

Project Symphony

Our energy future

Work Package 3.2: Aggregator Report

In partnership with:



Document Control

Disclaimer: This project received funding from the Australian Renewable Energy Agency (ARENA) as part of ARENA's Advancing Renewables Program.

The views expressed herein are not necessarily the views of the Australian Government, and the Australian Government does not accept responsibility for any information or advice contained herein.

This document is a Knowledge Sharing Deliverable (WP3.2) as part of Project Symphony under the ARENA Funding Agreement. The views expressed in this document are project views and may not necessarily reflect the views of project parties individually.

Table of Contents

1. Executive Summary	4
2. Introduction	6
3. Third-Party Aggregator Engagement	7
3.1. Third-Party Aggregator Involvement in Project Symphony	7
3.2. Objectives for Third-Party Aggregator Involvement	7
3.3. The DER Aggregation and Orchestration Ecosystem In Western Australia	10
3.4. Process Undertaken	11
3.5. Third-Party Aggregator Participation Requirements	12
3.5.1. <i>Technology requirements</i>	12
3.5.2. <i>Performance Reporting</i>	14
3.5.3. <i>Controllable DER</i>	14
3.5.4. <i>Customer Engagement Approach</i>	15
3.5.5. <i>Commercial Considerations</i>	15
3.6. EOI Outcomes	16
3.7. Learnings From The Third-Party Aggregator Engagement Process	17
4. Research on Customer Sentiment Towards Orchestration	19
4.1. Overview	19
4.2. Research Limitations	19
4.3. Research Results Summary	20
5. Next Steps	21
5.1. Engagement with Third-Party Aggregators	21
5.2. Building on Customer Sentiment Research	21
6. APPENDIX: Full Research Results	22
6.1. Information Provided to Survey Respondents	22
6.2. Response Numbers	23
6.3. Survey Composition	23
6.4. Survey Insights	25

1. Executive Summary

Project Symphony (the Project) is an innovative project where customer distributed energy resources (DER) like rooftop solar, batteries and selected household appliances will be orchestrated as a Virtual Power Plant (VPP) to participate in a future energy market. DER orchestration services will be provided by both Synergy and potentially multiple Third-Party Aggregators. For the purposes of the Project, aggregators are defined as parties which facilitate the grouping of DER to act as a single entity when engaging in power system markets (both wholesale and retail) or selling services to the system operator(s).

The involvement of Third-Party Aggregators in the Project will test the ability to aggregate and orchestrate DER across multiple parties and aggregation models and will provide valuable lessons regarding how to foster development of the nascent orchestration and aggregation ecosystem in Western Australia as needed. Third-Party Aggregators are also expected to bring their own customers to the Project (while integrating with the aggregator platform developed under Project Symphony), which will amplify customer acquisition across a range of DER types. While all residential customers and many business customers will be Synergy customers, a Third-Party Aggregator could have an existing relationship, or a future relationship, with customers that are separate to Synergy's relationship with that customer.

The selection of Third-Party Aggregators for Project Symphony was undertaken via an open Expression of Interest (EOI) process, whereby aggregators and broader DER ecosystem participants were invited to provide a response to the EOI. Prospective Third-Party Aggregators were identified via an ecosystem scan and through discussions with Project partners (Synergy, Western Power, AEMO and Energy Policy WA) and were invited to respond, but any interested party could seek to provide a response. Following a four-week submission process that closed on 17 December 2021, Third-Party Aggregator responses were assessed against a variety of selection criteria to be shortlisted, with shortlisted parties then entering commercial negotiations prior to formal appointment by July 2022.

Given the Project objectives, potential Third-Party Aggregators needed to satisfy a number of criteria:

- They had current access to controllable DER within the Project Target Geographical Area (TGA), and more broadly across the South West Interconnected Scheme (SWIS). The TGA was outlined in detail in Work Package 1.1, the Pilot Area Report¹;
- They had the ability to access or source additional controllable DER within the Project TGA; and
- They had technology solutions that met the aggregation and orchestration requirements of the Project within the required project timeframe.

The Third-Party Aggregator EOI process has underscored the relative nascency of the Third-Party Aggregator ecosystem in Western Australia. Project Symphony is the first VPP pilot in the SWIS and the first in Western Australia to test customer DER participation in market services. In comparison, there are multiple on-market VPP providers active on the National Energy Market (NEM) and there

¹ Work Package 1.1, the Pilot Area Report. Produced by Western Power, delivered to ARENA August 2021

have also been several VPP trials in the NEM. The legislated split between the non-contestable and contestable retail market, the different legislative and regulatory arrangements of the Wholesale Energy Market (WEM), Essential System Services markets and Capacity market in Western Australia compared to the NEM, and the present inability for aggregators to directly participate in energy markets in Western Australia have all led to an ecosystem that is still emerging.

A separate customer insights survey into residential and business customer sentiment towards DER 'orchestration' and 'aggregation' reflects that these concepts are also still relatively embryonic within the Western Australian energy consumer mindset. There is a general lack of understanding about what the concepts are, their benefits, and concern about control, cost and risk. This is understandable and suggests that industry participants have much work to do to educate energy consumers about the role of DER in the future WA energy system, and the benefits of this emerging model in their energy choices. Work Package 2.1, the DER Services Report², also noted that customer involvement in a VPP was not assured, and that it was important for them to be offered products and services that were easy to understand and action. Taken together, the research outlined in this document and the DER Services Report highlight a lack of customer participation could be a significant barrier to the large-scale uptake of related products and services. Project Symphony, and in particular Synergy as the partner responsible for customer engagement, will need to leverage and build on these findings through its customer recruitment activities. Work Package 3.3, the Social Science Study (due to be submitted to ARENA in May 2023), will also explore in more detail customer sentiment to DER orchestration through research conducted with the University of Tasmania.

Customers also reflected concerns about the role of Third-Party Aggregators (versus Synergy), including their profit motive, reliability, and degree of regulation. These concerns are understandable, given that this is an emerging model and most of the respondents acknowledged little understanding of the concepts, but demonstrates that unknown third parties may have a considerable hurdle to overcome to establish their profiles in the Western Australian energy market. It should be noted that these results could have differed if known brands were compared against Synergy, which was not covered by the research.

² Work Package 2.1, the DER Services Report, produced by Synergy, delivered to ARENA February 2022

2. Introduction

Project Symphony is an innovative project where customer distributed energy resources (DER) like rooftop solar, batteries and selected household appliances will be orchestrated as a Virtual Power Plant (VPP) to test a model for participation in Western Australian energy market. The Project provides an opportunity to test and enable DER integration and services for use in future commercial environments, where customers can benefit from being active market participants. The Project is occurring in the context of a broader market transformation program for the better integration of DER into the Western Australian electricity system and is subject to ongoing and rapidly evolving policy and regulatory changes.

The purpose of this document is to summarise the approach taken to identify and engage Third-Party Aggregators to be involved in the provision of Distributed Energy Resource (DER) services and orchestration testing within Project Symphony, and to summarise insights from primary research into customer sentiment towards DER orchestration and Third-Party Aggregators.

It is important to note that this document does not provide a definitive perspective on the learnings from Third-Party Aggregator involvement in the Project, as this report is being written prior to the engagement of the preferred Third-Party Aggregators and in parallel with the review of Third-Party Aggregator responses.

The document is divided into two sections:

- *Third-Party Aggregator Engagement*: a summary of the process Synergy went through to engage Third-Party Aggregators into Project Symphony.
- *Customer Sentiment Toward Orchestration*: a summary of two customer surveys that sought to understand the sentiment of residential and commercial customers towards DER orchestration and Third-Party Aggregators. Full details on the research conducted can be found in the appendix.

3. Third-Party Aggregator Engagement

3.1. Third-Party Aggregator Involvement in Project Symphony

The scope of Project Symphony includes installing and securing a meaningful aggregation of customer DER assets via direct engagement and multiple Third-Party Aggregators³. To enable this requirement, Synergy, in its capacity as Project partner, undertook a process to:

- Define the objectives for Third-Party Aggregator involvement in the Project (and therefore the requirements that Third-Party Aggregators had to demonstrate);
- Scan the WEM aggregation and orchestration ecosystem to understand if there were members of the ecosystem who could meet those requirements; and
- Develop and deliver an Expression of Interest process that invited prospective Third-Party Aggregators to present their proposals as to how they could meet those requirements.

The Project has tight timeframes reflecting local Western Australian needs to manage the challenges of rapid DER growth; the planned “go live” date for Third-Party Aggregator involvement is 1 July 2022 and will continue through to the end of the Project on 30 June 2023. As a result, the Third-Party Aggregator EOI process was undertaken rapidly to ensure that the Project would be able to select preferred Third-Party Aggregators by February 2022. The key process milestones were:

- Expression of Interest issued: 19 November 2021
- Briefing for registered parties: 25 November 2021
- EOI submissions due: 17 December 2022
- Third-Party Aggregators selected: February 2022
- Commercial agreements with preferred Third-Party Aggregators finalised: May 2022
- Technology integration activities with Synergy platform commenced: May 2022
- Orchestration testing commenced: July 2022
- Project Symphony completion: 30 June 2023

3.2. Objectives for Third-Party Aggregator Involvement

Overall, the Project is targeting to aggregate and orchestrate a total of 900 DERs, a portion of which will be via Third-Party Aggregators, within the Target Geographical Area from approximately 500 customers, across four DER types:

- Generation management of rooftop solar.
- HVAC control.

