

ONE-PAGE ELECTRICITY MARKET DESIGN SUMMARY

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Entities responsible for electricity market functions

Where the jurisdiction procures capacity separately from energy:

1. Capacity is procured through an auction.
2. The price is set by a central authority rather than an open market mechanism.
3. Retailers/large consumers are obliged to hold contracts or capacity certificates.
4. Retailers/consumers can engage directly with producers to meet capacity obligations.

Risk management mechanisms:

1. Standardised contract forms for bilateral contracting
2. Exchange traded futures
3. Financial transmission rights, settlement residue auctions and the like

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Centrally managed, financially &/or physically firm spot energy markets.

Non-energy services. Also known as as System Support Services or Essential System Services

Retail market characteristics:

1. Whether the market allows at some or all consumers a choice of electricity retailer.
2. Minimum demand required to qualify as a contestable customer.
3. Whether the market allows consumers/retailers a choice of meter equipment and/or data provider.
4. Approach to reconciling meter data and allocating unmetered consumption.

Scheduling and dispatch characteristics:

1. Gross pool: participants offer all generation capability, all generation quantities determined in central dispatch. Net pool: participants nominate self-scheduled quantities, deviation quantities determined in central dispatch.
2. Time granularity for which dispatched quantities are calculated
3. Extent to which facility commitment is managed by the participant vs instructed by the market operator
4. Extent to which market scheduling algorithms account for network and security constraints
5. How the market algorithms treat network losses
6. Dispatch compliance requirements on intermittent generation
7. Extent to which battery storage devices can provide market services

ELECTRICITY MARKET SUMMARY - NEW ZEALAND			
Governance	Dispatch	Settlement	
Policy	Gross pool ①	Final prices	①
Regulation	Net pool	Trading interval	②
Market design lead	Dispatch interval	Energy price floor	
Rule making	5 min ②	Energy price ceiling	\$20,000/MWh
Scheduling & dispatch	Intermittent held to dispatch	Reserve price floor	\$0/MWh
Power system operation	Full participation of batteries	Reserve price ceiling	None
Market operation	Interconnects	Scarcity pricing	③
Metering	Local pricing	Intervention pricing	④
Network planning	None		
TX owner			
DX owner			
Capacity	Ancillary services		
Auction ①	Service	Procurement	Cost recovered from
Administered price ②	Contingency Reserve	Instantaneous Reserve 6s & 60s; co-optimised with energy	IR: generators >60MW pro-rated to injection, HVDC owner
Retailer obligations ③	Regulation	Single service: contracted then cleared ahead of energy	OF: Tx owner
Bilateral agreements ④	Inertia	N/A	Loads pro-rated to offtake
	Black start	Contracted, availability fee + event fee	Grid owner
	Network support	Voltage Support considered, but none currently contracted	Affected distributors in relevant zone per peak kVar
	Real-time		
	Retail competition ①	Threshold ②	Metering competition ③
			Reconciliation approach ④

Settlement approach:

1. Ex-ante: prices firm at time of dispatch. Ex-post: prices determined after dispatch
2. Time granularity of settlement.
3. Whether market prices are explicitly adjusted during times of scarcity.
4. Whether market prices can be adjusted where the system operator or regulator has overridden market outcomes.
5. Locational granularity of prices.
6. Extent to which prices include the effects of network congestion.

Version number and release date

Physically connected neighbouring jurisdictions



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Governance

Policy	Energy Policy WA (EPWA)
Regulation	Economic Regulation Authority (ERA)
Market design lead	EPWA
Rule making	EPWA
Scheduling & dispatch	Australian Energy Market Operator (AEMO)
Power system operation	AEMO
Market operation	AEMO
Metering	Western Power
Network planning	Western Power
TX owner	Western Power
DX owner	Western Power

ELECTRICITY MARKET SUMMARY – AUSTRALIA WEM

Scheduling and dispatch		Settlement	
Gross pool <input type="radio"/>	Central commitment	Final prices	Ex-post
Net pool <input type="radio"/>	Locational dispatch	Trading interval	30 mins
Dispatch interval	Dynamic loss factors	Energy price floor	-\$1,000 /MWh
30 mins	Intermittent held to dispatch	Energy price ceiling	Varies, ~\$300/MWh
RULES PRE OCT 2023	Full participation of batteries	Reserve price floor	N/A
Inter-connects	Locational pricing	Reserve price ceiling	N/A
None	Congestion in prices	Scarcity pricing	✗
		Intervention pricing	✗

Ancillary services

Service	Procurement	Cost recovered from
Spinning Reserve / Load Rejection	Raise and lower services, default provider is state owned gentailer, supplemented by contracts with others. Manually cleared.	Raise cost: facilities injecting > 10 MW Lower cost: loads
Load Following	Competitive market for raise and lower services, cleared ahead of energy.	Loads, intermittent generators
Inertia	N/A	N/A
System Restart	Contracted, availability payment plus negotiated contract terms	Loads
Network support	Direct contracts	Locational network charges

