Swedish Energy Agency

Efficiency First: Reducing Pressure in Energy Supply and Demand

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Swedish Energy Agency

About the Swedish Energy Agency

- National authority for energy policy
- Reports to the Ministry of Climate and Enterprise
- Government-funded, Director-General appointed by Government
- ~540 employees

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Increasingly Complex Energy System Pressures in the EU

- Electrification picking up pace – peak load is the main challenge and new generation capacity cannot keep up with demand growth.
- More intermittency means supply is volatile - storage not yet available at sufficient scale.
- Non-harmonized energy policy and public resistance across the EU creates a risky investment environment.
- Conflicts and geopolitical uncertainty - Import dependence on fossil fuels still high and global supply volatile.

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Expanding Supply Alone Is Not Enough

Building more is essential, but takes time:

New large grid projects: 10+ years from planning to operation.

Offshore wind: 7–10 years incl. permitting.

Nuclear: 10+ years

Building more is expensive

Typical cost of new supply is $ 30–60/MWh for solar and onshore wind, $70–120 for offshore wind and 80–200+ for nuclear.

Typical cost of efficiency is $20–40/MWh.

Peak demand — not average consumption — is what determines capacity needs.

10–20% of grid and generation investments are driven by <100 peak hours per year.

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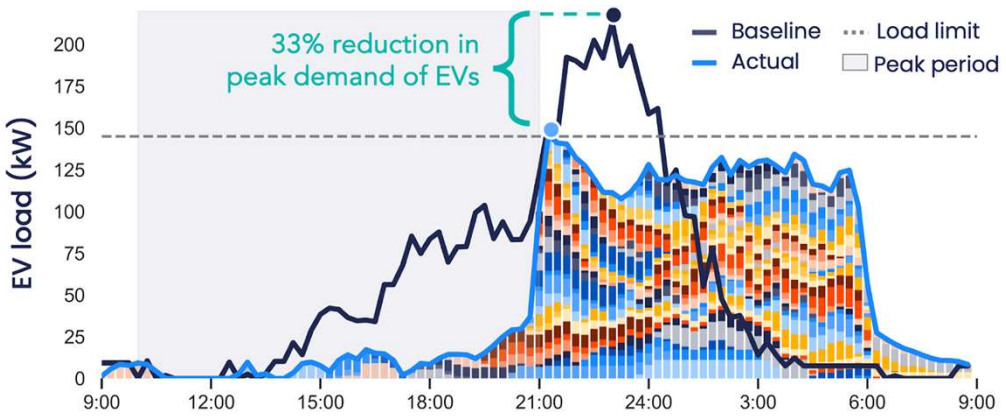
What ‘Efficiency First’ Means in Practice

- Meeting the same energy needs, with less input, at lower system stress.
  - Better building insulation, efficient appliances and motors, industrial process optimization, smart control and automation.

- When we use energy matters as much as how much we use – efficiency reduces both total demand and peak demand.
  - Flattening demand avoids grid bottlenecks without reducing comfort or output.



Source: https://www.energyhub.com/news/new-data-confirms-the-value-of-managed-ev-charging-for-utilities

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Energy Security & Price Stability

- Efficiency reduces exposure to shocks
  - 10% demand reduction can cut peak prices disproportionately (price spikes are marginal-driven)
- Efficiency reduces imports dependence → lower exposure to fuel price volatility.
- Efficiency reduces need for fossil backup during supply shocks.

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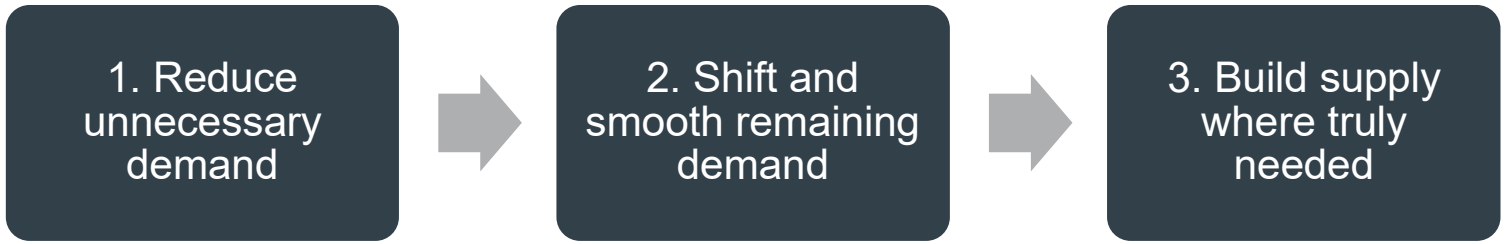
Efficiency First as a Strategic Energy Policy

- Efficiency lowers investment needs, reduces import dependence, improves energy security, and makes renewables easier to integrate. It is both faster and cheaper.
- A more cost-efficient and robust policy logic:



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Some policy examples from Sweden

Energy taxes on electricity and fuels.

Mandatory Energy Audits for Large Companies.

Implementation of EU Energy Efficiency and Buildings Regulation.

Energy and Climate Advice via municipalities. Aimed at households, associations, and small businesses.

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Summary

- High demand and peak load stress is inevitable in an electrified economy – system failure is not
- Efficiency First delivers:
  - lower costs, faster impact, higher security, smoother integration of clean energy

⇨ Efficiency First is a key pressure-relief valve for modern energy systems and can contribute to multiple societal benefits, quickly and cheaply.

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