Standardised Demand Flexibility Product Co-Design Group: Final report

1. Executive summary, recommendations and next steps

The Standardised Demand Flexibility Product Co-Design Group (the Group) was established to develop a standardised wholesale demand flexibility (DF) product for intra-day tail-risk management, to facilitate greater participation from Commercial and Industrial (C&I) end-users, and to identify supporting measures needed to bring this market into existence.

Our Terms of Reference framed this as a voluntary, commercial product for transferring risk between willing buyers and sellers – private price insurance, not a system-level reliability mechanism funded by all consumers. The product is to be consistent with the current Electricity Industry Participation Code 2010, requiring no fundamental changes to property rights or mandated participation.

However, the primary task of the Group has proven to be as much about catalysing a new market for demand flexibility as it is about designing a wholesale tradeable product that fits neatly into the existing price risk product landscape. Given the nascent state of the demand flexibility market in New Zealand, we are in an experimental discovery phase, and the way forward needs to recognise this.

Intra-day demand flexibility targets unexpected, short-duration tail-risk events: low-probability scenarios where spot prices spike to extreme levels for a small number of trading periods. The assets that underwrite this product must be capable of fast response at short notice, tolerant of infrequent activation, and available for short durations.

C&I assets – whether load shifting, curtailment, or behind-the-meter generation – meet these requirements. Critically, these assets exist for other commercial purposes and do not depend primarily on demand flexibility revenue to justify their existence; a cold store exists to store food, a diesel genset exists for site resilience. This makes them naturally suited to infrequent, unpredictable activation in a way that dedicated generation assets, which must earn their entire return from the electricity market, are not.

Their activation costs are generally higher than dedicated generation assets, which means they will only be called upon in those rare cases where the spot price is expected to exceed the level at which demand flexibility becomes the most affordable available form of supply. This cost positioning both defines the target risk profile and means the market is necessarily reliant on C&I assets – they are the natural supply source precisely because the events are potentially too infrequent and too brief to justify dedicated capital investment.

Beyond the large spot-facing industrials and available firming generation, any wholesale product will necessarily need to bring in retail C&I end-users on Fixed-Price Variable-Volume (FPVV) retail contracts as a source of physical curtailment – which presents specific challenges for participation. No wholesale product is likely to gain significant traction absent a functioning underlying retail market.

For this reason, the proposed retail product templates and supporting infrastructure are key. The templates have been designed to reflect the technical attributes of the underlying assets and the needs of their owners to participate—prioritising simplicity, accommodating lead times, bounded constraints, non-derivative structures, greater certainty of cashflows, and non-punitive penalties. They are structured as negotiation templates rather than standardised contracts, preserving the bilateral flexibility needed for what is, at this stage, a diverse and untested set of underlying assets and commercial arrangements.

Bringing in retail participation means physical settlement, which introduces new of complexities:

- the need for robust baselining and measurement and verification (M&V) infrastructure.
- because of the nature of FPVV contracting, the key agents for procuring DF are the retailers, driven by commercial and competitive pressures, as customers cannot otherwise trade this flexibility.
- the need for brokers to understand and support demand flexibility as a standard part of any C&I energy supply contract.

When this market becomes active, retailers and aggregators (intermediaries who pool demand flexibility across multiple C&I customers and consolidate this into a single portfolio position) are expected to enter with new risk capital to underwrite the proposed standardised financial wholesale call contract.

1.1 Conclusions

a. **Tail-risk suitability**: The demand flexibility opportunity is concerned with the management of unexpected tail-risk events, for which C&I assets are uniquely suited as a supply resource.

b. **Retail dependency**: A wholesale product will struggle for liquidity without bringing in C&I end-users. The underlying retail market is a necessary precondition for wholesale traction.

c. **Retail product design**: Demand flexibility asks C&I businesses to disrupt their core operations or invest in assets that are not central to their business. The retail products have been designed accordingly – prioritising simplicity, bounded commitment, certain cashflows, and non-derivative structures that reflect the reasonable limits of what these businesses will accept. Most C&I demand is on FPVV contracts, which may introduce additional considerations as the market develops.

d. **Retailer agency**: Due to FPVV structures, retailers are the critical agents. The extent of the perceived commercial opportunity and the competitive pressures they face will drive the market.

e. **Physical settlement complexity**: Retail participation requires physical settlement, necessitating new baselining infrastructure and broker education.

f. **Future consolidation**: As the market matures, retailers and aggregators will be in a position to consolidate C&I demand flexibility to underwrite a standardised wholesale DF contract.

1.2 Recommendations

The Group recommends the following priorities:

a. **Prioritise the retail templates**. The retail market is the binding constraint. Without physical participation from C&I customers, the wholesale product has a very limited supply base. Initial efforts should focus on deploying and testing the Flexibility Payment and Shared Savings templates with retailers and C&I customers – building familiarity, refining terms through early transactions, and demonstrating that demand flexibility can be contracted and settled in practice.

b. **Engage with the Financial Markets Authority (FMA)**. The Shared Savings product, as currently structured, could be defined as a derivative under the Financial Markets Conduct Act 2013. The Authority should engage with the FMA on this issue and the scope for a designation under section 562 of the FMCA, if deemed necessary.

c. **Signal and consult on the wholesale product.** The wholesale Callable Spot Price Cap should be signalled and consulted on now, with the intention that it be deployed in 12 to 18 months – allowing time for the retail market to begin developing the supply base and for early price discovery to inform the final product parameters. Premature standardisation – before there is sufficient underlying activity to reveal what terms the market needs – risks designing a product that does not trade.

d. **Make decisions on supporting infrastructure.** The following supporting measures require decisions from the Authority and the wider sector on timing and approach:

   - ***Education and awareness.*** Launch a programme targeting brokers, retailers, and C&I end-users to build understanding of demand flexibility value. C&I energy procurement is overwhelmingly focused on price; until brokers and customers understand that operational flexibility is monetisable, the retail templates may struggle to gain traction.
   - ***Baselining.*** The retail products rely on physical settlement, which requires credible baselines. International practice offers established models, but education and trust need to be built within the New Zealand sector. To accelerate this, the Authority could consider establishing a sector working group to assess baselining approaches across asset types and provide independent guidance on precision requirements and methodology.
   - ***Regulatory settings for aggregators.*** The specialist aggregation function does not yet exist at scale in New Zealand. Regulatory settings should ensure that market access rules are open to specialist aggregators and will encourage competition, and do not entrench incumbent retailers as the sole pathway to market for demand flexibility. This is primarily a matter of

ensuring existing rules do not create unintended barriers as the market develops.

e. **Iterative review.** In recognition that a demand flexibility market of this kind has not been built before in New Zealand, regular review should allow policies, product parameters, and supporting measures to adapt as learnings emerge from early deployment.

2. Introduction and Terms of Reference

The Group was tasked with developing a standardised wholesale demand flexibility product, including to facilitate greater participation from C&I end-users.

Before detailing our proposed solution, it is useful to ground our approach in four key themes drawn from our Terms of Reference:

a. **Standardised wholesale product**: The request for a "standardised wholesale product" implies a financial instrument. Financial settlement against an observable market price removes counterparty-specific complexities – no baselining, no measurement & verification (M&V), no reliance on the seller's physical performance. Combined with standardisation of key contract terms (strike price, volume, tenor), this enables fungible, anonymous trading and supports the price discovery essential for a liquid secondary market and investment signals. This contrasts with bespoke, physically settled flexibility contracts which, by their nature, resist both.

b. **Voluntary commercial transfer**: Any solution is not a grid-support mechanism, distinguishing it from centralised procurement of Demand Response by the System Operator. This is a voluntary, commercial DF product designed for transferring risk between individual parties. Participants must capture sufficient private benefit from the structure to be incentivised to trade.

c. **C&I assets and the relevant risk profile**: The goal is to crowd in C&I customers as a new source of flexibility supply to manage intra-day risks. C&I assets are well placed to deliver against precisely the unpredictable, short-duration tail events that existing hedging tools struggle with – the cold snap that drives price and volume against a retailer simultaneously, or the plant trip that leaves a forward-sold generator exposed at extreme spot prices. These assets – whether behind-the-meter generation or discretionary load – share common characteristics: their owners are reluctant to commit to frequent or open-ended obligations, and they can respond at relatively short notice (e.g. 4 hours or less). Their higher activation costs make them unsuited for baseload firming or daily arbitrage, but well-matched to situations where the buyer's existing hedge position is exhausted and additional cover cannot be procured at short notice. Pre-contracted DF has the potential to be the most cost-effective way to address this residual exposure, distinguishing it from daily peak management, seasonal firming, or dry-year cover, each of which is better served by other assets. See Appendix 1.

d. **Consistency with current Code**: The solution should ideally be consistent with the current Electricity Industry Participation Code. This means, for example, shying away from mandates requiring retailers to offer these products, nor fundamental changes to property rights – such as a reallocation of the windfall gains that may accrue to incumbent retailers when an end-user curtails consumption under a fixed-price variable-volume contract.

