

# Opportunities in the future energy market

CEDA NSW

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# Our changing environment

## People and capabilities

The challenges demand a broad range of technical competencies. To cope with continual change, AEMO employees must be skilled at multi-disciplinary capabilities in innovation, influencing and change management, drawing on modern organisational techniques such as agile design thinking and collaboration.

## Climate change and resiliency

The energy systems are not designed, built or operated to accommodate the increased frequency, extremity and scale of climate-induced weather events, or the influence of weather on major sources of energy production.

## Markets and regulations

Regulatory frameworks and competitive energy markets were designed for a time when market and technological changes were more limited. The processes used to support changes are not able to respond with the speed necessary to allow the industry and markets to develop solutions to the complexity of new challenges.

## Energy industry

## Power supply mix

Rapid increases in both distributed energy resources (DER) and variable renewable energy (VRE) are forecast, coupled with the retirement of conventional plant.

## Sector coupling

Increasingly complex co-dependencies between multiple sectors such as gas, heating, electricity and transport (electric vehicles), water, and hydrogen will have a significant impact on how best to evolve a power system that meets Australia's future needs.

## Digitalisation

The global explosion in data volumes, technologies such as artificial intelligence, and the characteristics of the energy industry mean the system will increasingly depend on digitalisation and data.

## Consumer engagement

Energy markets have historically been wholesale and business-to-business in nature, but consumers now have more options to engage with their energy consumption, including owning distributed generation and storage.

# AEMO Purpose, Mission and Core Functions

## Purpose

*Shaping a better energy future for all Australians*



## Mission

- Pursue operational, technical and commercial understanding and excellence.
- Partner with others to explore, test and learn.
- Contribute to affordable, secure, reliable and sustainable energy for all Australians.

## Core functions



Maintain and improve power and gas security



Manage a number of power and gas markets



Lead the design of Australia's future energy system



Facilitate competition and data availability for power and gas markets

## Strategic pillars

### 1 Reliable and secure system operations

Maintain high-reliability operation of energy systems while adapting to anticipated changes in generation, and improve our forecasting services.



### 2 Future system design

Facilitate among stakeholders an orderly transition to a fit-for-purpose future system.



### 3 Adaptive markets and regulations

Implement new approved market requirements, adapt rules and markets to emerging needs within current regulatory framework; and influence overarching reform of regulatory processes to support rapid innovation.



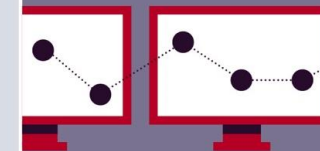
### 4 Consumer engagement and access

Empower individuals to exercise choice in the energy market, improving access to data and decision tools, and reducing friction in sharing data and implementing decisions.



### 5 Digital and data

Deliver a modern digital platform that will unlock new value for consumers, improve data access, choice and user experience, and enable flexibility and new services.



