

Multiple trading relationships

Pilot operational requirements

17 August 2021

This document outlines the pilot design and expected operational design requirements of the multiple supplier pilot to be included in the terms and conditions of participation.

These requirements are based on:

- > prior work of the Electricity Authority and its Innovation and Participation Advisory Group developing arrangements to support consumers choosing to have multiple providers of electricity services.
- > an indicative pilot design developed by Ara Ake between November 2020 and April 2021. The indicative design was tested with the Electricity Authority and a selection of people involved in day-to-day operation of the electricity market.
- > the outcomes of the collaborative pilot design workshop held by Ara Ake on 2 June 2021 to obtain input on key aspects of the proposed pilot design.
- > outcomes of meetings held individually or in groups with parties interested in participating of the pilot seeking for additional feedback (these meetings were conducted after sharing the workshop outcomes and proposals)

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1. Pilot summary

Currently, customers must contract with a single retailer for electricity services at one installation control point (ICP). The MTR concept is a form of innovation that aims to provide a customer with the option to contract with more than one supplier to receive or supply a subset of electricity services (including consumption, generation, demand response and other third-party provider services) at an ICP.

Currently, MTR is not allowed for under New Zealand's Electricity Industry Participation Code (the Code). The purpose of this pilot is to provide a real-world test for the MTR concept to:

- > evaluate if the MTR concept is considered sufficiently valuable to justify a change to the Code.
- > detect and highlight for risks and constraints that might impact negatively on the electricity market if MTR is added to the Code.
- > understand more about the different business models and propositions that might be developed if MTR was allowed for under the Code.

This pilot builds on a consultation process begun in 2017 by the EA on MTR. Renamed the [ACCES \(additional consumer choice of electricity\)](#) project, several barriers, including around data provision, were identified by electricity market participants. To progress the MTR aspect of the ACCES project, Ara Ake has offered to pilot the MTR concept in an 'off-market' environment to test its feasibility. Accordingly, the pilot represents an opportunity to test the thinking of the EA regarding the benefits to consumers and the broader electricity market of allowing consumers to have multiple suppliers. Additionally, the pilot would help to demonstrate:

- > the capability and performance of energy-related technologies in a market environment, including identifying, where possible, the potential impact on consumers, electricity networks and emissions.
- > the commercial prospects of new business models and intellectual property based on the multiple supplier concept, and the associated consumer experience and benefit.
- > the workability of the business processes underpinning multiple suppliers, in order to make a recommendation to the EA on whether a change to the Code is merited to incorporate MTR.

2. Why multiple trading relationships is of interest

Providing a household or business with the option to contract with a second (or third) supplier to receive or supply a subset of electricity services at an ICP expands the range of choices of suppliers and services available to the consumer, particularly in the context of greater uptake of distributed energy resources (DER) like rooftop solar panels. For example, a household could decide to join a community energy scheme, buying a portion of its electricity from one retailer, a portion of its electricity from the supplier operating the community energy scheme, and sell its self-generated electricity to supplier operating the community energy scheme.

The potential outcomes of MTR include:

- > a more consumer-centric electricity market with individual consumers having greater flexibility and diversity in their interactions with the electricity market and more opportunity to realise the financial benefits of their energy resources.

- > acceleration of uptake of renewable and low-emissions energy infrastructure, with a clearer path to market strengthening incentives for investment in distributed energy resources (and the potential for achieving emissions budgets at lower overall cost).
- > reduced barriers to entry and expansion of disruptive business models delivering innovative services resulting in thriving competition and flourishing innovation.

3. Why Ara Ake is coordinating this pilot

Ara Ake was established by the Government as part of their commitment to transitioning to a low-emissions economy. Its mission is to accelerate the development and commercialisation of energy innovation in Aotearoa, to support the transition to a low-emissions future. One of its areas of focus is to investigate regulatory settings (like the inability to implement MTR) that act as a potential barrier to energy innovation.

4. Main features of the pilot

The pilot is designed to provide participating households and businesses with the ability to receive or supply electricity services from multiple providers.

The result is the unbundling of the traditional retail electricity service into its separate tradeable component services. The separate component services are expected to be the consumption service, the generation service, and the flexibility service.

For the pilot, the providers of these services will include the trader at the connection point, plus one or more suppliers. The trader is also a retailer.¹

A supplier is a provider which is supplying a consumption, generation, or flexibility service to the customer alongside the trader. Based on current terminology and definitions, these suppliers may also be retailers if they are supplying electricity to the customer.²

The design is intended to mimic as closely as possible the standard market settings, with adjustments to reflect introducing multiple suppliers at an ICP. Compared to current market arrangements the pilot introduces three new parties – the supplier, the connection agent, the allocation agent.

The connection agent and allocation agent are new roles required by the pilot to provide equivalent services to the registry, reconciliation, and settlement functions which underpin the electricity market. These agents will be procured by Ara Ake for the duration of the pilot.

Table 1 lists the parties required in the pilot and an overview of their respective role and functions, based on the pilot design. Cells highlighted in orange represent new activities and roles.

The pilot will be conducted by participating suppliers, traders, and distributors according to relevant regulatory and market requirements, plus any conditions associated with participating in the pilot.

¹ The legislation governing the electricity sector used specific terminology for participants. Very simply, trader is the term used in the Electricity Industry Participation Code for a party trading in the wholesale market. The Code applies a range of obligations to traders.

Retailer is the term used in the Electricity Industry Act for a business engaged in the sale of electricity to a consumer other than for the purpose of resale. The Act and Regulations apply a range of obligations to retailers.

² A supplier selling electricity to a consumer will be a retailer. A supplier purchasing electricity from a consumer will be a trader.

- (1) The pilot is ‘off-market’ which means the extra supplier will not participate directly in the wholesale market or interact directly with the market operation service providers (MOSPs).
- (2) Suppliers, traders, and other participants involved in the pilot will not be exempted from regulatory obligations and market requirements which apply in the usual course of operating in the electricity market.

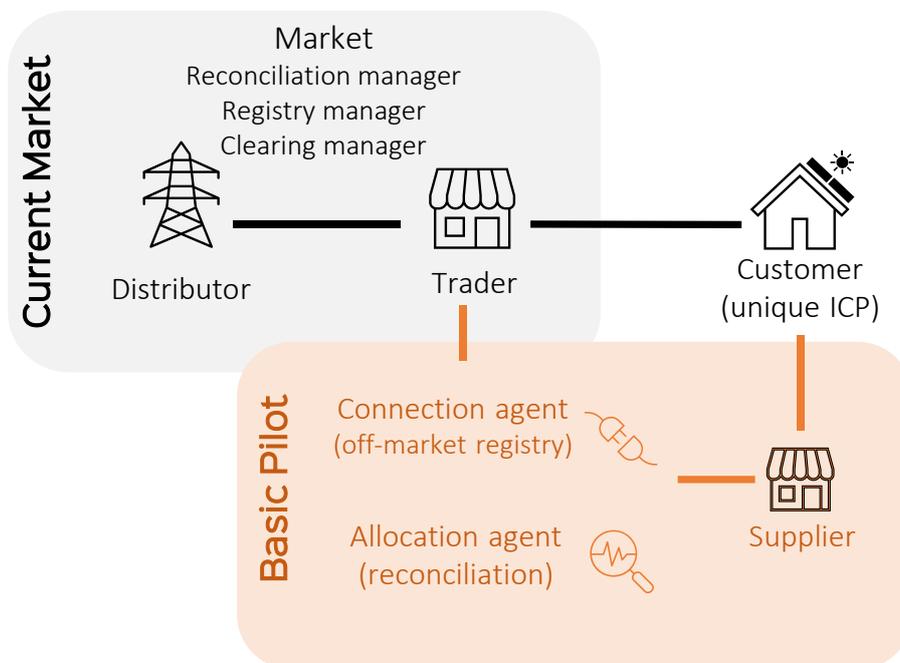


Table 1 Role and functions of parties required for the pilot

Party	Description	Role and function
Ara Ake	Coordinates the pilot	<ul style="list-style-type: none"> Coordinate pilot set-up, including final pilot design Recruit sub-ICP suppliers and ICP traders to join pilot Engage connection agent and allocation agent Coordinate pilot operation Monitor pilot performance Report on pilot outcomes
Trader	The trader supplying electricity services to the household or business at the ICP. The trader will have a contract with the household or business.	<ul style="list-style-type: none"> Meet pilot operational requirements Comply with market existing roles and responsibilities A trader at an ICP can be a supplier at another one
Supplier	A party supplying a subset of electricity services (sub-ICP services) to the household or	<ul style="list-style-type: none"> Meet pilot operational requirements

Party	Description	Role and function
	business at the ICP. The supplier will have a contract with the household or business. <i>New activity and role.</i>	<ul style="list-style-type: none"> • Deliver sub-ICP services, including recruiting customers • Comply with all relevant regulatory obligations according to participant status
Connection agent	The party performing the registry function for sub-ICP services, including managing sub-ICP switching process. <i>New activity and role equivalent to the registry manager function.</i>	<ul style="list-style-type: none"> • Perform sub-ICP registry functions according to functional specification in the final pilot design • Develop and maintain database for shadow Registry for sub-ICP services • Manage pilot switching process
Allocation agent	A party performing the sub-ICP reconciliation and settlement functions to allocate physical volumes and financial obligations between the ICP trader and sub-ICP supplier using approved process. <i>New activity and role equivalent to the reconciliation manager and clearing manager functions.</i>	<ul style="list-style-type: none"> • Perform sub-ICP reconciliation and settlement functions according to functional specification in the final pilot design

The pilot creates a market-like environment which reflects the business-to-customer, business-to-business, and business-to-market activities and processes of the electricity market established by the Electricity Industry Participation Code (the Code). The intention is to:

- > integrate suppliers (ie, a second supplier for the customer) into the customer-supplier relationship in a market-like environment
- > provide a market-like environment which reflects, to the extent necessary, the business-to-customer, business-to-business and business-to-market processes required under the Code and relevant regulations.
- > minimise the risk of possible negative impacts on consumers and industry participants both in and outside the pilot.

