Securing the future of nuclear

Karl Thedéen, President & CEO

CET, September 30, 2026

Studsvik

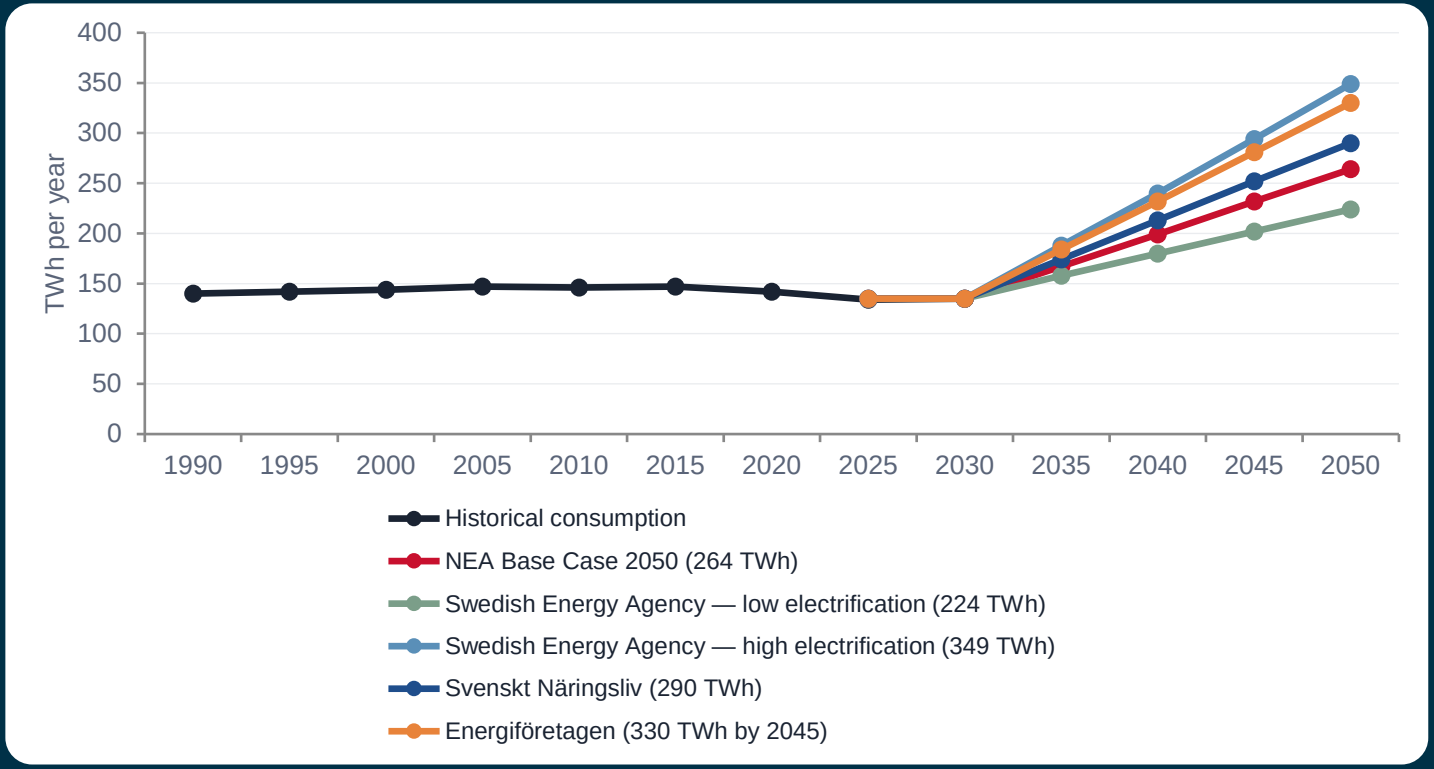
Key market drivers

Resilience
solutions

Studsvik

Electricity demand at least doubles by 2050

- Six independent forecasts converge on the same conclusion: Sweden must build out generation at unprecedented pace
- Even the lowest scenario requires Sweden to add roughly 90 TWh per year of new generation

