Gyrogy

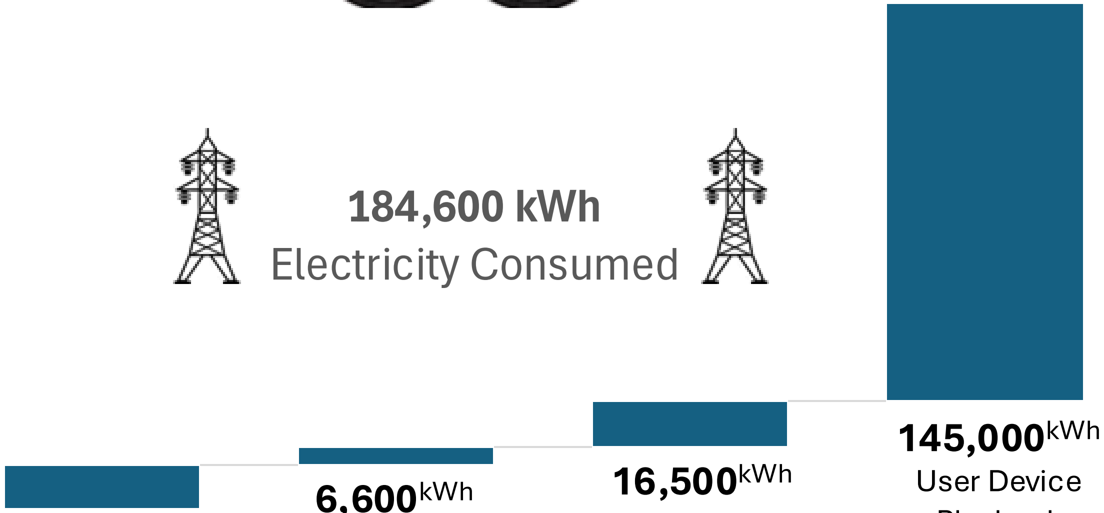
Digital Infrastructure enabling Energy Transition

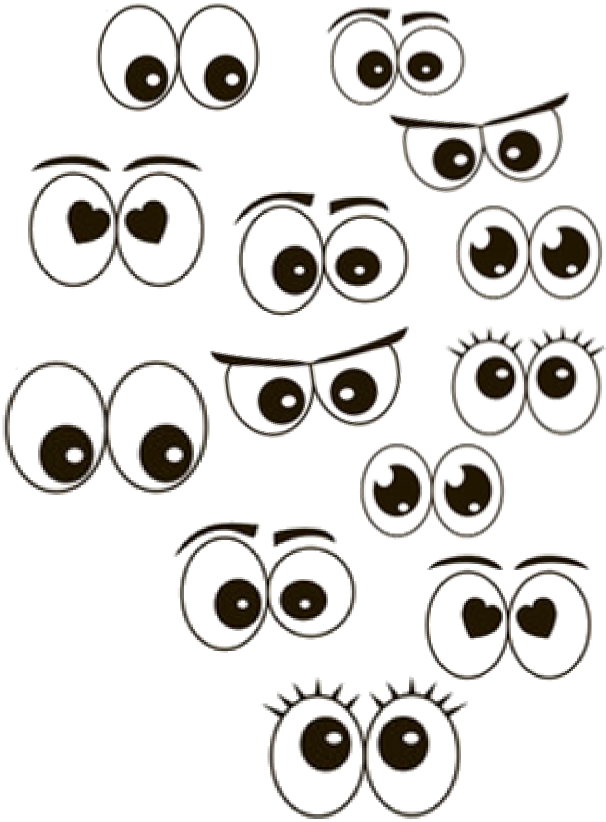

A GOLDEN BUTTON
FOR MY GOLDEN
Kids!
CRISTIANO

3,300 (TB) terabytes of data was transferred to **50 million** viewers.
[66MB x 50m=3,300TB]

83 tCO_2
Transferred to the Atmosphere
[@450gCO2/kWh IEA World Energy Outlook]

184,600 kWh
Electricity Consumed





$500,000 transferred to the Ronaldo's for those 50 million views.
[(50m/1000) x $10cpm = $500,000]

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Energy Transition Summit 2024