5. Operational requirements

The operational requirements for the pilot are grouped into the six categories listed in Table 2.

More detail on the requirements (conditions) of each category is provided in the relevant section in the remainder of this document.

Table 2 Operational requirements for the MTR pilot

Category	Description
Customer related requirements	These are the pre-existing regulatory obligations and expectations on electricity retailers relating to retailer and customer interactions and their applicability to suppliers
Distribution services	These are the obligations and expectations for the nature of the relationship between a supplier and a distributor, including for use of the network and payment for distribution services
Metering and measurement	These are the expectations for measurement of the electricity volumes imported and exported at each connection point used to calculate financial obligations relating to payments for wholesale market and distribution services
Sub-ICP Registry, reconciliation, and settlement functions	These are the market functions which support the buying and selling of wholesale electricity and related electricity services by ensuring the right person gets paid the right amount at the right time
Pilot administration, including customer recruitment and duration	These describe the parameters of the pilot, including the approach to pilot launch and closure
Monitoring and reporting of pilot outcomes	These are the requirements on pilot participants to collect and provide information and data to monitor pilot operation (focused on identifying harm to consumers) and to report pilot outcomes

5.1 Customer-related requirements

Electricity retailers are guided by industry obligations and expectations set by the Electricity Authority relating to customer-related interactions. These are outlined [on the Authority website](#). Some of the requirements are applied through the Code. Some of the requirements are applied through voluntary guidelines.

The customer-related requirements cover a range of topics, including contractual protections, pricing, complaints handling, trader default situations, access to consumption and tariff information, saves and win-backs, and consumer care, including disconnection. Several of the requirements cover every-day and routine events (eg, contracting and consumer care), while others deal with infrequent events (eg, trader default).

Participation in the pilot does not exempt someone who is an electricity market participant from complying with all relevant customer-related obligations and expectations. All participants of the pilot would continue to have a general obligation to meet all relevant regulatory requirements applying under the Code, Electricity Industry Act 2010, and other legislation, for example the Fair Trading Act 1986.

(3) The pilot will not include any specific requirements that a party comply with customer-related obligations and expectations as a condition of participating in the pilot. All participants of the pilot will continue to have a general obligation to meet all relevant regulatory obligations and expectations applying under the Code, Electricity Industry Act 2010, and other relevant legislation.

The pilot will include conditions relating to five customer-related requirements:

- > exchange of information between trader and supplier about customer-related events
- > the Electricity (Low Fixed Charge Tariff Option for Domestic Consumers) Regulations 2004 (LFC Regulations)
- > providing customers with information about the relevance of the Powerswitch price comparison service while they are participating in the pilot
- > specifying a process for exiting a customer from the pilot if they enter a credit management process or are scheduled for disconnection due to non-payment of their bill
- > privacy and management of customer information, including personal information.

5.1.1 Exchange of information between traders and suppliers relating to the customer experience

The customer experience in the pilot could be influenced by the exchange of information between traders and suppliers.

Information which should be communicated between the trader and supplier is:

- > advice from the distributor relating to planned network outages
- > a decision by either party to begin the credit management process
- > a decision by the trader to disconnect the customer for reasons other than credit management.

Planned outage information is exchanged between the distributor and trader using EIEP5A. The trader should inform the supplier about planned outages affecting the customer as soon as possible after receiving the EIEP5 file from the distributor.

(4) The trader will inform the supplier about planned outages affecting the customer as soon as possible after receiving the EIEP5 file from the distributor

Disconnection is a credit management tool. The trader or the supplier may begin a credit management process if the customer does not pay their bill, potentially resulting in disconnection. Disconnection by either the trader or the supplier may affect the ability of the other to receive/provide services.

(5) Participants will communicate a decision to begin a credit management process for a customer to the other parties supplying electricity services to that customer. No action to physically disconnect or withdraw services can be taken without the communication

Disconnection can occur for reasons other than non-payment of power bills. Disconnection by either the trader or the supplier may affect the ability of the other to receive/provide services.

(6) Participants will communicate an intention to disconnect a customer for reasons other than credit management. No action to physically disconnect or withdraw services can be taken without the communication

5.1.2 LFC Regulations: customers in the pilot must be supplied under a standard tariff option

The LFC Regulations require retailers to offer at least one low fixed charge tariff option available to customers. This means the fixed charge must be no more than \$0.30/day.

Customers receiving a low fixed charge tariff product cannot be charged for electricity services provided by another party. Only the electricity retailer that offers the low fixed charge tariff may charge the consumer directly in respect of delivered electricity, or any component of delivered electricity, supplied to the home.³

This restriction means a household wanting to participate in the pilot must choose to be supplied on a standard tariff option by their retailer.

(7) Customers in the pilot should be supplied on a standard tariff option.

5.1.3 Information about Powerswitch

Retailers and suppliers which are retailers participating in the pilot will be required to give information to their customers about Powerswitch.

However, Powerswitch provides comparison information and advice relating to standard electricity retail services; the information is not relevant to the unbundled electricity products and services which will be offered through the pilot.

(8) Participants should provide their customers with information as part of the pilot entry process that Powerswitch does not offer a comparison service relevant for comparing unbundled electricity products and services and that switching retailers during the pilot may require the customer to exit the pilot.

5.1.4 Process for exiting customers from the pilot due to credit management

Each trader and supplier participating in the pilot will have a credit management process in the event the customer does not meet their financial obligations, with the process potentially resulting in physical disconnection or the customer ceasing to receive the service.

³ LFC Regulations, section 21.

Restricting access to this tool may affect the commercial proposition of the traders and suppliers participating in the pilot. Disconnection of a customer or withdrawal of a service by either the trader or the supplier may affect the ability of the other to receive or provide services.

At a minimum, a decision by the trader or supplier to begin the credit management process for a customer in the pilot should be communicated to the other party.

Retailers are expected to adopt a credit management process which reflects the process described in the Consumer Care guidelines.⁴ The process includes a 10-day period after a customer fails to pay their bill before progressing to disconnection for non-payment of the bill. During this 10-day period the retailer is expected, amongst other things, to make several attempts to contact the customer.

If the customer is owed money for export of electricity under a contract with the supplier, the trader should not withhold those funds from the supplier to offset an unpaid power bill.

The consumer care guidelines also that retailers offering ‘bundled goods/services should, for a customer not on a payment plan and who is in payment arrears and/or is having payment difficulties, explain to the customer how part payments are being cleared against bundled components of an invoice that cover multiple goods/services provided. Retailers should consider allowing customers to elect that any part payments clear the customer’s debt related to electricity supply or distribution services first.’

(9) Pilot specific conditions:

- Failure by the customer to exit the credit management process within 10 days will result in the customer no longer being able to participate in the pilot. The customer would revert to the retail supply arrangements applying prior to joining the pilot or the relevant retail supply arrangements of the pilot trader (if the customer had been with a different trader immediately prior to joining the pilot)
- The trader must not withhold payments due to the customer under a contract with the supplier.

5.1.5 Privacy and management of customer information

Traders and suppliers will hold information, including personal information, about their customers. Parties holding personal information must comply with the requirements of the Privacy Act.

The pilot design, and associated monitoring and reporting requirements, will involve some customer information being available to parties other than the party with which they have contracted.

The traditional model assumes a one-to-one relationship between the customer, the trader they have a contract with, and the connection point where the electricity services are delivered. This assumption underpins efforts to manage privacy of information. However, the assumption cannot apply when there can be more than one supplier of electricity services at a connection point as the contract could be with anyone with a legal right to enter the contract for that household or business, ie, not necessarily the retail electricity account holder.

