Learn more about our FES 2023 data

8 August 2023, 1pm

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FES Data

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Agenda

Welcome	James Whiteford
FES Workbook & Data Portal	Oak Kerby-Steele
Web Visualisations	David Parfitt
Q&A with Sli.do	Aneesa Parkar
Close	

Where to find FES data

Data Groups

Home / Data Groups

Ancillary Services
Data on services that balance demand and supply including Fast Reserve, Firm Frequency Response and STOR
View

Balancing Costs
Data on forecast and historic balancing costs, including BSUoS and Balancing services charging reports.
View

Carbon Intensity
Data providing an indicative trend of regional and national carbon intensity of the GB electricity system. View the Carbon Intensity dashboard
View

Connection Registers
Data showing the latest contracted position, published twice weekly
View

Constraint Management
Data on historic costs and forecast constraint volumes. Required when the system is unable to transmit power to a demand location due to transmission...
View

Demand
Forecast and historic data for demand, interconnectors, pump storage pumping, wind and solar generation.
View

Demand Flexibility Service
Get data for our test and live DFS events. This is a new service giving extra flexibility during peak winter demand periods. Consumers are...
View

Future Energy Scenarios
Data on a range of different ways to de-carbonise and shape the future energy system, working towards the 2050 target. More about FES
View

Generation
Forecast volumes and cost for reserve margin, wind generation and generation by fuel type.
View

Interconnectors
Data relating to operational restrictions limiting interconnector flows connected to GB.
View

Network Charges
TNUoS tariffs and publications associated with TNUoS revenue and charges.
View

Plans, Reports & Insights
Other data including information supporting our Operational Transparency Forum.
View

System
System-wide data including historic system frequency data.
View

Trading
We trade power exchange, forward energy and balancing contracts to meet forecast energy needs, in advance of the balancing mechanism.
View

https://data.nationalgrideso.com/data-groups/future-energy-scenarios

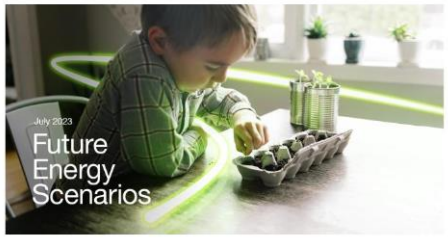
FES Website

ESO Data Portal

Visualisation site

https://www.nationalgrideso.com/future-energy/future-energy-scenarios

Future Energy Scenarios 2023 report



The Future Energy Scenarios publication outlines a number of credible energy futures that mean we can continue to support the development of the energy system.

FES in 5

For faster reading, download our FES summary document, which highlights the key headlines and statistics from the full publication.

Energy Background Document

The purpose of the Energy Background Document is to provide supplementary content and background to underpin the main FES 2023 document.

FES 2023 Data workbook

All the graphs, charts and supporting data published in FES 2023 from our modelling. If using Edge you need to download the file rather than view online.

FES 2023 scenario assumptions

Find out what assumptions we used in our models for FES 2023.

Regional breakdown of FES electricity data (maps)

Explore the geographical differences in electricity demand within National Grid ESO's Future Energy Scenarios 2022.

Regional breakdown of FES data (workbook)

FES modelling data segmented by region.

How we do our modelling for FES 2023

Learn more about the models we used to base the scenarios on.

https://www.futureenergyscenarios.com/

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Future Energy Scenario's Workbook Contents Page

Future Energy Scenarios 2023 Data Workbook

This workbook contains all the graphs and its data to our 2023 Future Energy Scenarios Document. This workbook also contains additional data and charts that we think might be useful to our stakeholders. The full FES document can be downloaded from our website (link below). Any questions, please contact us at the email address shown below.

https://www.nationalgrideso.com/future-energy/future-energy-scenarios FES@nationalgrideso.com

