Issues with demand-side participation in the NEM

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Presented to AEMC DSP3 review stakeholder reference group

8 June 2011

facilitating a more sustainable future

ENERGY RESPONSE

I was asked to talk about the problems, not about possible solutions

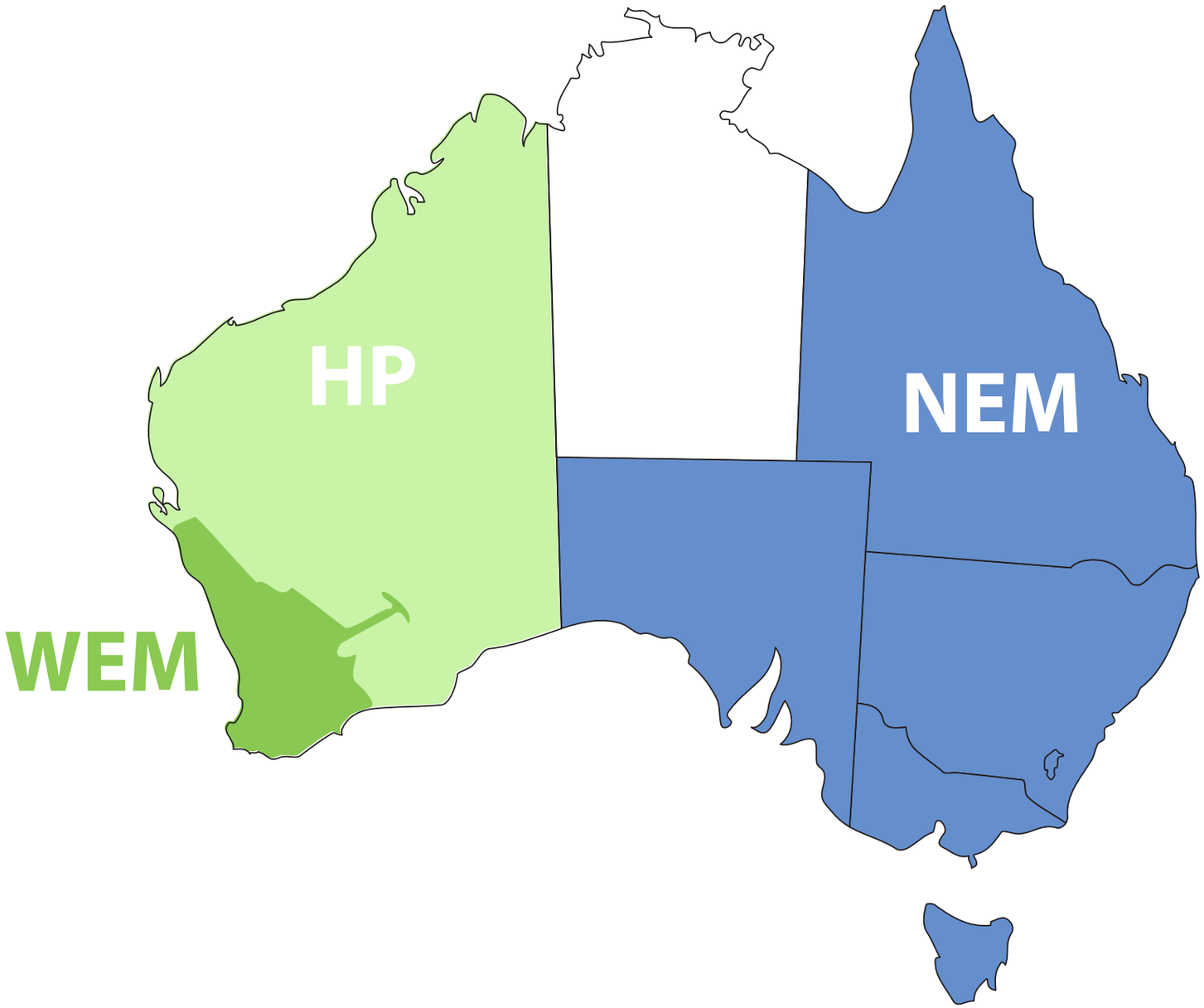
Energy Response's perspective

- Independent demand-side aggregator
- 227 MW under long-term management
- Typical loads between 50 kW and 30 MW
- Five products:
  - *Reserve capacity*
  - *Frequency control*
  - *Price-responsive generation*
  - *Price-responsive load*
  - *Network support*

Demand response done properly

- Comes in many forms, even from one site
  - *Different lead times (0.1 seconds to 1 day)*
  - *Different durations (1 minute to 8 hours)*
  - *Different marginal costs ($0 to $20,000/MWh)*
- Extremely reliable in aggregate
- Costs money to make available
- Needs long-term contracts to be attractive

Four very different markets



ENERGY RESPONSE

Are we serious this time, rather than just going through the motions again?

