



Mission to Zero™

One plant's journey to carbon neutrality



Agenda

01.

Safety & Integrity
Moment

02.

The Energy
Transition

03.

Segment Drivers

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The Mission to
Zero [™]

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Senatobia's
Journey

06.

Q&A

A man with glasses, wearing a blue shirt and a red vest, is focused on adjusting a piece of scientific equipment. He is in a laboratory or office environment with large windows in the background. The text 'Foster collaborative thinking to further the overall value' is overlaid on the left side of the image.

**Foster collaborative
thinking to further the
overall value**

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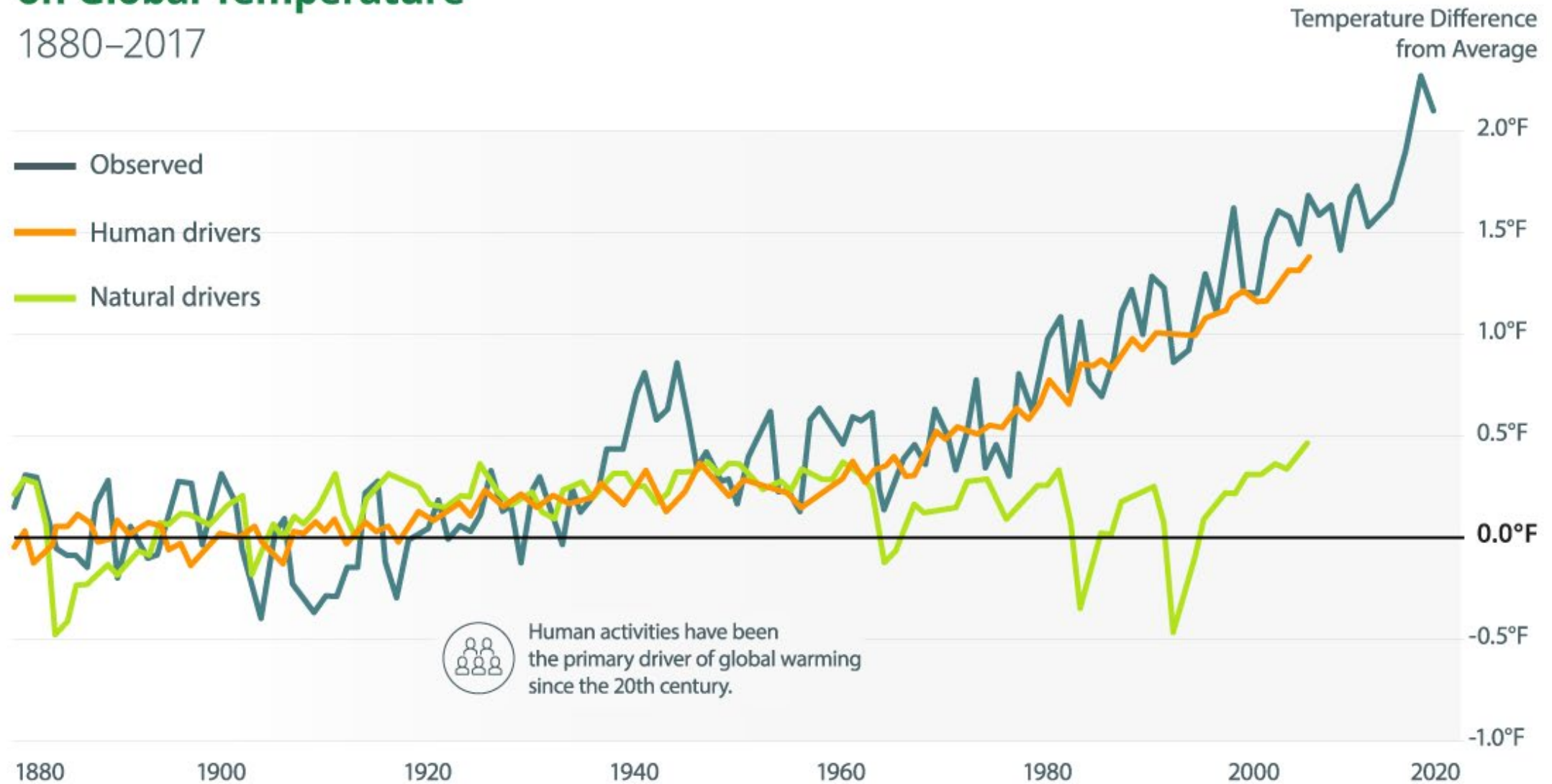
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Q&A

