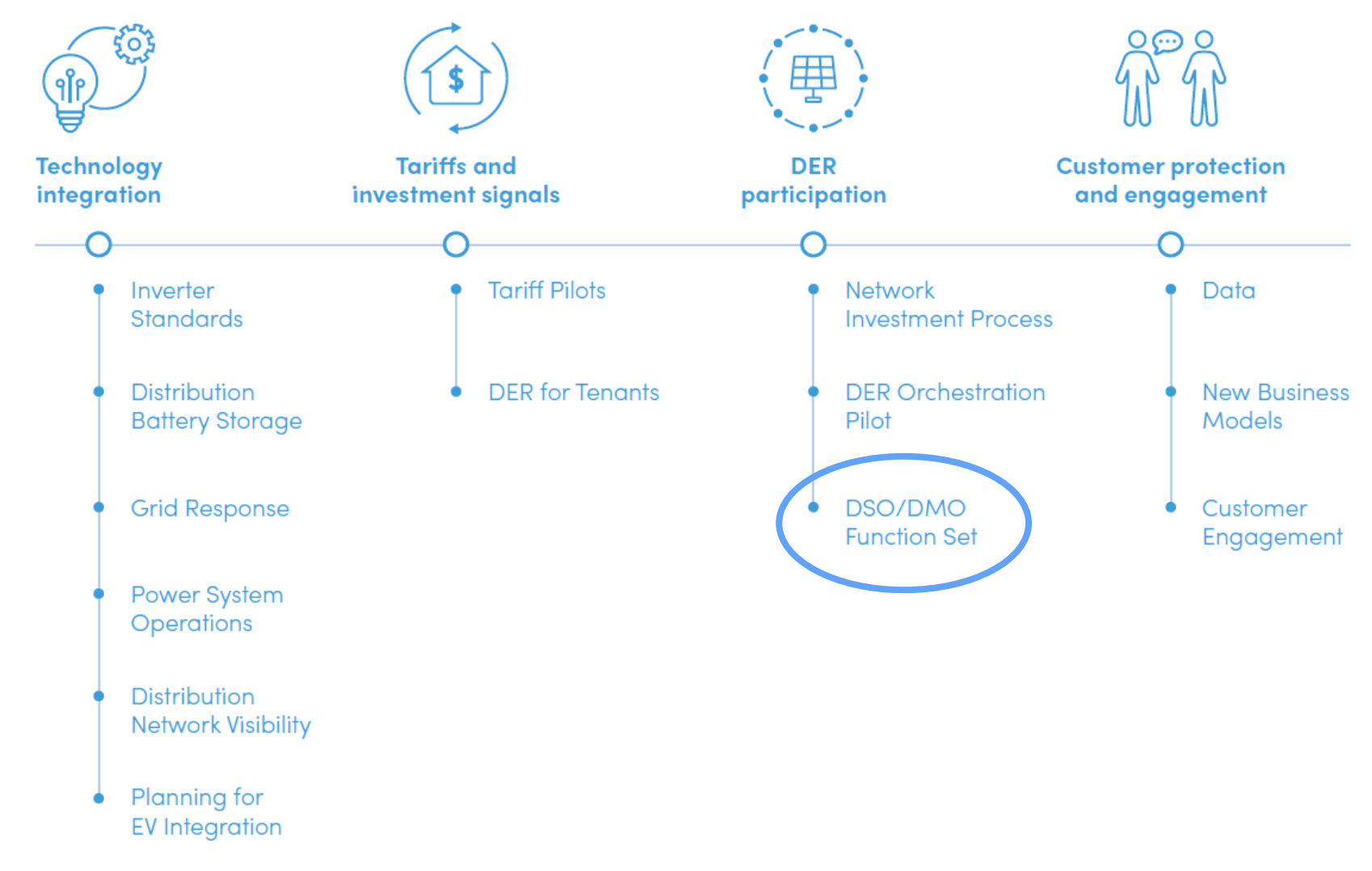
Market Start October 2022

Five year implementation

DER Roadmap – Themes and Elements

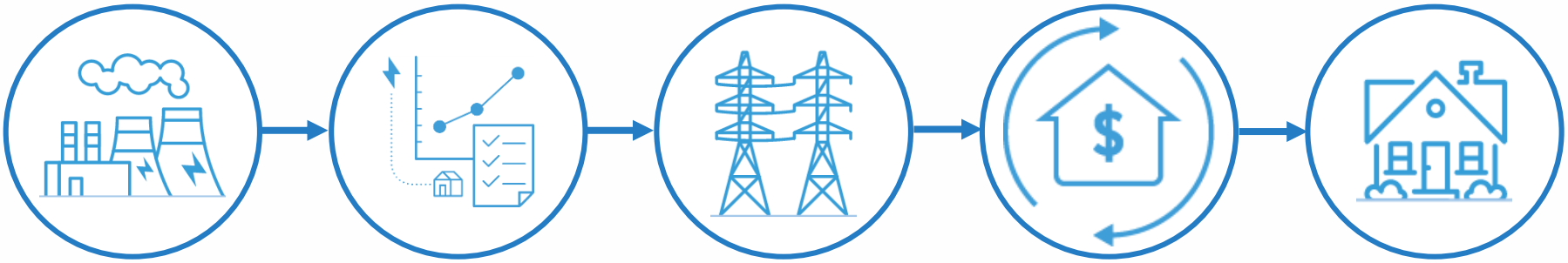


DER Roadmap – Themes and Elements



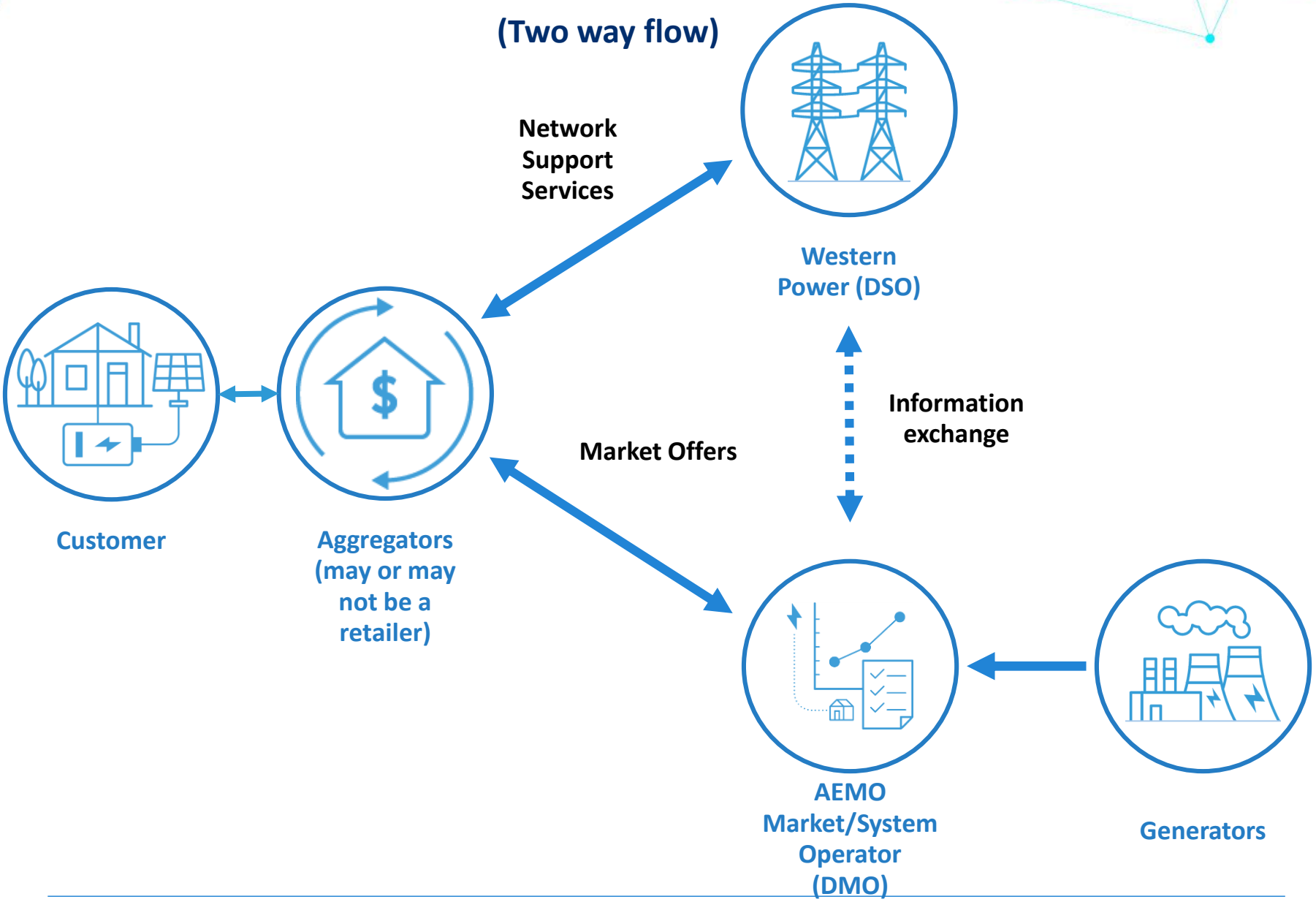
Traditional Electricity Supply Chain

(One way flow)



The Future Electricity Supply Chain

(Two way flow)



Issues Paper

DER Roadmap set out high-level requirements of actions needed to integrate DER into the electricity system.

Issues paper seeks more detailed comment from stakeholders related to :

- Distribution System Operator (DSO) – Western Power
- Market operator that facilitates DER participation (DMO) - AEMO
- Aggregators of DER
- Customer protections and considerations
- Other issues.

