

AI+ Energy Data Centre

Energy Demand, Policy Dynamics & Grid Realignment

Vice-Chairman, EGEEC ·
EGEEC Working Group Meeting · 2026



Why Data Center Energy Demands Attention Today



UNITED STATES

Data centers drove ~
50% of total electricity
demand growth
in 2025

58 TWh (2014) → **176 TWh** (2023) → **325–580 TWh** by 2028



CHINA

Data centre demand
projected from

~100 TWh (2024) → **277–289 TWh** by 2030



JAPAN

Consumption set to
TRIPLE

19 TWh (2024) → **57–66 TWh** by 2034



AI + Energy Trends

AI driven energy efficiency

Increasing policies related to AI and DC development

60+ Policies

enacted 2009–2026 across 9 economies

70% Policies

were enacted after 2023

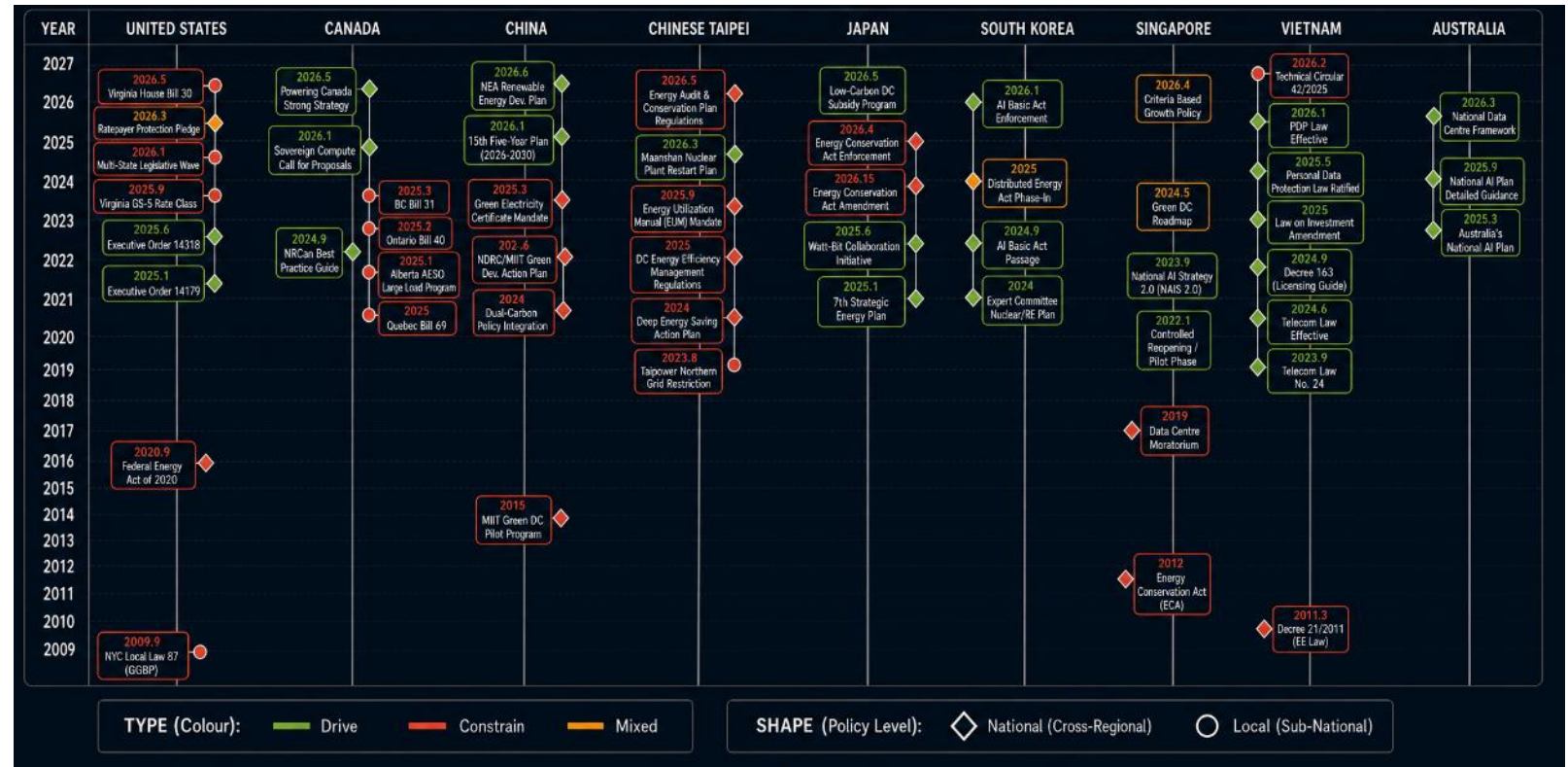


Figure – Policies related to AI and data centers development from 2009 to 2026 in 9 regions

