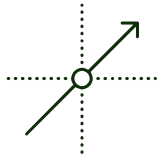
September 2024

OpenMinds 2024 ‘P50’ Outlook

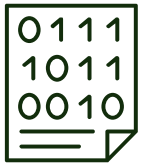
Energy & Climate Trajectory and Gaps to Close

OpenMinds

OpenMinds ‘P50’ Outlook Objectives



Develop a **non-biased view** of where we’re really heading on energy supply & consumption, power, and emissions



Quantify **what’s needed to close the gap** between our current energy mix and what’s needed to affordably and efficiently bend the curve

Provide an **annually-refreshed perspective to track** global & US progress against the Dual Challenge and to identify high-impact areas for improvement

OpenMinds ‘P50’ Outlook Scope and Contributors

2035 forecasts included in the ‘P50’ Outlook

	Global	US
Energy Demand	✓	✓
Supply Mix	✓	✓
Emissions	✓	✓

Developed and reviewed by industry leaders

MODEL CREATION

Intersect SM
BAIN & COMPANY

Additional detail in appendix

Copenhagen Economics
CE

EXPERT REVIEW

GE VERNOVA

CATF CLEAN AIR TASK FORCE

tpi

SCF PARTNERS
HOUSTON | CALGARY | ABERDEEN | SINGAPORE

NEW ENERGY CAPITAL

How the Intersect Model Works

Outlook based on most cost-effective path, limited by real world constraints

Inputs

- Population Growth
- GDP
- Technology costs *(incl. commodity intensities)*
- Experience curves
- CO_2 intensity

Simulation Engine

STEP 1

Model is run as a **constrained optimization** to ensure sectors **decarbonize** based on the **most cost-effective path**

EXAMPLE: Decarbonization levers for transportation

- Switch Technology *e.g., ICE to EV*
- Improve Efficiency
- Lower demand

STEP 2

Demand = Supply

Model uses prices to reach **demand and supply equilibrium** across all sectors subject to input output matrix constraints

STEP 3

Forces consistency by ensuring changes in sector output and factor incomes still sum to GDP**.** Process repeats each year until decarbonization targets are met each year

Real World Constraints

- Impact of intermittency of renewables on grid stability
- Assume electricity is priced on basis of average cost
- Physical availability of agricultural land for biomass activities
- Pace of roll out, amount of VRE installed per year

Outputs

- Energy demand
- Energy supply mix
- Sales and total stock of EVs
- Electrification pace
- Carbon emissions

OpenMinds ‘P50’ Outlook Key Model Assumptions

PRELIMINARY

Key assumptions			2023	2030	2035
Energy and Electricity Demand	**GDP growth** (%)	***Global***	2.6	2.7	2.7
		USA	2.0	1.7	1.9
	Energy intensity[1]	***Global***	3.8	3.4	3.0
		USA	3.7	3.4	3.1
	EV sales penetration (% of new car sales)	***Global***	17	45	64
		USA	10	35	55
	Electricity demand from data centers and AI (TWh)	***Global***	400	1,060	1,230
		USA	117	351	406
Power Sector	**US Value-Adjusted Levelized Cost of Electricity** (VALCOE, $/MWh)	***Solar***	60	64	62
		Wind	64	71	77
	LCOE learning rate[2] (%)	***Solar***	20		
		Wind	15		
	Capacity factor (%)	***Solar***	18	19	20
		Wind[4]	35	38	40
	Battery storage intensity[3] (%)	***Global***	2	8	11
		USA	6	19	22

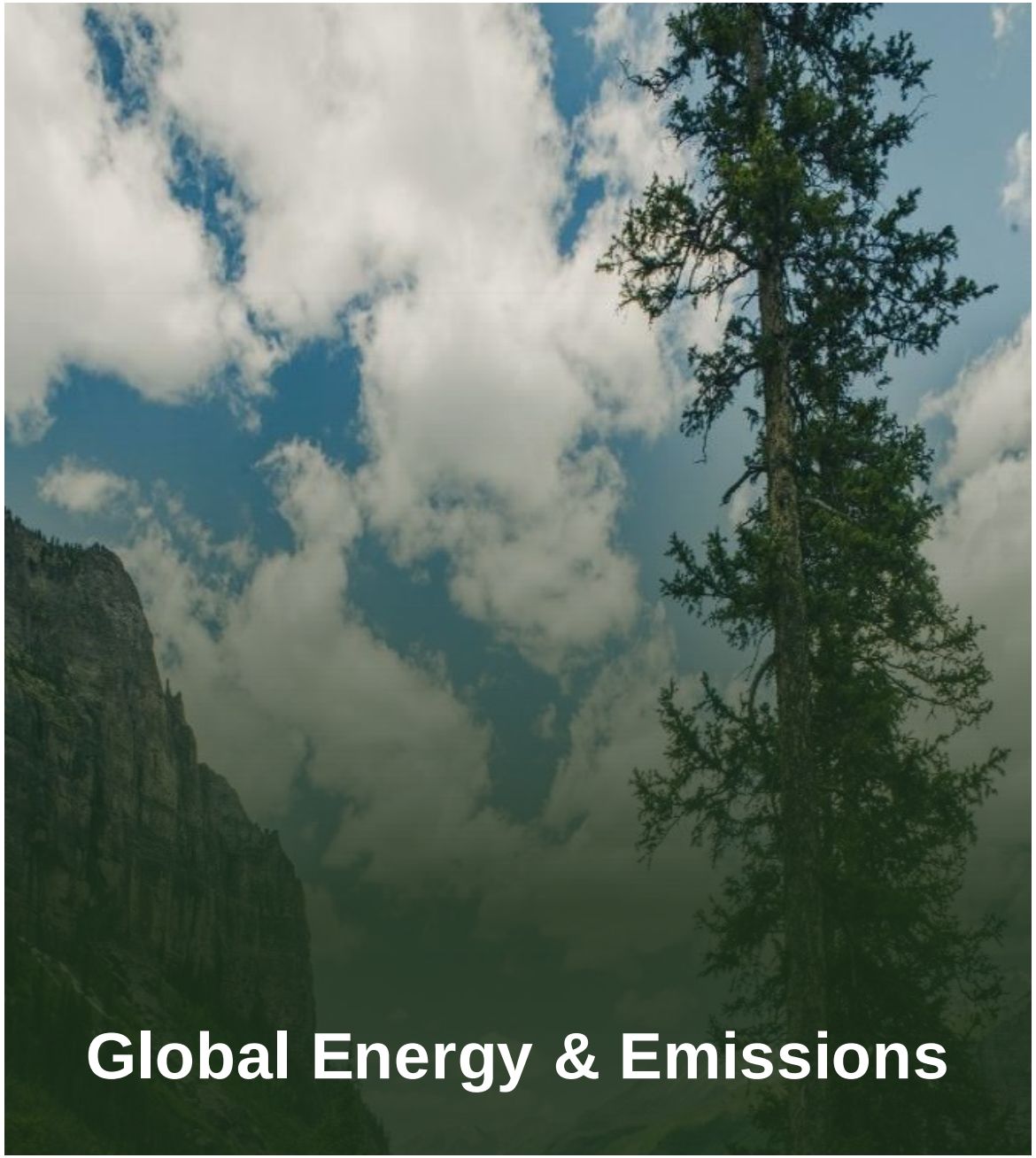
Questions answered by model

1 What is the outlook for **energy demand** and which sectors will drive growth?

2 How will the **energy mix** shift in coming years?

3 What does **emissions trajectory** look like through 2035?

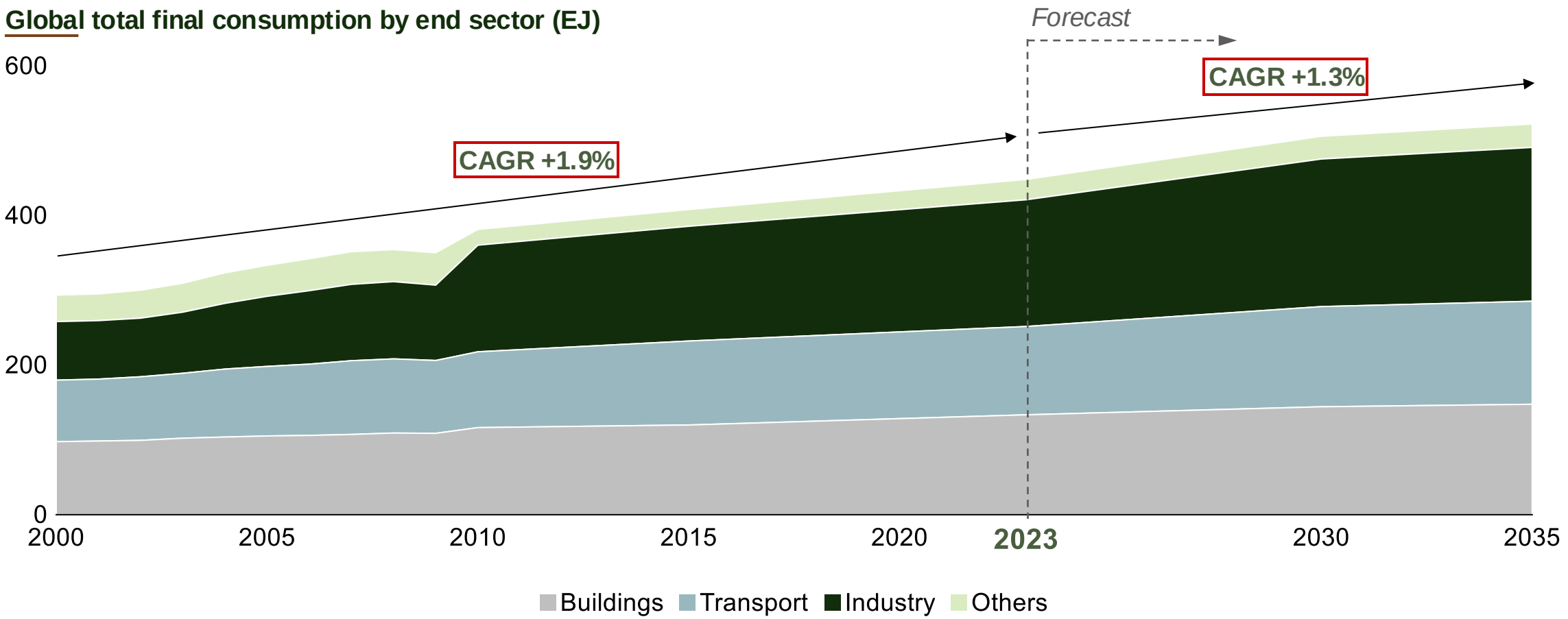
Note: [1]Energy intensity shown in terms of total final consumption (EJ) per purchasing power parity (PPP) in trillion dollars (T$). [2]LCOE learning rate is the percentage decrease in LCOE for every doubling of installed capacity. [3]Battery storage intensity calculated as the total installed battery capacity as a % of total installed variable renewable energy (wind and solar) capacity. [4]Wind capacity factor provided as weighted averages across offshore and onshore
Source: IEA, Goldman Sachs, IRENA