³ Note that Synergy will be the Financial Responsible Market Participant (FRMP) and that the Third-Party Aggregator will contract with Synergy. An independent aggregator will not be tested as part of Project Symphony.

Project Symphony

Our energy future

- Hot water control.
- Behind the meter battery energy storage.

It is expected that Third-Party Aggregators will bring their own customers to the Project and will interface with the aggregator platform developed under the Project to access the various energy value pools being tested in the Project.

The TGA is the area served by the substation identified by Western Power as ‘Southern River’ and was outlined in detail in Work Package 1.1, the Pilot Area Report. This area is shown in Figure 1 below. The substation does not fit neatly into suburbs or streets and the area concerned is instead defined on Standing Data provided by Western Power, allocating individual NMLs to a substation. Geographically this is a large area, stretching from (but not including) Jandakot Airport in the west to Camillo and Mount Nasura in the east and almost down to Anketell Road in the south. Recruitment activities will focus on customers on distribution transformers associated with a particular feeder (SNR540) within the TGA. The area covered by SNR540 is shown in Figure 2 below.

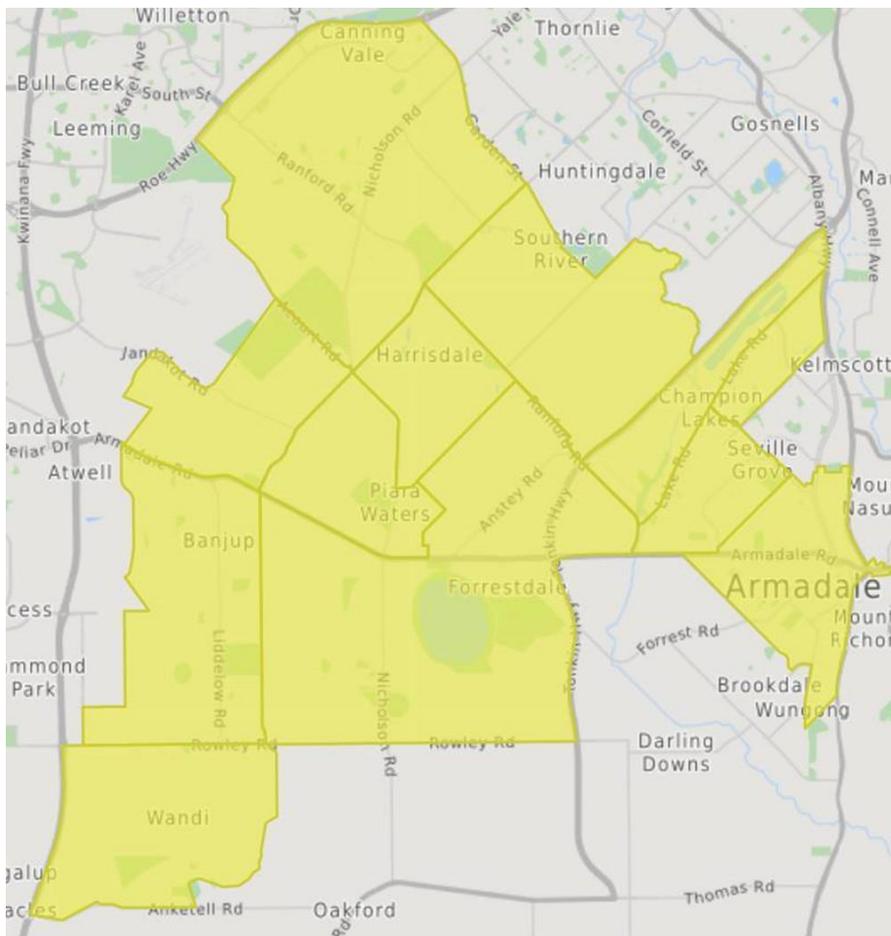


Figure 1 – Southern River zone substation region

In partnership with:



HFWPER\1197114-1

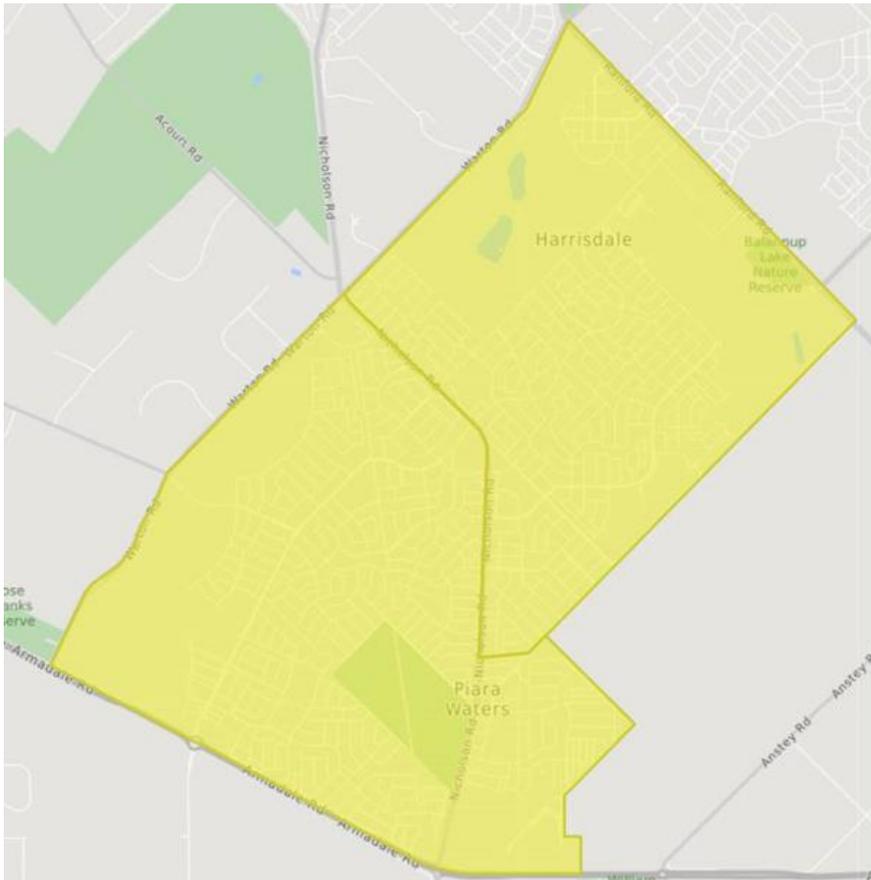


Figure 2 – SNR540 feeder region

Given these Project requirements the Project had several objectives from the Third-Party Aggregator EOI process:

- Source existing controllable DER located within the TGA that could be brought into the Project (with Third-Party Aggregator controllable DER located outside the TGA also of interest).
- Identify Third-Party Aggregators with proven customer acquisition capability who could source new DER within the TGA.
- Source a mix of DER types (e.g., hot water control versus HVAC control versus battery storage).
- Ensure that Third-Party Aggregators have proven technology solutions to meet the aggregation and orchestration requirements within the required timeframe.
- Understand different potential commercial compensation models, including price discovery for customer acquisition and DER orchestration.
- Understand emerging ecosystem dynamics, including which providers have existing capability and which are still developing it; what are the emerging Third-Party Aggregator business models; and under what circumstances will members of that ecosystem (installers, technology providers, device manufacturers) collaborate.

3.3. The DER Aggregation and Orchestration Ecosystem in Western Australia

The ecosystem for aggregation and orchestration services in Western Australia is still nascent. While there are numerous entities active in the WA market who retail or install controllable DER under a variety of financial models, and the platform selection process for the Project demonstrated strong interest from technology providers, there is not currently a strong baseline of orchestration and aggregation capability active in the WA market, especially across the Western Power network. There are a number of potential causes of this including market rules (including the present inability for virtual power plants to participate in energy markets in Western Australia) and the current contestability policy which places the government owned retailer Synergy as the sole retailer for most small-use electricity consumers.

The Western Australian energy landscape is also complicated by a significant energy market reform program that is running in parallel with DER integration work packages, including Project Symphony.

Project Symphony is an important milestone in developing aggregation capability in Western Australia. It is a proof of concept for Third-Party Aggregator participants, will help inform changes to technical capability, regulatory and market frameworks, and provide a valuable opportunity for successful Third-Party Aggregator participants to accelerate their development and test their offerings in a large-scale pilot environment.

Despite the relative immaturity of the offerings in the SWIS, an ecosystem scan (undertaken with input from internal project subject matter experts, and supplemented by an external market scan) demonstrated that there are **seven categories** of participant that could add value to the Project:

- *Providers with known orchestration and aggregation capability active in the SWIS:* these are providers who have DER within the TGA (or the SWIS more broadly) and claim either a current ability or an ambition to orchestrate and aggregate such devices. Critically, these providers have a current direct relationship with the customer and may have the contractual right to orchestrate their devices.
- *Providers known to have DER in the TGA and with proven VPP capability in the NEM:* these are providers with a proven capability to orchestrate and aggregate DER as demonstrated on the NEM and have current assets within the TGA. However, they are not currently using that capability within the SWIS and may not have a direct current relationship with the customer, nor an existing right to orchestrate customer devices.
- *Providers with emerging asset control solutions and who have expressed interest in the Project:* these are providers with innovative DER control solutions, either for their devices or for others, and have expressed a direct interest in being involved in Project Symphony.
- *Inverter manufacturers with assets in the TGA:* these entities don't have a direct relationship with the customer, but participants with more advanced control expertise have the capability, but not the existing contractual right, to orchestrate DER. There are multiple manufacturers with this advanced control capability that have inverters within the TGA.
- *DER installers:* while not traditionally orchestrators or aggregators in their own right, they have a unique understanding of what devices exist in the TGA, and a historical (if not currently active)

relationship with the customer. They may have an interest in partnering with other members of the ecosystem to help meet the project objectives.