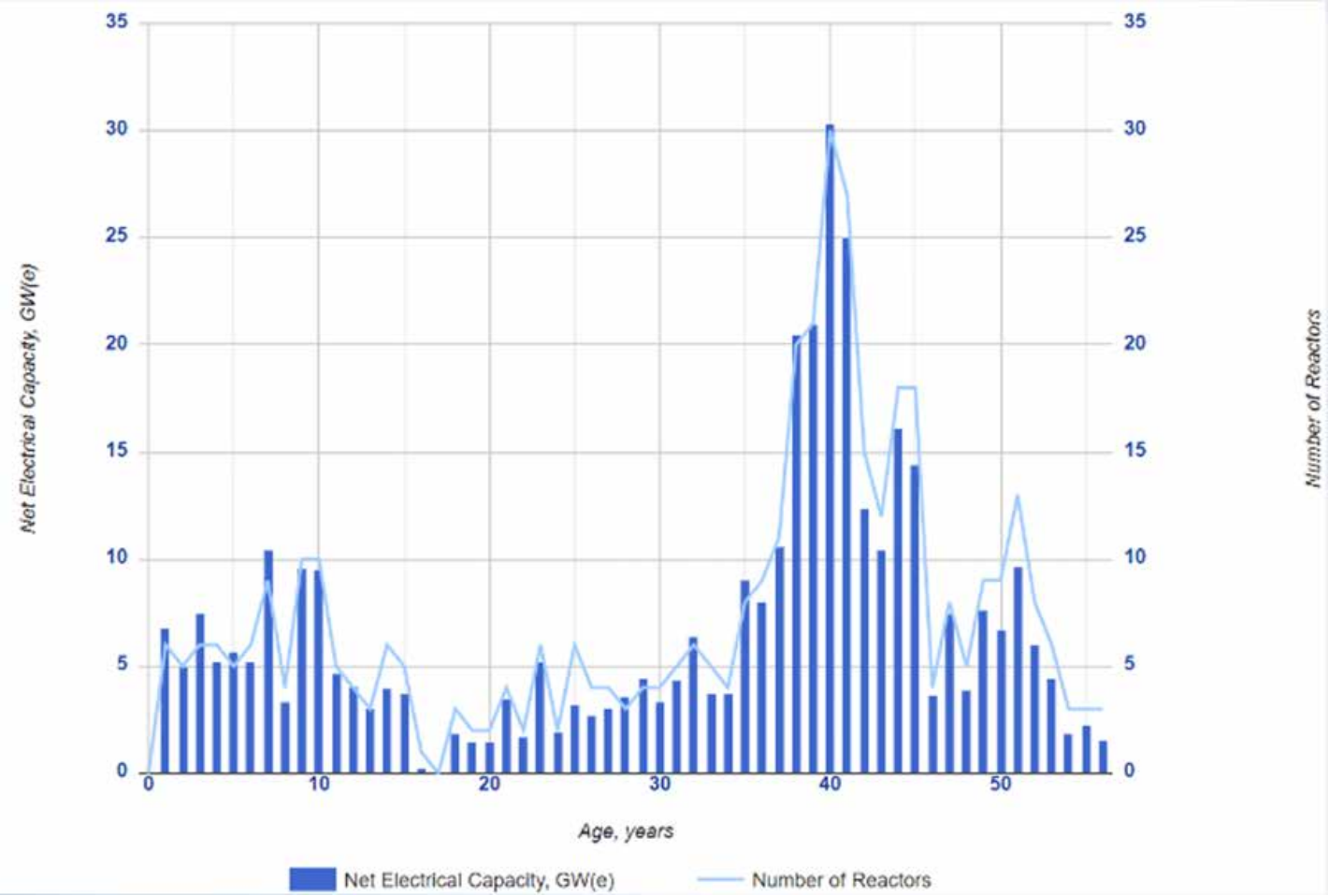


2050 scenario range

224 TWh	Swedish Energy Agency – low (2023)
264 TWh	OECD/NEA · Base Case 2050 (2026)
290 TWh	Svenskt Näringsliv / Q. Carbon (2022)
330 TWh	Energiföretagen · 2045 forecast (2023)
349 TWh	Swedish Energy Agency – high (2023)

