Data Center Integration in the National Electric System

Current Status and Outlook

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COORDINADOR ELÉCTRICO NACIONAL

SERVIMOS A CHILE CON ENERGÍA

The Coordinador: secure and economic operation of the SEN

Independent technical body responsible for the reliability, security and economic operation of Chile's National Electric System

01

Operation and security

Ensure secure and economic grid operation.
Administer wholesale electricity and ancillary services markets.

02

Open access and interconnection

Ensure open access to the transmission system.
Manage grid interconnection for new projects.

03

Planning and tendering

Develop and propose transmission expansion plans.
Conduct international tenders for new projects.

04

Monitoring and innovation

Monitor competitive market conditions.
Promote innovation, research and development.

Institutional framework of Chile's electricity sector

Different institutions perform complementary regulatory, coordination and dispute resolution functions.

GOVERNMENT BODIES

Ministry of Energy

Energy governance and policy.

CNE

Regulation, tariffs and technical standards.

SEC

Electricity sector oversight.

SEN COORDINATION AND OPERATION

Coordinador Eléctrico Nacional

Coordinates operation of the National Electric System.

OTHER STAKEHOLDERS

Panel of Experts

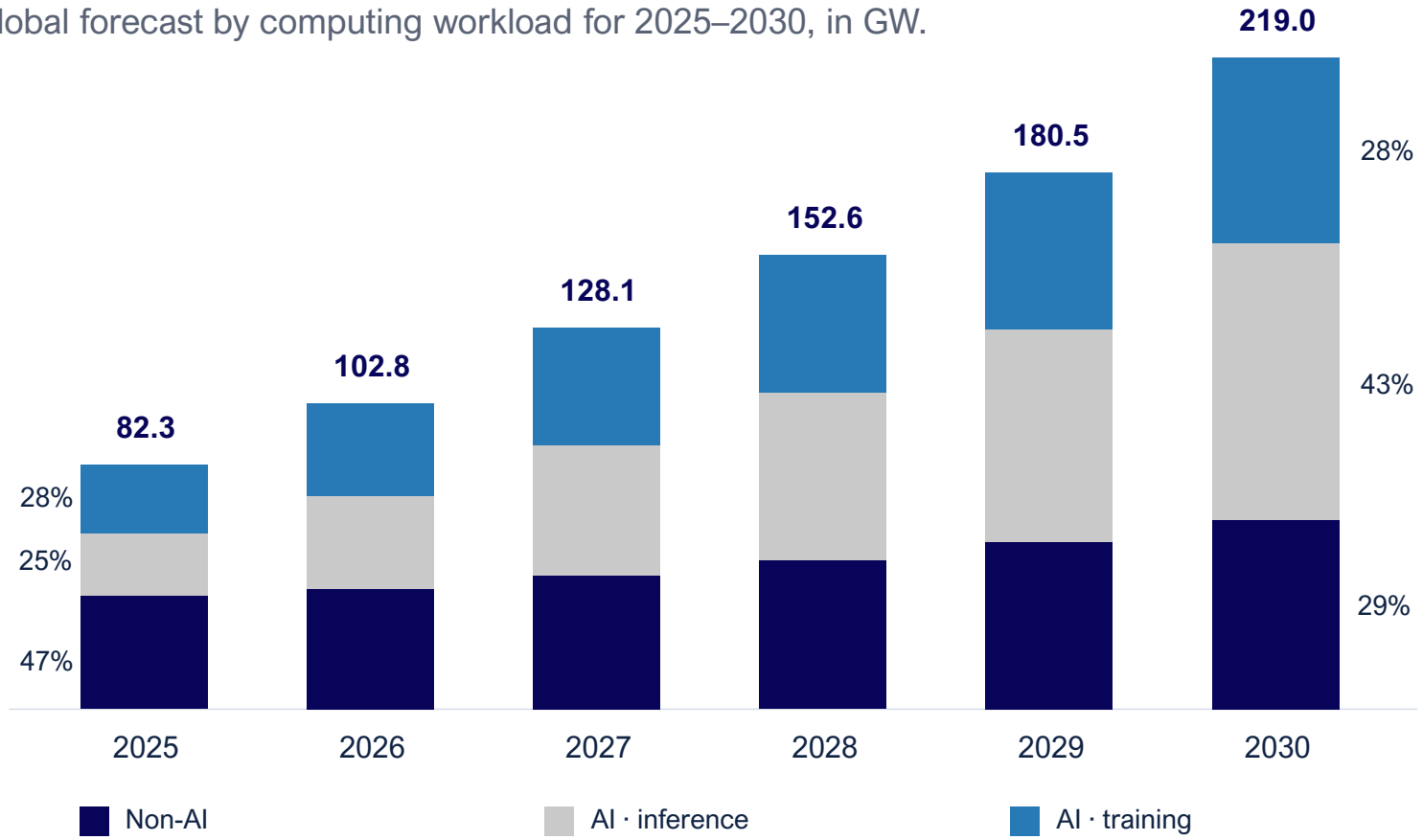
Resolves disputes in the sector.