- *Local innovative energy start-ups seeking to provide novel/innovative solutions:* these are local (WA) businesses seeking to play a role in the energy transition who believe that they have novel offerings that could provide value in a DER-enabled future.
- *Businesses who have expressed interest in other energy management projects in the SWIS:* these are providers who have previously expressed an interest in energy management projects in the SWIS, are known to the Project partners, and may be able to be part of a solution that meet the Project objectives.

3.4. Process Undertaken

The process undertaken to shortlist Third-Party Aggregators for their involvement in the Project followed a five-stage process of ecosystem scan, potential respondent list syndication, EOI registration and issuance, response assessment and commercial negotiation.

The ecosystem scan was undertaken to understand ecosystem capability, capacity and potential interest. An external market scan was supplemented by interviews with project party subject matter experts (from within Project Symphony, and also more broadly) to map the current ecosystem of known providers, including those who have previously expressed an interest in working with Synergy on DER matters. The focus was to identify potential Third-Party Aggregators that could add value to the Project through their installed DER or customer relationships in the TGA, proven or claimed DER device control capabilities, and actual or prospective customer relationships pertaining to DER.

This list of potential EOI respondents was syndicated and tested with the project partners to understand their perspectives. This process better defined what the various project partners were seeking from potential Third-Party Aggregator involvement, and also added potential providers to create an initial list of potential respondents.

The EOI process was managed through Synergy's Ariba procurement platform. While the EOI process was an 'open' process (that is, any interested party could respond), a constraint was that the interested party needed to be registered in Ariba to receive notification of the EOI and to respond:

- To ensure that the most prospective parties had the opportunity to respond to the EOI, the initial list were contacted directly by Synergy relationship owners to inform them that an Expression of Interest for Third-Party Aggregator involvement in Project Symphony was imminent, and had they not done so they needed to pre-register in Ariba.
- The Project Symphony page on the Synergy corporate website also encouraged interested parties to register via Ariba: *"For future phases of the pilot, Synergy will undertake an Expression of Interest (EOI) process for established Third-Party Aggregators in the Southern River area. The EOI will be released via ARIBA (e-Procurement system). This will enable suppliers to respond directly to Synergy tenders and quotes. Suppliers that are interested in being involved in the EOI process can register their interest by emailing vendor.support@synergy.net.au."*

- Once the EOI was formally released a number of potential respondents contacted Synergy directly and registered so that they could also access the EOI.

The EOI was formally released on Friday 19 November and was followed up with a vendor briefing on 25 November for interested parties. The briefing had ~45 individual Microsoft Teams logons and there were numerous questions regarding Project objectives, Third-Party Aggregator expectations, technology requirements, and potential commercial arrangements.

EOI submissions formally closed on Friday, 17 December and were then assessed by the Project against the published selection criteria, which are outlined below.

3.5. Third-Party Aggregator Participation Requirements

Interested parties were asked to describe how they met the five participation criteria:

- **Technology requirements:** The Third-Party Aggregator has, or will be in a position to have, a technology solution that enables orchestration of customer DER and meets one of the two technology models outlined in the EOI;
- **Performance reporting:** The Third-Party Aggregator has demonstrated ability to report performance against five performance reporting criteria outlined in the EOI;
- **Controllable DER:** The Third-Party Aggregator has, or will be in a position to have, customer DER under their control, with a strong preference for controllable assets within the TGA;
- **Customer engagement approach:** The Third-Party Aggregator has an approach to manage their customer relationships as it pertains to the Project objectives; and
- **Commercial considerations:** The Third-Party Aggregator has an acceptable commercial model for their involvement in the Project.

3.5.1. Technology requirements

The Project Symphony technology team detailed two different sets of technology requirements for Third-Party Aggregators to meet to enable successful interface with the selected aggregator platform for the Project:

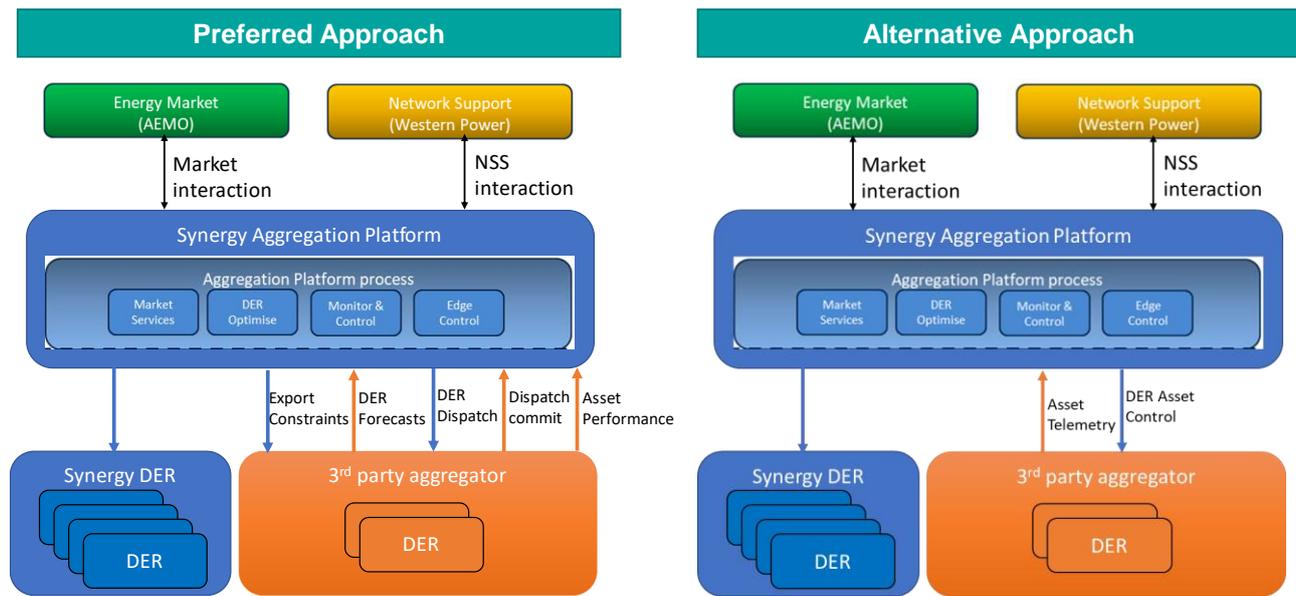


Figure 3 – Third-Party Aggregator Architectural approaches

The **preferred** approach sought a set of data exchange, control, forecast, aggregation control and compliance capabilities from the Third-Party Aggregator:

- a. An **API layer** to support appropriate data exchange, including:
 - i. Registration of DER assets, their standing data and NMI;
 - ii. Export constraints at each of the access points that contain controlled DER;
 - iii. Forecast of aggregated DER capacity taking into account asset, system and access point constraints;
 - iv. Dispatch instruction to control the DER;
 - v. Performance of the DER in meeting the dispatch instruction.
- b. **Monitor and control capabilities** to monitor, manage and control DER assets.
- c. **Optimisation capabilities** to forecast the DER capacity to provide energy as part of a market response.
- d. **Aggregation control capabilities** for existing or planned DER in the TGA of the Project, and then more broadly across the SWIS.
- e. **Tested compliance, or ability to test compliance**, of the DER asset pool to meet the requirements for DER control.

In the event that a Third-Party Aggregator could not meet the preferred technology requirements, they could alternatively demonstrate how they could allow orchestration of their assets via the provision of:

- a. An **API layer** to support appropriate data exchange, including:

- i. Registration of DER assets, their standing data and NMI (which could be manually integrated);
 - ii. Individual DER Asset telemetry data; and
 - iii. Dispatch control commands for the DER assets to meet the energy dispatch instruction.
- b. **Monitor and control capabilities** to monitor, manage and control DER assets.
- c. **Tested compliance, or ability to test compliance**, of the DER asset pool to meet the requirements for DER control.

Third-Party Aggregators were asked to note that while the Project would not fund development works, Synergy would be willing to discuss options to partially compensate Third-Party Aggregators for Project-specific technology requirements. This reflects that there may be particular costs that Third-Party Aggregators would incur to meet the defined requirements of the Project that they may not realise in the ordinary course of business.

3.5.2. Performance Reporting

Potential Third-Party Aggregators were asked to demonstrate their ability to report against five performance criteria:

- a. Time to activate controlled DER in order to meet dispatch instruction(s);
- b. Performance monitoring time granularity;
- c. Performance monitoring latency;
- d. Performance compliance to the dispatch instruction(s); and
- e. DER asset control availability.

