

CDR Gateway Model Review

Report Prepared for The Treasury

April 2021



Jessica Robinson
Assistant Secretary

The Treasury,
Langton Crescent,
Parkes ACT 2600

April 2021

Dear Jessica,

Thank you for the opportunity to assist the Department of the Treasury in reviewing the data access model for the CDR in the energy sector. This report contains the results of our engagement including details on our scope, approach and key findings. Where feasible, we would encourage readers to review our report in its entirety to fully understand our findings in the appropriate context.

Forms of report

For your convenience, this report may be made available to you in electronic as well as hard copy format, multiple copies and versions of this report may therefore exist in different media and in the case of any discrepancy the final signed copy should be regarded as definitive.

Location and period of fieldwork

This report is based on work completed during the period 15 March to 1 April 2021. Fieldwork was conducted remotely with various stakeholders.

Confidentiality

This report is confidential and has been prepared exclusively for use by the Treasury. It should not be used, reproduced or circulated for any other purpose, in whole or in part, without our prior written consent, such consent will only be given after full consideration of the circumstances at the time. The report is issued on the understanding that the contacts at the Treasury have drawn our attention to all matters, financial or otherwise, of which they are aware which may have an impact on our report up to the date of signature of this report. Additionally, we have no responsibility to update this report for events and circumstances occurring after this date.

Limitation of liability

We draw your attention to the limitation of liability clauses in our engagement letter which is included in your statement of work.

Grant Thornton

Collins Square, Tower 5
727 Collins St,
Melbourne VIC 3008

www.grantthornton.com.au

Scope of work and limitations

The scope of our work has been limited both in terms of the areas of the program and entities which we have considered and the extent to which we have considered them. There may be matters, other than those noted in this report, which might be relevant in the context of the Consumer Data Right (CDR) program, which a wider scope review might uncover.

The conclusions and recommendations stated in this report may be invalidated by additional information not made available at the time of our work.

Contacts

If there are any matters upon which you require clarification or further information please contact Daniel Farthing, Engagement Director, at +61 (0) 488 310 101 or Matthew Green, Engagement Partner, at +61 (3) 8663 6168.

It has been our pleasure working with you, your team and the industry contacts throughout this review. We are excited about the opportunities that come with the CDR more broadly and are thankful for this opportunity to be involved in this review.

We look forward to the opportunity to work with Treasury again in the future.



Matthew Green
Partner
Grant Thornton Australia Limited

Contents.

Authors: Mathew Green – Partner
Daniel Farthing – Director
James McCluskey – Manager

Review period: 15 March to 1 April 2021

To: **The Treasury**

Cc: Jessica Robinson, Assistant Secretary
Phil Schofield, Director
Daniel McAuliffe, Director

Section 1: Executive Summary	04
Section 2: Context	09
Section 3: Detailed Analysis	13
Appendices	20

Executive Summary



Executive Summary

Scope

The scope of this review focussed on the implications for delivery timeframes, build and ongoing costs should the Treasury adjust the model for Consumer Data Right (CDR) data sharing in Energy.

Grant Thornton was engaged by the Treasury (Official Order C02824, signed 15 March 2021) to provide advice on the implications for the energy sector as a consequence of a potential shift from the planned central Gateway model (operated by Australian Energy Market Operator [AEMO]) to a peer-to-peer (P2P) model (aligned with the approach in banking).

This review assesses the implication of changing the data sharing technology model taking into account:

- Estimated implementation costs, including operational costs, for data holders and Accredited Data Recipients (ADIs) under each model;
- Distribution of costs between data holders (large or mid-tier vs small electricity retailers) given the shift in costs and intention for AEMO to cost recover build and operating costs through its participant fees; and
- Estimated timeframes for implementation under either model, including consideration of whether large, mid-tier and small electricity retailers may require separate implementation timelines.

The two alternative models presented by the Treasury to be reviewed by Grant Thornton were:

- **The AEMO gateway model** – AEMO would provide a gateway function, (acting as a pipeline for the provision of CDR data from data holders which may include retailers and potentially also distributors, to accredited data recipients) and may also be a data holder providing CDR data directly to accredited data recipients.
- **The P2P model** – existing data holders (i.e. retailers) would be responsible for providing CDR data held by themselves and data held by AEMO directly to accredited data recipients and/or consumers (i.e. the model used for the banking sector).

Context

In 2019, stakeholders across the energy sector, as well as the ACCC, on balance supported that a centralised gateway model (rather than an economy-wide P2P model) was preferred for the sector.

Subsequent developments have revealed that the gateway model may not be able to leverage existing systems as intended, increasing total cost for AEMO and thus retailers (through the anticipated cost recovery model). In addition, there is a renewed focus on ensuring the CDR is interoperable across sectors following the release of the *Inquiry into Future Directions for the Consumer Data Right* in December 2020. For these reasons, Treasury is reconsidering the appropriateness of the gateway model.

The purpose of this review was to capture and interpret stakeholder feedback and commentary on the benefits and challenges associated with each of the alternative models.

Approach

Grant Thornton participated in **approximately 19 consultations with stakeholders** to understand the relative costs and benefits of each model. Of those stakeholders consulted 11 were energy retailers with total residential customers ranging from 400 to over 1.4 million.

Stakeholders were consulted on their estimates of time, cost, information security as well as any other opportunities or challenges in implementing either model. This feedback was noted and included within the analysis and report.

Our Conclusions

Based on consultations with selected stakeholders, and information provided, the P2P model may offer a better solution for the CDR program in energy.

Stakeholders consulted indicated that they have queries about how both work in practice. However, based on consultations and information provided, the P2P model has a number of advantages that the gateway model does not including:

- A flexible infrastructure that will allow participants to innovate with each other and as an ecosystem;
- Strong alignment with the need for CDR to be interoperable across industries; and
- More available mitigations for challenges raised by stakeholders in relation to cost and timing.

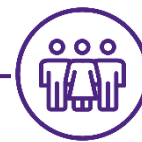
Despite these advantages, both models are likely to face challenges in implementation.

