

The Value of Optionality: Pulau Tekong and the Future of Singapore's Energy Architecture

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SYNOPSIS

In October 2026, the Energy Market Authority announced it will commission a feasibility study into establishing a 200-hectare energy infrastructure cluster on Pulau Tekong. This Policy Brief highlights that Pulau Tekong is a strategic investment in Singapore's future energy security, with the potential to support rising electricity demand while enhancing system resilience through geographic diversification. Its greatest value lies in preserving long-term optionality, allowing Singapore to adapt to evolving energy technologies, market developments, and geopolitical uncertainties.

KEY POINTS

- **Preserving Future Energy Options:** Pulau Tekong provides long-term flexibility for Singapore to accommodate emerging energy technologies, storage solutions, and electricity imports.
- **Strengthening System Resilience:** Developing a major energy hub in the northeast would diversify critical infrastructure, reducing concentration risks and enhancing resilience.
- **Balancing Security and Decarbonisation:** Hydrogen-ready generation, low-carbon technologies, and imported clean electricity can support the energy transition while maintaining reliable and affordable power.

INTRODUCTION

Singapore's energy system is approaching an inflection point. Rising electricity demand from economic growth, digitalisation and artificial intelligence (AI)-enabled data centres, the imperative to decarbonise, and growing geopolitical uncertainty are reshaping the nation's energy landscape. The challenge is no longer simply securing sufficient energy supplies. It is about building an energy system that is resilient, diversified, adaptable, and capable of withstanding an increasingly complex and uncertain future.

Against this backdrop, the [Energy Market Authority's \(EMA\) announcement on 6 October 2026](#) to study the feasibility of an energy infrastructure cluster on Pulau Tekong marks a significant development in Singapore's long-term energy strategy. The significance of the proposal lies not only in its scale, but also in what it signals. If

implemented, the Pulau Tekong energy cluster could become one of the most consequential energy infrastructure developments in Singapore's history, providing space for future generation assets, strengthening energy security, facilitating regional power integration, and enhancing the resilience of critical energy infrastructure. It reflects a shift from immediate energy provisioning towards long-term strategic planning, recognising that in an era of accelerating energy transition and geopolitical uncertainty, resilience must be designed into the system decades in advance.

ANALYSIS

Strategic Significance: More Than a 200-Hectare Site

The 200-hectare energy infrastructure cluster on Pulau Tekong is significant not because of the land area itself, but for what that land could enable within Singapore's future energy architecture. According to [tender documents](#)

[reported by The Straits Times](#), the feasibility study will assess whether the site can accommodate approximately 6 gigawatts (GW) of domestic power generation capacity and 2 GW of electricity imports, implying a potential energy throughput of up to 8 GW. Viewed against [Singapore's projected peak electricity demand of 9.6-11.4 GW by 2031](#), this is a substantial figure. If developed at the scale being assessed, the Pulau Tekong cluster could support a major share of Singapore's future electricity requirements.

On deeper reflection, the proposal should not be interpreted merely as a response to rising electricity demand. Rather, it reflects a recognition that Singapore's energy challenge is one of strategic infrastructure planning. Future demand growth from AI, data centres, advanced manufacturing, electrification, and new energy-intensive industries will require not only additional capacity, but also greater flexibility, redundancy, and system resilience.

Pulau Tekong therefore represents a form of strategic option value: preserving infrastructure space today for capabilities that may become critical decades from now. As John Maynard Keynes, one of the most influential economists of the twentieth century, reminded us, policymakers should strive to be "roughly right rather than precisely wrong" when navigating uncertainty. The value of Pulau Tekong lies precisely on this logic: preserving options in the face of an uncertain energy future. This insight matters for long-term energy planning, where technologies, markets, and geopolitical conditions can evolve in unexpected ways. Rather than optimising for a single vision of the future, Pulau Tekong creates the flexibility for Singapore to adapt its energy architecture as circumstances change, ensuring that future generations retain a broader range of choices.