22 Consultation questions but stakeholders encouraged to comment on all issues.

Orchestration objectives

- Leverage investment in DER by small customers
- Fit for purpose in the SWIS – meets local needs
- DER integrated in existing markets
- No new institutions – keep additional costs low
- Build for future not just now

New Roles in a SWIS high DER future

Distribution System Operator – Extension of Western Power capability

A Distribution System Operator (DSO) enables access to the network, operates and develops an active distribution system comprising networks, generation, demand, and other flexible distributed energy resources.

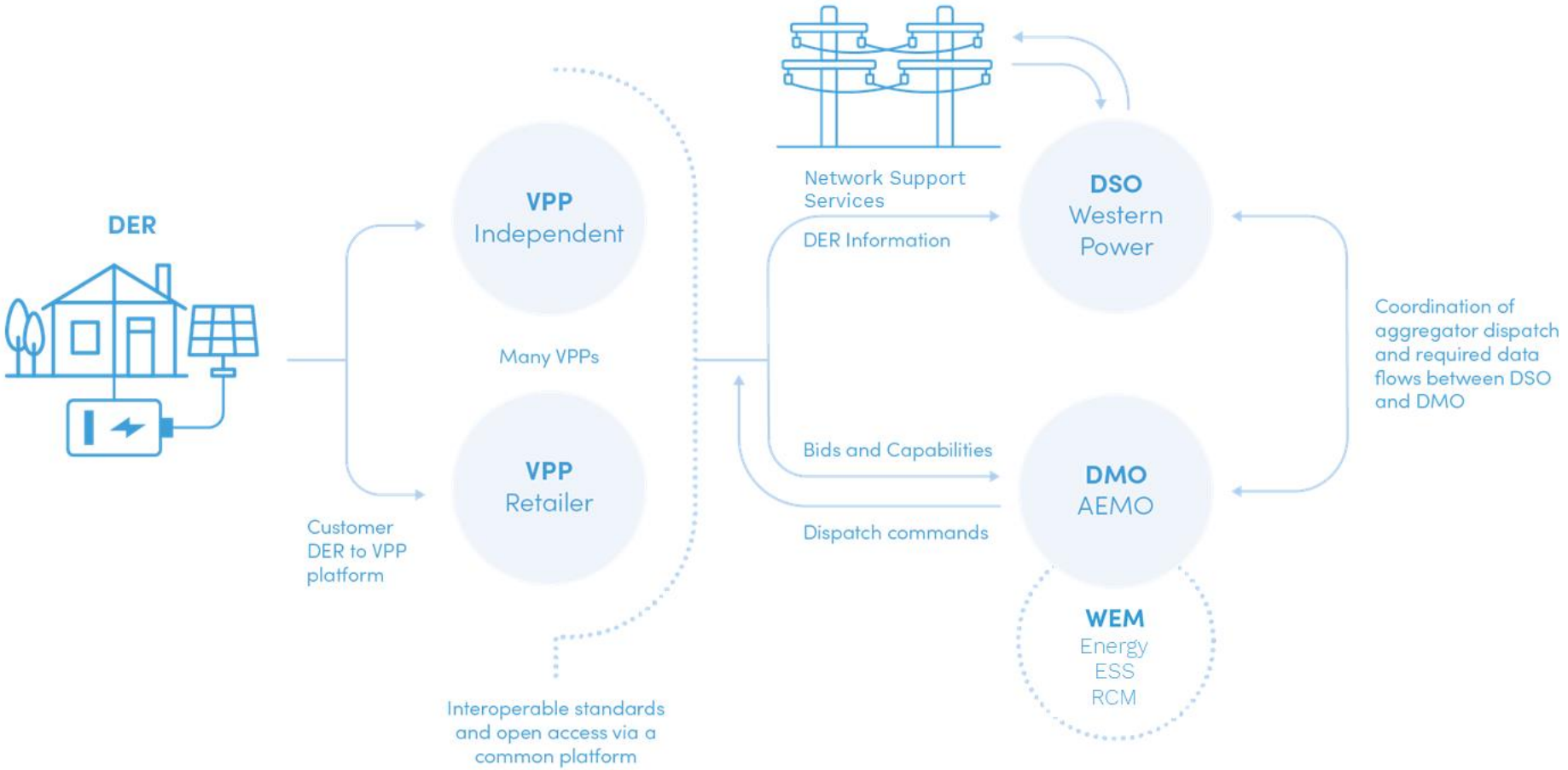
Distribution Market Operator – Extension of AEMO capability