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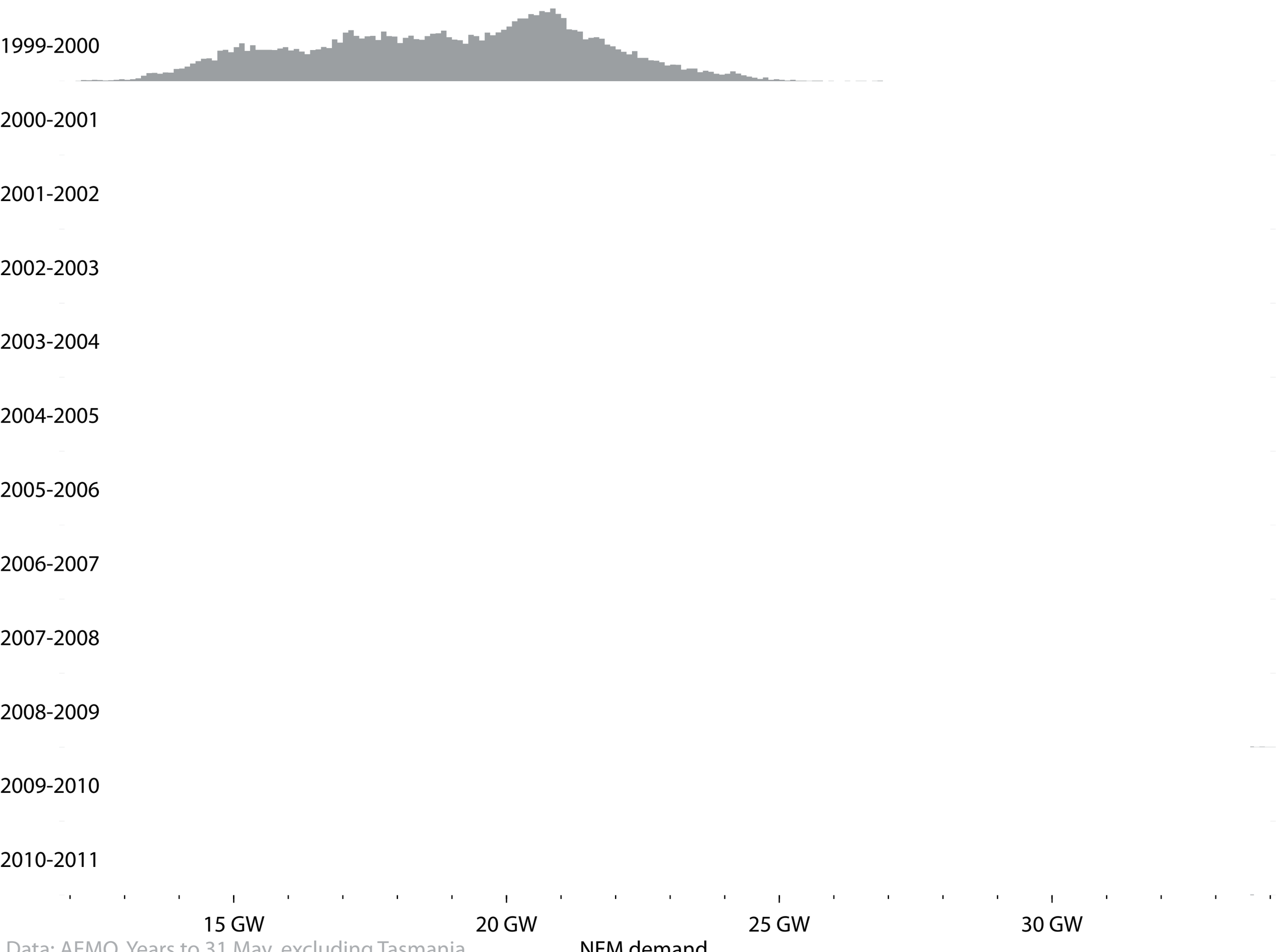
I’m assuming that we are.