(10) Each participant of the pilot, including Ara Ake, which holds customer information, including personal information, must meet the requirements of the Privacy Act.

⁴ The guidelines are available on the Authority website at: <https://www.ea.govt.nz/assets/dms-assets/28/Consumer-Care-Guidelines.pdf>.

- All participants of the pilot, including Ara Ake, will have appropriate systems and processes to properly protect customer information and ensure that information is used only for the purposes allowed by the customer.
- Ara Ake will specify the information and data which will be collected for monitoring and reporting on the pilot.
- Traders and suppliers will include conditions in their customer contracts describing what information will be collected as part of the pilot and how that information will be used. Customers must agree to these conditions to participate in the pilot.

5.2 Distribution services

Traders must have an agreement with a distributor to trade on that distributor's network. The distributor agreement describes the terms and conditions for use of the network, including for pricing and payment.

For the pilot, a complete distributor agreement describing terms and conditions for a supplier to use a distributor's network is not considered necessary. Minimum requirements for the pilot are:

- > distributor visibility of supplier activity and any implications for network operation and performance
- > the approach to allocation of distribution charges between traders and suppliers.

5.2.1 Distributor visibility of supplier activity

Distributors currently have some level of visibility of what and how their networks are being used for safety and network operation reasons.

Distributor agreements currently require a trader to inform the distributor about demand response activities of the trader and third parties (traders are required to include provisions in their customer contract obliging the customer to inform the trader when the customer contracts with a third party to provide demand response services). Distributed generation owners are required to meet specified connection standards when connecting their generation to the network.

(11) Traders and suppliers participating in the pilot should meet relevant operating and connection standards of the networks on which they are operating (and delivering services as part of the pilot).

(12) Distributors supplying distribution services to customers participating in the pilot:

- Should have access to the record of information and data maintained by the connection agent (or equivalent). That is, the distributor should have access to the registry-like information recorded to support operation of the pilot, particularly the description of services supplied to the customer.
- Should have access to consumption profile data (anonymised as appropriate) for research purposes once the pilot is concluded. Note, this data may be made available through reporting on the pilot outcomes.
- Access is subject to the distributor agreeing to the pilot terms and conditions.

Distributors charge for use of the network based on their pricing methodology. The most common approach is for the distributor to charge each trader based on the number and category of customers supplied.

(13) Trader and supplier of each customer on the pilot will be responsible for their share of distribution charges as determined by the allocation agent.

5.3 Metering and measurement

Electricity volumes imported and exported at each ICP are measured by the metering equipment provider (MEP) nominated by the trader using a certified meter installation.

Traders are responsible for ensuring that there is a metering installation at electrically connected ICPs and that all electricity conveyed is quantified in accordance with the Code. Traders are required in the Code to appoint the MEP. The trader will typically enter an arrangement with an MEP to provide a compliant metering installation for the ICP, including to read meters and provide raw meter data.

The trader and the supplier(s) must collect half-hourly volume data for each delivered service for each customer for reconciliation, settlement, and reporting purposes.

For the pilot, suppliers will have the option to elect to use the meter to measure volumes of the services they deliver or to use the measurement capability of an appropriate device.

Under current rules, the meter is provided by the MEP selected by the trader. To use the meter, the supplier will need to purchase the relevant metering services from the MEP.⁵

Suppliers choosing to obtain volume data from a device other than the meter must ensure the device is located to measure the relevant service, and can measure and transmit, half-hourly consumption data appropriate for reconciliation, settlement, and reporting purposes.

(14) Trader and supplier must collect and provide to the allocation agent half-hourly volume data for each delivered service for each customer in the pilot for reconciliation, settlement, and reporting purposes.

- a supplier electing to use the meter to measure volumes will have an agreement with the MEP for that location to receive relevant metering services
- the trader nominating the MEP for that location must agree to the MEP providing metering services to the supplier without imposing any conditions on that agreement, including requiring a payment from the supplier or MEP.

(15) A supplier electing to use a measurement device other than the meter must:

- ensure the device is located to accurately measure the half-hourly volumes associated with the specified service being supplied to the customer
- inform the party maintaining the pilot sub-ICP registry of the type of device (ie, brand, model) being used

⁵ Part 10 of the Code describes the obligation and process for a retailer to select an MEP. Schedule 10.6 requires the MEP to get permission of the trader at the ICP to provide metering services to another party using the meter at the ICP, ie, the supplier.

- ensure the device can measure half-hourly volume data at +/- 3% or better accuracy, based on the manufacturer specification
- ensure the device has communication capability enabling transmitting of half-hourly volume data at least every 24 hours
- has other relevant technical capability necessary to measure, store and transmit half-hourly volume data, and other relevant data, for each delivered service for each customer in the pilot needed for reconciliation, settlement, and reporting purposes. Required functionality includes time sync capability.

The requirement to ensure the designated measurement device is located to accurately measure the half-hourly volumes associated with the specified service means the device may be located elsewhere when it is measuring volumes associated with a consumption service.

For example, it is not physically possible for a service provider delivering customers a proportion of their electricity requirements by offering a time-based or availability-based consumption service using (notionally) the electricity generated by a community energy scheme to measure the associated volumes at the customer connection point or meter.

In this scenario, the service provider would need to measure the volumes for the consumption service at the point of purchase of the associated electricity, which could be the volumes exported at one or more connection points on the same network or at the network supply point (ie, GXP) for the network. The service provider would need to ensure the volumes sold matched with the volumes purchased.

5.4 Sub-ICP Registry, reconciliation, and settlement functions

The registry, reconciliation and settlement functions support a market for buyers and sellers to exchange wholesale electricity and related electricity services.

Providing a customer with the ability to choose to contract with an additional supplier requires integrating suppliers into the registry, reconciliation and settlement functions provided by the market operation services providers (MOSP).

The pilot is designed to mimic certain MOSP functions which exist to ensure the right person gets paid the right amount at the right time for each exchange of electricity services.

A **connection agent** will perform the sub-ICP registry function by establishing and maintaining a database to provide a central record of the buyer and seller of electricity services at a location (ICP), including information relevant to the price of those services at that location (eg, meter type, meter category, distribution price code etc). This information would provide the source of truth for who pays and gets paid for electricity services exchanged at a location, including when a customer switches trader.

An **allocation agent** will perform aspects of the sub-ICP reconciliation and settlement functions by providing:

- > a central process for allocating responsibility for the volume (quantity) of electricity purchased and sold at each ICP. Electricity volumes imported and exported at the ICP are measured by the MEP nominated by the trader and reported to the reconciliation manager to confirm the quantities purchased and sold by each trader (or purchaser). The reconciliation process

aggregates quantities for each trader at each GXP. Each trader is responsible for allocating volumes to each ICP it is responsible for at that GXP and providing this ICP-specific volume data to the distributor.

- > a central process for calculating and settling financial obligations for wholesale and distribution services. The clearing manager calculates and settles wholesale-related financial obligations of each trader at each GXP based on reconciled quantities and price information. Each distributor uses ICP-specific volume data from traders to calculate and settle the cost of distribution services bought or sold at the ICP.

5.4.1 Sub-ICP Registry function

The sub-ICP registry function will need to provide an accurate record of buyers and sellers at each ICP involved in the pilot, plus provide processes to support customer decisions to switch trader and supplier.

At a minimum, this involves replicating existing registry data, plus recording the supplier operating at that ICP and specifying which services are being exchanged at that ICP (and between which parties).

The sub-ICP registry function has two main parts:

- > providing information to support the reconciliation and settlement process, including specifying the services being transacted at each connection
- > supporting the switching process.

5.4.1.1 Information to support the reconciliation and settlement process

Having multiple suppliers at an ICP allows for the unbundling of the traditional retail electricity service into three separate (tradeable) component services:

- > a consumption service which involves the import of electricity from the local network for use at that location
- > a generation service which involves the export of electricity produced by generation, eg, solar, at the location to the local network
- > a flexibility service which involves the modifying of generation and/or consumption patterns in reaction to an external signal (such as a change in price) to provide a service within the energy system⁶, eg, by reducing consumption of a hot water cylinder or heat pump, or by discharging a battery, to the local distributor, Transpower, a trader or other buyer.

These three component services can be transacted separately or as a combination. A range of combinations is possible, subject to the physical and practical constraints of the equipment at the location and of the connection to the local network.

The implication for the sub-ICP registry function is the necessity of having a record of:

- > the services being delivered to the customer

⁶ This is the definition of flexibility used by the Electricity Authority's Innovation and Participation Advisory Group based on the definition developed by OFGEM.

- > the providers delivering those services
- > the approach for measuring the volumes associated with delivering those services.

(16) A database of connection information will be used to support the reconciliation and settlement process. The database will include the relevant information available in the registry.

