



## AUSTRALIAN GRID SURVEY

### ESB voltage analysis highlights major opportunity for energy efficiency and grid modernisation

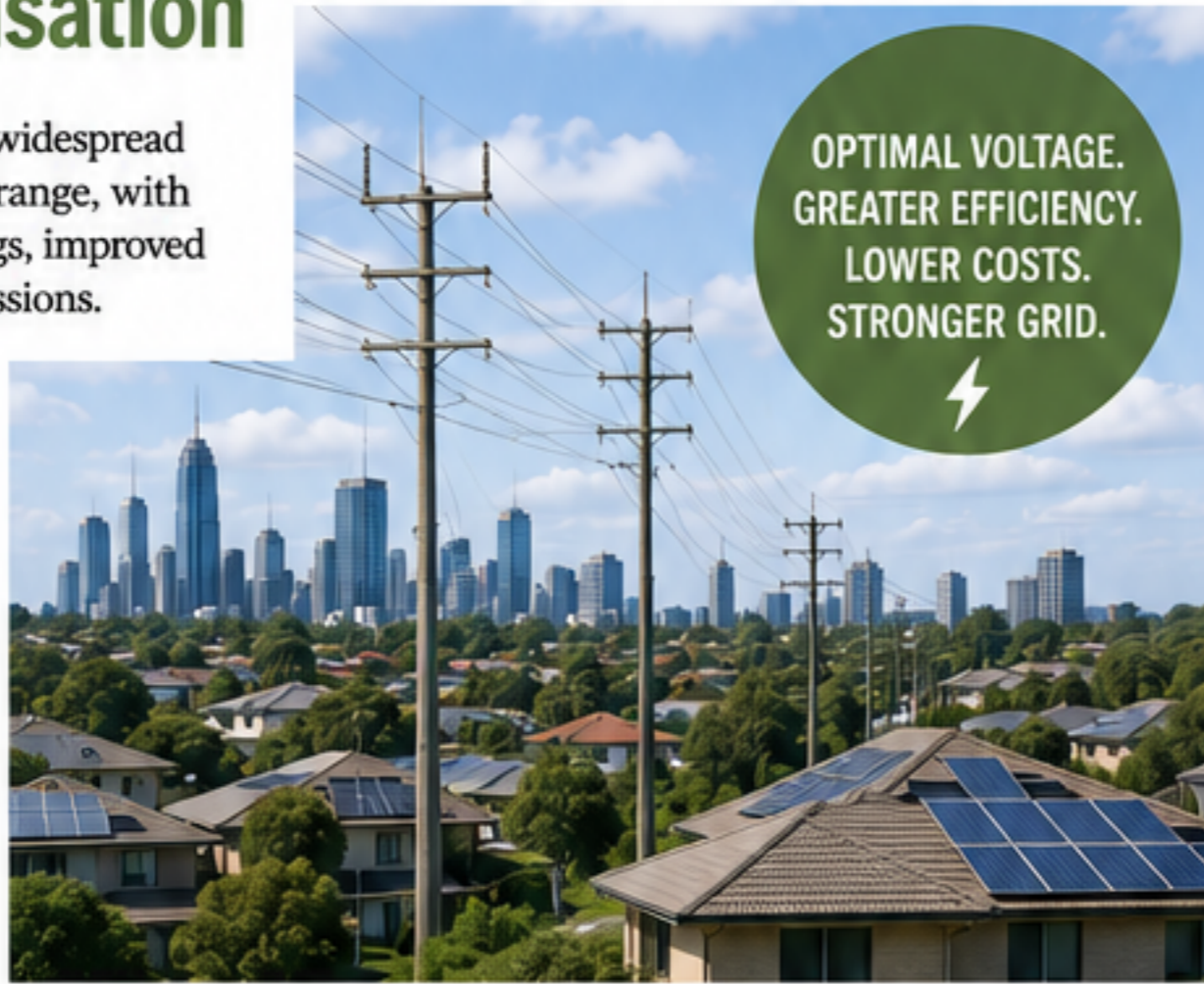
Comprehensive survey finds widespread voltage levels above optimal range, with significant potential for savings, improved power quality and lower emissions.