Increasing polices in recent years

Increasing constraints in all regions

Since 2023

economies have increasingly mandated
PUE limits, energy audits, and tax
measures

In 2026

Most intensive wave of policy

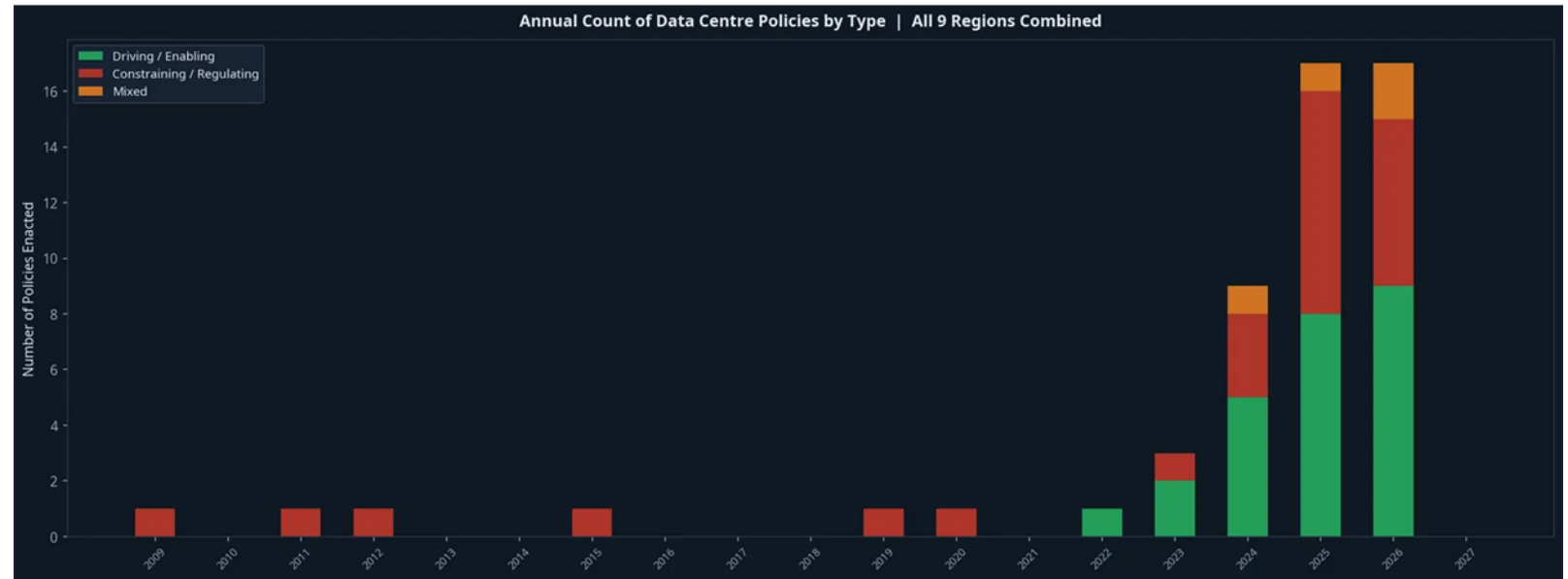
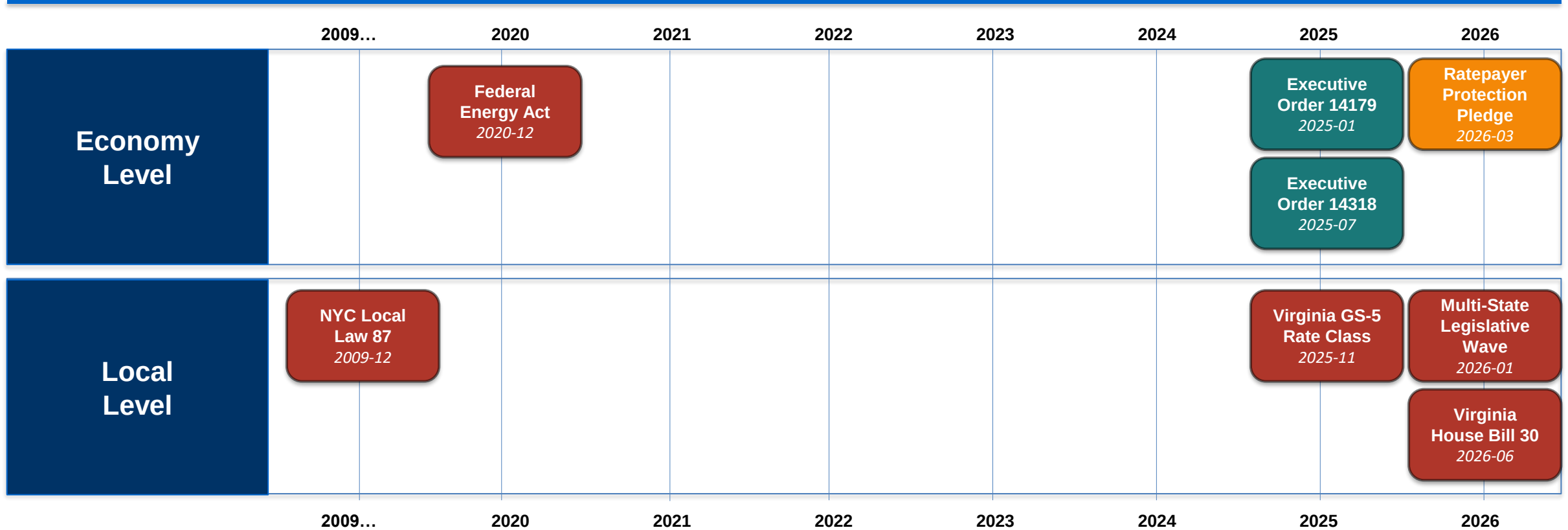


Figure – Distribution of policies by type

Policy Landscape

How economies are responding

United States



Strong differences between federal and local-level policies

United States

Drive

- **Executive Order 14179** removed regulatory barriers to AI;
- **Executive Order 14318** fast-tracked permitting for projects >\$500M / >100 MW, bypassing standard environmental review

Constraint

- **Virginia GS-5** rate class request DCs pay 85% of transmission costs
- **Virginia House Bill 30** poses a \$0.011/kWh consumption tax
- **Multi-state legislative wave** with over 300 state-level bills across 30+ states proposing moratoriums, tax rollbacks, rate restructuring and data disclosure ^[1]

Mixed

- **Ratepayer Protection Pledge** hyperscale AI/IT companies shoulder the full cost of the grid infrastructure needed for their data centers

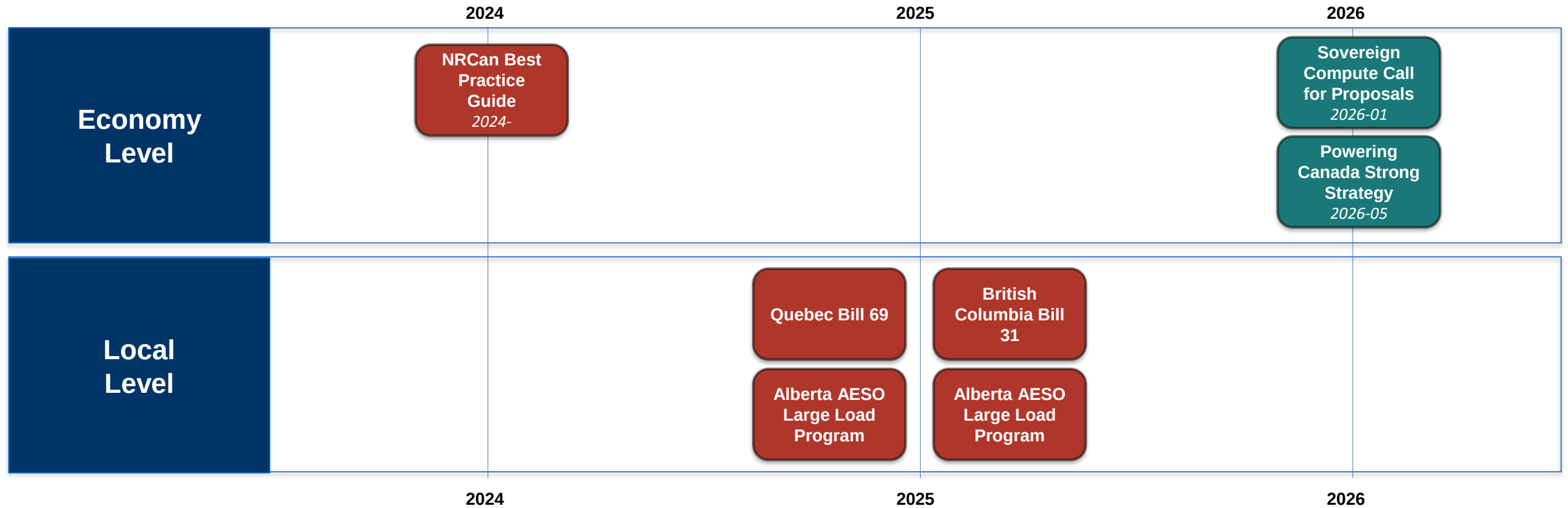
Multi-state legislative wave



Source:

[1] State Data Center Legislation in 2026 Tackles Energy and Tax Issues [\[Link\]](#)