(17) Participants providing electricity services to a customer must maintain information in the database maintained by the connection agent including:

- the specific services they are contracted with the customer to deliver at the connection point
- identifying the designated measurement point for volumes for each specific service being delivered, and whether measurement at that point results in a separate record of import and export volumes.

(18) A supplier electing to use a measurement device other than the meter must:

- inform the connection agent of the type of device (ie, brand, model) being used

5.4.1.2 Definition of services

A standard definition of the separate electricity services transacted at each location is required to ensure products and services offered are standard and a consistent reconciliation and calculation of financial obligations.

The electricity services expected to be transacted are:

- > the consumption service. The electricity sold (imported) at the connection. For example, the trader and the supplier could each be responsible for 50% of electricity imported from the grid at the connection in a half hour.

The import service can be measured in kilowatt hours (kWh) imported at the connection each half hour.

- > The generation service. The electricity purchased (exported) at the connection. For example, the supplier could be responsible for 100% electricity exported at that location in a half hour.

The export service can be measured in kWh exported at the connection each half hour.

- > The flexibility service. The flexibility capability at the ICP available by the modifying of generation and/or consumption patterns in reaction to an external signal (such as a change in price). For example, the trader could be responsible for managing the hot water cylinder and the supplier could be responsible for managing the heat pump and charging of an electric vehicle.

Financial obligations relating to flexibility services are not expected to be settled as part of the pilot.

(19) The services exchanged as part of the pilot will be:

- Consumption services involving the electricity sold (imported) at the connection
- Generation services involving the electricity purchased (exported) at the connection

- Flexibility services involving the modifying of generation and/or consumption patterns in reaction to an external signal at the location.

5.4.1.3 Supporting the switching process

Switching of trader by customers participating in the pilot is a possibility, even if trader switching were prohibited (eg, due to household miscommunication).

The pilot will support a basic level of switching. Trader switching processes are well tested and could be readily applied to supplier switching. The purpose of supporting a basic level of switching is to manage adverse customer impacts of inadvertent trader switches.

(20) The losing trader must inform the connection agent as soon as possible after it receives a switch request (an NT) for an ICP participating in the trial.

(21) The connection agent must check switch status of participating ICPs and advise a gaining trader that an ICP is part of the pilot.

- If the gaining trader is also part of the pilot, the connection agent will confirm with the gaining trader that the ICP is part of the pilot, then will confirm with the gaining trader and supplier that arrangements are in place to continue to include the ICP in the pilot. A gaining trader involved in the pilot will assume the pilot-related reconciliation and settlement responsibilities of the losing trader.
- If the gaining trader is not part of the pilot, the connection agent will confirm with the losing trader whether the switch is not in error.
 - If the switch is in error, the losing trader can withdraw the switch using the withdrawal process after confirming the error with the customer.
 - If the switch is not in error, the losing trader must inform the customer and the supplier that the customer can no longer be part of the pilot, and the reason.

(22) Functionality to support switching of supplier during the pilot is not proposed.

5.4.1.4 Overview of connection data in the pilot sub-ICP registry

Table 3 lists the customer connection data expected to be included in the pilot sub-ICP registry to support reconciliation and settlement and to support the switching process.

The data requirements are based on the current registry data fields, plus additional fields necessary to support reconciliation and settlement with multiple suppliers delivering services to a customer.⁷ Most of the data requirements listed are in the existing registry.

Italic text represents the additional fields and data necessary to support multiple suppliers delivering services to a customer.

i>

(23) The connection agent will provide a database with the connection data listed in Table 3.

(24) Pilot participants will update the database with the relevant participant specific connection data listed in Table 3.

Table 3 Connection data requirements and descriptions

⁷ The list of fields and descriptions are from the Electricity Authority, ICP connection data fields and descriptions, at <https://www.ea.govt.nz/assets/dms-assets/26/26801ICP-connection-data-fields-description.pdf>.

Field	Description
ICP	
ICP identifier	ICP identifier that the information is available for. An ICP identifier is a code that is unique to a consumer's premises.
ICP status	A code representing the energisation and connection status of the ICP <ul style="list-style-type: none"> • 999 – new • 000 – ready • 001 – inactive • 002 – active • 003 – decommissioned
Address	
Unit/number (Physical address)	This is the physical address recorded for the ICP by the Distributor. This may differ from a street address and may not be the same as the postal address. There may also be differences in the way street numbers are recorded in the registry e.g. 1C 154 the Terrace may be recorded as 1C 154, 1C-154, 1C/154, 154 1C, 154-1C, or 154/1C.
Street (Physical address)	
Suburb (Physical address)	
Town (Physical address)	
Post code (Physical address)	
Region (Physical address)	Permissible regions include Auckland, Bay of Plenty, Canterbury, Gisborne, Hawkes Bay, Manawatu, Marlborough, Nelson & Bays, Northland, Otago, Southland, Taranaki, Timaru & Oamaru, Waikato, Wairarapa, Wanganui, Wellington, West Coast.
Property name or description	A description of the property. Often used to describe an ICPs installation location or differentiate between two ICPs at a single location – eg on a farm, this might be used to differentiate between the House or workshop. Many ICPs will not have any property name or description entered.
GPS Easting	The easting location. Optional field. Not all ICP identifiers will have this information available. It is not displayed in the webpage results table. New Zealand Transverse Mercator 2000 (NZTM2000) coordinates, as defined in Land Information New Zealand's LINZS25002 standard (Standard for New Zealand Geodetic Datum 2000 Projections).
GPS Northing	The northing location. Optional field. Not all ICP identifiers will have this information available. It is not displayed in the webpage results table. New Zealand Transverse Mercator 2000 (NZTM2000) coordinates, as defined in Land Information New Zealand's LINZS25002 standard (Standard for New Zealand Geodetic Datum 2000 Projections).
Services	

Field	Description
Consumption service (CON)	<p>A service involving a provider delivering electricity to the customer for general consumption or specific consumption, eg, electric vehicle charging.</p> <p>The service is measured at a designated measurement point but financial obligations relating to the service will be determined at the meter, ie, electricity imported from the network.</p> <p>More than one consumption service can be delivered to a customer.</p>
Generation service (GEN)	<p>A service involving a provider purchasing electricity from the customer generated or produced by the customer, eg, generation by photovoltaic panels or discharging a storage battery.</p> <p>The service is measured at a designated measurement point but financial obligations relating to the service will be determined at the meter, ie, electricity exported to the network.</p> <p>More than one generation service can be delivered to a customer.</p>
Flexibility service (FLEX)	<p>A service involving a provider purchasing flexibility resource from the customer, eg from modifying of generation and/or consumption patterns in reaction to an external signal.</p> <p>The service is measured at a designated measurement point but financial obligations relating to the service will depend on the nature of the flexibility resource.</p> <p>Financial obligations for flexibility provided using a consumption service or generation service will be determined at the meter, eg, electricity imported from or exported to the network.</p> <p>More than one flexibility service can be delivered to a customer.</p>
Trader	
Trader participant	<p>Participant identifier and name of the trader that has accepted responsibility for the ICP in the registry. The trader purchases electricity from the wholesale electricity market for the ICP.</p> <p>Where a consumer purchases electricity from a “type 2 retailer” or a “brand name” of a parent company, the trader participant identifier shown here may not be the same as the consumers retailer.</p>
Services provided	<p>Services provided to the customer by the trader.</p> <ul style="list-style-type: none"> • CON • GEN

Field	Description
	<ul style="list-style-type: none"> • <i>FLEX</i> <p><i>More than one service can be delivered</i></p>
<i>Description of the service</i>	<p><i>Description of the services provided.</i></p> <ul style="list-style-type: none"> • <i>Consumption (import) – specify if the service is delivered anytime or for specified half-hour periods, eg, while charging an EV or under a time-based power purchase agreement</i> • <i>Generation (export) – specify if the service is delivered anytime or for specified half-hour periods, eg, while discharging a battery</i> • <i>Using a specifically metered device – import (capacity and availability)</i> • <i>Using a specifically metered device – export (capacity and availability)</i> • <i>Flexibility using controllable demand, generation or storage (capacity and availability)</i>
<i>Designated measurement point of the service</i>	<i>Identifies the measurement point of the specific service and the brand and model of the measurement device</i>
Trader switch in progress	Indicates if a consumer is in the process of switching to a new trader. “True” means a switch is in progress
Profile code	Profile is a fixed or variable electricity consumption pattern assigned to each ICP.
ANZSIC code	The Australian and New Zealand Standard Industrial Classification (ANZSIC) Code. Each business is assigned to an industry classification based on the activities it undertakes
Daily unmetered kWh	Means that unmetered load is connected at the ICP. Value must be decimal (to three decimal places) or ‘ENG’ if the load is profiled through an engineering profile in accordance with profile class 2.1
Unmetered load details – Trader	Details of unmetered load connected at the ICP.
<i>Service providers</i>	
<i>Supplier</i>	<i>Identifier and name of the supplier delivering services to the customer at the ICP.</i>
<i>Services provided</i>	<p><i>Services provided to the customer by the provider.</i></p> <ul style="list-style-type: none"> • <i>CON</i> • <i>GEN</i> • <i>FLEX</i> <p><i>More than one service can be delivered</i></p>
<i>Description of the service</i>	<p><i>Description of the services provided.</i></p> <ul style="list-style-type: none"> • <i>Consumption (import) – specify if the service is delivered anytime or for specified half-hour periods, eg, while</i>