Charts Contents

FES Key Comparison Chart

Return to: Main Menu
Return to: Chapter contents

Denotes UK Government Target & Ambitions

		2021	By 2025	By 2030	By 2035	By 2040	By 2045	By 2050	Maximum Potential by 2050
Emissions	Meets 2050 Net Zero target	446 MtCO2e						CT ST LW	Net Zero by 2046
	Meets 5th carbon budget			CT ST LW		FS			
	Meets 6th carbon budget				CT ST LW				
Electricity Generation	50 GW of offshore wind	13 GW		LW	CT	ST	FS		115 GW
	Up to 5 GW floating offshore wind	0 GW			CT ST LW		FS		20 GW
	Up to 70 GW of solar	14 GW				LW		CT	91 GW
	No unabated natural gas-fired generation capacity (subject to security of supply)	36 GW				LW	ST	CT	LW reaches this target in 2036

FES IN 5

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Future Energy Scenario's Workbook Data Tables

Data Tables

Chapter Section	Subsection	Figure Title	Figure Number
Data Tables		FLX1: Flexibility data table	FLX1
		ES1: Electricity supply data table	ES1
		ES2: European electricity supply data table	ES2
		ED1: Electricity demand summary	ED1
		ED2: Electricity definitions	ED2
		ED3: Gas demand summary	ED3
		ED4: Natural Gas demand definitions	ED4
		ED5: Road transport summary	ED5

ED1: Electricity demand summary

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Aggregation Level	Data item	Unit	Scenario	Fuel	Peak/ Annual/ Minimu	2020	2021
1	GBFES System Demand: Total	GWh	Consumer Transformation	Electricity	Annual [Fiscal]	286,689	294,569
1	GBFES System Demand: Total	GWh	Falling Short	Electricity	Annual [Fiscal]	286,689	294,569
1	GBFES System Demand: Total	GWh	Five Year Forecast	Electricity	Annual [Fiscal]	286,689	294,569
1	GBFES System Demand: Total	GWh	Leading the Way	Electricity	Annual [Fiscal]	286,689	294,569
1	GBFES System Demand: Total	GWh	System Transformation	Electricity	Annual [Fiscal]	286,689	294,569
2	GBFES Customer Demand: Commercial with Micro-generation Included	GWh	Consumer Transformation	Electricity	Annual [Fiscal]	77,846	80,815

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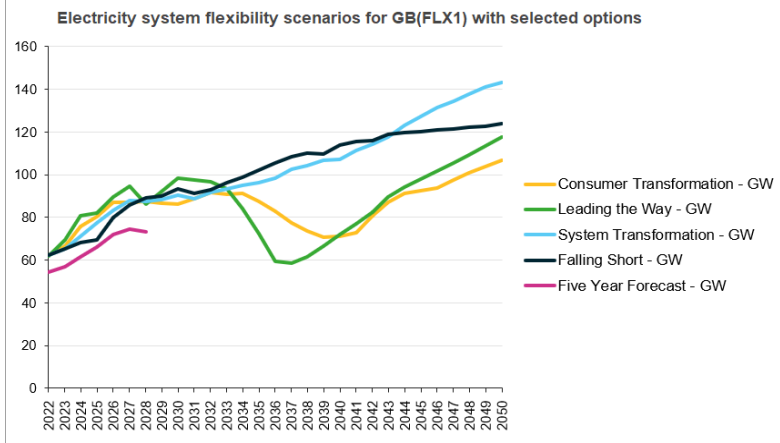
Future Energy Scenario's Workbook Data Dashboards

DB.FLX1: Electricity System Flexibility Data Dashboard

The Future Energy Scenarios (FES) represent a range of different, credible ways to decarbonise our energy system as we strive towards the 2050 target. One of the FES outputs is an agreed set of data tables containing the GB FES values for the electricity system flexibility (FLX1) which this dashboard is visualising. For each scenario and variable selected the values are summed across all remaining selected options. The data values for the selected options are below the chart.



Scenario
- Consumer Transformation
- Falling Short
- Five Year Forecast
- Leading the Way
- System Transformation

Flexibility sub-type
- Demand side flexibility
- Supply side flexibility

Unit
- GW
- GWh
- TWh

Detail
- Battery
- Biomass
- Capacity
- CCS Biomass
- CCS Gas
- Coal generation
- Compressed Air
- Gas generation
- Grid-connected ...
- Hydrogen gener...
- I&C DSR impac...
- Liquid Air
- Non-residential ...
- Non-residential ...

