Nordfjord

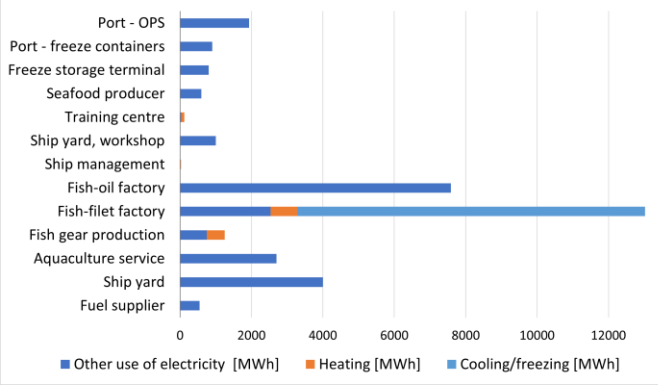
The Port of Nordfjord operates one of Norway's largest fishing ports, and two cruise destinations. Their contribution towards realizing local and regional sustainability goals is focused on establishing onshore power supply and promoting flexibility and co-use.

The port is an intermunicipal company managing sea areas on behalf of 3 municipalities, including a major cruise port in Olden-Loen, and a large fishing port in Måløy - also serving cruise and cargo ships. The focus here is on Måløy.

Energy demand. Two onshore power supply (OPS) facilities of around 1 MW were opened in 2025, aimed for fishery and cargo ships. OPS for cruise ships is planned for Måløy (8 MW), as well as for the Olden-Loen cruise port (12 MW). However, limited grid capacity is a challenge.

There are large industrial areas in and close to the port. Fish industries dominate, including a fillet factory, frozen storages, and a herring oil factory, associated with high thermal energy demands (heating and/or cooling), but also with large amounts of surplus heat. Some of the industrial heating demands are still covered by fossil fuels. Other companies in the area have high electricity consumption.

A previous initiative for district heating based on waste incineration was halted due to lack of local engagement. Ongoing electrification of the port, and limited access to grid capacity, makes it interesting to assess opportunities for local electricity production, energy storage, hydrogen production, as well as exchange of surplus heat between industries or to a district heating network.



Recommended investments and actions. A survey among 11 companies (see Figure) in and around Måløy, was carried out in order to map their energy needs, surplus heat availability, challenges related to energy costs and grid capacity, and willingness to invest in local PV generation or energy storage. The main conclusions and recommendations are as follows:

- **Local power generation and storage.** Several companies are positive about local power generation and have large roofs suited for PV panels. Local PV generation combined with batteries could alleviate issues with limited grid capacity, particularly in the summer when power demand for fish freezing facilities and OPS to cruise ships is at its highest. PV installations are considered most relevant for Pelagia's fish factories, and the Måløy freeze storage terminal. The total production potential in the area is estimated to around 150 MWh/year.

- **District heating.** A district heating system based on waste incineration and industrial surplus heat could reduce emissions by replacing fossil fuel-based heat production for industries, and reduce the electricity use for heating of buildings, and thereby freeing grid capacity for e.g. OPS.

- **Energy coordination.** Nordfjord Port is in charge of the two existing OPS facilities but sees a need for increased collaboration to realize further plans, for example with the regional electricity provider, the regional public transport authority, and the local development company (Smart City Måløy). To mitigate risks and secure added income, the port also considers establishing a separate company to manage the energy infrastructure. The ambition is to link OPS to a new terminal for electric buses, as well as a "Smart City" project involving new infrastructure for electrical cars and kick scooters.

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Assessment of **INTERPORT** ***goals*** and ***key performance indicators***

Reduced Carbon Footprint *(50 % in 2030, 100 % in 2050)*

- ***Reduced local CO_2 emissions****:* Better utilization of surplus heat from industry and waste incineration could replace use of fossil fuels and thus reduce emissions. OPS reduces CO_2 emissions from ships while at berth.
- ***Share of renewable energy usage****:* 0.4 % of electricity demands could potentially be covered by PV generation. District heating based on waste incineration could further increase the renewable share.

Reduced energy losses *(target 20 %)*

- ***Recovered energy****:* Increased utilization of surplus heat in the industry.
- ***Increased total energy efficiency****:* Use of OPS increases the energy efficiency compared to combustion engines.

Lower peak demand *(target 30 %)*

- ***Peak load reduction****:* PV panels, batteries and increased use of surplus heat can reduce the peak electrical load.

High flexibility and reliable supply

- Use of PV panels, batteries and thermal energy storage (e.g. water tanks) can contribute to flexible and reliable energy supply and increased energy self-sufficiency.

Cost-efficiency

- OPS is one of the port's primary measures for decarbonization. According to the port company's pricing model, which includes costs of investment, electricity, and other operational expenses, the estimated production cost of OPS is 2.5 - 3.0 NOK per kWh, compared to 1.6 NOK/kWh for onboard electricity generation from fossil fuels.

Sector Coupling

- ***Degree of sector coupling:*** Surplus heat can be exchanged between different industries.
- ***Stakeholder involvements:*** The port developer is in collaboration with several local stakeholders, including regional electricity providers to secure grid capacity. Positive interest from local industry. Alignment with ambitions related to cruise business and Smart City Måløy. However, roles and implementation pathways remain unclear. Engagement from major industry players is still limited.

Space utilisation

- ***Increased share of nature areas in the port:*** Not considered.
- ***Infrastructure space requirements:*** Additional infrastructure for energy storage, district heating and hydrogen production would increase the space demand.

Facilitate uptake and use of alternative fuels and energy carriers

- ***Supply of alternative energy carriers****:* none - due to large market uncertainty.
- ***Port acceptability*****:** High community acceptance. Alignment with regional and national policies but calls for more public-private partnership. Strong interest from cruise companies, but risks linked to long-term cruise demand and electricity cost-sharing.
- ***Port-city relationship****:* OPS is positioned as a sustainability measure enhancing tourism legitimacy. Smart City Måløy initiative links OPS to electric vehicle infrastructure and broader development goals. Local stakeholders address the need to avoid overburdening communities and ecosystems. Ongoing land-use planning processes are time-consuming due to multiple interest and sustainability priorities. Cruise traffic is seen as both an economic driver and a potential burden.

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