3.5.3. Controllable DER

Potential Third-Party Aggregators were asked to demonstrate that they currently had, or were in a position to have, customers' DER under their control. While preference would be given to Third-Party Aggregators with controllable devices within the Project TGA, the Project was willing to consider responses from providers that had controllable assets more broadly across the SWIS given the relatively narrow TGA of the Project.

Respondents were asked to demonstrate (without sharing particulars of any individual customer):

- a. The number of customer assets currently under their control that they could bring into the Project (within the TGA, and more broadly on the SWIS, including a list of postcodes that the DER were located in);
- b. By asset type; and
- c. By customer type (residential and commercial, including contestable vs non-contestable if known).

Third-Party Aggregators were also asked to demonstrate if, and if so how, they would **actively source** controllable customer DER assets to bring into the Project. This would include assets that the Third-Party Aggregator has the technical capability to control but lacks an existing right to control, as well as new assets that may be deployed into the Project. Given the number of customers required within the TGA, Synergy was willing to discuss joint efforts with the Third-Party Aggregator to bring customers into the pilot. Third-Party Aggregators were asked to demonstrate:

- a. Potential number of assets within the Project TGA, including:
 - i. The type and number of assets it believes it would be able to access, by asset type; and
 - ii. Evidence of the relationship with these controllable assets.
- b. The proposed marketing and acquisition approach for those assets;
- c. The proposed approach to seek permission of customers to orchestrate their assets. As noted above, Synergy was willing to consider proposals as to how it could work collaboratively with Third-Party Aggregators to source both controllable assets and customers; and
- d. The capacity and capability to procure, install, commission, and maintain the installed DER.

3.5.4. Customer Engagement Approach

The Project has also recognised that including Third-Party Aggregators will help the Project reach the required scale through accessing the Third-Party Aggregators' own existing customer and DER device base, and by accessing their existing customer acquisition capability.

There was recognition that Third-Party Aggregators would be unlikely to have material numbers of existing controllable DER within the Project TGA (outside of solar PV), given the geographic boundaries of the Project. However, there was an expectation that prospective Third-Party Aggregators would be able to leverage their existing customer acquisition capability to help the Project meet its customer acquisition objectives.

Accordingly, Third-Party Aggregators were asked to demonstrate if, and if so how, they would **actively source** controllable customer DER to bring into the Project, including assets the Third-Party Aggregator has the technical capability to control but lacks an existing right to control, as well as new assets that may be deployed into the Project. Given the number of customers required within the Project TGA, Synergy was willing to discuss joint efforts with the Third-Party Aggregator to bring customers into the pilot.

3.5.5. Commercial Considerations

There are many real benefits for a Third-Party Aggregator being involved in Project Symphony. The project provides a unique opportunity for a Third-Party Aggregator to prove their technology in the SWIS; provides marketing and brand benefits from being involved in a high visibility market pilot; potentially provides insight into emerging market directions; and provides an opportunity to generate incremental sales in the TGA.

It is reasonable that Third-Party Aggregators would expect financial compensation for their involvement in the Project. They are adding their customers and assets to be orchestrated, and they will be making a not insubstantial time commitment for a relatively small (500 customers, 900 DER), geographically contained pilot. The Third-Party Aggregator workstream debated different commercial approaches, value share models, compensation calculations and compensation values before deciding that the EOI process was a market discovery opportunity to understand how prospective market participants think about these concepts in what is an emerging area. How would participants price customer acquisition? How would they seek compensation for orchestration services? How would they share value with customers, if at all?

Accordingly, Third-Party Aggregators were invited to propose commercial models for their involvement in the Project, including (but not limited to):

- a. A compensation framework for their involvement in the Project (including the proposed units of measure);
- b. Indicative prices for their involvement; and
- c. Explanation for the compensation and pricing the Third-Party Aggregator was seeking for its involvement from the Project.

The above needed to include consideration of both DER assets controlled and customer numbers.

Third-Party Aggregators were also asked to note that the invitation to propose commercial models was not a commitment by Synergy that it would necessarily provide compensation for the involvement of Third-Party Aggregators in the Project, and that this would be subject to commercial negotiation once the Third-Party Aggregators were shortlisted.

Third-Party Aggregators were not asked to give any individual customer names or share customer pricing or load profile details. The focus of the information sought was to understand the general location and type of the underlying asset that could potentially be orchestrated.

3.6. EOI Outcomes

17 parties registered to receive the EOI, and of those 11 submitted responses. The respondents came from across the DER ecosystem: DER installers, existing NEM VPP providers, local emerging ecosystem participants, energy retailers and technology providers.

The responses are being assessed by the internal Project selection panel, and preferred respondents will be notified in February 2022. Responses will be assessed against six criteria:

- *Number and type of DER that the respondent can bring into the Project*: this will include considerations of controlled devices in the TGA, controllable devices in the TGA, and asset mix.
- *Asset acquisition approach*: how the Third-Party Aggregator proposes to acquire new customers and assets to bring into the Project, and their capability to procure, install, commission and maintain new DER.

- *Customer engagement approach*: whether the Third-Party Aggregator has the capability to activate, engage and manage its own customers, and proposed engagement model with Synergy.
- *Technical capability*: whether the technology solution used by the Third-Party Aggregator will deliver project requirements, including performance reporting requirements.
- *Delivery timeframes*: whether the technology solution currently exists or is otherwise in development but will be operational in time for orchestration trials.
- *Commercial considerations*: whether the commercial approaches for customer acquisition and orchestration compensation appear reasonable.

3.7. Learnings From The Third-Party Aggregator Engagement Process

The process of assessing responses is happening concurrently with the writing of this report, and there will undoubtedly be rich insight derived from evaluation of the 11 responses: a clearer understanding of the current capacity and capability of the aggregation and orchestration ecosystem in the WEM; the proposed participation models; the customer acquisition and engagement approaches; and the various commercial models. These additional learnings will be captured and documented as part of the next Public Project Lessons Learnt Report⁴. However, there are five initial learnings from the process undertaken to identify potential Third-Party Aggregators, and through the EOI engagement process:

- *The ecosystem is nascent*: while there is much interest pertaining to DER orchestration on the SWIS, the level of capability and capacity is still developing. For example, out of the 11 responses received only 1 met all of Synergy's requirements outright; having a customer relationship that allowed the orchestration of the customer's assets was typically absent. While there are numerous entities aggregating and orchestrating on the NEM, much of this capability is directed to delivering a limited number of services and it is unclear how many entities have similar capability – rather than ambition – in the SWIS.
- *Project Symphony is an important milestone for the sector*: Project Symphony provides a critically important opportunity for the selected Third-Party Aggregators to demonstrate their capability and accelerate their development. Outcomes from Project Symphony will inform market and regulatory changes to support widespread VPP operations and how third-party aggregators could participate in that future.
- *Unclear if there will be material numbers of DER under Third-Party Aggregator control within the TGA*: The ecosystem scan suggested that, outside of PV, there were unlikely to be material numbers of controllable devices within the TGA under the control of potential Third-Party Aggregators. Given this, there may be a need to broaden the geographic footprint for Third-Party Aggregators, although this will be better known once the responses are assessed.

⁴ Due in June 2022.

Project Symphony

Our energy future

- *Interest in the SWIS from NEM participants:* There is interest in the SWIS from providers currently providing VPP offers in the NEM, with at least two NEM VPP providers submitting EOI responses.
- *There are many participation models for orchestration and aggregation of DER:* Feedback received during the market scan process prior to the EOI being issued suggested that manufacturers of DER equipment (such as rooftop solar panels and inverters) and installers were keen to be 'involved' in the Project, and to potentially partner where necessary, but had little desire to evolve their business models to aggregate or orchestrate DER. Other EOI responses were received from traditional installers, manufacturers and energy retailers (as well as VPP operators and technology providers) seeking a more contestable landscape.

In partnership with:



Energy Policy WA

HFWPER\1197114-1

4. Research on Customer Sentiment Towards Orchestration

4.1. Overview

Given the importance of third-party orchestration to Project Symphony, and the broader desire of the Project to inform how third-party orchestration and aggregation could develop in the SWIS, the Project sought to understand customers' existing level of awareness around concepts such as 'orchestration' and 'aggregation', their sentiment towards it, and preferences around how an orchestration service could operate, including preferences between an orchestration service offered by Synergy versus a third party. The scope and format of research undertaken was also informed by initial conversations with Energy Policy WA to try to ensure it would be of value.

The methodology adopted was via two similar, but tailored, online surveys for residential and business customers respectively:

- Residential customers: the survey was emailed to Synergy's online Synergy Connect community (n=3,381 customers). Synergy Connect is a community of Synergy customers used to receive feedback on important topics through interactive polls, surveys and discussion forums. The survey was open from 24 November 2021 to 1 December 2021, with 560 responses.
- Commercial customers: the survey was emailed to a sample of Synergy's non-contestable SME customers with solar (n=4,595 customers). The survey was also open from 24 November 2021 to 1 December 2021, with 402 responses.

The market research was undertaken by survey as this the best approach to surfacing insights from a large population group.

4.2. Research Limitations

It is important to note the limitations of this research. Firstly, the Synergy Connect group used for the residential customer survey tend to be more engaged with energy matters than the 'average' customer so results should be viewed with this in mind.