core

Sustainability at the core

Industrial decarbonization: Data centres and large-scale energy consumers

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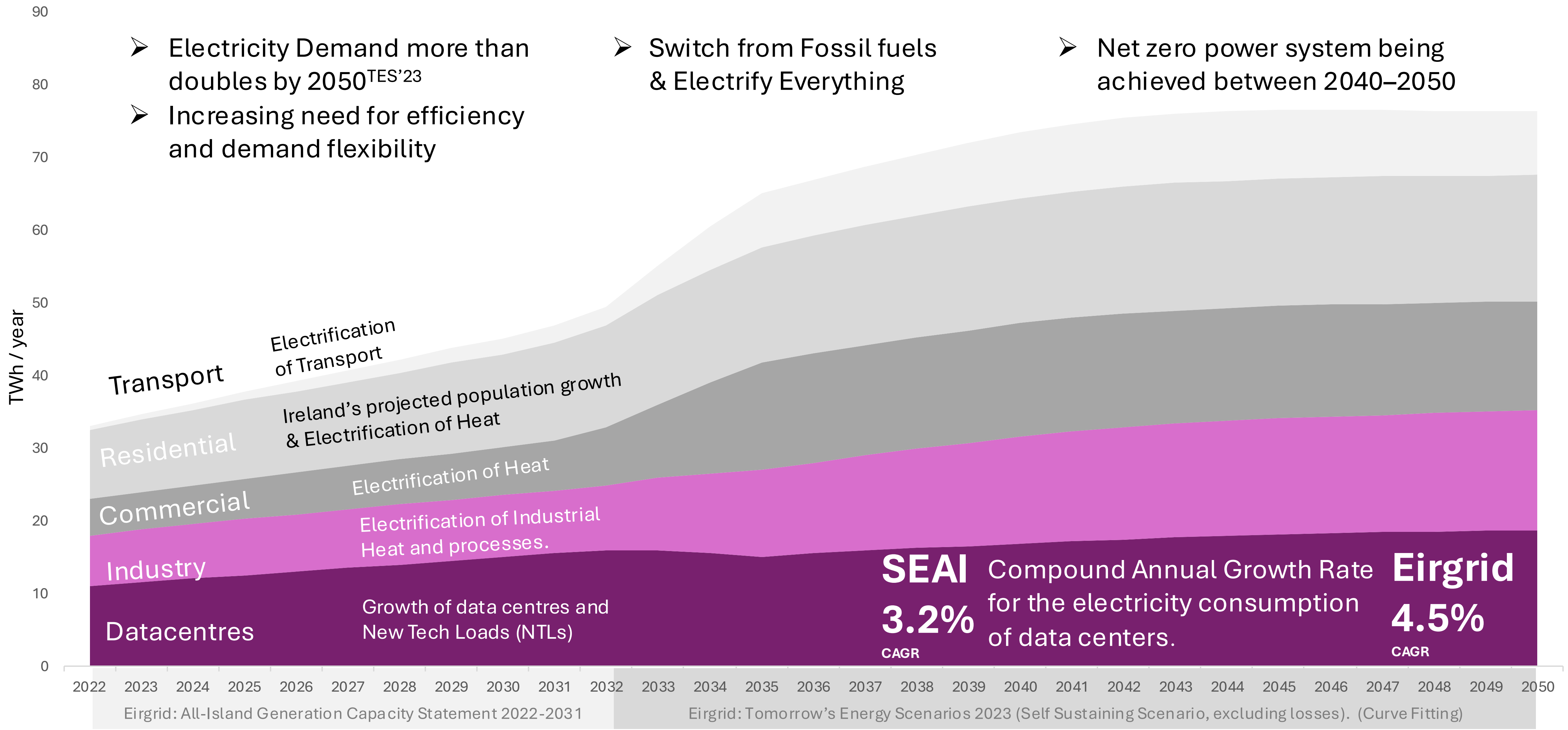
Demand Side Electricity Transition [Eirgrid/SEAI view]



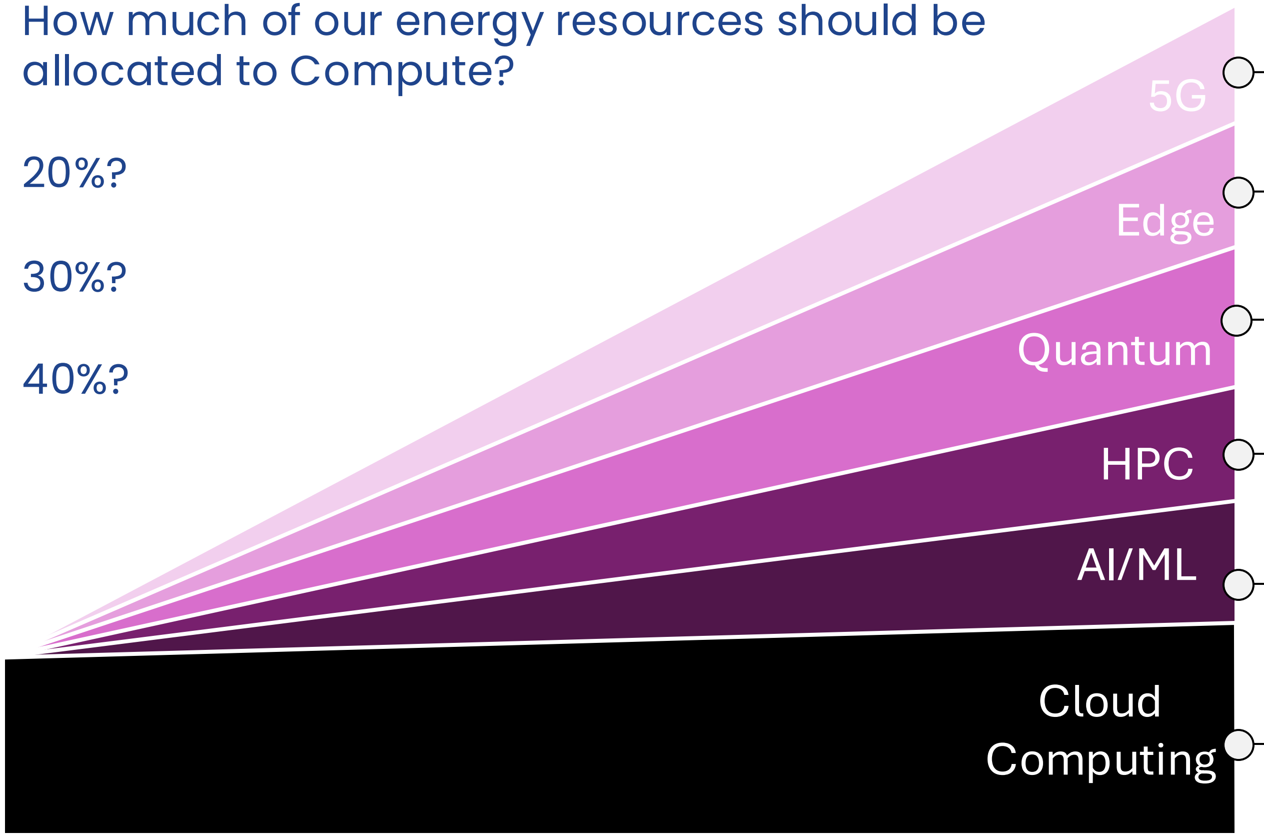
Growth in Compute Loads?