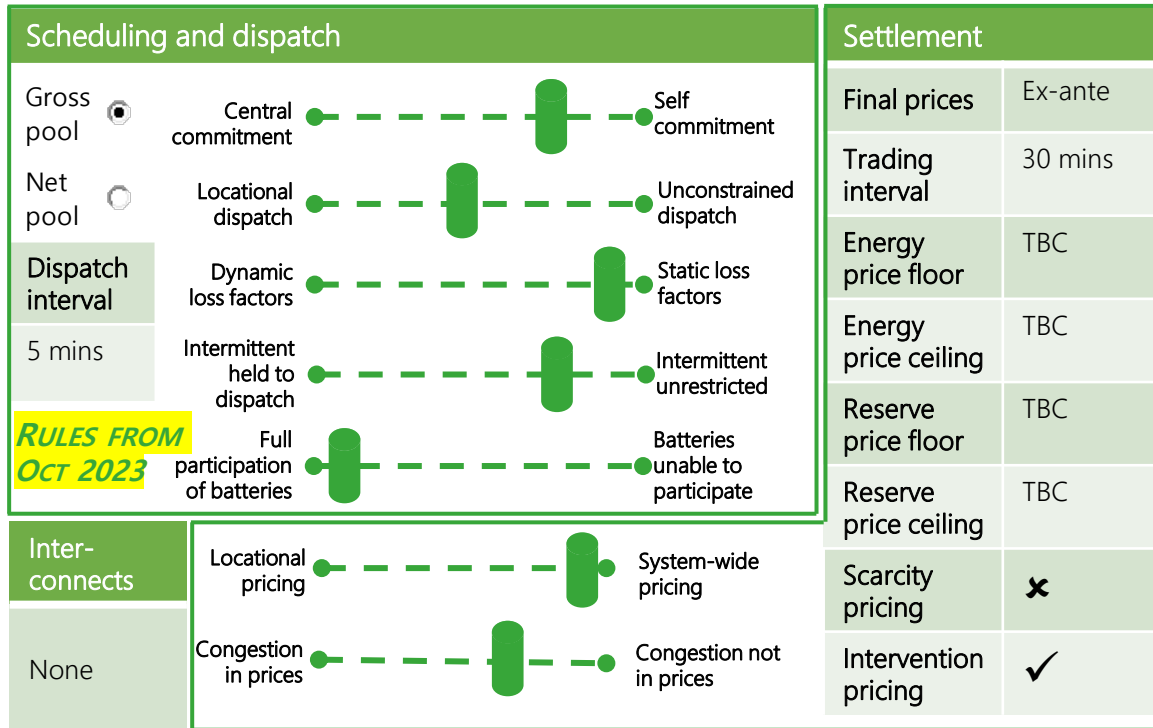
Capacity	Auction	✗	Contracts	OTC	✓
	Administered price	✓		ETFs	✗
	Retailer obligations	✓		Locational hedges	✗
	Bilateral agreements	✓		Day-ahead	✓
Spot	Intra-day	✗	Real-time	✓	

Retail	Retail competition	✓	Threshold	50 MWh /yr	Metering competition	✗	Reconciliation approach	Settlement by difference
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ELECTRICITY MARKET SUMMARY – AUSTRALIA WEM

Governance	
Policy	Energy Policy WA (EPWA)
Regulation	Economic Regulation Authority (ERA)
Market design lead	EPWA
Rule making	EPWA
Scheduling & dispatch	Australian Energy Market Operator (AEMO)
Power system operation	AEMO
Market operation	AEMO
Metering	Western Power
Network planning	Western Power
TX owner	Western Power
DX owner	Western Power



Ancillary services

Service	Procurement	Cost recovered from
Contingency Reserve	Five services co-optimised with energy in real-time market: Contingency Reserve Raise and Lower services, Regulation Raise and Lower services, RoCoF Control Service.	Raise cost: facilities injecting > 10 MW Lower cost: loads and generators consuming energy
Regulation		Intermittent generators, loads and generators consuming energy
Inertia	Backup procurement mechanism can provide availability payment in case of market inefficiency.	Minimum requirement: contributing generators, loads, network.
System Restart	Contracted, availability payment plus negotiated contract terms	Loads and generators consuming energy
Network support	Direct contracts	Locational network charges (or market recovery if AEMO procured)

Capacity	Auction	✗	Contracts	OTC	✓
	Administered price	✓		ETFs	✗
	Retailer obligations	✓		Locational hedges	✗
	Bilateral agreements	✓	Spot	Day-ahead	✓
		Intra-day		✗	
			Real-time	✓	

Retail	Retail competition	✓	Threshold	50 MWh /yr	Metering competition	✗	Reconciliation approach	Settlement by difference
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