Global Energy & Emissions

US Energy & Emissions

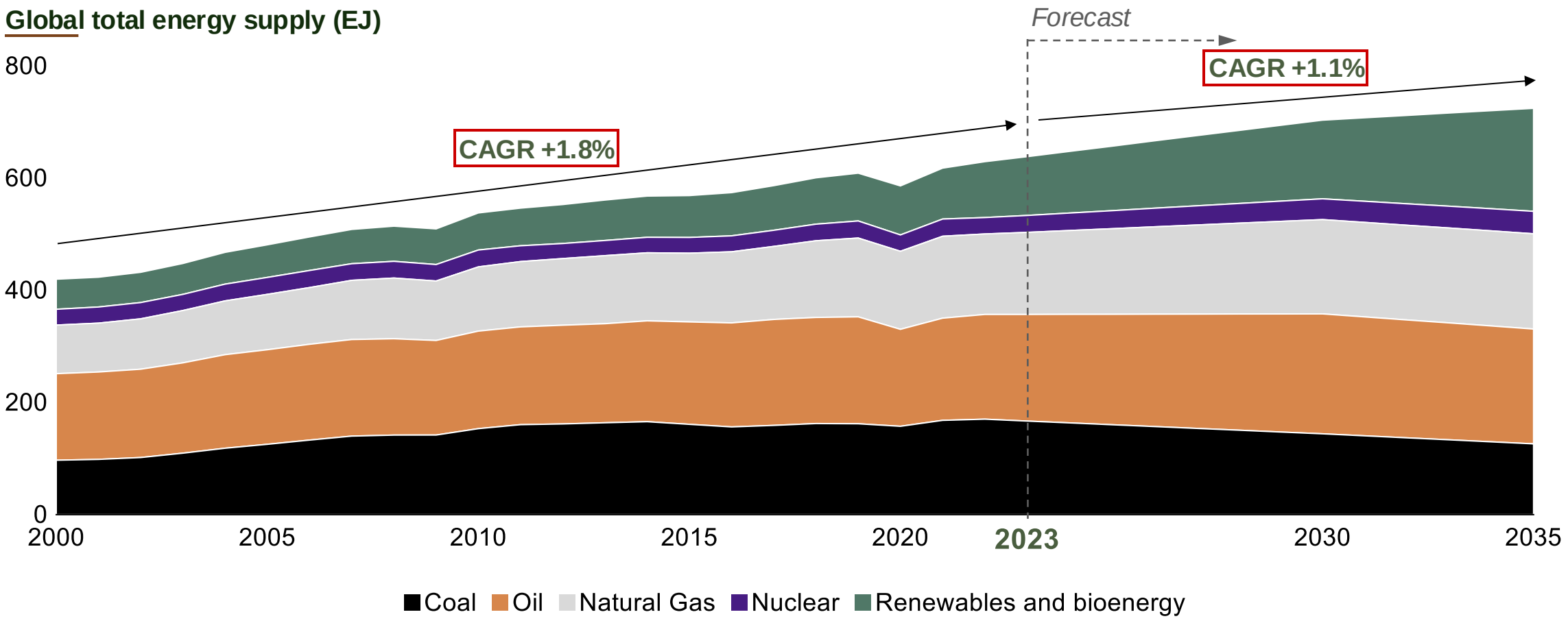
Global Energy Demand is Expected to Rise Driven by Consumption Growth in Buildings and Industry Sectors



Source: Intersect$_{SM}$ Carbon & Energy Transition CGE Model; IEA WEO 2023

Renewables are Forecast to Continue to Phase Out Coal in Global Energy Supply Mix

PRELIMINARY

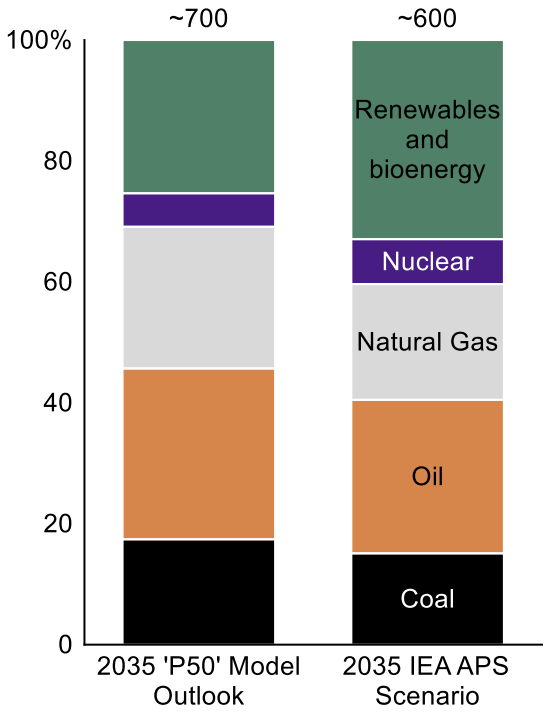


Source: Intersect$_{SM}$ Carbon & Energy Transition CGE Model; IEA WEO 2023

Despite Rapid Growth in Low-Carbon Energy, it's Not Enough

/PRELIMINARY /ILLUSTRATIVE

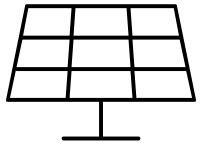
Forecasted Global Energy Supply (EJ)



Where We'll Land in 2035 if We Stay on 'P50' Path

Not enough renewables

Gap: 18 EJ

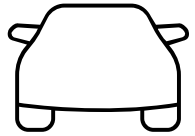


Enough solar to cover New Jersey

~70K more wind turbines

Overreliance on oil

Overage: 50 EJ

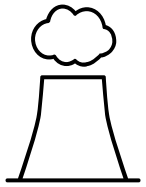


~13 million ICE vehicles

~8 billion barrels of oil

Underdeveloped nuclear

Gap: 5 EJ

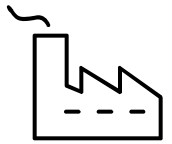


38 additional Vogtle power plants

~$1-2 trillion in capex

Too much gas & coal

Overage: 87 EJ

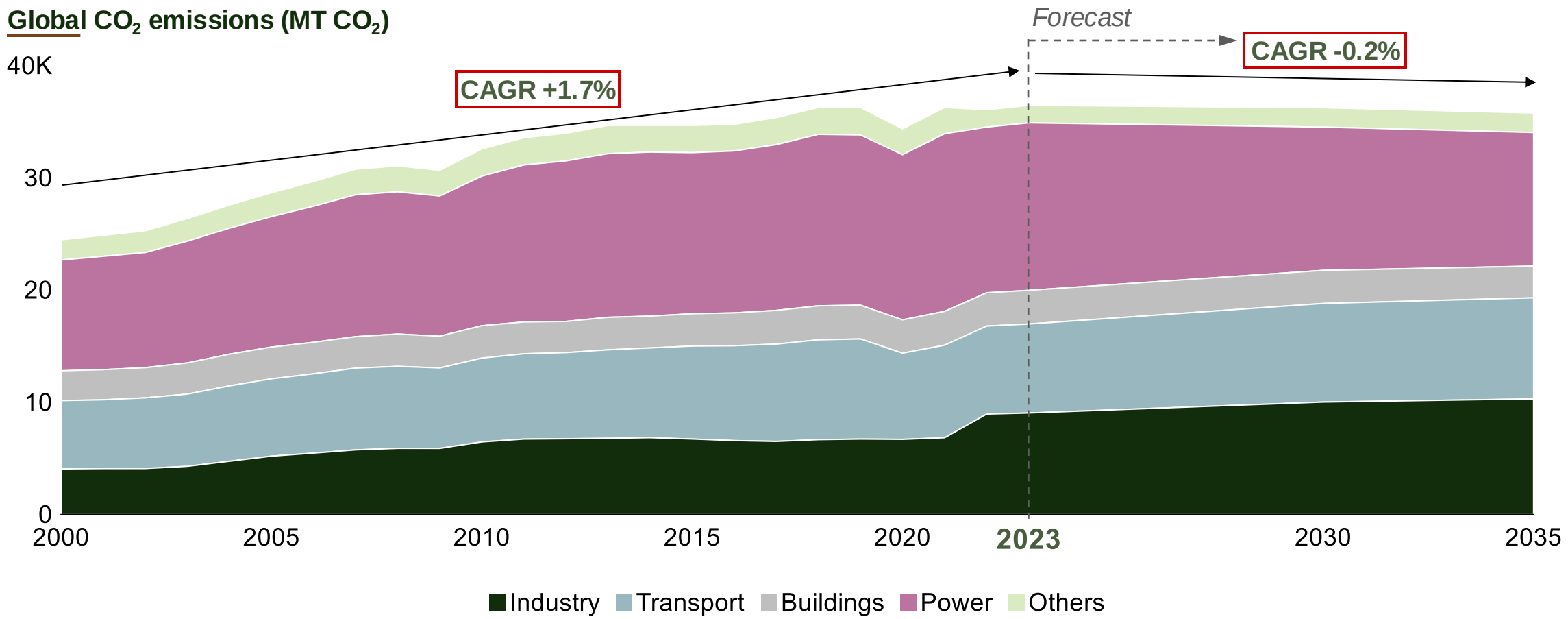


~50 trillion cubic feet of natural gas

~1 billion tons of coal

Source: Intersect$_{SM}$ Carbon & Energy Transition CGE Model; IEA

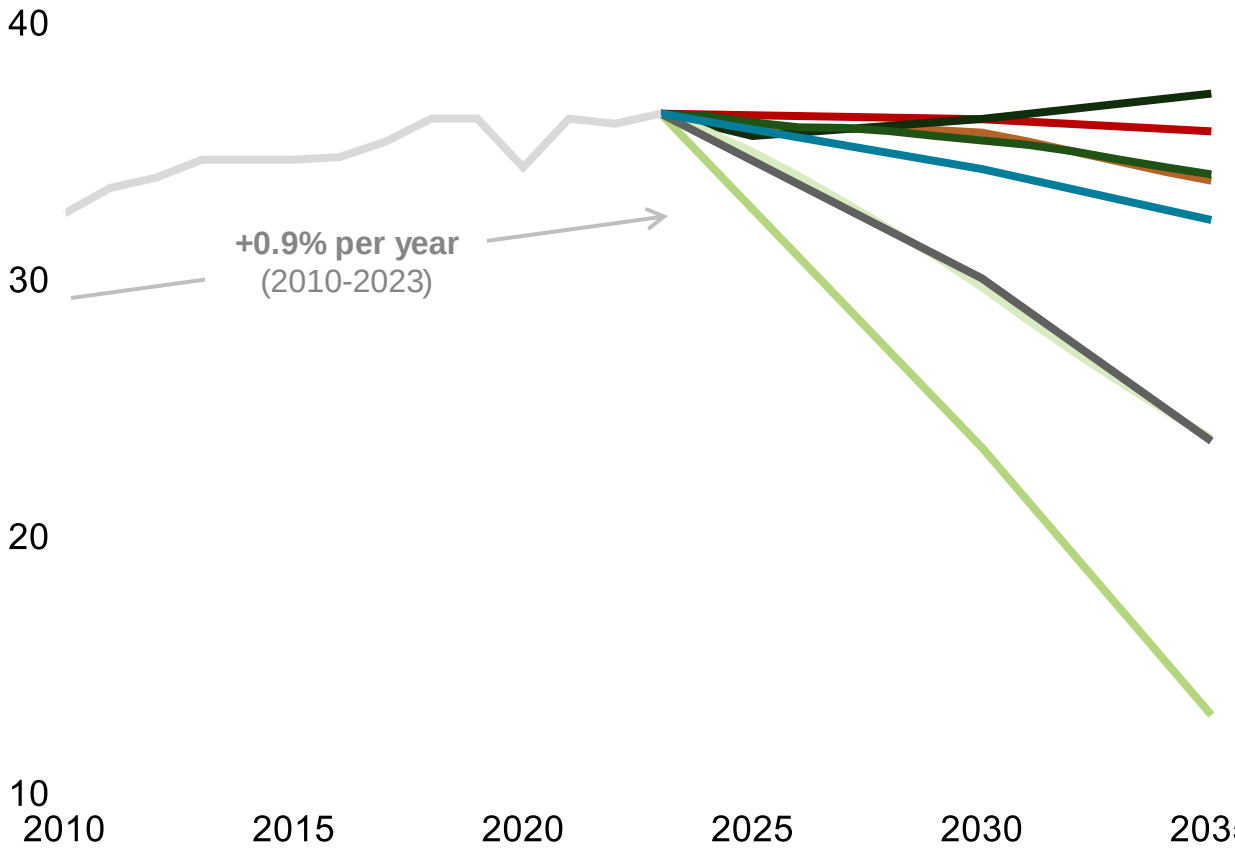
Developing Economies' Fossil Fuel-Powered Industrialization Offsets Developed Economies' Decarbonization