3. Context: establishing a new market

The challenge is not merely designing a new contract; it is establishing a new demand flexibility market. Any wholesale product requires an underlying physical supply of curtailment to largely underwrite it, and that supply must come primarily from C&I customers – the grid's generation base is not well-suited to managing unpredictable, short-duration tail risks. At present, this retail demand flexibility market is undeveloped. Until sufficient physical participation is established at the retail level, the wholesale product is unlikely to gain meaningful traction.

3.1 Facilitating C&I participation: the retail foundation

Grid-connected generation does respond to anticipated high-price conditions – dispatchable plant can be committed and ramped in advance. But the tail-risk events we are concerned with are precisely those where available, responsive and cost-effective supply-side flexibility has already been fully dispatched. Suitable generation may already be fully dispatched – what remains may be too slow to start or more expensive than calling on C&I demand flexibility. It is at this point that demand flexibility becomes the most cost-effective available resource.

C&I customers are often well-placed to provide supply in these circumstances precisely because their assets serve a primary commercial purpose and do not depend solely on DF revenue to justify their existence. A cold store exists to store food; a diesel genset exists for site resilience; a pump station exists to move water. DF revenue is incremental – a secondary value stream, not the full business case.

However, unlocking C&I participation faces several hurdles:

a. **The participation continuum and reluctance to commit**: C&I customers vary widely in their willingness to accept firm DF obligations. At one end of the continuum, many customers are unwilling to commit to any firm call obligation at all – they may respond opportunistically when it suits them and there is a financial incentive but will not accept being dispatched by a third party. This is the domain of "put" type structures – where the C&I customer maintains control over if and when they curtail. These Puts (like the Shared Savings product below) have value but individually lack the firmness buyers need for targeted risk management.

   Further along this continuum, C&I customers – particularly those with behind-the-meter generation or inherent process flexibility – may be willing to accept bounded firmer commitments: a limited number of events per year (e.g., 5 events), a strict annual cap on total hours (e.g., 20 hours), and constraints on frequency to manage operational fatigue. This is the sweet spot for a callable retail product. International experience (notably Australia) suggests that approximately 20 hours per annum represents a critical threshold – beyond which participation may drop sharply.

   That said, these parties are often reluctant to commit months in advance. Changing business conditions and commercial priorities mean that a penalty for non-delivery could compromise strategic flexibility in their core operations. It is therefore not uncommon for the contract to allow the seller to decline a specific dispatch instruction, with the consequence limited to forfeiture of the payment

attributed to that event. The buyer loses the hedge for that event but may withhold or claw back the corresponding payment.

These are not punitive penalties – punitive consequences only serve to suppress participation. The buyer can mitigate this limited commitment from individual sellers by over-subscribing their portfolio to reflect an expected level of non-response across any given event.

Within this callable segment, willingness and cost differ by asset type. Those with behind-the-meter alternative generation may be willing to respond more frequently and at a lower price (their cost is fuel, not foregone output). Those facing full business disruption may be more reluctant, face higher opportunity costs, and require stricter limits on calls. This differentiation in the underlying retail supply informs our proposed wholesale product design: we propose two standard strike prices ($600/MWh and $1,200/MWh) so that these distinct pools of retail DF can be aggregated and traded separately, reflecting their different cost bases and response characteristics.

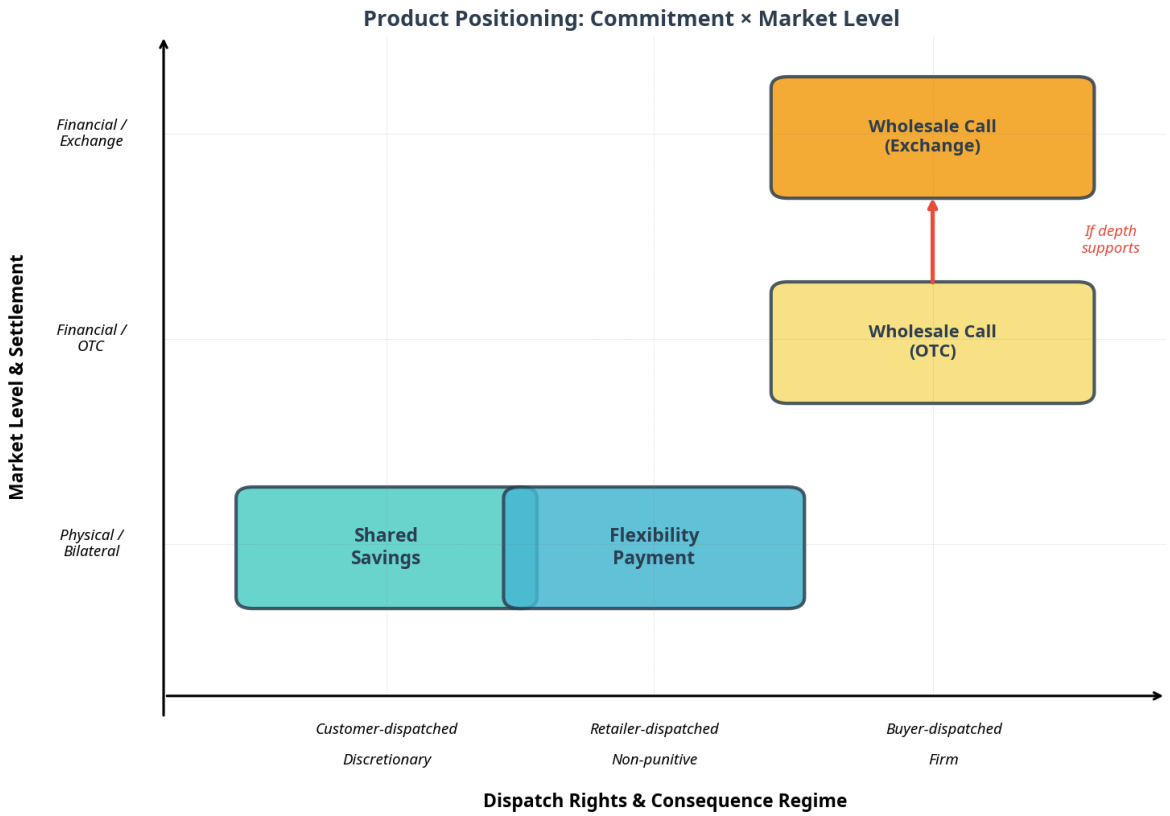
b. **Investment barriers**: Where capex is required (e.g., behind the meter generation), customers need certain, upfront cashflows to support their business cases. A product offering only contingent or uncertain future payments may not provide the revenue certainty needed to secure internal approval or financing for the investment.

c. **Derivative classification**: Products whose settlement is mechanically linked to an observable market price (e.g., the spot price) risk classification as financial derivatives under applicable financial markets legislation. This would create compliance obligations and barriers that would deter participation by many C&I customers and has therefore informed our product design choices.

- The Flexibility Payment is structured as a forward purchase of curtailment – a fixed payment for a physical commitment, settled independently of the spot price – and is unlikely to be classified as a derivative.
- The Shared Savings product, because its settlement is derived from the spot price, could be defined as a derivative under the Financial Markets Conduct Act (FMCA) 2013. The Group advises the Authority to engage with the FMA on this issue and the scope for a designation under section 562 of the FMCA, if deemed necessary.

4. Proposed solutions

To address these challenges, we propose a layered approach, recognising that the wholesale product is unlikely to gain traction absent the underlying physical participation.



The three products coexist –the market relies on all of them simultaneously. The arrow indicates a potential progression from OTC to exchange-traded product if market depth were to support it, though this is not envisaged in the near term.

4.1 The standardised wholesale product: Callable Spot Price Cap

We propose a Callable Spot Price Cap as the standardised wholesale financial product.

a. **Rationale:** This product directly addresses the short-duration, unpredictable, intra-day price spikes identified above. As a financial call option, it does not require physical infrastructure for settlement and avoids the complexities of physical baselining at the wholesale level.

b. **The role of premium and settlement payments:** The product mirrors the economics of insurance.

- The **option premium** – paid upfront, regardless of whether events occur – is the cost of buying cover. It compensates the seller for reserving capacity and accepting the financial risk of settlement against extreme spot prices.
- The **settlement payment** – paid only when the buyer exercises and the spot price exceeds the strike – is the insurance claim: it makes the buyer whole when the insured event materialises.

This separation of premium and contingent payout is the natural structure for a product addressing unpredictable, infrequent tail risks.

c. **Two strike prices:** Recognising the different cost structures of the underlying physical assets, we propose two standard strike prices:
    - **$600/MWh** – targeting aggregations of C&I customers whose flexibility is efficient at lower cost levels – such as those with behind-the-meter alternative generation. The lower strike reflects this relatively lower cost of dispatch. Given the higher probability of exercise at this strike, the negotiated premium is expected to be correspondingly higher – providing the wholesale seller with the cashflow certainty needed to underwrite the capital investment and availability costs facing the C&I customers who ultimately back the product.
    - **$1,200/MWh** – targeting aggregations of C&I customers whose flexibility carries higher activation costs, such as those involving genuine business disruption or process interruption. The higher strike ensures the resource is called only during genuine extremes, respecting the high opportunity cost of industrial curtailment. A lower premium reflects the reduced probability of exercise at this level.