What problem are we trying to solve?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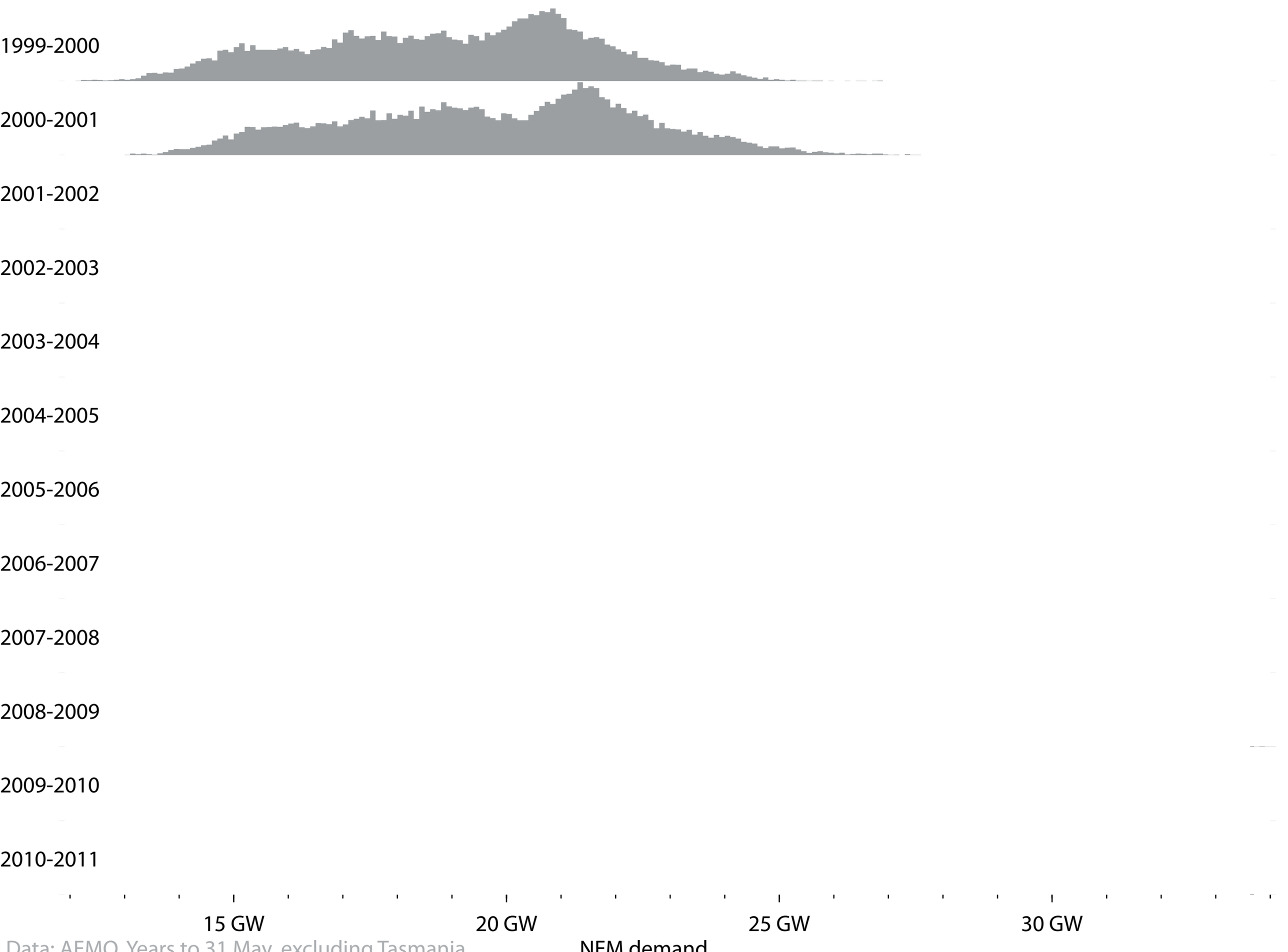
Data: AEMO. Years to 31 May, excluding Tasmania.