Secondly, most residential, and other small use electricity customers, within the SWIS have only the one supplier in Synergy. It should be noted that customer perceptions of Synergy providing a service versus another party could be influenced (both positively and negatively) by the lack of choice in the retail market.

Lastly, as demonstrated through the research results customer understanding of orchestration concepts is limited. Whilst the surveys attempted to compensate for this by providing some initial definitions and descriptions customer responses will undoubtedly have been influenced by their understanding (or lack thereof) regarding the concepts being explored.

Notwithstanding the above the Project partners believe this research provides some useful and initial data points which merit further consideration and exploration.

4.3. Research Results Summary

The full research results can be found in the appendix of this report, the below is a brief summary of some of the key findings:

- There is a low level of knowledge of ‘orchestration’ and ‘aggregation’ amongst customers, with 75% of respondents not having heard of the terms before the survey;
- Respondents believe that the most important benefits of DER orchestration are the financial benefits to the DER owner, followed by benefits to the environment;
- Solar is the DER asset that respondents believe should be most compensated for being orchestrated (though for battery owners this DER asset changes to batteries – however the sample size of battery owners within the respondent pool was too small for this to be considered a statistically significant result);
- There was little difference in the openness of residential respondents to orchestration based on the different incentive levels being offered;
- Comfort with levels of orchestration vary with asset class, and both residential and business respondents are less comfortable with third-party orchestration by an unknown commercial entity compared to Synergy;
- Respondents would prefer a longer contract period (1+ years) to participate in orchestration, across all DER device types;
- Both residential and business respondents would prefer to enable orchestration via gateway devices than the internet, but a large proportion have no preference; and
- Respondents would prefer a flexible commercial arrangement with orchestrators, rather than a multi-year contractual model; they also feel that commercial arrangements would be less appealing if it were offered by an unknown commercial entity, rather than Synergy.

5. Next Steps

Next steps for the Project from this work package fall into 2 categories; engagement of Third-Party Aggregators with Project Symphony and building on the initial customer sentiment research that has been conducted.

5.1. Engagement with Third-Party Aggregators

As outlined in section 3.1 the intended next steps and target dates for the engagement of Third-Party Aggregators are as follows:

- Commercial agreements with preferred Third-Party Aggregators finalised: May 2022
- Technology integration activities with Synergy platform commenced: May 2022
- Orchestration testing commenced: July 2022
- Project Symphony completion: 30 June 2023

More broadly it is hoped that through the end-to-end process of working with Third-Party Aggregators, via the EOI submissions and subsequent contract discussions, technical integration and beyond into a period of market testing, important lessons can be learnt that will inform future policy as to the role that Third-Party Aggregators can play in the SWIS.

5.2. Building on Customer Sentiment Research

The initial research summarised in this report, whilst limited in its scope and nature, nonetheless provides some important data points which require further consideration and exploration. This research indicates that customers are largely unaware of orchestration and associated concepts; this would likely be a significant barrier to the large-scale uptake of related products and services. Work Package 2.1, the DER Services Report, also noted that customer involvement in a VPP was not assured, and that it was important for them to be offered products and services that were easy to understand and action. The importance of these points is further amplified given the Synergy Connect customer pool that this research was conducted on could be considered more engaged in the energy sector than the 'average' customer, meaning it is even more critical this finding is acted upon.

Project Symphony, and in particular Synergy as the partner responsible for customer engagement, will need to leverage and build on these findings through its customer recruitment activities to onboard sufficient customers for the pilot to be successful. Engagement of customers whilst on the pilot will also be an important opportunity to understand drivers of customer sentiment that can inform future product structures and recruitment.

Work Package 3.3, the Social Science Study, will also explore in more detail customer sentiment to DER orchestration through research conducted in partnership with the University of Tasmania. This research will be used to further develop understanding of the areas flagged in this work package.

6. APPENDIX: Full Research Results

6.1. Information Provided to Survey Respondents

Given the understanding that the ecosystem is still developing, and that it was important to ensure that all respondents had the same understanding of key terms, both residential and business surveys had the wording outlined in Figure 4 at the start.

What are DER?

- DER are devices or appliances that either use, generate, or store electricity. Examples of DER are rooftop solar systems, batteries, pool pumps, electric hot water systems, and air conditioning systems.

What's the challenge?

- WA has some of the highest levels of rooftop solar installation in the world, which has delivered financial benefits to consumers and environmental benefits to our community; this is a great outcome!
- However, this transition to renewable energy is causing some challenges which need to be managed. When the grid was built – in the days before rooftop solar – it was designed for electricity to flow one-way from the power generators to homes and businesses. Rooftop solar means significant amounts of electricity is now flowing back into the grid as well.
- These high levels of solar exports, which are at times unpredictable and cannot be managed, are forecast to cause grid stability challenges and perhaps even blackouts from as early as 2024.
- Orchestration of DER devices, including rooftop solar, could help deal with these challenges by re-balancing the supply and demand of energy on the grid at different times of day.

What is “orchestration” of DER?

- Orchestration of DER means Synergy (or another organisation) remotely managing customers' DER devices for the benefit of customers and the grid.
- This might include remotely managing how much solar energy a home or business' system generates, managing when a battery may charge or discharge, or selecting the time of day that appliances such as air conditioning, hot water systems, or pool pumps are switched on or changing the amount of power that they use.

What are the benefits of orchestration?

- As well as supporting the grid in becoming more stable there are potential environmental benefits to large scale DER orchestration, such as increasing the amount of usable renewable energy. You could also be paid for allowing your personal DER devices to be orchestrated, and care will be taken to minimise or eliminate any negative impact of orchestration on customers' comfort or finances.

The role of Aggregators

- An aggregator is a company who “orchestrates” or manages customers' DER devices and groups them together with other customers to act as a single entity. For example, instead of several home solar systems being orchestrated individually, a group of home solar systems can be “aggregated” so they can all be orchestrated at once to deliver greater benefits. This is sometimes referred to as a “virtual power plant” or “VPP”.
- A “Third-Party aggregator” is an aggregator other than Synergy. In the future Third-Party aggregators may be able to offer orchestration services to customers here in WA. This may be in addition to, or perhaps instead of, your existing relationship with Synergy.

Figure 4 – Information provided to survey respondents

6.2. Response Numbers

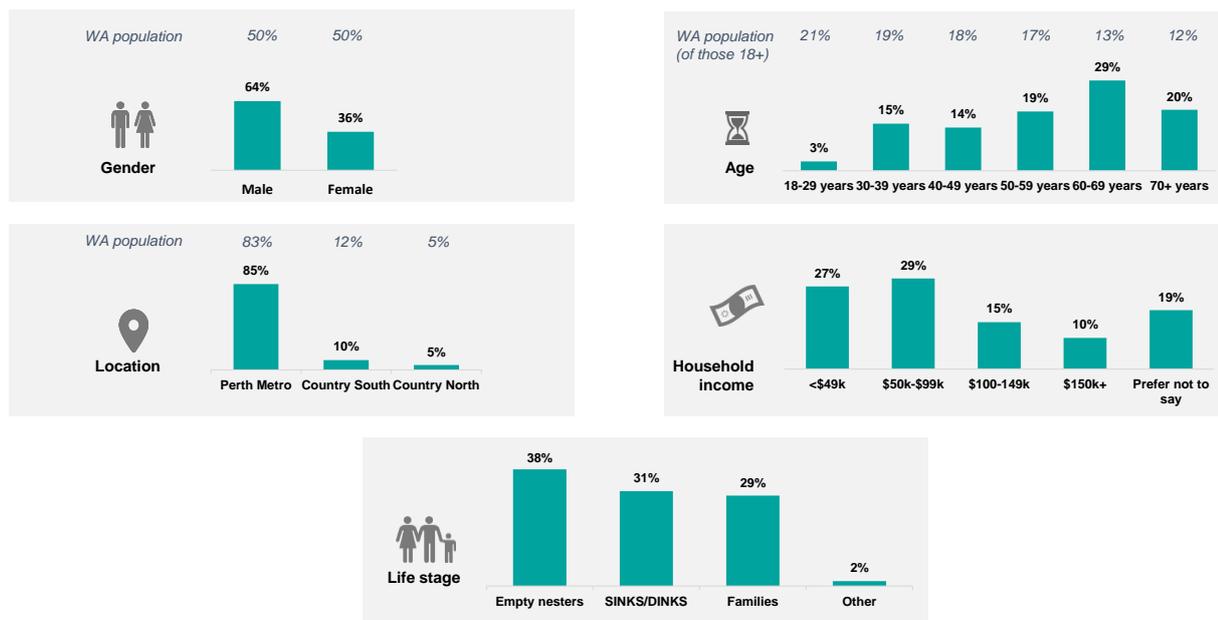
Two similar, but tailored, online surveys for residential and business customers respectively were used:

- Residential customers: the survey was emailed to Synergy’s online Synergy Connect community (n=3,381 customers). Synergy Connect is a community of Synergy customers used to receive feedback on important topics through interactive polls, surveys and discussion forums. The survey was open from 24 November 2021 to 1 December 2021, with 560 responses.
- Commercial customers: the survey was emailed to a sample of Synergy’s non-contestable SME customers with solar (n=4,595 customers). The survey was also open from 24 November 2021 to 1 December 2021, with 402 responses.