Each model has a number of advantages and disadvantages

Key benefit of option	The gateway model may enhance consistency of practice within industry, provide predictable timelines and result in lower cost to smaller retailers.	The P2P model better aligns with the current model in banking, allows for interoperability and encourages market solutions.
Timeline	<ul style="list-style-type: none"> ✘ Retailers will be required to wait until the gateway is materially complete before commencing their own internal builds, which may extend the overall program timeline — Current focus of the industry is reforms to the market, including five minute settlements and other changes, rather than CDR 	<ul style="list-style-type: none"> ✓ A P2P model would remove the need for the AEMO gateway to be built, enabling participants to move directly to building their internal infrastructure ✘ Some AEMO sourced data sets would not be available until AEMO builds are complete — Moving to a P2P model may require wider engagement with industry to inform them of the changes to their responsibilities under a P2P model.
Costs	<ul style="list-style-type: none"> ✓ The gateway model may cost less for smaller retailers who may not have the resources to meet the needs of the P2P model ✘ Building the gateway will require significant investment that will be eventually passed to the retailers through AEMO's cost recovery model 	<ul style="list-style-type: none"> ✓ P2P model may result in a reduced cost for AEMO ✓ Some technologically mature retailers (large or small) have indicated that they will be able to easily pivot to building to a P2P model ✘ P2P model may require more upfront investment by some retailers to build the systems and infrastructure required (note that under both models, investment will be required but the magnitude is expected to be greater for P2P)
Security/privacy	<ul style="list-style-type: none"> ✘ The gateway model provides a single point of attack/failure, whilst this can likely be addressed through infrastructure and architecture, it may be costly 	<ul style="list-style-type: none"> ✓ Energy providers have more experience maintaining and protecting personal information than AEMO (which currently does not store customer data) ✓ P2P model is disaggregated, and does not have a single point of failure ✘ The number of connection points and entry points into the ecosystem may present security risks
Policy alignment	<ul style="list-style-type: none"> ✓ Non-retail stakeholders have indicated that CX for ADRs (e.g. comparison websites) may be superior in a gateway model due to single point of contact and improved data quality ✘ Energy will be the only sector using the gateway model, possibly undermining an economy-wide approach to CDR 	<ul style="list-style-type: none"> ✓ Consistency between banking and energy may provide a large enough market for third-party technology providers to offer off-the-shelf solutions for smaller retailers ✓ The P2P model may enable the creation of innovative products that (informed by usage data across a number industries) may better serve consumers ✓ The flexibility of the P2P model may enable the sharing of voluntary data sets using CDR data rails, further encouraging innovation
Conclusion	<p>Consultations with stakeholders (government and non-government) indicate the business case for the gateway model has fundamentally changed since it was selected. Specifically, the gateway model may be more expensive, take longer to implement and not be as competitive when compared to the P2P model. Moreover, the constraints raised by stakeholders are not easily mitigated by government.</p>	<p>The P2P model is consistent with the approach used in banking and may enable participants and third-parties to innovate within a flexible framework. Any perception that the P2P model is inferior to the gateway model could be addressed by mitigants such as the exemption of smaller retailers, a phased roll-out for mid-tier retailers and making incentives available to third-party technology providers.</p>

Legend:

Regardless of the data sharing model, the implementation of CDR in energy faces a range of challenges



Legislative/Regulatory Environment

Stakeholders have indicated that a number of legislative changes in State and Commonwealth jurisdictions will need to occur before AEMO can participate in either model.

It has been highlighted that State elections may impact the passage of legislation at a state and national level.

In addition, changes to the National Energy Market will need to be considered and enabled.

The above issues may impact implementation timelines of either model.

Rules and Standards

Stakeholders consulted have indicated that the data rules are well progressed.

Consultations have shown that there remains a number of areas that are required to be resolved under either model (e.g. the precise role of AEMO and how it will execute its obligations).

Consultations (and education) on rules and standards should continue to ensure the final solution meets the needs of the market. Running these in parallel with other activities should minimise impact to timelines.

AEMO Costs

AEMO has considered in detail the costs of the gateway model, and to a lesser degree, the costs of the P2P model.

Further analysis and forecasting may be required before communicating to the market the estimated cost impact to retailers under the cost recovery model.

Based on stakeholder consultations, the market is currently unaware of the magnitude of these costs they are likely to bear. Regardless of the model chosen, market participants are likely to express concerns once these costs are better understood.

Capacity and Capability

In either model, the capacity and capability of the sector to respond to change will be challenged. There are current in-flight reforms such as 5 minute settlement which are taking up much of the existing capacity for change.

In addition, the technology capability of some retailers is lower than comparable organisations in the banking sector. Whilst some third party providers have indicated an interest and capability to build an off-the-shelf solution for data holders, these products do not yet exist and may not be available during the implementation timeframe.

Data Quality

In either model, retailers will be sharing new data in different formats with multiple external parties (e.g. AEMO, suppliers and retailers). Both models represent a significant step change requiring communication between multiple parties, the effective use of APIs, and a high volume of data sharing.

Stakeholders have indicated that both models will take time to test and implement and that under either model there may be challenges in ensuring that data is shared in a uniform way compliant with final data rules and standards.

Data quality issues may take time for retailers to resolve.

Concluding remarks

Based on consultations with selected stakeholders, and information provided, the P2P model may offer a better solution for the CDR program

AEMO Gateway Model

The original decision to take the Gateway approach was supported by most retailers who provided written responses during the ACCC's consultations in 2019. The basis of support was the perceived cost efficiencies in leveraging data sets already created and held by AEMO. The assumption guiding this assessment was that the IT infrastructure and resources already established within the AEMO will be able to be leveraged in the CDR model without significant investment from energy market participants. From a cost perspective, the combination of these efficiencies, and the sharing of AEMO's build costs across the industry was seen as a positive, with the only costs lying with the participant being the development of web-based APIs (in addition to any internal costs to providers in retrieving their data).

While initial assumptions led the ACCC to recommend the Gateway model as the preferred approach, the initial assumptions supporting the cost/benefit analysis of a centralised Gateway model have not borne out as technical discovery of the proposed solution has been completed. Changes in technicalities have impacted initial assumptions upon which the costing benefits of the Gateway model were ascertained, such as the recognition that it would not be possible to use the B2B e-hub to transfer CDR data to the AEMO gateway.

In addition to the above, stakeholder interviews have indicated that there has been uptake of new technology within retail organisations (such as cloud-based solutions and the wider use of APIs) as well as some major retailers considering expansion into other industries. In addition, over the past two years third-party providers offering CDR products have emerged and expressed interest in supporting the rollout of CDR in energy.

These developments have undermined the value proposition of the gateway model for government as well as industry and call into question the ongoing viability of this approach.

P2P model

Consultation interviews conducted with key stakeholders revealed reluctance to comment in detail on the costs associated with either model. However, of those retailers who had commenced preliminary planning and analysis of the implementation of CDR within their organisations (generally tier 1 retailers), a preference for the P2P model was expressed.

Some of the key benefits of a P2P model is the increased control for retail providers in the implementation of the CDR within their organisation, the ownership of the CX and consent processes and the costs associated with these. Other benefits identified include: faster roll-out, removal of 'single point of failure', a reduction in duplication should retailers become ADRs, potential expansion beyond the NEM and interoperability to other sectors (eg telecommunication and banking).

The P2P model also has the potential to reduce overall costs of implementation through utilisation of third-party technology providers that will have the opportunity to minimise the technical gap and costs imposed through providing standardised software products. In addition, Commonwealth assistance may be used to create an open access library of artefacts to assist implementation.

Despite the aforementioned benefits, the upfront costs to retailers involved in the P2P model will likely be higher compared to the gateway model and will rely more on the technical capability of retailers. Whilst some stakeholders, especially smaller retailers, expressed a preference for the gateway model, their concerns are more easily mitigated than those associated with the gateway model. Specifically, a staged and selective approach, where mid-size retailers are given a longer implementation window, and some smaller retailers are excluded from mandatory compliance (at least initially) may address these concerns.

The views expressed in this report are subject to a number of limitations pertaining to the stakeholders consulted with, data available, and the time allocated to complete analysis. The implementation of either model will require continued close consultation and collaboration with industry.