NEM demand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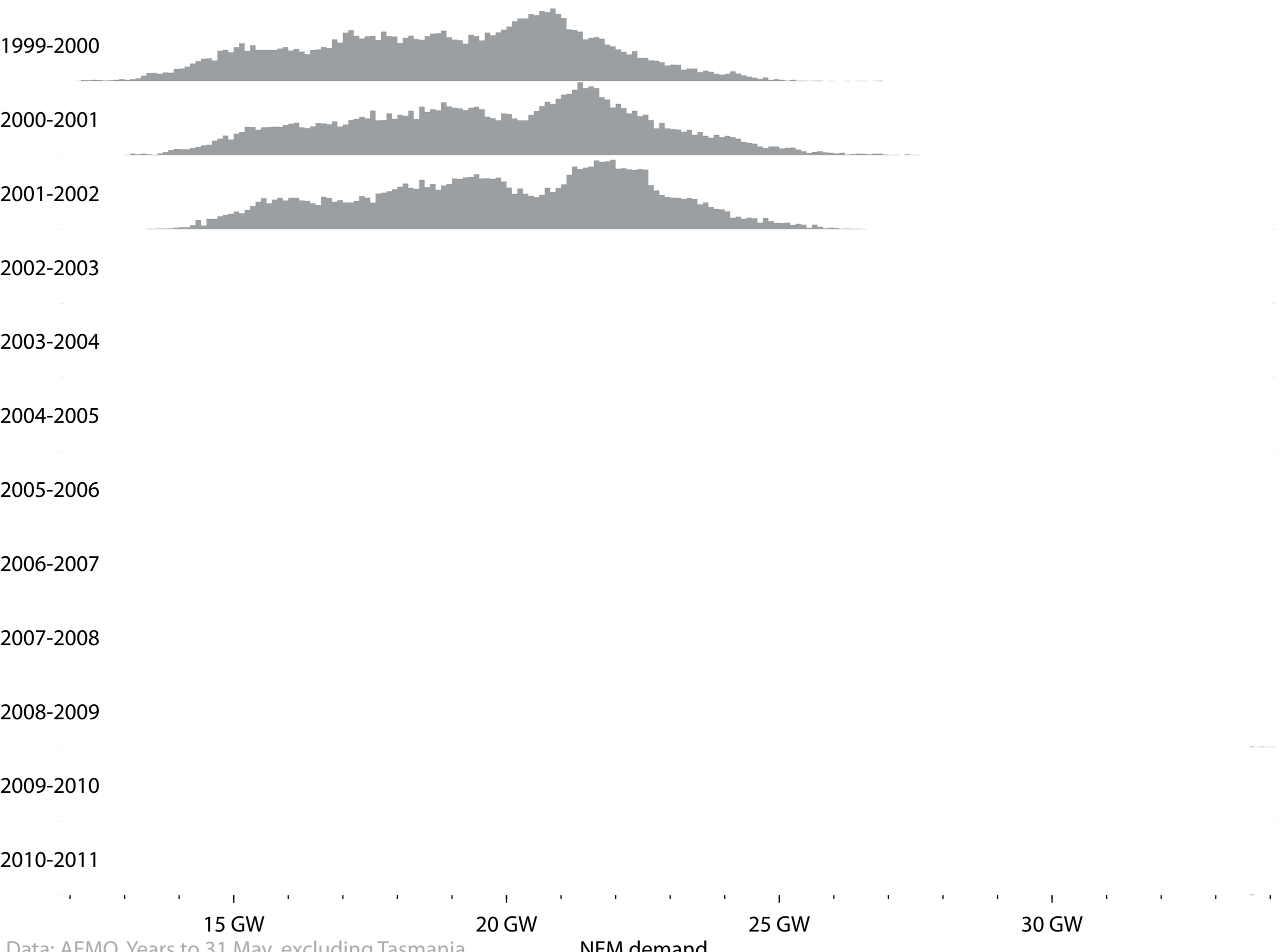
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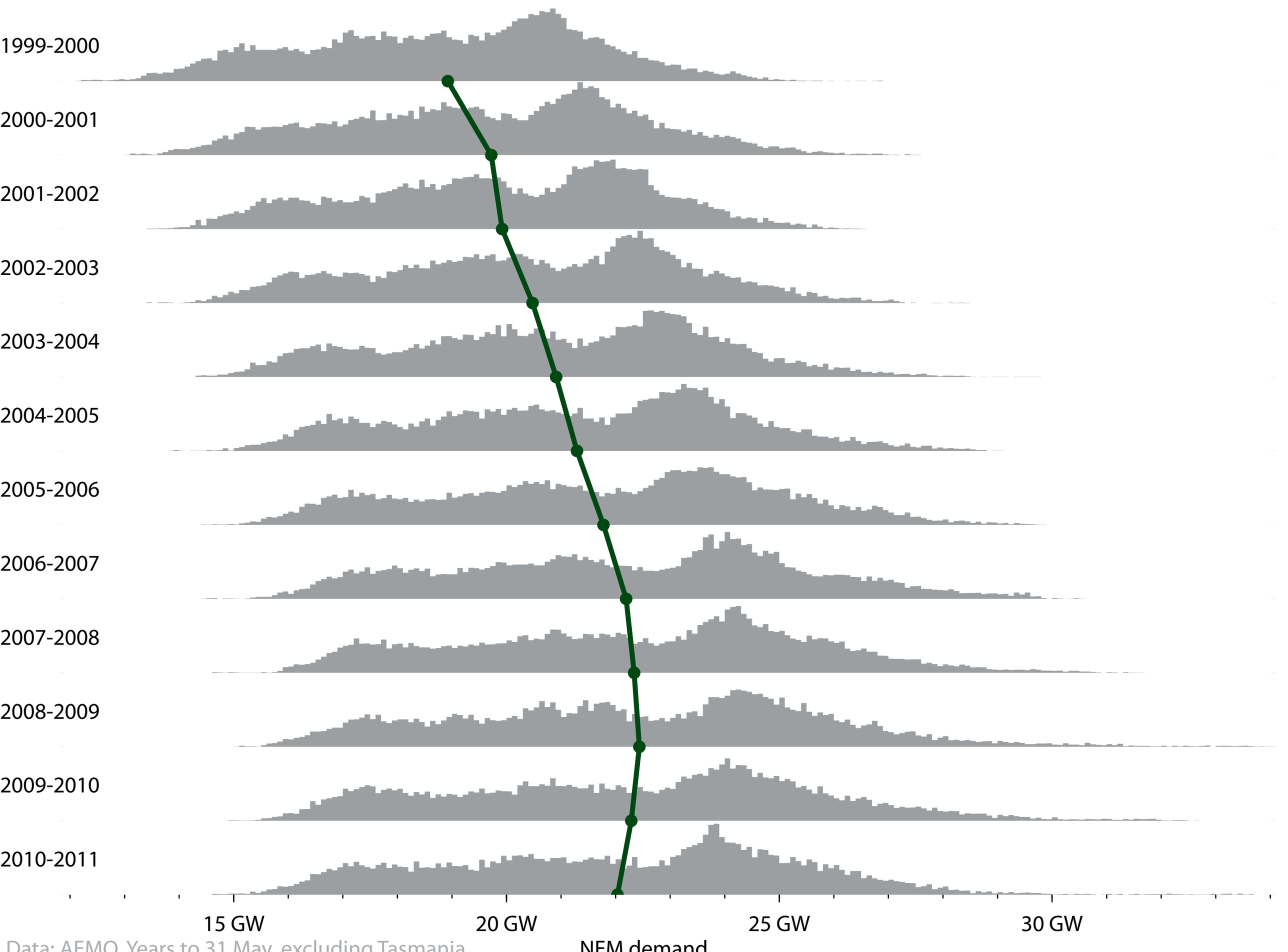