Coordinated companies

Participants in the electricity industry.

Global data center demand could reach 219 GW by 2030

Global forecast by computing workload for 2025–2030, in GW.



Source: McKinsey Data Center Demand Model

71%

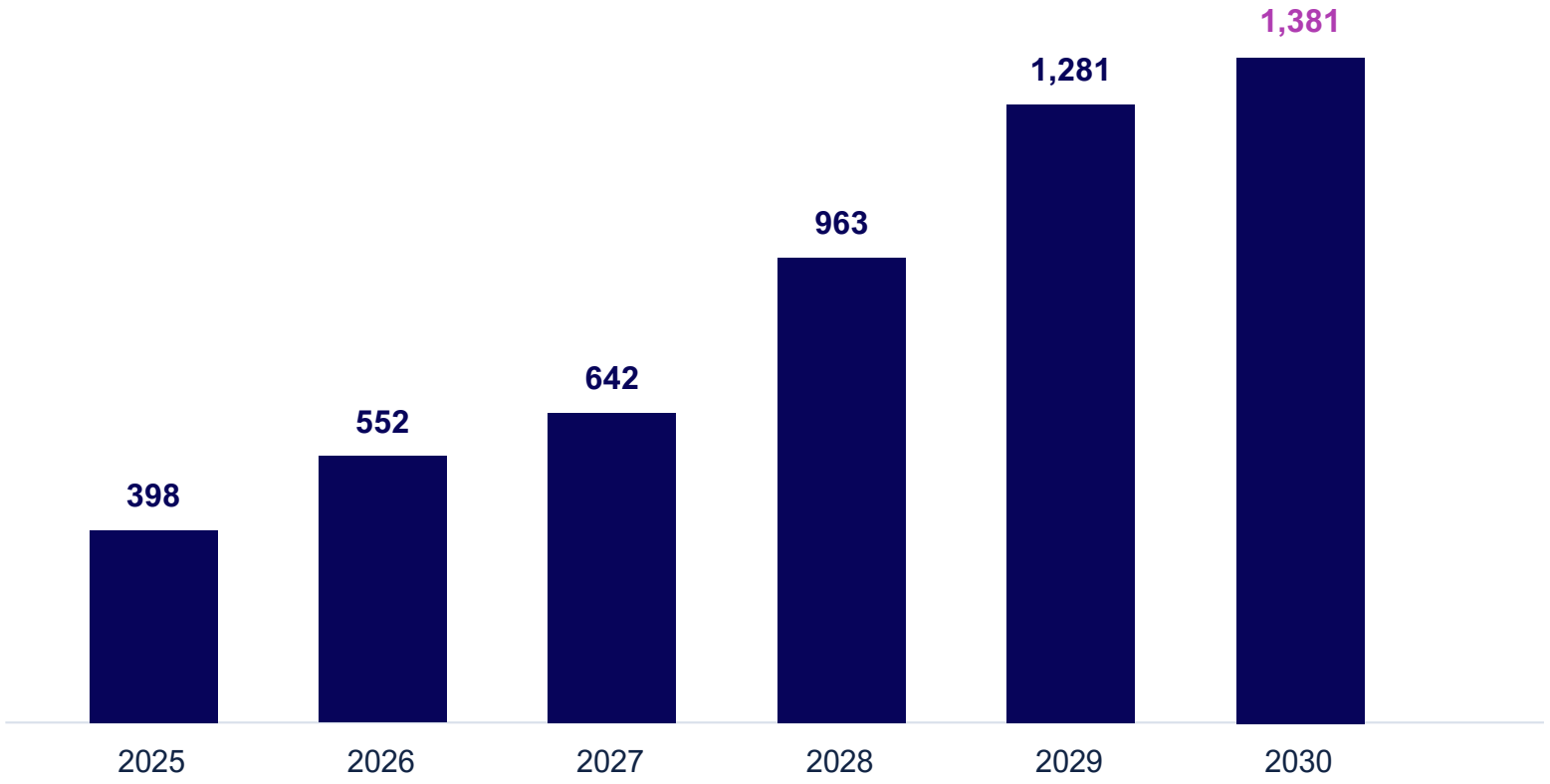
of power demand in 2030 is associated with AI workloads