See Appendix A for limitations

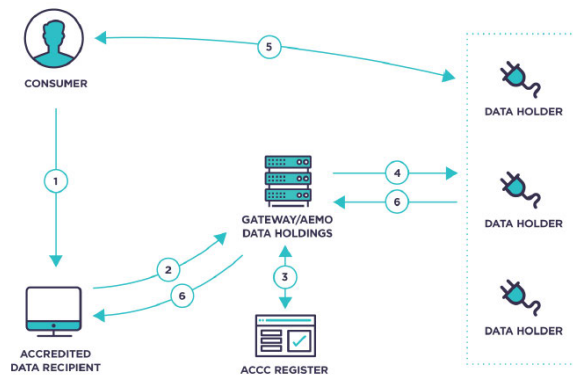
Section 2: Context



This report considers the advantages and disadvantages of two alternative approaches to implementing CDR in the energy sector

Gateway Model

The AEMO gateway model – AEMO would provide a gateway function, (acting as a pipeline for the provision of CDR data from data holders which may include retailers and potentially also distributors, to accredited data recipients), AEMO may also be a data holder providing CDR data directly to accredited data recipients.

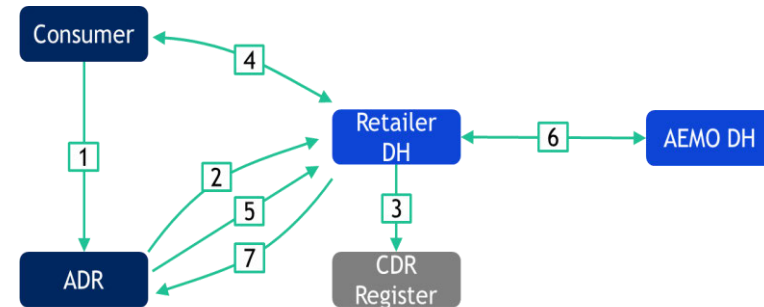


1. The consumer consents to an ADR obtaining their data
2. The ADR contacts the gateway, seeking to access the consumer's data
3. The gateway authenticates the ADR using data previously obtained from the ACCC's register
4. The gateway identifies which data holder(s) hold the consumer's data and provides transaction details to them
5. The process of authentication and authorisation occurs in accordance with any requirements in the CDR energy rules. The gateway's role in this process is to be determined.
6. The consumer's data is shared with the ADR via the gateway.

Above: Data flows in a gateway model
Source: ACCC

P2P Model

The P2P model – existing data holders (i.e. retailers) would be responsible for providing CDR data held by themselves and data held by AEMO directly to accredited data recipients and/or consumers (i.e. similar to the model used for the banking sector).



1. The consumer consents to an accredited data recipient (**ADR**) obtaining their data
2. The ADR contacts the retailer Data Holder (**DH**), seeking access to the consumer's data
3. The retailer DH authenticates the ADR using the CDR Register
4. The consumer is redirected to the retailer DH's authentication and authorisation service. The retailer DH authenticates the identity of the consumer via a one-time password. The Consumer authorises the retailer DH to disclose their data to the ADR
5. The ADR requests a specific set of data that is covered by the authorised consent
6. The retailer requests the relevant data, covered by the authorised consent, from AEMO as a data holder (**AEMO DH**). AEMO DH provides the requested data to the retailer DH. The retailer may also obtain relevant data from its own data holding.
7. The consumer's data is shared between the retailer DH and the ADR

Above: Data flows in a P2P model
Source: Treasury

The AEMO gateway model was selected following consultations in 2019, it is now under review after a number of developments

2019 ACCC Consultations

ACCC Consultation paper release and stakeholder feedback

On 25 February, 2019 the ACCC released a consultation paper seeking feedback from stakeholders on the three proposed data access model options. Consultation on the models closed in March 2019 and 39 letters of response were received from stakeholders.

Three alternative models were put to stakeholders for feedback:

1. The AEMO Centralised model
2. The AEMO gateway model
3. The economy-wide CDR model (similar to the P2P model)

Of the stakeholders who identified a preferred option, 15 preferred the gateway model. 7 stakeholders preferred the economy-wide CDR model, 5 opted for the centralised model (not in scope for this review) and 12 declined to comment on a preferred model. In their written submissions, many stakeholders requested further information, close consultation and detailed costings. None of the 39 stakeholder submissions to the ACCC included a detailed cost analysis citing a lack of detailed information provided to them.

On 29 August, 2019 the ACCC released their position paper, identifying the gateway model as their preferred model.

2020 Enquiry into Future Directions

Enquiry into Future Directions of the Consumer Data Right

In January 2020, the Treasurer announced the Inquiry into Future Directions for the Consumer Data Right. The inquiry was established with the purpose of making recommendations on options to expand the CDR's functionality. The report addressed CDR across all sectors, including energy, but did not make any specific recommendations for the sector.

The Inquiry communicated a number of key insights that have formed part of the basis for revisiting the gateway model:

- Interoperability: across Australia's growing digital economy, CDR cannot be considered in isolation in any industry and needs to work effectively in conjunction with other frameworks
- Costs: can be reduced through the use of third party providers and the ability to replicate a consistent system over different sectors.
- Connectivity: the CDR should enable easier interactions with regulatory bodies, reducing regulatory burdens overall

The Inquiry into Future Directions for the Consumer Data Right paper was completed in October and released to the public in December 2020.

