8 February 2018

Equal access project

Assessing the effectiveness of the current equal access arrangements

2nd Meeting

Innovation and Participation Advisory Group (IPAG)

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Glossary of terms

- **ABAA** - Accounting based allocation approach is a cost allocation methodology that the Commerce Commission applies
- **Ancillary services** – Services that the system operator purchases from 3rd parties to ensure that the power system is operated securely
- **CAPEX** - Capital expenditure (cost)
- **Customised Price Quality Path** – Under the Commerce Act 1986 distribution businesses can apply to become subject to a Customised Price Quality Path if justified special circumstances arise
- **EDB** – Electricity Distribution Business, also referred as a distributor or a distribution network business
- **Electricity Corporation New Zealand** – A state-owned enterprise formed to give effect to industry reforms that started in the late 1980s
- **ELS** - electricity lines service is defined, and declared regulated, in the Commerce Act 1986
- **GXP** - Grid exit point, for example the physical point where a distributor connects to the transmission network
- **HHI** – Herfindahl-Hirschman Index is a measure of market concentration
- **IM** - Input methodology that the Commerce Commission uses to regulate electricity line services
- **Information disclosure –** A requirement imposed on all EDBs in New Zealand to publish certain financial and non-financial information for regulation purposes
- **OPEX** - Operating expenditure (cost)
- **OVABAA** - optional variation to the accounting based allocation approach is a cost allocation methodology that the Commerce Commission applies
- **POS** - Point of supply
- **PQR** - Price-quality regulation in these slides refers to the Commission's building block approach to regulating the overall prices that certain EDBs can charge to its customers
- **RAB** - Regulated asset base. Reflects the capital expenditure value attributed to the supply of the regulated electricity line services
- **Ripple control** – A receiver that allows controlling load at a consumer's premises, for example, through turning on/off a water storage heater.
- **SAIDI** - system average interruption duration index is a measure that the Commerce Commission uses to regulate the quality of electricity line services
- **SAIFI** - system average interruption frequency index is a measure that the Commerce Commission uses to regulate the quality of electricity line services
- **Spot electricity market** – This is the electricity market where electricity is actually traded in real-time (it is a continuous time market)
- **System operator –** Is responsible for running the power system through coordinating generation and demand in real time
- **WACC** - weighted average cost of capital

Purpose of today’s meeting

- Report back on the three actions from the previous meeting
- Decide on focus and approach for the project. This will then be documented in a project plan

Three actions from last meeting

Action #	Action	To be completed by	Date for completion
1.4	Provide a description of the operation of the existing access framework in basic terms	Secretariat	By next meeting
1.5	Provide a preliminary list of indicators of effectiveness for the access framework, including descriptions of how to develop these indicators, and any statistics that may help establish if there are any issues with the existing access framework, where available	Secretariat	By next meeting
1.6	Provide further information on how best to involve external stakeholders in any discussions about whether there are potential “gaps” in the existing framework, and where if so	Secretariat	By next meeting

Structure for today's meeting

Session 1

- Introduction to current equal access arrangements for transmission and distribution networks
- Effectiveness of current equal access arrangements against policy objectives it was designed to achieve
- Technology and innovation changes that might affect the effectiveness of the current equal access arrangements

Session 2

- The Commerce Commission will introduce how it regulates distribution networks with an emphasis on its treatment of new technologies relevant to the current equal access arrangements

Session 3

- Concerns raised in submissions to the enabling mass participation consultation regarding the effectiveness of current equal access arrangements given technology change and innovation
- How best to assess the effectiveness of current equal access arrangements given technology change and innovation

Session 1

Current equal access arrangements to transmission and distribution networks

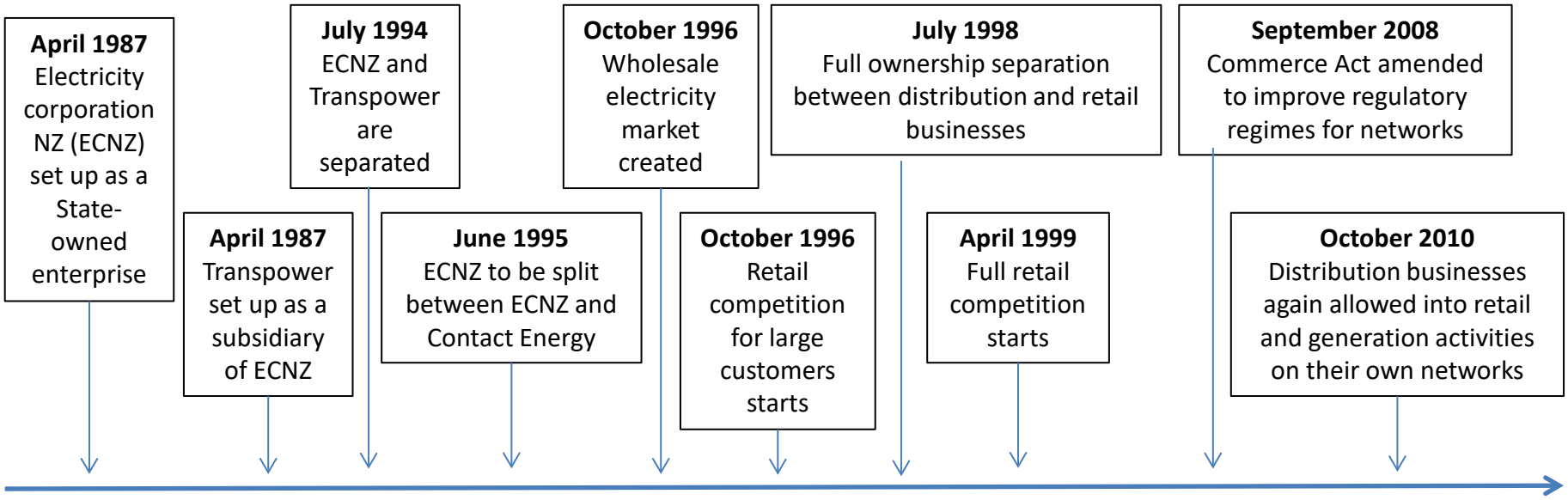
Equal access was integral to wider industry reform to increase productivity

Industry reform approach:

- Separated generation/transmission elements of the supply chain
- Created wholesale and retail electricity markets to promote access and competition
- Targeted regulation of monopoly network infrastructure businesses to control for monopoly power and promote efficient network investment and operation
- Regulated participation of monopoly network businesses in wholesale and retail market activities to promote a level playing field

Key equal access milestones

Industry reform timeline



Strong focus on supporting a level playing field in wholesale, retail and ancillary service markets

Policy objective	What has been done over time?
Control for the ability and incentives of transmission and distribution businesses to overcharge for access, invest inefficiently or provide poor quality service	**Monopoly network regulation** Introduction of targeted and proportional regulation using a mix of tools such as information disclosure requirements and price and quality controls
Control for the ability and incentives of transmission and distribution businesses to raise barriers and block competition to favour themselves if they also participate in the retail and wholesale markets, eg: • overcharging competitors for access to their physical network platforms to favour an affiliate • investing inappropriately in the network • cross-subsidising their wholesale or retail activities	**Access** Regulations introduced to regulate access to the transmission and distribution physical network platforms to allow parties to compete in wholesale and retail markets **Participation in competitive activities** Introduction of rules and oversight that govern how transmission and distribution businesses can participate in wholesale and retail markets
Improve the efficient operation of the wholesale market and transmission network to promote competition, efficiency, security and reliability of supply	• Creation of a spot electricity market • Creation of a **system operator role** to coordinate generation and demand in the spot market and conduct **ancillary service markets**

Current equal access arrangements have many moving parts

Legislation and regulations

- Electricity Industry Act 2010
- Commerce Act 1986
- Commerce Commission's Input methodologies
- Electricity Industry Participation Code
- State-Owned enterprise Act 1986

Wholesale/spot market

Retail market

Participation in competitive activities

Access

Participation in retail and wholesale/spot market activities

Access

Physical platform

Transmission

Distribution

Access

Monopoly regulation

System operator role

Operation of the physical platform

Participation in competitive activities

Access to ancillary service markets

Monopoly regulation

- No structured market mechanisms to procure network support
- Network support generally self-supplied

A relevant difference between transmission and distribution arrangements

Legislation and regulations

- Electricity Industry Act 2010
- Commerce Act 1986
- Commerce Commission's Input methodologies
- Electricity Industry Participation Code
- State-Owned enterprise Act 1986

Physical platform

Monopoly regulation

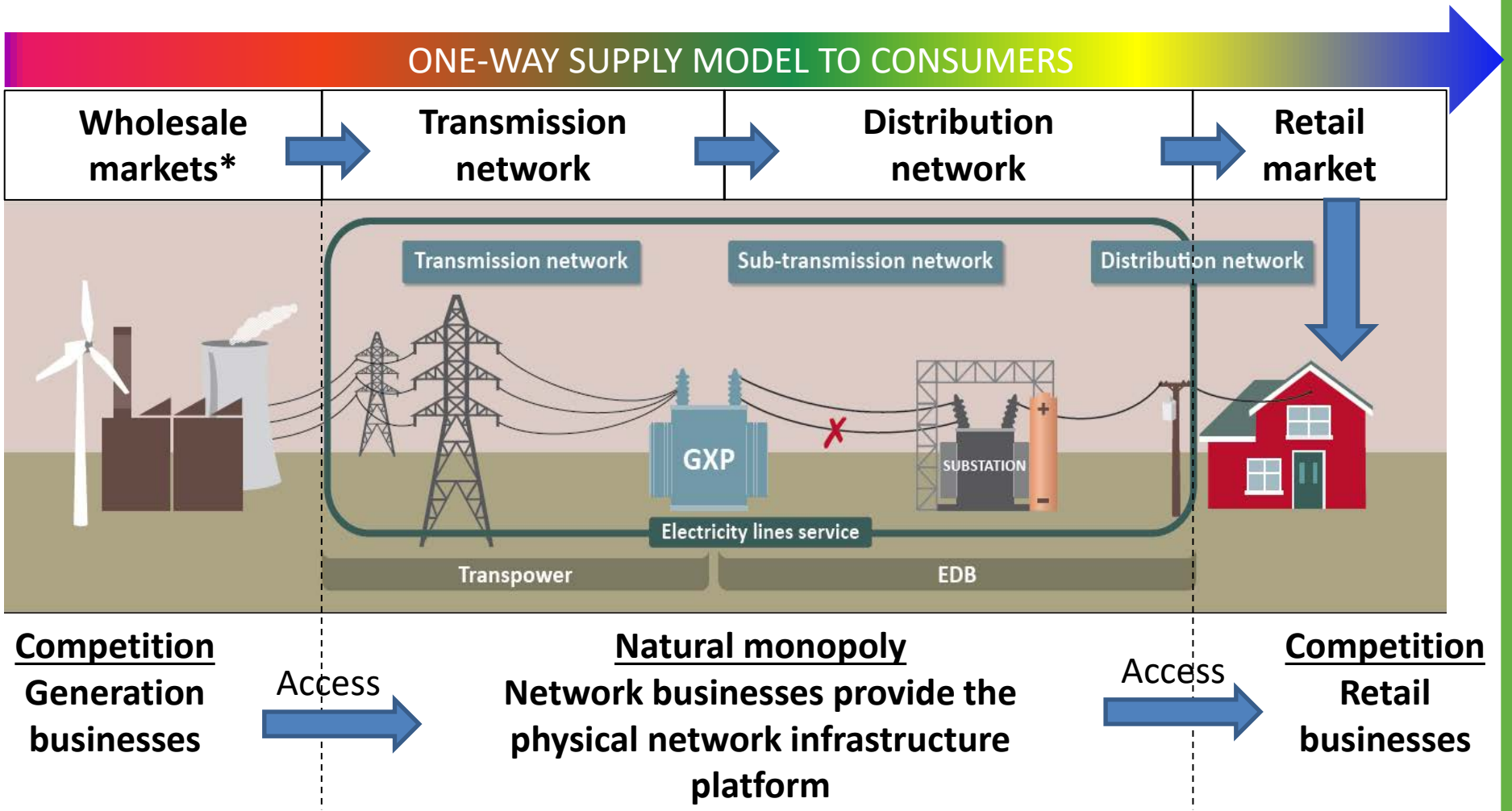
Operation of the physical platform

- No system operator role
- Not many opportunities to use market mechanisms as at transmission level

Monopoly regulation

- No structured market mechanisms to procure network support
- Network support is generally self-supplied

Current equal access arrangements were also developed with the one-way supply model to consumers in mind



*Note: The secretariat thanks the Commerce Commission for allowing us to use their electricity supply chain infographic

Current equal access arrangements

Transmission

Current equal access arrangements to the transmission platform

Legislation and regulations

- Electricity Industry Act 2010
- Commerce Act 1986
- Commerce Commission's Input methodologies
- Electricity Industry Participation Code
- State-owned enterprise Act 1986

Wholesale/spot market

Participation in competitive activities

Access to compete

Physical platform

Access

Monopoly regulation

Operation of the physical platform

Current equal access arrangements to the transmission platform (1)

	What?	How?
Monopoly regulation	Transpower provides electricity line services which are regulated because there is little or no scope for competition (natural monopoly)	**Commerce Act 1986** • Transpower's electricity line services are declared regulated • Comply with information disclosure requirements • Subject to price and quality regulation • Transmission network investment is also subject to regulation (capital expenditure input methodology) **Part 12 of the Code** • Establishes the transmission network reliability standards

Current equal access arrangements to the transmission platform (2)

	What?	How?
Access to compete	• Access and connection is regulated for generators and large consumers such as distributors and large industrial consumers • Overall transmission price levels are indirectly regulated • Transmission pricing structures for transmission services are regulated	**Part 12 of the Code** • Obligation on Transpower and parties seeking to access the transmission network to enter into a transmission agreement • The Code spells out a benchmark agreement that works as a default transmission agreement • The Connection Code regulates the technical requirements for connection to the transmission network • Transmission pricing methodology (TPM) regulates the structure of transmission charges **Commerce Act 1986** • Price and quality regulation (revenue cap) which indirectly regulates overall price levels for transmission services

Current equal access arrangements to the transmission platform (3)

	What?	How?
Participation in competitive activities	• Transpower is a state-owned enterprise (SOE) • As a SOE, there is no explicit restriction to become involved in generation and demand response (or even retail) activities or businesses. But there are less explicit controls	**State-Owned Enterprises Act 1986** • Ministers to approve a Statement of corporate intent for becoming involved in generation, demand response or retail businesses **Commerce Act 1986** • Commerce Commission to approve investment in generation or demand response resources as an investment alternative to poles, wires and transformers • Related party regulations to ensure arm's length transactions

Current equal access arrangements to ancillary services markets

Legislation and regulations

- Electricity Industry Act 2010
- Commerce Act 1986
- Commerce Commission's Input methodologies
- Electricity Industry Participation Code
- State-owned enterprise Act 1986

Physical platform

System operator role

Monopoly Regulation

Operation of the physical platform

Participation in competitive activities

Access to ancillary services markets

Current equal access arrangements to ancillary services markets (1)

	What?	How?
Monopoly regulation	• Transpower as a system operator is a statutory monopoly • The system operator ensures that the system is maintained in a secure state in real time	**Electricity Industry Act 2010** • Transpower is established as the system operator • Code to regulate the system operator's functions and performance **Part 7 of the Code** • The Authority and system operator to engage in a service provider agreement that regulates functions, performance and capital expenditure approvals

Current equal access arrangements to ancillary services markets (2)

	What?	How?
Access to markets for network support	• The system operator runs a number of markets to buy ancillary services from 3rd parties (eg, the market for instantaneous reserve). These markets can be thought of as if they provide network support services to the system operator • Access determined through assessment of the ability to provide services, and an established procurement plan that allows choice to the system operator around market mechanisms to use to procure ancillary services	**Part 8 of the Code** • To participate in ancillary service markets parties first apply to become an ancillary service agent • A procurement plan sets out the processes the system operator must use to procure ancillary services • Procurement plan allows system operator to buy ancillary services from ancillary service agents • Procurement plan also allows the system operator to use spot (short term) market transactions or transactions based on longer term contracts