+22%

compound annual growth rate

Data center demand in Chile is projected to increase

Estimated electricity demand for 2025–2030, in MW.



×2.5

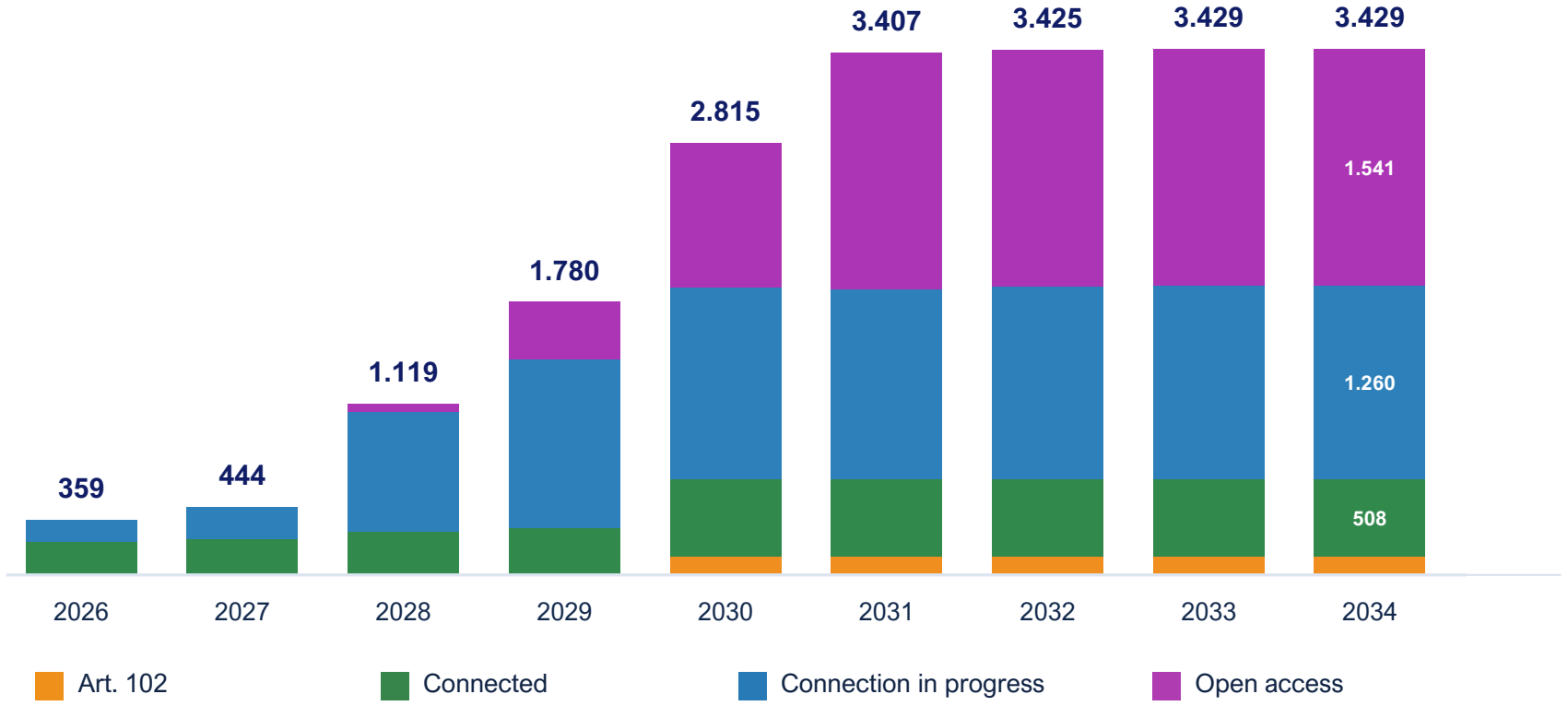
Demand in 2030 relative to 2026.