2021 This Review

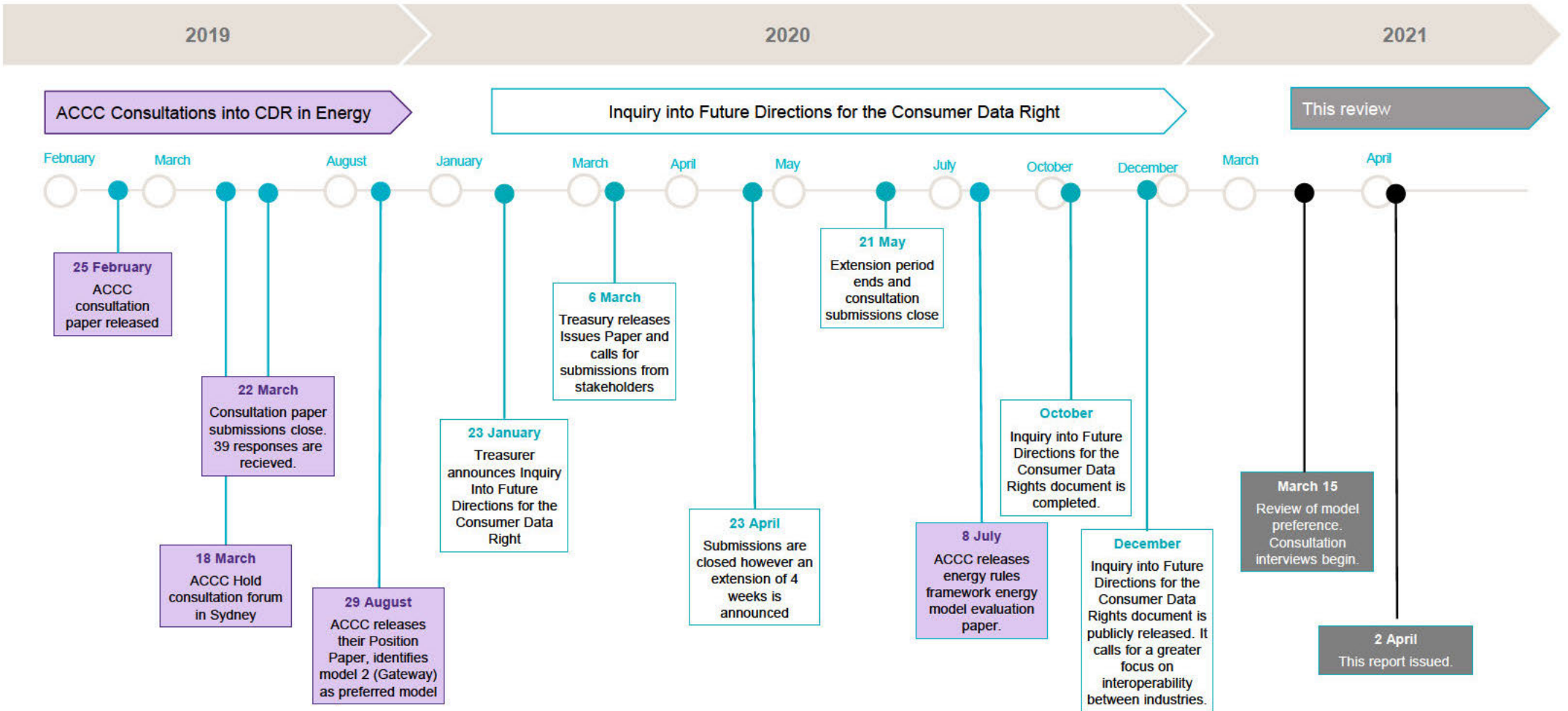
Review of data access model for the energy sector (this review)

In March 2021 the Treasury partnered with Grant Thornton to review a potential change to the data access model for the Consumer Data Right. In a rapidly changing environment, the Treasury sought an independent view on the challenges that have emerged since the decision was made to pursue a gateway model for energy.

Key assumptions which informed the selection of the gateway model that been challenged throughout 2020 and early 2021 by stakeholders and AEMO include (in part):

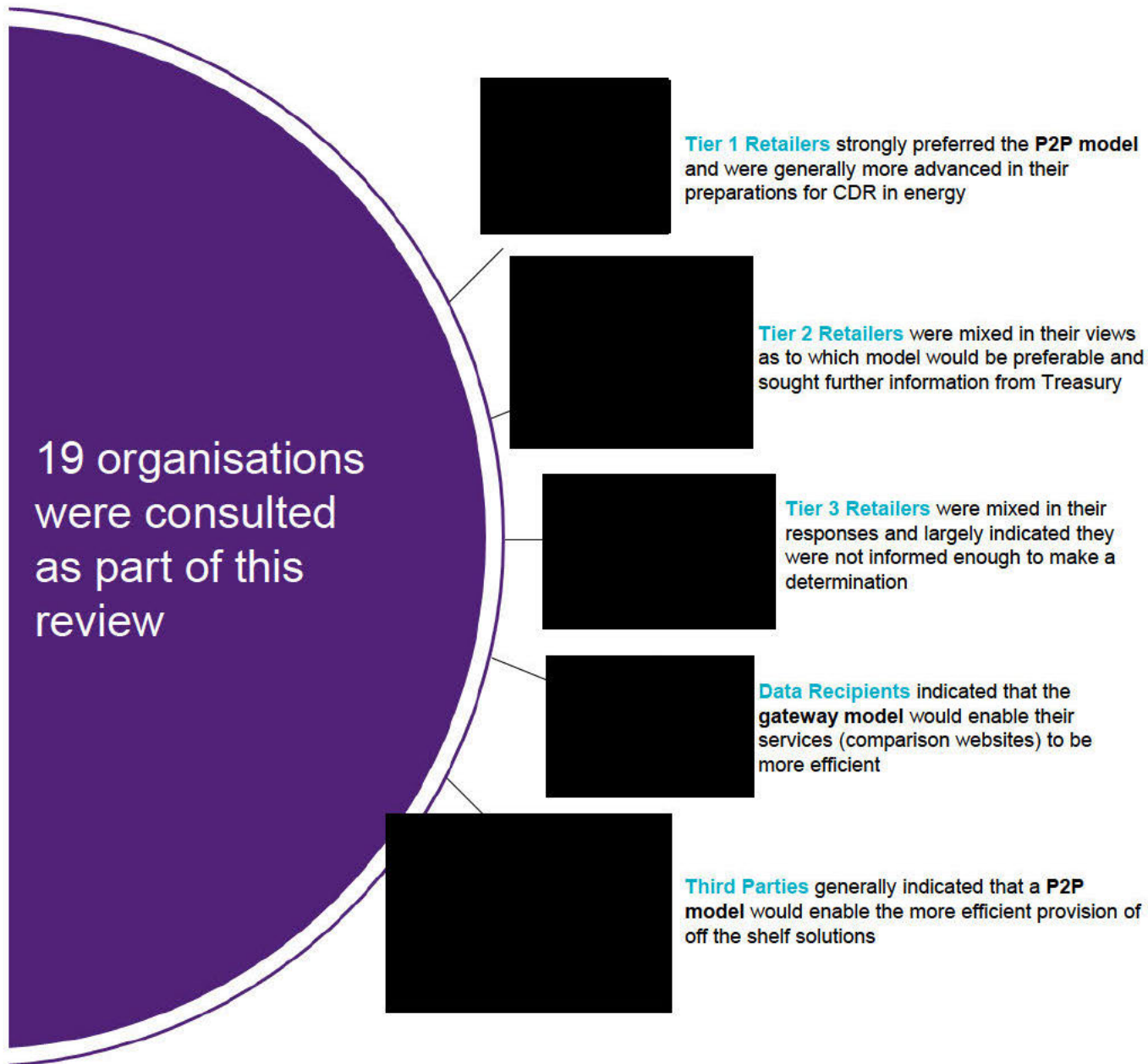
- It will not be possible to use AEMO's existing systems and infrastructure to the degree assumed (e.g. the B2B e-hub to transfer the CDR data to the AEMO gateway), undermining a key pillar of the gateway model's comparative cost-effectiveness and triggering a significant increase in AEMO's cost estimates to deliver the gateway model
- Service providers (third party software providers) may be able to help data providers meet their technical and regulatory obligations under the CDR with 'off the shelf' solutions, potentially lowering costs for data holders and data recipients
- The gateway model is unlikely to be extended into the broader energy sector outside the NEM (or other industries), increasing implementation costs (i.e. duplicating build costs) for providers which operate beyond the NEM (e.g. gas) or in other industries

This review has been informed by previous consultations and reports



Detailed Analysis

Stakeholder perspectives



Consultations with stakeholders revealed that while some stakeholders were more progressed in their thinking than others, none had started detailed planning and building the infrastructure required to join the CDR in energy.