Canada



Local initiative move faster

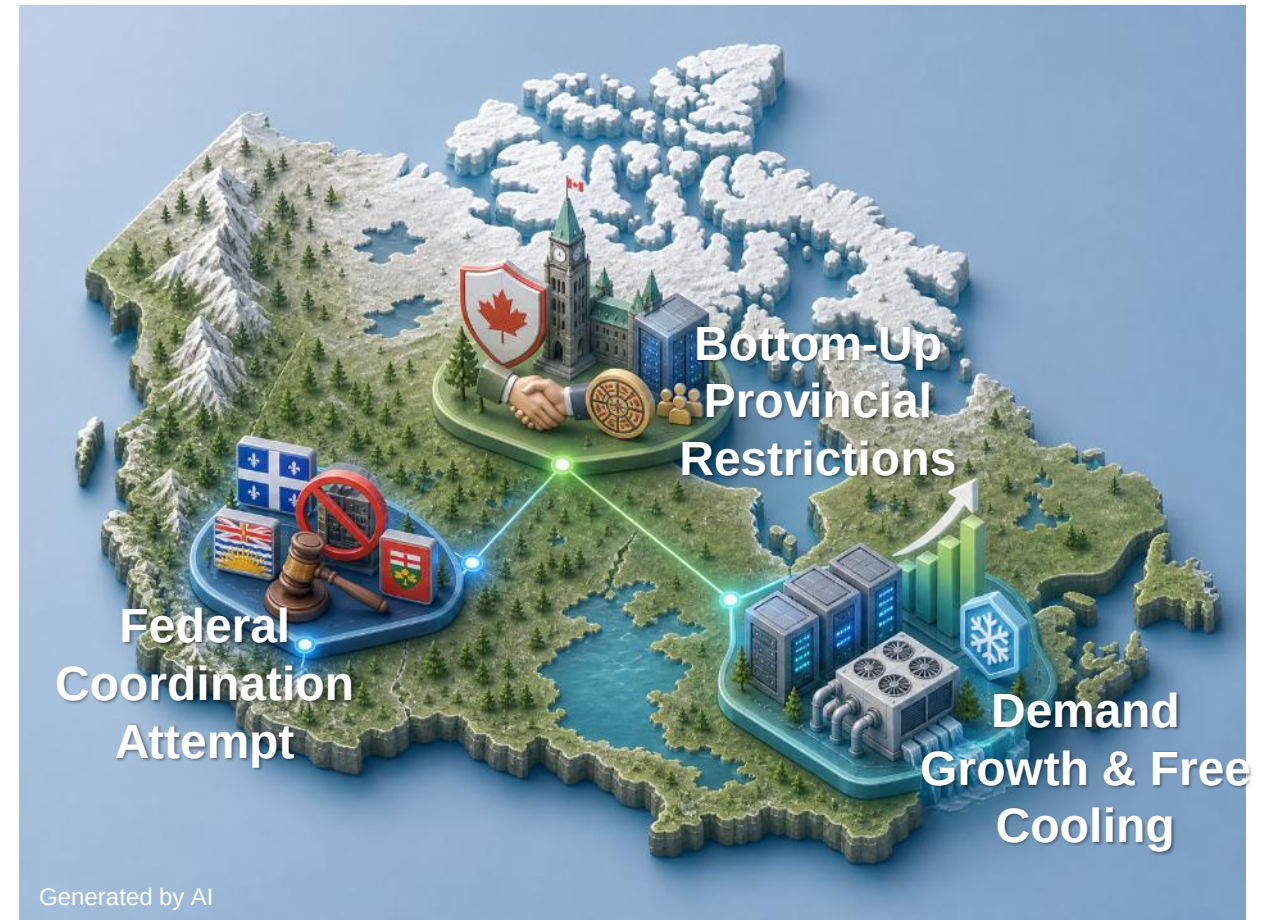
Canada

Drive

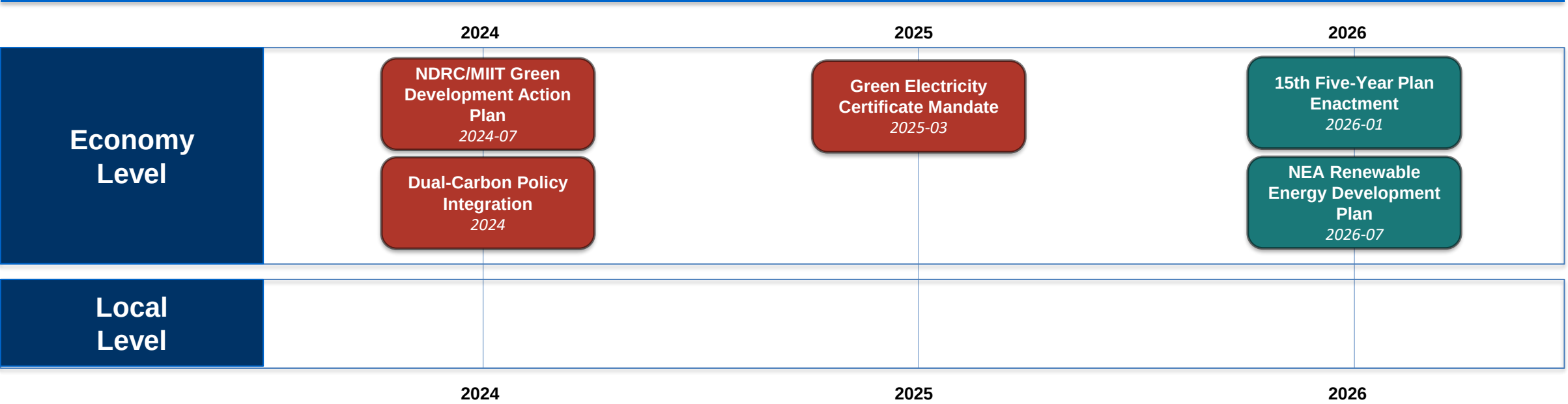
- **NRCan Best Practice Guide** Released voluntary guidelines on cooling and efficiency
- **Sovereign Compute Call for Proposals** funding initiative for facilities over 100 MW
- **Powering Canada Strong Strategy** high-level strategy to double grid capacity by 2050, targeting an 84% clean energy mix

Constraint

- **Quebec Bill 69** requiring direct ministerial approval and custom energy evaluations for any new electricity connection
- **Alberta AESO Large Load Program** requiring all excess demand to undergo full review
- **Ontario Bill 40** energy affordability legislation designed to protect residential ratepayers from rising costs driven by large industrial loads
- **British Columbia Bill 31** a complete ban on crypto-mining loads to preserve capacity for a competitive large-load allocation program