89%

Demand concentrated in the Santiago Metropolitan Region.

Metropolitan Region: potential pipeline reaches 3,429 MW in 2034

Power demand by connection status, 2026–2034 (MW).



3,429 MW

2034 · +655% vs. 2026.

45%

Share under open access.

508 MW

Connected demand by 2030.

Transmission reinforcements are needed to meet rising demand

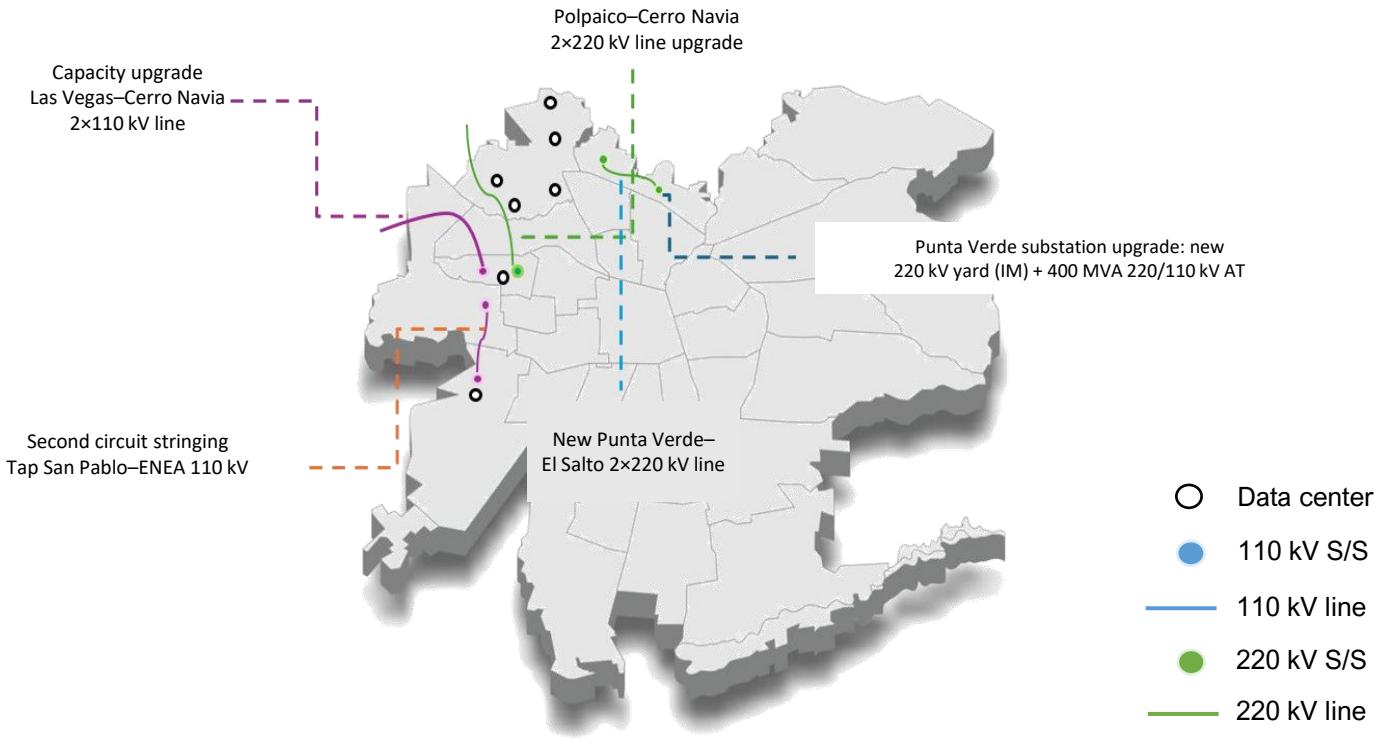
Proposed projects to address supply adequacy in the metropolitan area.