### 6 People, culture and capabilities

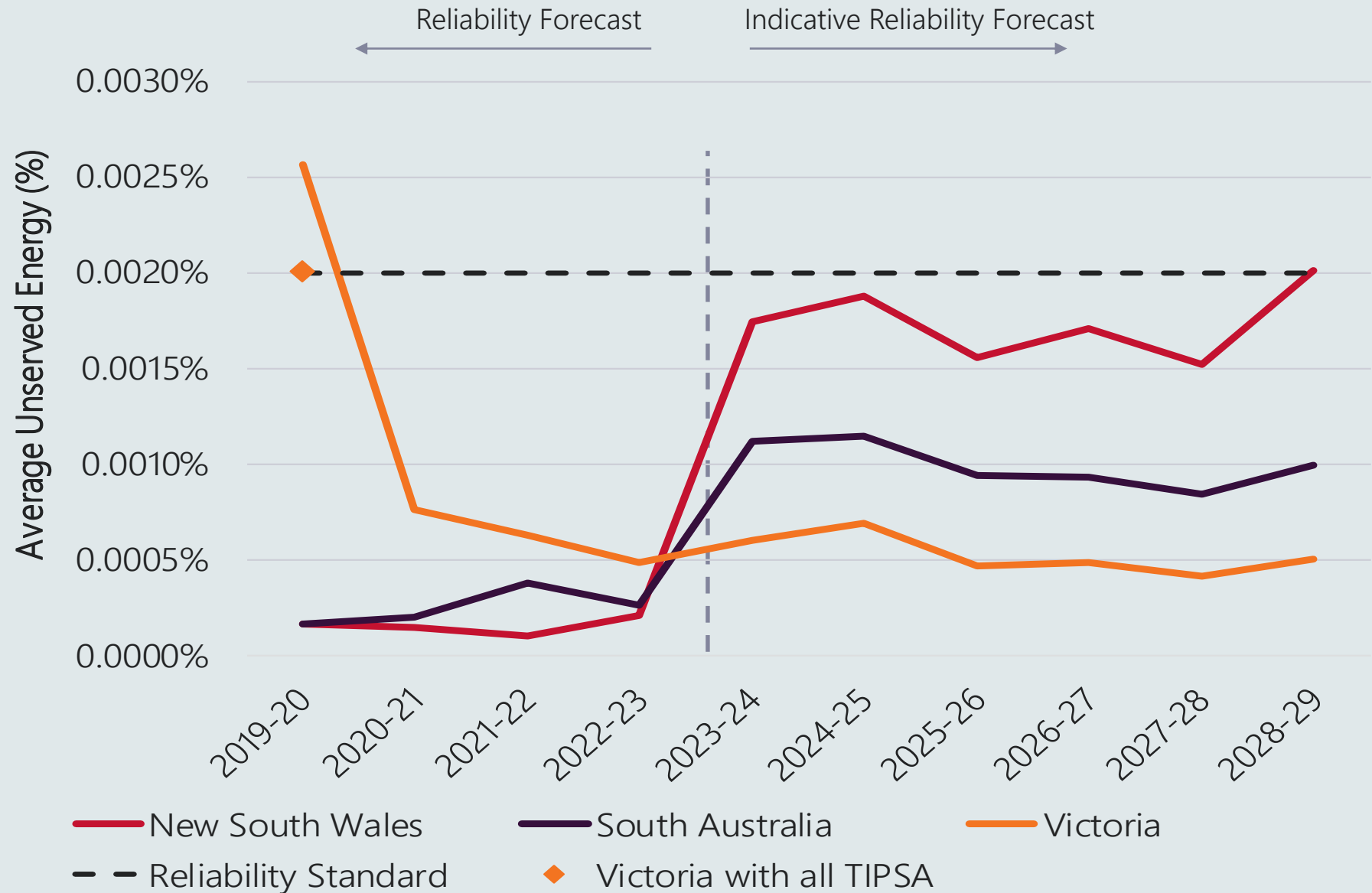
Build on our key assets – our organisational knowledge and our people – by broadening our technical skills and evolving our culture to favour innovation and collaboration, enabling our people to deliver on our strategic pillars, and keeping AEMO a sought-after environment where our diverse, talented people can thrive.