The product's strike prices and the tail-risk framing reflect a deliberate choice informed by the nature of C&I assets: their high activation costs, limited tolerance for frequent or prolonged curtailment, and their comparative advantage relative to other flexibility resources that are better suited to routine peak management (a component of shaping). This is where the primary source of value lies, and the basis on which the standardised wholesale product is designed. That said, the Shared Savings product (see below) does not preclude responses at lower price levels. Where a customer judges curtailment economic at prices below the tail-risk thresholds, nothing in the product design prevents them from acting. But this is not where the comparative advantage of C&I DF lies, and it is not the basis on which the wholesale product is structured.

4.1.1 Product specification: Callable Spot Price Cap

This proposal is for a standardised wholesale financial call option. The option structure was chosen because it is the most efficient mechanism for providing tail-risk insurance. Unlike the retail proposals, the wholesale product is less encumbered by the specific constraints of C&I end-users (such as the need for bounded commitments or avoidance of derivative classification). It is a firm contractual arrangement with standard penalties for non-compliance, structured cleanly as a financial derivative without design compromises. As a financial instrument, it settles against an observable market price rather than physical delivery, avoiding the complexities of site-specific baselining and measurement, and encouraging anonymous, fungible trading.

Why a call option rather than a swaption?

Because the underlying physical response requires lead time, the buyer must exercise any DF contract at their discretion based on their *expectation* that the spot price will exceed the strike – not on the basis of the actual settled price, which is only known after

the fact. This creates the possibility that the buyer exercises and the spot price does not ultimately exceed the strike.

Under a call option, this forecast error carries no financial consequence beyond the use of one of the buyer's capped annual calls. Under a swaption – an option to enter a fixed-for-floating swap at the strike price – the buyer who exercises is locked into paying the strike regardless. If spot settles below the strike, the buyer pays the difference. The swaption penalises forecast error; the call option does not.

Given that forecast error is inherent in any product requiring advance notice, the call option is the more appropriate structure. It provides the buyer with one-directional protection: they benefit when the option is exercised and spot exceeds the strike and are unharmed when it does not. This asymmetry is consistent with the insurance framing – an insurance policy does not penalise the policyholder for making a claim that turns out to be unnecessary.

Natural participants

The Callable Spot Price Cap creates a two-sided market motivated by managing tail risks. Sellers (who write the cap and receive the premium) include retailers monetising surplus flexibility inherent in their retail book, and large industrials on spot contracts self-insuring by curtailing their own operations. Buyers (who purchase the cap for protection) include:

a. retailers facing correlated price-volume risk during demand surges,

b. generators exposed to delivery risk from plant trips or fuel constraints, and

c. participants managing cross-island basis risk during HVDC disconnections.

The path to standardisation

At present, this product may require more bilateral negotiation (e.g., around specific availability windows) than is optimal for a fully liquid, exchange-traded instrument. This reflects the nascent state of the market and the need to align with underlying physical constraints. We recommend a "Discovery Phase" of approximately 12 to 18 months, after which the most repeatable and widely adopted contract parameters can form the basis of a rigidly standardised, highly liquid product.

Dependency on the retail market

Finally, it must be emphasised that this wholesale product assumes a functioning retail DF market. Any wholesale product requires an underlying physical supply of curtailment to underwrite it, and that supply must come primarily from C&I customers. Until sufficient physical participation is established at the retail level, the wholesale product is unlikely to gain meaningful traction.

Parameter	**Specification**	**Rationale**
Parties	Buyer (Retailer/Super Peaker Seller/Pre-sold Generators) and Seller (Retailer/Aggregator/Large Industrial).	Eligible Investor Certificate (a.k.a. Wholesale Investor Certificate) requirement.

Parameter	Specification	Rationale
Contract volume	Negotiated fixed MW capacity (e.g., 2.3 MW)	Provides certainty of the hedge volume.
Minimum unit of volume	0.1 MW in 0.1MW increments	Sets standard increments to support fungibility.
Contract term	Quarterly	Aligns with the horizons of other wholesale exchange traded options.
Availability windows	Trading Periods: • 43-14 (9:00pm to 7:00am) and/or • 15-21 (7.00am to 10:30am) and/or • 22-34 (10:30am to 5:00pm) and/or • 35-42 (5:00pm to 9:00pm)	The seller commits to providing cover only during specific periods. Enables a balance of flexibility for the seller and targeting for the buyer. Enables secondary trading.
Applicable days	• Work weekdays and/or • Non-working days	The seller commits to providing cover only during specific periods. Enables a balance of flexibility for the seller and targeting for the buyer. Enables secondary trading.
Dispatch event duration	8 trading periods per event	Provides coverage of intra-day short-duration event without unduly fatiguing assets.
Dispatch notice period	Minimum 4 hours	A seller hedging this risk with C&I physical assets needs a dispatch period at least as long as the dispatch period in their retail contracts.
Minimum recovery period	For negotiation	Limits on time between events and mitigates seller fatigue.
Quarterly cap	Minimum of two independently exercisable 4-hour increments (2 x 4 hours = 16 TP)	Balances seller commitment with buyer value. These limits bind the aggregator's portfolio, not individual C&I customers – whose exposure is governed by their own retail arrangements.

Parameter	Specification	Rationale
	Can stack 2, 3, 4, 5 increments per quarter	
Strike price	$600/MWh or $1,200/MWh	Defines the threshold for extreme price events. Set high enough to reflect genuine scarcity, not normal daily peaks, and tiers in curtailment cost structures. Further consultation required on appropriate levels.
Option premium/availability payment	Negotiated fixed fee (paid upfront or monthly)	Compensates the Seller for reserving capacity and accepting the financial risk of settlement against extreme spot prices.
Settlement payment	Financial difference payment. In each exercised trading period where Spot Price > Strike Price, Seller pays Buyer: (Spot − Strike) × Contract Volume × 0.5 hours.	Ensures the Buyer's net cost on the Contract Volume is capped at the Strike Price during exercise periods, with the Seller bearing the excess. Spot and Strike are in $/MWh and Contract Volume is in MW, so the 0.5 hours converts the half-hour trading period to MWh and the payment is in dollars.
Dispatch trigger	Buyer’s discretion	Exercised at Buyer's discretion when, at the time of notification, they expect the contract to be in-the-money. The notice period means actual settlement prices may differ from expectations – this timing risk is borne by the Buyer.
Reference node for pricing	• OTA2201 • BEN2201 • Other negotiated	OTA and BEN align with other wholesale products and concentrates liquidity - supporting price discovery and secondary selling. “Other negotiated” provides for more efficient management of basis risk to Seller’s GXP – but may dilute liquidity.

4.2 The retail physical flexibility products: negotiation templates

Designing for C&I participation

The retail products must be designed around a fundamental constraint: C&I customers who, to varying degrees, require simplicity, cashflow certainty, and bounded commitments. They are generally unwilling to manage derivative risk or monitor spot prices. Many will not accept open-ended or firm dispatch obligations at all.

We propose developing **negotiation templates** rather than standardised retail contracts. The case for standardisation at the wholesale level rests on enabling fungibility, anonymous trading, and secondary market liquidity. None of these apply at the retail level. Retail DF contracts are bilateral, site-specific arrangements between a known buyer and a known seller – they are not intended to be traded, and performance depends on the characteristics of a particular site. The benefits of standardisation simply do not arise.

Furthermore, C&I loads are highly heterogeneous. A cold store, a pump station, and a diesel generator have fundamentally different operating constraints, notice requirements, and seasonal availability profiles. Baselines must reflect specific load patterns. Buyer strategies will differ depending on their wholesale exposure. Rigid standardisation would either exclude willing participants or impose terms that do not reflect operational reality.

A standardised contract is a finishing point – all material terms are fixed, and parties either accept or decline. A negotiation template is an **informed starting point** – it provides the structure, language, and default positions while leaving key commercial parameters open for bilateral agreement. Templates reduce transaction costs without sacrificing the flexibility needed to close deals across diverse asset types.

The products proposed below reflect this approach – offering a spectrum from no firm commitment (Shared Savings) through to bounded firm commitment (Flexibility Payment), with the degree of firmness matched to the degree of financial incentive. Both products are intended to sit within or alongside the energy contract between the Retailer and the C&I customer and are of identical term.

4.2.1 Product specification: flexibility payment

The table below sets out the key commercial terms for a Flexibility Payment product.

This product is designed to encourage participation from C&I end-users, while simultaneously creating firm, dispatchable value for retail buyers. It would form part of the retailer's energy contract with the customer.