Source: Intersect$_{SM}$ Carbon & Energy Transition CGE Model; IEA WEO 2023

Global Carbon Emissions Likely to Decline Slightly by 2035

Global emissions by scenario (Gt CO_2)

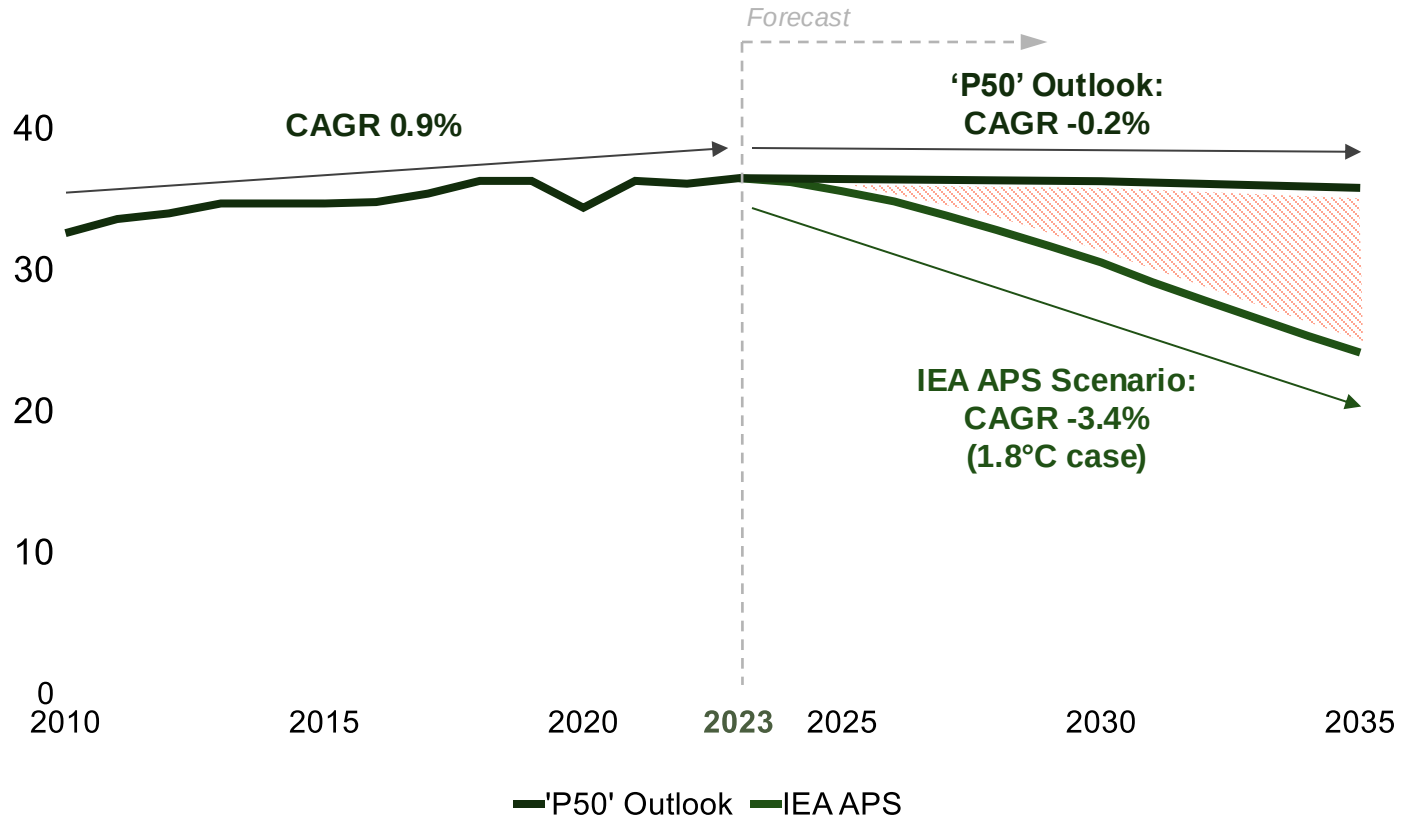


	Growth per year 2023-2035
Scenarios without significant policy or tech shifts	
EIA: International Energy Outlook 2023	+0.2%
OpenMinds 'P50' Outlook 2024	(0.2%)
ExxonMobil: 2023 Outlook for Energy	(0.6%)
BP: 2024 Energy Outlook	(0.6%)
IEA: Stated Policies Scenario (STEPS) 2023	(1.0%)
IEA: Announced Pledges Scenario (APS) 2023	(3.4%)
Scenarios with significant policy and tech shifts	
IEA: Sustainable Dev. Scenario (SDS) 2023	(3.5%)
IEA: Net Zero Emissions by 2050 (NZE)	(8.2%)

Source: BP Energy Outlook, 2021; ExxonMobil 2023 Outlook for Energy; International Energy Agency, World Energy Outlook 2023; EIA International Energy Outlook 2023

We're Bending the Curve, but Still Have a Big Gap

Global CO_2 emissions (GT CO_2)



The gap through 2035

~66GT

Total global CO_2 emissions gap between the 'P50' Outlook and IEA APS scenario

-14%

Total global CO_2 emissions reduction needed to stay on track from '23-'35

~$16T*

Total social cost of CO_2 emissions gap from '23 to '35

Note: *Value is presented in 2023 USD using 2% discount rate
Source: Intersect$_{SM}$ Carbon & Energy Transition CGE Model; IEA WEO 2023; Climate Action Tracker; EPA

Implications for Global Energy & Climate Outlook

Energy Demand...

is set to grow 15% by 2035, largely driven by developing economies

Oil Demand...

peaks in 2030, as the world passes a tipping point in EV adoption

Natural Gas Demand...

will grow in-line with total energy demand, maintaining its ~23% share through 2035

Renewable Energy...

share of energy mix is forecast to increase from ~15% to ~25% in 2035, as strong growth continues

Carbon Emissions...

will largely remain flat, decreasing ~0.2% p.a. to reach ~35 Gt in 2035

Differing Priorities...

in developing and developed world, with former focused on energy access, latter on climate change

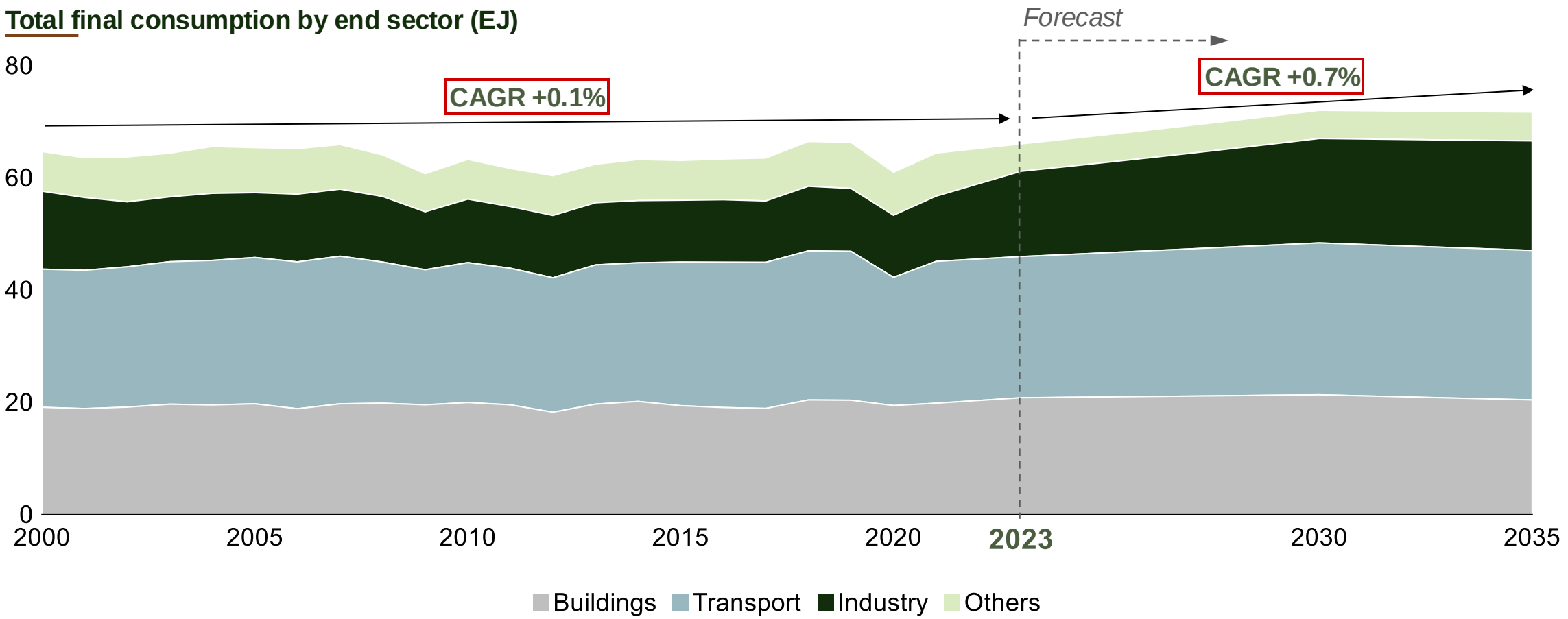
Global Energy & Emissions

US Energy & Emissions

In the US, Rising Energy Demand is Expected to be Mainly Driven by Transport and Industry Sectors

PRELIMINARY

Total final consumption by end sector (EJ)