How much of our energy resources should be allocated to Compute?

20%?

30%?

40%?



Maybe a better question is, **When?**

5G and Network Infrastructure: 5G networks increase the demand for compute loads due to higher data transmission rates and more connected devices. This infrastructure requires a robust backend involving data centers and network equipment that adds to the overall energy footprint.

Edge Computing: With the rise of IoT devices and real-time processing needs, will offload some demand from central data centers, it also introduces new energy consumption points distributed across the network.

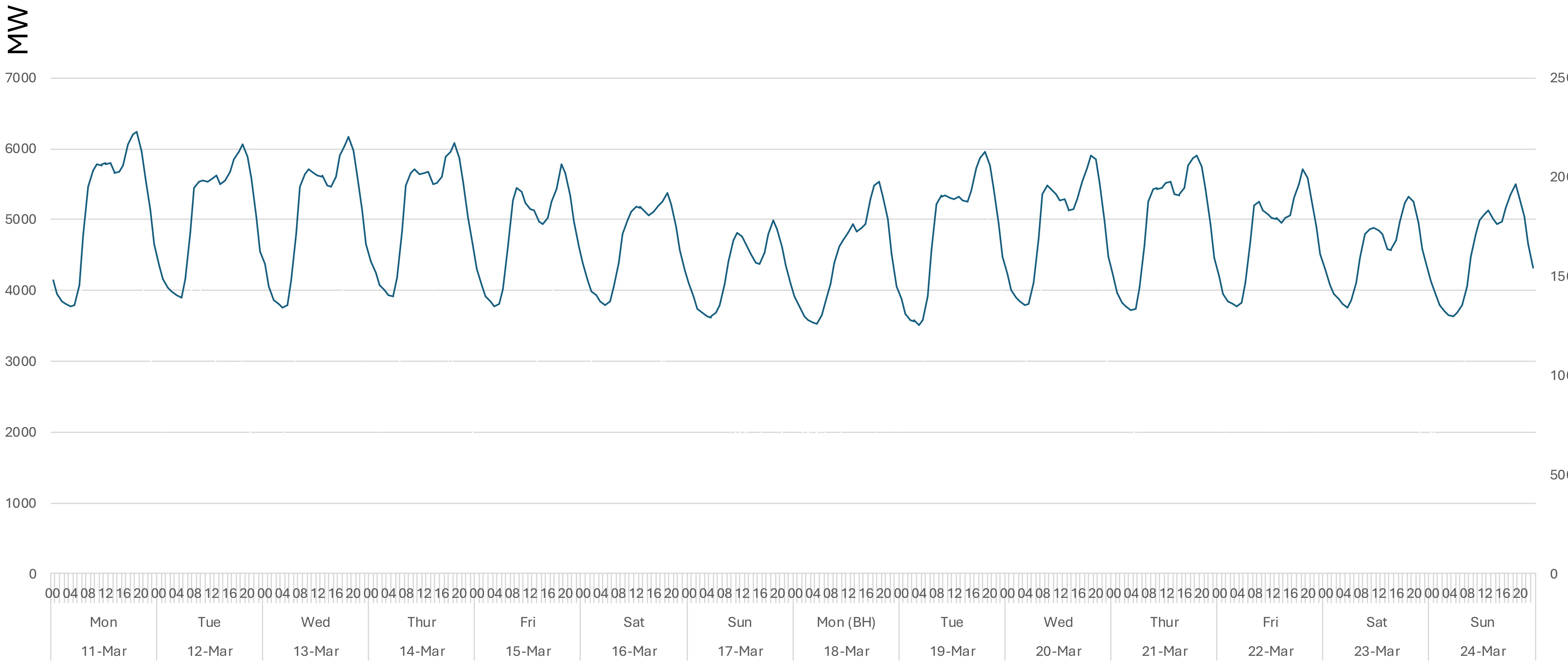
Quantum Computing: Could revolutionize computing with capabilities far beyond classical computers and potentially alter the energy dynamics of computing. Quantum computers may solve specific problems more efficiently, reducing the need for extensive compute loads in certain areas. However, their operational environment (cryogenic cooling, etc.) also involves high energy use.

High-Performance Computing (HPC): Supercomputing facilities used for scientific research, weather forecasting, and simulations immense computational power, leading to significant electricity use.