A market operator that is equipped to operate a market that includes small-scale devices aggregated and able to be dispatched at appropriate scale.

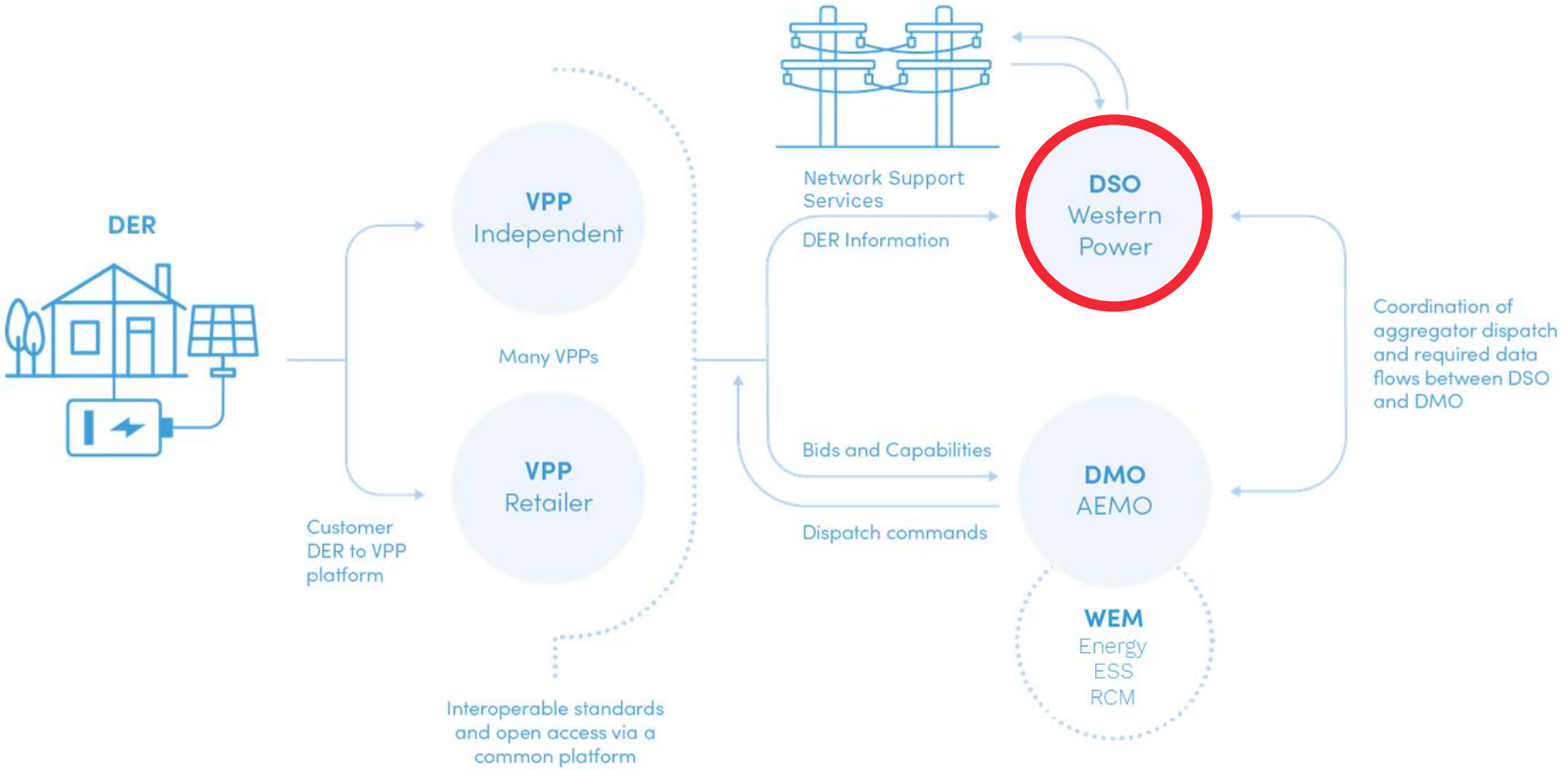
Aggregators of DER – Opportunity for retailers and alternative electricity service providers

A party which facilitates the grouping of DER to act as a single entity when engaging in markets (both wholesale and retail) or selling services to the DSO (network operator).