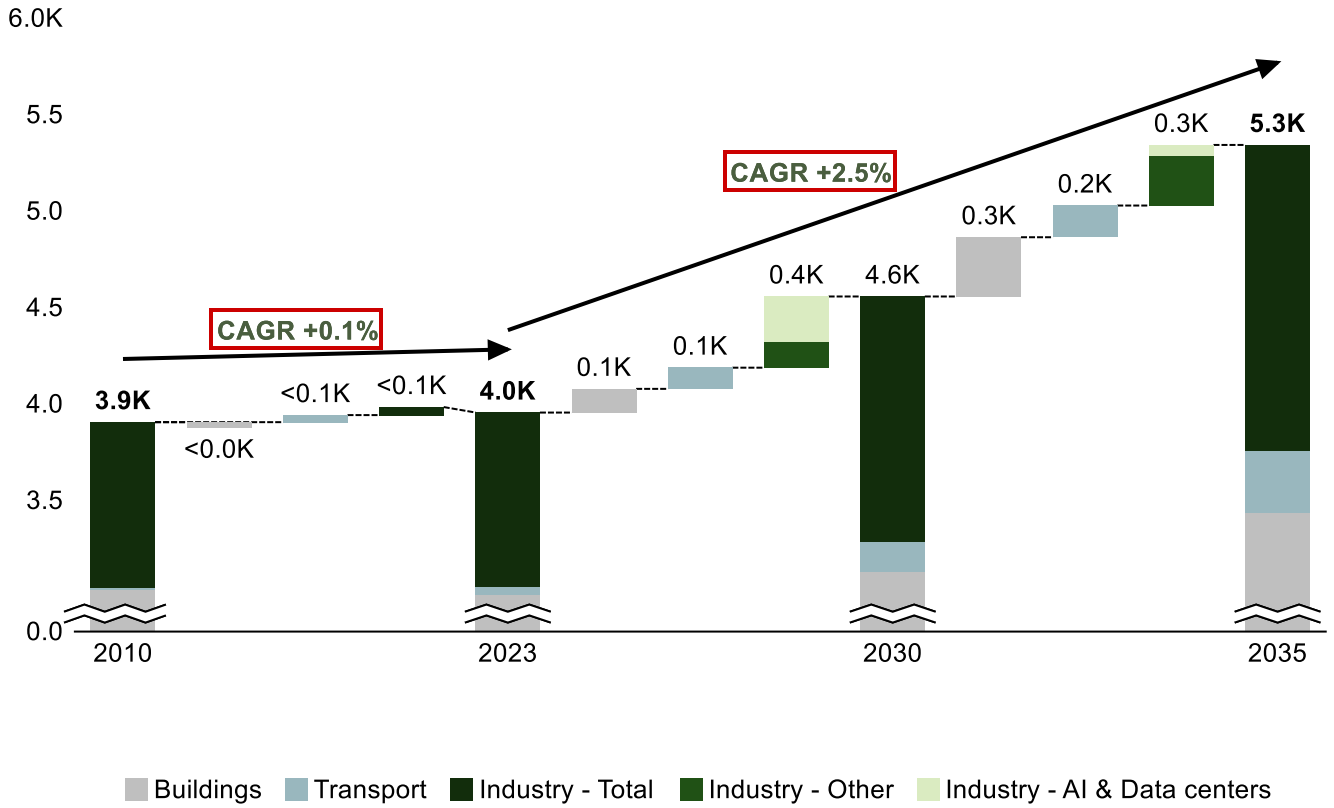


Source: Intersect$_{SM}$ Carbon & Energy Transition CGE Model; IEA WEO 2023

Electricity Demand Expected to Grow by ~2.5% p.a., Driven by Data Centers, Increased AC Use, and EV Sales

PRELIMINARY

US electricity demand (2010A-2035F, TWh)



+35%

'23-'35 Growth in Total US Electricity Demand

~410 TWh

from Data Centers & AI by 2035

8% of total, 30% of incremental demand

~320 TWh

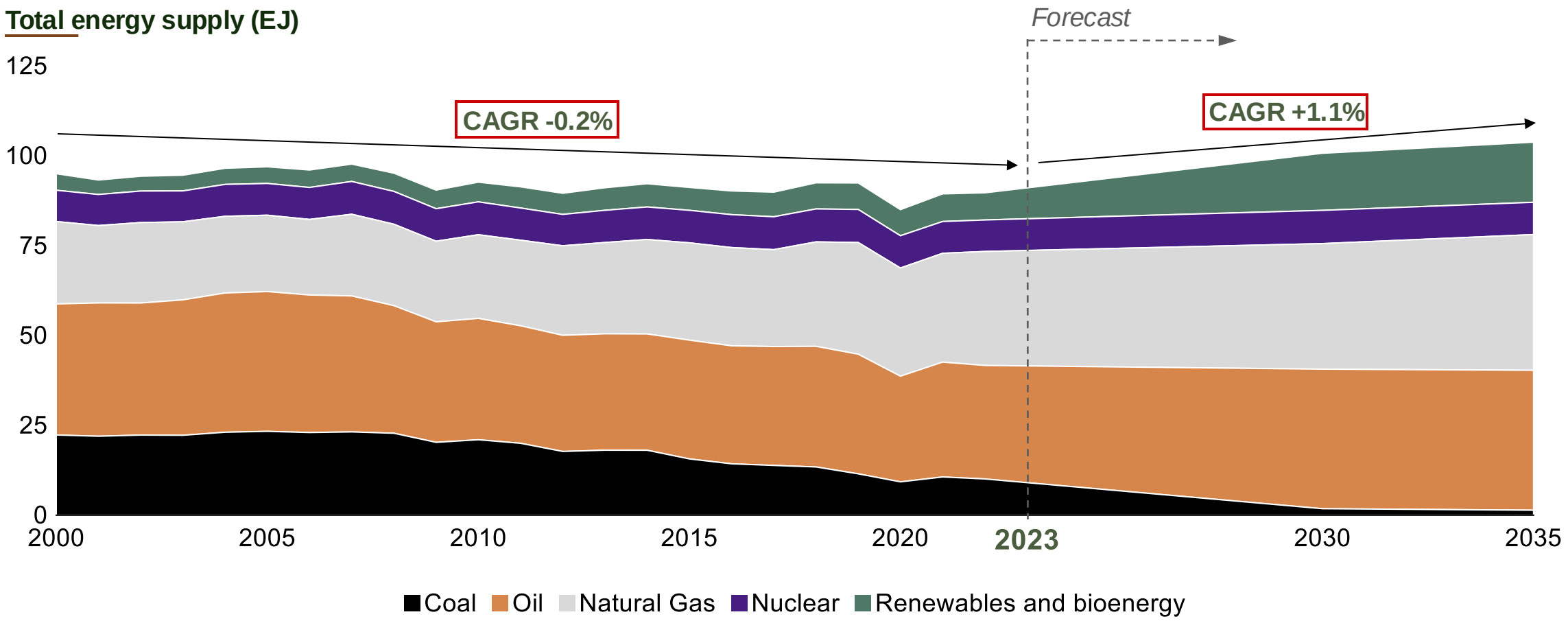
from EV Transport by 2035

6% of total, 23% of incremental demand

Note: (1) "Buildings" only includes residential buildings; LDV = light-duty vehicles; ICE = internal combustion engine
Source: Intersect$_{SM}$ Carbon & Energy Transition CGE Model; Goldman Sachs

The US is Projected to Rapidly Retire Coal as an Energy Source, Replacing it with Renewables and Natural Gas

PRELIMINARY

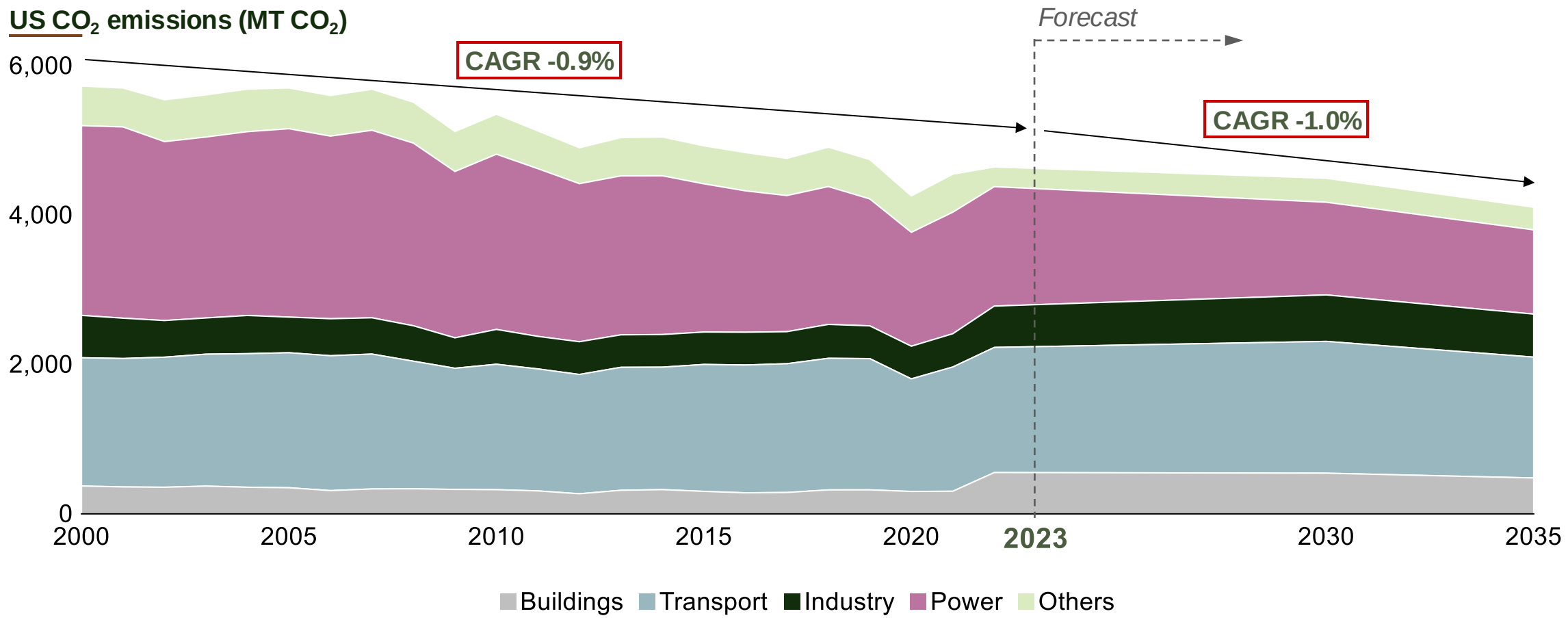


Source: Intersect$_{SM}$ Carbon & Energy Transition CGE Model; IEA WEO 2023

US Power Generation's Continued Shift from Coal to Gas and Renewables Drives Lower Emissions