Key design features

a. **Certainty for end-users**: The seller receives fixed, upfront cashflows, subject only to meeting negotiated performance targets when called.
b. **Combined payment structure**: The upfront Flexibility Payment compensates the seller for both their availability and cost of curtailing. There is no separate usage payment.

c. **Negotiated availability**: The windows of availability are agreed bilaterally. This provides flexibility for the seller and allows the buyer to target critical scarcity windows.
d. **Bounded commitment**: The contract template signals strict limits on event duration (fixed and short) and caps on the number of calls (e.g., 20– 40 hours per annum, applied at daily, seasonal, and annual levels), though again these parameters are by negotiation.
e. **Proportionate consequences**: Non-compliance consequences are reasonable and structured as a forfeiture of the pro-rata Flexibility Payment, meaning the seller is unlikely to have to "write a cheque" for under-delivery.
f. **Low derivative risk**: Because the contract payout is not expressly tied to an underlying spot price and is linked to a physical supply contract, it is unlikely to be classified as a financial derivative.

The "forward purchase" rationale

A defining feature of this product is that the Dispatch Trigger is at the buyer's discretion.

As a consequence, this is an option over *when* the curtailment is called, rather than *if* it will be called at all. This is because the buyer has pre-paid for a capped volume of energy curtailment and can therefore be expected to use their full allocation.

Economically, this makes the product equivalent to a forward purchase agreement. This forward purchase structure—unlike a traditional option where exercise is contingent on a defined condition (e.g., spot price exceeding $600/MWh)—justifies paying both the availability and energy components in advance.

Implementation approach

The proposal below focuses on the core economics of the arrangement. Technical issues—such as baselining methodologies and measurement protocols—are left open at this stage, as these are common to all physical contracts and will vary by site.

It is proposed that this structure is offered as a negotiation template rather than a rigidly standardised contract. Retail C&I flexibility profiles are highly heterogeneous; a template reduces transaction costs by ensuring parties aren't starting from scratch, while preserving the flexibility needed to close deals across diverse asset types.

Ultimately, a key success factor for this product will be raising education and awareness among brokers and end-users, to drive acceptance and utilisation.

Parameter	**Specification**	**Rationale**
Parties	Retailer/EDB X and Customer Y.	Buyer (retailer/aggregator/EDB) and Seller (C&I customer/facility owner).
Contract capacity	Fixed nominated MW capacity (e.g., 1.5 MW), equivalent to 0.5 × MW of	The nominated demand reduction (MW) the Seller commits to make available when dispatched - becomes the billing basis for the Flexibility Payment. MW is used as the

Parameter	Specification	Rationale
	energy (MWh) in each trading period	common unit across all three products; energy in any trading period is 0.5 × MW.
Contract term	Aligned with prevailing energy contract	Retailer is the sole buyer and aligning terms simplifies negotiations.
Availability window	Ultimately negotiable	The hours/seasons during which the Buyer may call dispatch events (e.g., Super Peak only) and involves consideration of the flexibility within the underlying asset - some assets may be amenable to 24/7 others more defined windows and seasonality.
Dispatch event duration	Negotiable but might reasonably expect: • Not less than 30 minutes per event. • Up to 4 hours per event	Minimum and Maximum duration of any single dispatch event.
Minimum recovery time	Negotiated	Avoids "fatigue" by putting limits on time between events e.g. 1 per day, 2 per day, 2 per week.
Period cap (event limits)	Negotiated e.g. 20 or 40 hours per annum	Maximum number of hours or events per annum the Buyer may dispatch. Begin with low commitments.
Notification period	Schedule: 1 min, 15 min, 1h, 4h	Minimum advance notice the Buyer must give before dispatching. Retailers indicate that for intra-day price management anything longer than 4 hours may be of low value.
Dispatch trigger	Buyer's Discretion	Simplifies pricing – working assumption is not whether, but rather when, the Period Cap will be called. Makes the product attractive to both retailers and EDBs.
Flexibility payment	$X quarterly, paid in equal monthly instalments (flat profiles) or	The fixed upfront payment for the Contract Capacity. This is the sole payment stream.

Parameter	Specification	Rationale
	reflective of availability profile	The Flexibility Payment is paid in full, subject to performance, even if the total number of calls is below the period cap. The Flexibility Payment embodies both availability and usage payments. Quarterly fee recognises that DF value is seasonal.
Performance standard	Negotiable but typically less than the Contract Capacity e.g. Minimum 90% of Contract Capacity delivered	Minimum delivery threshold to be considered compliant for an event. No payment for delivered capacity exceeding the Contract Capacity.
Non-acceptance penalty	Forfeiture/clawback of the Flexibility Payment for that event	The Seller declines a dispatch instruction within the notification window. Not a punitive penalty.
Non-delivery penalty	Negotiable	The Seller accepts a dispatch instruction but fails to deliver the Contract Capacity during the event. Consequence: forfeiture of the pro-rata Flexibility Payment attributed to that event (e.g. Flexibility Payment / Maximum allowable number of calls per quarter) *plus* an additional consequence (e.g., clawback multiplier, or termination right). Balance incentives for end-users to participate but also give retailers a high degree of surety going into an event that the contracted curtailment will occur.
Baseline methodology	Agreed bilaterally (e.g., "10 of 10" similar days, or fixed schedule)	How "normal" consumption is established to measure the curtailment against. Must be perceived as fair by both parties.
Measurement & verification (M&V)	Ex-post calculation using interval metering or sub-metering data	How actual demand reduction is measured and verified against the baseline.
Metering requirements	Remotely-read interval metering or	What metering infrastructure is required.

Parameter	Specification	Rationale
	sub-metering at the premises	
Dispatch communication	Negotiated	Agreed-upon communication mechanisms between Buyer and Seller.

4.2.2 Product specification: Shared Savings

The table below sets out the key commercial terms for a Shared Savings product.

This product is designed for C&I end-users with inherent process flexibility who are unwilling or unable to accept firm call obligations – but who would respond voluntarily when the economics are sufficiently attractive. It is structurally a put option held by the end-user: the customer retains full discretion over whether and when to curtail, and is paid a share of the value created when they do. It would form part of the retailer's energy contract with the customer and, as a physical contract, requires agreed baselining methodology to support settlement.

Key design features

a. **Full customer discretion**: The customer decides whether, when, and for how long to curtail. There is no dispatch instruction, no minimum response obligation, and no penalty for non-response. That said, the customer may choose to work with an aggregator who would monitor expected spot prices and assist customers with efficient curtailment decisions.
b. **Shared value mechanism**: When the customer curtails during a high-price period, the gains of trade – the spread between spot price and contract price – are shared between the customer and the retailer according to a negotiated sharing ratio.
c. **Pure upside for end-users**: The customer retains full discretion over whether to curtail and notifies the retailer only for periods in which they actively curtailed and the spot price exceeded their contract price. Because the customer chooses which periods to claim, they will never be out of pocket in practice – their worst outcome for any event is simply not to notify.
d. **Ex-post declaration**: The customer declares after the event which trading periods they are claiming as curtailment. No pre-approval or real-time notification is required.
e. **Monthly settlement**: The payment is the net sum of savings across all half-hours the customer declares. The customer will rationally declare only those periods in which the spot price exceeded their contract price and they actively curtailed — meaning in practice all declared half-hours will be positive contributions.
f. **Low barrier to entry**: No upfront commitment, no availability obligation. The customer simply agrees to a methodology for measuring curtailment and a ratio for sharing the value.

Derivative classification – Shared Savings product

The Group notes that the Shared Savings product, as currently structured, could be defined as a derivative under the Financial Markets Conduct Act 2013. For parties meeting the wholesale investor threshold (net assets or turnover of at least $5m in each of the two most recent completed accounting periods), the regulatory implications of this classification are substantially reduced and the product may be deployed on that basis.

For other parties, the classification carries implications for licensing, disclosure, accounting treatment, and internal approval policies, and participants would need to proceed cautiously – seeking independent legal advice appropriate to their circumstances. Some may conclude, with sufficient risk assurance, that they are comfortable proceeding. Others may prefer to develop alternative structures that achieve a similar commercial outcome while satisfying a non-derivative characterisation.

The Group recommends that the Authority consider approaching the FMA to seek a designation under section 562 of the FMCA that products of this nature do not constitute derivatives for the purposes of the Act, which would provide the regulatory certainty needed to support broader market adoption beyond the wholesale investor category.

The base model and a variant

In the base model, the sharing ratio (r) applies from the first dollar of spread: the customer receives r × (S − P) × curtailed volume for every qualifying half-hour.

A variant is available for customers with material curtailment costs (e.g., behind-the-meter diesel generation at $200– 400/MWh, or quantifiable production disruption costs). Under this variant, the customer first recovers their net cost of curtailment (their declared cost C [negotiated with the retailer] less the FPVV price P they avoid by not drawing from the grid), and only the value created above their cost C is shared at the negotiated ratio. The variant has two branches. Where the spot price S exceeds their cost C, the customer receives [(C − P) + r × (S − C)] × Curtailed Volume. Where S is at or below C, the customer receives (S − P) × Curtailed Volume, so the customer bears the full cost of an uneconomic curtailment, and the retailer is never required to pay out more than the value pool. The two branches are continuous at S = C, where both pay (C − P). The customer's net position is r × (S − C) per unit curtailed, so they respond whenever the spot price S exceeds their cost C. This ensures the customer is made whole on their direct costs before any sharing occurs, removing the risk that the sharing ratio erodes their cost recovery. The variant lowers the spot price threshold at which it becomes economic for the customer to curtail – because they recover their full cost before sharing begins, rather than absorbing a (1−r) share of it. This improves participation incentives for high-cost assets without changing the fundamental structure of the product.