Human and Natural Influences on Global Temperature

1880–2017



Source: U.S. Global Change Research Program (2018)

Climate disasters on the rise Costly

US economy emissions

1% increase in greenhouse gas emissions in 2022, 5.8% increase in 2021. However, 13.8% decrease since 2005.

Power sector

Emissions dropped 1.5% in 2022, down 35% since 2005

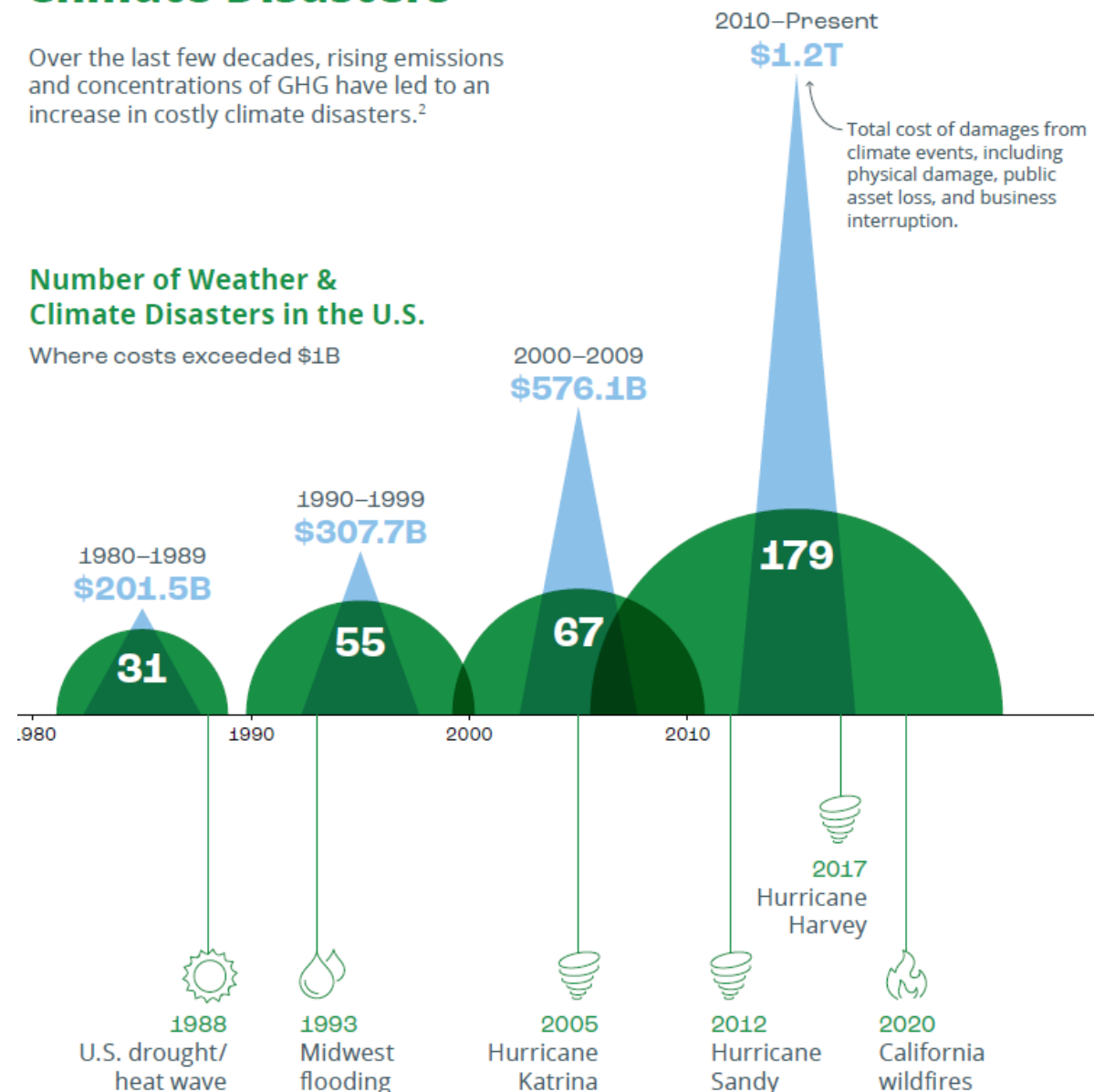