AI and Machine Learning (ML) Training: Training large AI models, particularly deep learning models, is extremely energy-intensive. AI workloads are projected to consume an increasing share of data center energy use

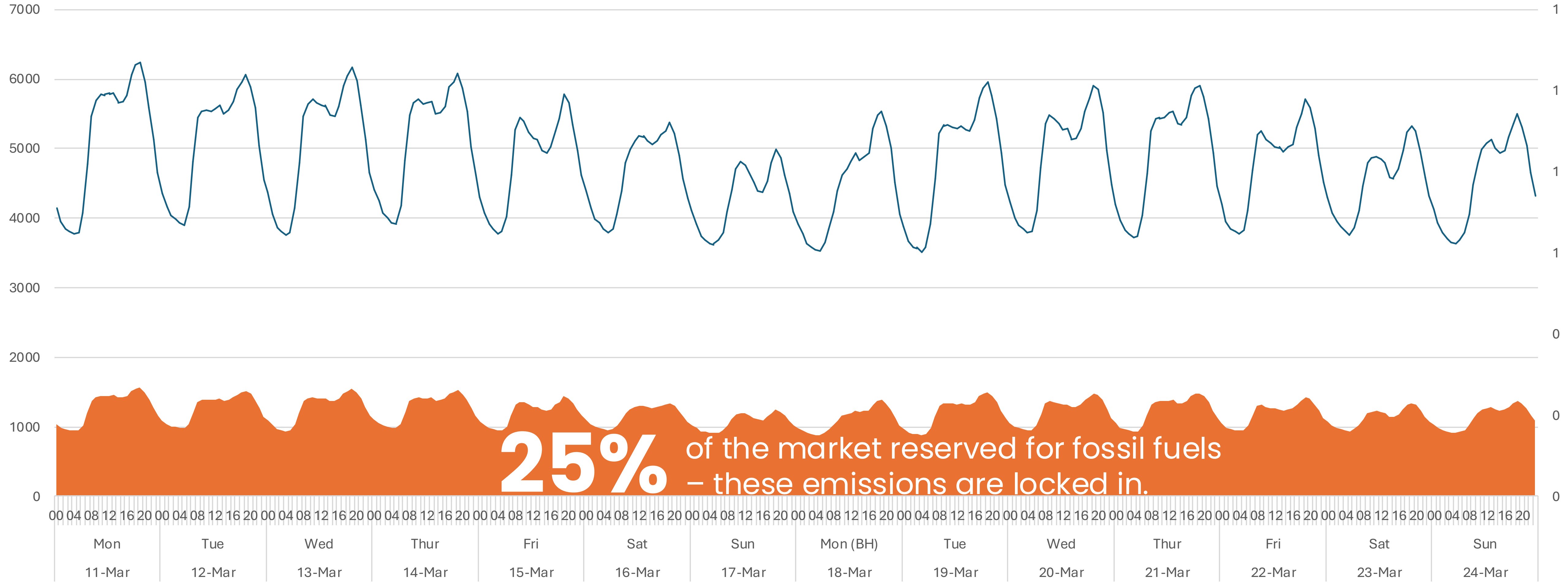
Cloud Computing: (e.g., AWS, Microsoft Azure, Google Cloud) Demand for cloud services, including SaaS, IaaS, and PaaS, continues to grow, making cloud data centers key contributors to energy consumption. 20%+ CAGR[Gartner]