Location Advantage: Planning for an Uncertain Energy Future

Unlike Jurong Island, which has evolved into a highly utilised energy-industrial ecosystem, Pulau Tekong offers large-scale integrated planning on relatively undeveloped land. Jurong Island remains one of Singapore's most valuable industrial assets, but it is characterised by competing land uses and space constraints. Pulau Tekong, by contrast,

provides planners with the opportunity to design a next-generation energy hub from the ground up. This flexibility which Pulau Tekong brings is valuable given the uncertainty surrounding future energy technologies and infrastructure requirements. Questions remain regarding the eventual role of hydrogen, carbon capture and storage, electricity imports, long-duration energy storage, and other low-carbon pathways. A greenfield site allows infrastructure planning to evolve alongside technological developments rather than being constrained by legacy configurations.

Moreover, the island's geographic location offers operational advantages. LNG facilities, electricity-import landing points, subsea cable connections, telecommunications infrastructure, and future hydrogen-related assets often require extensive marine interfaces and significant safety buffers. Pulau Tekong is uniquely positioned to host infrastructure that would be increasingly difficult to site elsewhere in land-constrained Singapore.

Resilience and Energy Security: Towards a Multi-Node Energy System

Singapore's existing energy and industrial infrastructure is concentrated predominantly in the west. From a resilience standpoint, this concentration creates vulnerabilities to operational disruptions, climate-related events, or other unforeseen contingencies. Developing a major energy node in the northeast would introduce an element of geographic diversification, reduce concentration risk, and strengthen system resilience.

This perspective explains why the proposed Pulau Tekong cluster and the [new western island announced during the National Day Rally](#) should be viewed as complementary rather than competing developments. Each appears designed to fulfil different functions within Singapore's future infrastructure landscape. Jurong Island will remain Singapore's primary industrial and energy hub. The western island would support a broader mix of industrial, logistics, maritime, and energy-related activities. As the [ESI statement issued on 6 August 2026](#) highlighted, merging Pulau Semakau, Pulau Bukom and Pulau Sudong into an integrated island to support

next-generation industries and critical energy infrastructure is a bold initiative demonstrating Singapore's commitment to overcoming land and resource constraints while strengthening long-term economic and energy resilience. Pulau Tekong could evolve into a dedicated next-generation energy platform integrating power generation, LNG infrastructure, electricity imports, telecommunications connectivity, and potentially hydrogen-related facilities.

Taken together, these developments suggest a shift towards portfolio-based infrastructure planning. Rather than relying on a single geographic concentration of energy assets, Singapore appears to be creating multiple nodes with distinct but complementary functions. In an era characterised by climate risks, geopolitical uncertainty, technological disruption, and evolving patterns of energy demand, the objective should not only be efficiency. It is also adaptability.

Trade-Offs: Strategic Flexibility Versus Infrastructure Incumbency

The advantages of Pulau Tekong should not obscure the practical challenges involved. Unlike Jurong Island, Pulau Tekong does not possess a mature industrial ecosystem, established transmission infrastructure, extensive utility networks, or supporting supply chains. Realising a large-scale energy cluster would likely require significant investments in grid connections, marine infrastructure, transport access, and ancillary facilities. There may also be operational considerations arising from the island's continuing defence-related functions. Consequently, a trade-off exists. Jurong Island benefits from decades of accumulated infrastructure, network economies, and industrial clustering effects. Pulau Tekong's comparative advantage lies in its capacity for expansion, flexibility, and long-term strategic development. The question is therefore not whether Pulau Tekong can compete with Jurong Island, but whether Singapore requires additional infrastructure platforms to

accommodate future energy pathways that existing sites may be unable to support.

The Energy Transition: Reconciling Security and Decarbonisation

The proposal raises important questions about the relationship between new gas infrastructure and Singapore's net-zero ambitions. At first glance, investments in additional gas-fired infrastructure could appear inconsistent with the nation's net-zero targets. The picture is, however, more nuanced if we factor in Singapore's national circumstances, specifically its alternative energy constraints.¹ As of 2025, [Singapore generates about 93.1% of its electricity from natural gas](#). Due to the limited renewable energy options, gas will remain important for energy security and grid reliability while alternative low-carbon technologies mature. The EMA announcement refers to hydrogen-ready natural gas-fired power plants. Hydrogen readiness suggests that infrastructure is being designed with future fuel-switching capabilities in mind, allowing assets to transition progressively towards lower-carbon fuels as technologies become commercially viable. The fundamental question, therefore, is not whether Singapore will require natural gas in the near to medium term. It almost certainly will.