5 projects

Four upgrades and one new transmission line.

US$ 91.8 M

Estimated investment in reinforcement projects.



Reinforcements and connections in the metropolitan area

Two key mechanisms for connecting new projects

Feasibility depends on the infrastructure required and technical connection conditions.

01

Open access

Grid connection using transmission capacity and/or available infrastructure.

Requires an assessment of impacts on security and quality of supply.

02

Urgent projects · Art. 102 LGSE

Allows infrastructure development outside the regular planning process to meet justified needs.

Justification must address need, urgency and benefits; CEN assesses impacts on security and service quality.

Urgent projects (Art. 102): Assumptions and indicative Permitting

Four project categories outside the planning process and stages shown in the original material.

01 Ensure supply

Avoid outages or shortfalls as new needs arise.

*E.g.: **DATA CENTER** demand.*

02 Improve security

Prevent faults and reinforce critical infrastructure.

E.g.: lines and substations.

03 Support new projects

Integrate generation, storage or ancillary services.

E.g.: solar farms, wind farms or batteries.

04 Temporary connections

Limited operation until permanent works are completed.

E.g.: temporary connections to supply demand (*)

(*) Currently not specified in the Technical Standard

Justification	Ensure Supply	Improve Security	New Projects	Temporary Connections
Need	✓	✓	✓	COORDINADOR must determine that the connection causes no security or supply quality issues. Connection term ≤4 years (or conditional)
Urgency	✓	✓	✓	
Outside the Planning Process	✓	✓	✓	
Benefits or improved S&Q	N/A	✓	✓	

INDICATIVE MILESTONES

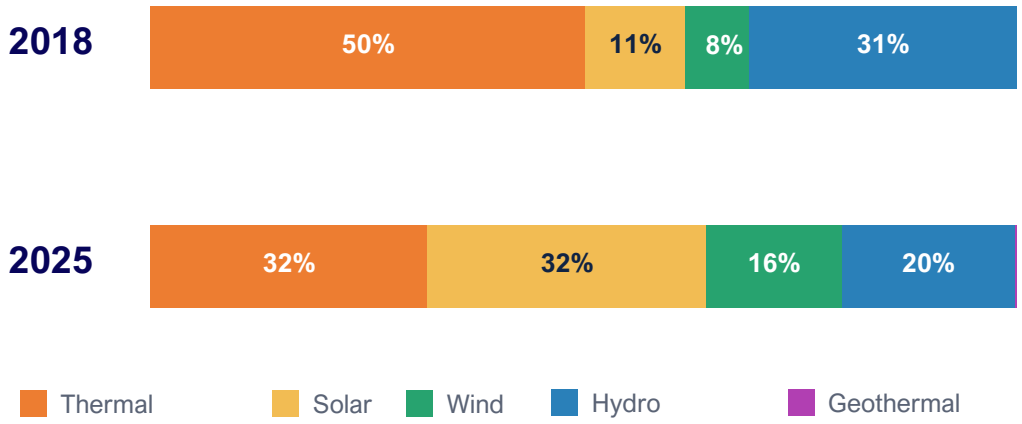


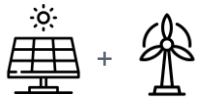
More renewables in the generation mix and lower emissions

The generation mix is changing significantly.