Real-time: Demand

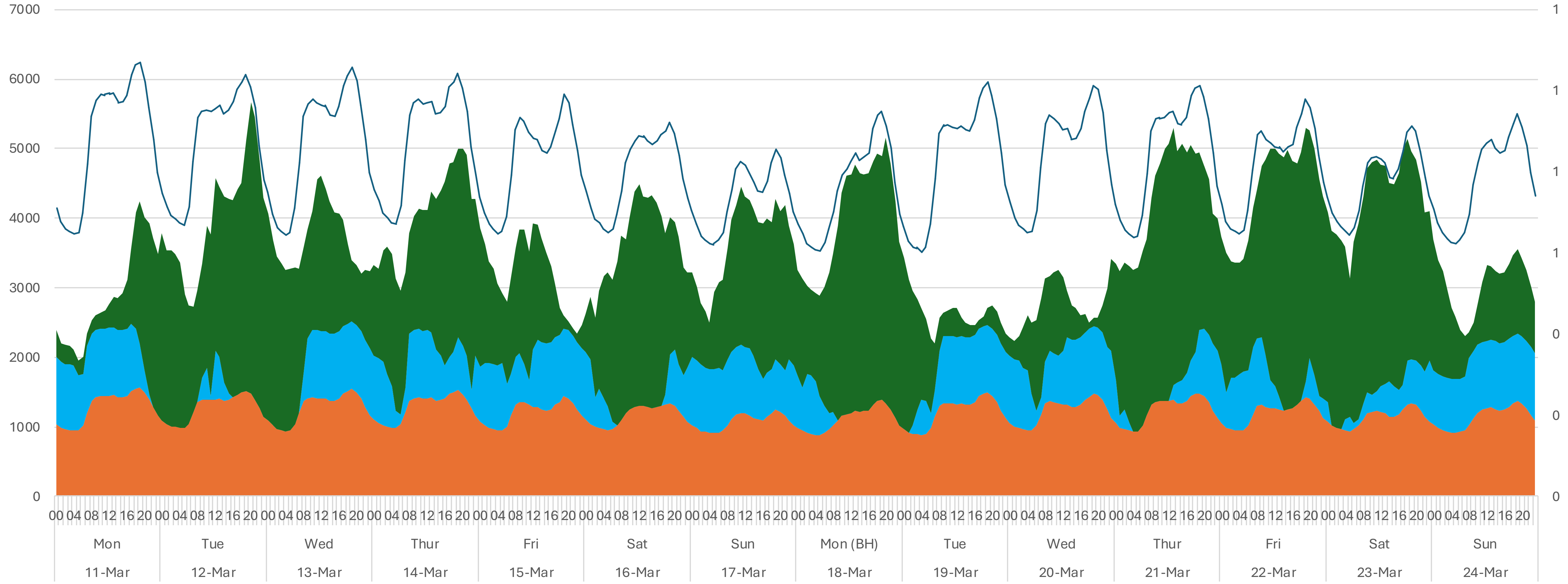


Operational Constraints: Must-run Generation

- Eirgrid limits Renewables and Interconnection to 75% [SNSP Limit]
- "N-1 contingency," against losing the largest generating unit (or interconnector).