Cost of emissions

Caused \$165B in damage in 2022. Forced 3.4m Americans to evacuate their homes

Compounding Climate Disasters

Over the last few decades, rising emissions and concentrations of GHG have led to an increase in costly climate disasters.²

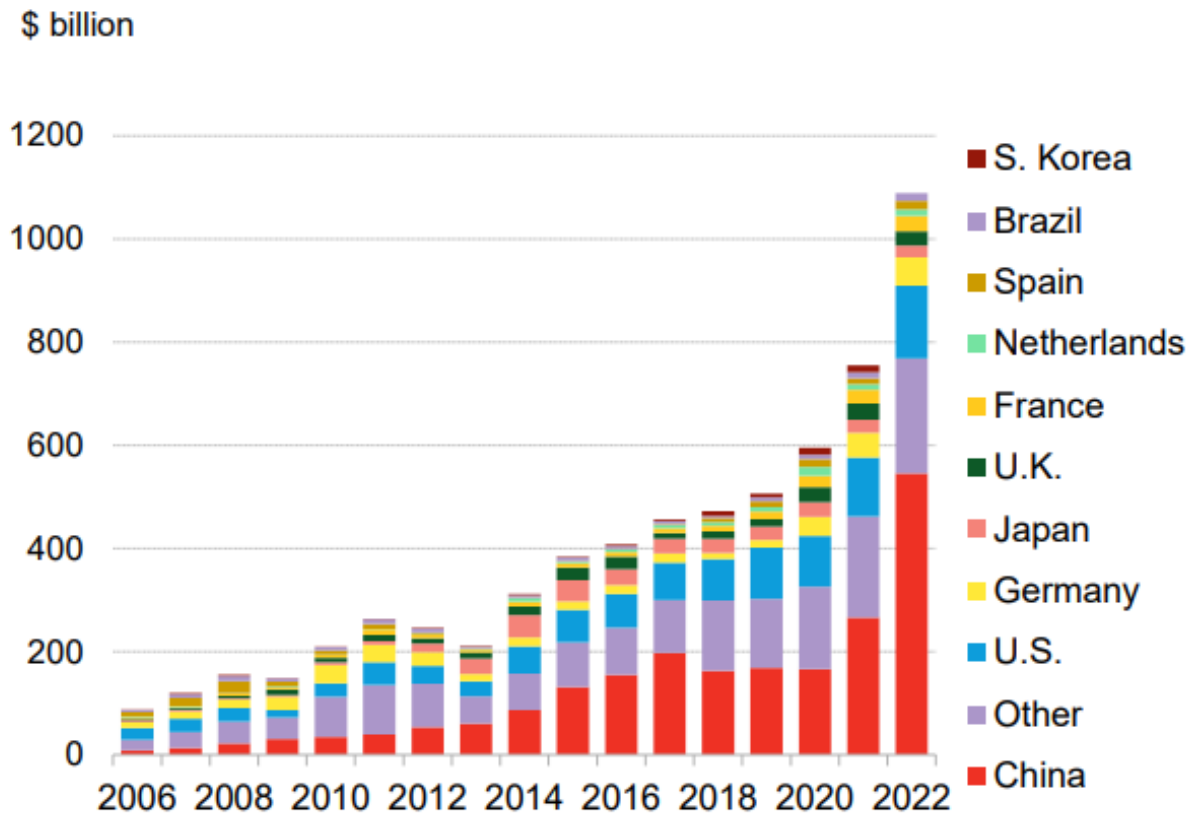
Number of Weather & Climate Disasters in the U.S. Where costs exceeded \$1B