Potential DSO/DMO Model



DSO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Independent
Many VPPs
VPP
Retailer
Customer
DER to VPP
platform
Interoperable standards
and open access via a
common platform
Network Support
Services
DER Information
Bids and Capabilities
Dispatch commands
DSO
Western
Power
DMO
AEMO
WEM
Energy
ESS
RCM
Coordination of
aggregator dispatch
and required data
flows between DSO
and DMO

Distribution System Operator

Proposed Responsibilities

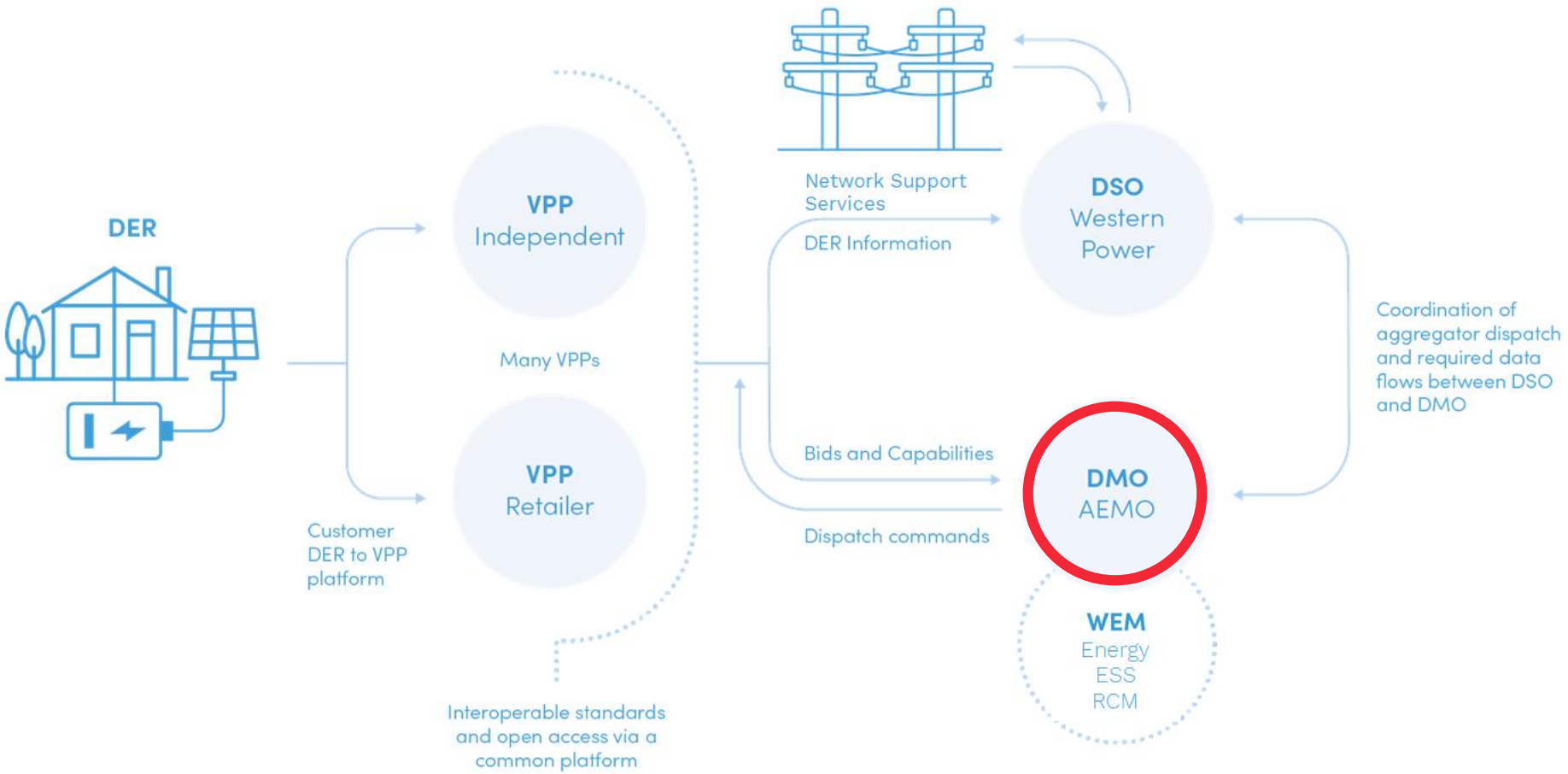
- D1 - Determine technical arrangements for connection of DER.
- D2 - Review and approve connection applications for DER assets. Includes assessment of network capacity and requirements within a given area.
- D3 – Manage the commercial and technical control of DER connections, as allowed by the connection agreement and regulatory frameworks.
- D4 - Collate information on DER and provide it to AEMO for a DER Register.
- D5 – Develop static and/or dynamic constraint equations at the distribution level that describe the transfer limits of the network
- D6 – Provide a static and/or dynamic operating envelope for all active DER

Distribution System Operator

Proposed Responsibilities - continued

- D7 – Plan, install and manage links to aggregators/retailers/AEMO to disseminate information about operating envelopes.
- D8 – Create and or administer systems (DSO Platform) to enable visibility of, and a means of managing power flows across the distribution network in real time.
- D9 – Develop processes within the DSO platform that allow the network operator to request network support services.
- D10 - Provide information on the deployment of network support services to AEMO to consider the impact of these services on the broader power system.
- D11 – Planning network investment that delivers economic benefit

DMO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Distribution Market Operator

Proposed Responsibilities

- M1 – Leverage and/or administer a market platform to enable generators, customers, aggregators and other third parties to access value in the energy market, the reserve capacity mechanism, essential system services and network control services that may be required in the future.

- M2 – Register aggregators and aggregated facilities for the purposes of market participation and provision of services under the WEM rules.

- M3 – Ensure that registered market participants meet participation requirements under the WEM rules.

- M4 – Co-ordinate with the DSO and aggregators to dispatch active DER in the market.