The level of preparation reflects a number of factors raised in consultations:

- Participants were waiting for more information from the government in relation to timing for the gateway – under the gateway model participants would be building to the gateway’s specifications and once further details were announced participants were planning to increase efforts in this space
- A number of significant reforms to the energy market, including five minute settlements, MSATS standing data review (MSDR) and electricity B2B changes are the near term focus of retailers
- The technology capacity and capability of retailers varies considerably, generally based on the size of each business – larger retailers are better resourced and could comment on the advantages and disadvantages of either model, whereas smaller retailers were more likely to seek further information to understand the two models without indicating a preference either way (although some indicated their technology capability and small size may be advantageous when developing CDR infrastructure)

See Appendix A for limitations in relation to stakeholder interviews

See Appendix B for information provided to stakeholders regarding the P2P model

See Appendix C for summary of each stakeholders’ views on cost, security and timeline implications of either model.

Stakeholders were consulted on how the gateway and P2P will impact cost, security and privacy, and implementation timeline



SUMMARY ANALYSIS

The cost difference between the gateway and P2P model may be marginal overall given retailers will be required to build infrastructure to participate in the CDR under either model.

The P2P model leverages the significant personal information security experience of retailers and mitigates the risk of creating a single point of failure or attack for the CDR in energy.

Whilst the P2P model enables retailers to build CDR technology requirements sooner, legislative and regulatory changes to the NEL will be more influential in the overall implementation timeline.

STAKEHOLDER VIEWS

Whilst AEMO has indicated that the gateway model will cost more to build (and be passed onto industry), other stakeholders had a range of views of the cost implications on changing to a P2P model.

Tier 1 retailers indicated a preference for the P2P model and sought to benefit from internal synergies (e.g. existing APIs in use), interoperability between Australian energy markets, and industries which may participate in the CDR ecosystem.

Tier 2 retailers were more in favour of a gateway model and indicated a preference for AEMO to take on as much of a leading role as possible in developing CDR technology.

A majority of tier 3 retailers did not indicate a preference, and generally sought more information before being able to consider which of the models would be more cost effective. Two of those consulted preferred the gateway model.

Third parties and data recipients had a mixed view as to the cost effectiveness of either model.

AEMO has indicated that the gateway model will be more expensive, costing approximately ██████ more over three years (estimated).

Although larger retailers argued that the P2P model would be more secure, feedback from others reveals that either the gateway model or P2P model could meet the security needs of the CDR. Regardless of AEMO's security, a gateway model presents a single point of failure.

Larger retailers (tier 1) indicated in consultations that a P2P model would leverage the significant experience retailers had in protecting personal data. They emphasised in consultations that AEMO does not currently store valuable personally identifiable data whereas retailers have developed systems and processes over time to protect this data.

The balance of stakeholders (tier 2 and 3 retailers, data recipients and third parties) were neutral about which model offered the most security for the CDR in energy.

AEMO did not indicate that it had specific security concerns under either model. Throughout this review, whilst it was recognised that AEMO would be a single point of attack or failure in a gateway model, the organisation has robust cybersecurity in place as a Critical Infrastructure provider.

The majority of stakeholders in each stakeholder group did not express an opinion, or were neutral, on the timeline implications of either the gateway or P2P model. Stakeholders indicated that under a gateway model, they would await the completion of the gateway before commencing their detailed planning and builds.

In consultations, the majority of stakeholders in each group (1st, 2nd and 3rd tier retailers, data recipients, and third parties) indicated that prior to more information on the rules and design of the gateway or P2P being made available, they were not in a position to comment on the timeline implications of either model.

During one consultation, AEMO indicated that it would be capable of building either the gateway or P2P model in a timely manner but emphasised that a number of changes would need to occur to its mandate prior to participating in CDR.

The P2P model is more aligned to the policy objectives of the CDR as a whole



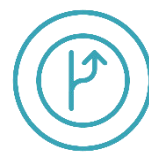
Interoperability within the energy sector

AEMO manages the National Electricity Market (NEM), and various gas markets, however its coverage in Australia is not total (e.g. WA and the NT are not connected to the NEM). Avoiding an AEMO-centric model will ensure the CDR in the energy sector will encourage as many participants from across Australia, and minimise the risk that participants operating in non-NEM markets will have to build duplicate systems to operate in different markets.



Interoperability across CDR ecosystems

The P2P model will mirror the approach taken in banking, and whilst the models for additional industries are not confirmed, the principles of CDR suggest they will likely apply the P2P approach. A P2P model allows the possibility that innovative products which cut across different industries will be made available to consumers in the future. It may also minimise the regulatory burden on businesses which operate in multiple CDR markets by eliminating the need for multiple CDR technology builds.



Flexibility and adaptability of data flows

Whereas the gateway model will be a fixed piece of infrastructure designed to facilitate specific data flows between participants, the P2P model offers the opportunity for participants to innovate within a flexible framework.

The flexibility of the P2P model may enable the sharing of voluntary data sets using CDR data rails, further encouraging innovation. Consequently, it is more likely to deliver more value to markets and consumers.



Participation of smaller participants

A P2P model is more likely to enable outsourced technology providers to build off the shelf CDR solutions for participants in a cost-effective way. Off the shelf solutions may enable smaller retailers, and third parties (such as comparison services) to build to CDR requirements efficiently. In addition, taking a staged approach will enable smaller participants to benefit from 'lessons learned' and open-source material and information provided by Treasury.

Cost to industry is unlikely to vary significantly under either model, though the balance of cost distribution amongst retailers may differ

Lack of reliable estimates available at the data holder level

For a number of reasons, obtaining an estimate of costs for the build and operation of energy retailer systems has proven difficult. Some of the reasons for this include:

- Whilst rules and standards are progressed, they are not finalised;
- In part as a result of the above, there has been minimal technical discovery performed on the part of retailers;
- For the few cost estimates that were provided, these were high level and lacked detailed information on assumptions (providing limited utility); and
- There is currently a lack of established third-party technology solutions available to the energy market.

Overall costs to industry are unlikely to vary significantly under either model

To better understand the cost variance between the two models, it is worthwhile to consider what comprises the technology-related CDR costs to the industry as a whole:

1. Each data holder will be required to build a system for retrieving and providing consumer data on-demand (i.e. the data 'plumbing');
2. Market facing APIs including data, information security and administration APIs;
3. Authentication mechanisms to ensure that a CDR data request is coming from an authorised consumer;
4. Authorisation mechanisms to confirm the information to be shared with data recipients;
5. Consent dashboards available for consumer review and monitoring; and
6. In order to facilitate a simple user experience, energy data holders (including AEMO) will need a 'back-office' connection to share energy data not held exclusively by one data holder.

Regardless of the data sharing model selected, the build and operation of the above technology will be necessary to support CDR in energy. As a result, the key cost considerations between the two models are comprised of potential efficiencies in developing the technology solution and the AEMO cost allocation amongst the retailers.

Centralising certain costs with AEMO (under the gateway model) may lead to technical efficiencies

The greatest potential efficiency from utilising the gateway model is that AEMO will be operating a single consumer-facing system which would include the market facing APIs, authorisations and the consent dashboards. Due to this being a single system to which all market participants can connect, it may result in lower build and operation costs than the P2P model (with each data holder being required to build these items separately).