China



Highly synchronized, top-down integration

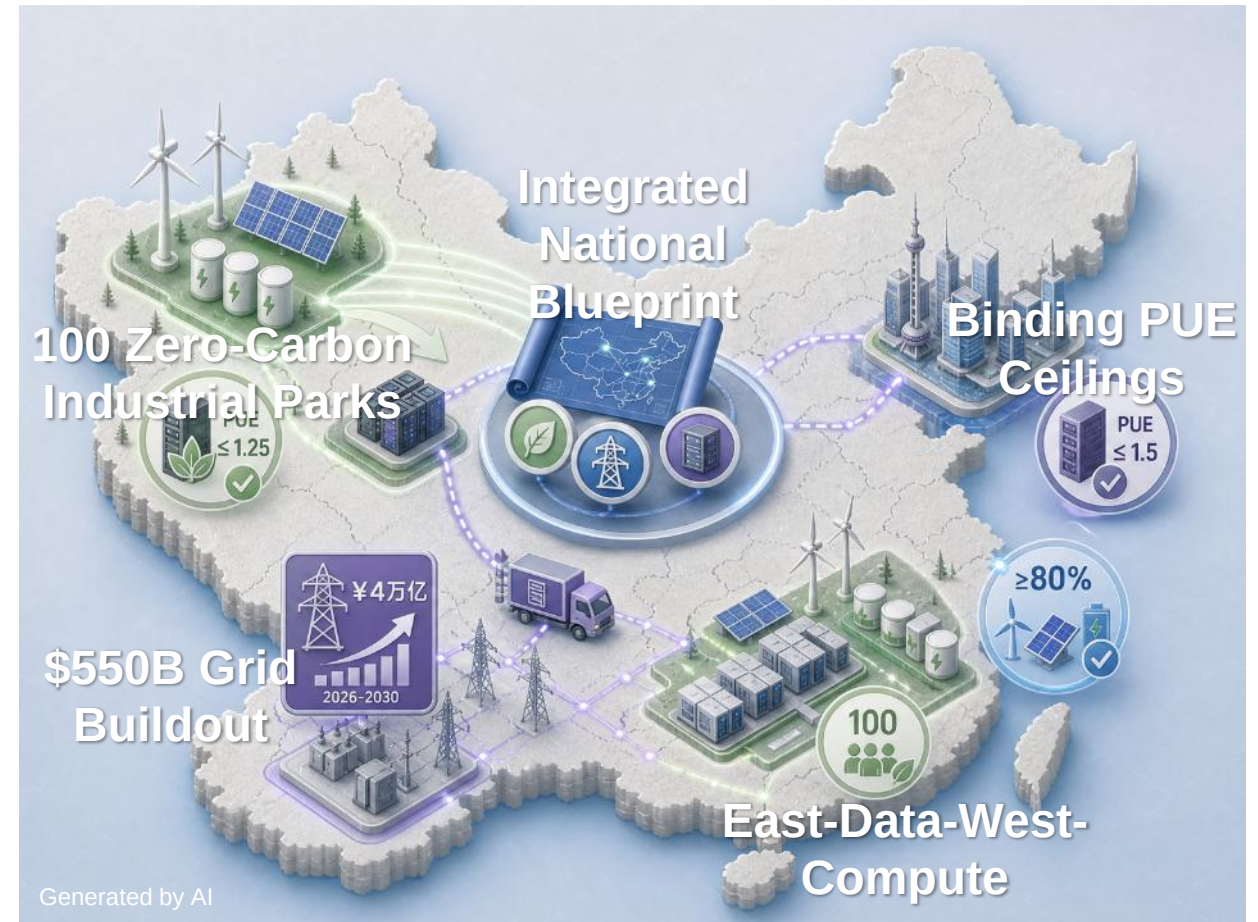
China

Drive

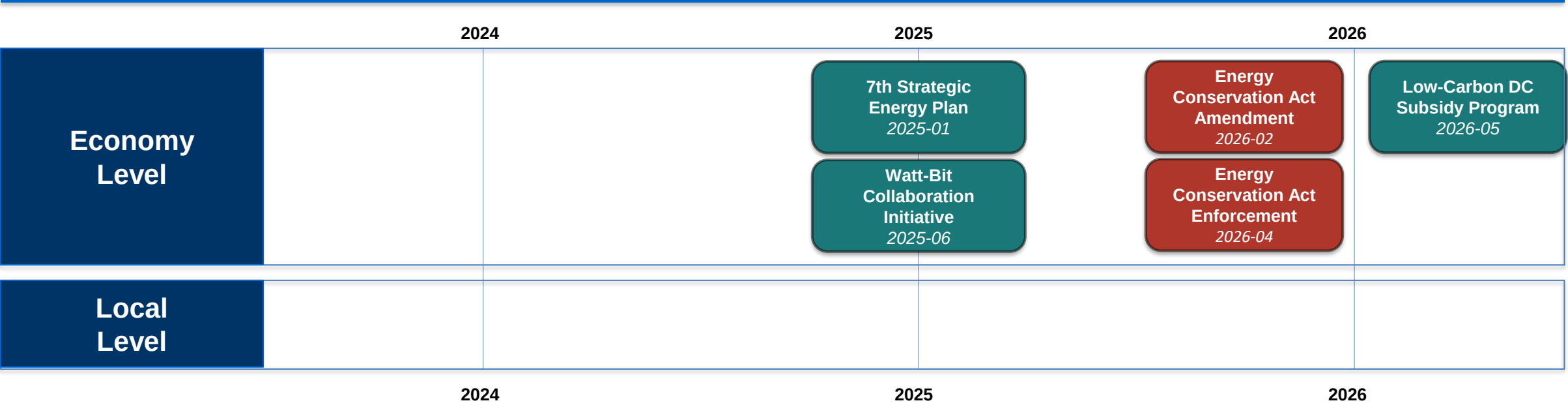
- **15th Five-Year Plan Enactment** Approved central blueprint directing 4 trillion yuan (~\$550 billion) for grid investment, 100 zero-carbon parks
- **NEA Renewable Energy Development Plan** roadmap targeting 3.5 billion kW of renewable capacity

Constraint

- **NDRC/MIIT Green Development Action Plan** Enforced strict PUE limits: (≤ 1.5 by 2025, and ≤ 1.25 for all new large facilities)
- **Dual-Carbon Policy Integration** Aligned data center expansion with national goals of peaking emissions by 2030 and carbon neutrality by 2060.16
- **Green Electricity Certificate Mandate** request data center to sources at least 80% of power from renewable energy source by 2030



Japan



Transitioned from a permissive, market-led framework to a structured, reactive regulatory model

Japan

Drive

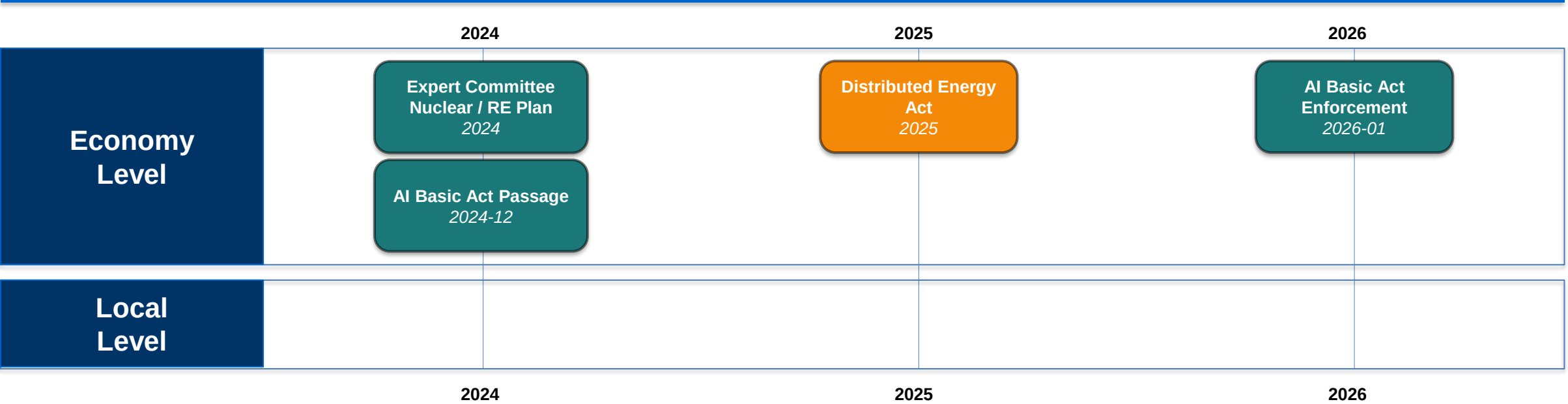
- **7th Strategic Energy Plan** raise the 2030 national power demand forecast to accommodate the expansion of AI and data center
- **Watt-Bit Collaboration Initiative** direct the physical co-location of data centers with renewable and nuclear generation
- **Low-Carbon DC Subsidy Program** funding program to subsidize advanced cooling, liquid loop, and optimization technologies.