3 | EMISSIONS TRAJECTORY

PRELIMINARY

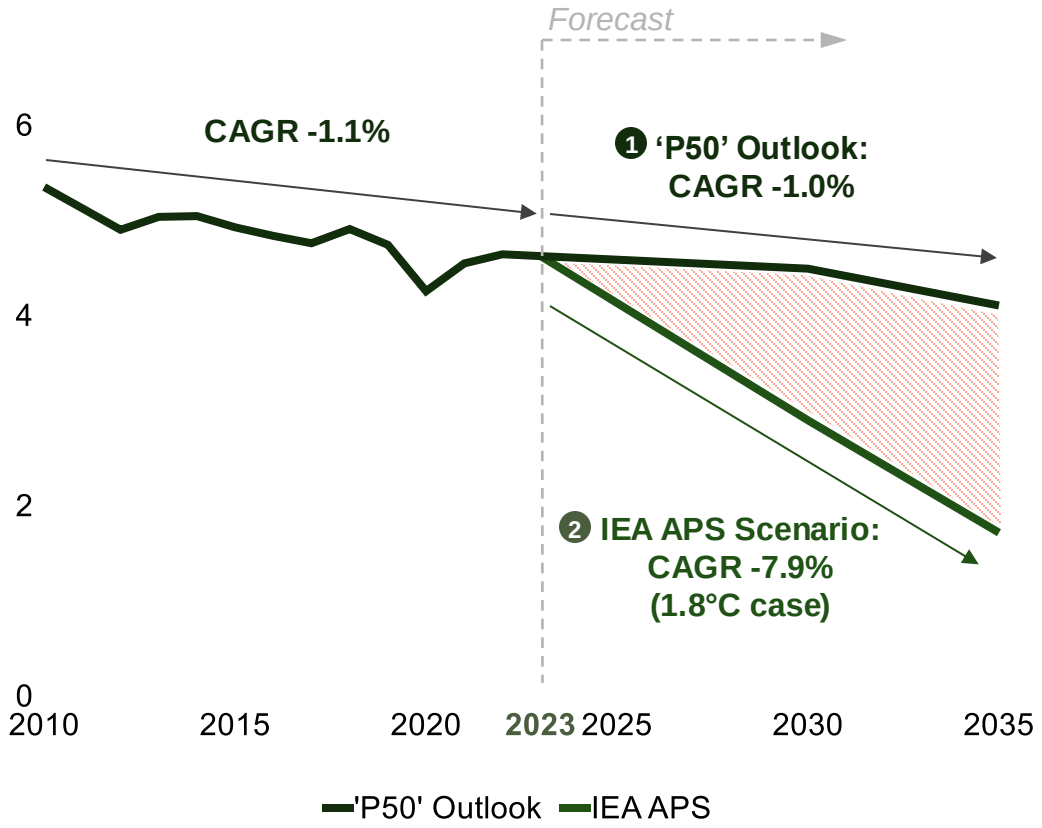


Source: Intersect$_{SM}$ Carbon & Energy Transition CGE Model; IEA WEO 2023

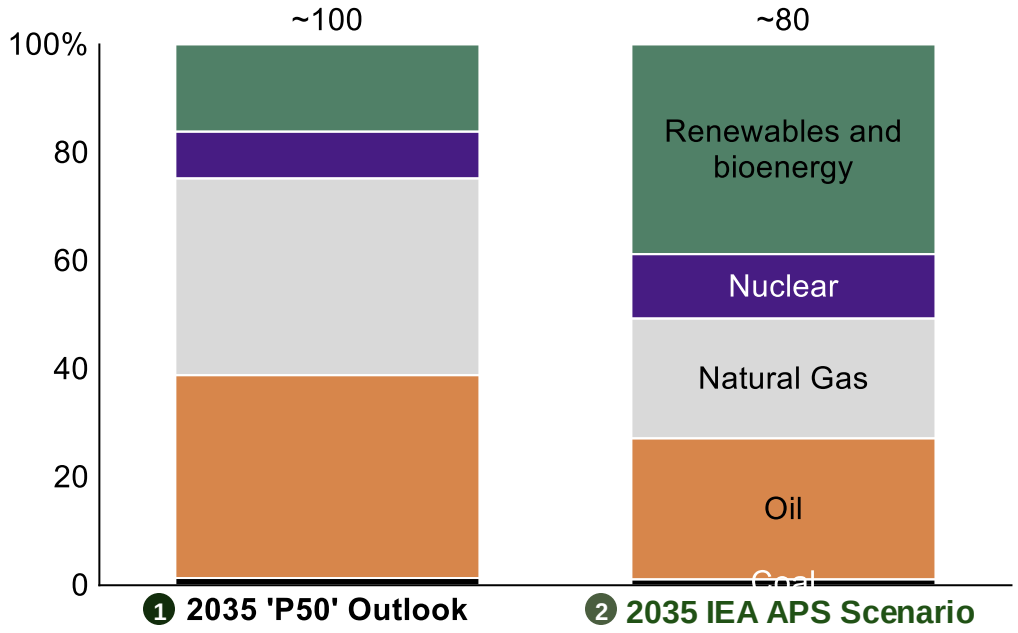
Large Emissions Gap in the US Compared to 1.8°C Scenario Highlights Need For Rapid Low-Carbon Energy Expansion

/PRELIMINARY /ILLUSTRATIVE

US CO_2 emissions (GT CO_2)



Forecasted US Energy Supply (EJ)



Source: Intersect$_{SM}$ Carbon & Energy Transition CGE Model; IEA WEO 2023

What's Needed to Close the Gap in the US

Solutions we're progressing with current OpenMinds Impact Projects

Add More Firm and Low-Carbon Generation

- **Accelerate renewables**
- Scale geothermal and advance SMRs
- Deploy long-duration storage
- Firm with gas peakers

Remove Emissions from Current Energy System

- **Maximize methane abatement**
- **Advance CCS deployment**
- **Progress coal-to-X switching**

Expand Electric Transmission Infrastructure

- **Streamline permitting**
- **Enable interconnection**
- Upgrade existing assets

Increase Energy Efficiency and Electrification

- Make buildings more energy efficient
- Install heat pumps
- Improve fuel economy standards and EV adoption
- Electrify industrial processes

Identify and Develop a New Generation of Leaders

- **Equip, empower, and foster innovation**
- **Grow a strong network across climate and energy**

Implications for US Energy & Climate Outlook

Energy Demand...

is set to grow 9% by 2035, with booming electricity demand a key driver

Coal Power...

continues to decline, although recent plant retirement delays will slow mix shift

Natural Gas Demand...

will grow roughly in-line with total energy demand, maintaining its ~35% share through 2035

Renewable Energy...

is forecast to nearly double from ~9% of energy mix today to ~16% in 2035

Carbon Emissions...

will decrease by ~11% to reach ~4 Gt in 2035 (-1.0% p.a.)

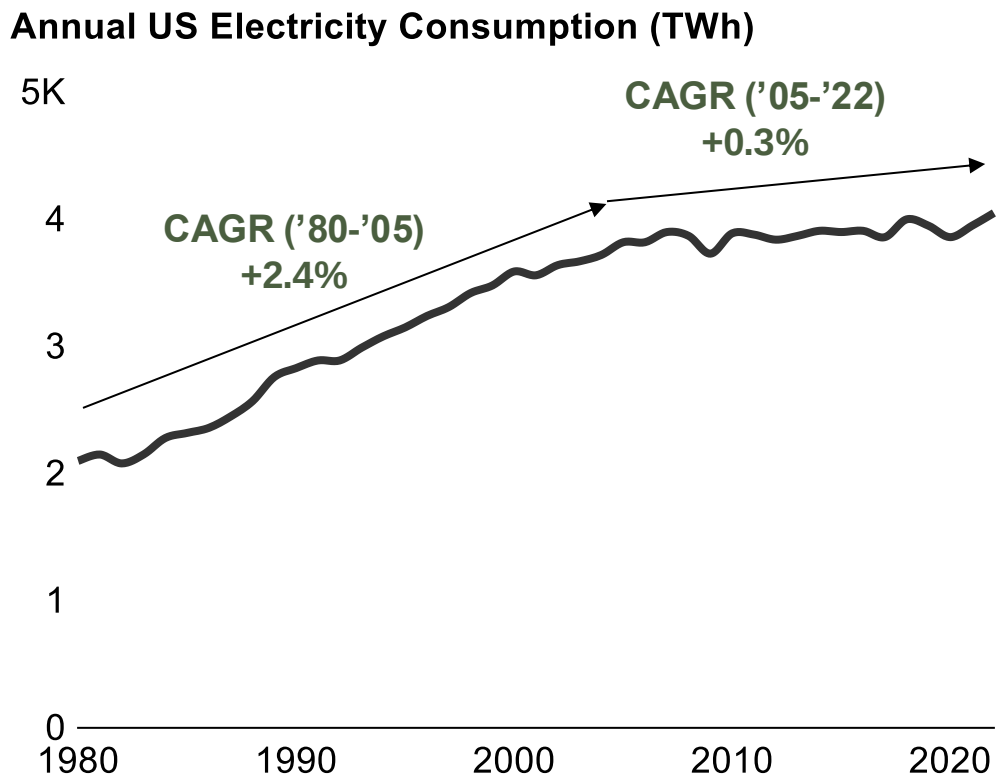
Energy Mix...

trajectory misaligned with 1.8°C forecast, requiring rapid implementation of solutions

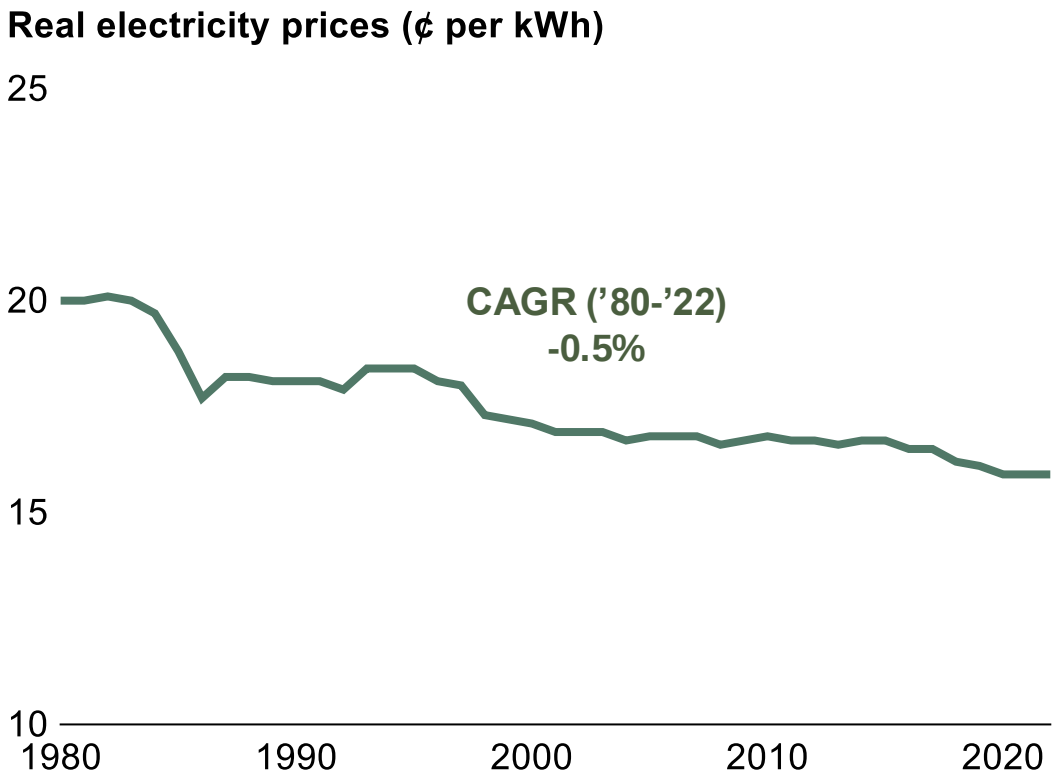
Appendix

Historically, US Electricity Consumption Has Increased as Real Prices Have Declined