Third-party technology providers may step-in and deliver similar efficiencies

A downside of utilising the gateway model is that it may limit competition amongst technology providers who could potentially develop ready-made solutions to assist data holders with the same items that would be centralised in the AEMO gateway model. In addition, by encouraging market competition, these technology solutions are more likely to be cost competitive and with additional features.

When considering the potential entrance of technology providers, and highlighting that the overall technical ask is not substantially different between the two models, it is our estimation that the overall costs to industry are unlikely to vary significantly between the two models.

Depending upon the (AEMO) cost-recovery model applied, the distribution of costs across the energy retailers is likely to vary between the two models

It has not yet been determined how AEMO's CDR-related costs will be distributed to the retailers. Based upon consultations, however, it is possible that the costs will be distributed based on retailer size and usage (e.g. number of residential retail connections or kilowatt hours). In utilising a usage-based cost recovery principle, smaller retailers will receive a substantially lower allocation of AEMO's CDR-related costs than would the larger retailers.

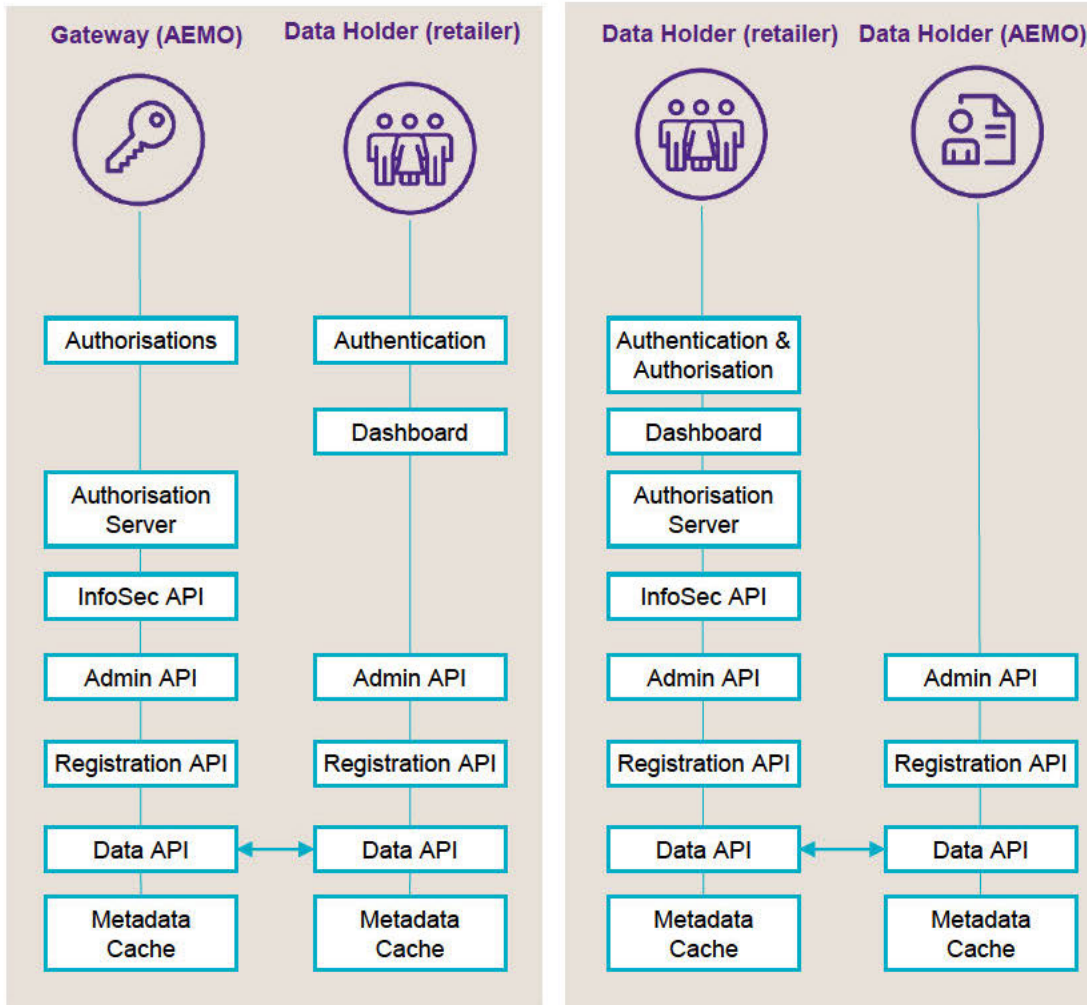
When further projecting a usage-based cost recovery principle to the potential P2P and gateway models, it is quite likely that the overall CDR-related costs to the smaller retailers would be lower under the gateway model than under the P2P model (due to the larger proportion of costs being incurred by AEMO in the gateway model). Refer to further analysis of such projections of AEMO's costs to retailers on slide 19.

Whilst, this review has only considered a usage-based cost recovery approach, it is possible that other cost recovery approaches could be utilised instead, impacting the balance of cost distribution across the retailers.

Core responsibilities of retailers and AEMO under gateway and P2P models

AEMO centralised Gateway Responsibilities

Peer to Peer Responsibilities



Item	Definition
Authorisation	The technical process whereby the gateway or data holder grants access to an Accredited Data Recipient to the relevant consumer data.
Authentication	The mechanism by which data holders must determine that a request is from a valid consumer account.
Authorisation Server	Defines the security boundary, a software statement is presented by an ADRs Product to data holder's authorisation server as part of a client registration request.
Consent Dashboard	A direct to consumer view of CDR consents that will enable consumers to manage consents for the collection and use of their CDR data.
Admin API	Application Programming Interface (API) exposing metric data as per the CDR Standards.
Data API	The relevant CDR data APIs to share consumer data via the ecosystem. The proposed datasets for energy include: national metering identifier standing data, metering data, customer provided data, billing data, retail product data, and distributed energy resource register data.
InfoSec API	APIs with information security information to assist in managing security across the ecosystem
Metadata Cache	Cache of discovered ADRs and their associated Software Products within the CDR ecosystem
Registration API	APIs exposing dynamic registration endpoints

Utilising a per-connection cost recovery model, AEMO will likely recoup 75% of the CDR build and run costs from tier 1 retailers

The CDR build costs of AEMO will be distributed to retailers under either the P2P or gateway models

Whilst the precise basis and timeline upon which AEMO will recover its costs to build infrastructure required under either model is unknown, the table at right illustrates how costs may fall against different tiers of retailers under the assumed cost recovery model (per connection to retail premises).

AEMO and the Department of Finance has estimated that to build the gateway will cost approximately [REDACTED], whereas the P2P model will cost AEMO significantly less, at approximately [REDACTED]. Neither figures are final estimates and full detailed costings were not available to the authors at the time of writing this report.