6.3. Survey Composition

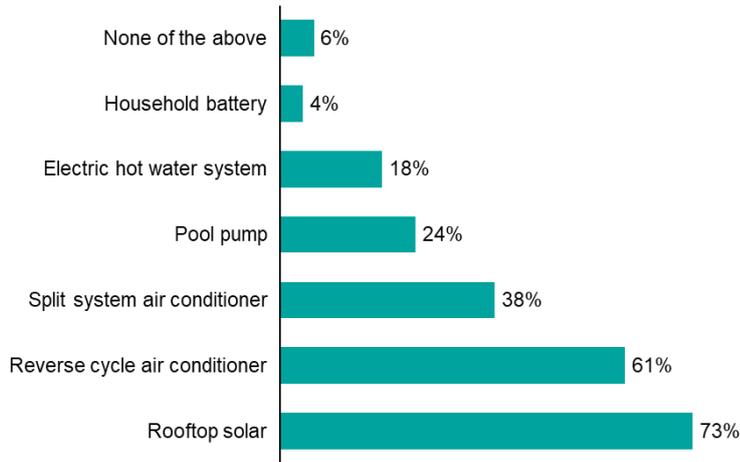
Residential Survey

Demographic information regarding the 560 respondents was as follows:



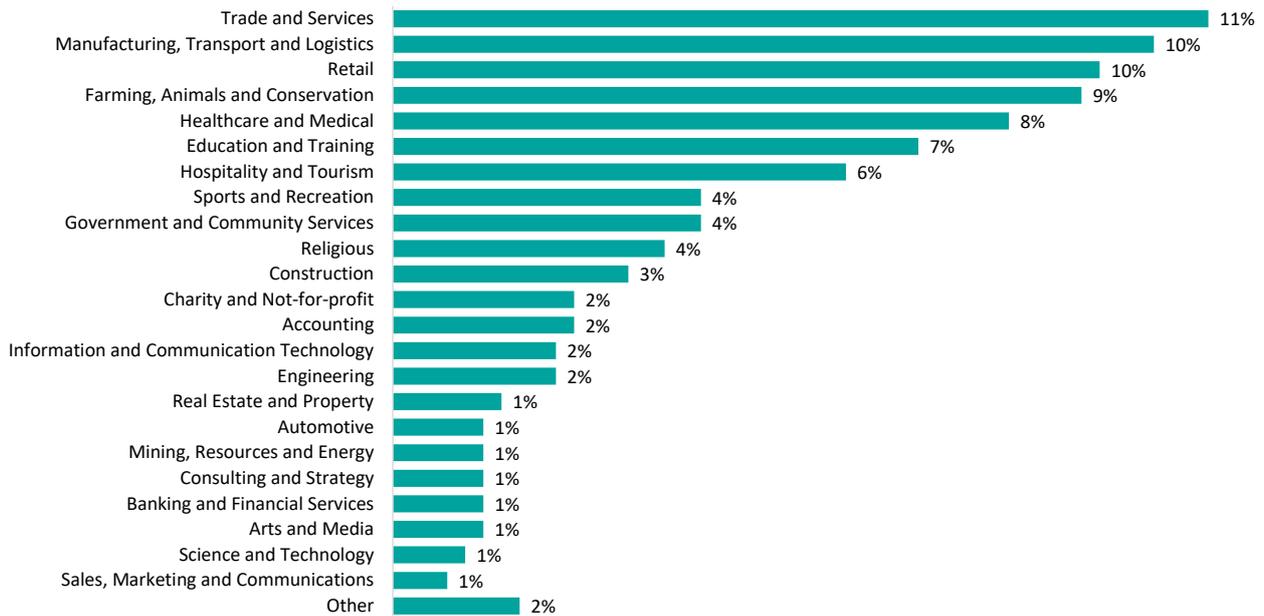
The residential respondents also had a broad range of DER:

Which of the below devices/appliances do you have in your home?
Select all that apply



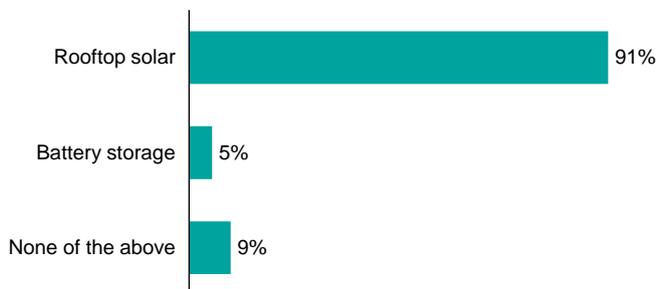
Business Survey

The composition of the 402 business respondents was as follows:



As would be expected, the range of DER for business customers was more limited:

Which of the below devices does your business or workplace have? *Select all that apply*

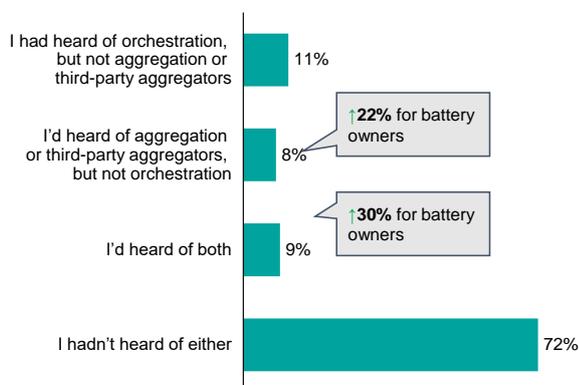


6.4. Survey Insights

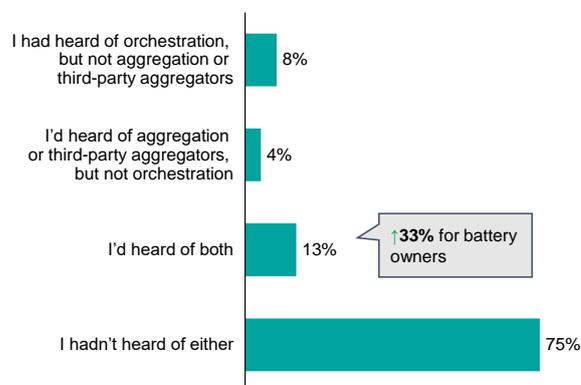
There was low level of knowledge of orchestration and aggregation, with ~¾ of respondents not having heard of the terms before the survey

Overwhelmingly, residential and business respondents had not heard of either orchestration or aggregation in the electricity market before:

Residential Survey:
Had you heard of orchestration, aggregation, or third-party aggregators before today?



Business Survey:
Had you heard of orchestration, aggregation, or third-party aggregators before today?

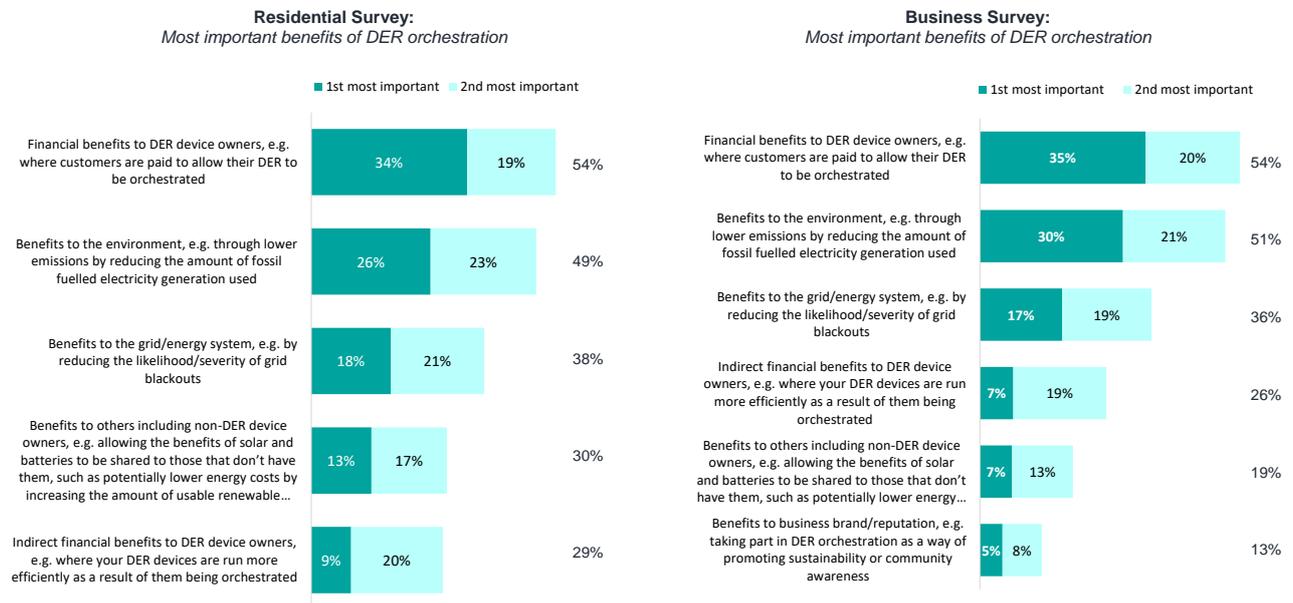


Noticeably, knowledge of the terms was stronger for respondents that were also battery owners; while this is to be expected given that they tend to be more engaged with energy topics, the sample size of battery owners within the respective survey sets was small (4% for residential, 5% for business) and is not statistically significant.