In this context, Singapore's challenge is not merely to replace one fuel with another. It is to manage a carefully calibrated transition that maintains a secure and reliable energy supply while progressively reducing emissions and creating space for emerging low-carbon technologies to scale. Viewed through this lens, natural gas is not simply a bridge fuel. It is a foundational component of a broader strategy that preserves flexibility, supports economic competitiveness, and enables an orderly transition to a lower-carbon energy future. As [Daniel Yergin has argued, the energy transition is best understood not simply as a process of energy substitution, but as one of "energy addition"](#). Historically, successful energy transitions have rarely involved the abrupt

¹ UNFCCC Article 4:10 accommodates the situation of countries which are alternative energy disadvantaged. It states that "...the Parties shall, in accordance with Article 10, take into consideration in the implementation of the commitments of the

Convention the situation of Parties, particularly developing country Parties, ...with economies that are highly dependent on ...the use of fossil fuels for which such Parties have serious difficulties in switching to alternatives..."

replacement of incumbent fuels. Rather, they have unfolded through the gradual accumulation of new energy sources, technologies, and infrastructure, with existing fuels continuing to play important roles for extended periods as economies seek to balance affordability, energy security, reliability, and sustainability.

At the UNFCCC's COP 28 in 2023, [Parties collectively agreed that the net-zero pathway is also about managing an orderly transition](#).² As intermittent renewable imports increase, Singapore still requires dispatchable generation to ensure reliability when imported electricity or renewable sources are unavailable. A more forward-looking question is whether today's gas infrastructure can serve as a foundation for tomorrow's low-carbon energy system, including hydrogen, imported clean electricity, and other emerging decarbonisation pathways. In this regard, Singapore's strong track record demonstrates its commitment to building the foundations of a credible and resilient net-zero future.

A Broader Evolution in Singapore's Energy Strategy

The most significant aspect of the Pulau Tekong proposal is what the proposal reveals about the evolution of Singapore's forward oriented planning and perspectives on energy. The initiative suggests a shift away from viewing energy infrastructure as a collection of discrete assets and towards treating it as an integrated national system that must be designed around resilience, flexibility, and future optionality. Seen in this light, Pulau Tekong is best understood not as a standalone project but as a cornerstone of a more distributed, diversified, and adaptive energy architecture. If realised, it would represent a deliberate effort to build today the physical foundations necessary for multiple future energy pathways, ensuring that Singapore retains the capacity to respond effectively regardless of how technologies, markets, or geopolitics evolve over the coming decades. The central policy significance of Pulau Tekong, therefore, lies in the strategic choices that the

development preserves. In a period of profound uncertainty, optionality itself becomes a national asset.

CONCLUSION

The significance of the Pulau Tekong proposal lies in the strategic options it would create. The project reflects a move towards a diversified, resilient, and adaptable energy system capable of accommodating multiple future pathways. In an era of technological, economic, and geopolitical uncertainty, preserving optionality is as important as building capacity itself. As Winston Churchill observed during Britain's transition to oil-powered naval forces in 1912, "safety and certainty ... lie in variety and variety alone."³ More than a century later, this insight remains relevant to Singapore's energy system, where diversification of fuels, technologies, import sources, and infrastructure is central to energy security.

WHAT TO LOOK OUT FOR

- Feasibility study outcomes
- Examination of the scale of investments required for energy infrastructure and potential conflicts with military activities
- Integration/coordination plans for multiple energy clusters

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² para. 28(d): Transitioning away from fossil fuels in energy systems, in a just, orderly and equitable manner, accelerating action in this critical decade, so as to achieve net zero by 2050 in keeping with the science."

³ Daniel Yergin, *The Prize: The Epic Quest for Oil, Money and Power* (New York: Simon & Schuster, 1991), 160.