Data item
- Demand
- Demand side response
- Dispatchable electricity supply capacity
- Electricity storage connection capacity
- Electrolysis (installed electric capacity)
- Interconnectors
- Vehicle to Grid
- Electricity storage energy storage pote...

Fuel
- Bioresources
- Coal
- Electricity
- Gas

Values	Column Labels: Consumer Transformation GW	Consumer T	Leading the W GW	Leading the Way	System Transformation GW	System Transforma	Falling Sho GW	Falling Short	Five Year Forecast GW	Five Year Forecast Total
2022	62	62	62	62	62	62	62	62	54	54
2023	66	66	69	69	65	65	65	65	57	57
2024	76	76	81	81	71	71	68	68	62	62
2025	80	80	82	82	77	77	70	70	66	66
2026	87	87	89	89	84	84	80	80	72	72
2027	87	87	95	95	88	88	86	86	74	74
2028	87	87	86	86	88	88	89	89	73	73
2029	87	87	92	92	88	88	90	90		
2030	86	86	98	98	90	90	93	93		
2031	89	89	98	98	89	89	91	91		
2032	92	92	97	97	92	92	93	93		
2033	91	91	93	93	93	93	96	96		
2034	91	91	84	84	Plot Area	95	99	99		
2035	87	87	72	72	96	96	102	102		
2036	83	83	60	60	98	98	105	105		
2037	77	77	59	59	102	102	108	108		
2038	74	74	62	62	104	104	110	110		
2039	71	71	66	66	107	107	110	110		

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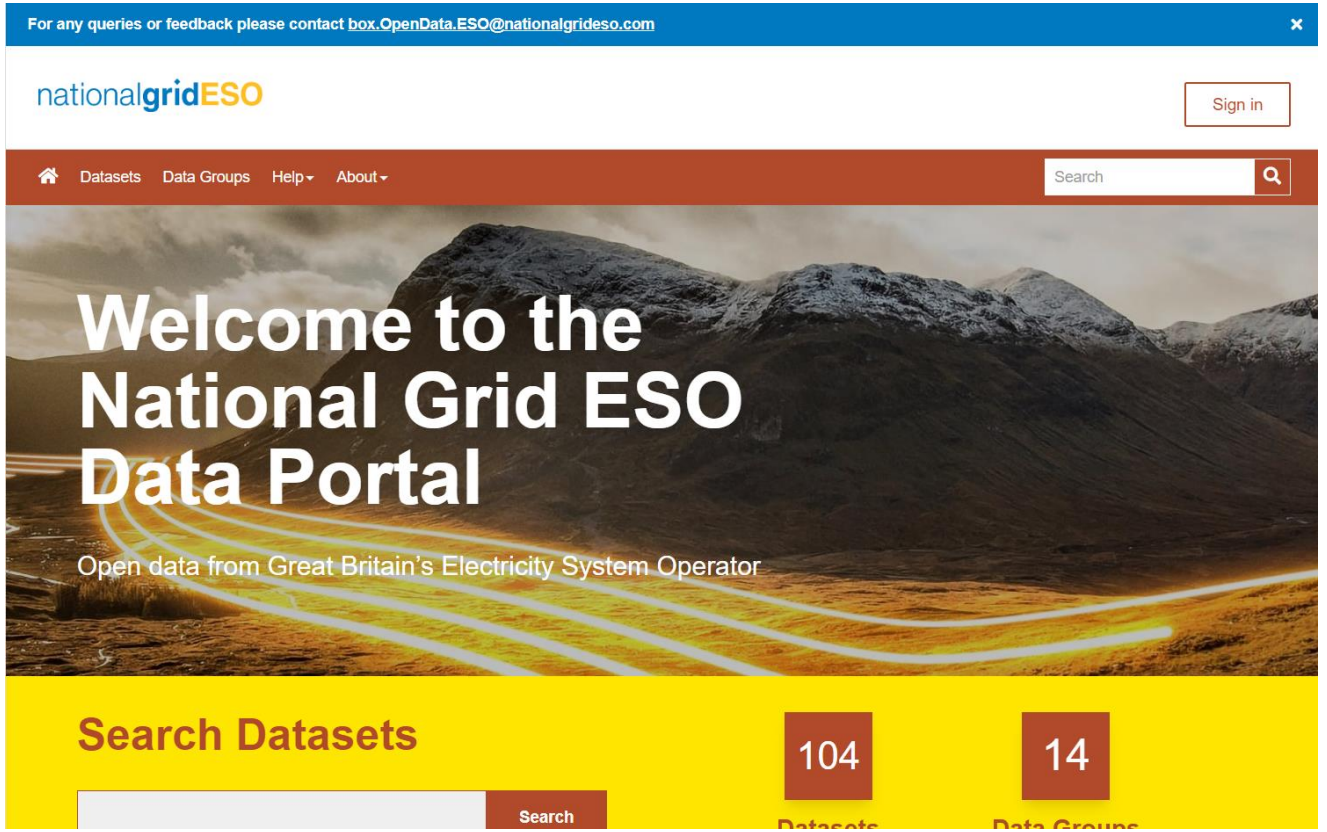
Data Portal (Live Demo)