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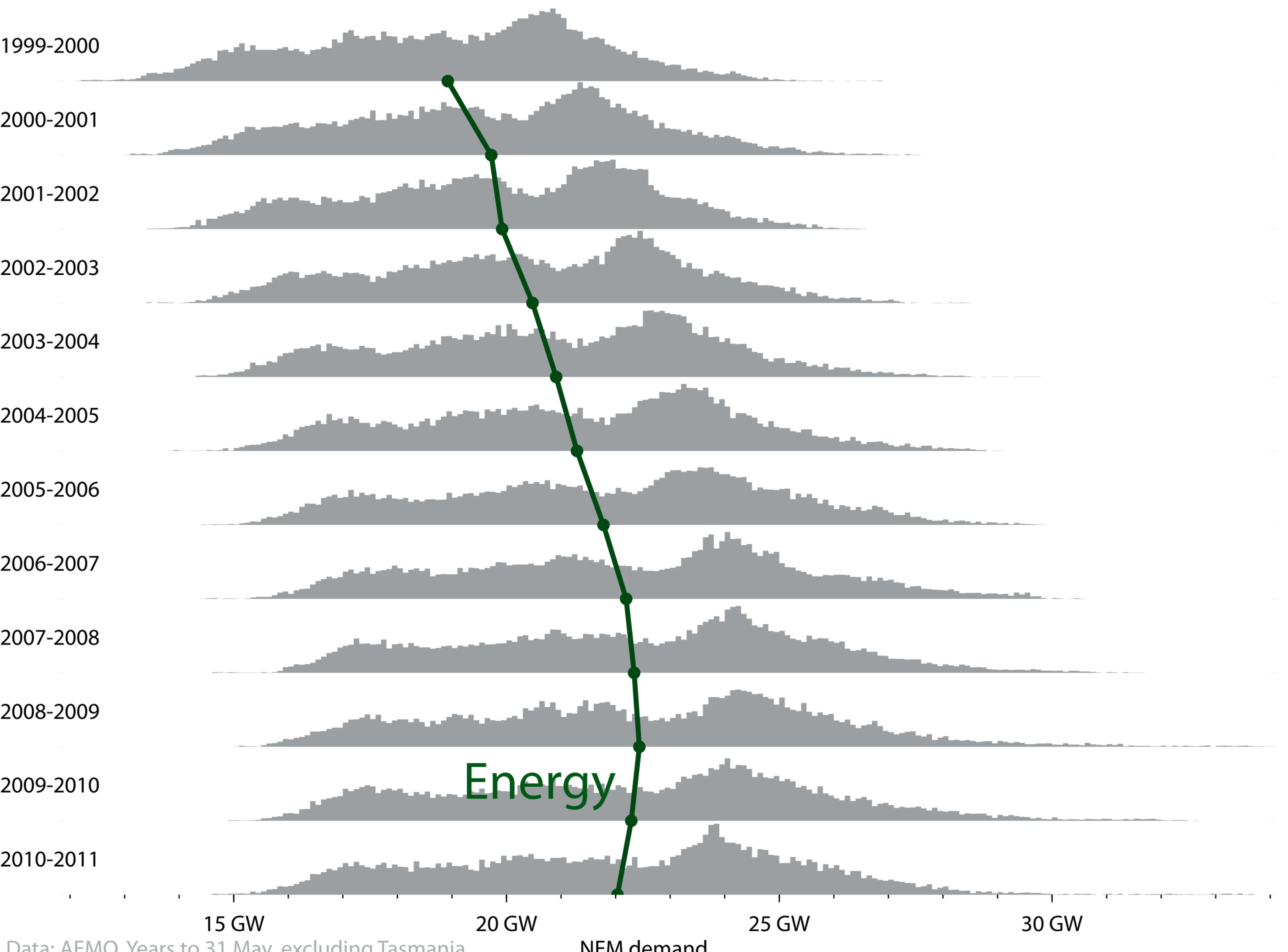