Share by generation source

Sustained growth in renewable capacity





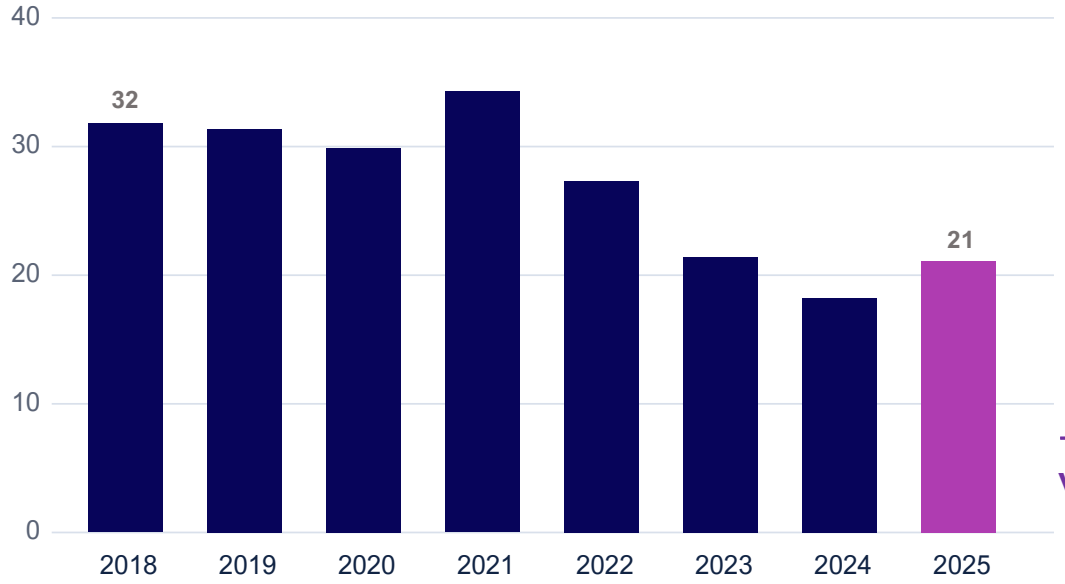
Solar + wind

19% → 48%

2018 2025

System emissions ($MtCO_2eq$)

Declining emissions



–34% vs. 2018

Source: Own calculations using annual energy and emission factors from CNE's Energía Abierta.

Reliability and efficiency: challenges of intensive demand

Data center operation and siting can affect grid requirements.

01	**Siting and supply**	Access to energy, connection capacity, demand profiles and cooling needs (water and electricity).
02	**Backup and continuity**	Backup generation and UPS: support for service continuity and contingency management.
03	**Flexibility and services**	Potential for peak shaving, demand response and, where applicable, black start and other ancillary services, subject to technical requirements.

Operational impacts of large simultaneous disconnections must also be assessed.

Four conditions for a sustainable data center ecosystem

Competitiveness requires capacity, continuity, cost efficiency and resilience to contingencies.

ABUNDANT

Sufficient capacity to meet projected demand growth, including AI.

RELIABLE

High availability and continuity of supply. Stated benchmark: >99.9%.

AFFORDABLE

Competitive energy costs compared with other global locations.

RESILIENT

Resilience to physical, operational and cyber threats.

Industry expansion requires an integrated view of demand, infrastructure and power system operation.

Three priorities for securely integrating new demand

Proposed technical approach to strengthen SEN readiness.

01 **Better characterize demand**

Bus locations · hourly profiles · commissioning dates · effective demand · project traceability.

02 **Anticipate grid constraints**

N-1 studies, voltage, transformer capacity and sensitivity to large block disconnections.

03 **Coordinate feasible solutions**

Transmission expansion planning (PET), open access and urgent mechanisms where applicable; assess flexibility, backup and costs.

Shared priority: explicit uncertainty and scenarios; distinguish the project pipeline from firm demand.

The challenge goes beyond connecting more MW

Digital competitiveness depends on a ready, reliable and flexible grid.

Anticipation

New demand may emerge faster than infrastructure can expand.

Accuracy

Forecasts and project pipelines must be distinguished to avoid over- or undersizing.

Coordination

The solution combines planning, access, operation and regulatory mechanisms.

Planning location, connection timing and service quality is as important as securing energy.

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