Field	Description
	<p><i>charging an EV or under a time-based power purchase agreement</i></p> <ul style="list-style-type: none"> • <i>Generation (export) – specify if the service is delivered anytime or for specified half-hour periods, eg, while discharging a battery</i> • <i>Using a specifically metered device – import (capacity and availability)</i> • <i>Using a specifically metered device – export (capacity and availability)</i> • <i>Flexibility using controllable demand, generation or storage (capacity and availability)</i>
Designated measurement point of the service	<i>Identifies the measurement point of the specific service and the brand and model of the measurement device</i>
Network	
Network participant	Participant identifier and name of Distributor’s network that the ICP is connected to.
POC	Point of connection that the distributor connects to its parent network.
Reconciliation type	Valid reconciliation type for distributor and ICP type.
Initial connection date	The date of the ICPs initial energisation.
Generation capacity	Generation nameplate capacity in kW of embedded generation connected at the ICP.
Fuel type	The embedded generation Fuel Type connected at the ICP (eg solar).
Directed billed status	<p>Indicates who, out of the Distributor or Trader, directly bills the customer for the distribution network lines charges. Valid values are:</p> <ul style="list-style-type: none"> • Retailer • Distributor • Neither • Both • TBA • NUL
Network pricing	
Distributor price category code	A code assigned by a distributor to the ICP that relates to the distributors pricing schedule for network charging tariffs.
Distributor loss category code	A code assigned by a distributor to the ICP that must be used in reconciliation processes to reference the ICP volumes of electricity conveyed to the POC.

Field	Description
Chargeable capacity	Information populated by the distributor for use in network charging.
Distributor installation details	Information populated by the distributor for use in network charging.
Metering	
Metering equipment provider	The metering equipment provider recorded in the registry as responsible for the provision and certification of the metering installations at the ICP.
Metering installation category	1 – 5. The metering category for the metering installation that the component is certified in. Metering category is an indicator of the capacity of the metering installation. Category 1 is direct connected and is the lowest of the metering categories
Metering installation type	Indicates what certification process the metering installation has been certified with. Values can be: • HHR (half hour) • NHH (non-half hour) • NON
Component type	An identifier used to identify the type of metering component selected from the list of codes within the registry. Values include: <ul style="list-style-type: none"> • M (Meter) • C (CT) • V (VT) • D (Data Storage) • Device (Load Control Device)
Meter type	Indicates the information that the meter may record. It does not necessarily mean that HHR information is available from the trader. It will only be available where the trader collects the HHR information. Values can be: <ul style="list-style-type: none"> • HHR (half hour) • NHH (non-half hour) • PP (non AMI prepay)
AMI flag	An AMI meter is a smart meter. The AMI flag indicates if the meter is a communicating AMI device.
Compensation factor	Commonly known as the multiplier and must be applied to meter readings. Maximum value is 999999.999
Channel number	Unique number that identifies the channel assigned to the information being recorded. This number may be different to what is shown on the meter display itself
Register content code	Valid register content code from the static reference table stored in the registry. The register content code identifies when a meter register is active. A schedule of valid register

Field	Description
	content codes is contained in SD020 of the registry functional specification.
Period of availability	Records the minimum service hours per day that supply is available for. 24 means that the service is not subject to control by the retailer or distributor.
Unit of measurement	Indicates what the unit of measurement is used for the channel – eg: • kWh (Kilowatt-hour) • kW (Kilowatt) • kVA (Kilovolt-amp) • kVARh (Kilovolt-amp Reactive)
Energy flow direction	Indicates which direction of electricity flow is recorded by the channel. Valid values are: <ul style="list-style-type: none"> • 'I' for injection (measures the flow of embedded generation that is injected by the ICP into the distributors network) • 'X' extraction (measures the flow of consumption that is received by the ICP from the distributors network)
Accumulator type	Indicates how electricity volumes are derived from meter readings for the channel. Valid values are: <ul style="list-style-type: none"> • 'C' for cumulative (means that electricity volumes must be calculated as the difference between a start read and an end read at two different dates, in the same way as vehicle odometers record distance) • 'A' for absolute (means that electricity volumes are recorded directly by the meter register)
Switch read indicator	Indicates a meter read value for this channel needs to be supplied during a trader switch

5.4.2 Reconciliation and settlement functions

The reconciliation and settlement functions are required to calculate the respective financial obligations of the trader and the supplier for the cost of imported wholesale electricity and the payment for exported wholesale electricity at the ICP, and the cost of distribution services.

For the pilot, the trader will remain the party interfacing with the market and will receive the invoicing information from the reconciliation manager and clearing manager and distributor.

Financial obligations of the trader and supplier(s) for each customer in the pilot will be determined through the following process.

- > Submission of volumes by the trader and the supplier(s) for the market and pilot
- > Reconciliation of market volumes
- > Reconciliation of pilot volumes
- > Settlement of wholesale market financial obligations
- > Determining wholesale-related financial obligations for the pilot
- > Determining distribution-related financial obligations for the pilot

> Invoicing and payment of financial obligations for the pilot.

5.4.2.1 Submission of volumes

The trader – as a reconciliation participant – is required to provide the reconciliation manager with aggregated volume information (submission information) for each connection point it is responsible for (as recorded in the registry) for the prior month, plus historic volume information.⁸

For the pilot, the trader and supplier(s) will provide submission information for each ICP for each service they deliver to the ICP to the allocation agent. The trader will also provide the total import and export volume information for the ICP.

Volume data provided to the allocation agent by the trader and by suppliers must be consistent with the requirements for submission information provided to the reconciliation manager.

(25) Pilot specific conditions:

- the trader continues to be responsible for providing submission information for ICPs of customers in the pilot to the reconciliation manager
- the trader must provide import and export volume data measured at the meter for each ICP of customers participating in the pilot to the allocation agent
- the supplier must provide the import and export volume data it has measured, as relevant, based on the services it supplies the customer, to the allocation agent
- volume data should be provided to the allocation agent by the trader and the supplier in the form and according to the timeframes for providing submission information to the reconciliation manager.
- allocation agent will hold the data securely, allowing access only by approved parties.
- allocation agent will destroy the data received at the end of the pilot

For consumption services delivered to a customer measured at the point of purchase of the associated electricity – the volumes exported at one or more connection points on the same network or at the network supply point (ie, GXP) for the network – the service provider will need to ensure the aggregate volumes sold (import volumes) and aggregate volumes purchased (export volumes and grid purchases) recorded in the submission information for each network are equal.

The submission information requirements are the same as for other services; volume of the consumption service provided in each half-hour period.

5.4.2.2 Reconciliation of market volumes

The reconciliation manager processes the aggregated volume information, including checking that submission information is complete and accurate, adjusting for inaccuracies, applying loss factors, calculating unaccounted for electricity (UFE).

The output is a reconciliation report (GR-010) which aggregates separately both consumption and generation reconciliation information by reconciliation participant, NSP, trading date and trading period. reconciled generation and consumption information which is provided to the clearing management and to reconciliation participants, including the trader.

⁸ Refer <https://www.ea.govt.nz/assets/dms-assets/27/Reconciliation-manager-functional-specification.pdf>

The reconciliation manager provides the reconciliation report to the Clearing Manager. Each trader (reconciliation participant) receives a subset of the report with the information relating to their purchase and sale volumes so they can verify their own reconciliation information.

(26) No specific conditions relating to the reconciliation process for the market.

5.4.2.3 Reconciliation of pilot volumes

The reconciliation of volumes for the pilot is needed to allocate volumes to the specific services being delivered to the customer at the ICP to calculate the wholesale and distribution-related financial obligations of the trader and the supplier(s) by:

- > assigning a relevant share of wholesale costs (for electricity consumed)
- > assigning a relevant share of wholesale payments (for electricity produced)
- > assigning a relevant share of distribution charges (for network services used).

Financial obligations will be determined using import and export volumes measured at the meter, not the gross consumption and generation volumes.

The allocation agent will calculate the allocation of volumes using the volume data provided by the trader and supplier(s) delivering services to the customer at the ICP, ie, 'submission' volumes, not reconciled volumes.

The import volumes and export volumes provided to the allocation agent by the trader and the supplier must equal the import and export volumes provided in the submission information to the reconciliation manager.