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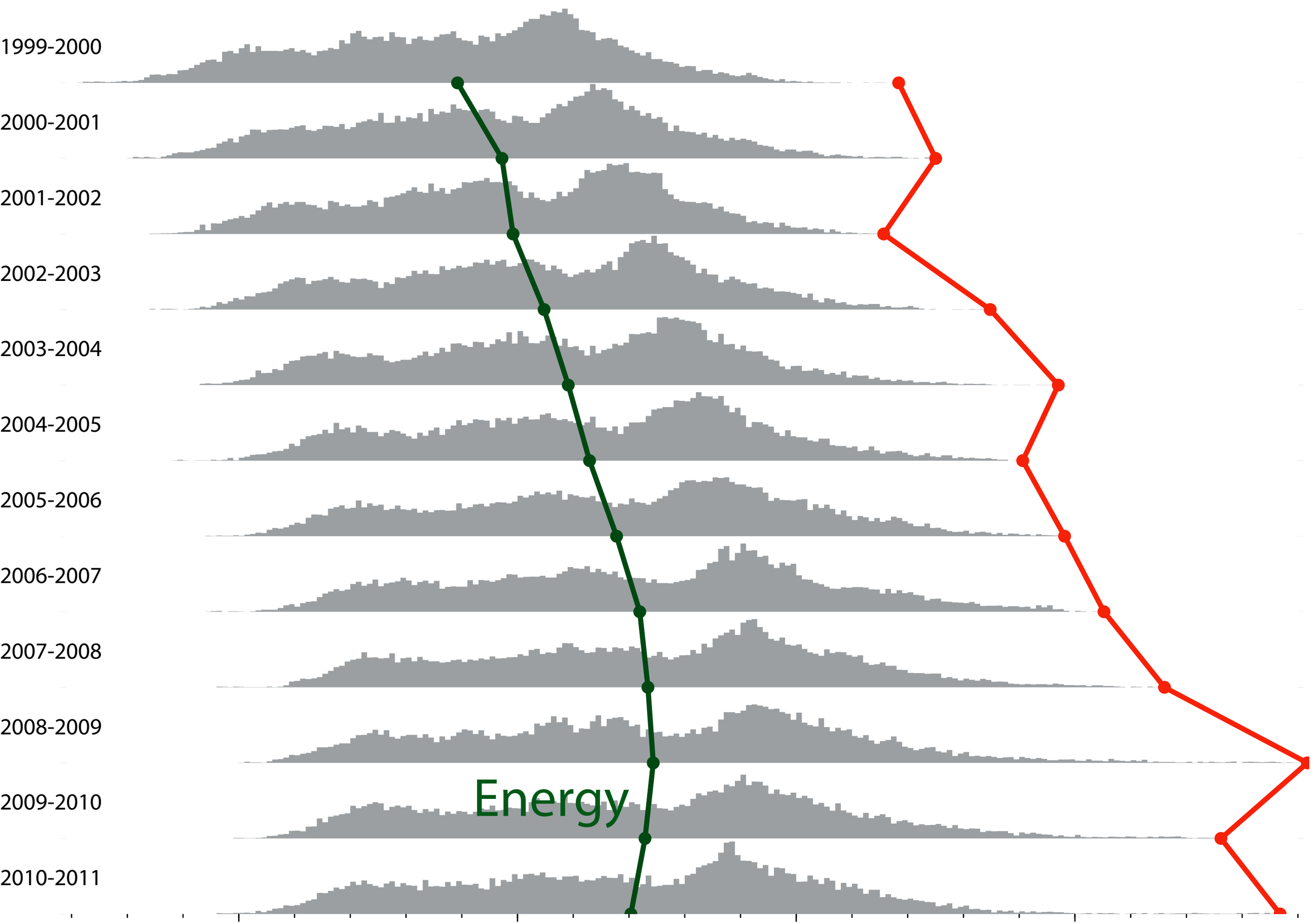