Current equal access arrangements to ancillary services markets (3)

	What?	How?
Participation in competitive activities	As applicable to Transpower in general (see slide 17)	

Current equal access arrangements to ancillary services markets (4)

	What?	How?
System operator role	Functional separation with Transpower between transmission owner and system operator roles. No corporate separation requirements (or beyond) apply	**Part 8 of the Code** • Establishes a policy statement that sets out a policy around how the system operator is ought to manage conflicts of interest in performing both the transmission owner and system operator roles

Current equal access arrangements

Distribution

Current equal access arrangements to the distribution platform

Legislation and regulations

- Electricity Industry Act 2010
- Commerce Act 1986
- Commerce Commission's Input methodologies
- Electricity Industry Participation Code
- ~~State-owned enterprise Act 1986~~

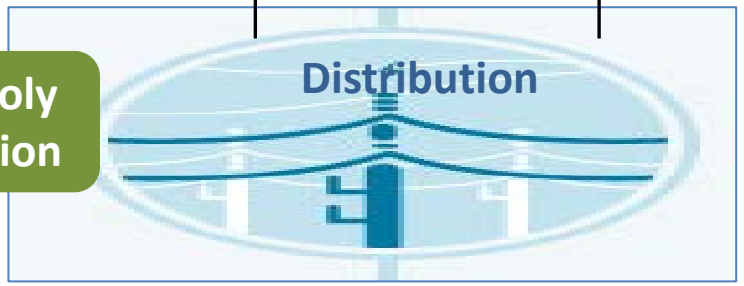
Wholesale/spot market

Retail market

Participation in competitive activities

Access to compete

Monopoly Regulation



Physical platform

Operation of the physical platform

Current equal access arrangements to the distribution platform (1)

	What?	How?
Monopoly regulation	• Distributors provide electricity line services which are regulated because there is little or no scope for competition (natural monopoly)	**Commerce Act 1986** • Line services declared regulated • All distributors regardless of ownership structure are subject to information disclosure requirements • Price-quality regulation is only applied to those distributors that are *not* consumer-owned

Current equal access arrangements to the distribution platform (2)

	What?	How?
Access to compete	• Some large consumers, embedded networks and aggregators negotiate their use, connection terms and other technical standards with the distributor • Retailers must negotiate a use-of-system agreement to access the distribution network • Distributed generation can use a process governed in the Code to apply and connect to the distribution network • Overall distribution price levels are indirectly regulated (price-cap) • There is no distribution pricing methodology to regulate distribution pricing structures	**Market facilitation measures** • Distributors can adopt voluntary distribution pricing principles to price their services to all users • Retailers and distributors are expected to use a model use-of-system agreement to negotiate their own use-of-system agreements **Part 12A of the Code** • Use-of-system agreements between distributors and retailers must be negotiated in good faith **Part 6 of the Code** • Regulated application process and default connection terms for distributed generation (includes regulated terms, pricing principles and maximum fees) **Commerce Act 1986** • Price and quality regulation which indirectly regulates overall price levels for distribution services via a price-cap (transitioning to a revenue-cap from 2020)

Current equal access arrangements to the distribution platform (3)

	What?	How?
Participation in competitive activities	• Legislation explicitly allows for different ways for distribution business to participate in generation and retail businesses or activities • Legislation and regulations also govern transactions between distribution businesses and its related parties, including any retail business they might be participating in	**Electricity Industry Act 2010** • Thresholds (own network only) apply before corporate separation and arm's length rules apply to distributors being involved in retail or generation businesses/activities • Thresholds on involvement in transmission connected generation activities also apply before ownership separation rules apply **Commerce Act 1986** • Cost allocation rules govern how common costs are allocated between the distribution business and any other regulated or unregulated activities or business a distributor might be participating in • Duty to not unduly deter distributors' investments in other markets or activities • Related party rules to ensure that transactions between the related party and the distributor are at arm's length

Current equal access arrangements for 3rd parties capable of providing network support services

Legislation and regulations

- Electricity Industry Act 2010
- Commerce Act 1986
- Commerce Commission's Input methodologies
- Electricity Industry Participation Code
- ~~State-owned enterprise Act 1986~~

Physical platform

Monopoly regulation

Operation of the physical platform

Monopoly regulation

- No structured market mechanisms to procure network support
- Network support is generally self-supplied

Current equal access arrangements for 3rd parties seeking to provide network support services (1)

	What?	How?
Monopoly regulation	• Monopoly regulation uses incentives to induce distributors to operate efficiently. These incentives govern how distributors' consider opportunities from capable 3rd party service providers (self-supply vs testing the market) to contribute to making the distribution network service more efficient	**Commerce Act 1986** • Information disclosure requirements applicable to all distributors regardless of their ownership structure to make transparent how distributors are procuring services from 3rd parties • Price quality regulation provides financial incentives to distributors to consider self-supply vs testing the market for capable 3rd party service providers. These financial incentives are only applied to those distributors that are *not* consumer owned

Current equal access arrangements for 3rd parties seeking to provide network support services (2)

	What?	How?
Access to compete	• No separate system operator to run network support service markets • No structured market mechanisms to procure network support services (at least, not as structured as the ancillary service markets that are operated at the transmission level) • Access for 3rd parties is dependent on distributors' incentives (commercial and regulatory) to go beyond considering efficient self-supply options and test the market for 3rd parties, or adopt more efficient pricing structures • Information disclosure governs how distributors' make opportunities and procurement processes for network support services transparent to 3rd parties	**Market facilitation measures** • Facilitating distributors transition to more efficient distribution pricing structures. These would provide information to 3rd parties about when and where investments deliver a network support service (eg, deferral of traditional network investment) **Commerce Act 1986** • Information disclosure requirements applicable to all distributors • Price quality regulation (financial incentives to self-supply vs testing the market) applicable to distributors that are *not* consumer owned • New related party arrangements introduce new information disclosure requirements to make more transparent opportunities and procurement processes when there are significant related party transactions

Current equal access arrangements for 3rd parties seeking to provide network support services (3)

	What?	How?
Participation in network support service markets	• Distributors are allowed to self-supply to provide network support services on their own network (ie, there is vertical integration). This can include owning and controlling assets that are located at consumers' premises, for example, ripple control systems that provide demand response services • Distributors are also allowed to participate in different types of businesses in a very broad way, and this can include setting up affiliates capable of supplying network support services to the distributor (eg, vegetation management or voltage support)	**Electricity Industry Act 2010** • No restrictions to directly own generation assets on their own networks that provide network support services but corporate separation and arm's length rules apply if certain thresholds are met • No explicit restriction to be involved in businesses that provide network support services **Commerce Act 1986** • Distributors are allowed to own assets that provide network support services even if these are located at consumers' premises, including assets that provide demand response services • Related party regulations would apply in the case of a distributor buying network support services from an affiliate • Duty to not unduly deter investments in other markets

Any questions?

Effectiveness of current equal access arrangements

Approach to assessing effectiveness

- Assess effectiveness of equal access arrangements against set policy objectives
- Apply the ‘structure-conduct-performance’ framework to make the assessment
- Look at some readily available indicators that provide a useful indication of effectiveness

Assess effectiveness against set policy objectives

Understanding effectiveness of current equal access arrangements requires a consideration of the policy objectives that these arrangements were originally designed to achieve: **support a level playing field in the wholesale, retail and ancillary service markets**

Applying the ‘structure-conduct-performance’ approach

- Effective equal access arrangements are compatible with observing new and existing businesses entering the wholesale, retail and ancillary service markets over time in a way that promotes competition in these markets

- New entry can produce changes to the structure of a market that promote competition because new entrants require all businesses to compete harder to be successful (conduct) which improves overall market performance (eg, prices are more closely related to cost, new products, more innovation and quality of products and services)

- In applying the ‘structure-conduct-performance’ approach to assess the effectiveness of the equal access arrangements we have looked at whether **new entry has changed the market structure** in a way that is consistent with promoting competition in the wholesale, retail and ancillary service markets

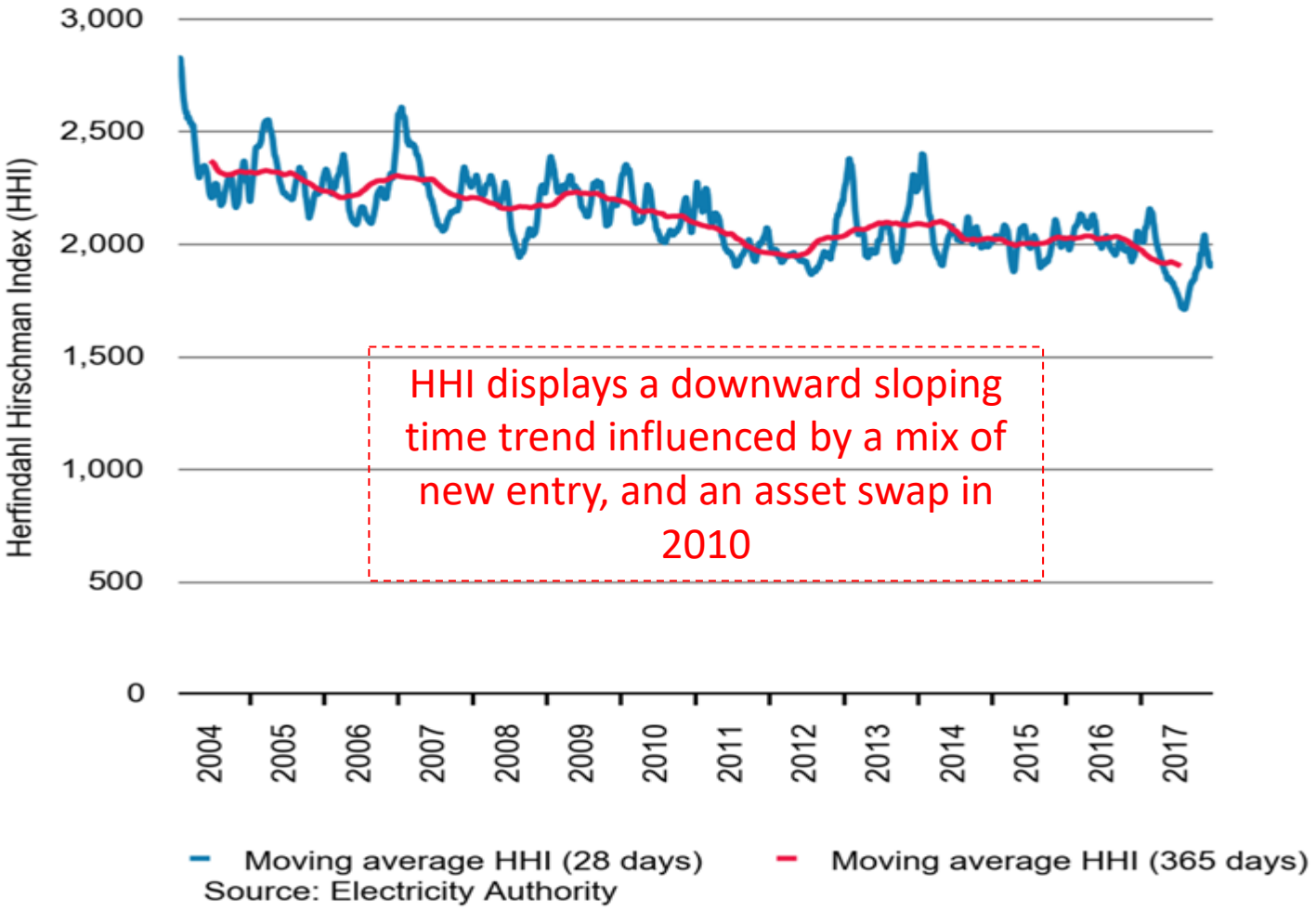
Measuring market structure

- Market structure can be measured in different ways. For this presentation we have used measures for which we had sufficient time series data and that were readily available from our website or from the Authority's market monitoring team
- We have looked at:
  - **Market shares**: Provide an indication of whether a particular business, or group of businesses, have a position of market dominance
  - **Herfindahl-Hirschman Index (HHI):** Provides a robust measure of overall market concentration. A more concentrated market is compatible with situations where a small number of businesses can unilaterally raise prices without fear of losing businesses to a competitor. (HHI = 10,000 the market is a monopoly; HHI = 0 the market is perfectly competitive)
- Market structure changes can be influenced by a range of other factors and policies other than equal access arrangements
- But provide a good sense check on whether existing equal access are effective by looking at whether entry is possible in a way that competition is promoted
- There are many ancillary service markets. We only had readily available data for the instantaneous reserve market

Key market structure indicators (wholesale, retail and ancillary service markets)

New entrants have played a role in improving the market structure of the spot market

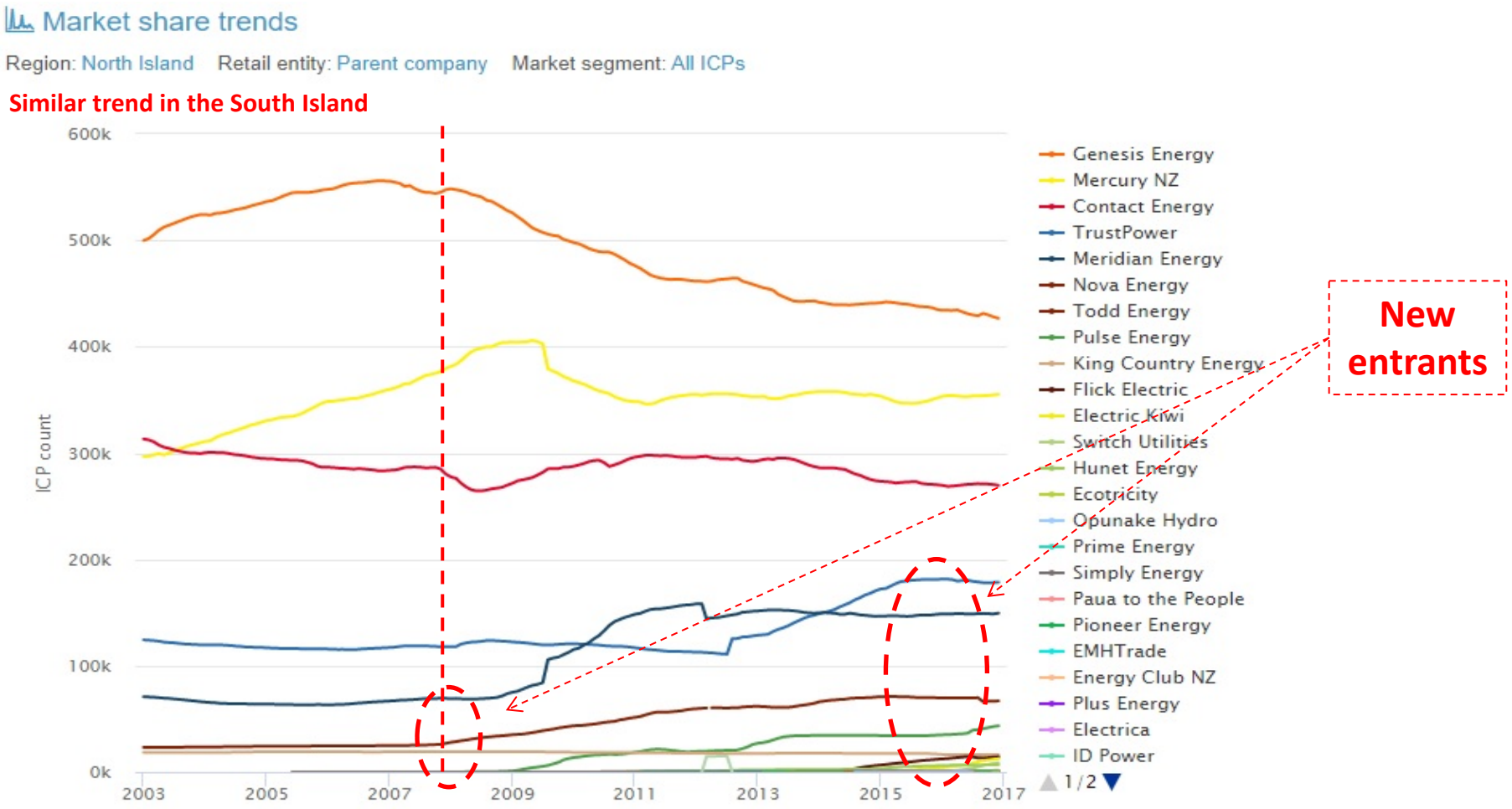
Market concentration time trend for the spot market since 2002