Constraint

- **Energy Conservation Act Amendment** legally binding PUE targets of 1.4 for large facilities and mandating energy reporting for operators over 16,000 MWh
- **Energy Conservation Act Enforcement** Legal enforcement date for the binding efficiency standards, mandatory consumption reporting, and partial public disclosure of PUE



Korea



A proactive system that treats AI development and energy security as the same goal

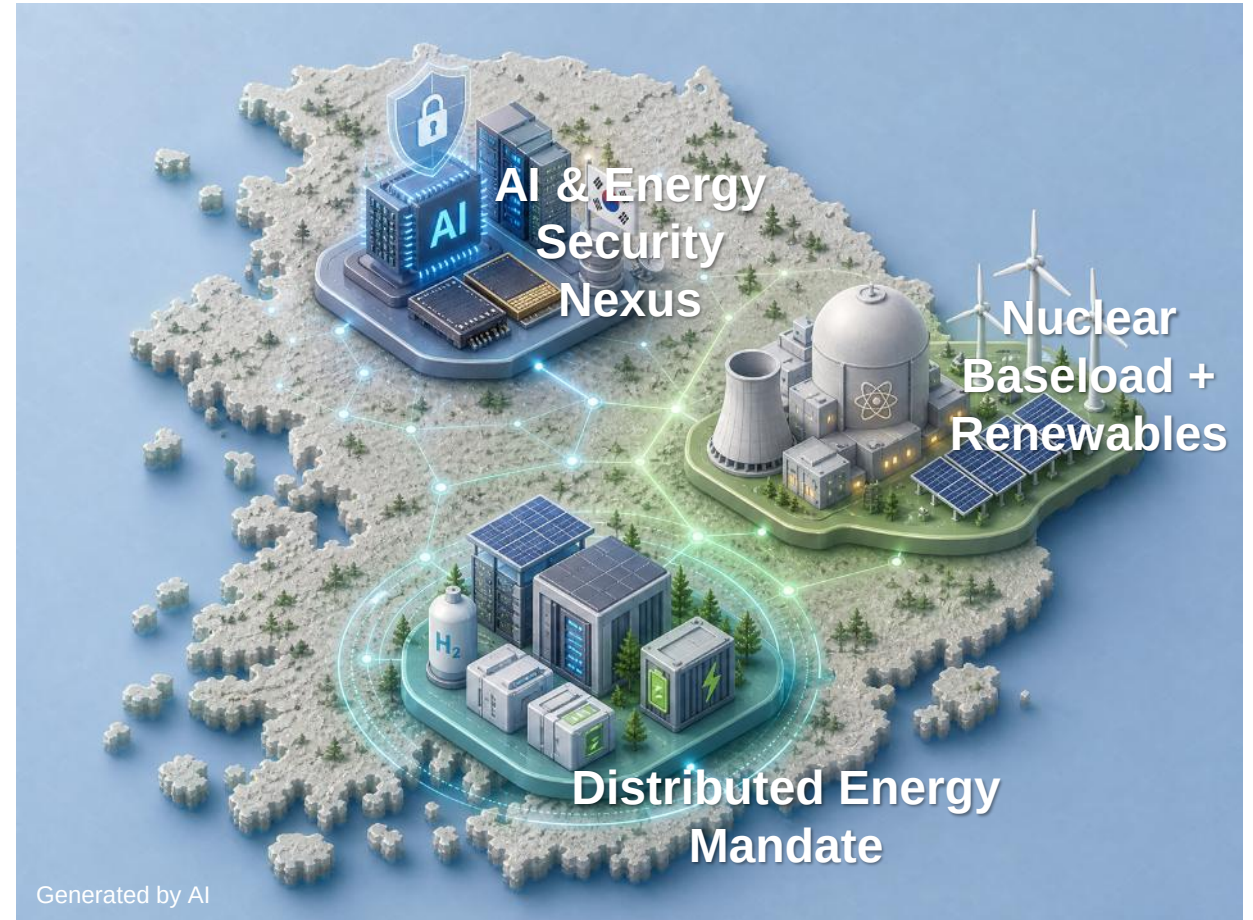
Korea

Drive

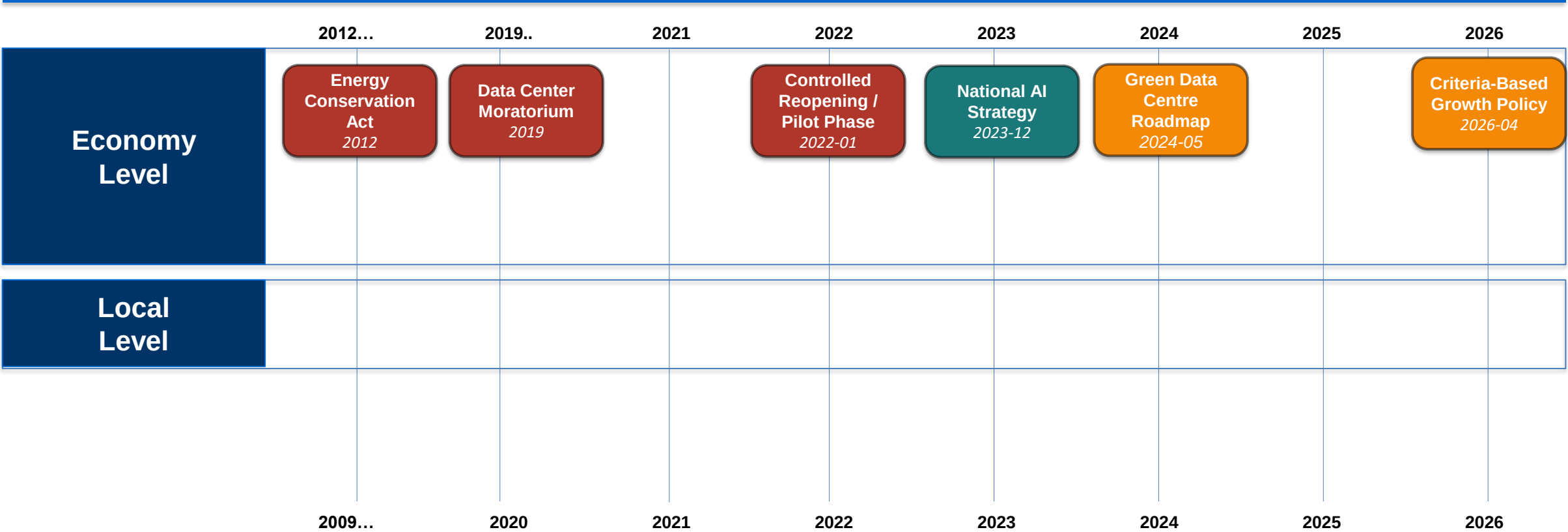
- **Expert Committee Sourcing Proposal** positioning nuclear power as the primary baseload source and target to reach ~33% RE by 2038
- **AI Basic Act Passage** advance domestic AI competitiveness, sovereign cloud architecture, and hardware supply chains

Constraint

- **Distributed Energy Act Phase-In** mandated that large energy consumers gradually increase their utilization of local, decentralized power generation
- **AI Basic Act Enforcement** national AI framework, linking digital infrastructure scale-up directly with grid-stability targets