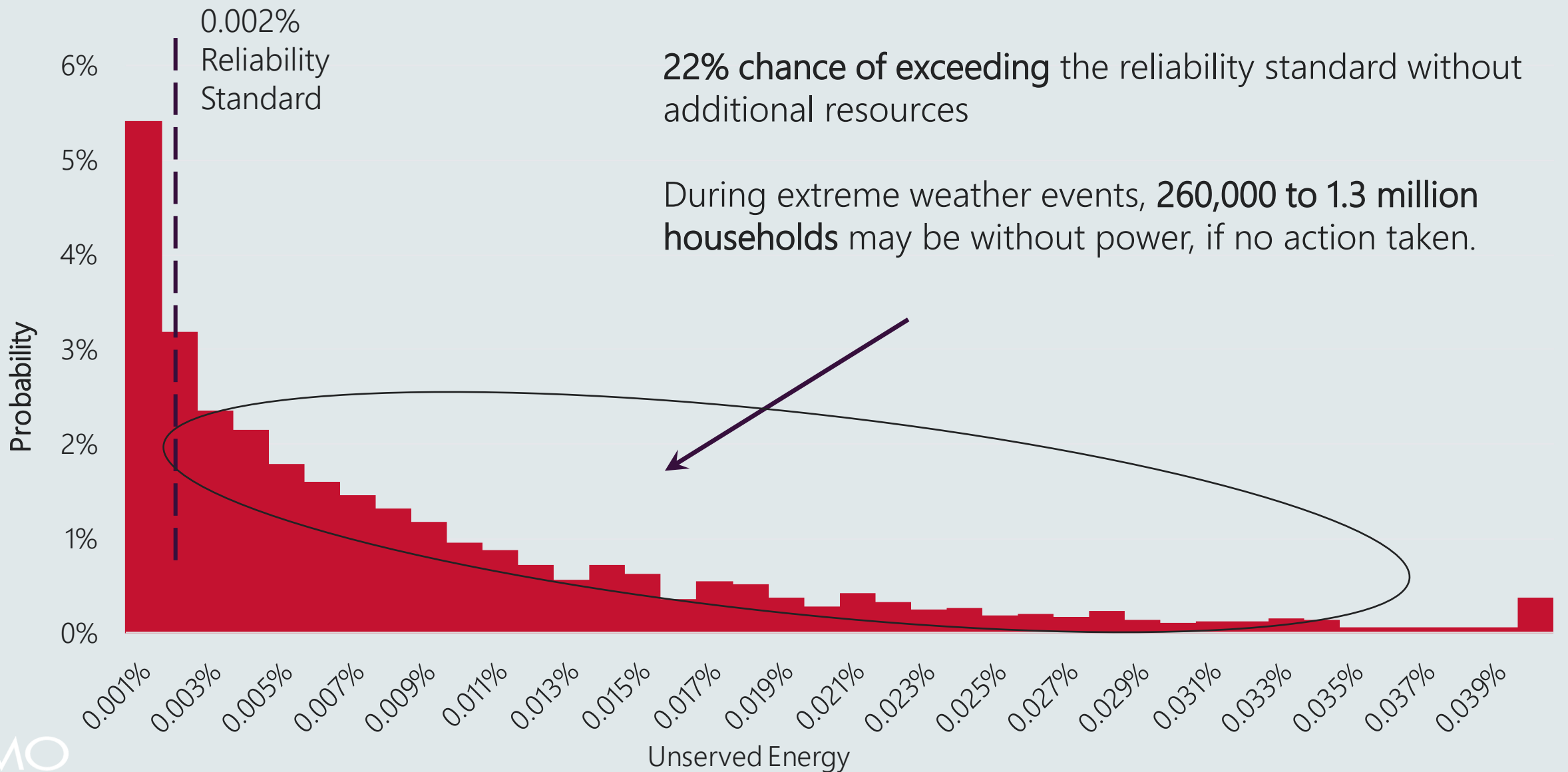
# Reliability outlook

RRO is **not** triggered as USE is below the standard in 2022-23 in all regions

Includes only existing and committed generation and transmission. Does not include any Group 1 ISP projects.