Distribution Market Operator

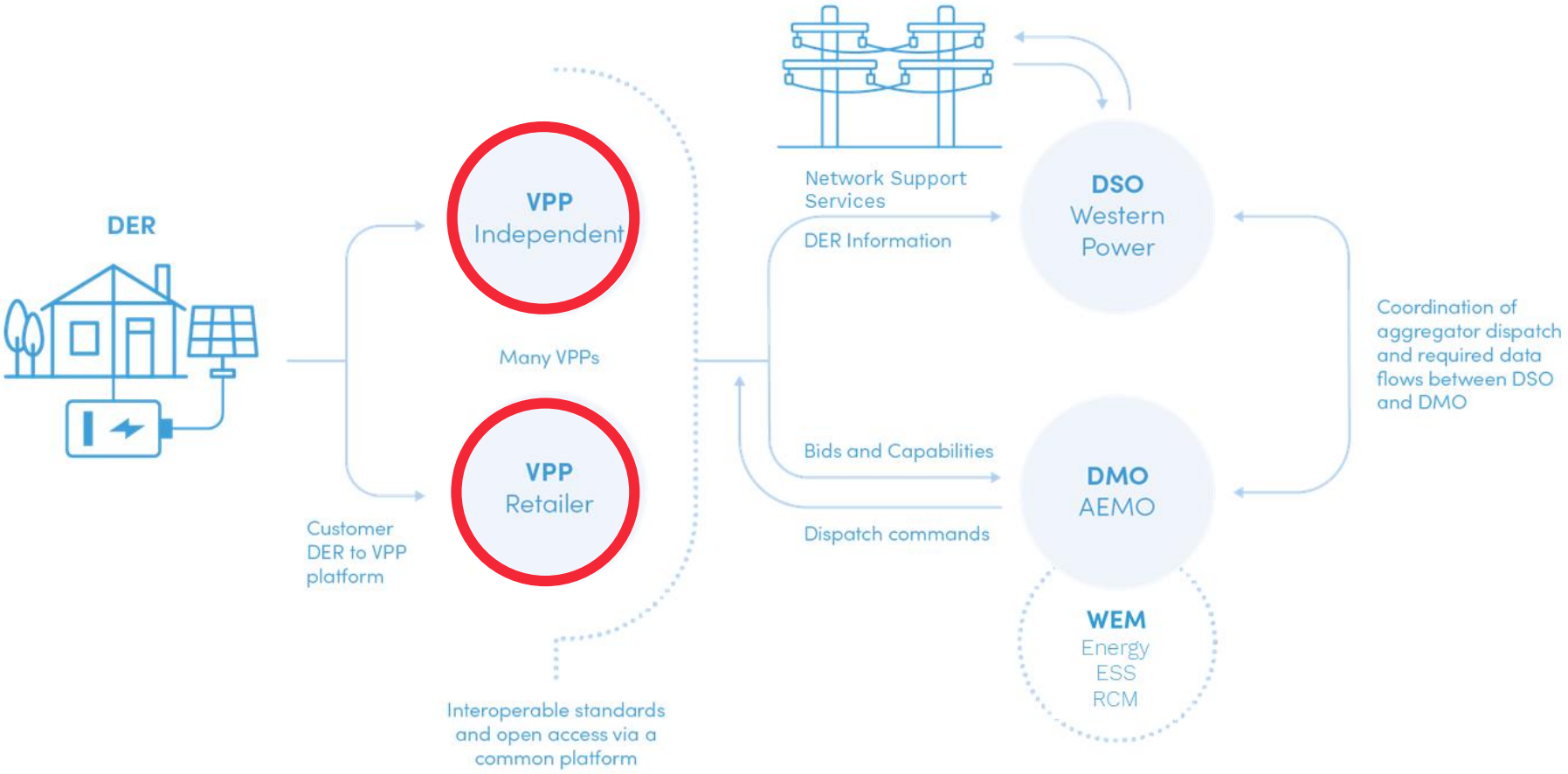
Proposed Responsibilities - continued

- M5 – Operate and manage the wholesale electricity market platform(s) to enable settlement inclusive of services provided by aggregated DER in the WEM.

- M6 – If/when a centralised market for network support services is established, settlement of DER dispatched to provide these services.

- M7 – Providing information to the DSO on opportunities for investments within the distribution network which would alleviate constraints that may deliver market benefits

Aggregators



Aggregators

Proposed Responsibilities

- A1 – Aggregate, monitor and manage a portfolio of individual DER via customer contracts.
- A2 – Develop and maintain appropriate systems for information gathering and to support management of contracted DER.
- A3 – Enter into bilateral contracts with the DSO for provision of network support services.
- A4 – Submit offers and bids to AEMO for provision of market services by DER