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NEM demand

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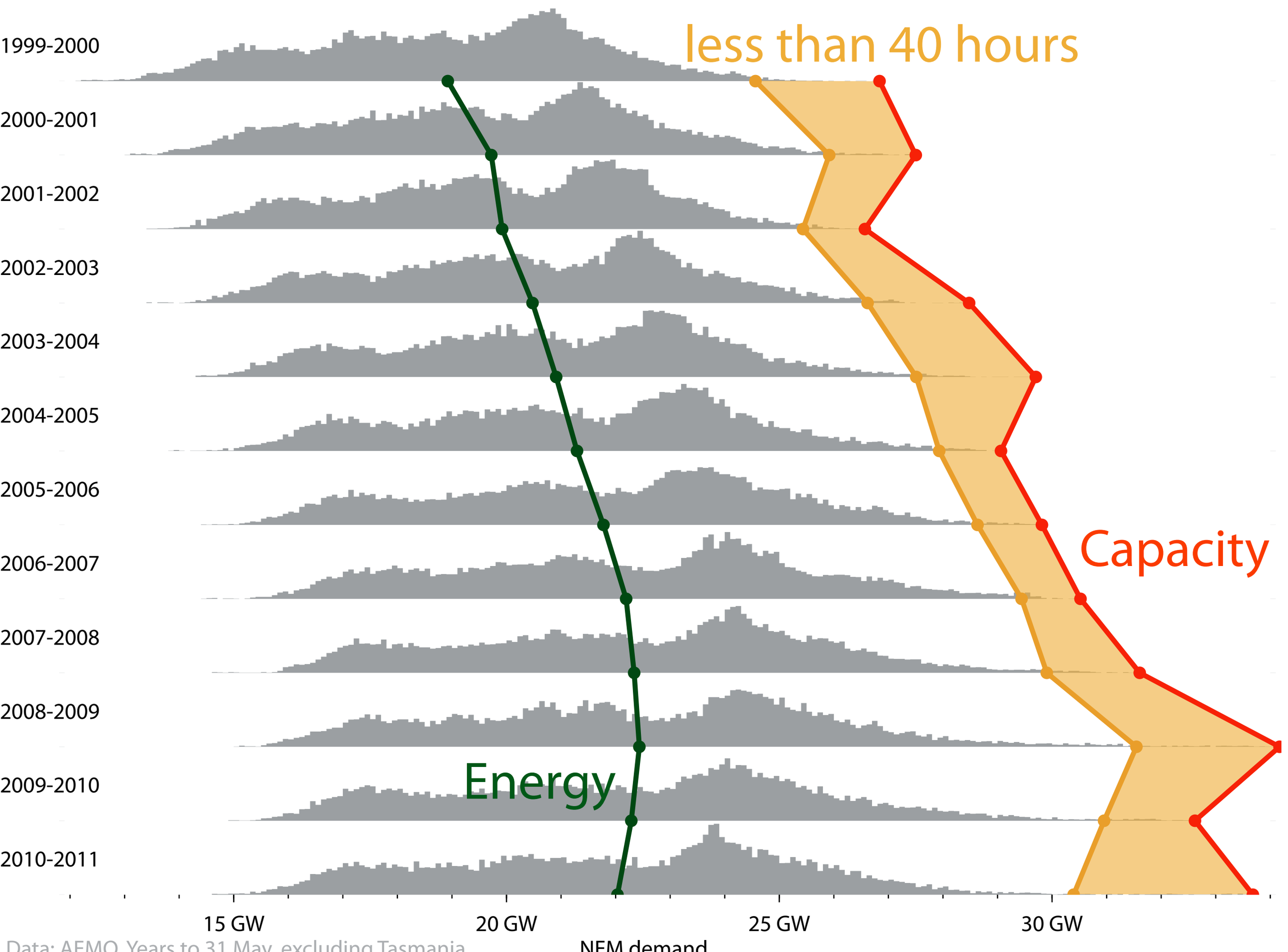

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Effective price signals

Energy prices are not good capacity signals

- The two are only equivalent for participants who:
  - — *Have very deep pockets, or*
  - — *Can use derivatives to hedge their positions*

Energy prices are not good capacity signals

- The two are only equivalent for participants who:
  - — *Have very deep pockets, or*
  - — *Can use derivatives to hedge their positions*
- This covers the supply side, but not consumers
- To consumers, extreme spot prices seem punitive
- Hence consumers insulated by retailers
- No effective price signal reaches consumers
- Consumers will always make this choice

ENERGY RESPONSE

Choice

Price-responsive DSP is not portable

- At present, only a consumer's retailer benefits from price-responsive load reductions
- Hence, a consumer can only sell their DSP to:

— *Their retailer*

— *A subcontractor to their retailer*

- They have no other choices

Gentailers may not be keen on DSP

*"We may be interested in paying you **not** to use it."*

"We'd sue anyone who tried that with our customers."