Data Portal



Web visualisations

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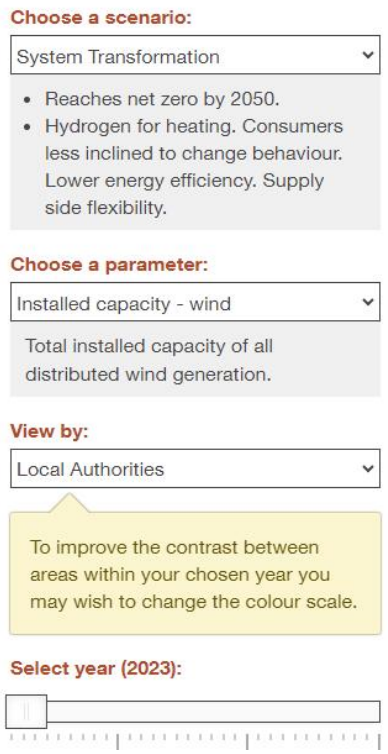
Web visualisations

Why?

- Improve access to our FES data especially for non-power systems people
- Show what our G.B. level assumptions and projections look like at for different areas of the country

Not:

- Replacing the data in the data workbook
- Replacing DFES / local area planning



FutureEnergyScenarios.com

Data processing

GSP data from data workbook and ETYS regional datasets

Disaggregate based on GSP shapefile information to LSOA regions (from ONS)

Aggregate LSOA data to Local Authority and GB regions*

Future Energy Scenario (FES) Building Block Data

CSV

We have been working with the other network companies as part of the Energy Networks Association (ENA) Open Networks project. The Whole System Electricity Future Energy Scenarios (FES) part of this...

Regional breakdown of FES data (Electricity)

CSV

Long term electricity forecasts per region covering demand, demand side response and distributed generation based on our Future Energy Scenarios. Regions presented are Grid Supply Points (GSPs) and...

- Allocation weighted currently by populations, could be weighted by other LSOA statistics
- Helps where we have GSP regions that cover both urban and rural areas.

*'GB regions' -> Wales, Scotland + International geography English regions i.e. the old NUTS1 regions

Web Visualisations – Live Demo

Choose a scenario:

System Transformation

- Reaches net zero by 2050.
- Hydrogen for heating. Consumers less inclined to change behaviour. Lower energy efficiency. Supply side flexibility.

Choose a parameter:

Installed capacity - wind

Total installed capacity of all distributed wind generation.

View by:

Local Authorities

To improve the contrast between areas within your chosen year you may wish to change the colour scale.