Aggregators

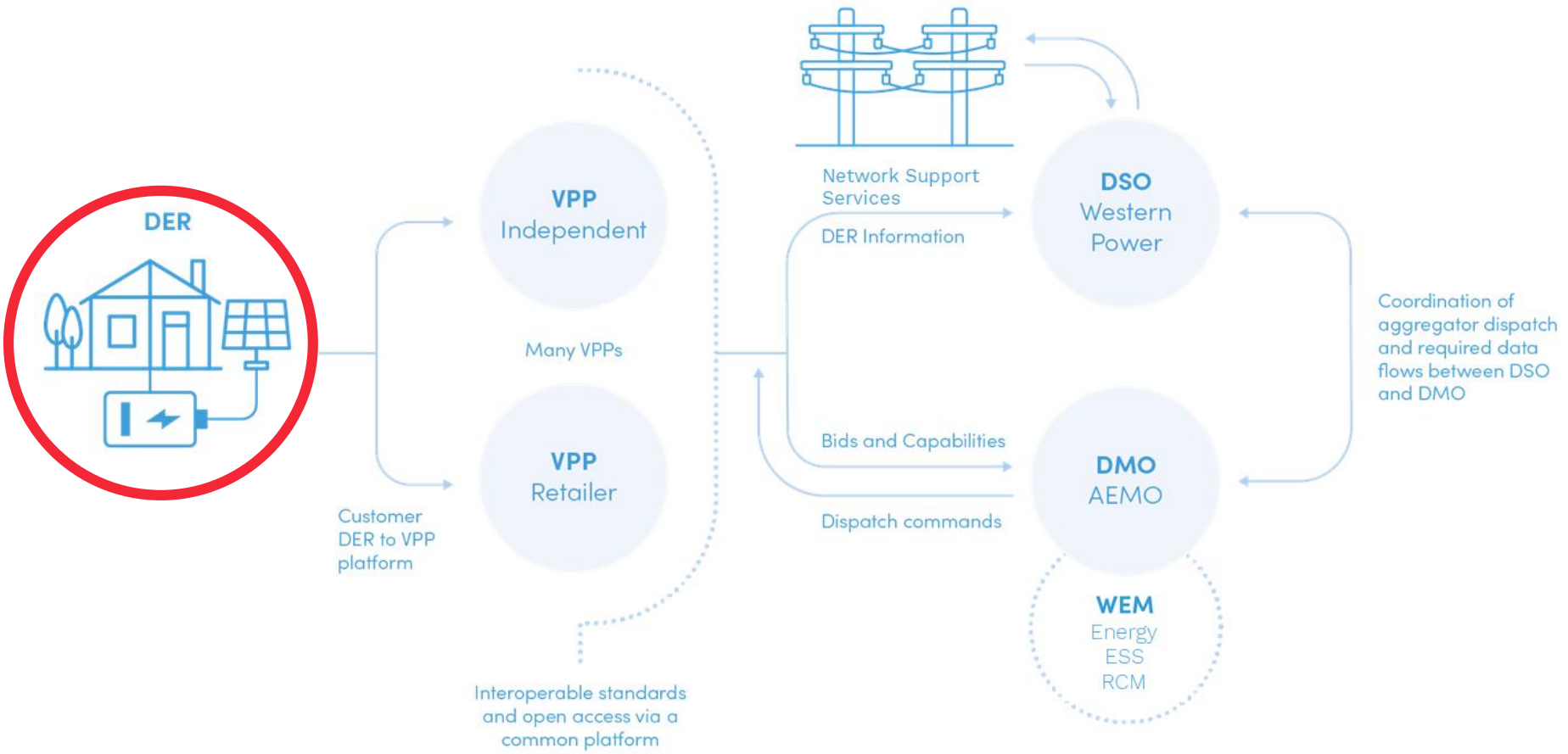
Proposed Responsibilities - continued

- A5 – Respond to instructions as per contractual agreements within the market or by the DSO in line with applicable Operating Envelopes.

- A6 – Develop customer products and contracts that reflect adequate compensation for market services or network support services and apply appropriate customer protections.

- A7 – Managing DER to provide customer services.

Customers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Recap

- DER needs to be integrated into the system to unlock benefits.
- This needs changes to the way we have done things before.
- Introduction of new roles and responsibilities for Western Power and AEMO.
- Need to coordinate and aggregate DER.
- Maximise the use of existing markets
- Need to examine consumer interaction with the power system to ensure access and equity as well as continued power system stability.
- Government will need to make policy calls on some issues.
- Feedback sought as per the paper to assist with design.

Next Steps

- Consultation period (closes 26 Sept 2020)
- Submissions will be published unless marked confidential.
- DER Orchestration position/implementation paper prepared for Taskforce end 2020 to outline the next steps of the path forward on the Roadmap.

Questions?

Contact details

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Dora.Guzeleva@energy.wa.gov.au

For more detail, please visit the Energy Policy WA webpage:

https://www.wa.gov.au/government/announcements/issues-paper-released-distributed-energy-resources-orchestration-roles-and-responsibilities

Energy Transformation
Implementation Unit

NAQ Framework

Final design

NAQ framework

- Key design parameters (covered previously)
- Assignment process (covered previously)
- Capacity Cycle timeframes
- NAQ requirements
- Information provision
- Treatment of new small generators
- Reserve Capacity Auction
- Supplementary Reserve Capacity
- Augmentation facilities
- Early CRC

NAQ assignment

Key design parameters

- NAQ is performance based and not subject to a specified time limit.
- All capacity resources (generation, DSM, storage) eligible.
- Facility performance (CRC) must support NAQ.
- Available NAQ assigned to existing facilities first before new facilities.
- NAQ assigned with the objective of maximising network utilisation.
- Different priorities apply to facilities depending on their circumstances.
  - Existing facilities have a higher priority if NAQ has been previously reduced due to ‘organic’ changes (network, demand, weather).
  - Existing facilities have a lower priority if NAQ is reduced due to poor performance resulting in a reduced CRC.
  - Existing facilities with more certified capacity (CRC) than NAQ will be prioritised ahead of new facilities
  - Existing facilities that upgrade capacity (beyond their initial maximum capacity) are assessed for any additional NAQ with new facilities.

NAQ assignment

Key design parameters

  - New committed facilities have a higher priority over new proposed facilities.
  - New facilities that accept a floating price have a higher priority over facilities that accept a fixed price.
- Facilities that fund augmentation are assessed ahead of other new entrants for NAQ enabled by their funding but not existing facilities.
- NAQ enabled by network funded augmentation will be prioritised to existing facilities that have been impacted by organic changes.
- A retiring facility does not retain its NAQ beyond the date of retirement regardless of whether the facility retires.
- DSM accreditation will be subject to a locational aspect.

Assignment process

Existing facilities and augmentation facilities

NAQ ASSIGNMENT PRIORITISATION ORDER

1 Existing facilities whose performance supports NAQ

- Does current CRC support last year's NAQ?
- Assessing negative impacts of 'organic' changes (i.e. demand, network, weather).

2 Existing facilities where NAQ reduced due to organic changes previously

- Assessing positive impacts from organic changes.
- Requires us to track 'Highest NAQ'.

3 Existing facilities where CRC exceeds NAQ

- Facilities that have received less NAQ than CRC because of limited network availability.
- Intermittent facilities with relevant level above NAQ.

4 Facilities that have funded network augmentation

- 'Augmentation facilities' modelled with existing facilities, but before new facilities.

5 6 7 8 New facilities and facility upgrades.

- New facilities are committed and proposed facilities.
- Operational facilities that have never been assigned NAQ.
- Upgrades tracked using 'Maximum Capacity' or nameplate capacity of facility.