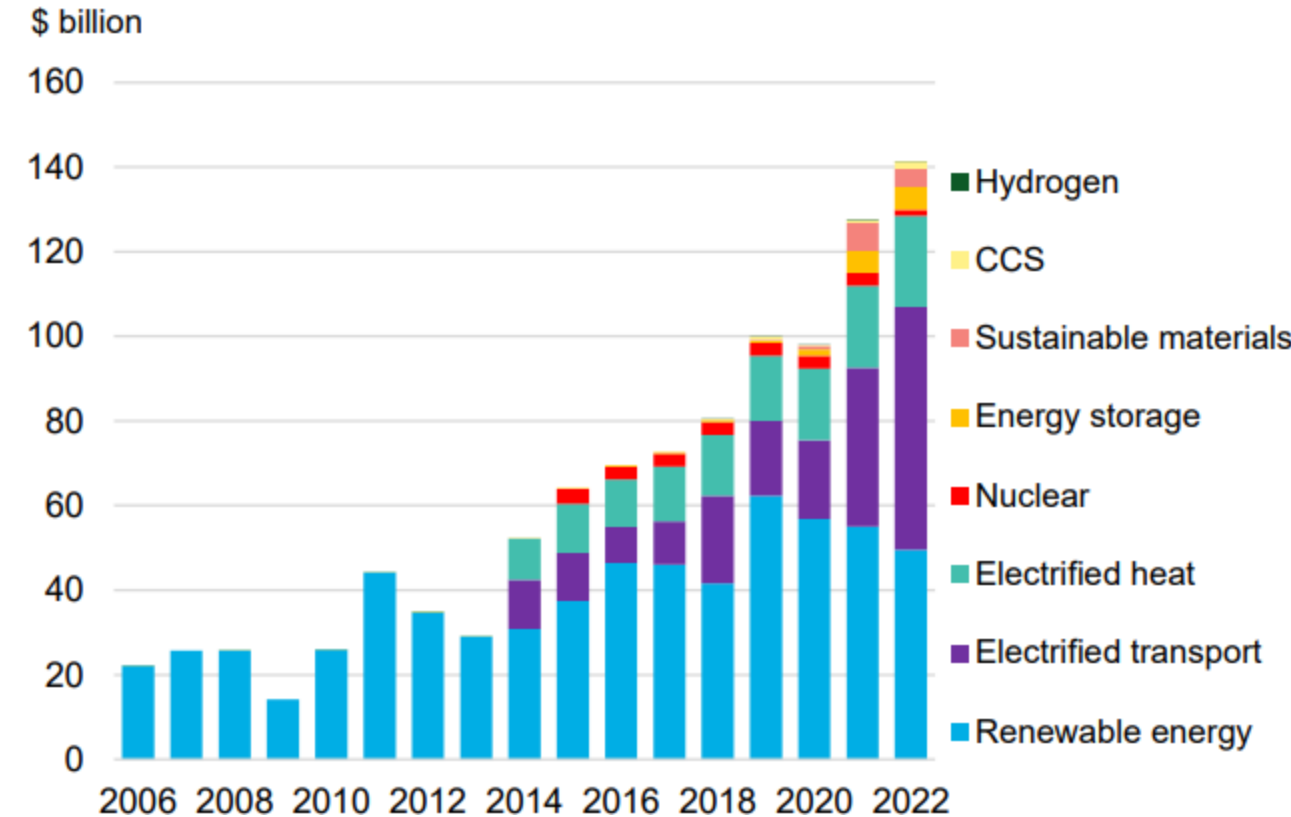
Global investment in energy growing and shifting to clean sources