Source: Electricity Authority

New entrants in the retail market have grown market share since 2008

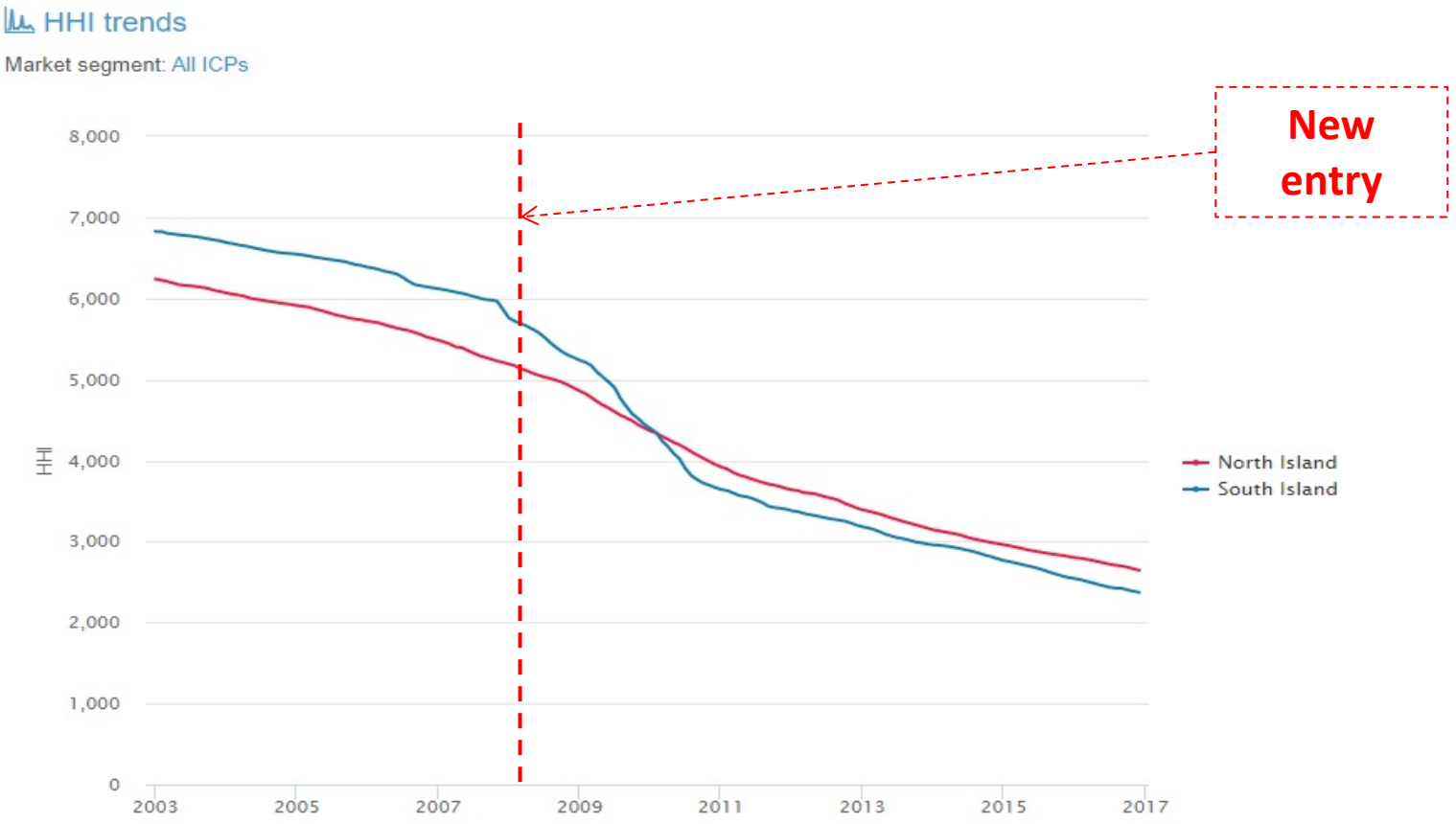
Market share time trend for the retail market since 2002



Source: [The Electricity Authority's market information website]

New entry has also played a role in improving the market structure in the retail market

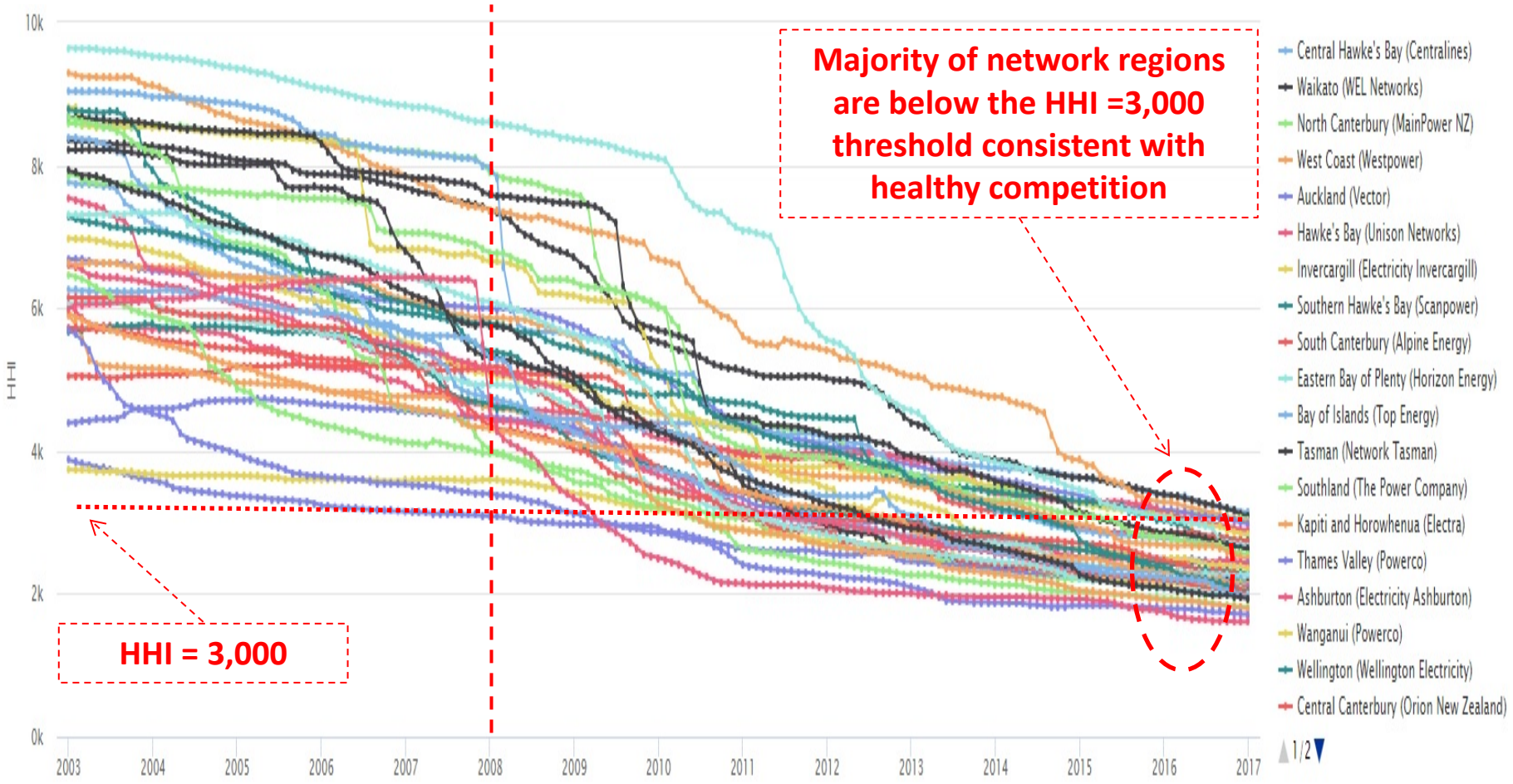
North and South island market concentration trends since 2003



Source: [The Electricity Authority's market information website]

Retail market structures across all distribution networks have become significantly competitive since new entry started to grow around 2008

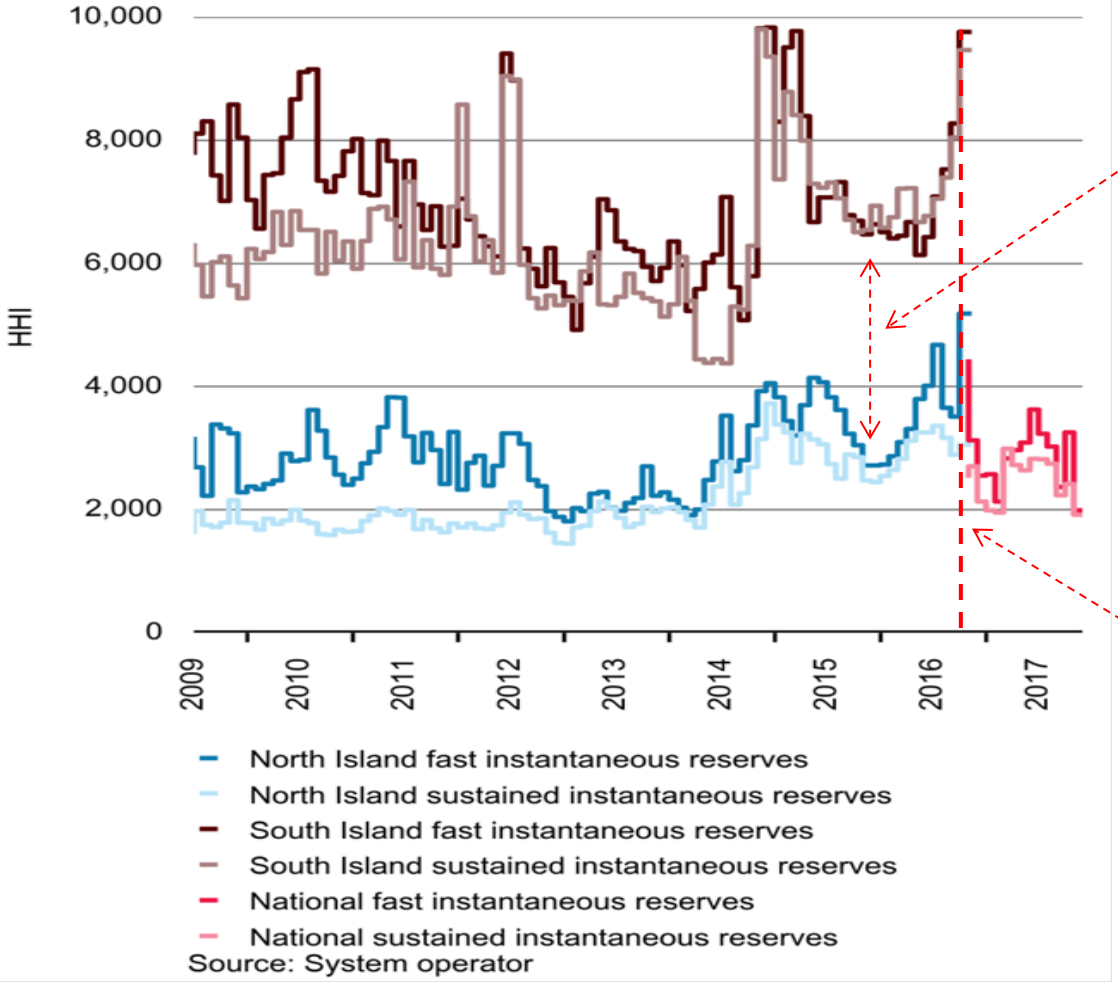
HHI retail market time trends per distribution network region since 2003



Source: [The Electricity Authority's market information website]

Ancillary services – Market for instantaneous reserve

HHI for the North and South Island in the market for instantaneous reserve for transmission network support



Example of issues to consider when opening markets to competition

But, link upgrade between North and South Islands created a national market and a more competitive market structure for instantaneous reserve

Source: The Electricity Authority's calculations using system operator's data

Conclusions*
(prima facie)

- **Evidence shows that new entry has changed wholesale and retail market structures over time producing more competitive market structures**

- **This suggests that existing equal access arrangements have been reasonably effective at delivering the policy objectives that they were originally designed to achieve***

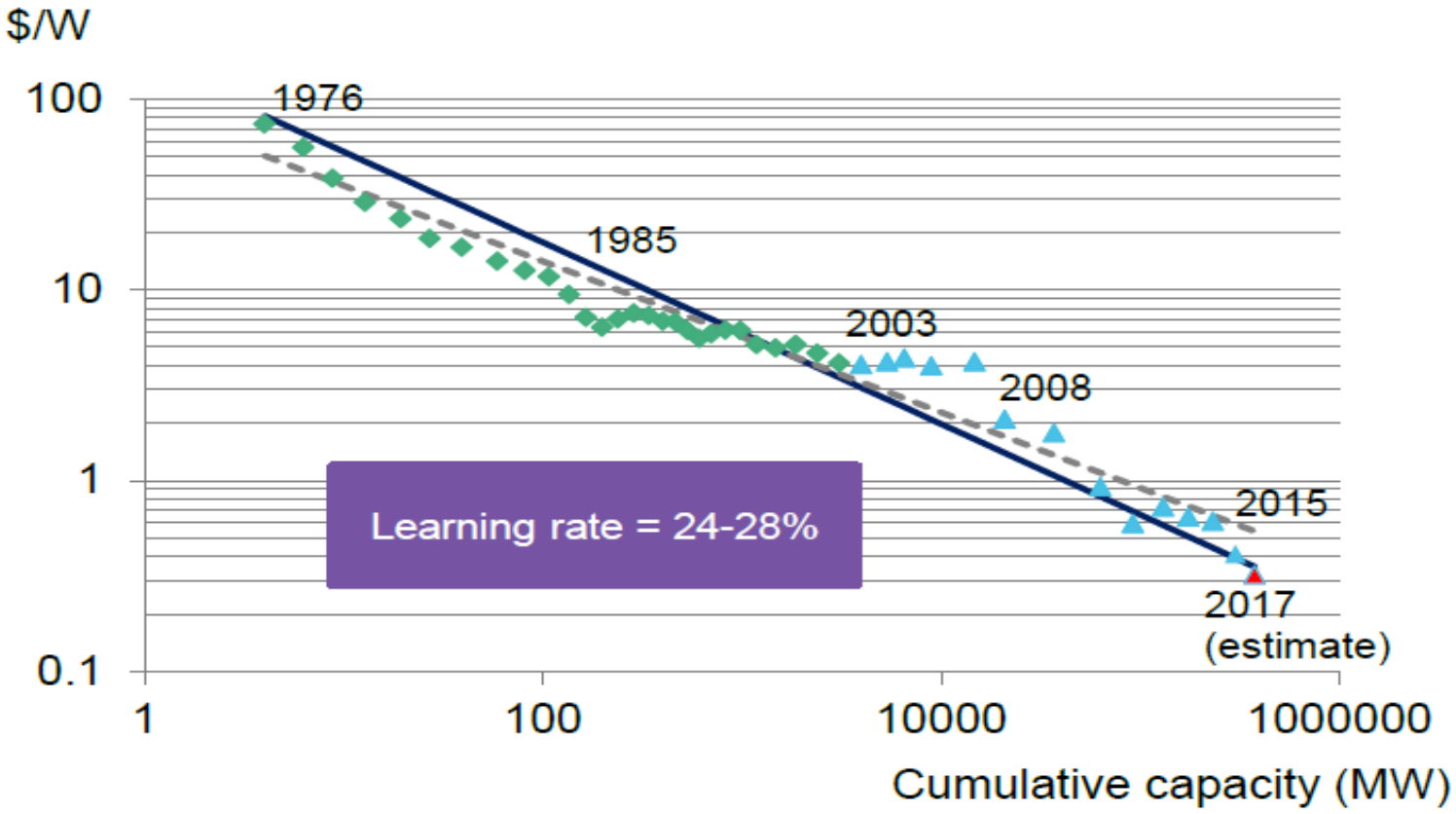
*Lack of readily data prevents extending these conclusions to ancillary service markets

Questions?