NAQ framework

Capacity Cycle timeframes – proposed key changes

- EOIs open 15 January (currently 31 January) and close 1 March (currently 1 May).
- EOI responses published by 1 April (currently 15 May).
- CRC applications open 14 April (currently 1 May) and close 24 June (currently 1 July).
- No change to publication date of ESOO.
- AEMO notifies applicants of their CRC by 12 August (currently 19 August).
- Notification of bilateral trades and provision of Reserve Capacity Security by 25 August (currently 2 September).
- AEMO assigns Capacity Credits on 30 September and publishes NAQ related information.

NAQ framework

NAQ process requirements

- Market participants must submit an Expression of Interest for a Reserve Capacity Cycle in order to apply for certification of Reserve Capacity.
  - Western Power and AEMO need some certainty as to facilities seeking NAQ in order to prepare limit advice and constraint equations.
- Facilities that are yet to enter service must provide their ‘Minimum Required Capacity Credits’ as part of the information required for the certification of Reserve Capacity.
  - The Minimum Required Capacity Credits is the minimum amount of Capacity Credits a facility requires in order to participate in the RCM.
  - Facilities that receive less NAQ than their Minimum Required Capacity Credits will be removed from the NAQ assignment process.
  - This will facilitate the NAQ assignment process.
- DSM must provide the location identify of the single transmission node identifier the facility is connecting to.
  - DSM can only be aggregated if the associated loads are connected behind the same TNI.

NAQ framework

Information to be available to market participants

- Various sources of information will be made available to market participants to assist in decision making.
- ‘Preliminary constraint equations’ to be used for the NAQ assignment process will be published one month before the close of CRC applications.
  - Intent is to provide information to assist market participants with their application.
  - Will represent a reasonable expectation of the configuration and transfer capability of the network expected for the relevant Capacity Year.
- Once the NAQ assignment process is concluded, AEMO will publish
  - Modelling inputs, assumptions, and parameters used in the NAQ Model.
  - The final set of constraint equations used in the calculation and assignment.
  - A list of facilities with their NAQ for the relevant Cycle.

NAQ framework

Information to be available to market participants (continued)

- Public information to include:
  - Information relating to new load and generation applications.
  - Information on Market Participant funded network augmentation.
- ESOO to include additional information on the network and congestion to assist with decision making:
  - Planned network changes, including augmentations by market participants
  - Areas of the network where NAQ was reduced in the previous Capacity Cycle due to network limitations.
  - Local demand as forecast by Western Power.
- This information is intended to complement the range of other network and congested related information also to be published:
  - Congestion Information Resource – AEMO (WEM Rules).
  - Network Opportunities Map – Western Power (Access Code).

NAQ framework

Treatment of new small generators

- Rules currently allow small facilities (<1MW) to apply for Capacity Credits outside of the normal Capacity Cycle process and timeframes.
- ETIU is removing these provisions and these facilities will need to apply as part of the normal Capacity Cycle process and timeframes.
- Granting Capacity Credits to facilities outside of the normal Capacity Cycle process and timeframes will be inconsistent with the NAQ framework.
  - The NAQ assignment process would need to be re-run with all other facilities to determine if there any impacts to existing facilities.

NAQ framework

Removal of the Reserve Capacity Auction

- The current design of the Reserve Capacity Auction has several shortcomings and the ETIU is proposing to remove it from the RCM.
- Auction process triggered only if:
  - There is a capacity shortfall; and
  - Facilities have nominated to trade CRC in the auction.
- If the auction is not triggered, then facilities that have nominated to trade CRC in the auction cannot then bilaterally trade that capacity.
- The auction process is unlikely to resolve a capacity shortfall if insufficient Reserve Capacity has been certified to meet the target.
- If the purpose of the Reserve Capacity Auction is to address capacity shortfalls, it must be redesigned to achieve this.
- A mechanism already exists to address capacity shortfalls – the Supplementary Reserve Capacity mechanism.

NAQ framework

Supplementary Reserve Capacity Mechanism

- The Supplementary Reserve Capacity mechanism will be retained and continue to be utilised to procure capacity to address shortfalls.
- This is a more efficient process to procure shortfall capacity.
- Process currently allows AEMO to procure capacity for only the expected shortfall period rather than the entire Capacity Year.
- Capacity procured through the mechanism will not be eligible for NAQ.
- AEMO must consider the location and constraints to ensure capacity is procured in areas on the network with available capacity.

NAQ framework

Augmentation funding facilities

- Facilities that fund an augmentation to the shared transmission network will be prioritised ahead of other new facilities, but not other existing facilities.
  - Augmentation is for shared network, not just capital contribution for connection assets.
- This is because of the potential for the funding facility to affect the NAQs of other existing facilities, depending on where it locates.
- This can occur if, in a constrained section of the grid, the new entrant funding facility has a lower coefficient (or contribution to the constraint) than an existing constrained generator.
  - AEMO will not know impacts to existing NAQ unless the new augmentation facility is assessed for NAQ together with existing facilities.
- Augmentation funded by the facility must be such that the new facility's access to the network does not negatively affect existing facilities.

NAQ framework

Early CRC

- Early Certification of Reserve Capacity (Early CRC) provides an avenue for projects with long lead times to gain certification.
- These projects may include new technologies and facilities that are funding network augmentation or fuel infrastructure.
- NAQ framework will retain Early CRC.
  - Facilities may apply to AEMO up to a maximum of two years before the relevant Capacity Cycle.
  - Facilities will need to demonstrate to AEMO that their project requires long lead time.
  - Eligible facilities will be included in the NAQ assignment process and be granted NAQ but will only be assigned Capacity Credits in the relevant Capacity Cycle.
  - NAQ granted to eligible facilities subject to the same rules as other facilities.