Breaking records

Energy transition investment, by country



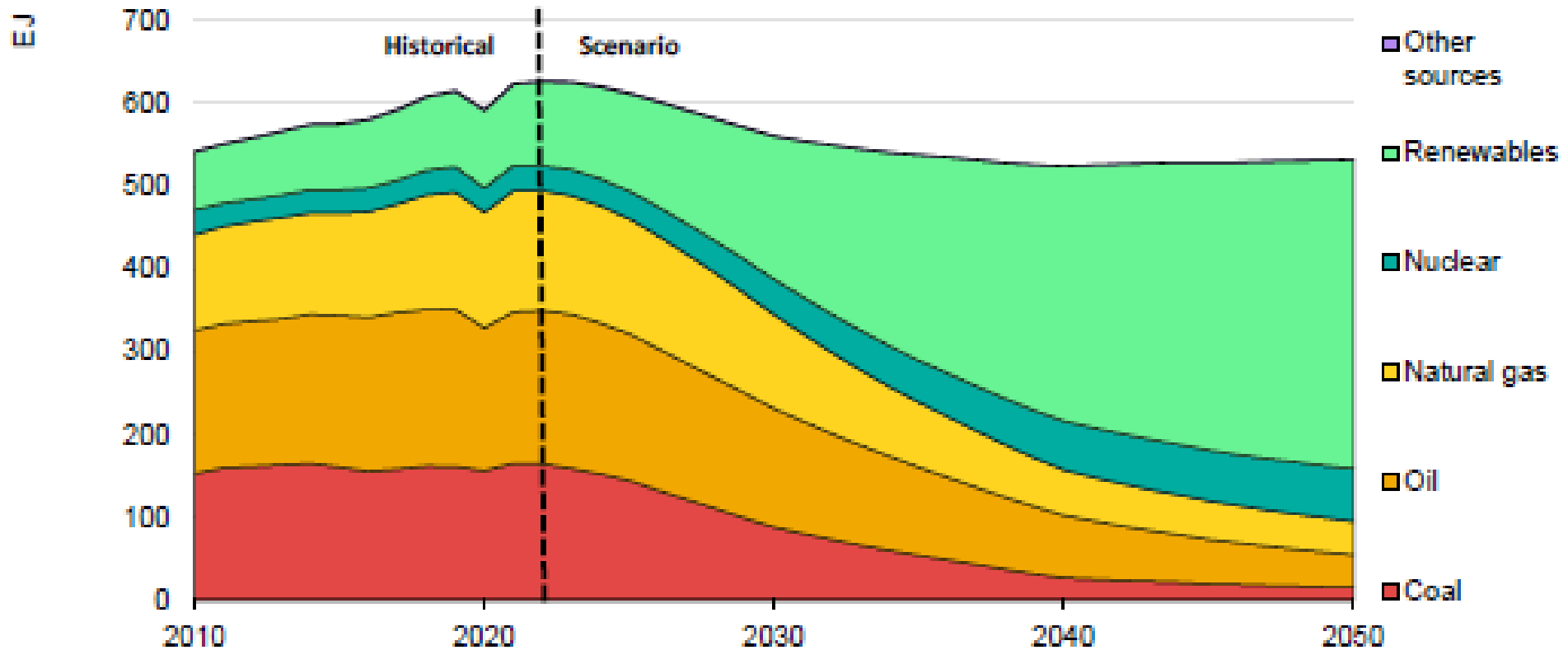
US energy transition investment, by sector



