

Shore power storage investment

What is a shore power facility?

Shore power facilities will generally form part of a wider port energy network including electric power for port assets and back-up power generators. Ports that have a high-power grid connection (or could upgrade their connection at reasonable cost) do have the option of supplying shore power directly from the grid.

Why is port not willing to invest shore power?

When $k_u + p_t \geq M + e M + e - o M - M + e, M^e \leq 0$, the port revenue always decreases with M^e , so port is not willing to invest shore power, $M N S e = 0$.

How to subsidize the investment cost of shore power infrastructures?

One of the mechanisms is the IS to subsidize the investment cost of shore power infrastructures directly. The other is the EI; namely, the government rewards the port authority according to the emission reduction of the port area by shore power service provided by the authority.

How to implement shore power?

To implement the shore power, power supply facilities are installed in the port, and electricity receiving facilities are installed on the vessels to replace fuel combustion with electricity and eliminate the emissions of auxiliary engines at berth (Peng et al., 2019; Spengler and Tovar, 2021; Zis, 2019).

What is the impact of over-investment of shore power?

CAA (2022) pointed out that the utilization of shore power is less than 20%. The over-investment of the power capacity causes lower utilization and capital waste, while the under-investment results in service congestion and reduces the enthusiasm of vessels to use SPBs.

Does shore power reduce emissions from vessels in Port?

Shore power is the most effective way to reduce emissions from vessels in port. The lower-investment in shore power infrastructures results in low service quality for the VWs and reduces their willingness to use SPBs. However, the over-investment in shore power infrastructures results in inefficient utilization and causes capital loss.



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