However, the variant introduces additional negotiation complexity – the parties must agree on the declared cost of curtailment (C). These negotiations may be complicated for curtailment processes with high fixed costs per event – for example, restarting a kiln, furnace, or production line – where the cost is incurred once regardless of curtailment

duration. These fixed costs must either be recovered in the first trading period (making the effective C very high for short curtailments) or allocated across a minimum number of trading periods (requiring the parties to agree an assumed curtailment duration at the point of contracting). Neither approach is straightforward, and both introduce assumptions that may not match the actual event when it occurs.

It also reduces the retailer's share of the spread, since the customer retains 100% until C is recovered. Whether this trade-off is worthwhile depends on the net effect for the retailer. The variant increases the expected frequency of response from participating assets – because the customer's economics are positive at lower spot prices than under the base model. The retailer receives a smaller share per event, but of a larger number of events.

Whether the retailer is better off net is an empirical question that depends on the customer's cost of curtailment, the distribution of spot prices, the negotiated sharing ratio, and the physical bounds on the number of curtailment hours available in the period – since more frequent response at lower spot prices may exhaust the customer's limited appetite before the highest-value events occur.

The aggregators' role for backing the wholesale product

While the Shared Saving product can operate as a standalone bilateral arrangement between retailer and customer, its value as supply backing for the wholesale product may depend on active aggregation. The aggregator increases the likelihood and frequency of response through pre-warning and communication, and – critically – optimises the allocation of the customer's limited appetite for disruption to the events where it is most valuable. Without active aggregation, the product delivers general demand elasticity. With it, the product may approach targeted demand flexibility – and the total value pool (S − P) becomes available to underpin the wholesale Callable Spot Price Cap. The aggregator's margin – the difference between what they earn from the wholesale premium and what they pay out to customers and retailers – is their compensation for managing the portfolio and absorbing residual performance risk.

Hedge value to retailer

Unlike the Callable Spot Price Cap (which eliminates exposure above the strike) and the Flexibility Payment (which provides fixed-cost cover), the Shared Savings product reduces rather than eliminates the retailer's spot exposure. The retailer's exposure on curtailed volume is reduced by (1−r) – a proportional sharing of avoided loss that still scales with spot, but at a reduced rate. While a weaker hedge than the Flexibility Payment, it is acquired at zero upfront cost to the retailer, and the retailer pays only when value is realised, subject to one possible scenario[1]. The structure provides value to the retailer over and above what they would receive under a straight supply contract.

[1] Where the sum of a customer's Payment Amounts for a month is negative, the floor at zero means the retailer, not the customer, bears the loss. This arises where the customer curtails in anticipation of high spot prices, the actual spot price during the curtailment period falls below the contract price, and the month contains no offsetting positive Payment Amounts to absorb it. Where the month is net positive, the negative trading periods are netted off the customer's payment and the customer bears the cost. In the floored case this is an incremental risk created by the contract, since the curtailment would not have

Implementation approach

The proposal below focuses on the core economics of the arrangement. Technical issues – such as baselining methodologies and measurement protocols – are left open at this stage, as these are common to all physical contracts and will vary by site.

It is proposed that this structure is offered as a negotiation template rather than a standardised contract. The diversity of C&I operational profiles, cost structures, and flexibility characteristics means that key commercial parameters (sharing ratio, cost recovery threshold, contract price reference, and term) must be negotiated bilaterally.

As with the Flexibility Payment, a key success factor will be raising education and awareness among brokers and end-users – particularly the insight that flexibility is a monetisable dimension of the energy contract, not merely a byproduct of operational happenstance.

Parameter	**Specification**	**Rationale**
Parties	Retailer and C&I customer (or aggregator and C&I customer where pass-through settlement permits)	Bilateral arrangement embedded within or alongside the existing supply agreement. Absent pass-through settlement, the incumbent retailer is the only viable contracting party, unless an aggregator contracts through the retailer. Note: May satisfy the statutory definition of a derivative under the Financial Markets Conduct Act 2013, which would have implications for signatories.
Contract term	Aligned with prevailing energy contract	Retailer is the sole buyer and aligning terms simplifies negotiations.
Contract capacity	Variable by trading period. Determined ex-post as baseline minus actual. No fixed MW commitment. Minimum threshold optional	Maximises flexibility and participation.
Availability window	Any trading period	Maximum flexibility.

occurred without the incentive the contract provides. The retailer could negotiate the sharing ratio to compensate for this asymmetry.

Parameter	Specification	Rationale
Declaration / notification	Ex-post declaration required. Customer curtails at their discretion and declares after the event which half-hours they are claiming as curtailment. No pre-approval or real-time notification required. No declaration, no payment	Confirms intent and distinguishes deliberate curtailment from coincidental demand variation. Removes real-time friction.
Event duration	Minimum of 1 TP with no maximum	Customer determines duration at their discretion.
Sharing ratio (r)	Negotiated bilaterally	The residual (1−r) compensates the retailer/aggregator.
Reference spot price (S)	Spot price at the customer's GXP (or a defined reference node)	Consistent with wholesale market price signals.
Contract price (P)	The customer's contracted purchase price under their existing retail agreement	The spread (S − P) represents the value pool created by curtailment. P anchors the calculation to the customer's actual cost of supply.
Curtailed volume	Baseline consumption minus actual metered consumption during the declared half-hours and adjusted for losses from customer's ICP to GXP. Expressed in MWh per trading period, so that Payment Amounts (with S, P and C in $/MWh) are in dollars. Curtailed Volume is	Physical settlement requires observable, verifiable measurement. Interval metering (half-hourly) at the ICP is the minimum requirement. The declared half-hours are for all periods deemed to be part of a demand response event and include the period of reduced demand e.g. battery discharge, and the period of demand recovery e.g. battery charge. As discussed elsewhere in this report, this forms part of the wider consideration of baseline methodologies and approaches.

Parameter	Specification	Rationale
	negative in any declared trading period where actual consumption exceeds baseline, such as a demand recovery period	
Baseline methodology	Agreed between parties at contract inception. Calculated ex-post using historical data preceding the event, applied to the agreed methodology. Options include: historical average, day-matching, regression-based, or meter-before/meter-after	Must be perceived as fair by both parties, having regard for cost and supporting technology.
Customer's cost of curtailment (C).	Cost of curtailment $/MWh e.g. diesel fuel or battery degradation per cycle	The spot price above which the customer has a financial incentive to dispatch their demand response.
Payment amount per trading period	*Base Model* Payment Amount = r * (S – P) × Curtailed Volume *Variant Model* For S <= C, Payment Amount = (S – P) × Curtailed Volume For S > C Payment Amount = ((C – P) + r * (S – C)) × Curtailed Volume	*Base Model* Value from avoiding spot costs in excess of P is shared with the retailer. *Variant Model* 100% of the net value from curtailment up to the curtailment cost pays for the cost of dispatching demand response. Value is shared from avoiding spot costs over and above the curtailment cost. The customer is discouraged from dispatching their demand response during period where S < C as they incur a cost for the uneconomic dispatch subject to the monthly floor.

Parameter	Specification	Rationale
Settlement mechanism	Monthly net settlement. Payment is the sum of the Payment Amount across all half-hours the customer elects to declare.	Because the customer chooses which periods to declare, they will rationally notify only those half-hours that produce a positive contribution. This means the net payment for any settlement period will never be negative in practice — the customer's discretion over notification is itself the protection mechanism. This preserves the 'pure upside' positioning essential for participation without requiring a contractual floor.
Firmness	Entirely discretionary. No minimum delivery obligation	Deliberate design choice. Hard penalties would reduce participation without proportionately improving reliability. Reliability is achieved through incentives and aggregation, not obligation.

4.3 Soft commitment and the reliability of retail DF contracts

4.3.1 The nature of the commitment

Neither retail product proposed in this paper carries a hard penalty for non-performance in the traditional sense. However, the two products are soft in structurally different ways:

a. **Flexibility Payment (the call):** The buyer holds the dispatch right and calls for curtailment when they judge conditions warrant it. The seller's obligation is to respond – but the consequence of non-response is limited to forgoing or clawing back that part of the Flexibility Payment attributable to each call. For example, if the seller wished to be contracted to receive an $8,000 Flexibility Payment for up to 4 calls, they would forfeit $2,000 for each call they fail to respond to. The buyer has control over when to call; the softness lies in whether the seller will comply.

b. **Shared Savings (the put):** The buyer has no dispatch control at all. The customer decides at their sole discretion whether and when to respond. There is no instruction to comply with or ignore – the softness lies in whether the customer will act when it is economic to do so.