Energy supply having a moment

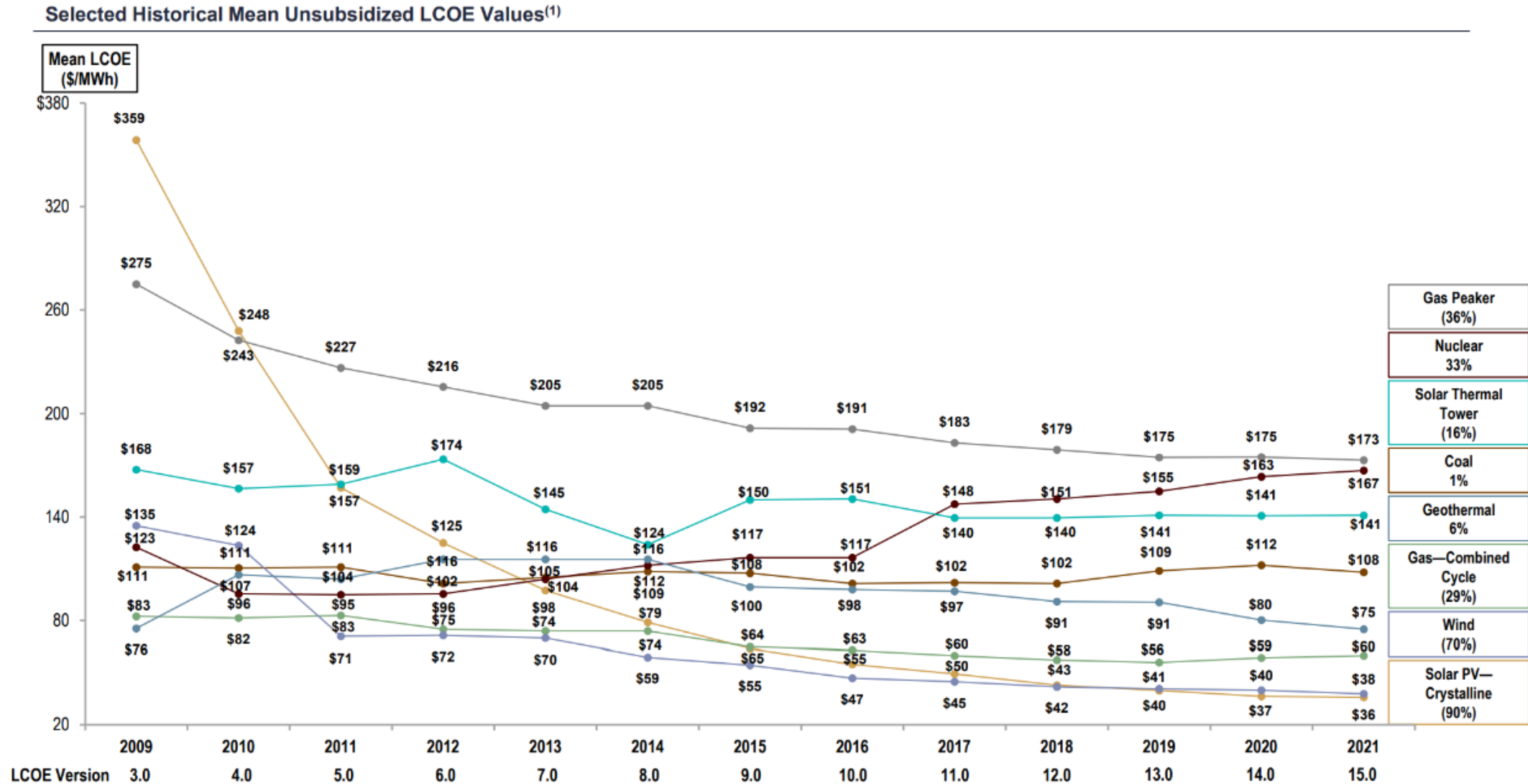
Incredible change has started

Figure 1.2 Global total primary energy supply in the NZE Scenario



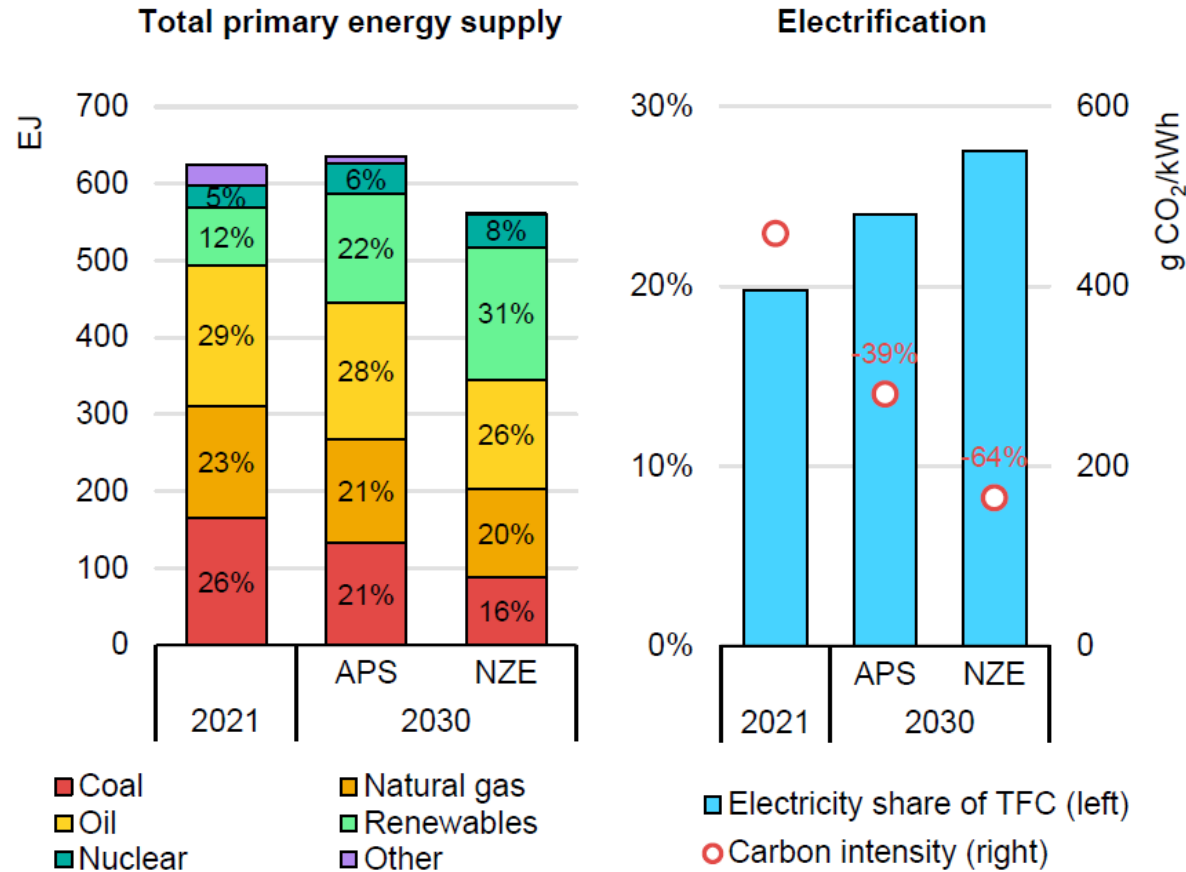
IEA. CC BY 4.0.

Levelized Cost of Electricity is suprising



Everything goes electric

Massive expansion of electricity



- Electricity demand to double by 2050
- Electricity generation to grow 3.5% per year
- 40 million EVs by 2030
- Increased adoption of heat pumps
- Electric water heaters
- Electric lawn mowers, trimmers, blowers

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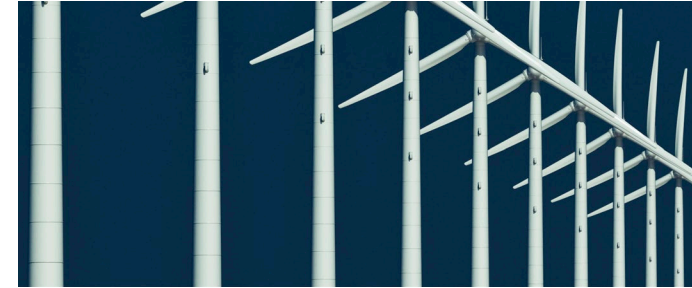
SO MUCH MONEY - Inflation Reduction Act

Provides certainty through 2030

Tax Credits for Clean Energy (Production & Investment)