Singapore



Strict gatekeeping to prioritize high-value AI compute within physical limits

Singapore

Drive

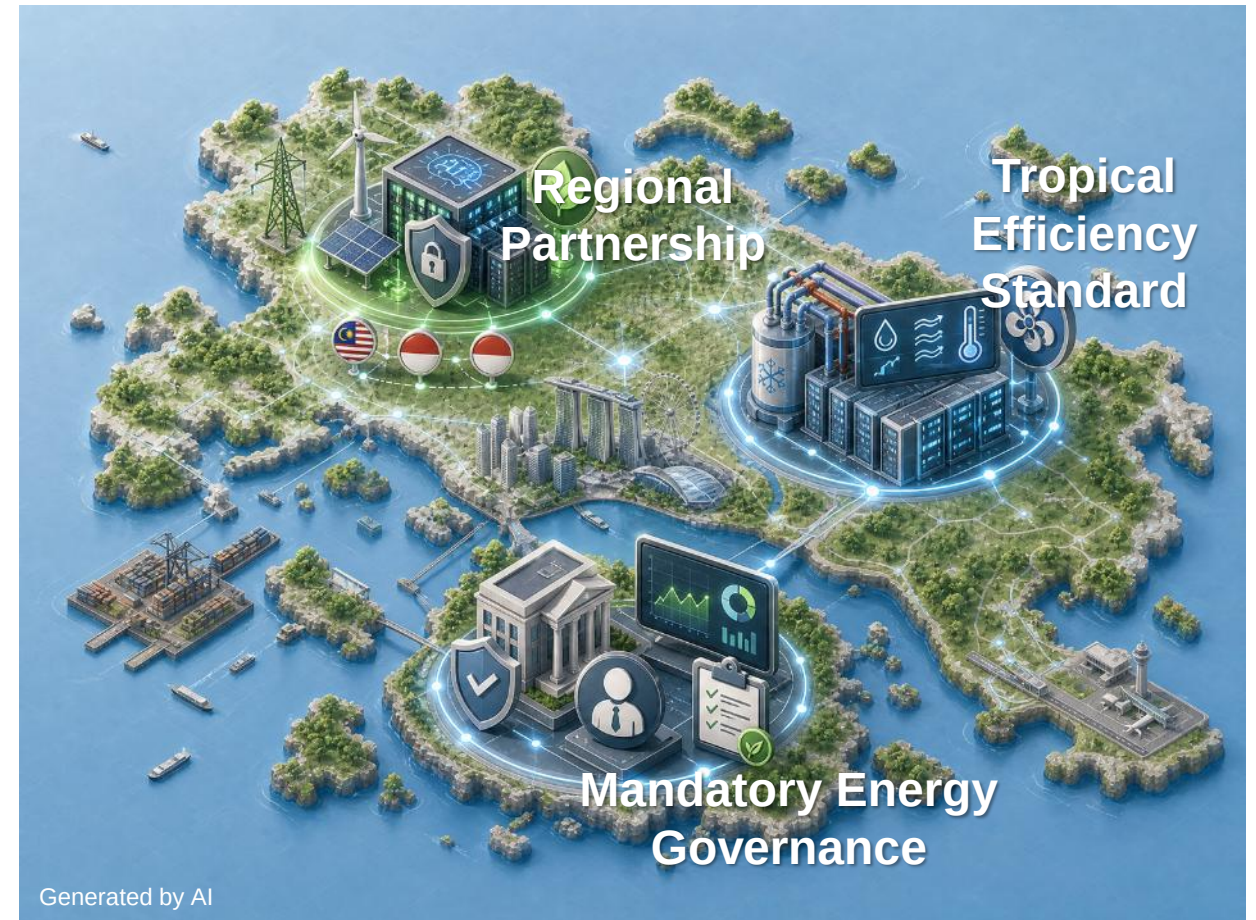
- **National AI Strategy** overarching strategy coordinating compute expansion, national AI research, and green digital infrastructure

Constraint

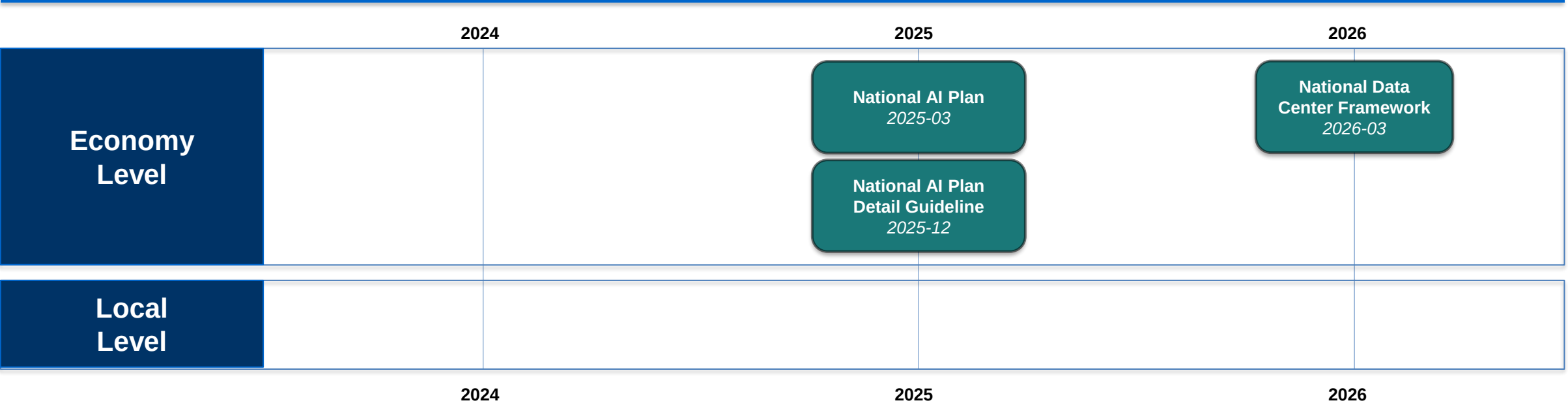
- **Energy Conservation Act** require large energy users to appoint energy managers and submit energy efficiency plans.
- **Data Center Moratorium** imposed a strict halt on all new data center approvals to allow time for a comprehensive sustainability review

Mixed

- **Green Data Centre Roadmap** IMDA capacity release program, permitting at least 300 MW of new capacity only if operators meet a PUE limit of ≤ 1.25 .