Technology and innovation changes that might affect the effectiveness of equal access arrangements

Sharp decrease in costs of new technologies

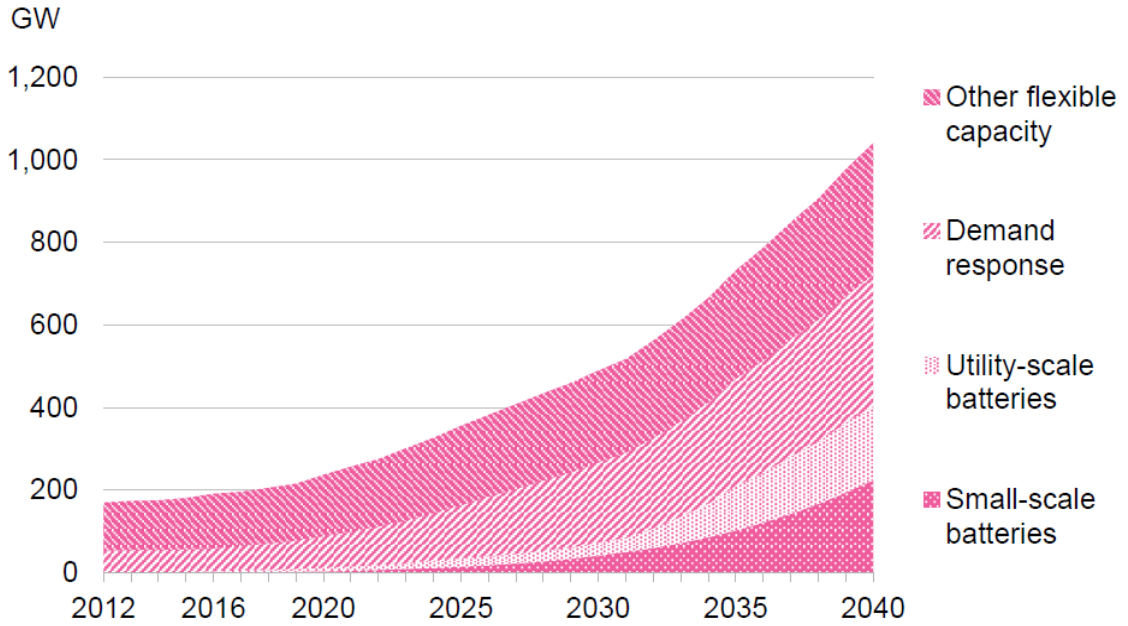
Unit costs for solar PV technology



Source: Bloomberg New Energy Finance

New, cheaper and faster ways to balance supply and demand are already here

Demand response and batteries meet peak and balance the grid

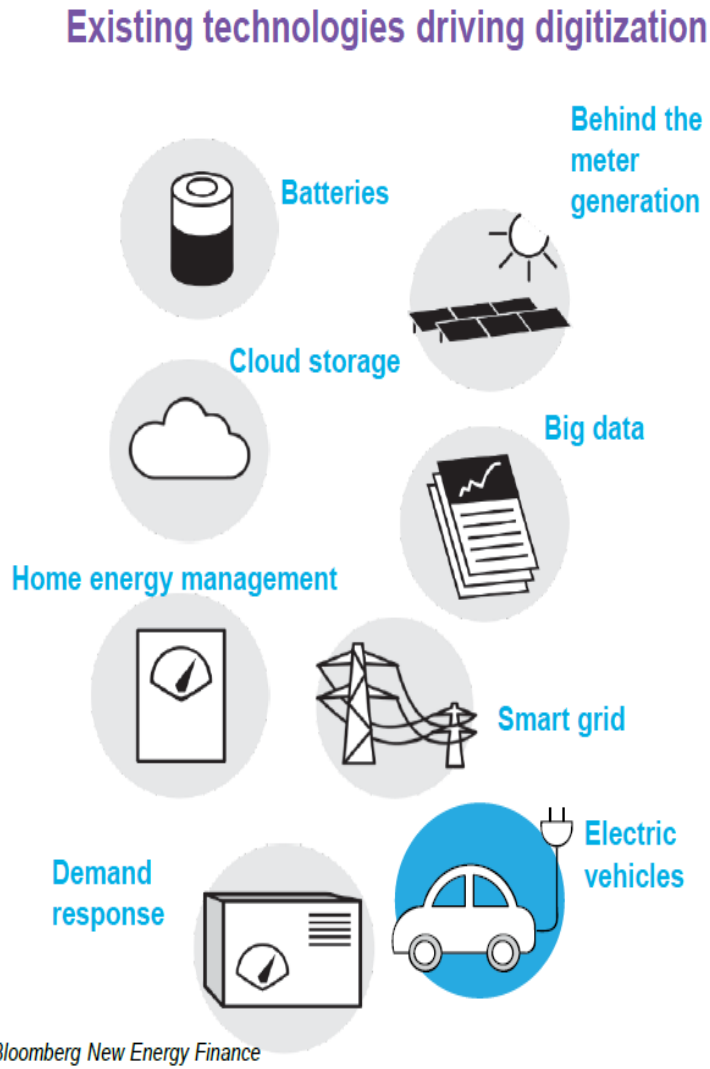


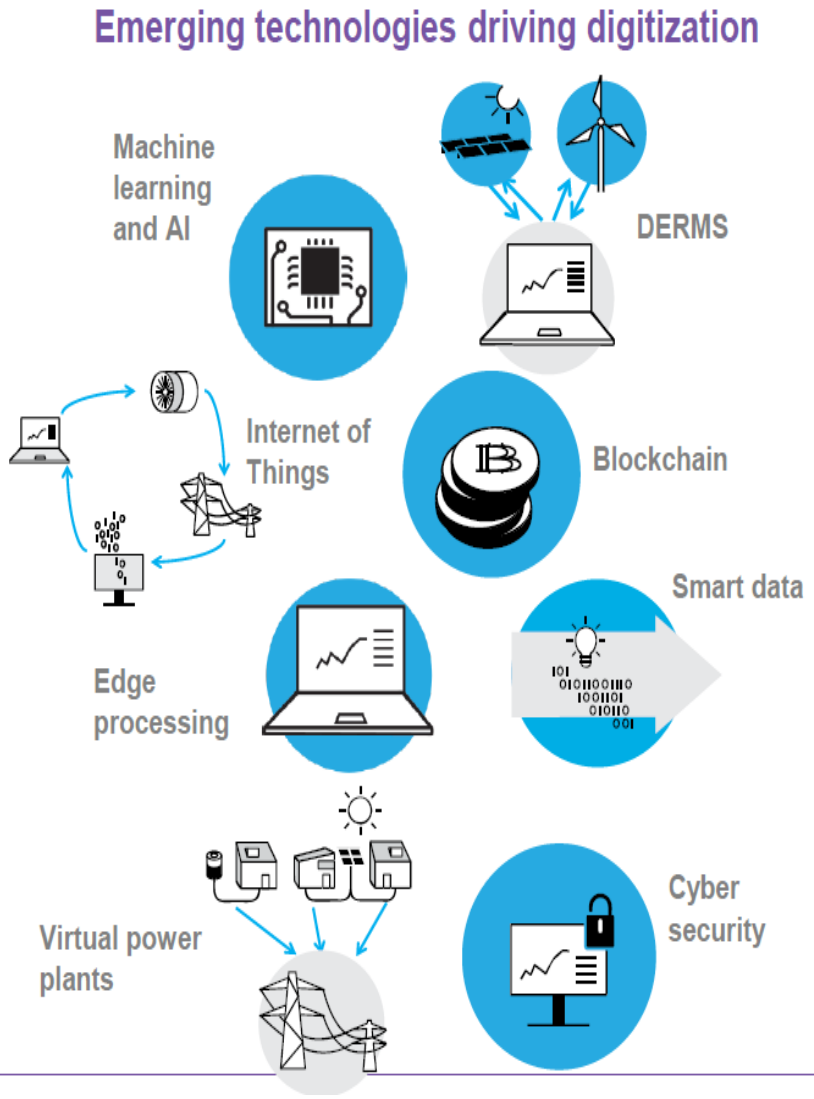
Top 5 markets in 2040	
China	343GW
U.S.	200GW
India	127GW
Japan	62GW
Germany	30GW

Source: Bloomberg New Energy Finance

Bloomberg New Energy Finance

Technology is creating more interconnection between businesses and consumers

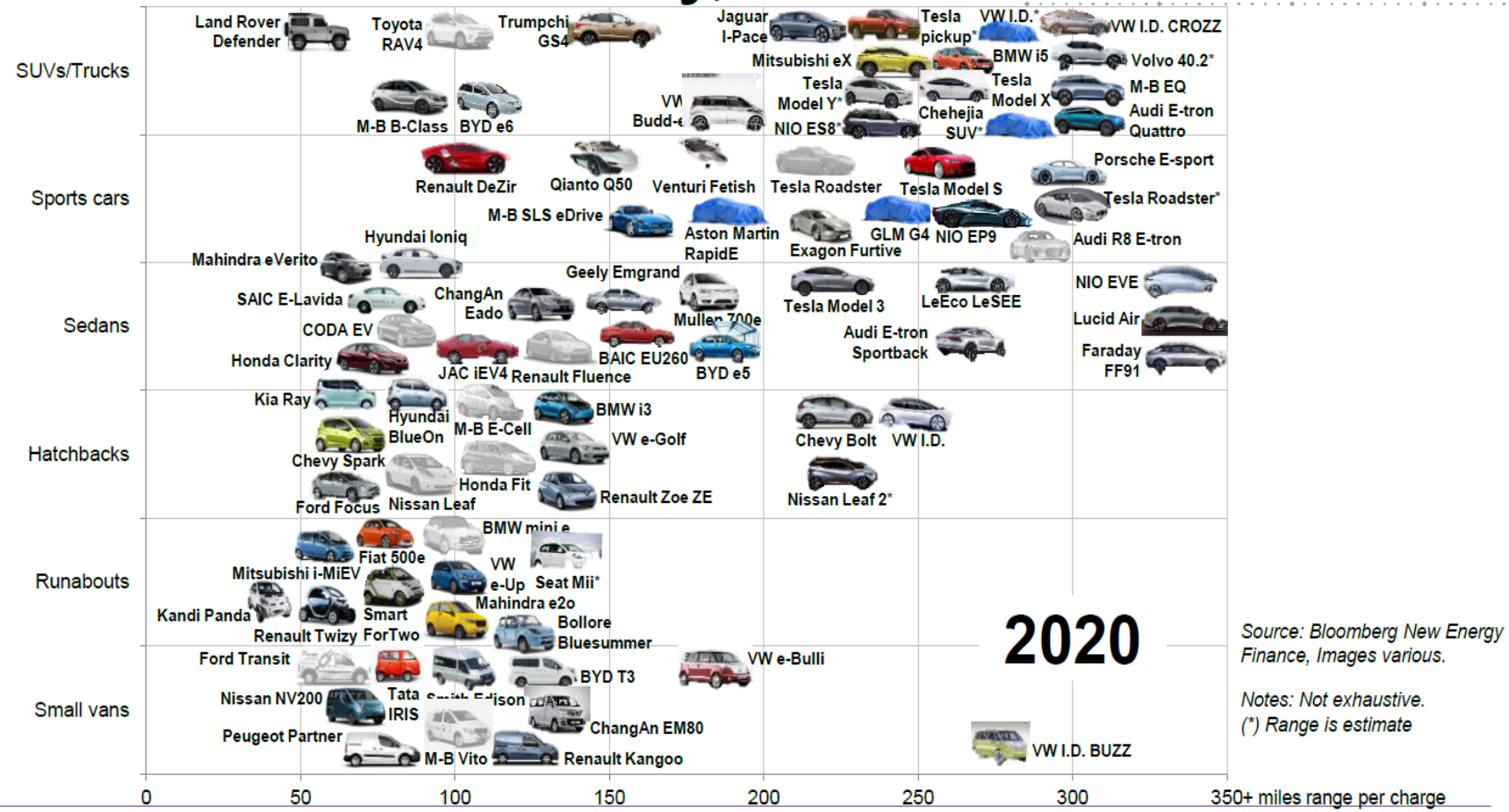




Source: Bloomberg New Energy Finance

Predicted take-off of electric vehicles

BEV model availability, 2008-20



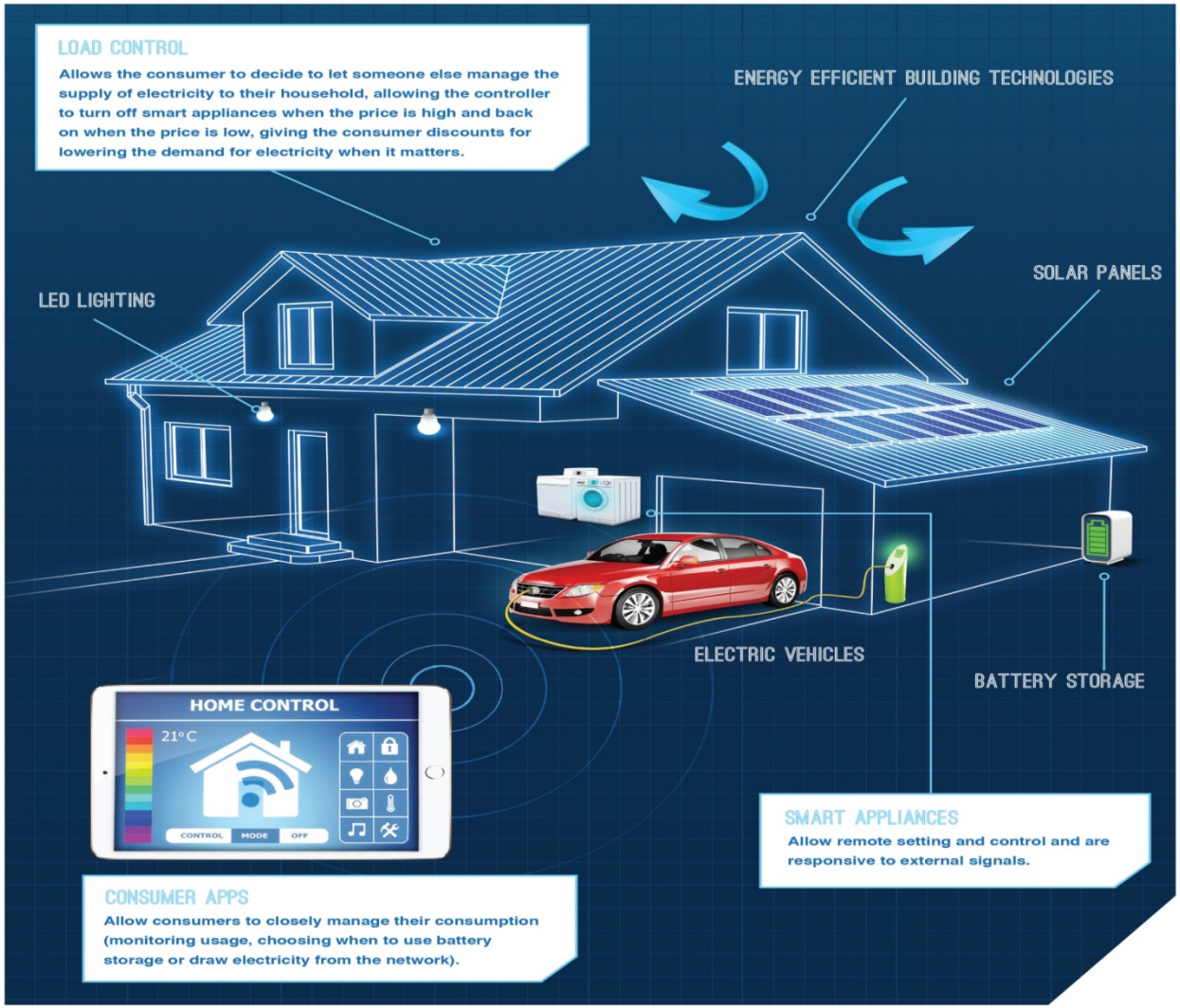
Source: Bloomberg New Energy Finance, Images various.