Next steps
RCM changes

- September 2020
  - Release an Information Paper on the final NAQ/RCM framework design
  - Finalise draft amending rules
  - Conduct one-on-one stakeholder briefings
- October 2020:
  - Commence formal consultation on draft rules
  - One-on-one and TDOWG stakeholder briefings
- November 2020:
  - Submit amending rules to Minister for approval

Energy Transformation Implementation Unit

Storage participation in the RCM

Detailed design matters

28 August 2020

Previous Taskforce endorsed policy positions

The introduction of a derating approach for certifying the capacity value of large-scale storage facilities

The introduction of a daily, duration-limited obligation for storage facilities that are assigned Capacity Credits to make that capacity available to the energy market

The application of adjusted reserve capacity refunds for storage facilities that are assigned Capacity Credits and do not meet their obligations to make that capacity available

A requirement for hybrid facilities with more than one type of generating technology behind a connection point to have each element of the facility certified separately for reserve capacity purposes

A requirement for storage facilities to contribute to funding reserve capacity payments if they consume energy during peak periods

The inclusion of a review of the certification and participation model for storage facilities in the Wholesale Electricity Market (WEM) Rules

Derating method

	Linear	Effective Load Carrying Capability	Equivalent Firm Capacity	Least worst regrets
Minimises complexity for market participants and AEMO				
Alignment with existing approaches to de-rating.		(Once new RLM introduced)		
Not overly volatile.				
Compatible with other aspects of the RCM		(Once new RLM introduced)		
Transparent				
Accurately measures the contribution of resources of different durations				
Ease of implementation.				

Taskforce endorsed approach: Linear model

Addressing volatility and investment certainty

RCOQ period duration would fluctuate over time as the characteristics of the peak electricity demand change

This volatility cannot be mitigated by any one facility – this can create barriers to investment

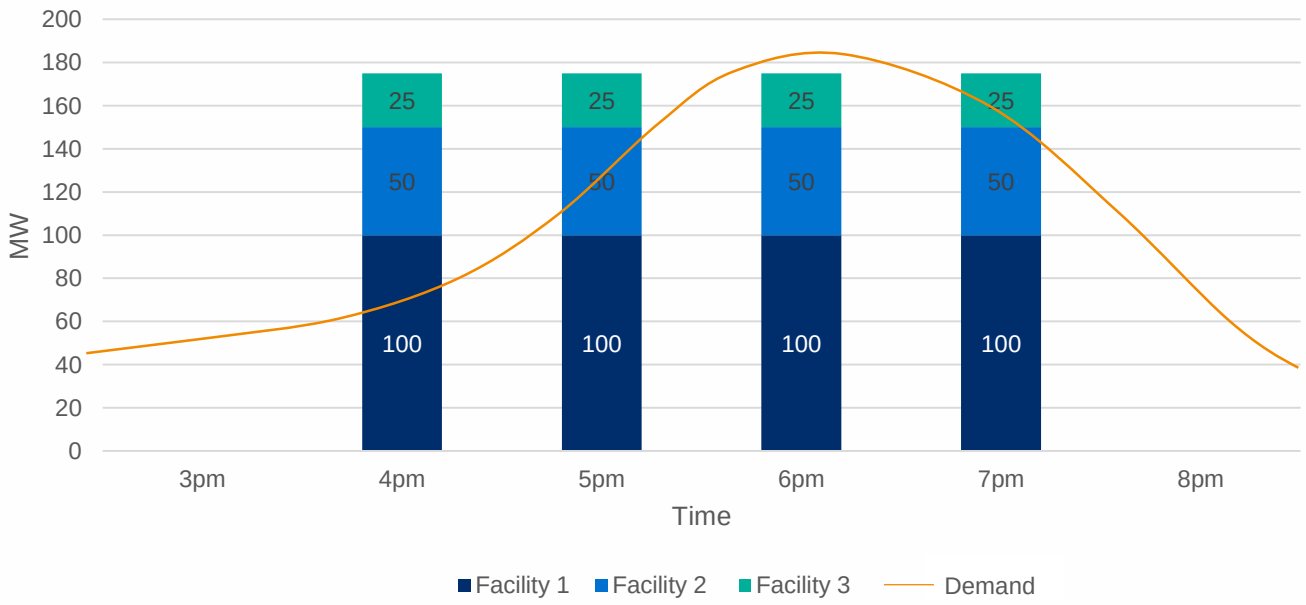
Investment incentives can be improved by hard-coding the initial RCOQ period duration (four hours) into the WEM Rules for a set duration (5 years)

A review of the derating methodology and duration of RCOQ (peak event) should be carried out at least once in every five years to ensure it remains fit for purpose

Reserve Capacity Obligations

Obligations for facilities with Capacity Credits include: to have planned outages approved by AEMO, to bid the required amount of energy into the day ahead and real time market, and respond if dispatched by AEMO

All facilities should be required to be available for a standardised duration (at a level they can sustain for that duration)



Metering arrangements for hybrid facilities

Participants with hybrid intermittent/storage facilities will be required to install (or use) their own meters on at least one element of their facility and provide data from this meter to AEMO for the purposes of calculating the relevant level in the RCM.

A framework will be put in place to ensure the integrity of the data provided. This framework will be based on that used under the Renewable Energy Target Scheme for large-scale generation certificates, which requires generators to install sub-metering on renewable energy sources to support any claim to create a large-scale generation certificate.

Other design decisions

Registration – no new class, leverage ‘electrical storage resource’ definition to impose obligations

RCOQ for hybrid intermittent/storage facility - zero outside of storage RCOQ period, RCOQ equal to the level of capacity credits of the storage facility during the storage RCOQ period

Outages - hybrid facilities should be required to submit both planned and forced outages on the storage component of the facility

ESS provision - the storage component of hybrid facilities will be able to be accredited to provide ESS. The operational detail of this will be captured in ESS Accreditation procedure

Small Distribution Connected Storage

Proposed Treatment

- Small Electric Storage Resource (ESR), including Small Aggregation comprising aggregated ESR – to be registered as Non-Scheduled Facility
- Aggregated ESR must be connected behind a single TNI
- Certified Reserve Capacity assigned:
  - in accordance with the Relevant Level Methodology, or
  - for facilities which were not in operation in any previous Capacity Year, calculated by applying a Linear Derating Method
- Participant must provide:
  - Each individual nameplate capacity and discharge duration of each Electric Storage Resource (if Small Aggregation);
  - Evidence of contractual or other arrangements that demonstrate the Facility will discharge during peak intervals

Meeting close

Questions or feedback can be emailed to TDOWG@energy.wa.gov.au

Next meeting: TDOWG 23 - Page turn of the Transitional Rules for GPS,
Wednesday, 9 September 2020 9:30 AM-11:30 AM