Studsvik

Worldwide base of nuclear energy



417
reactors

284
above 30y

191
above 40y

Studsvik

PRESS RELEASE • NUCLEAR • 17 JUNE 2024, 10:00 CET • 1 MIN

Forsmark and Ringhals nuclear power plants aim for 80 years of operation of existing reactors

To extend the operating time, investments of an estimated SEK 40-50 billion are being made to replace or renovate systems and components. Technical needs include maintenance, refurbishment or replacement of components such as turbines, condensers, generators, as well as modernisation of control and monitoring systems. Investments are also required in switchyards and power lines, plant buildings and other infrastructure.

Studsvik

Owners of Oskarshamn nuclear power plant in Sweden investigate lifetime extension

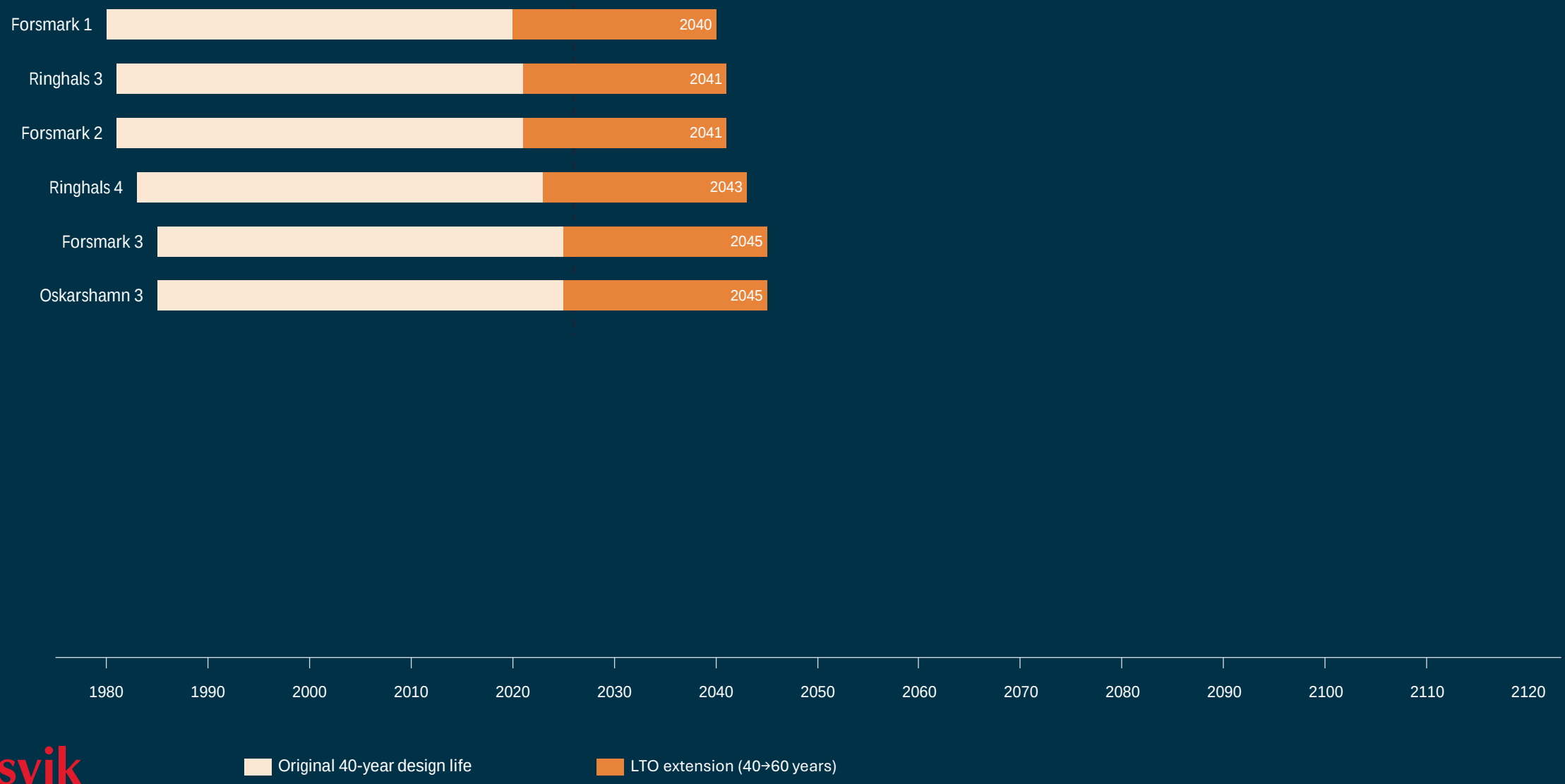
18 September 2024 at 10:00 EEST

HSwMS Södermanland submarine undergone lifetime extension

November 18, 2024 GDC Europe, Sea 0

Studsvik

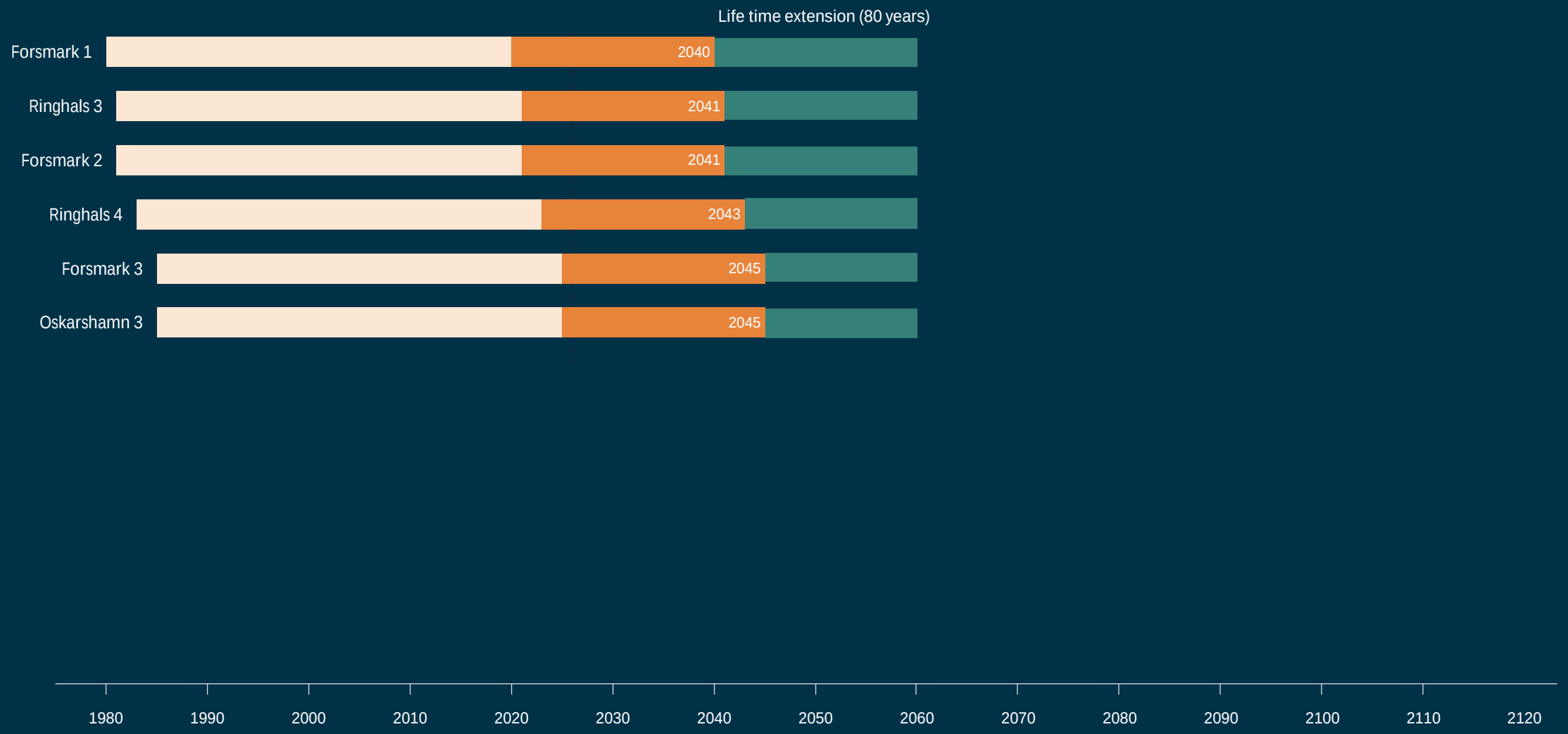
Existing generation retires 2040–2045 if not...