Notes: Not exhaustive.
(*) Range is estimate

Bloomberg New Energy Finance

Consumers' role and preferences are changing fast

More and new opportunities to participate in markets and manage energy needs

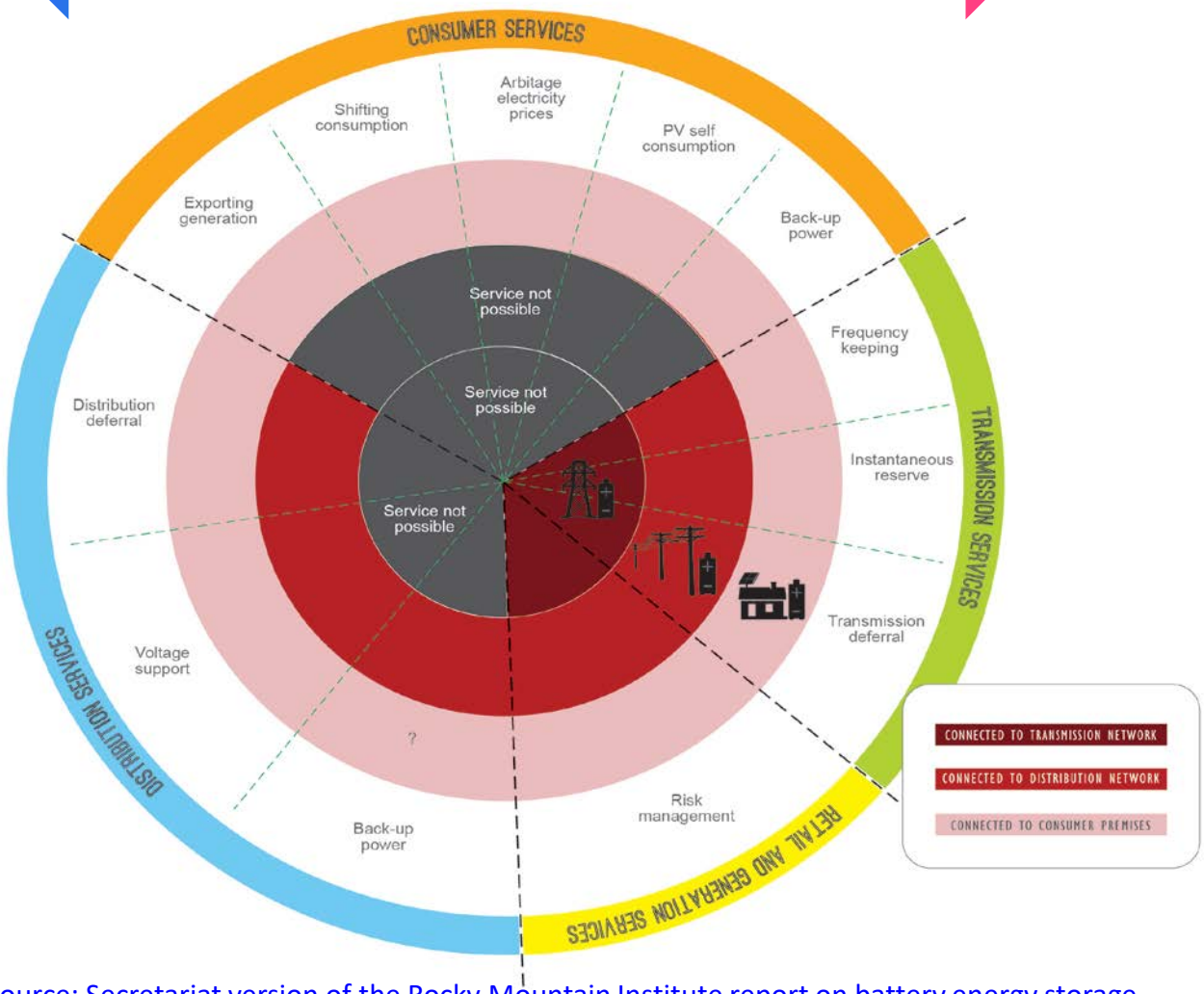


Key drivers

- New dynamic (time and location) network tariffs
- New innovative ways of doing business
- New communication technologies
- New control and optimisation technologies
- Home energy management systems
- Electric vehicles
- Batteries and other storage technologies
- Solar panels

Two-way rather than a one-way direction of supply model

Two-way direction of supply model



Source: Secretariat version of the Rocky Mountain Institute report on battery energy storage

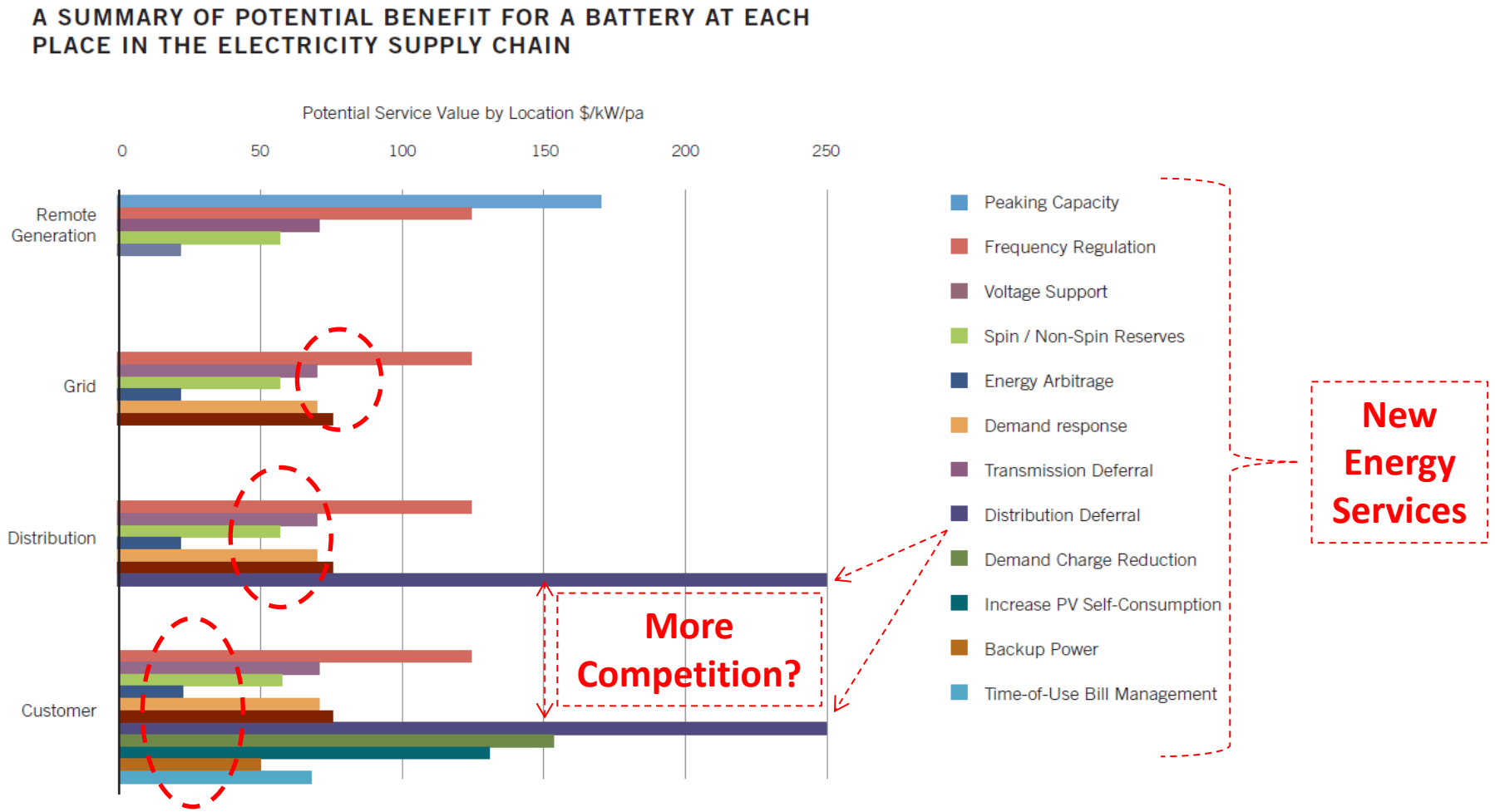
NZ CONTEXT

Transpower 's battery storage report

"Some specific commercial or industrial end-consumer battery applications are economic now" *(page 2)*

"*Batteries offer greater value when they **are located closer to the end consumer**, where there is the potential to provide a range of services both for the owner directly, and upstream to the whole network*" (page 2)

Potential implications for current equal access arrangements



Source: [Transpower's battery storage report, page 10]

What do IPAG members think are key technology and innovation changes that could affect the effectiveness of current equal access arrangements?

Session 2

Commerce Commission's current regulation of distribution networks

COMMERCE COMMISSION NEW ZEALAND
Te Komihana Tauhokohoko

Our economic regulation of monopoly electricity lines services - selected topics

IPAG meeting

8 February 2018

Overview

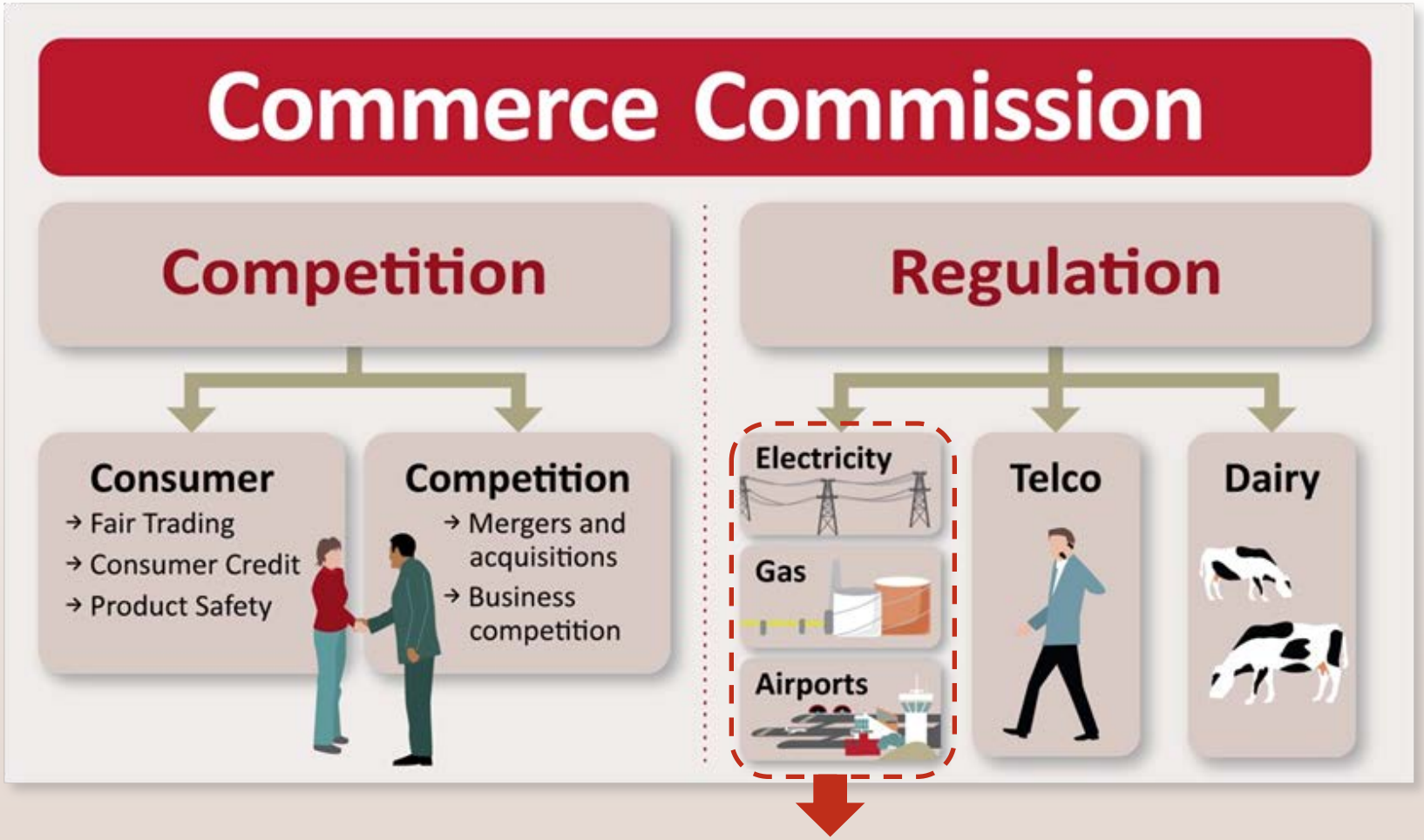
- Regulation of electricity lines services - an overview
- Treatment of emerging technologies - selected scenarios
- Related parties rules
- Implications for open access - conclusion
- Annex - related parties rules scenarios

Please note: This presentation provides a high level overview of the regulatory regime of electricity distribution businesses, but is not a complete description in scope or detail. It focuses on certain aspects of the regime which we think IPAG may find relevant.

COMMERCE COMMISSION
NEW ZEALAND
Te Komihana Tauhokohoko

Regulation of electricity lines services
An overview

What we do



"Markets where there is little or no competition, and little or no likelihood of a substantial increase in competition"

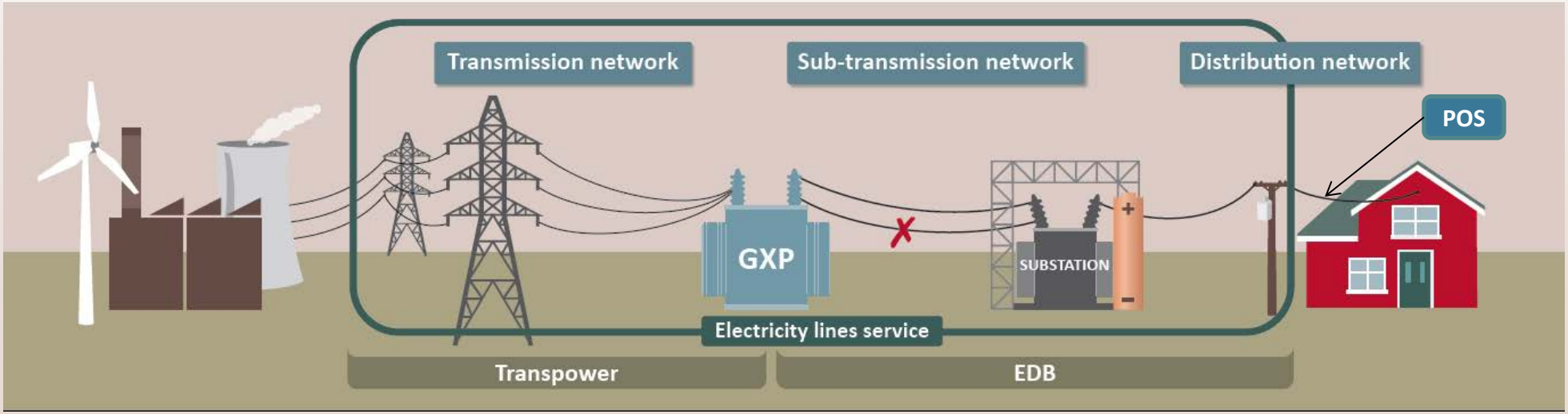
Purpose of Part 4 of the Commerce Act

To promote the **long-term benefit of consumers** [of electricity lines services] by **promoting outcomes that are consistent with outcomes produced in** [workably] **competitive markets** such that suppliers of regulated goods or services:

- have **incentives** to **innovate** and **invest**
- have **incentives** to improve **efficiency** and provide services at a **quality** that reflects consumer demands
- share efficiency gains with consumers, including through **lower prices**
- are limited in their ability to extract **excessive profits**

What we regulate

- Electricity lines services (ELS) declared to be regulated in section 54E of the Commerce Act
- ELS defined in section 54C as “conveyance of electricity by line” to the point of supply

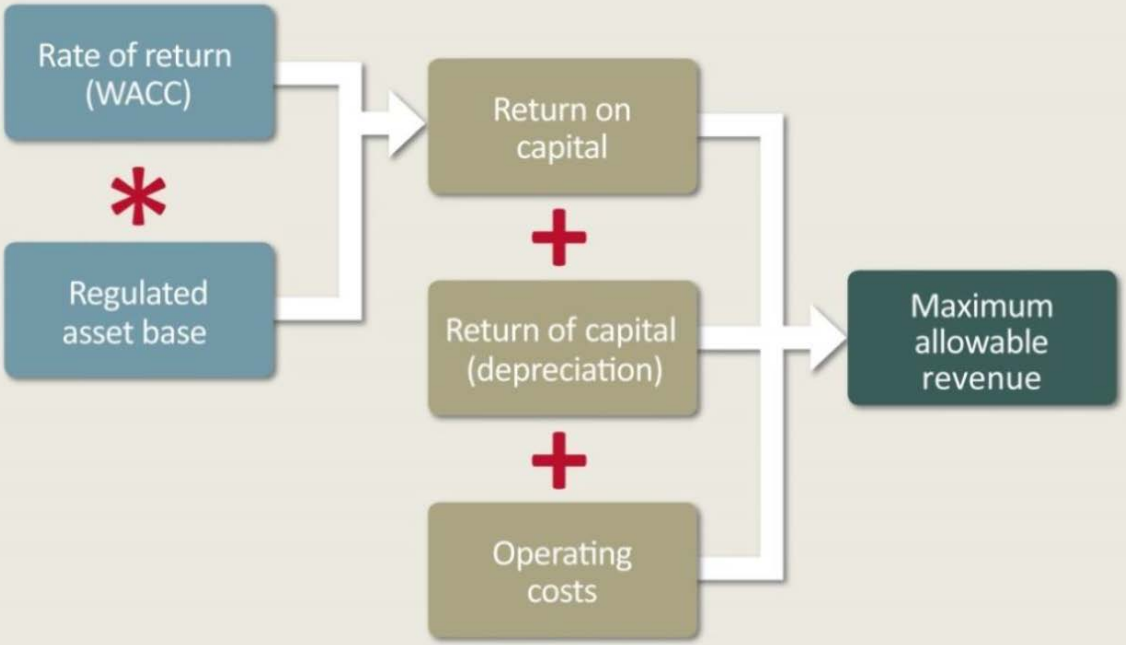


Notes: GXP = grid exit point; POS = point of supply

How we regulate

- We apply *information disclosure regulation* to all EDBs
- We also apply *price-quality regulation* (PQR) to non-exempt EDBs (ie those that are large or not consumer-owned)
- We determine maximum allowable revenue using the 'building blocks' approach
- We set quality standards based on SAIDI and SAIFI

Simplified building blocks diagram



Note: this simplified diagram excludes components that are not central to the purpose of this presentation

Notes: SAIDI = system average interruption duration index; SAIFI = system average interruption frequency index

There are 29 EDBs that provide ELS across NZ

- 17 EDBs subject to both price-quality regulation and information disclosure regulation
- 12 consumer-owned EDBs subject to information disclosure regulation only

Information disclosure regulation

"*sunlight is said to be the best of disinfectants*" – Brandeis

- The idea behind information disclosure (ID) regulation is that it influences suppliers' behaviour by making their performance in supplying regulated services transparent
- The purpose of ID regulation is to *"ensure that sufficient information is readily available to interested persons to assess whether the purpose of this Part is being met"* - section 53A
- Includes financial and non-financial information
- ID is supplemented by summary and analysis of the information
- Scope: all 29 EDBs, Transpower, gas pipeline businesses and Auckland, Wellington and Christchurch airports

How we regulate non-exempt EDBs

- For PQR, regulate **prices (revenues)** and **quality** of ELS – we only consider costs/assets required to supply ELS
- We set a maximum weighted average *price* path for 5 years (*revenue* path from 2020) for providing ELS
- We consider relevant costs in setting maximum prices (revenues)
- Regulated maximum revenues recover:
  - certain *types* and *proportion* of costs (capex, opex, pass-through costs etc)
  - financial incentives (rewards/penalties)
- Input Methodologies (IMs) set what *types* of costs may be considered and in what *proportion*
- Determinations set maximum revenues, which incorporate our decision on the *level of forecast* costs to allow

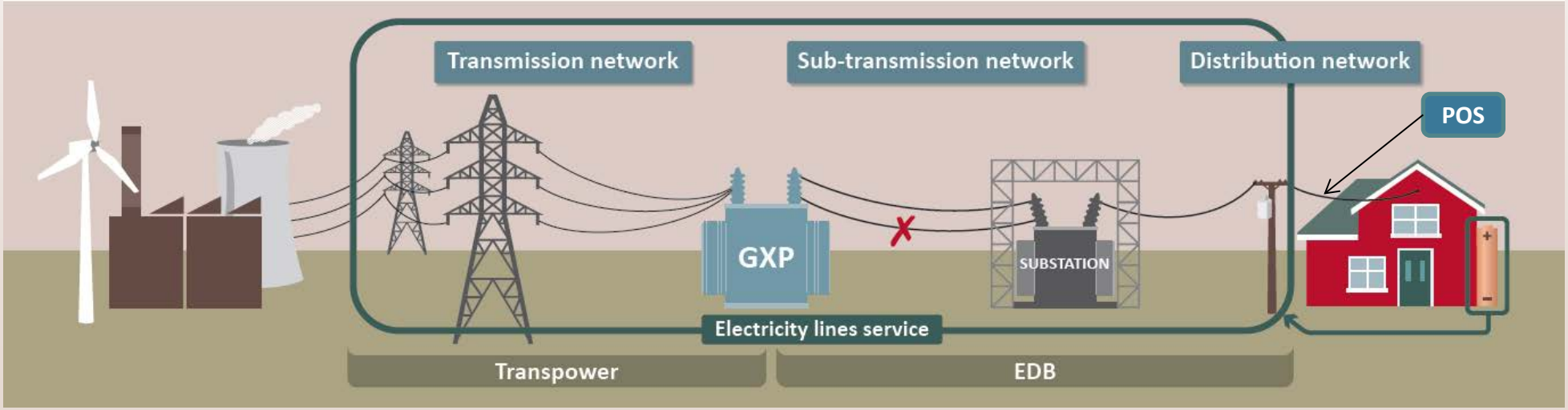
What *types* of costs can be recovered through regulated revenue?

- Asset must be ‘used’ (in whole or in part) to provide ELS in order for the capital cost to be recovered through regulated revenue (via inclusion to the regulated asset base (RAB))
- Operating costs must be ‘attributable’ (in whole or in part) to the provision of ELS
- Limited guidance in IMs (load control relays are one exception) on what specific assets may go into the (RAB)
- Two cost allocation approaches
- No revenue allocation rules
- Capital contributions defined

What costs can be considered within the scope of the regulated service?

Costs or assets beyond the point of supply or not physically sited within the grid may *fall within the scope of (*cf be part of) the regulated service to the extent attributable or used to provide ELS

- Eg costs of providing network support services such as load control using relays in hot water cylinders, batteries behind the meter or vegetation management



Notes: GXP = grid exit point; POS = point of supply

What *proportion* of costs can be recovered through regulated revenue?

- Cost allocation IM requires allocation of a proportion of capex and opex between different types of regulated services and between regulated and unregulated services that an EDB may provide
- Law requires cost allocation IMs to not unduly deter investment by regulated suppliers in supplying other regulated/unregulated services
- Costs directly attributable to ELS → allocated to ELS
- Costs non-directly attributable to ELS → allocated using *accounting based allocation approach (ABAA)*
  - Use causal cost allocators (or proxy allocators where causal ones not available). Eg how use of asset is split between regulated/unregulated service
- Option to allocate non-directly attributable costs using *optional variation* to ABAA if investment would otherwise be deterred

Incentives on expenditure

- Once price or revenue path is set, expenditure* results in lower profit → incentive to reduce expenditure (improve efficiency)
  - We can vary the incentive strength to economise on opex and capex
  - Currently EDBs retain 33% and 15% of every opex and capex dollar saved respectively
- Resulting lower expenditure translate into a lower price or revenue path in subsequent regulatory period → sharing of efficiency gains with consumers through lower prices
- Incentives to invest in the provision of ELS is maintained through the principle of ex-ante financial capital maintenance, including
  - Setting an appropriate rate of return on capital
  - Including (the relevant proportion of) assets into the RAB whereby we provide a return on and of capital until fully depreciated, even if asset becomes stranded

* This excludes pass through and recoverable costs that are deemed outside EDBs' control

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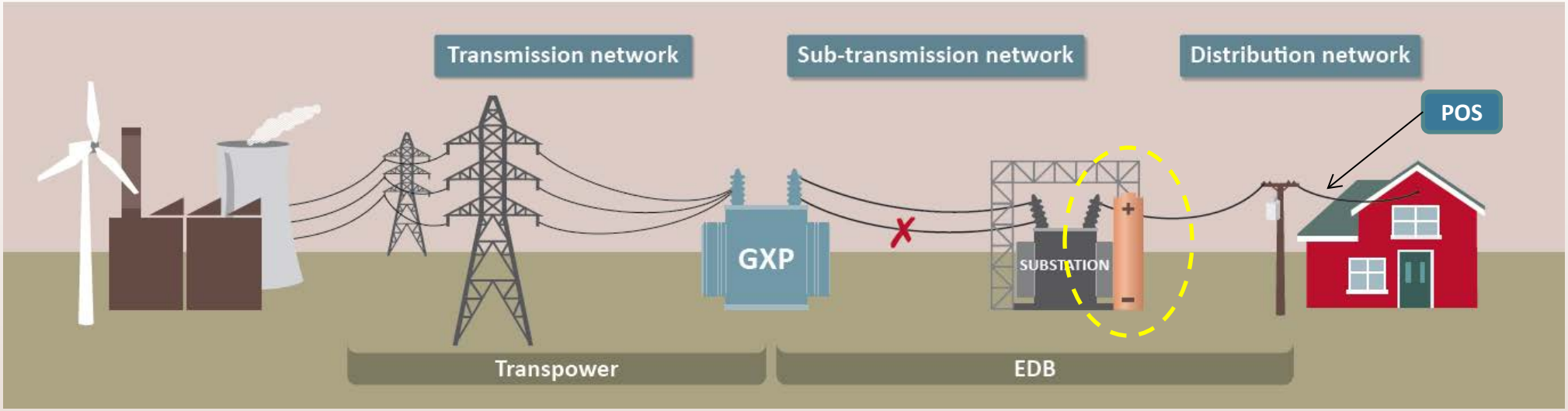
Treatment of emerging technologies
Selected scenarios

Distribution network battery

EDB buys and installs battery in its network (self supply) as an alternative to traditional network upgrades. Battery is metered



Location	Ownership	Control	Use	Revenues	Capex	Opex
EDB network	EDB	EDB	- Defer capex - Improve reliability - Reduce transmission charges - Unregulated service	*Received by EDB* - Selling energy at discharge - Quality incentive - Unregulated service	*Incurred by EDB* Battery	*Incurred by EDB* Wholesale energy purchases

Notes: GXP = grid exit point; POS = point of supply

Distribution network battery

Regulatory treatment of costs and revenues

- Treatment of capital costs

Battery *used to provide* both regulated and unregulated services → cost allocation IM must be applied to allocate capital costs → ACAM if threshold not reached; ABAA otherwise; OVABAA option if investment unduly deterred

- Treatment of operating costs

Operating costs are *attributable to* both regulated and unregulated service → cost allocation IM must be applied

- Treatment of revenues

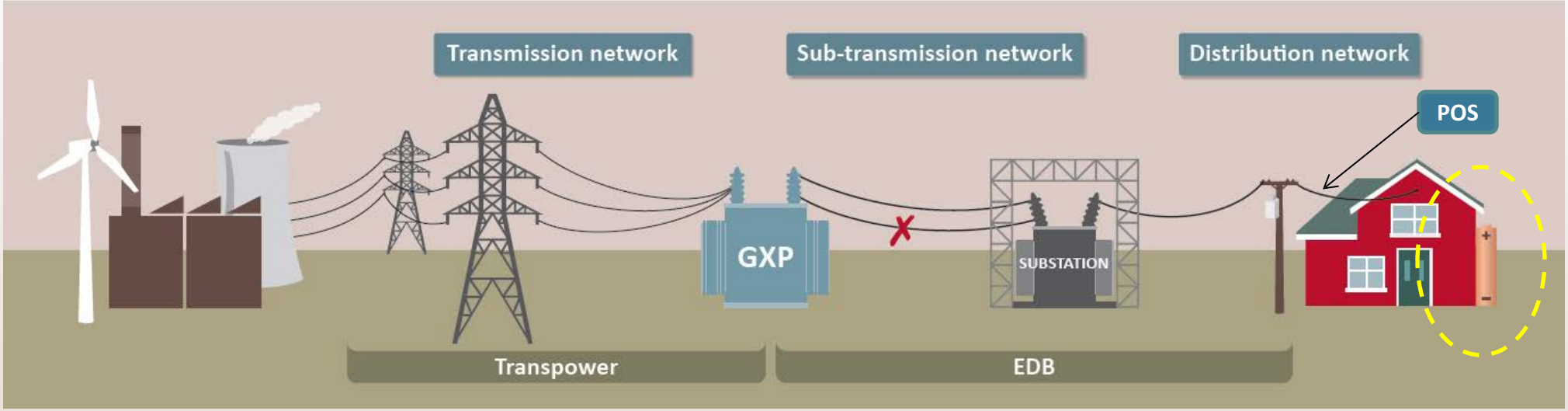
Revenues *attributable to* both regulated and unregulated service. Line charges will be affected by above treatment of capex and opex. There are three additional revenue streams:

1. Selling energy at discharge → ?
2. Quality incentive → regulated
3. Unregulated services → unregulated

Domestic battery scenario 1

EDB owned and controlled battery behind meter

EDB buys and installs battery behind the meter (self supply) as an alternative to traditional network upgrades on its own distribution network



Location	Ownership	Control	Use	Revenues	Capex	Opex
Consumer premises	EDB	EDB	- Defer capex - Improve reliability - Reduce transmission charges - Unregulated service (eg reduce consumer bill)	*Received by EDB* - Quality incentive - Unregulated service (eg payment from consumer)	*Incurred by EDB* Battery	*Incurred by consumer* Retail energy purchases

Notes: GXP = grid exit point; POS = point of supply

Domestic battery scenario 1

EDB owned and controlled battery behind meter

Regulatory treatment of costs and revenues

- Treatment of capital costs

Battery *used to provide* both regulated and unregulated services → cost allocation IM must be applied to allocate a portion of the capital costs into the RAB

- Treatment of operating costs

Operating costs (incurred by consumer) *not attributable to* regulated service → operating costs not considered in regime. However, any payment from the EDB to the consumer may be considered as regulated opex to the extent it is attributable to the regulated service