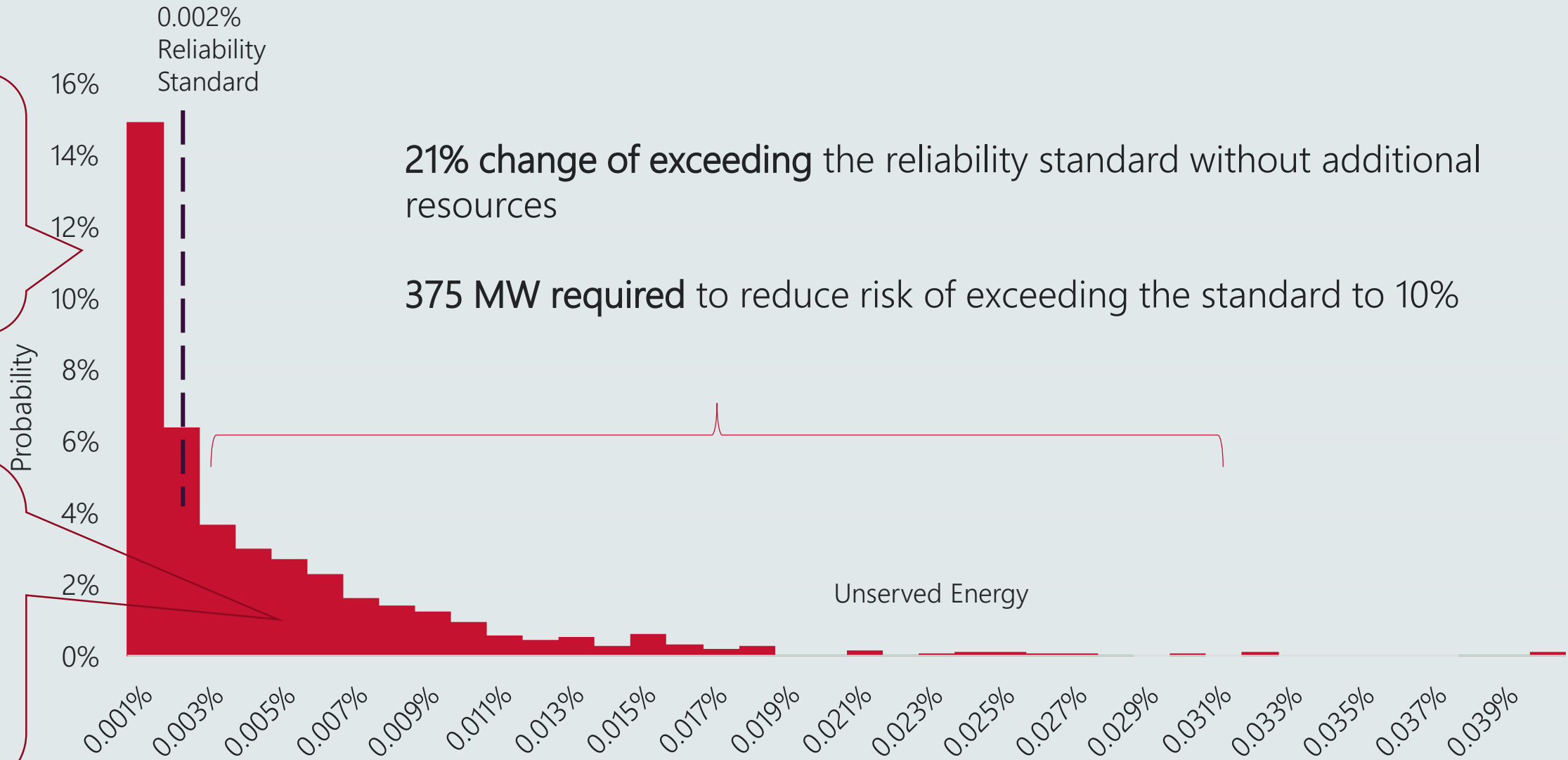
# Tail-risk in Victoria – potential for severe load shedding