In neither case does the seller face a financial penalty beyond the loss of the payment they would otherwise have earned (unless both parties agree to additional penalties for non-performance). This raises a legitimate question: if there is no enforceable obligation (in the case of the call) and no buyer control (in the case of the put), can these contracts be relied upon? And if they cannot be relied upon individually, can they underpin a wholesale product that requires firmness?

4.3.2 Why soft commitment is more reliable than it appears

Several factors make these contracts more reliable in practice than their legal enforceability or structural softness alone would imply. These factors apply to both products, though with different emphasis.

a. **Sunk costs and commercial attractiveness**. The seller has incurred real costs in negotiating the contract, installing any required metering, and establishing operational procedures. The payments have been set at commercially attractive levels. In most instances, failing to respond – whether to a call or to an economic opportunity – means forgoing a return that significantly exceeds the cost of curtailment. A rational seller will respond in the majority of cases because it is in their financial interest to do so. This applies equally to both products: under the call, the seller forgoes the usage payment; under the put, the customer forgoes their share of the spread.

b. **Investment-dependent assets.** Where new investment has been undertaken on the basis that DF revenue is the marginal element that makes the business case viable – for example, an on-site generator that does not stack up without dispatch payments – the customer's incentive to respond goes beyond forgoing upside: non-response threatens the viability of the investment itself. The aggregator can reasonably assign higher confidence to such assets than to those where DF revenue is merely an optimisation layer on an already-economic investment. As the market matures and DF revenue streams become more visible and bankable, this category of asset is likely to grow.

c. **Pricing as a lever**. The more generous the payment or sharing ratio, the higher the likelihood of response. This gives the buyer (or the market designer) a direct lever: if reliability is insufficient, the price can be increased. Shorter contract terms (quarterly rather than annual) also mitigate the risk that input costs (such as diesel prices) move adversely during the contract term, rendering the payment unattractive relative to the cost of response. This applies to both products – for the call it keeps the usage payment above the seller's cost of response; for the put it keeps the sharing ratio attractive enough to motivate action.

d. **Pre-warning and preparation**. For both products, advance communication from the aggregator or buyer that conditions are building toward a dispatch event materially increases the likelihood of response. Under the call, there is no automatic trigger at a strike price – the buyer exercises at their discretion based on their expectation of spot. Pre-warning that a call is likely gives the seller time to prepare operationally (alert staff, wind down processes, check fuel levels) and signals that the event will be commercially attractive. Under the put, pre-warning makes visible the financial opportunity that might otherwise go unnoticed – a customer who receives a message saying "spot prices are forecast to exceed $2,000/MWh tomorrow afternoon – curtailment would be worth approximately $X to you" is far more likely to act rationally than one who only discovers the opportunity after the fact. In both cases, pre-warming serves the same dual function: operational readiness and informed decision-making.

e. **Repeated interaction and reputation**. These are not one-shot transactions. Retailers and aggregators will contract repeatedly with the same customers.

Under the call, a customer that consistently fails to respond when dispatched will not be offered future contracts, or will be offered less attractive terms. Under the put, a customer that never exercises despite favourable conditions may be viewed as uncommitted and deprioritised for future engagement. Conversely, customers that demonstrate reliability under either product will attract better pricing and preferential treatment. The value of the ongoing relationship disciplines behaviour without requiring legal penalties. This mechanism is well-established in the economics literature on relational contracts, where repeated interaction substitutes for formal enforcement.

f. **Portfolio diversification and over-subscription**. An aggregator or retailer holding a portfolio of retail DF contracts can over-subscribe – contracting for more capacity than they need to deliver against their wholesale obligation – to account for the probability that some sellers will not respond on any given occasion. This is standard practice internationally and applies to both products. However, over-subscription does not address systematic risk factors (such as a spike in diesel prices) that would simultaneously reduce the willingness of multiple sellers to respond. Where non-response risk is correlated across the portfolio, pricing and contract term design are more effective mitigants than volume alone.

4.3.3 The role of the aggregator: converting soft commitments into firm positions

The aggregator (whether a retailer or a specialist intermediary) plays a critical role in transforming what are individually soft and uncertain commitments – whether soft calls or discretionary puts – into something materially firmer and more predictable at the portfolio level. Without this active management, individual C&I responses might reasonably be expected to be sporadic and unreliable. The aggregator's practices significantly increase the probability, predictability, and rationality of response beyond what the contract terms alone would suggest.

a. **Pre-dispatch communication**. International practice demonstrates that aggregators maintain ongoing communication with their customer base as market conditions suggest a dispatch event may be approaching. This typically involves a tiered notification system: an advance warning when forward prices or system conditions suggest a high probability of dispatch, followed by a formal notification when the event is confirmed. For call customers, this gives time to prepare. For put customers, it makes the opportunity visible and actionable. In both cases, the advance warning gives customers time to review their curtailment plan, alert relevant staff, and confirm readiness.

   For example, one of the largest demand flexibility aggregators in the United States operates a structured communication cycle with enrolled customers. During the active DF season, customers first receive an "Advanced Warning Email" notifying them that the aggregator believes there is a high probability of dispatch, followed by formal dispatch notifications via SMS, email, and phone when the event is confirmed. Customers are expected to confirm receipt and execute their pre-agreed curtailment plan. This layered communication process progressively narrows uncertainty and materially increases response rates.

b. **Active portfolio management increases predictability.** Aggregators develop performance histories for each customer over time – understanding which customers respond reliably, which respond only in extreme events, and which face operational constraints on particular days or seasons. This allows them to build an increasingly accurate picture of likely portfolio response under different price scenarios. The result is that while any individual customer's response remains uncertain, the portfolio's aggregate behaviour becomes progressively more predictable as the aggregator's knowledge deepens.

c. **Over-subscription and pre-confirmation increase firmness.** By contracting for more capacity than their wholesale obligation requires, and by actively confirming customer availability in advance of expected events, the aggregator converts a collection of probabilistic individual responses into a portfolio with a high confidence of delivering the required volume. The layered process – from "we have contracts for X MW" to "we have confirmed availability of Y MW for tomorrow" – progressively firms up the position well before the wholesale obligation crystallises.

d. **The aggregator absorbs residual risk.** The aggregator's wholesale obligation (for example, selling a Callable Spot Price Cap) is firm – they bear the financial risk if their portfolio underdelivers. Their commercial incentive is therefore to invest in the relationships, communication systems, and market intelligence that maximise response rates. The spread between what they pay retail customers and what they receive from wholesale buyers compensates them for this residual performance risk. In this way, the aggregator acts as a transformer – taking in soft, discretionary retail commitments on one side and producing a firmer, more predictable wholesale product on the other.

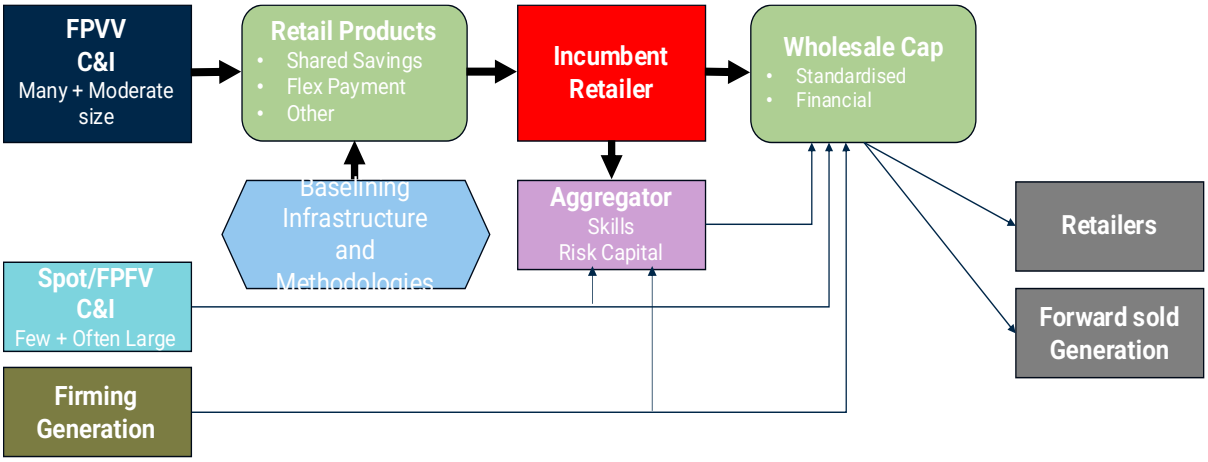
4.3.4 Summary

The two retail products proposed here are soft in different ways: the Flexibility Payment is a soft call (the buyer dispatches but cannot compel compliance), while the Shared Savings is a discretionary put (the buyer has no dispatch control and relies on the customer choosing to act). Neither carries hard penalties for non-response.

This is a deliberate choice reflecting the early stage of market development. The evidence suggests that commercial incentives, repeated interaction, shorter contract terms, pre-warning and communication, active aggregator management, and portfolio over-subscription can collectively deliver reliable aggregate performance from both products – and that imposing hard penalties at this stage would reduce participation without proportionately improving reliability. The aggregator's role in actively managing the portfolio – monitoring forward prices, pre-warming customers, confirming availability, and absorbing residual performance risk – is central to converting these soft retail commitments into firm wholesale positions.