- Treatment of revenues

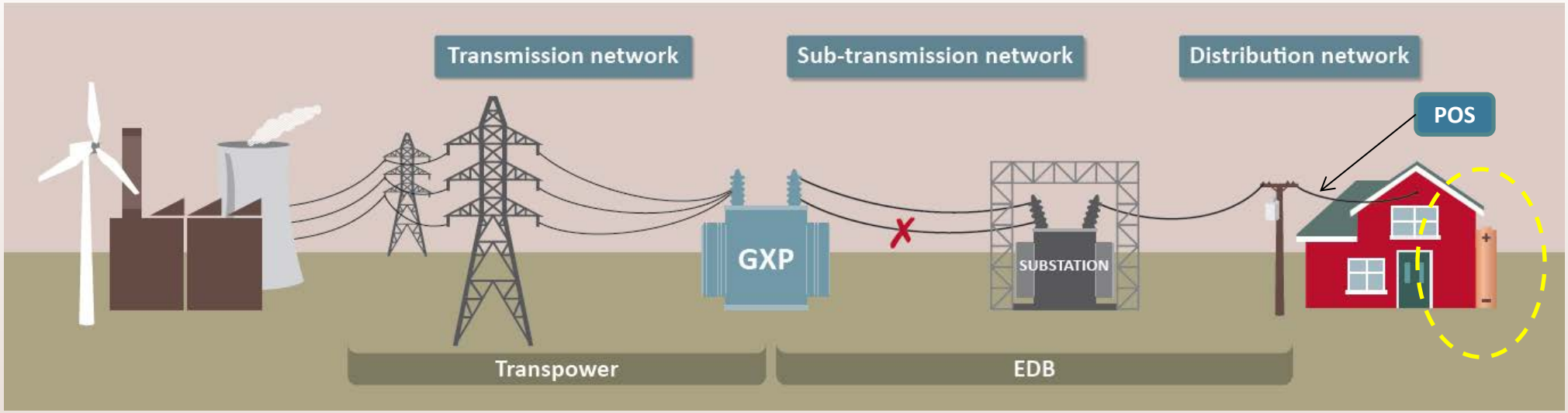
Distribution line charges provide revenue to recover the costs allocated to ELS. There may be additional sources of regulated and unregulated revenue, like:

1. Quality incentive → regulated
2. Unregulated services (eg any fee the EDB may charge the consumer for managing the battery to reduce its energy bill) → unregulated

Domestic battery scenario 2

EDB owned and controlled battery behind meter

EDB X buys and installs battery behind the meter as an alternative to traditional network upgrades but this time on EDB Y's network (3rd party supply)



Location	Ownership	Control	Use	Revenues	Capex	Opex
Consumer premises	EDB X	EDB X or Y	- Defer capex - Improve reliability - Reduce transmission charges - Unregulated service (eg reduce consumer bill)	*Received by EDB X* - Payments from EDB Y (ie opex for EDB Y) - Unregulated service	*Incurred by EDB X* Battery	*Incurred by consumer* Retail energy purchases

Notes: GXP = grid exit point; POS = point of supply

Domestic battery scenario 2

EDB owned and controlled battery behind meter

Regulatory treatment of costs and revenues

- Treatment of capital costs

Battery used to provide a network support service to *another* EDB → capital costs not considered in the regime

- Treatment of operating costs

Operating costs (incurred by consumer) *not attributable to* regulated service → operating costs not considered in the regime. Any payments from EDB Y to EDB X may be considered as regulated opex for EDB Y

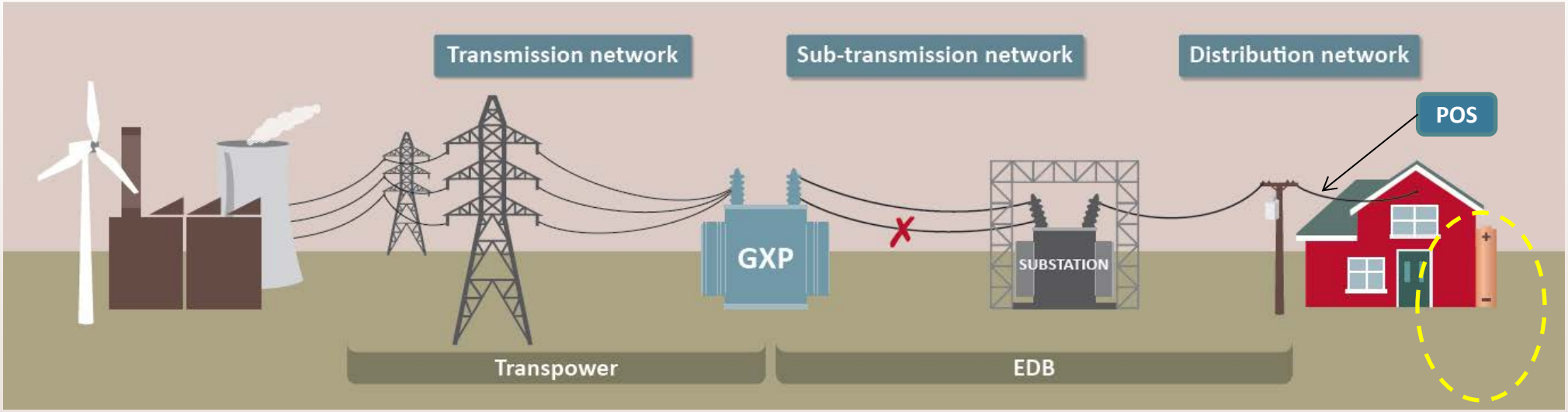
- Treatment of revenues

Revenue received by EDB X from EDB Y for providing network support services is unregulated

Domestic battery scenario 3

Consumer owned battery behind meter

Consumer buys a battery from a third-party service provider (3rd party supply)



Location	Ownership	Control	Use	Revenues	Capex	Opex
Consumer premises	Consumer	Consumer or third party service provider	- Manage consumer's bill (and any other unregulated service) - Defer capex on distribution and/or transmission - Improve reliability	*Received by consumer* - Lower bill (and revenue from any other unregulated service) - Payments from EDB and Transpower	*Incurred by consumer* Battery	*Incurred by consumer* Retail energy purchases

Notes: GXP = grid exit point; POS = point of supply

Domestic battery scenario 3

Consumer owned battery behind meter

Regulatory treatment of costs and revenues

- Treatment of capital costs

Battery used to provide both unregulated service (bill management) and a network support service → capital costs (incurred by the consumer) not considered in the regime

- Treatment of operating costs

Operating costs (incurred by consumer) not considered in the regime. Any payments from the EDB or Transpower to the consumer may be considered as regulated opex for the EDB and/or Transpower to the extent attributable to the regulated service

- Treatment of revenues

Revenue received by the consumer. Not considered in the regime

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Related parties rules

Review of related parties rules

- Policy intent: ensure that related party arrangements cannot be agreed by regulated suppliers in a way that results in higher prices for ELS
- Recent rule change: move from a prescriptive to a principles-based valuation of related party transactions, supported by enhanced audit requirements
  - Requirement to demonstrate arm's length valuation, based on an objective and independent measure*
- Enhanced disclosure requirements for EDBs that make material use of their related parties, including
  - a new "heat map" of anticipated network expenditure and network constraints
  - Disclosure of procurement policies

* We have not found evidence of manipulation. The aim is to increase transparency

Conclusion

Implications for equal access

- Given scope of Part 4 purpose statement, we do not have a mandate to promote competition in adjacent markets through our regulatory functions
  - However, we do have powers to address anticompetitive practices more generally through Part 2 of Commerce Act
- Law requires that cost allocation rules do not unduly deter investment by regulated suppliers in providing other regulated/unregulated services (section 52T(3) of Commerce Act)
- Cost allocation and related parties rules do not necessarily imply a 'level playing field'

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Annex
Related parties rules scenarios

Related party definitions

Related party means-

(a) a person that is related to the regulated supplier, where the regulated supplier would be considered as the 'reporting entity', as specified in the definition of 'related party' in NZ IAS 24; or

(b) any part of the regulated supplier that does not supply regulated services.

Related party rules and cost allocation scenarios

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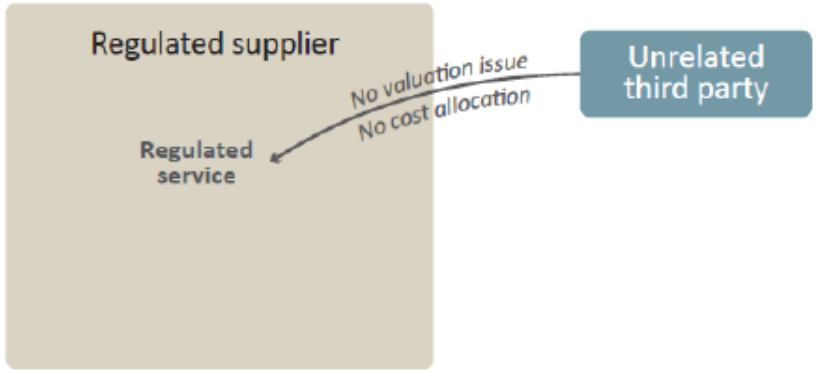
1. No valuation issue/No cost allocation



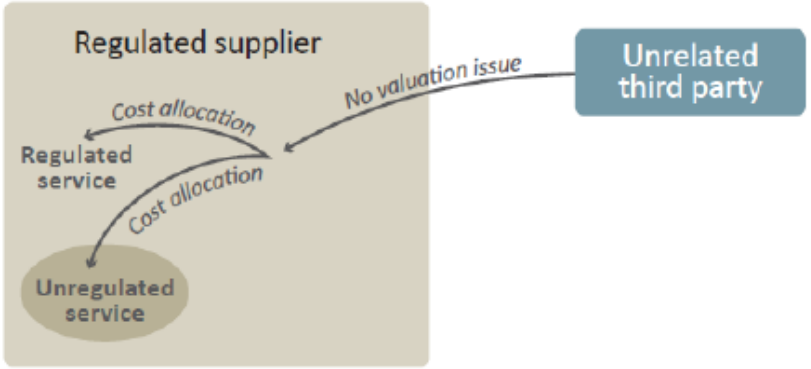
Facts:

- All costs are incurred from external third parties
- All costs are directly attributable to the regulated service

Key features:

- No 'related party' of the regulated service
- No valuation issue on third party costs (meets arm's-length test)
- No cost allocation applies (no cost directly attributable to an unregulated service and no cost needs to be allocated between regulated service and unregulated services)

2. Cost allocation only – no valuation issue



Facts:

- All costs are incurred from external third parties
- Costs apply to regulated service and unregulated services
- No services supplied by unregulated service to regulated service

Key features:

- No 'related party' of the regulated service
- No valuation issue on third party costs (meets arm's length test)
- Costs directly attributable to regulated service are allocated under cost allocation rules to the regulated service
- Costs not directly attributable to regulated service or unregulated service; use cost allocation to allocate between regulated and unregulated services

Related party rules and cost allocation scenarios

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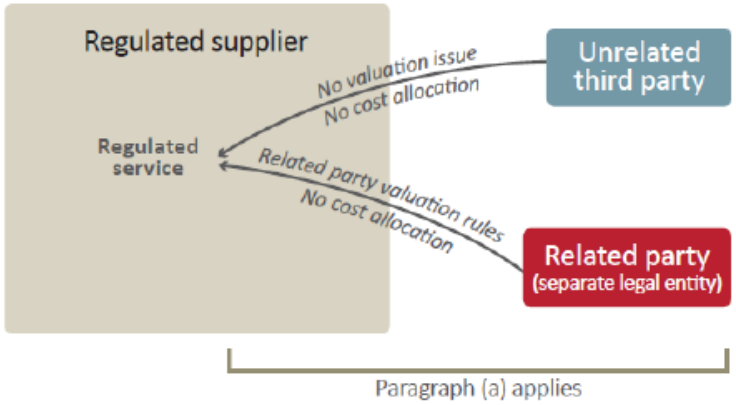
3. Paragraph (a) of related party definition applies – no cost allocation



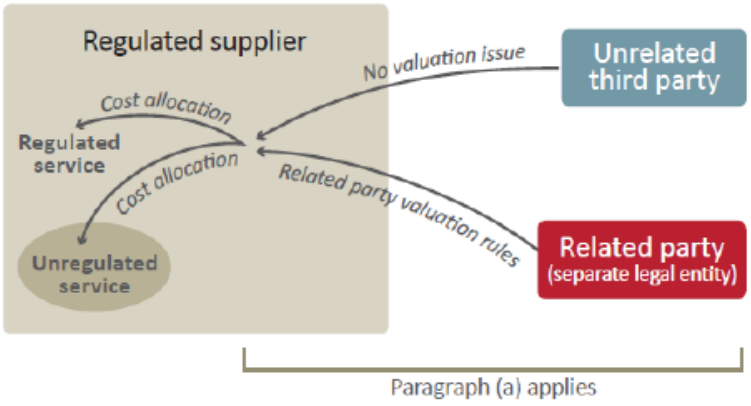
Facts:

- One related party (separate legal entity) supplying the regulated supplier
- Also some costs from external third parties
- All costs are directly attributable to the regulated service

Key features:

- No valuation issue on third party costs (meets arm's-length test)
- Valuation of charges from related party – related party valuation rules apply
- No cost allocation applies (no cost directly attributable to an unregulated service and no cost needs to be allocated between regulated and unregulated services)

4. Paragraph (a) of related party definition applies with cost allocation



Facts:

- One related party (separate legal entity) supplying the regulated supplier
- Also some costs from external third parties
- Costs apply to regulated service and unregulated services

Key features:

- No valuation issue on third party costs (meets arm's-length test)
- Valuation of charges from related party – related party valuation rules apply
- Costs directly attributable to the regulated service are allocated under cost allocation rules to the regulated service
- Costs not directly attributable to the regulated service or unregulated service; use cost allocation to allocate between regulated and unregulated services

Related party rules and cost allocation scenarios

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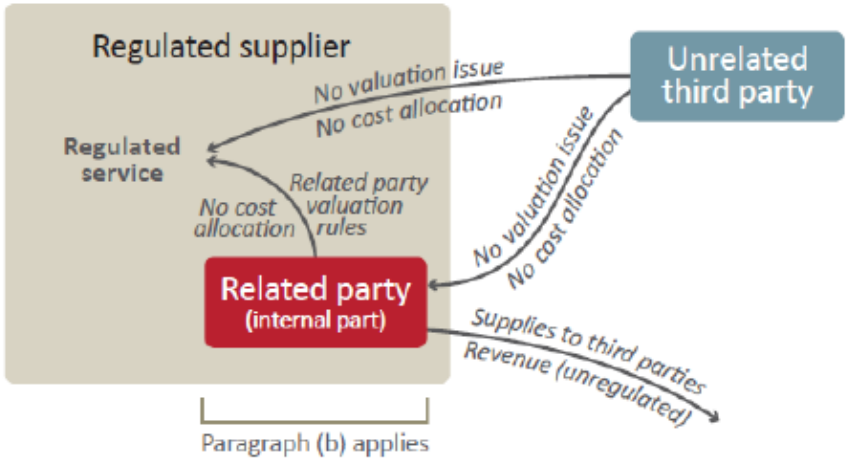
5. Paragraph (b) of related party definition applies – no cost allocation



Facts:

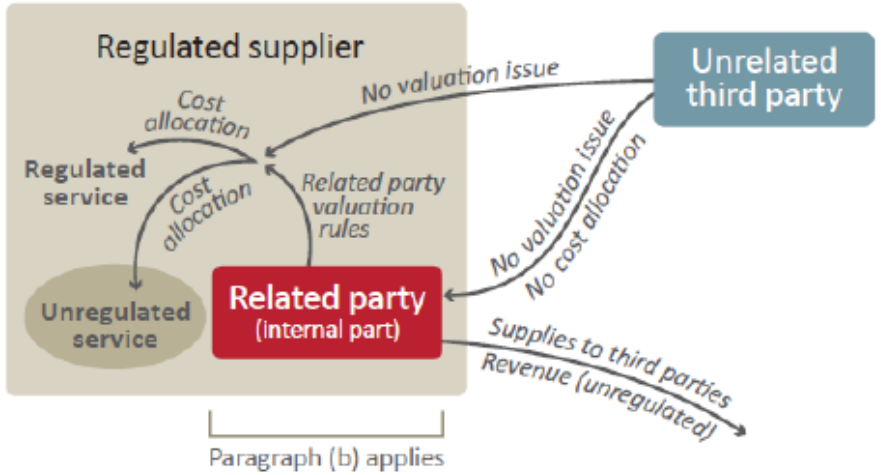
- An internal part of the regulated supplier supplies to the regulated service and sells assets, goods or services externally
- The internal part of the regulated supplier has the management and operational features of a business capable of standing alone
- Some costs are incurred by the regulated service directly from external third parties
- Some costs are incurred from external third parties through the internal related party
- All costs directly incurred by the regulated service from third parties are directly attributable to the regulated service
- All charges from the internal related party to the regulated service are directly attributable to the regulated service

Key features:

- No valuation issue on third party costs when passed directly to the regulated service at cost with no additional margin (meets arm's-length test)
- Valuation of charges from internal related party – related party valuation rules apply
- No cost allocation applies to charges from unrelated third party directly to the regulated service
- No cost allocation applies to charges from internal related party to the regulated service
- No requirement to apply cost allocation or related party valuation rules to charges from unrelated third party to unregulated internal related party

Related party rules and cost allocation scenarios

6. Paragraph (b) of related party definition applies with cost allocation



Facts:

- An internal part of the regulated supplier supplies to the regulated service and sells assets, goods or services externally
- The internal part of the regulated supplier has the management and operational features of a business capable of standing alone
- Some costs are incurred by the regulated service directly from external third parties
- Some costs are incurred from external third parties through the internal related party
- Costs apply to regulated service and unregulated services

Key features:

- No valuation issue on third party costs when passed directly to the regulated service at cost with no additional margin (meets arm's-length test)
- Valuation of charges from internal related party – related party valuation rules apply
- Costs directly attributable to the regulated service or unregulated service; are allocated to the regulated service
- Costs not directly attributable to the regulated service use cost allocation to allocate between regulated and unregulated services
- No requirements to apply cost allocation or related party valuation rules to charges from unrelated third party to unregulated internal third party

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Session 3

Can current equal access arrangements to distribution networks continue to be effective given technology change and innovation?