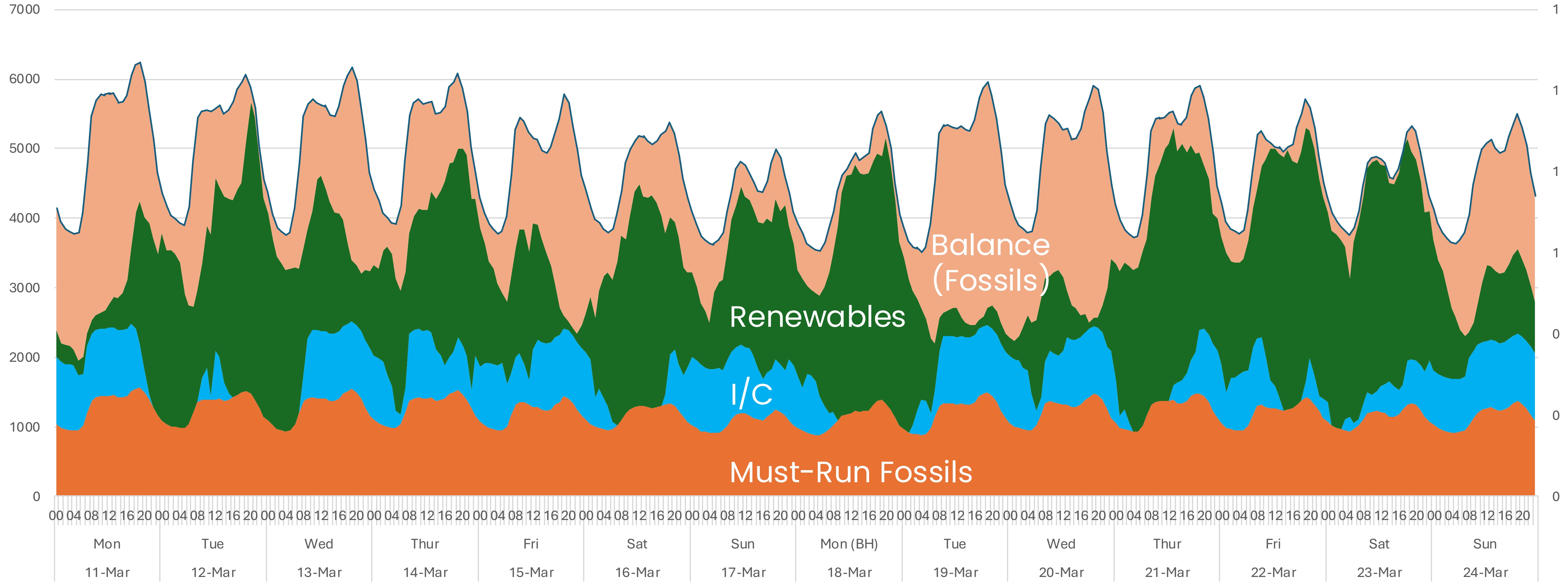


Real-time: Zero Carbon Renewables and Interconnection



Real-time: Displaceable Fossils

25% Volume of Electricity available for Decarbonisation in these 2 weeks

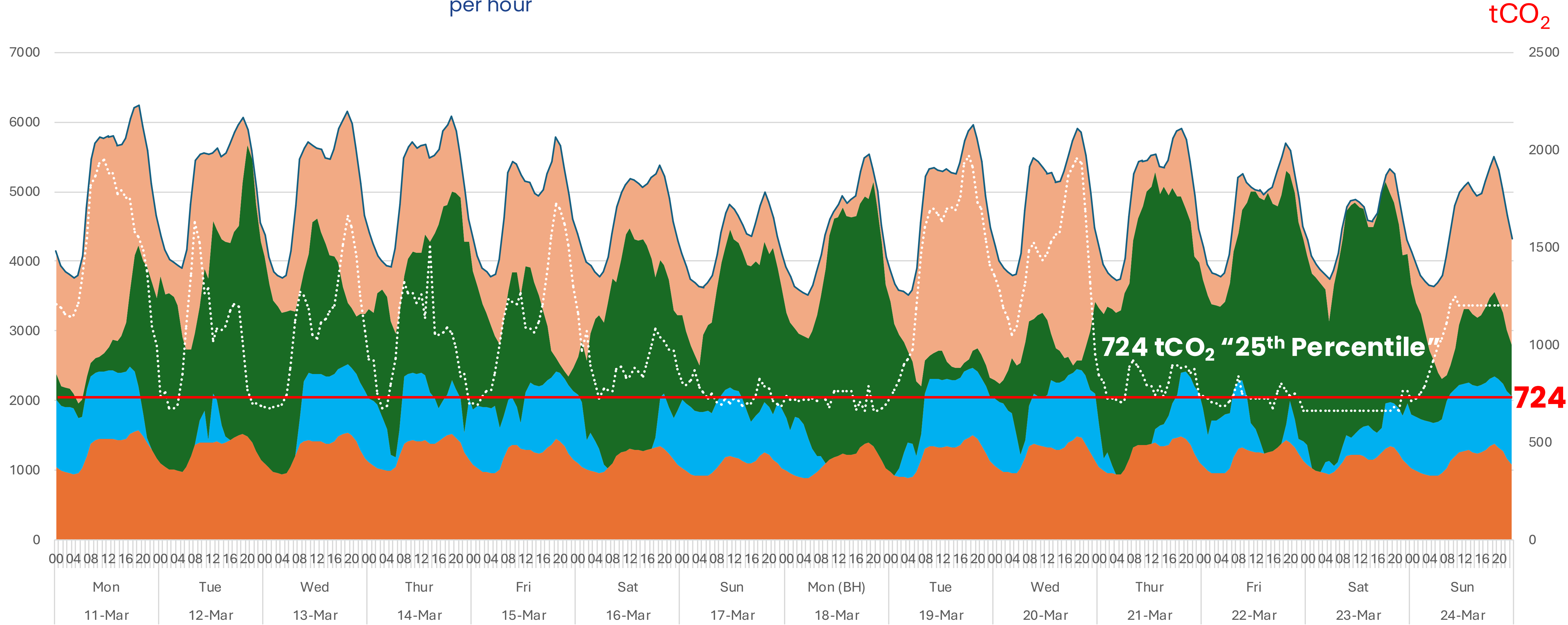


Real-time CO_2 Emissions

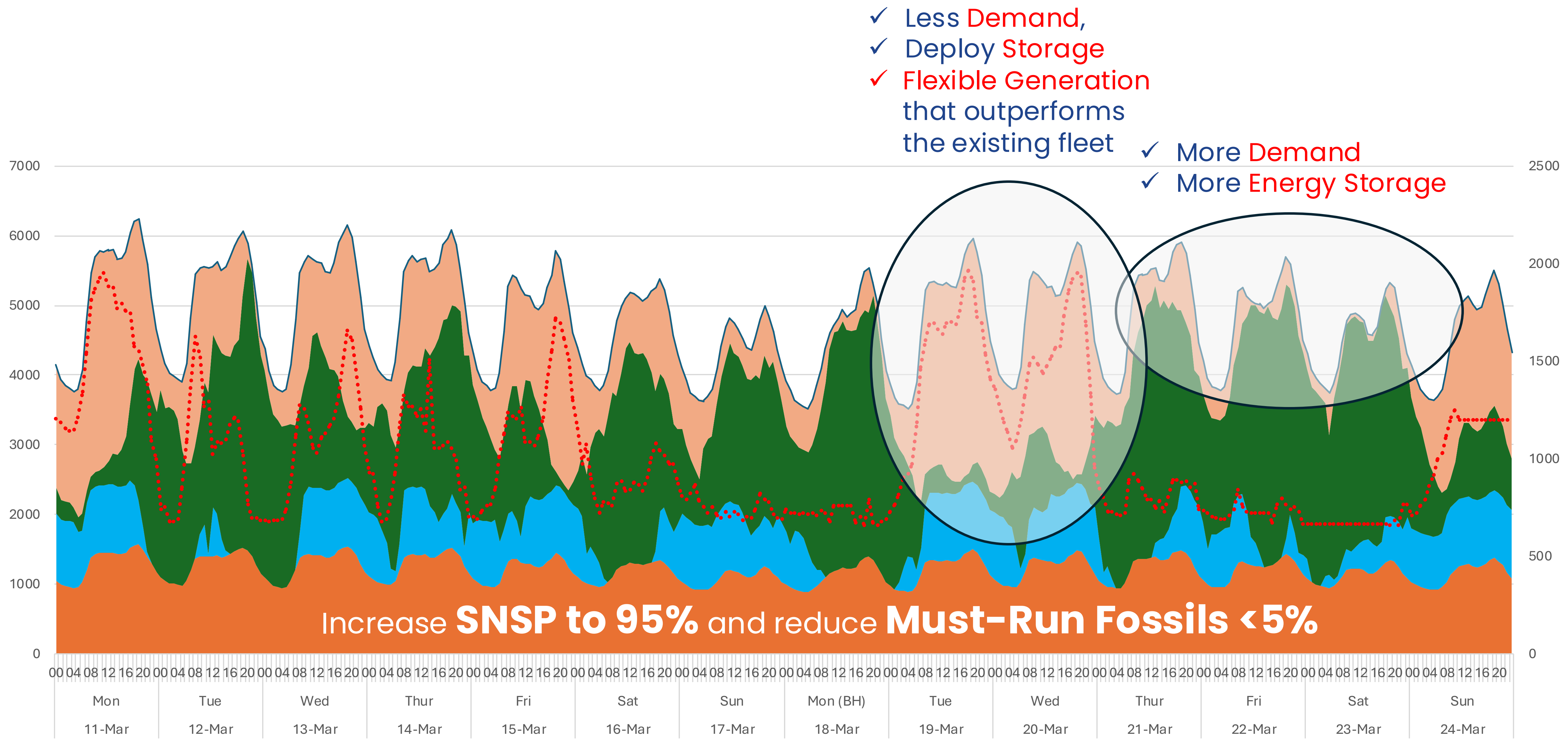
724
Tonnes CO_2 per hour

Emissions Locked-in by Must-Run Generators

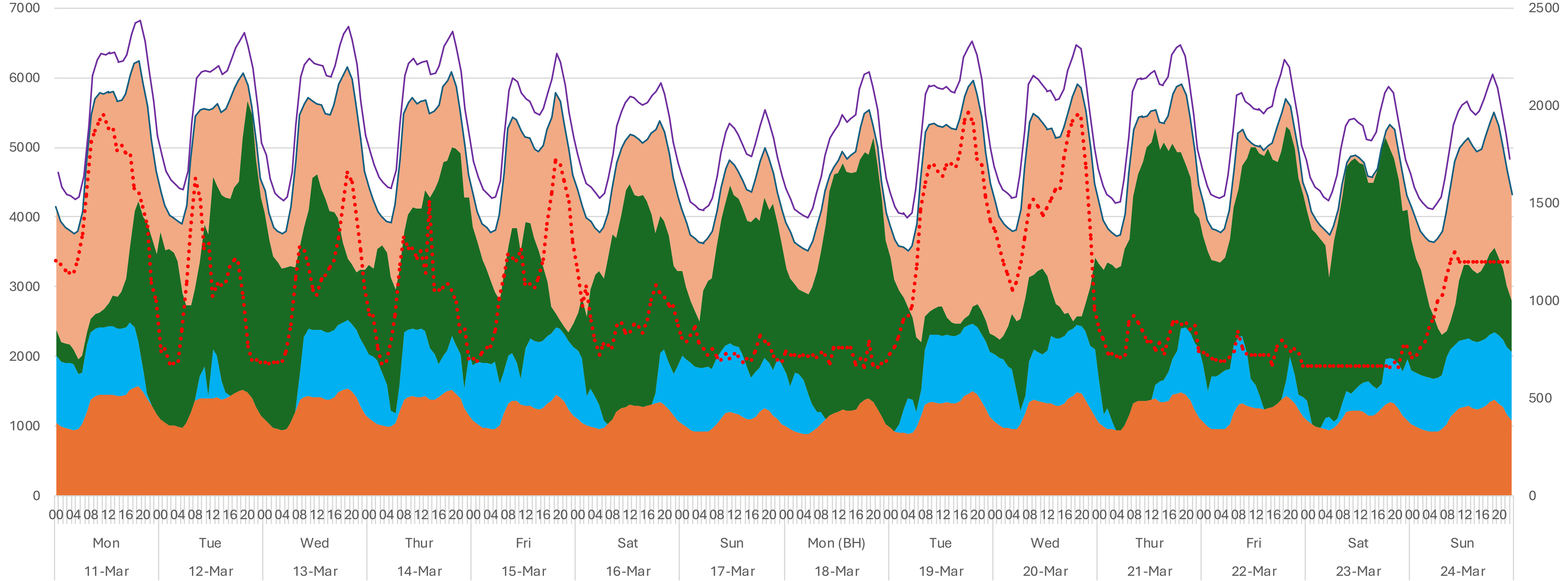
60%
CO_2 Emissions



What do we need more of; and **When?**