Respondents believe that the most important benefits of DER orchestration to them are the financial benefits to the DER owner, and benefits to the environment

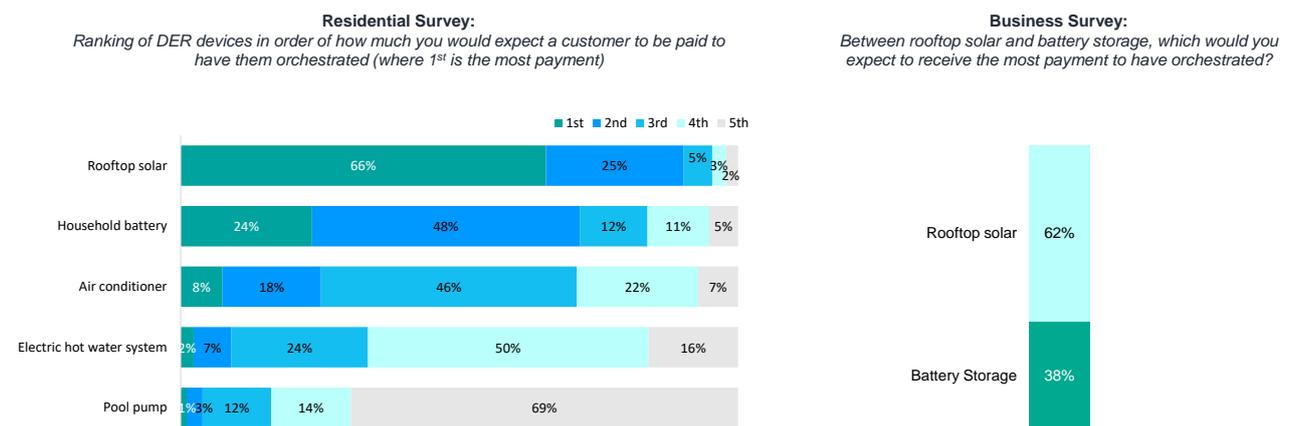
When asked to rate the two most important benefits of DER orchestration from a list of five, both residential and business customers selected financial benefits as most important (54% rating it either first or second across both residential and business). The potential benefit to business brand or

reputation for taking part in DER orchestration was deemed of low importance (only 13% of business customers rated it first or second most important).



Solar is the DER that most respondents believe should be most compensated for being orchestrated

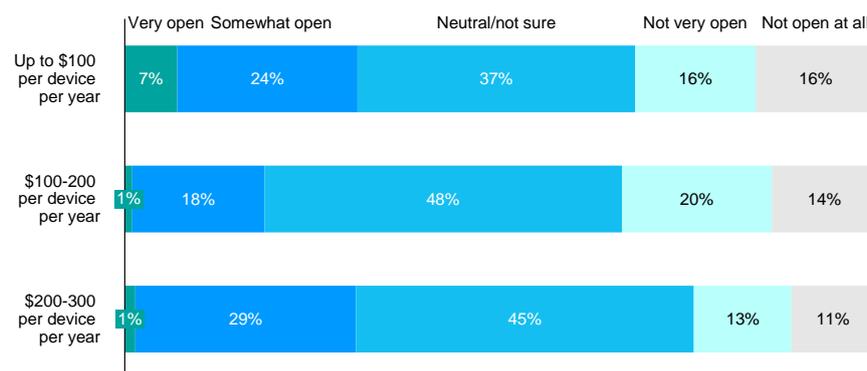
Both residential and business respondents believed that orchestration of rooftop solar deserved the most payment (66% of residential respondents ranked it first; 62% for business). For residential (with five DER asset types to choose from), the order of perceived value was rooftop solar, battery storage, air conditioning, electric hot water system then pool pump. This is not unexpected, given the large upfront investment for residential customers for rooftop solar and battery storage.



Little difference in openness of residential respondents to orchestration based on incentive level offered

Residential customers were asked how open they would be towards having their DER orchestrated at three different annual incentives (<\$100, \$100-200, \$200-300). They were shown these incentives in a randomised order and asked to rate their openness towards having their DER orchestrated at that incentive level: very open; somewhat open; neutral/not sure; not very open; not open at all.

If you were offered up to \$100/ between \$100-\$200/between \$200-\$300 per device, per year to have your DER devices orchestrated, how open would you be to allow your device(s) to be remotely orchestrated?



The results are surprising and difficult to interpret, as they don't demonstrate the expected progression of openness increasing with increasing incentive levels. Residential respondents were as open ("very open" plus "somewhat open") at <\$100 per year as they were at \$200-300 per year. Potentially the survey wording was not clear enough, leading to respondent confusion.

However, what is consistent is that at all three incentive levels the biggest response was that respondents were 'neutral/not sure' (37%-48%) to having their DER orchestrated. This suggests uncertainty in the concept of orchestration itself (consistent with the majority not having heard of the concept before the survey), or uncertainty as to what a fair incentive point for orchestration should be.

Comfort with levels of orchestration vary with asset class, and both residential and business respondents are less comfortable with third-party orchestration than Synergy orchestration

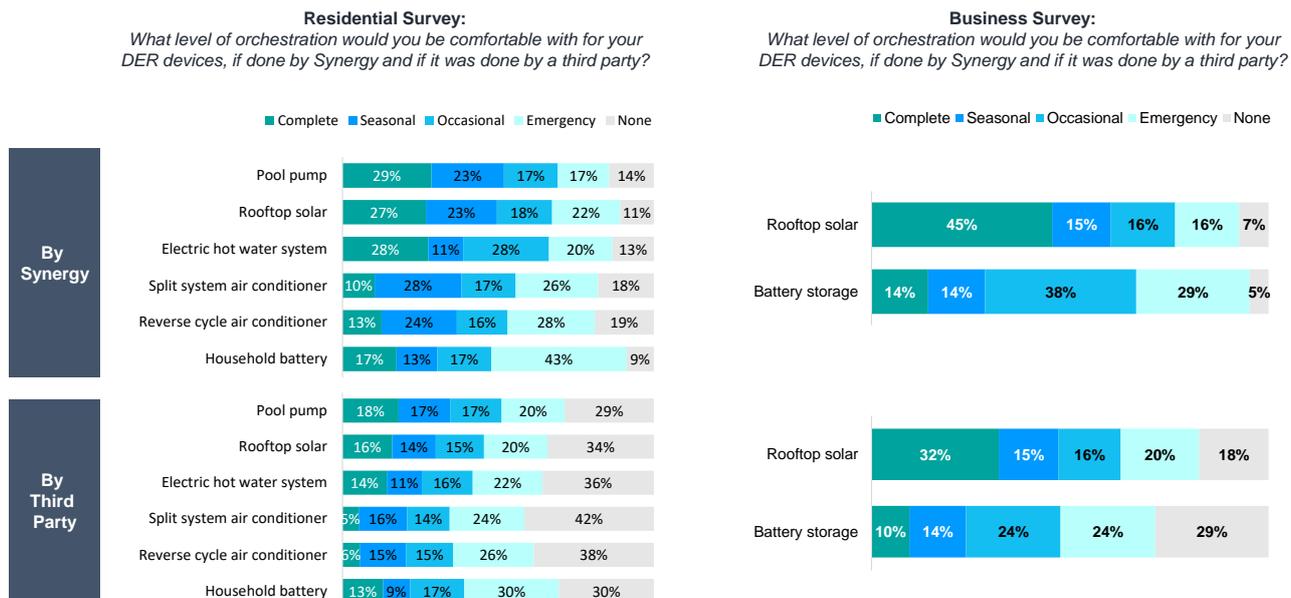
Customers were asked to select their desired level of orchestration for their own DER if the orchestration was undertaken by Synergy, and then if it was undertaken by a third party. Customers were asked to consider five levels of potential orchestration: complete; season; occasional; emergency; or none at all. These were defined as follows:

- **Complete orchestration:** where your DER devices may be remotely managed at any time of the day, on any day of the year.
- **Seasonal orchestration:** where your DER devices may be remotely managed only during a certain season, for example in the summer or during the transition period between seasons.
- **Occasional orchestration:** where your DER devices may be remotely managed occasionally throughout the year depending on the state of the grid.

- **Emergency orchestration:** where your DER devices are remotely managed very occasionally only in emergency grid situations.

The survey noted that the level of remuneration or compensation a customer receives would increase with how frequently they were happy for their DER devices to be managed. Notifications may also be provided before orchestration occurs, for example via text, and there may also be the ability to “over-ride” or “opt-out” of orchestration events if the customer wished.

The results were as follows:



For both residential and business respondents, there was materially greater comfort in Synergy orchestrating DER than there was for third parties:

- Residential respondents were comfortable for Synergy orchestrating their DER devices occasionally, seasonally or completely ranging from 47% (for household battery) to 69% (for pool pump); in contrast, that same level of comfort for third parties orchestrating DER devices ranged from 36% (for air conditioning) to 52% (for pool pumps).
- Business respondents were comfortable for Synergy orchestrating their DER devices occasionally, seasonally or completely 76% of responses for rooftop solar and 66% for battery storage. They had similar levels of comfort for third parties orchestrating their rooftop solar (63%) solar but only 48% for battery storage.