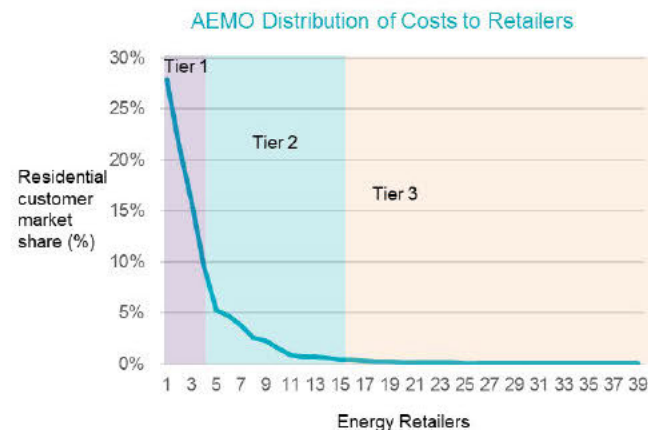
For the purposes of this report, the size of retailers are described below

- **Tier 1** represents those retailers which have more than 9% of market share. Of the four retailers in this tier, the largest has approximately [REDACTED] customers and the smallest has [REDACTED] customers.
- **Tier 2** represents those retailers which have more than 0.2% of market share (and less than 9% market share). Of the 14 retailers in this tier, the largest has approximately [REDACTED] customers and the smallest has [REDACTED] customers.
- **Tier 3** represents those retailers which have less than 0.2% market share. Of the 21 retailers in this tier, the largest has approximately [REDACTED] and the smallest has [REDACTED] customer.

On a per-connection basis, tier 1 retailers will bear 75% of the CDR build costs of AEMO under either the P2P or gateway models

Should AEMO recover cost on a per-connection basis to retail homes the largest four retailers will bear 75% of the cost (see graph above right). When consulted, larger retailers generally indicated a preference for the P2P model, pointing to the greater opportunities to control costs, leverage existing technology within their organisations, and exploit benefits of interoperability across industries (should they expand into other CDR industries likely to implement the P2P model).

For a complete view of projected impacts per-retailer, see Appendix D.



Tier 2 and 3 retailers were more likely to prefer the gateway model

Under both the P2P and gateway models, retailers will be required to invest to build technology (see previous page for details). When consulted, tier 2 and 3 retailers were more likely to indicate a preference for the gateway model to minimise investment required to meet the technology and compliance obligations of the CDR. Estimated costs of AEMO were not provided to retailers consulted.

The table below illustrates the estimated cost impact on a per-connection basis of either model on the largest retailer of each tier.

Retailer (and tier)	Estimated AEMO Cost Distribution	
	Gateway	P2P
[REDACTED] (largest tier 1)	[REDACTED]	[REDACTED]
[REDACTED] (largest tier 2)	[REDACTED]	[REDACTED]
[REDACTED] (largest tier 3)	[REDACTED]	[REDACTED]

Appendices

Appendix A: Limitations

A sample of stakeholders were consulted: Grant Thornton held consultations with 19 stakeholders in the energy sector, including AEMO, retailers, cost comparison groups, and third parties (such as technology providers). Whilst every effort has been made to engage with as many stakeholders as possible, not all participants were able to be consulted.

Timeframe: Grant Thornton had a limited timeframe of 3 weeks to contact stakeholders, conduct interviews and collate findings. The insights drawn from these consultations are limited to the effort available during a 3 week period.

Stakeholder cost and timing estimates: Many stakeholders had not completed detailed estimations of the cost or timing of either models on their business. In many cases, they were unable or unwilling to provide the resource effort required to implement either option. As a result, no stakeholder provided costing or timing estimates for either model.

AEMO cost estimates: Where this report draws conclusions on the likely impact of AEMO recovering investment costs in building and delivering either model, these conclusions are based on data provided by the Treasury (via AEMO). Full assumptions and models supporting estimations were not made available to the authors and, as such, not able to be critically considered. The cost-recovery approach of AEMO is yet to be determined.

The authors were advised that the estimated [REDACTED] in costs associated with building the gateway model is a total cost for everything past the design stage – staffing, ICT requirements, etc. Includes program management, legal advisors, solution architects, database engineers, cloud designers, integration specialists etc. This figure also includes cloud costs and any hardware needed, cybersecurity etc. The figure does not include any operating or maintenance costs and has around [REDACTED] in contingency.

Rules and standards: The final rules and standards for either the gateway, or P2P model for energy, were not available to stakeholders consulted or the authors of this report. The design of the final rules and standards will likely impact the cost and effort required for parties to participate in the CDR program.

Reliance on third party developers: Consultations with third parties indicated that some, but not all, outsource service providers sought to develop products to support CDR data holders in the energy sector. This report has assumed, over time, off the shelf solutions will become available subject to independent commercial determinations made by outsource service providers.

Phasing or exemptions for smaller retailers: The exact nature of phasing or exemptions to mandatory obligations remains a policy determination to be made by government.

Appendix B: Consultation information provided to stakeholders

Consultation on the energy sector data access model

TSY/AU

Key concerns with a centralised gateway

A standardised implementation of the Consumer Data Right in each sector will help to reduce overall costs and link a sector to the emerging market of CDR service providers.

The initial assumptions behind the cost/benefit analysis of a centralised Gateway model have not borne out as technical details of the model have emerged. For example, it has become apparent it will not be possible to use the B2B e-hub to transfer CDR data to the AEMO gateway.

The service providers that are emerging in Open Banking, helping to prepare data holders meet their obligations and manage data flows, may be more effective at reducing implementation costs than a centralised Gateway.

The centralised Gateway model is unlikely to be extensible to the broader energy sector (gas and electricity supply outside the NEM). This may increase implementation costs as the same data holders need to build multiple systems for CDR.

A peer-to-peer model may have significant benefits

Allows better integration across the whole CDR, including with the emerging market of outsourced service providers.

The Government intends to increase the pace of the CDR roll out across the economy and extend its functionality and interactivity through intermediaries and service providers.

The Gateway imposes a time constraint on roll out of the CDR as retailers need to wait for the Gateway to be complete before being able to finalise their own implementation. A peer-to-peer model avoids this problem and gives retailers control.

Potentially a lower overall cost to implement, making use of third party service providers and potentially Commonwealth assistance to create an open source library of artefacts to assist with implementation. Extensible within the energy sector and, for retailers operating across sectors, economy-wide, limiting the prospect of retailers needing to build for both a Gateway and peer-to-peer model.

How would a peer-to-peer model work?

Retailers would be responsible for the construction and maintenance of appropriate APIs to deliver their data to requesting Accredited Data Recipients.

Retailer systems would need to be able to interact with the ACCC Register to authenticate ADRs and with AEMO to draw data from the datasets it holds.

Retailers would provide customer authentication and consent management systems for all requests. AEMO would respond to data requests from retailers without the need for additional authentication.

The Data Standards Body would set standards retailers would need to comply with for the data payloads and infrastructure.

But there are some costs as well

A peer-to-peer model shifts the direct, upfront costs of CDR implementation from AEMO to retailers, with lower costs passed on from AEMO.

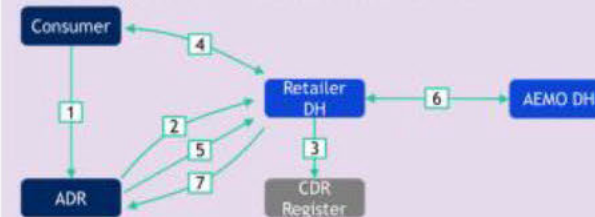
- In the centralised gateway model, AEMO would pass on higher build and operating costs to retailers over time through cost recovery mechanisms.