We don’t need **Fixed Demand** Datacentres



Flexible Demand, Storage & Generation

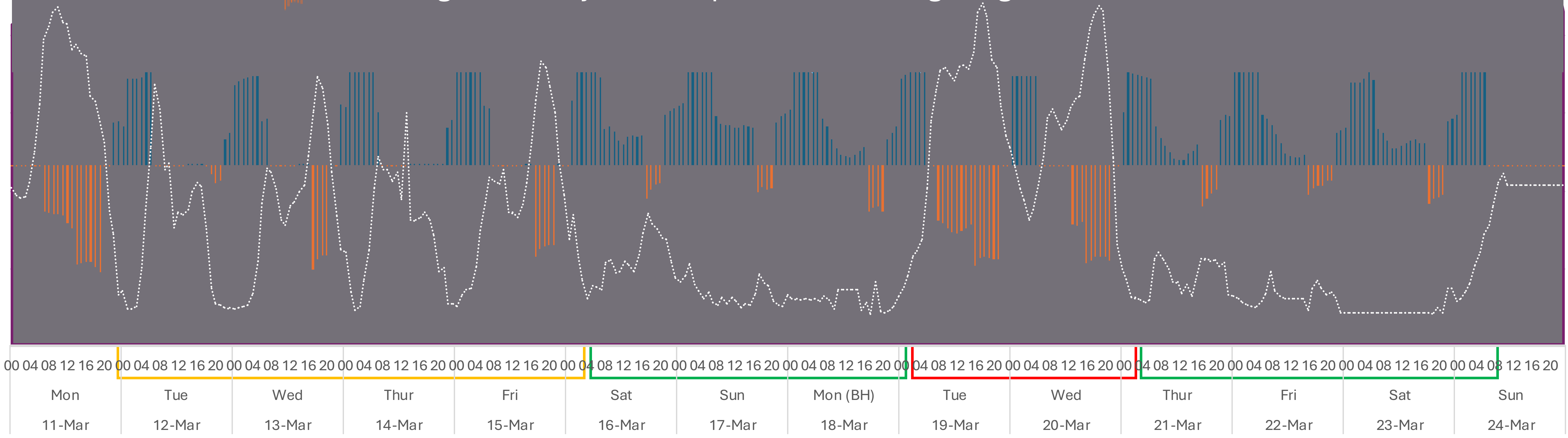
	Grid Benefit	DC Benefit
(blue)	New Demand	Low Emissions
(orange)	New Generation	Avoiding Higher Emissions

Large Energy Users should be both consumers and producers of energy ["Pro-sumers"]

Consuming when there is an abundance of renewables and interconnection

Capable of reducing demand in variable conditions

Producing when they can out-perform the marginal generator for emissions.