Forced bundling prevents competition

- Price is everything
- It's very unlikely that consumers will choose retailers on the basis of their DSP schemes
- Hence no pressure on retailers to take DSP seriously
- For competition to develop over DSP, it must be separable from retail supply

Implementation details matter

- Rules give consumers the right to access their meter data

BUT

- They have to go through their retailer
- No delivery mechanism is specified
- Neither is a timeframe for a response

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⇒ Retailer becomes gatekeeper

Reserves management

AEMO's reserves management tools

- Communications

  — *ESOO, PASA, LRC, LOR forecasts, etc*

- Directions

- Blackouts

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AEMO's reserves management tools

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  — *ESOO, PASA, LRC, LOR forecasts, etc*

- Standing reserve

- Directions

- Blackouts

Summary

- DSP is an efficient way to tackle capacity problems
- Need to redesign reserves management processes to find the best places for DSP
- Spot prices can't give capacity signals to consumers
- DSP services are distinctly different to network services or retail supply
- Forced bundling must be avoided
- Practical open access is important

ENERGY RESPONSE

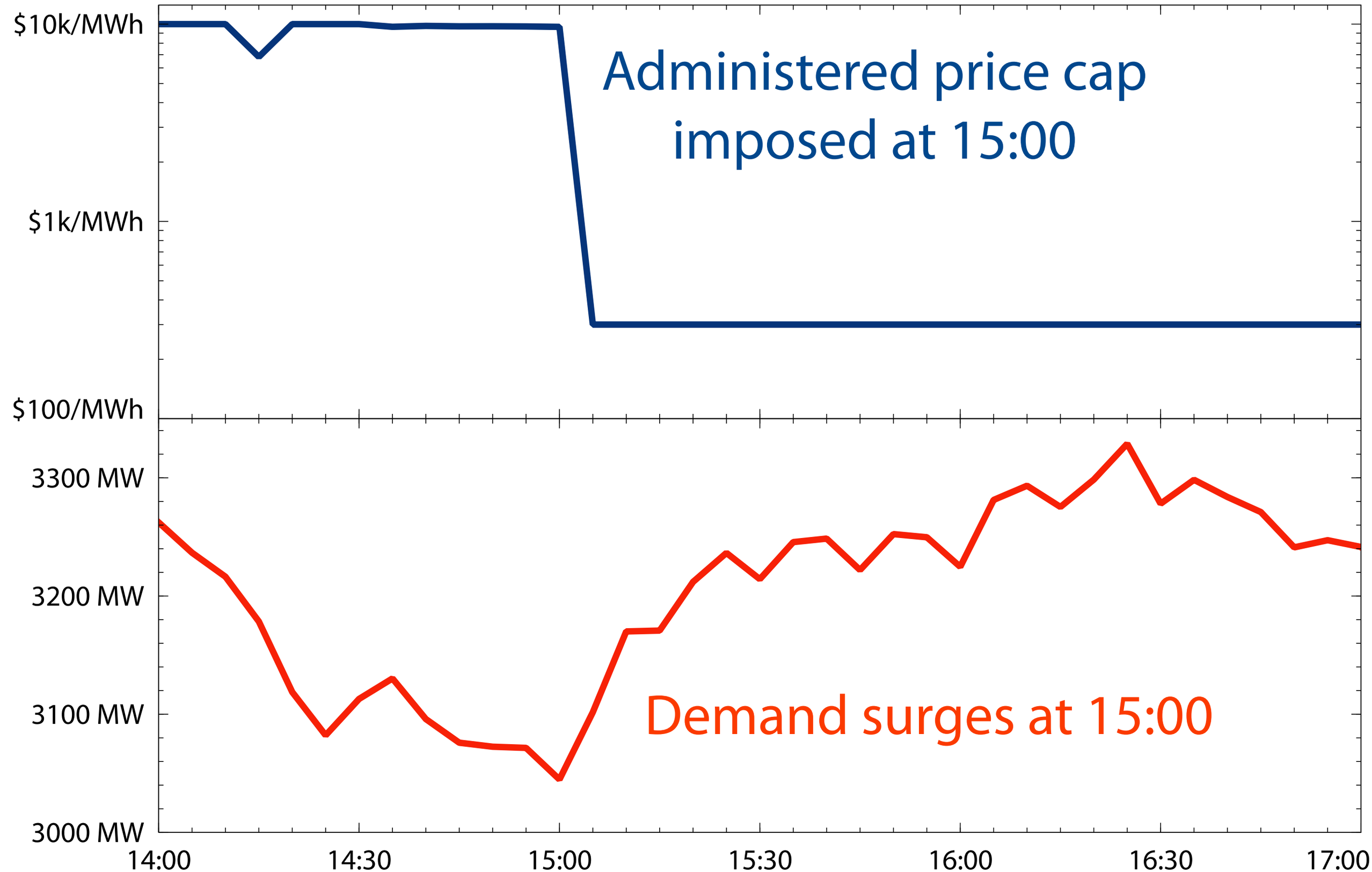
Extra material

Price distortions

30 minute trading prices are too coarse

- Demand can respond more quickly than supply
- With 30 minute pricing, there's no reward for agility
- Ex-post pricing introduces unhedgeable risks
- IT systems have improved since market start; surely we can cope with 5 minute prices now?

Cumulative Price Threshold: SA, 29 Jan 2009



Data: AEMO

Duration

Duration is important

- Limited by
  - — *Retail churn*
  - — *Short-duration network support requirements*
- Short duration schemes tend to
  - — *Cost more*
  - — *Be less reliable*
  - — *Elicit less capacity from a given area*