The differences in comfort between potential orchestration by Synergy and orchestration by third parties is stark. Analysis of the free text responses to the question “what questions or concerns may you have with your DER device being orchestrated by Synergy” and then “by a third party” suggest that the concern for Synergy orchestration is around loss of control over a customer’s own asset, whereas for a third party it is around the profit-motive of the third party and unfamiliarity with the third party itself. Business respondents were also concerned about third parties and reliability, conformance to operational standards, and how they would be regulated. This suggests that the

growth of the third-party orchestration ecosystem in the SWIS will need to be supported by education and marketing campaigns to explain how they will sit alongside Synergy.

It should be noted that the survey asked customers to compare Synergy with an unknown Third-Party Aggregator. The results could have been different if customer comfort with known brands were compared against Synergy in this space.

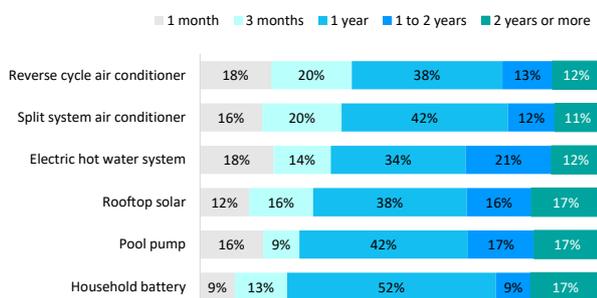
There are also noticeable differences in orchestration comfort across asset classes:

- For residential customers, the DER devices they are least comfortable giving complete orchestration (to either Synergy or a third party) is air-conditioning. This is not surprising, given other Synergy research suggesting residential concern about control of air-conditioning over summer months. The DER device they are most comfortable with complete orchestration control is a pool pump, which has low personal utility for consumers.
- Business respondents are far more comfortable having their rooftop solar completely orchestrated than residential customers. They are also far more comfortable having their solar completely orchestrated than a battery. While it is not possible to know definitively, this may reflect that if they do receive feed-in compensation, it is more market reflective than for residential customers and therefore less attractive.

Respondents would prefer a longer contract period (1+ years) to participate in orchestration, across all DER device types

Both residential and business respondents expressed a preference for contract terms of one year or longer. Residential respondents were less comfortable with longer contracts for air-conditioners, which is congruent with their broader discomfort with orchestration of that DER device category. Business respondents were less comfortable with longer contracts for battery than for rooftop solar, though it should be noted that the sample size for business battery respondents is small.

Residential Survey:
If you were to sign up your existing DER device(s) to an orchestration service, for each device how long a period would you be comfortable signing up for? Note, you would be free to leave the service at any time, however there may be a cost to leaving the service within the contracted period



Business Survey:
If you were to sign up your existing DER device(s) to an orchestration service, for each device how long a period would you be comfortable signing up for? Note, you would be free to leave the service at any time, however there may be a cost to leaving the service within the contracted period

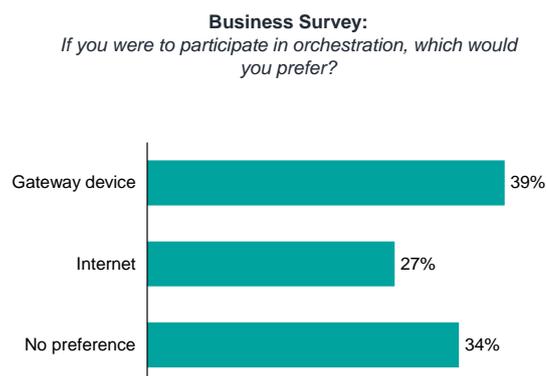
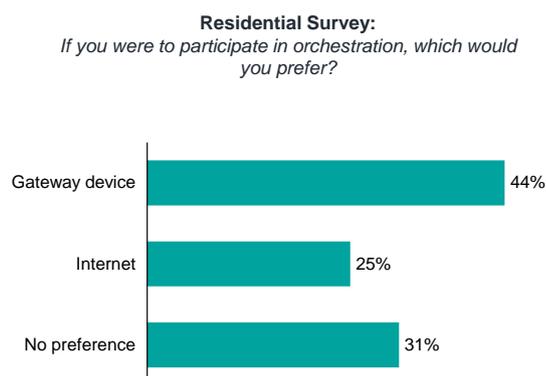


Both residential and business respondents would prefer to enable orchestration via gateway devices than internet, but a large proportion have no preference

The survey noted that for orchestration to work, the aggregator needs a way of remotely orchestrating your DER devices, with two options provided:

- **Gateway device:** DER devices are remotely orchestrated via a gateway device that would be installed in the customer's home, at no cost to the customer. The gateway device is similar in size and appearance to an internet router.
- **Internet:** DER devices are remotely orchestrated via a 4G connection or using the customer's existing home wi-fi and data. The estimated data usage would be 500MB to 1GB per month. The customer would not need any new equipment installed in their home.

Respondents were asked that if they were to participate in orchestration, which would they prefer:



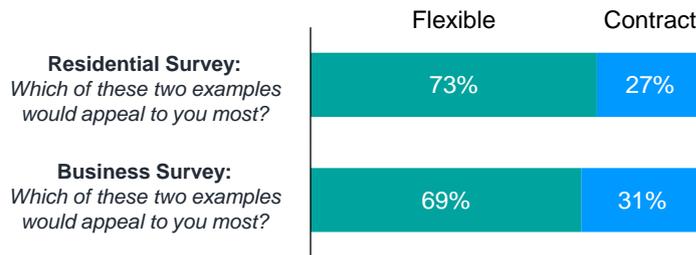
The use of a gateway device was preferred to the internet, though the proportion of customers who did not have a preference was also high. Given that the majority of respondents had not heard of DER orchestration prior to receiving the survey this is perhaps not surprising.

Respondents would prefer a flexible commercial arrangement with orchestrators, rather than a multi-year contractual model; they also feel that commercial arrangements would be less appealing if it were offered by a third party, rather than Synergy

Respondents were asked to consider between two commercial models with orchestrators:

- **New DER devices + orchestration package (contract):** Synergy would provide the customer with new DER devices where required (e.g., a battery), at no upfront cost to them. Instead of a usual energy bill they would pay a fixed monthly amount (of comparable cost to your current bill), similar to a mobile phone plan. As part of this contract, they would agree to allow Synergy to remotely orchestrate their devices. The contract length would be for several years.
- **New DER devices + orchestration package (flexible):** The customer would purchase any new required DER devices themselves, to participate in an orchestration service. While they would pay for own DER devices upfront, the orchestration service means Synergy will pay them per billing cycle for allowing the orchestrator to remotely orchestrate their DER devices. The customer may also leave the orchestration service at any time.

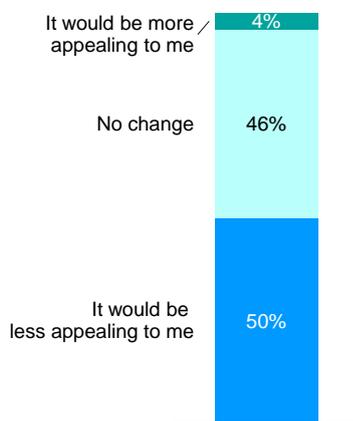
Both residential and business customers showed a clear preference for flexible contracts:



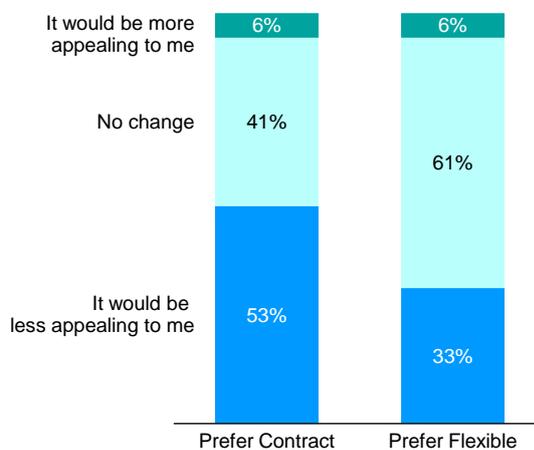
For residential customers, those who preferred flexible contracts valued the control that it gave the customer, whereas those who preferred a contract valued the lack of upfront investment required. For business customers, those who preferred flexible contracts preferred the optionality it would provide in a rapidly evolving ecosystem, whereas those who preferred a contract valued the lack of upfront costs and the certainty. It should be noted that the financial impact to the customer wasn't transparent in the survey, and by adding this information the results could differ.

Respondents were also asked to consider how their preference would change if the orchestration service was being provided by a third party, rather than Synergy:

Residential Survey:
How would your preference change if the service was being offered by a third party, rather than Synergy?*



Business Survey:
How would your preference change if the service was being offered by a third party, rather than Synergy?*



*no significant difference between those who preferred a contract vs those who preferred flexible

These results reinforce the earlier insight around the differing levels of comfort between Synergy orchestration and third-party orchestration. Half of residential respondents felt that their packages would be less appealing if the service was offered by a third party rather than Synergy, with no significant difference between those who preferred a contract versus those who preferred flexible. Similarly, 53% of business respondents who preferred contracts believed that this would be less appealing if the service was offered by a third party, and 33% who preferred flexible believed that this would be less appealing if offered by a third party – this difference is likely explainable because the flexible arrangement allows the customer to walk away at any time, so if they didn't like the third-party experience there is a relatively low cost of exit.