CORE Energy Transition

core
Sustainability at the core

Transition from:

- Burning 1000t of Limestone every day.
- 200,000 tCO_2 yearly
- Intense SOx , NOx , Dust & Noise emissions

Transition to:

Leading industrial decarbonisation

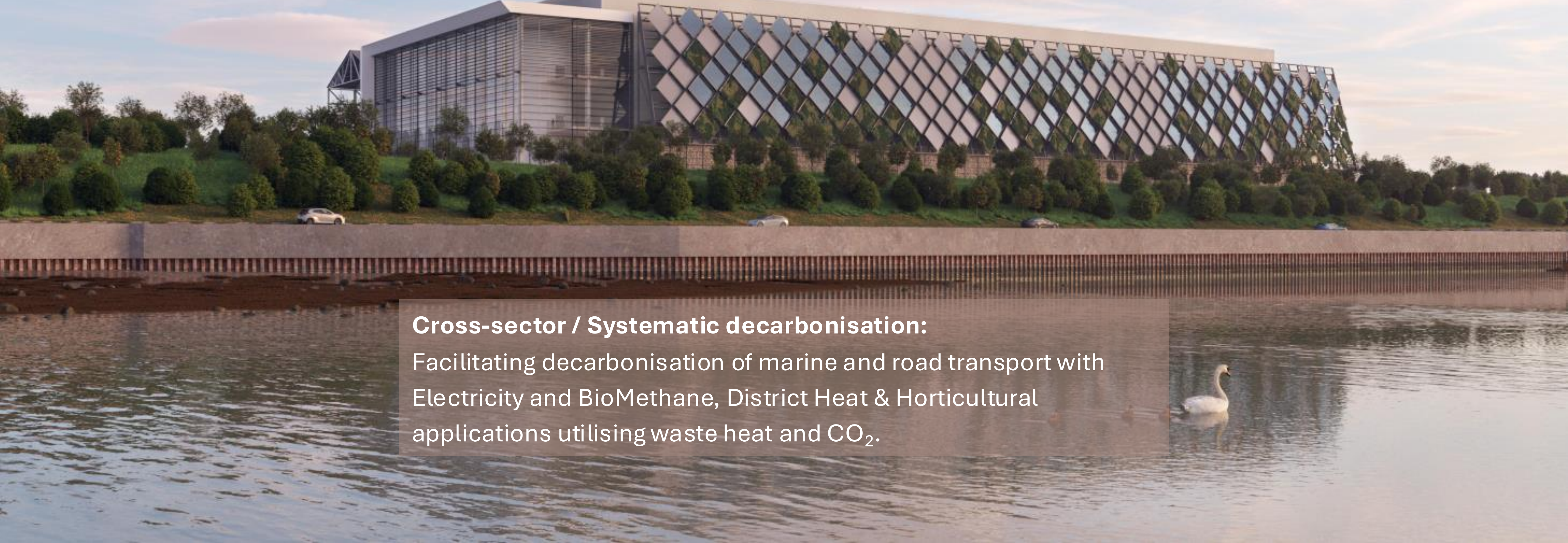
Industrial Decarbonisation.

Campus Vision: To attract new enterprises to manufacture their products and deliver their services from real-time net-zero electrical and heat networks, with no impact on the public water system.

PPL's upgraded Electricity Gas and Water Utilities when coupled with Gyrogy's Energy Technology will **accommodate Thermal and Electric LEU's**

Fully Flexible-Demand, Kinetic, Thermal & Battery Energy Storage Systems, On-site renewables, Industrial and Municipal heat networks and integration of Biomethane.

Future potential to integrate with off-shore wind including multi-purpose interconnection and Power-to-X applications.



Cross-sector / Systematic decarbonisation:
Facilitating decarbonisation of marine and road transport with Electricity and BioMethane, District Heat & Horticultural applications utilising waste heat and CO_2.

Key take aways on Industrial Decarbonisation

- ❑ All LEU's (Thermal or Electric) should connect to both Gas and Electricity Grids.
- ❑ Have the capability to operate interchangeably between them, according to the availability of renewable electricity, creating and inherent energy flexibility on the demand side.
- ❑ Legacy facilities (particularly datacentres) need to be retrofitted to become flexible.
- ❑ There must be attrition in the industrial fleet during the Energy Transition.

Key take aways for you!

- Thank you. Well-done for being here. This is important!
- Whatever your ideas are – make it happen.
- We need every solution implemented – let the market decide on the volume.
- Look around at all the people that can help you shape / finance / improve them to them.

Sustainability at the core

- Visit us in Drogheda to learn more about the project.
- Think about operating your business from the Campus, Supplying the Campus with your technology, Joining our Development Team
- Because you understand Energy Transition – lend your support for projects that you think have sustainability at their Core.

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