Studsvik

Sources: NEA (2026) table 4.8 (60- and 80-year operations); Vattenfall power plant fact sheets (Ringhals, Forsmark); OKG (Oskarshamn 3); Swedish wind capacity statistics.

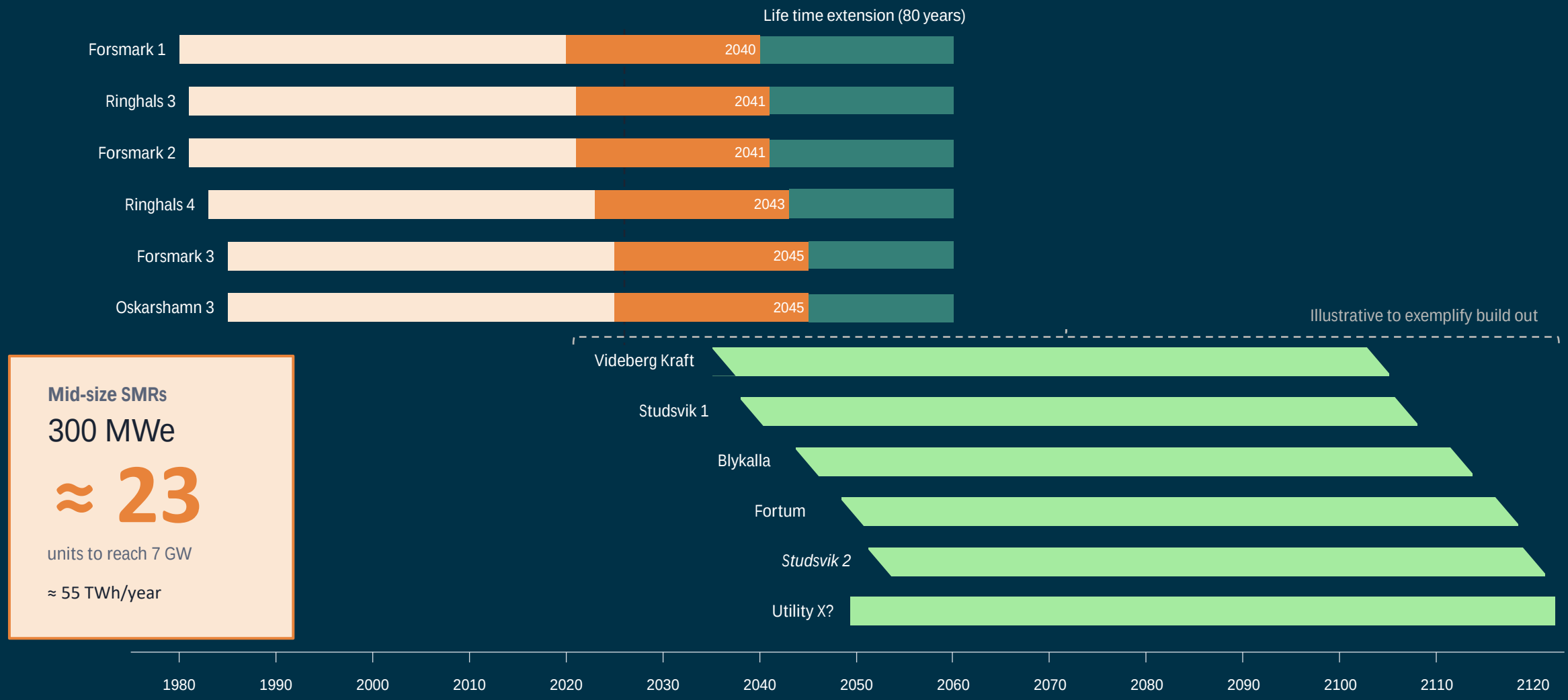
Existing generation retires 2040–2045 if not...