Select year (2023):

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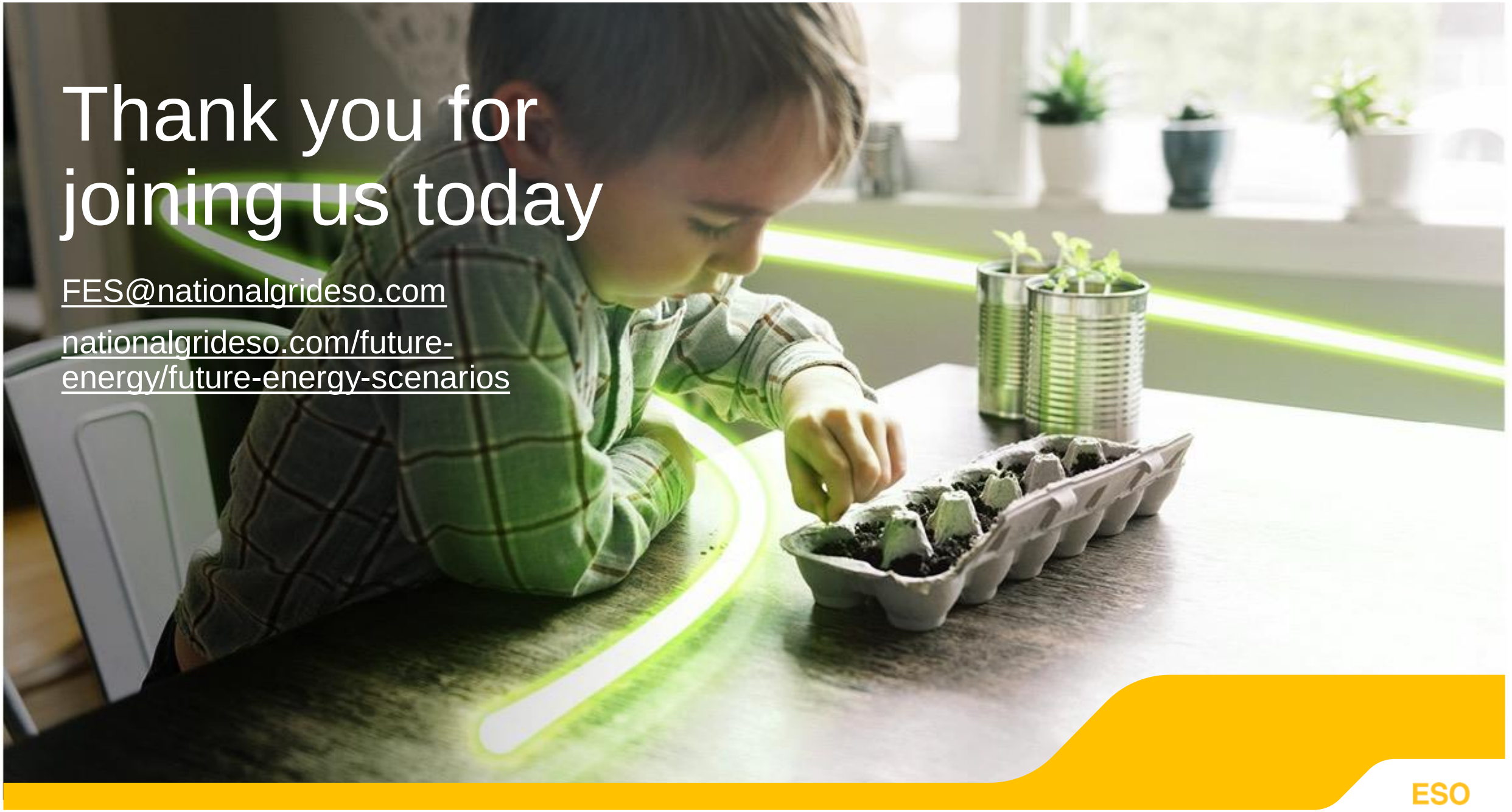

Thank you for joining us today

FES@nationalgrideso.com

nationalgrideso.com/future-energy/future-energy-scenarios