The process for identifying the volumes associated with each specific service delivered to a customer depends on the services being delivered and the volume measurement method.

Three scenarios are presented as examples of possible electricity services arrangements at an ICP.

Scenario A – single consumption service and single generation service. The customer has contracted with:

- > Supplier A to sell electricity generated by on-site PV generation (a generation service)
- > Trader B to purchase electricity for their day-to-day consumption (a consumption service).

The allocation agent can allocate volumes for the consumption service and generation service based on the proportion of electricity consumed and generated relative to the imported and exported volumes.

Supplier A delivers 100% of the generation service measured at the meter (export register). Trader B delivers 100% of the consumption service measured at the meter (import register).

Inputs are:

- > Supplier A submission information on purchases (measured at meter)
- > Trader B submission information for import/export

Scenario B – two consumption services and a single generation service. The customer has contracted with:

- > Supplier A to purchase electricity to charge their EV (a consumption service)
- > Supplier B to sell electricity generated by on-site PV generation (a generation service)
- > Trader C to purchase electricity for their day-to-day consumption (a consumption service).

The allocation agent can allocate volumes for the consumption service based on the proportions of electricity consumed for each consumption service relative to the imported volumes.

Supplier A and Trader C each provide a proportion of the consumption service, with Supplier A delivering electricity specifically for charging an EV.

The allocation agent can allocate volumes for the generation service based on the proportions of electricity produced relative to the exported volumes.

Supplier B provides 100% of the generation service.

Inputs are:

- > supplier A submission information on EV consumption (measured at EV)
- > supplier B submission information on total generation (measured at PV)
- > trader C submission information for import/export.

Scenario C – two consumption services. The customer has contracted with:

- > Supplier A to purchase electricity from a community energy scheme (a consumption service)
- > Trader B to purchase electricity for their day-to-day consumption (a consumption service).

The allocation agent can allocate volumes for the consumption service based on the proportions of electricity consumed for each consumption service relative to the imported volumes.

Supplier A and Trader B both provide a proportion of the consumption service.

Inputs are:

- > Supplier A submission information on volumes delivered to the customer ICP
- > Trader B submission information for import/export.

Submission information from Supplier A for the customer will be verified against the aggregate volume information for sales and purchases on the network.

(27) The allocation agent will allocate import and export volumes to each trader and supplier in proportion to the service they delivered

○ Volumes imported from the network

- Delivering electricity for day-to-day consumption, eg, household use. Share of imported volumes will be assigned based on the proportion of electricity consumed for that purpose relative to the imported volumes.

- Delivering electricity for a specific time-period. Share of imported volumes will be assigned based on the submission information.
- Delivering electricity for a specifically metered device, eg, electric vehicle. Share of imported volumes will be assigned based on the proportion of electricity measured as being consumed for that purpose relative to the imported volumes

○ Volumes exported to the networks

- Supplying electricity from on-site generation, eg, solar panels. Share of exported volumes will be assigned based on the proportion of electricity generated at the location relative to the exported volumes.

A worked example of a volume allocation calculation is shown in Figure 1 including the calculations and inputs.

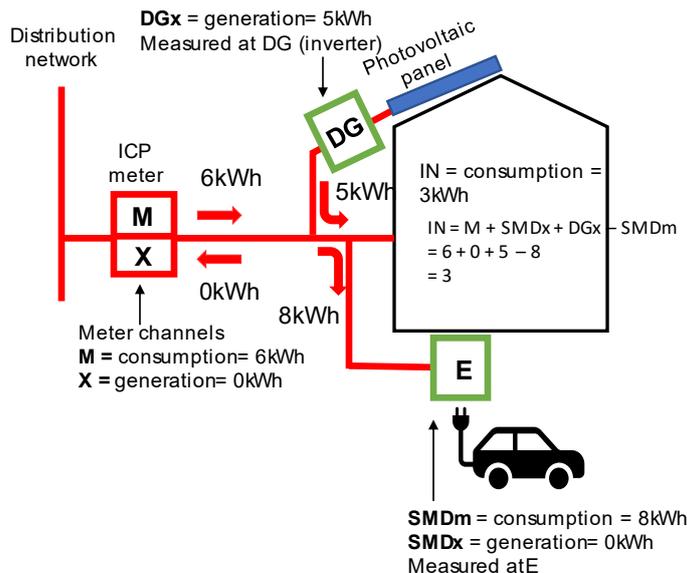
The example reflects the allocation of volumes in proportion to consumption or generation without accounting for the relative retail price of each service. This approach was adopted to minimise calculations and data requirements.

Providers are welcome to propose alternative allocation approaches subject to the approach not adversely affecting settlement outcomes. For example, a provider may want to explore a customer-level price-based dispatch process, involving allocating imported volumes according to a merit order of prices offered by each provider. Changes to the pilot design will be considered taking account of factors including cost and impact on other pilot participants.

Figure 1 Worked example of volume allocation involving three suppliers and four services (single-phase connection)

Scenario involves **2 consumption services + 1 generation service + 1 flexibility service** (via a generation service):

- Supplier A to purchase electricity to charge their EV (M1 = SMDm) and charge/discharge the battery (X1 using SMDx)
- Supplier B to sell electricity generated by on -site PV generation (X2 using DGx)
- Retailer C to purchase electricity for their day -to-day consumption (M2).



Financial obligations = Import (M) = Supplier A (M1) + Retailer C (M2)... = Installation (IN) + Specifically metered device import (SMD,)

Financial obligations = Export (X) = Supplier A (X1) + Supplier B (X2) = Specifically metered device export (SMDx) – Distributed generation export (DGx)

$$\begin{aligned}
 M1 &= (SMDm / (SMDm + IN)) * M \\
 &= (8 / (8+3)) * 6 \\
 &= (8 / 11) * 6 \\
 &= 4.4
 \end{aligned}$$

$$\begin{aligned}
 M2 &= M - M1 \\
 &= 6 - 4.4 \\
 &= 1.6
 \end{aligned}$$

$$\begin{aligned}
 X1 &= (SMDx / (SMDx + DGx)) * X \\
 &= (0 / (0 + 5)) * 0 \\
 &= 0
 \end{aligned}$$

$$\begin{aligned}
 X2 &= (DGx / (DGx + SMDx)) * X \\
 &= (5 / (5 + 0)) * 0 \\
 &= 0
 \end{aligned}$$

- M from Retailer C (6kWh) measured at M
- X from Retailer C (0kWh) measured at X
- SMDx from Supplier A (0kWh) measured at E
- DGx from Supplier B (5kWh) measured at DG
- SMDm from Supplier A (8kWh) measured at E
- IN is calculated from M, DGx, SMDx, SMDm

5.4.2.4 Settlement of wholesale market financial obligations

The clearing manager invoices industry participants by combining reconciled quantity information, provided by the reconciliation manager, with half-hourly pricing information, from the pricing manager, to determine the amounts owed to and by each industry participant.

The clearing manager issues tax invoices for amounts owing by participants to the clearing manager and pro-forma invoices for amounts owing by the clearing manager to each participant. The invoices contain aggregated invoice (monetary) amounts for the different energy products (ancillary services etc) plus adjustments for revisions to volumes or prices for prior periods.⁹

⁹ Invoices include costs and charges for: the purchase and sale of electricity; ancillary services; must-run dispatch auction rights; hedge contracts; financial transmission rights; constrained on and constrained off compensation; dispatchable demand constrained on and constrained off compensation; loss and constraint excesses; fees and taxes; and washups.

The invoices are for the financial obligations for the aggregate sales and purchases of electricity by each trader at the GXP, plus the costs and offsets associated with a range of market and system operation activities.

(28) No specific conditions relating to the clearing and settlement process for the market.

5.4.2.5 Determining wholesale-related financial obligations for the pilot

The market settlement process results in the trader getting two numbers for each GXP – an amount to pay and an amount to be paid – which it allocates to customers (ICPs) using its chosen method.

A standard approach for determining the respective financial obligations of the trader and the supplier(s) will be used for the pilot.

- > financial obligations will be determined using submission volumes, not reconciled volumes
- > financial obligations will be determined using final price information
- > non-electricity costs and offsets will not be allocated between trader and supplier
- > no prudential security will be required from suppliers.

(29) Settlement volumes will be the submission volumes provided to the allocation agent by the trader and the supplier(s) relating to the services each has delivered to customers in the pilot.

(30) The allocation agent will use final prices published on WITS to calculate financial obligations of traders and suppliers for each customer in the pilot.

(31) Non-electricity costs and offsets will not be allocated between the trader and supplier(s). Each party will bear their own costs.

(32) No prudential requirements will be imposed on suppliers participating in the pilot relating to their wholesale or distribution-related financial obligations.