(Concerns presented are based on feedback from our consultation on enabling mass participation)

Concerns relating to equal access arrangements for 3rd parties seeking to provide network support services (1)

Summary of concerns

Physical platform

Operation of the physical platform

Monopoly regulation

More efficient distribution prices

No system operator role

Involvement in network support services activities?

Access to compete?

Monopoly regulation

- No structured market mechanisms to procure network support
- Network support generally self-supplied

New competition for new network support services?

New Energy Services

Concerns relating to equal access arrangements for 3rd parties seeking to provide network support services (2)

Issue	Potential problem	IPAG to consider
Distributors' investments in batteries to self-supply network support should not be included in the regulatory asset base (RAB)	**Investments are not treated equally creating a competition problem** There are a range of parties (consumers, distributors, retailers and others) competing to invest and provide services. RAB protection can create an unnecessary regulatory barrier to entry and market development	**Worth further investigation given its potential negative impact on competition, efficiency and reliability?**
Distributors' investments in load control assets including ripple receivers and smarter meters to self-supply network support should not be included in the RAB	**Investments are not treated equally creating a competition problem** There are a range of parties (consumers, distributors, retailers and others) competing to invest and provide services from these load control technologies. RAB protection can create an unnecessary regulatory barrier to entry and market development	**Worth further investigation given its potential negative impact on competition, efficiency and reliability?**

Source: Submissions to enabling mass participation consultation that closed on 11 July 2017

Concerns relating to equal access arrangements for 3rd parties seeking to provide network support services (3)

Issue	Potential problem	IPAG to consider
Transparency of network planning and opportunities for network support services	**Unequal access to information creates a competition problem** There are large information asymmetries that make it difficult for new businesses to enter the market for network services and compete	**Worth further investigation given its potential negative impact on competition, efficiency and reliability?**
Lack of effective procurement processes to test the market for network support when planning the network	**Market opportunities are not considered equally creating a competition problem** A lack of structured market mechanism processes make it difficult for new businesses to enter the market for network services and compete	**Worth further investigation given its potential negative impact on competition, efficiency and reliability?**

Source: Submissions to enabling mass participation consultation that closed on 11 July 2017

Concerns relating to equal access arrangements for 3rd parties seeking to provide network support services (4)

Issue	Potential problem	IPAG to consider
Distributors' participation in businesses (eg, an affiliate) that provide network support services	**Opportunities to block or make competition difficult** When distributors as owners of the physical platform are also active participants in markets for network support have the incentive and the ability to take actions that could block or make competition difficult	**Worth further investigation given its potential negative impact on competition, efficiency and reliability?**
Lack of medium and low voltage network information (distribution networks)	**Insufficient information to manage more complex network support services** Complex markets for network support or distribution price signals in cannot evolve without this information being captured and available	**Worth further investigation given its potential negative impact on competition, efficiency and reliability?**
Lack of coordination between of generation and demand response activities on distribution networks	**No specific distribution system operator role** A lack of coordination on the distribution network can create network security and quality problems. A distribution system operator could run network support markets to manage these security and quality problems, or even go as far as directly coordinating generation and demand response activities. There is no reason for the distributor to also perform a system operator role if the distributor does not have the capability of performing that role.	**Worth further investigation but at the option assessment phase if a problem is established?**

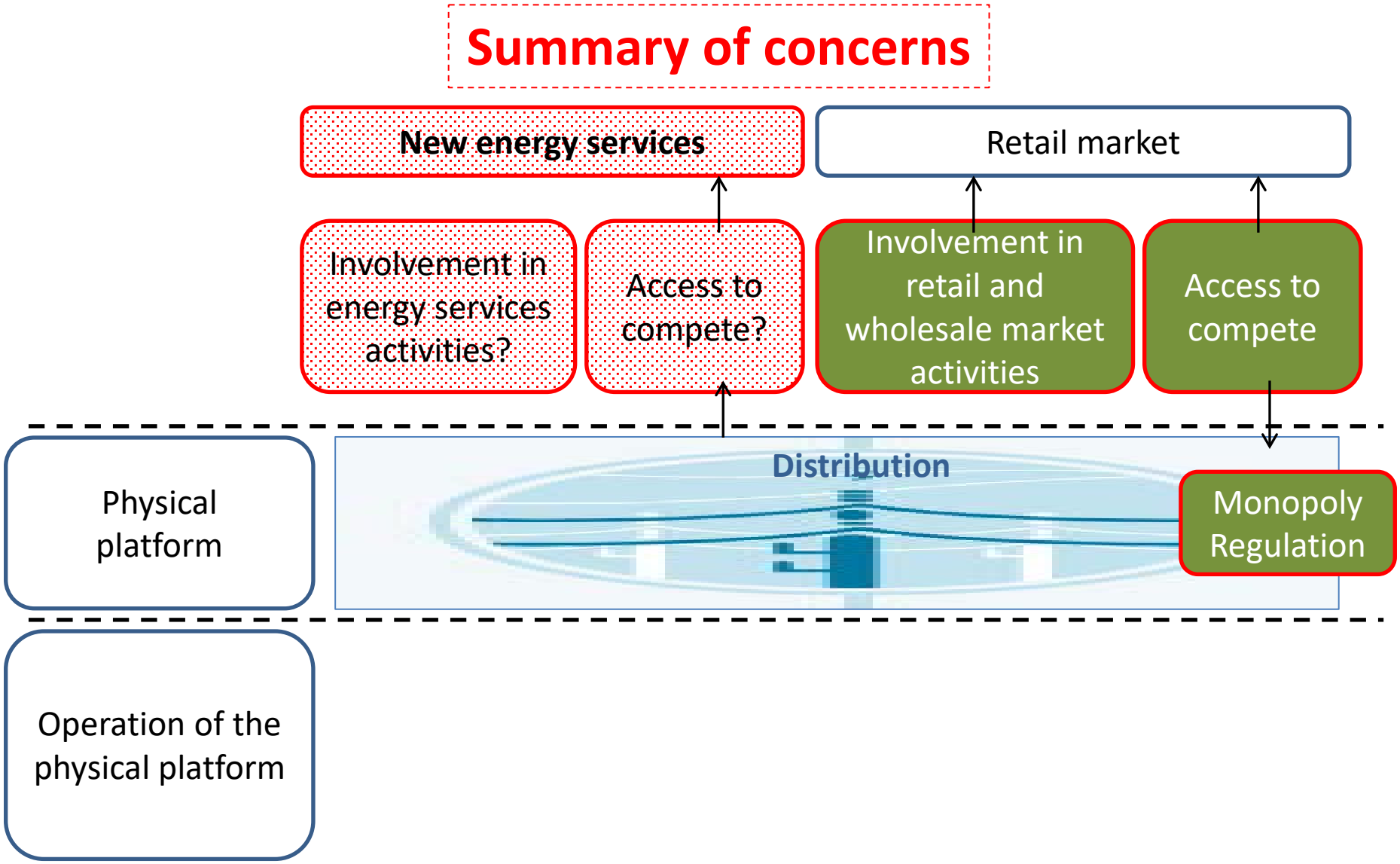
Source: Submissions to enabling mass participation consultation that closed on 11 July 2017

Concerns relating to equal access arrangements for 3rd parties seeking to provide network support services (5)

Issue	Potential problem	IPAG to consider
Network load control tariffs	**Investments are not treated equally creating a competition problem** Network load control tariffs are structured as part of the distributor's regulated service. This precludes the competitive provision of network support	**This is a legacy issue is being considered through our existing Default Distribution Agreement, distribution pricing and demand response principles projects**
More efficient distribution prices	**Consumers and distributors investments are not treated equally creating a competition problem** Lack of efficient prices means that parties do not have relevant information about where their investments in new technologies are economically valuable to distributors meaning that consumers investments are not given an opportunity to compete with distributors investments	**This issue is being considered though our distribution pricing review project**

Source: Submissions to enabling mass participation consultation that closed on 11 July 2017

Concerns on equal access to the distribution network physical platform (1)



Concerns on equal access to the physical distribution network infrastructure platform (2)

Issue	Potential problem	IPAG to consider
Distributors' behaviour when they are also involved in businesses that provide new energy services	**Opportunities to block or make competition difficult** Conflicts of interest emerge when distributors are also active participants in the markets their physical platforms support which could lead them to take actions that could block or make competition difficult. Distributors may have incentives to maintain pricing plans, establish connection arrangements or technical specifications to favour their own commercial activities, eg a solar panel businesses.	**Worth further investigation given its potential negative impact on competition, efficiency and reliability?**
Distributors' behaviour based on an ability to cross-subsidise and distort new energy services markets	**Distributors' new energy services are not treated equally creating a competition problem** There seems to be low confidence that information disclosure and cost allocation rules are sufficient controls to prevent the subsidisation of new energy services by the regulated distribution service	**Worth further investigation given its potential negative impact on competition, efficiency and reliability?**

Source: Submissions to enabling mass participation consultation that closed on 11 July 2017

Concerns on equal access to the physical distribution network infrastructure platform (3)

Issue	Potential problem	IPAG to consider
Distributors' behaviour based on an ability to use commercially sensitive information gathered while performing regulated functions to favour itself (or an affiliate) in new energy services markets	**Distributors' new energy services are not treated equally creating a competition problem** Leveraging on the information gathered as part of the regulated activities to access commercially sensitive information provides an advantage to distributors and their affiliates in new energy services markets	**Worth further investigation given its potential negative impact on competition, efficiency and reliability?** We note that there are strong interactions with the Multiple Trading Relationship Project and the Default Distribution Agreement project

Source: Submissions to enabling mass participation consultation that closed on 11 July 2017

Assessing effectiveness of current equal access arrangements given technology changes and innovation

Defining the problem

Based on feedback from submissions there seem to be two potential problems that may impact on competition, efficiency and reliability:

Defining the problem (IPAG to discuss)

	Potential problem	Description
1	**Current arrangements might not support the competitive procurement of network support services**	Existing mechanisms to procure network support worked well when the distributor was the only likely provider (self-supply). However, these mechanisms can now be *inefficient if there is scope for more efficient providers (competition)* and the existing equal access arrangements unnecessarily treat distributors' self-supply options more favourably
2	**Current arrangements might not provide confidence that distributors' ability and incentives to engage in problematic behaviours in new energy services markets is contained**	Distributors have the *ability* and *incentive* to tilt the level playing field in their favour in the new energy services markets (including network support services) when distributors' have a commercial interest (self-supply or via affiliates) in providing new energy services. There may be gaps in the current arrangements that mean that network users are not confident that the potential for these behaviours to materialise are contained

Problem 1 - Are current arrangements to procure network support services inefficient? (1)

IPAG to discuss proposed plan of action

Proposed Tasks	Why	How	Recommend
Define network support services	Important to clearly define what potential services can be subject to competition	• **Option 1:** Instruct secretariat to engage with distributors and other interested parties	**Option 1**
Establish prospect for competition for network support services	• Prospect of competition is a strong indicator that change to current arrangements is required • Provides more information to understand the scope and nature of changes affecting the industry	• **Option 1:** Commission a survey to understand who (nationally/internationally) has the capability and the interest to provide network support services across NZ • **Option 2:** Talking (next IPAG meeting) with parties that we already know are active, or are thinking about becoming active in this space	**Options 1 and 2** (This information is key to support a case for change)

Problem 1 - Are current arrangements to procure network support services inefficient? (2)

IPAG to discuss proposed plan of action

Proposed Tasks	Why	How	Recommend
Establish whether distributors' ability to include self-supply investments in the RAB is a barrier for competition for new network support	If prospect for competition is established, then current arrangements could unnecessarily treat more favourably distributors' self-supply network support investments compared to those from 3rd parties from a financial point of view	• **Option 1:** Instruct secretariat to develop an economic assessment (develop case studies where possible) and report back to IPAG • **Option 2:** Commission expert financial consultant to understand the extent to which RAB arrangements can provide an unnecessary advantage to distributors compared to 3rd parties	**Option 1** (we have started work on this, but independent advise might be valuable)
Establish what network planning information and procurement processes can support market based procurement	General feedback from submissions have indicated that transparency of opportunities and existing procurements are not conducive to market development	• **Option 1:** Secretariat to work with the Commerce Commission to provide an assessment and report back to IPAG • **Option 2:** Talking with parties (next IPAG meeting) that we already know are active, or are thinking about becoming active in this space	**Option 2** (parties are best suited to know what are their needs to compete)

Problem 2 - Why is there low confidence that distributors' problematic behaviours are not contained? (1)

Assessing whether existing equal access arrangements contain distributors' engaging in problematic behaviours is difficult:

- New energy service markets are very recent and developing
- Some behaviours are difficult to monitor or to prove (eg, delaying access to a network, or favouring an affiliate)
- Complaints do not necessarily materialise (we do not necessarily know when businesses decide not to enter a market because they had low confidence in the access arrangements or because the distributor made it difficult to access the network platform)

Problem 2 - Why is there low confidence that distributors' problematic behaviors are not contained? (2)

IPAG to discuss proposed plan of action

Proposed task	Why	How	Recommendation
Establish credibility of existing market players' low confidence and gather intelligence on which are the potential gaps in the existing arrangements	Assessing 'problematic' behaviours is difficult. Exposure to first-hand experiences can be extremely valuable in this context	Listening/talking to key market players. Next IPAG meeting could: **Option 1 –** Be an open venue event for some key players to present **Option 2 –** Be devoted to bring parties willing to speak confidentially about their experiences at EA premises	**Option 2** Quality of information is likely to be improved if parties can speak confidentially. Engagement can also be used to gather intelligence about problem 1
Establish which are the potential gaps in the existing arrangements using a more 'analytical' approach	Search for potential relevant weaknesses in the current arrangements	Secretariat could develop case studies and worked examples of potential problematic behaviours that could take place under current arrangements as a complementary task to the talks	Decide whether this task is necessary after listening/talking to market players?

NOT DISCUSSED

List of potential market players that IPAG could engage with at next meeting

IPAG members have any suggestions?

Market player	Why
Contact Energy	Contact Energy is actively seeking to enter the new energy services market. Their submission was very detailed, knowledgeable and raised credible concerns in relation to network support services
Powerco	Powerco has done a lot of work for their Customised Price Path. Speaking with Powerco could give a good sense about how distributors are thinking about network support services
Vector	Vector is a distributor that is very active in the new energy services space. Speaking with Vector could provide useful intelligence about how distributors think about engaging in unregulated market activities
Others?	

NOT DISCUSSED

What next?