Retailers must meet the full, upfront costs and the technical requirements of CDR implementation.

- Treasury anticipates third party service providers will be able to reduce this technical gap and cost imposed through standardised software products.

- If there is interest from data holders, it may be possible for the Data Standards Body to assist with implementation through the provision of open source artefacts.

Data flows in a peer-to-peer model



1. The consumer consents to an accredited data recipient (ADR) obtaining their data.
2. The ADR contacts the retailer Data Holder (DH), seeking access to the consumer's data.
3. The retailer DH authenticates the ADR using the CDR Register.
4. The consumer is redirected to the retailer DH's authentication and authorisation service.
5. The retailer DH authenticates the identity of the consumer via a one-time password. The Consumer authorises the retailer DH to disclose their data to the ADR.
6. The ADR requests a specific set of data that is covered by the authorised consent.
7. The retailer requests the relevant data, covered by the authorised consent, from AEMO as a data holder (AEMO DH). AEMO DH provides the requested data to the retailer DH. The retailer may also obtain relevant data from its own data holdings.
8. The consumer's data is shared between the retailer DH and the ADR.

Questions for consultation

Would a peer-to-peer model work for your business?

In your view, does your business have the digital capacity and readiness to meet your obligations under the CDR? Would a change to the data access model affect this view?

How would a peer-to-peer model affect your implementation costs?

Have you incurred costs in undertaking a technical build to prepare for a centralised Gateway model that would not be transferable to a peer-to-peer model?

Do you consider there is value in AEMO facilitating and coordinating testing of the CDR communications infrastructure between itself and retailers for the electricity sector?

Are there products or services you would like to see to help you meet your obligations under the CDR? Are there specific open source products or artefacts the DSB could make available to assist with implementation? Would you consider an off-the-shelf solution if it were available?

What adjustments may need to be made for small retailers to allow them to meet their CDR obligations? What metric would be best used to determine who is a "small" retailer and what should the threshold be?

Source: Treasury, consultation guide provided to stakeholders

Appendix C: Consultation summary

Stakeholder	Type	Tier ¹	Costs Estimate (preference)	Security / Privacy Estimate (more secure)	Timeline Estimate (faster build time)	Summary (preference overall)
████	Data Holder	Tier 1	P2P	P2P	P2P	P2P
██████████	Data Holder	Tier 1	=	P2P	=	P2P
██████████	Data Holder	Tier 1	P2P	P2P	=	P2P
██████████	Data Holder	Tier 2	GATEWAY	=	GATEWAY	=
██████████	Data Holder	Tier 2	P2P	P2P	=	P2P
████	Data Holder	Tier 2	GATEWAY	=	=	GATEWAY
██████████	Data Holder	Tier 2	GATEWAY	GATEWAY	=	GATEWAY
██████████	Data Holder	Tier 3	=	GATEWAY	=	=
██████████	Data Holder	Tier 3	=	=	=	=
████	Data Holder	Tier 3	GATEWAY	P2P	=	GATEWAY
████	Data Holder	Tier 3	=	=	=	=
████	Data Holder	Tier 3	GATEWAY	GATEWAY	GATEWAY	GATEWAY
██████████	Data Recipient	N/A	=	=	GATEWAY	GATEWAY
████	Data Recipient	N/A	GATEWAY	=	GATEWAY	GATEWAY
████	Third Party	N/A	P2P	=	P2P	P2P
██████████	Third Party	N/A	=	=	=	P2P
██████████	Third Party	N/A	=	=	=	=
████	Third Party	N/A	P2P	=	=	=
████	N/A	N/A	P2P	=	=	=

Note:

1. 'Tiers' are indicative only based on the number of retail connections, see section three for detailed definition.
2. '=' indicates the stakeholder didn't express a preference for either model, or may not have had enough information to do so

Appendix D: AEMO estimated cost recovery - Tier 1 & 2 retailers

Illustrative projection of AEMO's cost recovery for the P2P and gateway models (utilising number of residential connections as the cost-recovery model).
 Note that internal build and run costs of retailers are not included.

Tier	Company Name	Residential Customers	Market Share	Estimated Gateway Distributed Costs	Estimated P2P Distributed Costs	Net benefit of P2P model (AEMO cost recovery)
Tier 1	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Tier 1	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Tier 1	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Tier 1	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Tier 2	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Tier 2	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Tier 2	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Tier 2	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Tier 2	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Tier 2	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Tier 2	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Tier 2	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Tier 2	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Tier 2	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Tier 2	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Tier 2	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Tier 2	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Tier 2	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Tier 2	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Tier 2	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Tier 2	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

- Notes:
- AEMO cost estimates of the P2P and gateway model, number of retailers, and residential connections provided by Treasury.
 - The above table illustrates the costs difference associated with AEMO's build of the gateway model versus the P2P model. It does not include the costs of retailers to build and run infrastructure to meet the needs of the CDR
 - The technology which is required to be built under both models is described on page 18.

The matters raised in this report came to our attention during the course of our review, as a result of our consultations and review of evidence made available to us. The possibility therefore exists that our report may not take into account material information that was not made available to us at the time of our review. Our comments should be read in the context of the scope of our work as detailed in the terms of reference.

This report has been prepared solely for the use of **the Treasury** and should not be distributed in whole or in part without our prior written consent. No responsibility to any third party is accepted as the report has not been prepared, and is not intended, for any other purpose.

Reliance on information provided

This work does not constitute an audit performed in accordance with Auditing Standards.

Except to the extent set out in our Report, we have relied upon the management representations, documents and information provided to us as being accurate and genuine.

Forms of report

For your convenience, our Report may have been made available to recipients in electronic as well as hard copy format. Multiple copies and versions of our Report may therefore exist in different media and in the case of any discrepancy the final signed electronic copy should be regarded as definitive.

If further information is produced and brought to our attention after service of our Report, we reserve the right to revise our Report as appropriate. However, we are under no absolute obligation to do so, nor to amend our Report (or any report to you in any form) following its issuing.

Grant Thornton Australia Limited ABN 41 127 556 389 ACN 127 556 389

'Grant Thornton' refers to the brand under which the Grant Thornton member firms provide assurance, tax and advisory services to their clients and/or refers to one or more member firms, as the context requires. Grant Thornton Australia Ltd is a member firm of Grant Thornton International Ltd (GTIL). GTIL and the member firms are not a worldwide partnership. GTIL and each member firm is a separate legal entity. Services are delivered by the member firms. GTIL does not provide services to clients. GTIL and its member firms are not agents of, and do not obligate one another and are not liable for one another's acts or omissions. In the Australian context only, the use of the term 'Grant Thornton' may refer to Grant Thornton Australia Limited ABN 41 127 556 389 and its Australian subsidiaries and related entities. GTIL is not an Australian related entity to Grant Thornton Australia Limited. Liability limited by a scheme approved under Professional Standards Legislation. Liability is limited in those States where a current scheme applies.