Australia



Rapid expansion guided by voluntary frameworks without binding enforcement

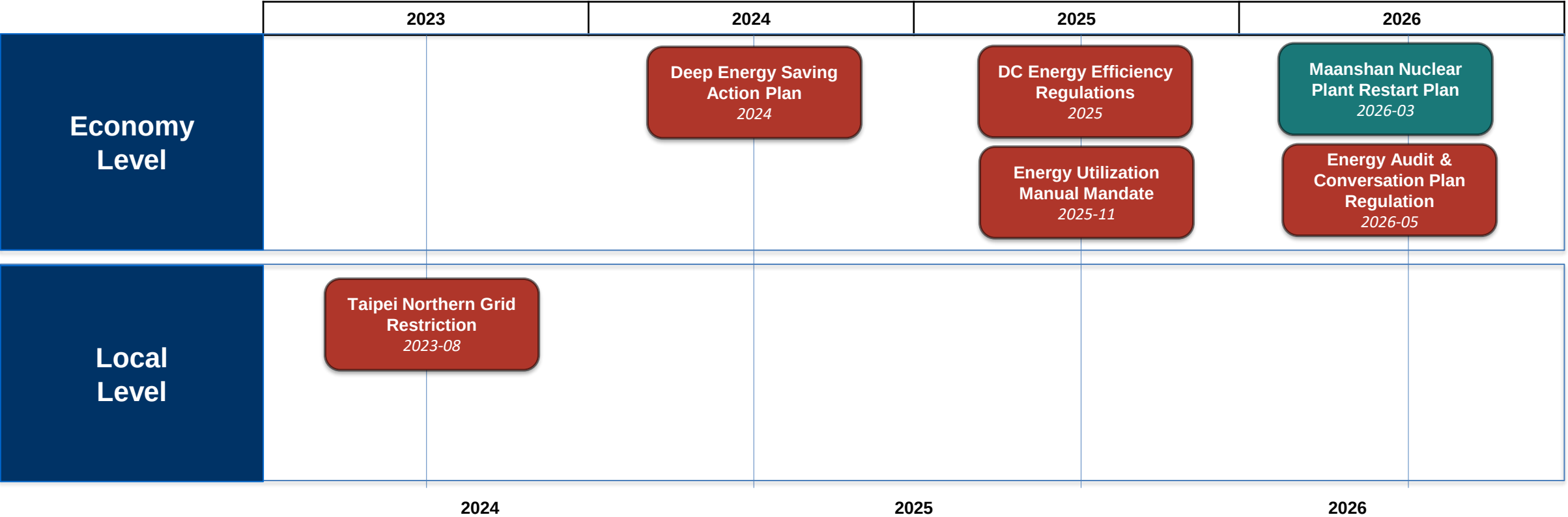
Australia

Drive

- **Australia's National AI Plan** High-level roadmap outlining federal AI funding and integration strategies, but lacking binding or mandates
- **National AI Plan Detailed Guidance** projected investment pathways exceeding \$100 billion
- **National Data Centre Framework** federal expectations regarding water usage and renewable energy sourcing, but remained explicitly voluntary



Chinese Taipei



A strict pre-construction approval and ongoing audit system

Chinese Taipei

Drive

■ **Maanshan Nuclear Plant Restart Submission** formally submitted a restart plan for the decommissioned nuclear plant to secure stable future power

Constraint

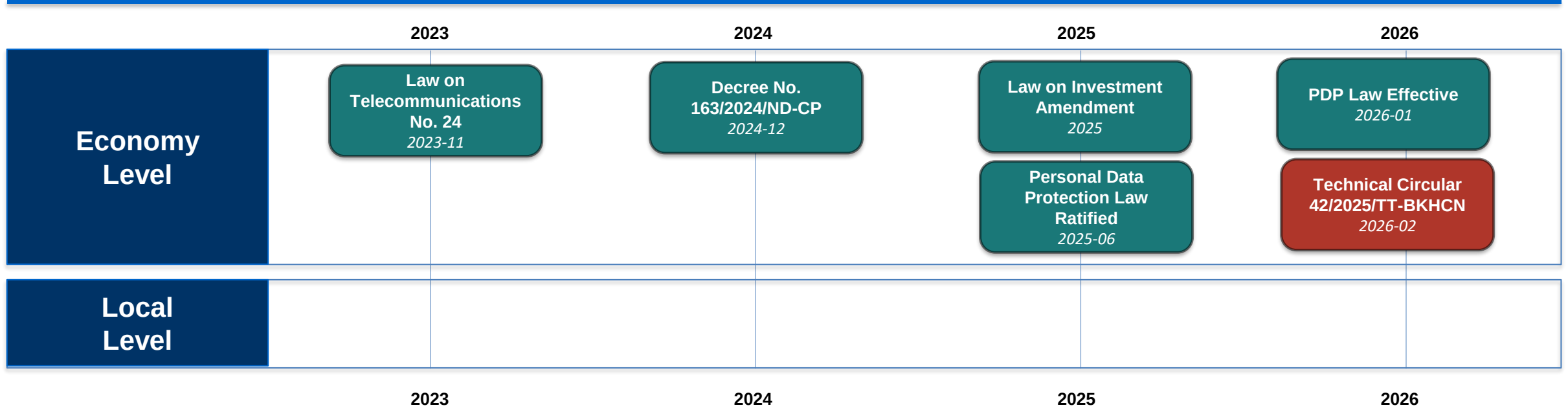
- **Taipower Northern Grid Restriction** suspended grid connection applications for data centers over 5 MW north of Taoyuan
- **Deep Energy Saving Action Plan** save 20.6 billion kWh of electricity over four years through targeted industrial efficiency reforms
- **Data Center Energy Usage Efficiency Management Regulations** legally binding PUE limits for data centers with contracted capacity of 5 MW or more
- **Energy Utilization Manual Mandate** require DC over 5 MW to submit EUMs and adopt Best Available Techniques prior to construction.
- **Energy Audit and Conservation Plan Regulations** expanded mandatory energy audits and five-year planning to all energy users exceeding 800 kW



Source:

[1] State Data Center Legislation in 2026 Tackles Energy and Tax Issues [\[Link\]](#)

Vietnam



Fast-tracked growth and starting with few rules

Vietnam

Drive

- **Law on Telecommunications No. 24** first legal permitted up to 100% foreign ownership of digital infrastructure
- **Decree No. 163/2024/ND-CP** provided detailed licensing guidance, requiring new facilities to align with provincial master planning
- **Personal Data Protection Law Ratified** enacted data localization mandates
- **Law on Investment Amendment** eased market entry by removing DCs from the state's list of restricted
- **PDP Law Effective** legal enforcement date for data residency requirements, imposing penalties

Constraint

- **Technical Circular 42/2025/TT-BKHCN** technical and engineering standards for telecom and data center operations