Studsvik

Sources: NEA (2026) table 4.8 (60- and 80-year operations); Vattenfall power plant fact sheets (Ringhals, Forsmark); OKG (Oskarshamn 3); Swedish wind capacity statistics.

Existing generation retires 2040–2045 if not...



Mid-size SMRs

300 MWe

≈ 23

units to reach 7 GW

≈ 55 TWh/year

Studsvik

Original 40-year design life

LTO extension (40→60 years)

New build SMRs

New build Large reactors

LTO extensions (80 years)

Sources: NEA (2026) table 4.8 (60- and 80-year operations); Vattenfall power plant fact sheets (Ringhals, Forsmark); OKG (Oskarshamn 3); Swedish wind capacity statistics.

Lifetime extension is not automatic

- Are we investing enough today to secure operation beyond 2045?

Studsvik

Supporting lifetime extension – and a challenge for Sweden

SCIP

The Studsvik Cladding Integrity Project

SMILE delivered

- Quantified embrittlement of reactor pressure vessel steels
- Generated unique fracture toughness data for irradiated reactor internals
- Improved understanding of long-term ageing of Alloy 690 materials and welds

SMILE

Studsvik Material Integrity Life Extension

SMILE 2 will

- Investigate irradiation effects in cast stainless steels.
- Expand studies on high-fluence
- PWR forged material from Ringhals 2
- RPV internals
- Address key knowledge gaps for safe operation beyond 60 years

Studsvik

We need both

Lifetime extension preserves capacity. New build creates capacity.

LTO · Long-term operations

The first gap · 7 GW existing fleet

- Support New Fuel development
- Materials testing for ageing analysis
- Hot-cell capacity in Studsvik
- Core design and safety analysis Software
- Next gen Battery back-up products and automated Safety systems

New build

The second gap · 10+ GW of new nuclear

- Project development and siting (Valdemarsvik and others)
- Early suitability assessment and planning permits
- Licensing and permitting strategy
- Technology selection and vendor partnerships
- Project structuring and financing (SPVs)

Studsvik

Strong partnership to develop new nuclear in Sweden

"STUDSVIK, GE VERNOVA HITACHI AND SAMSUNG C&T COMMIT TO ADVANCING 1.2 GW NUCLEAR POWER PROJECT IN SWEDEN"

Vision: Studsvik site 2035

AI VISUALISATION

Studsvik

Thank you!

Securing the future of nuclear

Karl Thedéen, President & CEO

CET, September 30, 2026

Studsvik