Electricity consumption plateaued after long rise



Real electricity prices have trended down since 80s

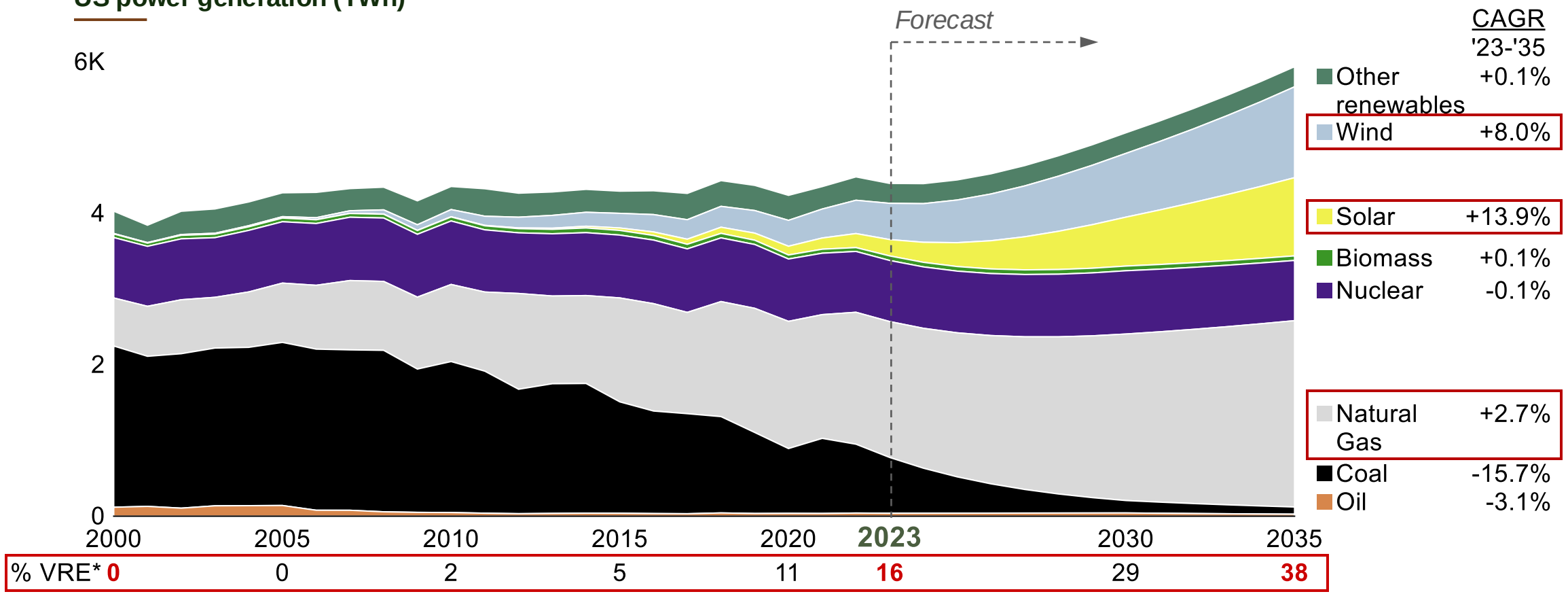


Source: EIA

Wind and Solar are Expected to Grow by ~3x and ~5x Respectively by 2035, While Coal is Replaced by Gas

PRELIMINARY

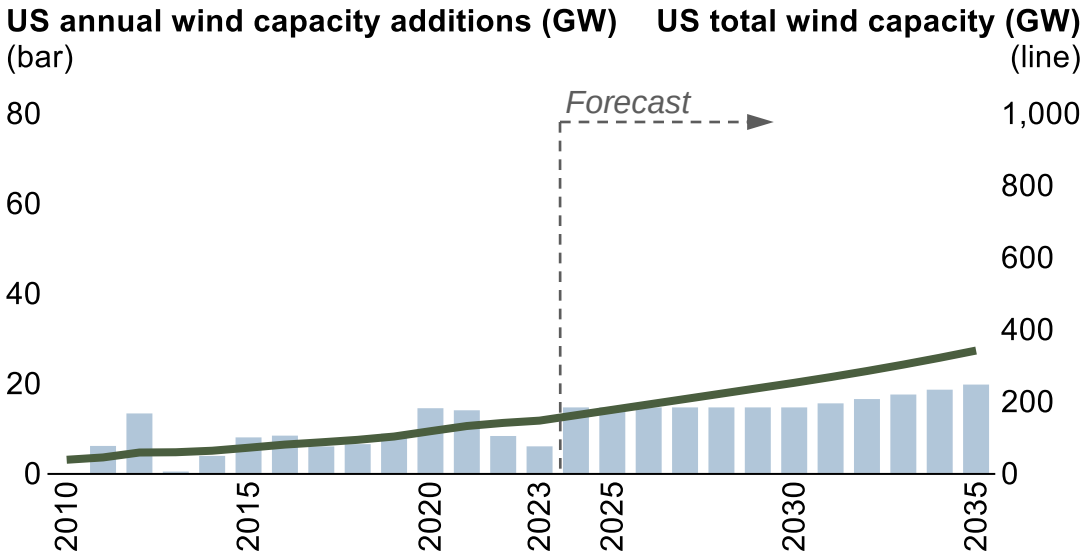
US power generation (TWh)



Note: (*) Variable renewable energy - includes percentage share of wind and solar combined; Other renewables include 'Hydropower'; IRA – Inflation Reduction Act
Source: Intersect$_{SM}$ Carbon & Energy Transition CGE Model; IEA

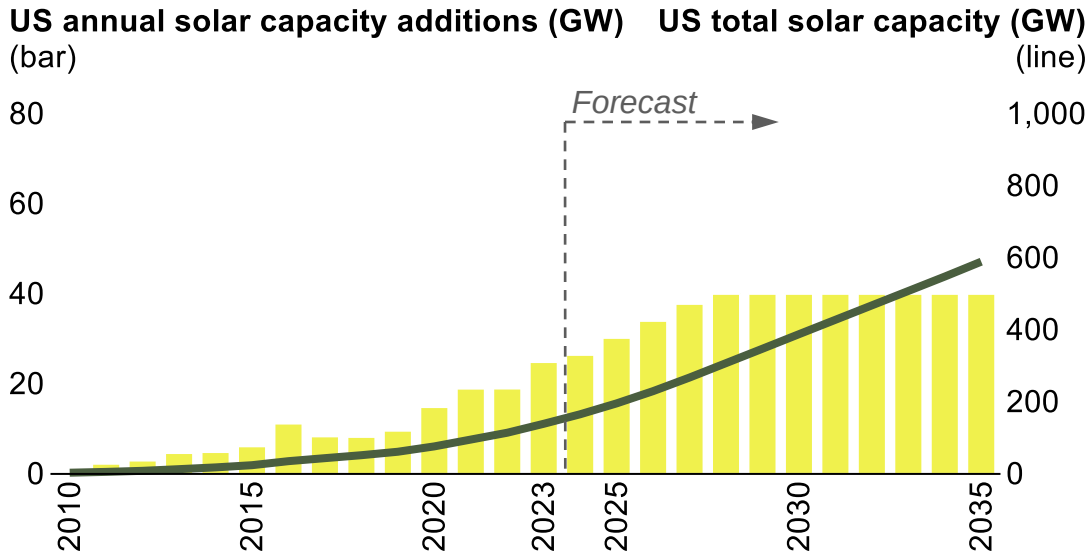
Solar Capacity Growth Will Continue to Outpace Wind

Wind capacity additions will flatline to 2030, before slowly accelerating



- Strong, but more moderate growth expected
- Elevated interest rates and increasing mix of costlier & longer-to-develop offshore wind drive deceleration

Solar capacity will more than double over the next five years

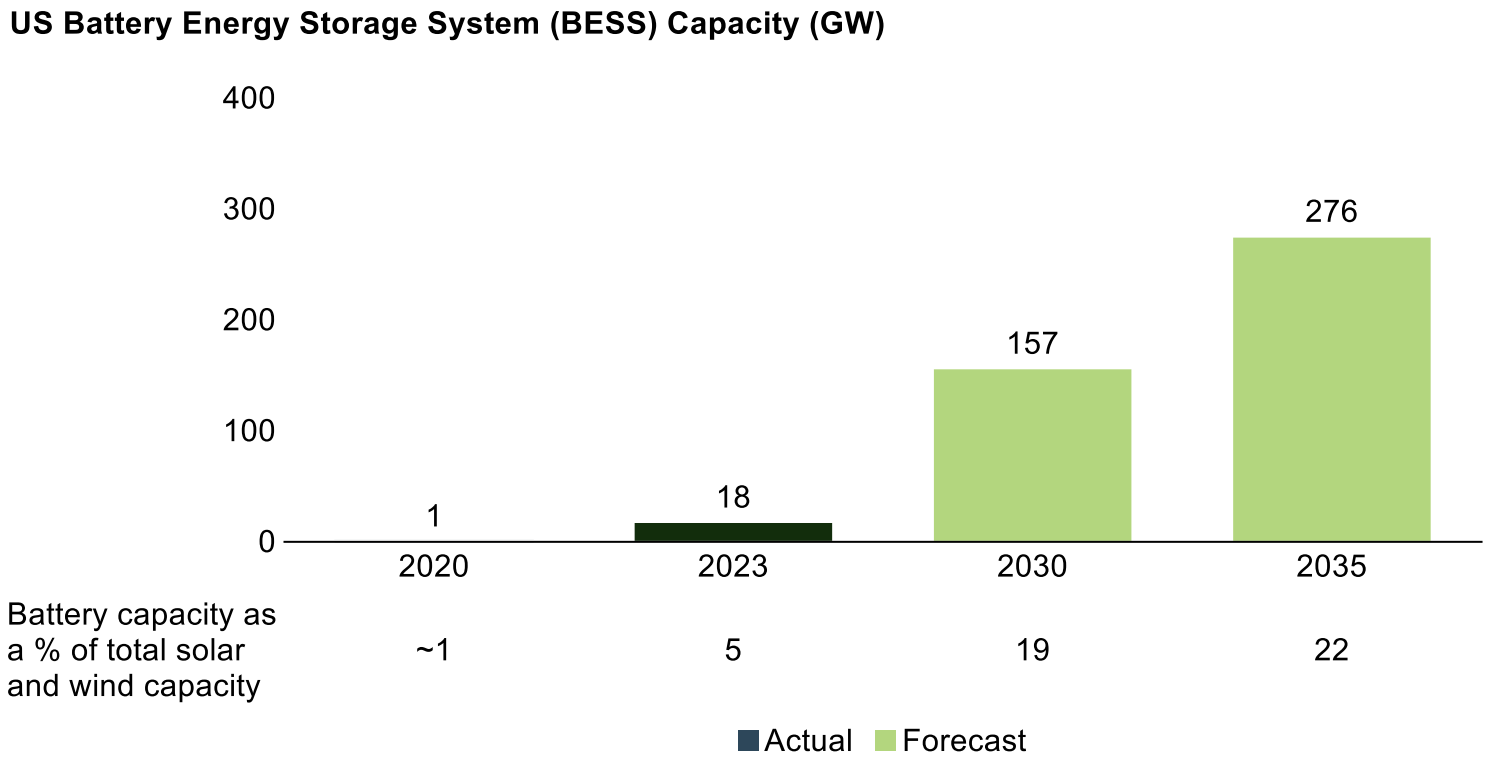


- Further cost reductions will continue to drive strong growth
- Growth beyond 2029 will level out due to US manufacturing capacity constraints (assumed to max out at 40 GW annually)

Source: Intersect$_{SM}$ Carbon and Energy Transition CGE Model, IEA WEO 2023

The US Will Rely Heavily on BESS to Manage Intermittency

BESS outlook shows strong growth off small base



- US is expected to have **similar share of renewables as other developed economies** by 2035
- Fragmented grid and nodal pricing are likely to cause **US to rely more on BESS** to manage intermittency
- **Forecast is highly uncertain,** dependent on extent to which other flexible supply and storage options are used (e.g., demand response, peak gas, hydrogen)