5.4.2.6 Determining distribution-related financial obligations for the pilot

Traders in the pilot will be invoiced by the distributor for the distribution charges for each customer (ICP) in the pilot. The charges will be allocated between the trader and supplier(s) delivering services to that customer based on the allocation determined by the allocation agent.

The allocation agent will allocate distribution charges as follows:

- > fixed charges, eg, daily charges, non-varying capacity charges, are allocated equally between the parties delivering services to the customer. For example, a scenario with two providers delivering services to the customer would be each allocated 50% of the applicable fixed charge
- > demand charges, eg, varying \$/kW or \$/kVA charges, are allocated between the parties delivering services to the customer according to the kW (or kVA) measured for each service
- > volume charges, eg, \$/kWh charges, are allocated between the parties delivering services to the customer according to the kWh measured for each service.

The allocation between parties delivering services to a customer would be in accordance with the processes set out in the distributors' distribution agreement with the trader and the methodologies set out in the relevant electricity information exchange protocol (EIEP).

The trader at the ICP remains responsible for meeting distribution-related financial obligations.

(33) The allocation agent must allocate distribution charges to parties delivering services to the customer according to the applicable pricing structure so that:

- fixed charges, eg, daily charges or non-varying demand or capacity charges, are allocated equally between the parties delivering services to the customer
- demand charges, eg, varying demand or capacity charges, are allocated between the parties delivering services to the customer according to the kW (or kVA) measured for each service
- volume charges, eg, varying volume charges, are allocated between the parties delivering services to the customer according to the kWh measured for each service.

5.4.2.7 Invoicing and payment of financial obligations for the pilot

The trader at the ICP remains responsible for meeting wholesale and distribution-related financial obligations invoiced by the clearing manager and distributor.

The calculation of financial obligations for the pilot can occur independently to the processes of the clearing manager and distributor.

The wholesale and distribution-related financial obligations for each service provider for each service delivered in the prior month will be determined by:

- > the allocation agent confirming the volumes of each service delivered to the customer using volume information for the prior month provided by the trader and the supplier(s) by the 1600 on the 4th day of the month
- > the allocation agent confirming wholesale electricity prices for the prior month for each GXP with ICPs in the pilot for each half hour using final price information obtained from WITS
- > the allocation agent calculating the value of purchases and sales for each service delivered to each ICP in the pilot using the volume information and wholesale price information
- > the allocation agent calculating the value of distribution charges for each service delivered to each ICP in the pilot using the volume information, relevant distribution price structure and allocation method
- > the allocation agent providing the relevant service provider a tabulation of financial obligations for the specific services delivered to each ICP in the pilot in the prior month to by the 10th day of the month. The tabulation would in a form which could be used by the service providers as the basis for a pro forma invoice or tax invoice
- > the trader issuing an invoice by the 12th day of the month (or the next business day) to each supplier delivering services at the ICP for electricity purchases and distribution charges based on the information provided by the allocation agent

- > the supplier(s) issuing an invoice by the 12th day of the month (or the next business day) to the trader at the ICP for electricity sales based on the information provided by the allocation agent
- > the settlement date for all invoices would be the 22nd day of the month (or the next business day).

The trader and supplier must generate their own tax invoices due to the tax implications of having the allocation agent do so.

(34) The allocation agent must determine financial obligations as follows:

- o confirm the volumes of each service delivered to the customer using volume information for the prior month provided by the trader and the supplier(s) by the 1600 on the 4th day of the month
- o confirm wholesale electricity prices for the prior month for each GXP with ICPs in the pilot for each half hour using final price information obtained from WITS
- o calculate the value of purchases and sales for each service delivered to each ICP in the pilot using the volume information and wholesale price information
- o calculate the value of distribution charges for each service delivered to each ICP in the pilot using the volume information, relevant distribution price structure and allocation method
- o provide the relevant service provider a tabulation of financial obligations for the specific services delivered to each ICP in the pilot in the prior month to by the 10th day of the month. The tabulation would in a form which could be used by the service providers as the basis for a pro forma invoice or tax invoice.

(35) Traders and suppliers must invoice and settle financial obligations determined by the allocation agent as follows:

- o the trader must issue an invoice by the 12th day of the month (or the next business day) to each supplier delivering services at the ICP for electricity purchases and distribution charges based on the information provided by the allocation agent
- o the supplier(s) must issue an invoice by the 12th day of the month (or the next business day) to the trader at the ICP for electricity sales based on the information provided by the allocation agent
- o the settlement date for all invoices would be the 22nd day of the month (or the next business day).

5.4.2.8 Failure to settle

Failure to settle an invoice within three working days of the 22nd of the month may result in a supplier being required to exit the pilot at the end of the month.

(36) Failure to settle an invoice within three working days of the 22nd of the month may result in a supplier being required to exit the pilot at the end of the month.

6. Pilot administration

Ara Ake is responsible for administering and coordinating the operation of the pilot.

Pilot administration includes:

- > establishing a pilot advisory group
- > specifying criteria for pilot participation
- > specifying pilot timeframes
- > managing provision of market operation functions for the pilot

6.1 Pilot advisory group

The overarching objective of the group is to provide support to Ara Ake's project management group with domain expertise. The Advisory Group is not intended to provide governance or formal QA. The expectation is for the group to contribute to the periodic analysis of monitoring outcomes and to test the viability of solutions proposed to correct and/or improve the pilot design. The group would also serve as a two-way avenue of communication between Ara Ake and the group participating organizations.

Virtual meetings will be held at least monthly in the first instance, or more frequently as required. The intention is to provide support in the first stages of the implementation as it is expected to encounter a higher amount of conflicts with several new participants and services being incorporated at the same time.

Work outside meetings will be kept to a minimum – with summary material being presented for review during meetings although discussion will be better informed by some pre-reading. Most meetings will run for two hours although the total time commitment for members will be in the order of half-day per month (meetings plus occasional limited pre-reading and follow-up work).

MTR advisory group members are expected to actively participate in meetings (including review of minutes and papers), take a genuine interest in the project's outcomes and overall success, support open discussion and debate, encourage fellow advisory group members to voice their insights, and look at the need/requirements for regulatory changes if ever required.

They will provide specialist input, recommendations, insight and an 'on the ground' perspective to Ara Ake as they work through variations and/or amendments to the pilot design and develop recommendations. Members will act on opportunities to communicate positively about the project, ensure stakeholder confidence that the right actions and engagements are in place to deliver on the goals and outcomes of the pilot, promote opt-on to the pilot across the stakeholders, and report back to relevant stakeholders and/or organizations on progress of group and project.

6.1.1 Mid-pilot review and end-of-pilot planning

Ara Ake and participants will undertake a mid-point pilot review exercise to determine whether sufficient information is available to assess the prospects of continuing to provide consumers with the ability to have multiple suppliers.

The mid-point review will identify participants' perspectives and interest in continuing with multiple suppliers, and options for achieving this outcome.

Options available include:

- > customers reverting to their pre-pilot supply arrangement and contract
- > customers switching to a new trader
- > participants independently (without Ara Ake involvement) supporting the off-market pilot environment through bilateral agreements with traders and the agents
- > participants seeking exemptions from the Code to enable a basic form of multiple suppliers in the market
- > requesting amendments to the Code to make the arrangement a permanent feature of the electricity market.

6.1.2 Pilot participation criteria

Pilot participation criteria are:

- > participants must agree to the terms and conditions of participation. These will specify the key operating requirements for the pilot and the actions and expectations of each participant
- > suppliers will have primary responsibility for recruiting customers
- > distributed energy resources of customers participating in the pilot must be renewable or low carbon.

6.1.2.1 Suppliers have primary responsibility for recruiting customers

Suppliers will have primary responsibility for recruiting customers.

Ara Ake will also make information on the pilot available on its website with an option for customers to register their interest and to consent for their information to be shared with participating suppliers, traders, and relevant distributor.

(37) Suppliers have primary responsibility for recruiting customers.

6.1.2.2 DER in the pilot must be renewable

The distributed energy resources of customers participating in the pilot must be. Specifically, distributed generation in the pilot must not use fossil fuels.

(38) Distributed generation in the pilot must be renewable.

6.1.3 Pilot is intended to operate for 18 months

The pilot is intended to operate for 18 months from the launch date (first trader, supplier and customer signing up). Customers will be able to join the pilot within the first six months from the pilot being launched to allow for a minimum of 12 months of participation.

Ara Ake is unable to commit to supporting agent functions beyond the close of the pilot.

Suppliers and traders must be explicit about the options they are able to provide customers at the end of the pilot.

(39) The pilot will operate in principle for 18 months from the launch date (first trader, supplier and customer signing up) with customers able to join the pilot within the first six months from the pilot being launched, to allow for a minimum of 12 months of participation.

- (40) Customers having a negative experience with the pilot will have the ability to opt-out of the pilot at their discretion. As part of the opt-out process customers would be offered to complete an optional survey (developed by Ara Ake) to identify the customers experience with the pilot, including the reason for leaving the pilot early.
- (41) Suppliers and traders must explicitly advise customers about the length of the pilot and the options available to them at the end of it.