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A major new survey by the Energy Security Board (ESB) has revealed that many voltage levels across Australia's National Electricity Market (NEM) are operating above optimal ranges — driving up energy costs for households and businesses, increasing wear on equipment and creating unnecessary stress on the grid.

The ESB report recommends a coordinated national response to improve voltage management and unlock substantial energy efficiency benefits for consumers, industry and the environment.

Full story on Pages 4–5



#### WHAT THE SURVEY FOUND

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| <b>VOLTAGES ABOVE OPTIMAL LEVELS</b><br>Many locations record voltages above 240V, exceeding optimal levels within the 216V to 253V range (AS 61000.3.100). | <b>REGIONAL VARIATIONS</b><br>Significant voltage differences across the NEM, with rural and remote areas experiencing greater variability. | <b>ENERGY EFFICIENCY IMPACT</b><br>Higher voltages increase energy use by up to 10% in some areas. Voltage optimisation can deliver real savings. | <b>RENEWABLE CHALLENGES</b><br>High DER penetration can cause voltage rise in low-load conditions, requiring better management and coordination. | <b>EQUIPMENT &amp; POWER QUALITY</b><br>Excess voltage accelerates equipment degradation and reduces lifespan of appliances, motors and infrastructure. |
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#### WHAT THE ESB SURVEY MEANS FOR AUSTRALIA

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| <b>A CALL FOR ACTION</b><br>The ESB's findings send a clear message — voltage management must become a higher priority for all stakeholders to improve efficiency and ensure a stable grid. | <b>STRONG ECONOMIC BENEFITS</b><br>From lower energy bills and reduced maintenance to deferred infrastructure investments, effective voltage management delivers strong financial returns. | <b>SUPPORTING THE ENERGY TRANSITION</b><br>As renewables grow and electricity demand rises, smart voltage management will be essential to supporting a sustainable, decentralised energy system. | <b>CONTRIBUTING TO EMISSIONS TARGETS</b><br>Reducing unnecessary energy consumption through voltage optimisation supports Australia's carbon reduction commitments. |
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#### ENERGY TRANSITION

##### Coal plants close as renewables surge



Australia moves closer to a clean energy future with record renewable generation.

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#### INFRASTRUCTURE

##### New transmission projects unlocking capacity



Major projects announced to strengthen the grid and support future demand.

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#### BUSINESS

##### Energy costs top concern for Australian industry



Rising electricity prices impacting competitiveness and investment.

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#### KEY RECOMMENDATIONS



##### IMPLEMENT VOLTAGE MANAGEMENT STRATEGIES

Adopt voltage optimisation, advanced tap changers, dynamic voltage regulation and network augmentation to maintain voltages within the optimal range.



##### ENHANCE MONITORING AND REPORTING

Increase deployment of smart meters and voltage monitoring devices for granular, real-time visibility and faster corrective actions.



##### POLICY AND REGULATORY REFORMS

Update the regulatory framework to encourage compliance with voltage standards and incentivise DNSPs to actively manage voltage levels.



##### SUPPORT FOR DISTRIBUTED ENERGY RESOURCES (DERS)

Improve coordination between DNSPs and DER owners, including advanced inverter settings and dynamic export limits to manage voltage impacts.



##### CONSUMER AWARENESS AND ENGAGEMENT

Educate consumers on the benefits of optimal voltage, energy savings and the role of voltage management in improving power quality.

#### THE POTENTIAL IMPACT



##### UP TO 10%

Energy savings potential in some areas



##### LOWER EMISSIONS

Reduced energy use supports Australia's decarbonisation goals



##### 5–10% REDUCTION

In peak demand, easing pressure on the grid



##### LONGER EQUIPMENT LIFE

Improved power quality reduces wear and maintenance costs



##### DEFERRED INVESTMENT

Better voltage management can defer costly network upgrades



##### GREATER GRID RESILIENCE

Supports renewable integration and a modern, reliable grid

*“Managing voltage more effectively is one of the most practical and immediate pathways to lower energy costs, reduced emissions and a more resilient electricity grid.”*

— Energy Security Board