Source: Intersect$_{SM}$ Carbon & Energy Transition CGE Model; IEA WEO 2023; EIA

6 Macro Trends are Shaping the Utility and Power Sector

Data center load growth

Data center load growth primarily driven by **rapid expansion, development, and change in the AI and cloud computing spaces**

Manufacturing load growth

Key drivers of manufacturing load growth are largely regulatory and geopolitical, incentivizing **reshoring** of and **clean technology** investments in manufacturing

Decarbonization

Increasing focus on **emissions reduction** and need to incorporate more distributed renewable generating mix (e.g., rooftop solar)

Aging infrastructure & resiliency

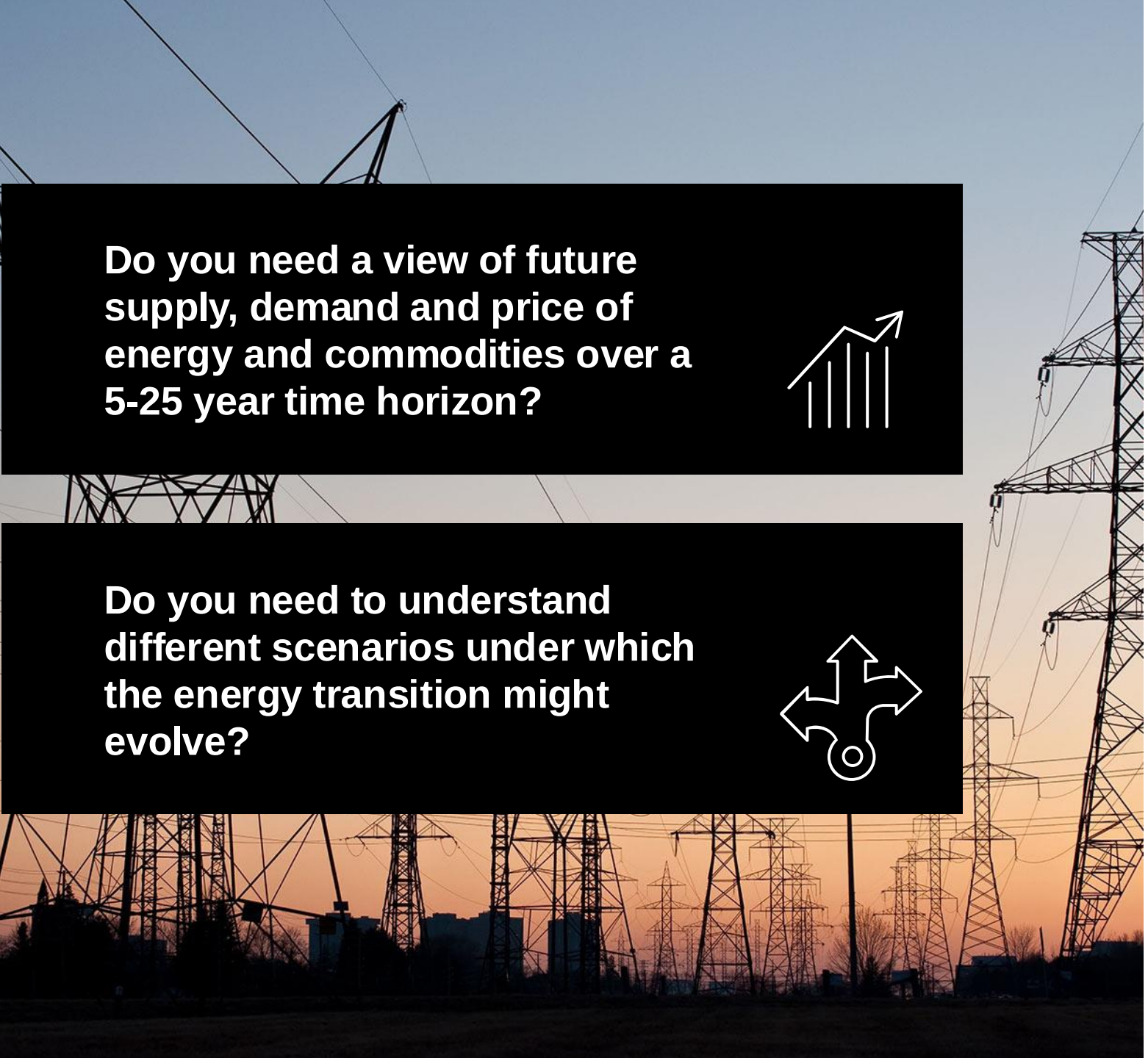
Antiquated systems across the US increasingly **require repairs and upgrades** in addition to new transmission and distribution

Resource constraints

Competition for both skilled workers and material supplies are leading to a lack of resources to complete electricity investments in time to meet demand

Affordability

Increasing challenges to the rate base model with added focus on maintaining overall **customer affordability** in the face of increasing real price of electricity and increasing share of a smaller energy wallet



Do you need a view of future supply, demand and price of energy and commodities over a 5-25 year time horizon?

Do you need to understand different scenarios under which the energy transition might evolve?

Intersect℠

can help answer these questions

With proven success across a range of use cases:

Oil and Gas Co.	**Explored potential gas investment** based on forecast energy and gas supply, demand and trade flows across multiple scenarios
Mining Co.	**Developed strategy to ramp down coal assets** based on forecast coal supply and demand across range of transition scenarios
Energy Co.	**Defined renewables supply chain strategy** based on forecast supply and demand of minerals critical to energy transition (e.g. Copper) and their implied supply chain risk

More case studies upon request…

Problem | The energy transition brings unprecedented uncertainty; including significant risks and opportunities

Negative shocks – potential risks

Carbon price

-10-40%

EBIT impact[1]

Physical risks

-4.5%

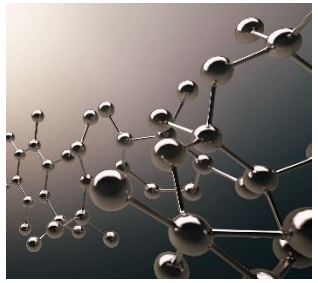
value adjustment[2]

Reaching 1.5°C target

up to **$900B**

of fossil fuel reserves may be stranded

Upside opportunities – potential markets



Hydrogen

$165B

Market size 2027

Biofuels

$150B

Market size 2024

Pivot to offshore wind

+23pp EBITDA %

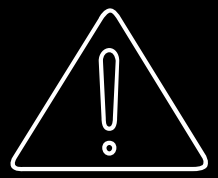
2012-20 by transformation from O&G to renewables

Note: (1) Lower end of range from Bain analysis of EBIT impact on CP companies, higher end of range from modelled impact on listed Integrated Oil & Gas assuming carbon price of $100/ tonne. (2) Based on estimated annual insurance costs needed for global Oil & Gas companies | Source: Company annual reports; FT Schroders; Grand View Research; Allied market research

Problem | Energy transition modelling is critical to climate adaption but not a stand-alone solution

0 1

Despite a more challenging global outlook **delivering on climate ambition** remains critical

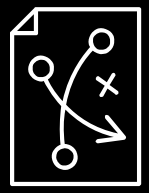


0 2

The interplay between sectors and regions is the only way to understand the full picture of the energy transition

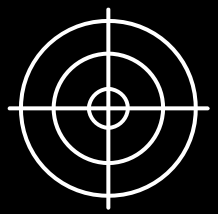
0 3

A **top-down and bottom-up** modelling approach allows for explicit choice of technologies while considering broader economic impacts



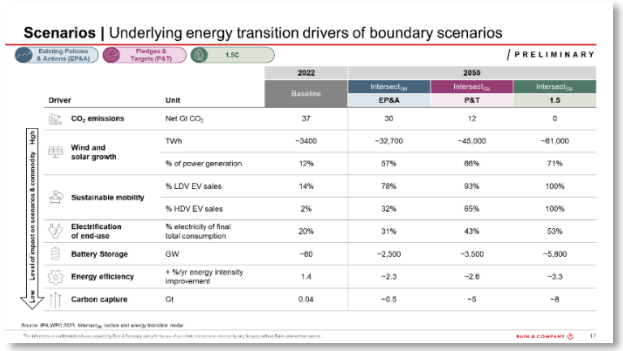
0 4

Corporates don’t just need climate scenarios, but **clear signposts to guide strategic decisions**, differentiated by geography



Solution | Intersect$_{SM}$ provides a nuanced approach to understand what matters to decision making under uncertainty

Intersect$_{SM}$ enables strategic decision-making under uncertainty…


Scenarios | Underlying energy transition drivers of boundary scenarios

Existing Policies & Actions (EP&A) · Pledges & Targets (P&T) · 1.5C · PRELIMINARY

Driver	Unit	2022 Baseline	2050 Intersect$_{EP}$ EP&A	2050 Intersect$_{PT}$ P&T	2050 Intersect$_{1.5}$ 1.5
CO_2 emissions	Net Gt CO_2	37	30	12	0
Wind and solar growth	TWh	~3400	~32,700	~45,000	~61,000
	% of power generation	12%	57%	66%	71%
Sustainable mobility	% LDV EV sales	14%	78%	93%	100%
	% HDV EV sales	2%	32%	65%	100%
Electrification of end-use	% electricity of final total consumption	20%	31%	43%	53%
Battery Storage	GW	~60	~2,500	~3,500	~5,800
Energy efficiency	+ %/yr energy intensity improvement	1.4	~2.3	~2.6	~3.3
Carbon capture	Gt	0.04	~0.5	~5	~8

Low ← Level of impact on scenarios & commodity → High

Source: IPA WPO 2021, Intersect$_{SM}$ nuclear and energy transition model

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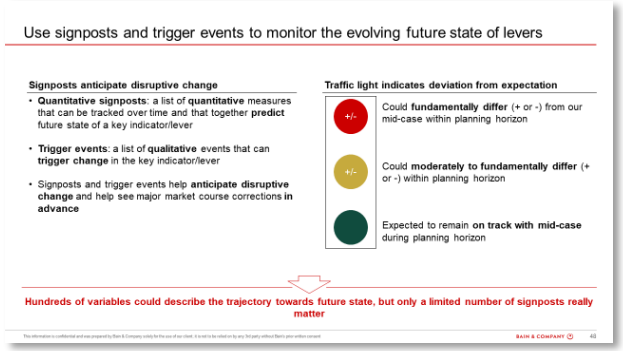
- The **energy transition landscape remains uncertain**
- We must understand different **outcomes and sensitivities** in energy transition decisions
- Intersect$_{SM}$ enables **decision-making based on sensitivities**

…by understanding tipping points and monitoring signposts…


Use signposts and trigger events to monitor the evolving future state of levers

Signposts anticipate disruptive change

- **Quantitative signposts**: a list of **quantitative** measures that can be tracked over time and that together **predict** future state of a key indicator/lever
- **Trigger events**: a list of **qualitative** events that can **trigger change** in the key indicator/lever
- Signposts and trigger events help **anticipate disruptive change** and help see major market course corrections **in advance**

Traffic light indicates deviation from expectation

+/- Could **fundamentally differ** (+ or -) from our mid-case within planning horizon