While incumbent retailers hold the customer relationship and settlement position – and may be the natural first movers – international experience suggests that specialist third-party aggregators often develop unique capability in this function. They operate across multiple retailer portfolios, bring focused expertise in a narrow discipline, and – where market structures permit direct customer access – can negotiate independently. The skills required are new and specific: portfolio construction from voluntary

commitments, pre-warming, performance optimisation, and residual risk absorption. These represent a distinct source of competitive advantage that does not yet exist at scale in New Zealand. Regulatory settings should ensure that settlement structures, data access, and market participation rules are open to specialist aggregators – allowing capability to develop through competition rather than incumbency.



4.4 Portfolio management and residual risk

The seller of the wholesale Callable Spot Price Cap takes a firm obligation to settle against the spot price when called. However, neither retail product provides absolute certainty that the underlying physical response will materialise for any specific event. The Shared Savings structure is a put – the C&I customer decides whether to respond. The Flexibility Payment is a firm purchase, but the seller's binding commitment to deliver only crystallises when they accept a specific dispatch instruction. At the time the wholesale contract is written, the aggregator cannot guarantee that their retail book will be fully available on any given day. This requires the wholesale seller to over-subscribe their retail supply base – contracting more capacity than the wholesale obligation demands – in anticipation that not all C&I participants will be available for any specific event. The residual risk that the aggregated retail portfolio falls short of the wholesale commitment sits with the aggregator. This is a portfolio management challenge, not a product design flaw – it is analogous to the way an insurer manages its book against its reinsurance obligations.

4.5 Interaction with System Operator and central procurement

The System Operator currently has a limited overview of how intra-day demand flexibility is being used in the electricity market. Existing mechanisms for demand-side engagement, such as Dispatch Notified Load and Dispatchable Demand, have not been effective in attracting DF to signal its flexibility into the market.

This creates risks for the future if the proportion of DF being used across the market grows and is not signalled to the System Operator. It is reasonable to ask: can these products address this issue over time?

The answer is yes – and the wholesale Callable Spot Price Cap is the natural hook. When a wholesale cap contract is called by the buyer, that is the signal that physical curtailment may be activated across the aggregator's retail portfolio. With a simple

disclosure requirement – notify the System Operator when a wholesale contract is called, including volume, duration, and reference node (Otahuhu or Benmore) – the System Operator gets real-time visibility of wholesale cap activation which might reasonably imply some expected level of physical DF. With experience across multiple events, the System Operator builds firmness data: how much physical curtailment actually follows each wholesale call. The dispatch mechanism is already embedded in the product – the buyer's exercise decision cascades down through the aggregator to the retail sites.

Ensuring that this DF is signalled in the wholesale spot market contributes to several important outcomes. It helps to ensure that market schedules are accurate, supporting efficient price discovery and scheduling on generation vs DF resources in the wholesale market. Closer to real-time operates, understanding of what DF is being activated will help ensure that supply and demand is balanced in real time.

5. Supporting services and interventions

The Group was also asked to identify interventions to support the adoption of the wholesale product and facilitate this nascent DF market. Because the wholesale product depends on underlying physical participation from C&I customers, these supporting services are not peripheral – they are foundational.

The question is which of these measures should be acted on now, which are best left to market processes, which warrant a wait-and-see approach, and which should inform existing Authority workstreams without requiring separate action by this Group.

5.1 Do now

a. **Education and awareness:** A key success factor is shifting the focus of energy procurement negotiations. At present, brokers and C&I end-users evaluate retail supply contracts almost exclusively on the fixed energy price ($/MWh). The flexibility value embedded in their operations – and the revenue it could generate – is not part of the conversation.

   For this market to develop, retailers need to offer these structures as part of their standard retail proposition, and brokers need to understand how to evaluate and compare them alongside the energy price. The goal is for the Flexibility Payment and Shared Savings to become something end-users and their brokers actively look for, see real value in, and factor into their procurement decisions – not an afterthought or a novelty.

   This requires education on both sides: helping retailers articulate the value proposition clearly, and helping brokers and end-users understand that their operational flexibility has a quantifiable market value that can be monetised with bounded commitments, certain cashflows, and no derivative exposure.

b. **Baselining and Measurement & Verification for physical retail contracts**: The physical retail contracts (Flexibility Payment and Shared Savings) require methodologies and capability for establishing what the customer would have consumed absent the curtailment event (the baseline), and for measuring actual delivery against that baseline (M&V). These methodologies need to be transparent, fair, and low-cost to administer. Without approaches that both parties can trust, neither can have confidence in the settlement of the physical contract.

   This is a critical dependency: the wholesale product relies on the retail product, and the retail product relies on credible measurement. International practice offers established models, but education and trust in these approaches need to be built within the New Zealand sector. In the first instance, the expectation is that baselines will develop through market practice and bilateral negotiation, with any such processes needing to be proportionate and fit for C&I customers and their commercial realities. To accelerate this and support the building of trust, the Authority could consider establishing a dedicated sector working group to assess baselining approaches across asset types and provide independent guidance that participants can rely on. This recommendation was reinforced by the Electricity Authority Advisory Group during our presentation to them, who identified

independent and credible advice on baselining as critical to building trust and catalysing market participation.

This is critical infrastructure for a functioning retail demand flexibility market, though evaluating and developing a fit-for-purpose solution is beyond the current scope of this Group.

5.2 Leave to the market

a. **Aggregation capability and risk capital**: The retail products proposed here – and the soft commitment model that underpins them – depend on an intermediary performing active portfolio management: pre-warming customers ahead of expected events, building performance histories, over-subscribing to manage non-response risk, and absorbing the residual performance gap between soft retail commitments and firm wholesale obligations. This requires both specialist capability (customer acquisition, communication platforms, dispatch systems, portfolio optimisation) and risk capital (the balance sheet to underwrite the gap between aggregated soft commitments and the firm delivery obligations sold into the wholesale market).

   Internationally, these functions are performed by specialist demand response aggregators – such as Enel X, CPower, and Voltus – who have developed both the capability and the risk appetite over more than a decade of market participation. Neither exists in New Zealand today at any meaningful scale.

   Retailers can perform some of these functions and have a commercial incentive to do so – both where they hold unhedged spot exposure and where they recognise the latent flexibility embedded in their portfolio of C&I customers as a resource to be unlocked and monetised. But specialist aggregators bring focus, purpose-built technology and business models, dedicated risk-capital and competitive pressure that drives innovation. Regulatory settings should ensure that market access rules are open to specialist aggregators and will encourage competition, and do not entrench the incumbent retailer as the sole pathway to market for demand flexibility.

5.3 Wait and see

a. **Pass-through mechanisms**: The bulk of C&I customers are on Fixed Price Variable Volume (FPVV) retail contracts. Under a standard FPVV retail contract, when a customer curtails consumption, the incumbent retailer avoids purchasing that volume from the spot market. If the curtailment occurs during a high-price period, this avoided purchase represents a significant financial gain – a "windfall" – that accrues entirely to the retailer. The customer receives no benefit from their curtailment because their contract price is fixed regardless of volume.

   This creates a structural problem: the end-user has no cashflow from curtailment against which to underwrite any demand flexibility hedge they might sell directly to a third party. The key player in enabling retail demand flexibility from FPVV customers is therefore the incumbent retailer. Retailers need to be motivated to provide their customers with financial incentives to curtail – which means sharing this windfall.

If retailers face sufficient commercial incentives and competitive pressures, this issue may resolve itself. A retailer who recognises the value of flexibility embedded in their customer base has an incentive to monetise it – either by using it to manage their own portfolio risk, or by selling it to its highest-valued use (which may be a competitor retailer or aggregator with a different risk profile). In a competitive retail market, retailers who fail to share this value with customers may lose those customers to competitors who do.

However, if competitive pressures prove insufficient to drive this behaviour, the industry may wish to consider a pass-through settlement mechanism – a form of non-coincident settlement that enables the demand flexibility value to be separated from the retail supply relationship. This would allow third-party aggregators or competing retailers to contract directly with C&I customers for their flexibility, without requiring the cooperation of the incumbent retailer. Such a mechanism would address the windfall issue structurally, but represents a more significant market design intervention and may require a Code change to enable it.

5.4 Inform but leave to existing Authority's processes

a. **Dispatch signalling platform**: A platform for signalling dispatch instructions between counterparties would reduce operational costs and support coordination across the market. Such a platform could also provide the System Operator with visibility over the volume of privately contracted demand flexibility that may be activated during a trading period. This need not make the System Operator a party to the contracts, but would give them line of sight over available demand-side capacity – improving their ability to manage system security without centralising procurement.