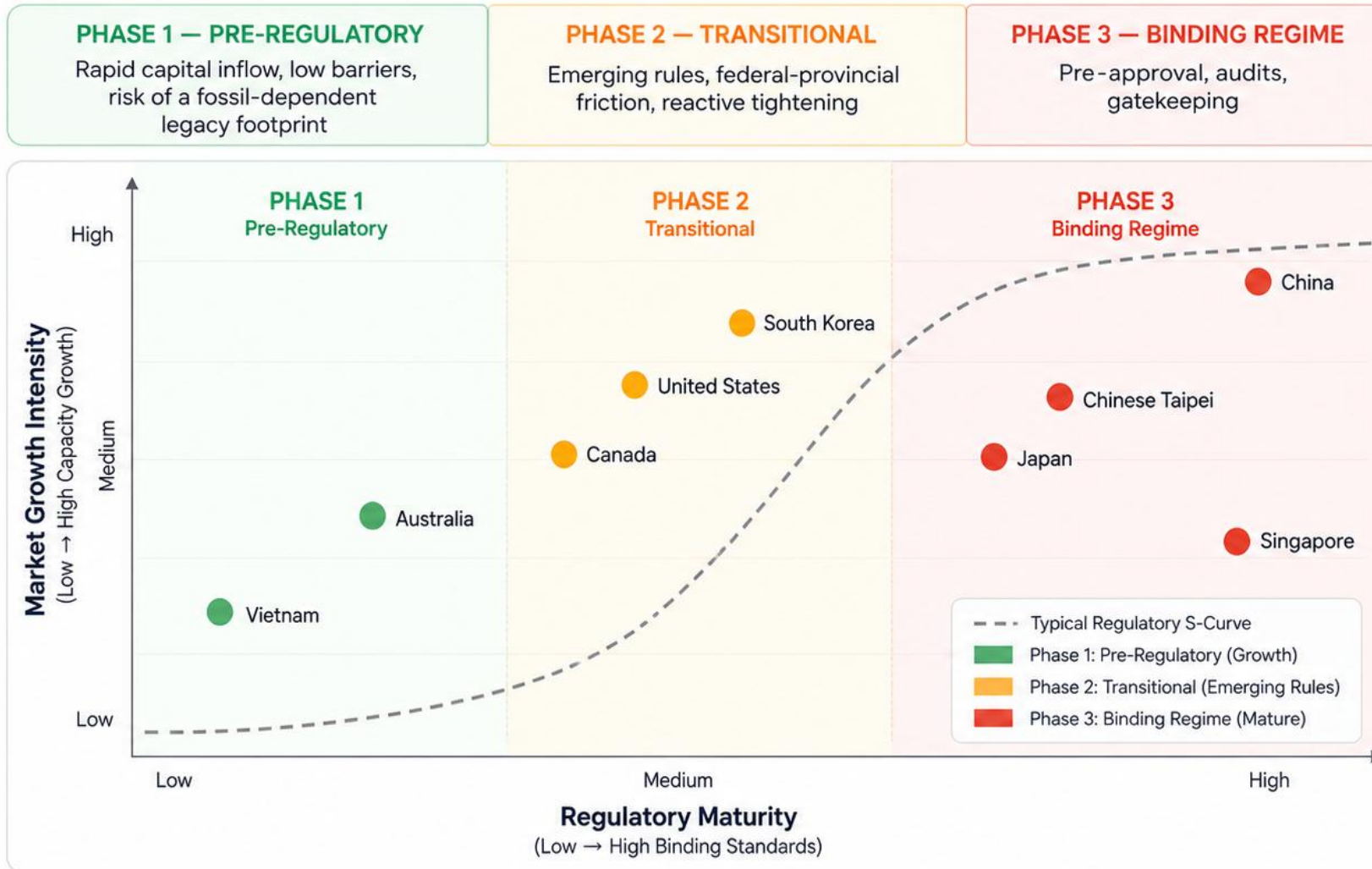
Observations

Optimisation

Observations

Economy	Primary Policy Stance	Binding Efficiency Standards?	Capacity Growth (2024 → 2030)	Consumption Signals (2024 → 2030)	Grid Governance Model
United States	 Federal acceleration with defensive state-level protections	 NO	 61.8 GW → 134.4 GW (~2.2× increase)	 ~50% of total electricity demand growth	 Fragmented, reactive, and highly decentralized
China	 Top-down, vertically integrated planning	 YES	 32 GW → ~60 GW (~1.9× increase)	 ~100 TWh → 289 TWh (~2.9× increase)	 Highly centralized and proactive
Japan	 Reactive tightening with relocation mandates	 YES	 ~14 GW → >90 GW (>6× increase)	 19 TWh → 57–66 TWh (~3× increase)	 Centrally coordinated but reactive
Korea	 AI-aligned & sovereign energy planning	 YES	 8.2 TWh → 30 TWh (~3.7× increase)	 Soaring demand; reliance on baseload	 Proactive, centralized, and early-stage
Singapore	 Restrictive, high-value gatekeeping	 YES	 ~300 MW → ~1,300+ MW (~4× increase)	 Capped to protect physical limits	 Centralized and highly restrictive
Australia	 Voluntary guidelines with no binding enforcement	 NO	 1,050 MW → 2,500 MW (~2.4× increase)	 2% → 13% of demand (~6.5× increase)	 Decentralized, market-led, weak enforcement
Chinese Taipei	 Strict pre-approval with grid-allocation controls	 YES	 Under construction → 300 MW by 2029	 224 kW → 1 GW (~4.5× increase)	 Centralized utility coordination with zoning & approvals
Vietnam	 Rapid liberalization with localization focus	 NO	 524.7 MW → 950.4 MW (~12.6% CAGR)	 \$588.9M → \$1.40B (~2.4× increase)	 Market-led, permissive, and pre-regulatory
Canada	 Provincial-first gatekeeping	 NO	 ~1% → 1.4% of electricity (~4× increase)	 Alberta: 1,200 MW allocation oversubscribed	 Fragmented and divided federal vs. provincial authority

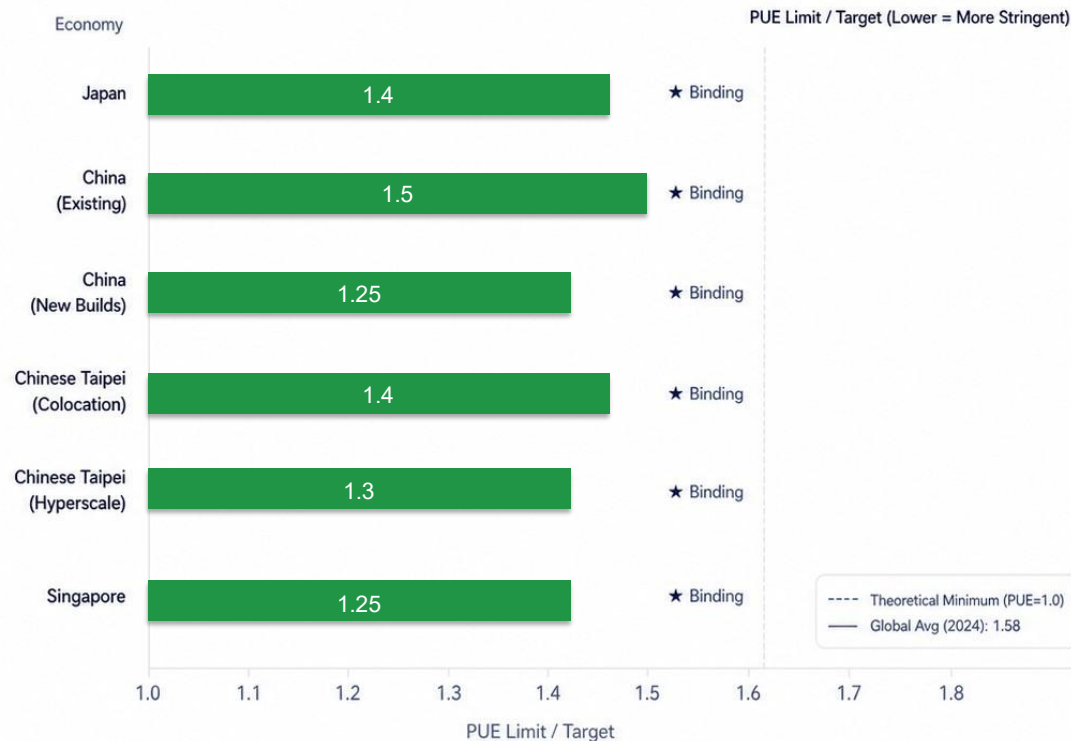
The Regulatory S-Curve



Efficiency Standards Comparison

Binding PUE Efficiency Standards by Economy

Lower = More Stringent



★ Binding = Legally or regulatorily required

What PUE Means for Energy Experts



Lower PUE = Higher Efficiency

Less energy wasted supporting IT infrastructure.



Example Impact

100 MW IT Load → 158 MW Total Input (PUE 1.58) → 125 MW Total Input (PUE 1.25) → 21% Less Grid Demand



Most Stringent

Singapore & China (New Builds): PUE ≤ 1.25



No Binding Standard

United States (national), Australia, Vietnam, Canada — highest uncontrolled demand and emissions growth

Way Forward

EGEEC actions

Cross-economy Collaboration

01 Knowledge Sharing

- Regular workshops for economies to share AI+ data center energy efficiency policy, experiences, case studies, and lessons learned
- APEC AI+ Energy Data Centre Guide comparing member economies' policies, PUE standards, audit requirements, and AI+ best practices
- Connect experienced economies with those developing frameworks.

02 AI+ Pilot Projects

- Pilot projects pairing data centres with AI+ driven energy efficiency
- Pilot projects pairing data centres with AI+ district energy systems
- Pilot projects pairing data centre with AI+ clean energy integration

Thank you

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