+/- Could **moderately to fundamentally differ** (+ or -) within planning horizon

Expected to remain **on track with mid-case** during planning horizon

Hundreds of variables could describe the trajectory towards future state, but only a limited number of signposts really matter

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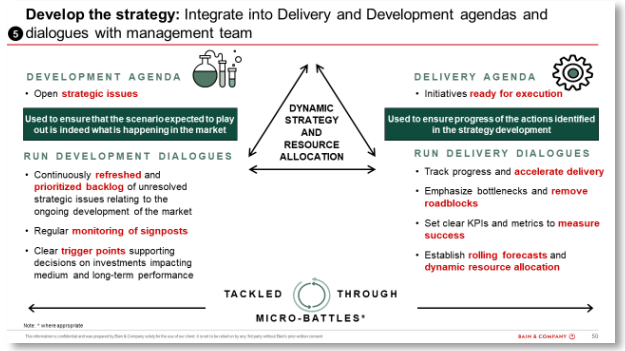
- Develop **signposts** to predict future state of key levers
- Identify **triggers** and the **actions to take** when hit
- Track signposts regularly using **dashboards**

… and creating and deploying playbooks


Develop the strategy: Integrate into Delivery and Development agendas and 5 dialogues with management team

DEVELOPMENT AGENDA
- Open **strategic issues**

Used to ensure that the scenario expected to play out is indeed what is happening in the market

RUN DEVELOPMENT DIALOGUES
- Continuously **refreshed** and **prioritized backlog** of unresolved strategic issues relating to the ongoing development of the market
- Regular **monitoring of signposts**
- Clear **trigger points** supporting decisions on investments impacting medium and long-term performance

DYNAMIC STRATEGY AND RESOURCE ALLOCATION

DELIVERY AGENDA
- Initiatives **ready for execution**

Used to ensure progress of the actions identified in the strategy development

RUN DELIVERY DIALOGUES
- Track progress and **accelerate delivery**
- Emphasize bottlenecks and **remove roadblocks**
- Set clear KPIs and metrics to **measure success**
- Establish **rolling forecasts** and **dynamic resource allocation**

TACKLED THROUGH MICRO-BATTLES*

Note: * where appropriate

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- Ensure the **governance** is in place to act fast and remain agile
- Quickly move when **triggers** are hit
- Update the **Delivery and Development** agendas

Solution | The Intersect$_{SM}$ Energy Transition model considers multiple inputs whilst factoring for real world constraints

Decarbonisation based on most cost-effective path, limited by real world constraints

Inputs

- CO_2 Trajectories
- Population Growth
- GDP
- Technology costs *(incl. commodity intensities)*
- Experience curves

Simulation Engine

STEP 1:

Model is run as a **constrained optimisation** to ensure sectors **decarbonise** based on the **most cost effective path**

Example: Decarbonization levers for transportation

- Switch Technology *e.g., ICE to EV*
- Improve Efficiency
- Lower demand

STEP 2:

Demand = Supply

Model uses prices to reach **demand and supply equilibrium** across all sectors subject to input output matrix constraints

STEP 3:

Forces **consistency** by ensuring changes in sector output and factor incomes still sum to GDP. Process repeats each year until decarbonization targets are met in each year.

Real World Constraints

- Impact of intermittency of renewables on grid stability
- Assume electricity is priced on basis of average cost
- Physical availability of agricultural land for biomass activities
- Pace of roll out, amount of VRE installed per year

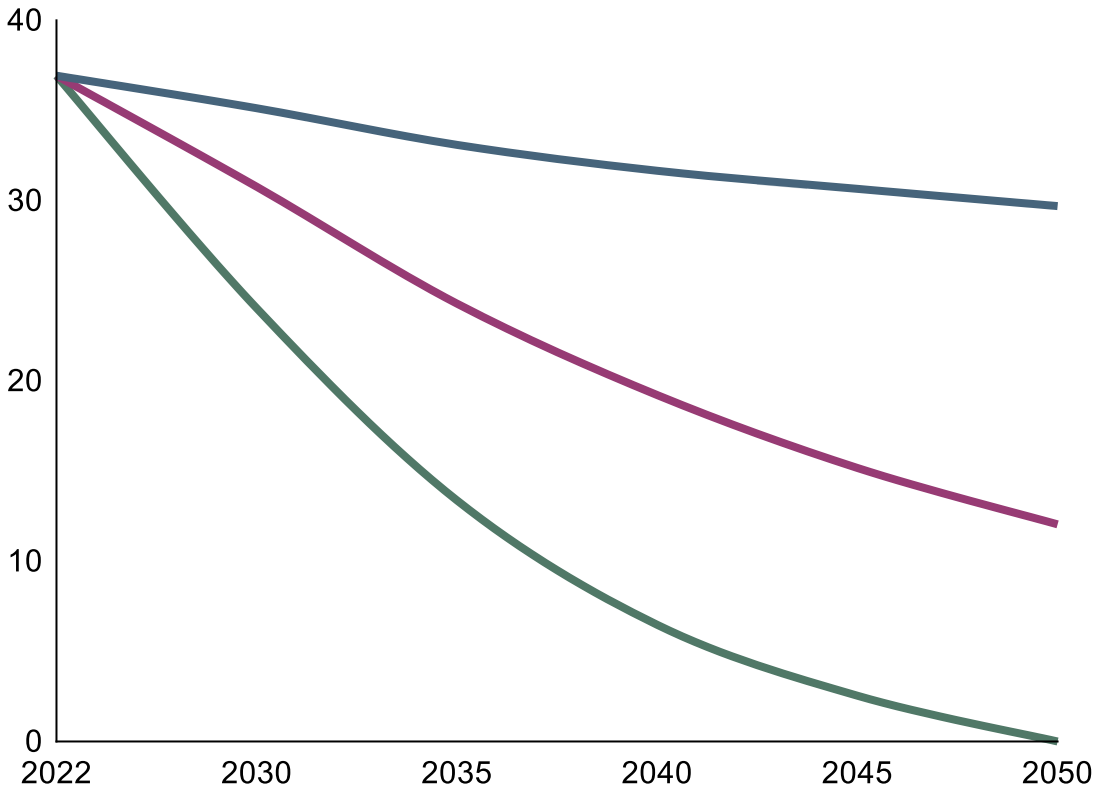
Outputs

- Total electricity demand
- Energy power stack
- Sales and total stock of EVs
- Pace of electrification

Source: Intersect$_{SM}$ Climate and Energy Transition CGE Model

Scenarios | Intersect$_{SM}$ can explore and model the energy transition through standard and custom scenarios

Global CO_2 emissions by scenario (Gt CO_2)



STANDARD TRANSITION SCENARIOS

Existing Policies & Actions (EP&A)

Progress in the energy transition at a rate similar to historic trends

Pledges & Targets (P&T)

Accelerated progress with the expectation that future stated pledges and targets will be met, including long-term net zero targets

1.5C Consistent

Further accelerated progress with policy and technology implementation that enables net zero by 2050

CUSTOM TRANSITION SCENARIOS

Custom scenario

Parameters of scenario to be agreed with Intersect$_{SM}$ client

Note: includes industrial process and flaring emissions | Source: Intersect$_{SM}$ Climate and Energy Transition CGE Model

Coverage | Intersect$_{SM}$ outputs include major considerations for transition strategies, with more upon request

Outputs

- Energy and commodity supply, demand, and price
- Energy supply stack
- Investments and return on capital
- Trade flows
- Technology cost development
- Sector and country specific abatement costs
- Global and country MACC (Marginal Abatement Cost Curve)
- GHG emissions trajectories and carbon leakage

Regions

Americas
- Canada
- USA
- Mexico
- Brazil
- Rest of C & S America

EMEA
- European Union
- United Kingdom
- Rest of Europe
- Russia
- Rest of Eurasia
- Middle East
- South Africa
- Rest of Africa

Asia Pacific
- China
- India
- Japan
- Australia, NZ, and Oceania
- Rest of Asia

Sectors

Energy sectors
- Electricity generation
- Coal extraction
- Gas extraction / distribution
- Crude oil extraction
- Refined oil products / chemicals
- Hydrogen production

Other energy-intensive sectors
- Mining
- Steel
- Construction
- Other manufacturing

Transportation
- Light duty vehicles
- Heavy-duty vehicles
- Air transport
- Rail
- Marine shipping
- Pipeline

Other goods and services

Commodities

- Coal
- Crude oil
- Natural Gas
- Electricity, by type
- Gasoline
- Diesel
- Other major fuels (e.g., kerosene, fuel oil)
- Hydrogen
- Steel
- Selected non-ferrous metals critical to the energy transition (lithium, nickel, copper)

How it compares | While other transition outlooks exist, Intersect$_{SM}$ improves upon the existing solutions in the market

From transition scenario outlooks with clear drawbacks …

Off-the-shelf data: organizations may have data cuts that do not meet their needs, data which is challenging to update or data missing important contextual information

"Black box": organizations are missing transparency into the assumptions behind their data and cannot test the sensitivity of outputs to specific assumptions

Sector siloes: many models focus on one sector, or the impact of one sector on the overall economy

… to a state-of-the-art energy transition modelling capability

Flexible capability-driven offering: Intersect$_{SM}$ can provide bespoke data and scenarios, a leave-behind tool with the potential for further revisions, and expert advice on the outputs and broader context

Transparent assumptions and sensitivities: underlying assumptions are clearly communicated to organizations and can be adjusted; the sensitivity of outputs to specific assumptions can be tested

Sectoral view in wider economy: Intersect$_{SM}$ provides sectoral detail in addition to considering the interplay between sectors; when assumptions are updated, the outputs for all sectors change

Use cases | Bain teams using Intersect$_{SM}$ support decisions across strategy, investment and supply chain

Capability	Example decisions	Example use case
Strategy 	How should we position ourselves 5 years from now?	Oil & Gas Co. defining a set of long-term corner scenarios to test strategy, business initiatives and investments
	What is the expected growth of our current portfolio?	Mining Co. developing strategy to ramp down coal assets
Investment 	How attractive is a target company's market?	PE fund considering acquisition of Pipeline Inspection Co and potential Oil, Gas, Hydrogen, and CCS pipeline demand
	Are some of assets at risk of being stranded?	Mining Co. exploring acquisition of transition mineral (e.g. copper, lithium) assets and risk of stranding
Supply chain 	How resilient is our current supply chain model?	Energy Co. assessing supply chain risk of critical minerals in multi-polar world
	How volatile are raw material prices expected to become?	Energy Co. negotiating pricing for future supply of green steel

Delivery | Intersect$_{SM}$ is a capability with significant internal and external expertise

The Intersect$_{SM}$ team has expertise across economics and strategy

James Nixon
Expert Associate Partner, Economist and Intersect$_{SM}$ lead

Torsten Lichtenau
Partner, Global Head of Carbon Transition

Alasdair Robbie
Partner, Energy Transition expert

Dave Rennard
Partner, Director of Bain's global O&G Practice

Dayle Nel
Practice Senior Manager, Sustainability & Responsibility

Bjarke Lumby
Expert Senior Manager, lead economic modeller

Intersect$_{SM}$ is supported by its partnership with Copenhagen Economics

- **Deep industry and strategy expertise** combined with **state-of-the-art economic modelling techniques**
- **Economic and policy analysis** to inform strategy **for particular industries in specific regional contexts**
- **Co-creation of analytical and transformational horsepower**, delivering results not reports