This infrastructure likely has wider applicability than commercial demand flexibility alone, and we understand it is something the Electricity Authority has been considering in a broader context. Developing a fit-for-purpose solution is beyond the scope of this Group, but we note it as an important enabler.

b. **Public price disclosure**: Price discovery is a public good. Transparent pricing – visible premiums, strike prices, and contracted volumes – reduces the cost of trading by giving counterparties a common reference point, eliminating the need for each participant to independently assess fair value. It informs entry and investment decisions: a potential demand flexibility seller can assess whether the returns justify investment in BTM generation; a potential new generator can assess whether the market is pricing scarcity risk at a level that justifies their entry. Visible prices build liquidity by attracting participants who would otherwise stay on the sidelines, and support the development of secondary trading as the market matures. Developing appropriate disclosure mechanisms for the wholesale demand flexibility product would materially accelerate market development.

c. **Prudential recognition of demand flexibility hedges**: In the New Zealand wholesale electricity market, participants purchasing from the spot market are required to maintain prudential security with the Clearing Manager (NZX) to cover

their potential settlement obligations during periods of high spot prices. These prudential requirements – typically in the form of cash deposits, bank guarantees, or approved hedge cover – can represent a significant capital cost, particularly for retailers exposed to volumetric risk during price spikes.

Currently, recognised hedges that reduce a participant's prudential exposure are limited to standard financial instruments (Contracts for Difference (CFDs), futures, options listed or registered with the Clearing Manager). If demand flexibility arrangements – whether the Callable Spot Price Cap or aggregated retail positions – were recognised as qualifying hedge cover for prudential purposes, participants holding demand flexibility contracts would receive capital or liquidity relief proportionate to the cover those contracts provide. This would reduce the cost of carrying prudential security during high-risk periods, creating a direct financial incentive to contract for demand flexibility and improving the commercial case for both buyers and sellers.

The principal reason for caution is hedge quality. Prudential recognition exists to ensure that a participant's obligations to the Clearing Manager can be met with high confidence. Traditional hedges – CFDs with creditworthy counterparties, exchange-cleared futures – offer near-certain financial performance. A demand flexibility hedge, by contrast, depends on physical delivery by a portfolio of C&I customers whose response is probabilistic rather than guaranteed, and whose counterparty credit may be less established. The Clearing Manager would need to be satisfied that the firmness of delivery, the creditworthiness of the counterparty (likely the aggregator), and the evidential standard for performance are sufficient to justify the prudential relief granted. These performance requirements obviously need to be met – but they are not inherently unachievable, particularly for the wholesale Callable Spot Price Cap where the aggregator bears a firm financial obligation regardless of underlying physical delivery.

The Authority may wish to consider whether the prudential framework can be extended to recognise qualifying demand flexibility hedges, and what standards of firmness, counterparty credit, and delivery confidence would be required for recognition.

Appendix 1: Flexibility resources: suitability for short-duration, unpredictable tail-risk events

1. Introduction

The private insurance use case for wholesale DF targets a specific class of market event: **short-duration, unpredictable, intra-day price spikes** caused by sudden acute demand surges, plant failures or transmission constraints (including HVDC disconnection). The product must be callable at the buyer's discretion, within acceptable bounds of commitment for the seller, and financially attractive to both parties.

This paper compares five flexibility resources against these requirements, beginning with two established dispatchable supply-side assets (grid-scale batteries and dispatchable thermal), before examining the three forms of C&I demand flexibility and their relative suitability.

2. The nature of the risk: unpredictable, infrequent, short-duration, tail risks

The risks being hedged are **short-duration, unpredictable, intra-day price spikes**. Consequently, the focus is primarily on tail-risk management. We are targeting unexpected events leading to extreme and transient spot price spikes, where the capacity for C&I to flex is most valuable.

Traditional generation assets are generally not well-placed to provide this specific insurance. For example, grid-scale batteries require regular and frequent cycling to recover their capital costs, which conflicts with the requirement to hold capacity in reserve for infrequent, unpredictable tail risks. Dispatchable thermal generation is suited for prolonged, foreseeable supply shortages but is often too slow to respond to sudden intra-day spikes – large thermal units may take hours or days to start from cold and cannot respond to unpredictable events unless already committed and spinning with spare capacity.

C&I DF, however, is uniquely positioned to fill this gap for two reasons:

a. **Cost structure**: While industrial curtailment is expensive (high SCC), making it unsuitable for daily arbitrage, this high cost naturally aligns with infrequent, extreme-value events. It is the resource you call only when the spot price genuinely exceeds the value of firing up behind-the-meter generation, or of the foregone industrial output.
b. **Lead times**: C&I DF can typically respond within minutes to hours – a diesel genset starts in minutes; a cold store can be shut down within a trading period. This short lead time matches the unpredictable, sudden nature of the target events.

In short, DF is expensive but fast. The target events are infrequent but sudden. The cost structure matches the infrequency; the lead time matches the unpredictability.

3. The Asset Types

3.1 Grid-scale battery energy storage systems (BESSs)

a. **Business case**: BESSs carry high capital costs and relatively low operating costs. To recover their investment, they generally need to cycle frequently – targeting regular, expected daily price differentials and providing continuous ancillary services such as frequency keeping.

b. **Assessment**: BESSs respond well to sudden events, but their business case is generally built around frequent, regular cycling. This creates a fundamental conflict: a battery that is arbitraging daily cannot guarantee it will be charged and available at the moment an unpredictable tail-risk event occurs. Conversely, a battery held in reserve for tail events will not pass a business case built on infrequent deployment alone. The resource is either committed to daily trading or committed to insurance – it cannot credibly do both.

3.2 Dispatchable thermal generation

a. **Business Case**: Thermal plants carry high fixed costs (maintenance, staffing) and high variable costs (fuel, carbon). Once running, they can operate continuously for extended periods, making them suited to prolonged energy shortages.

b. **Assessment**: Thermal generation is the strategic reserve for enduring dry-year shortages. It is generally too slow and too expensive for the short, sudden, unpredictable events that the private insurance use case targets.

3.3 C&I behind-the-meter (BTM) generation

a. **Business case**: Many C&I sites already have backup diesel generators for resilience purposes, meaning some capex may already be sunk. Where new investment is required, it is relatively modest compared to grid-scale assets. Operating costs are moderate (fuel and maintenance). Because these assets generate electricity rather than disrupting the core business, they could be deployed without impacting the site's primary output. However, to encourage investment specifically for market participation, owners may require upfront cashflows and a high degree of cashflow certainty.

b. **Assessment**: BTM generation is arguably the low-hanging fruit for callable DF. It does not disrupt the core business, can respond within a reasonable notice window, and could sustain output through a typical short-duration event. The primary barrier is encouraging the capital investment, which suggests a product structure offering upfront cashflow certainty (higher premium, lower strike price – e.g., $600/MWh – called more frequently).

c. **Why buy the call right rather than own the asset?** Generating assets with no baseload grid function – those that exist expressly for tail-risk management – are often better owned by the C&I customer than by a generator, retailer, or aggregator. This is because the customer holds a switching option: they can choose to run the asset whenever their cost of self-generation is below their cost of grid supply, not only when formally dispatched for DF. This switching option

may be exercised far more frequently than the formal DF calls, meaning the asset delivers more total value to the customer than it could to any third-party owner who may only capture value when the contract is exercised. The DF contract (Flexibility Payment) therefore represents an additional revenue stream layered on top of the customer's own switching optionality and resilience value – it need not justify the entire investment alone. Product design should focus on underwriting the customer's investment - the buyer secures the DF call right; the customer retains the switching option and resilience value. The asset provides value streams to both parties.

3.4 C&I business disruption (load curtailment)

a. **Business case**: Capex is relatively low (may involve some investment in controls, automation, or process modifications), but the opportunity cost of deployment is high – the site's primary output is interrupted. The business case may therefore rely on an upfront payment to justify the commitment, combined with strict caps on the number and duration of calls to limit disruption.

b. **Assessment**: Business disruption DF is well-suited to the tail-risk insurance role precisely because its high opportunity cost naturally aligns with infrequent, extreme-value events. It is the resource you call only when the spot price genuinely exceeds the value of the industrial output. This suggests a product structure with a lower premium and higher strike price (e.g., $1,200/MWh), called rarely and only during genuine extremes.

3.5 C&I inherent process flexibility (seller-initiated)

a. **Business case**: Capex may be relatively low (some investment in metering, automation, or scheduling systems). Many industrial processes have inherent flexibility (e.g., pumping, irrigation, crushing, cooling) that could be shifted in time without halting production. However, a flat average retail electricity price provides no incentive to exploit this flexibility. The business case relies on a dynamic incentive structure – such as a shared savings arrangement – where the retailer and customer share the gains of trade when the customer voluntarily curtails during periods where the spot price exceeds the contract price.

b. **Assessment**: Inherent process flexibility is a valuable source of aggregate demand reduction, and dynamic pricing or shared savings structures could unlock significant volumes. However, because the curtailment is seller-initiated and opportunistic, it is not as valuable to the buyer as a tail risk management tool. The buyer may be reluctant to rely on it to manage specific, targeted portfolio risks because they cannot control the timing or certainty of the response. It lacks the **firmness** that callable products provide – there is no guarantee that the curtailment will materialise when the buyer most needs it. It complements, but does not substitute for, firm callable products.