# Tail-risk in NSW post full Liddell closure – Potential for severe load shedding

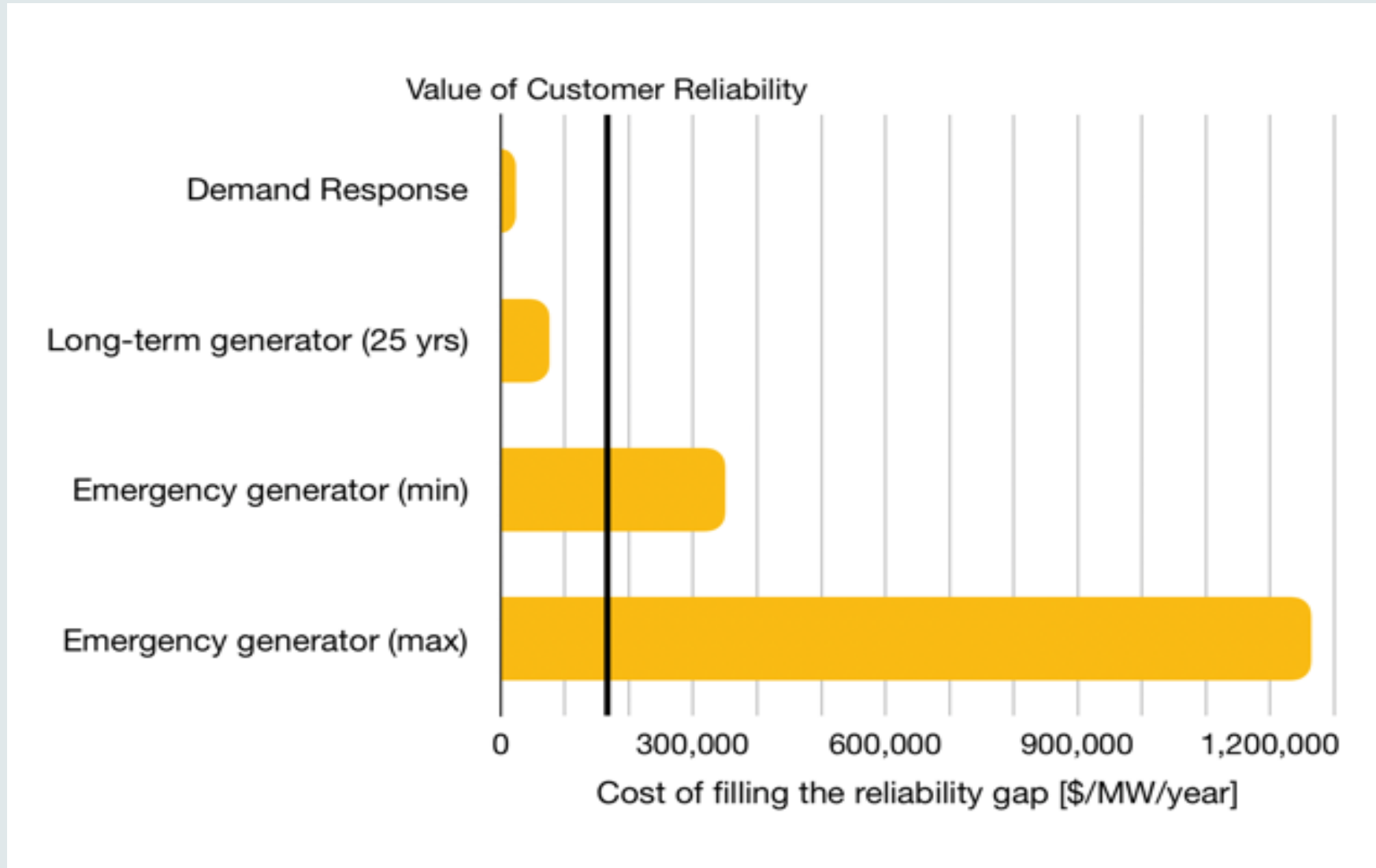
~135,000 households out for ~3 hrs  
Example system configuration:  
• 1 unit out @ P10 demand  
OR  
• 2-3 units out @ P50 demand

~770,000 households out for ~3 hrs  
Example system configuration:  
• 2-3 units out @ P10 demand  
OR  
• 1 unit out and low contribution from VRE and IC





# Adequate planned reserves are cost effective



# Required actions

1. Modifying the Reliability Standard
2. Summer readiness plan
3. Commissioning of targeted transmission augmentation
4. Dispatchable resources
5. Three-year strategic reserve
6. Wholesale demand response
7. Market reform
8. Notice and mechanism of closure
9. Information transparency