6.2 Market operation functions will be delivered by agents

The market operation functions for the pilot will be delivered by agents selected by Ara Ake. They will provide functionality necessary to support the pilot, based on the pilot design requirements specified in the document.

7. Monitoring and reporting of outcomes

The purpose of the pilot is to obtain evidence and insight into the outcomes of providing households and businesses with the ability to contract with multiple electricity service providers and the unbundling of the electricity service.

The overarching research question is **what additional value is available to consumers, the electricity supply chain, and the economy** from providing households and businesses with the ability to contract with multiple electricity service providers?

The pilot will try to answer this question by obtaining insight and evidence relating to:

1. the benefits available to customers from the ability to contract with multiple service providers, with consideration of both price and non-price outcomes
2. the benefits from business model and product development from the ability to offer new or different products to customers, with consideration of customer interest, customer expectations, value, size-of-market, and scalability
3. the potential costs and risks of unbundling of the electricity service, particularly the possible implications for reliable and safe operation of electricity networks from DER being actively managed to maximise value
4. the workability of the business processes for integrating multiple suppliers into the market and regulatory framework.

Information and data will be collected as part of the pilot to answer these questions. The findings will inform decisions about the need for changes to the Electricity Industry Participation Code and market settings to implement the multiple supplier concept.

Information and data will also be collected to assist in identifying and mitigating harm to consumers and participants.

7.1 Information and data are needed to test whether multiple suppliers will add value

Providing households and businesses with the ability to contract with multiple electricity service providers and the unbundling of the electricity service is expected to result in a net economic benefit by maximising the value of consumption, generation, and flexibility resources, particularly the resources held by households and businesses.

Households and businesses are expected to benefit from an **improved consumer experience** arising from **greater competition** in supply of electricity services, **improved reliability of supply**, **more efficient operation** of the electricity sector, and reducing **carbon emissions**.

The expected impacts over the medium-to-long term include:

- > improved customer satisfaction from access to a greater array of products and access to products which more closely reflect their preferences and needs
- > increased consumer financial benefits from DER from improved access to products which maximise value to the customer of their portfolio of consumption, generation, and flexibility resources
- > reduced average electricity prices from increasing competitive pressure on retail and wholesale prices

- > reduced electricity costs due to reduced wholesale costs and reduced network costs
- > increased investment in DER – generation, batteries (including electric vehicles), controllable load – due to an increase in the value of DER
- > improved reliability, quality, and resilience of supply as the increased availability of DER provides system and network operators with extra capability to keep the lights on despite an increasingly challenging operating environment
- > reduced carbon emissions due to increased investment in renewable DER and increased use of DER during peak demand periods, thereby reducing the need to use coal and gas-fuelled generation.

The benefits described here are likely to be realised in a future state which does not include the unbundling of the electricity service. However, the benefits without multiple suppliers are expected to be less due to a slower rate of investment in DER, less investment in DER, the failure to use the full capability and value of DER, and continued constraints on business model innovations which assist to decarbonise the economy and delight the customer.

The potential costs and risks of unbundling of the electricity service will be identified from the pilot indicating the expected impacts and benefits will not be realised. The specific focus of monitoring of potential costs and risks will be:

- > customer expectations and experience
- > the implications for the reliable and safe operation of electricity networks from DER being actively managed to maximise value.

The workability of the business processes needed for multiple suppliers will be informed by the experience of customers and of participants relating to the pilot design and operation. The focus will be on the practical impacts:

- > of the customer-related requirements on customers and participants
- > for the supply of distribution services by the distributor
- > of ensuring the sub-ICP registry, reconciliation, and settlement functions result in the right party getting paid the right amount at the right time.

7.2 Measuring outcomes and impacts

The specific information and data to be collected to measure pilot outcomes and to answer the overarching research question and four sub-questions are listed in 5-7.

Table 4 Summary of expected outcomes and impacts of multiple suppliers

Outcome	Impact
Benefits to consumers, the economy and climate	<ul style="list-style-type: none"> • improved customer satisfaction • increased customer value of DER • reduced prices • reduced costs • improved reliability, quality, and resilience of supply • increased investment in DER • reduced carbon emissions

Outcome	Impact
Costs and risks	<ul style="list-style-type: none"> poor customer experience negative network impacts
Practical challenges and workability	<ul style="list-style-type: none"> poor customer experience due to inadequate or inappropriate customer obligations and business processes increased participant costs due to business processes

These expected outcomes and impacts can be measured using the following information and data.

Italic text is data and information additional to that required from participants for pilot operational reasons.

Table 5 Provider and services information

Data	Source	Frequency
Number of service providers participating in the pilot	Pilot database maintained by connection agent	Ongoing
Number of ICPs participating in the pilot	Pilot database maintained by connection agent	Ongoing
Number and type of services provided through the pilot	Pilot database maintained by connection agent	Ongoing
<i>Customer feedback and complaints</i>	<i>Participant</i>	<i>Monthly</i>
<i>Experience with pilot operation</i>	<i>Allocation and connection agent reports & survey</i>	<i>Monthly & end of pilot</i>

Table 6 Customer information

Data	Source	Frequency
<i>Customer demographic information: household size, heating methods, household income etc</i>	<i>Participants and/or survey</i>	<i>On enrolment</i>
Customer details: location, ANZIC etc	Pilot database maintained by connection agent	Ongoing
<i>Price per unit of services delivered to the customer</i>	<i>Participant</i>	<i>On enrolment, and after change</i>
<i>Price per unit of services pre-pilot, eg, recent power bill</i>	<i>Survey</i>	<i>Enrolment</i>
<i>Customer expectations and experience</i>	<i>Survey</i>	<i>Enrolment and end of pilot</i>

Table 7 Technical information

Data	Source	Frequency
Consumption information by connection and service	Pilot database maintained by agent	Ongoing
<i>Consumption information pre-pilot (12 months)</i>	<i>Customer (via allocation agent)</i>	<i>Enrolment</i>
<i>Power quality data</i>	<i>MEP or participant if meter / measurement device is capable</i>	<i>Ongoing</i>
Capability of DER delivering services (capacity, availability, responsiveness)	Pilot database maintained by connection agent	Ongoing
Network outages affecting customers in the pilot	Participants (EIEP5 files)	End of pilot

7.2.1 Management of data and information for reporting

The data and information for reporting on the performance and outcomes of the pilot will be collected by pilot participants (traders and suppliers) and the provider of the connection agent and the allocation agent functions.

The data and information will be:

- > operational data provided to the connection agent and allocation agent as part of operating the pilot. Examples include, number of customers, number and type of services delivered as part of the pilot, consumption data provided by the traders and suppliers (for reconciliation and settlement), energy and network costs, and DER type and capability data
- > customer data provided to the trader or supplier under the contract to deliver services. Examples include personal information relating to the customer (name, address etc), price per unit of services delivered and customer feedback and complaint information
- > customer data provided to the trader or supplier in response to specific requests to understand pilot performance and outcomes and customer expectations and experience. Examples include demographic information provided in response to surveys about customer expectations and experience and historical consumption data (pre-pilot).

Note: the trader or supplier will be responsible for undertaking customer surveys at the request of Ara Ake given the existing customer relationship. Survey approach and design will be finalised in collaboration with participants and with the pilot advisory group.

The complete set of data and information required for reporting purposes will be collated and held by the party providing the connection agent function.

This party will anonymise the data and information before providing it to Ara Ake.

The data and information will be anonymised by removing information which would identify the customer. Specifically this means removing name and address, the ICP number, and ICP location data. The customer location would be identified by suburb and local substation given the importance of location on electricity price and cost impacts.

The original data and information will be destroyed at the conclusion of the pilot.

Ara Ake will hold the anonymised data and use it to report on the pilot performance and outcomes and make it available to approved persons for research and decision-making about regulatory changes proposals and innovation in the electricity sector.

- (42) Participants in the pilot will collect and provide information and data specified by Ara Ake to monitor pilot performance and report on pilot outcomes. The specified information is listed in Tables 5-7.
- (43) Participants in the pilot will provide information and data specified by Ara Ake (listed in Tables 5-7) to the connection agent consistent with the nominated reporting frequency and format.
- (44) The connection agent will hold non-operational and customer-related information and data separately from operational data and information and ensure the non-operational data is held securely and is not accessible to any other party.
- (45) The connection agent will anonymise the non-operational information and data prior to providing it to Ara Ake in an agreed form.
- (46) The connection agent will destroy the original operational and non-operational information and data at the conclusion of the pilot and confirm this to Ara Ake.
- (47) Ara Ake will hold the anonymised information and data and make it available to approved persons for research and decision-making about regulatory changes proposals and innovation in the electricity sector.