- 3¢/kW or 6% (x5) if wage & apprenticeships
- 10% for domestic content
- 10% if in energy community

150%



Advanced manufacturing Production Credit

- Solar modules
- Wind components
- Batteries
- Inverters

200%



700%



New SEC Rules

Climate disclosure coming

- Draft released last year
- Scope 1, 2 & 3
- Pushback from industry
- Final rules expected this year
- Legal challenges likely



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The diagram is a circular graphic divided into four quadrants by a white circle in the center. Each quadrant has a different background image: top-left is a lush green forest, top-right is a group of people walking on a paved path, bottom-right is a turquoise body of water, and bottom-left is a group of people walking on a paved path. The central white circle contains the word 'Integrity'. Each quadrant has a title and a description, separated by a small red horizontal line.

ABB Purpose

We enable a low-carbon society

We reach carbon neutrality in our operations by 2030 and partner with our customers and suppliers to reduce their emissions.

Integrity

We promote social progress

We take care of our people and promote social progress with our partners, suppliers and in communities.

Transparency

We preserve resources

We embed circularity by reducing waste, improving recycling and fostering reusability.

Environmental Product Declaration (EPD)



Goal

An EPD report tells the life cycle story of a product in a single, comprehensive report. The EPD provides information about a product's impact upon the environment, such as global warming potential, smog creation, ozone depletion and water pollution.



Current energy status

EPDs are a disclosure tool that helps purchasers better understand a product's sustainable qualities and environmental repercussions, so they can make more informed product selections.



Policy

Scope 3 emissions

The Mission to Zero

A mission to zero can help unlock savings and efficiencies while increasing electricity reliability. In a world headed towards energy independence where energy sources continue to get closer to loads, mission to zero provides a blueprint to enable plants to make and using their own power.



Enable savings, efficiencies and resiliency



Potential regulatory and tax benefits



Energy independence



Ludenscheid Germany



- 1st site
- 3500 m² solar installed
- 1100 MWh generated annually
- ABB Ability™ OPTIMAX®
- 200kW/275kWh BESS
- EV Charging
- Smart switchgear
- 630 Tons of CO₂ eliminated annually

Porvoo Finland



- 375kW ground mount solar
- 238MW generated annually
- 636 tons of CO₂ eliminated annually
- BE Sustainable
- ABB i-bus® KNX system
- 93% of site heating electrified
- 1st site to recycle energy

Dalmine Italy



- Site already purchasing green power
- 4,000 m² solar added
- 900kWp capacity, 20% daily demand
- ABB Ability™ Energy & Asset Manager
- LED upgrade reduced consumption by 76,000 kWh
- 1,100 tones of CO₂ eliminated annually

Beijing China



- Rooftop solar delivering 420MWh/year
- Annual CO₂ reduction of 400 tons
- EV Charging
- ABB Ability™ Energy & Asset Manager
- ABB i-bus® KNX
- Digital switchgear

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ABB IN THE U.S.



Senatobia: factory of the future

How ABB uses its own technology to make carbon-neutral manufacturing a reality



Senatobia MISSISSIPPI



ABB's Mission to Zero is a global program started in 2014 that aims to make the company carbon neutral by 2030.

ANTICIPATED RESULTS

1

87%

Shift of current energy usage to renewables

PROJECT GOALS

Meet ABB Green Building Policy and Sustainability goals...



Reduce energy consumption, cost and associated CO₂ emissions



Increase use of renewables and energy storage

Showcase ABB products and systems in new CXC

2

>25%

 Reduction in energy consumption, cost and CO₂ emissions

- Solar production of ~750,000 kWh annually
- Energy savings via optimization and BESS ~250,000 kWh annually

...by integrating ABB products and solutions seamlessly.

Establish control architecture for office and manufacturing spaces

Pilot ABB Ability™ Energy Management (OPTIMAX) and Energy and Asset Manager to manage on-site microgrid with:



3

Granular data collection, monitoring, and reporting for consumption of:



Power



Gas

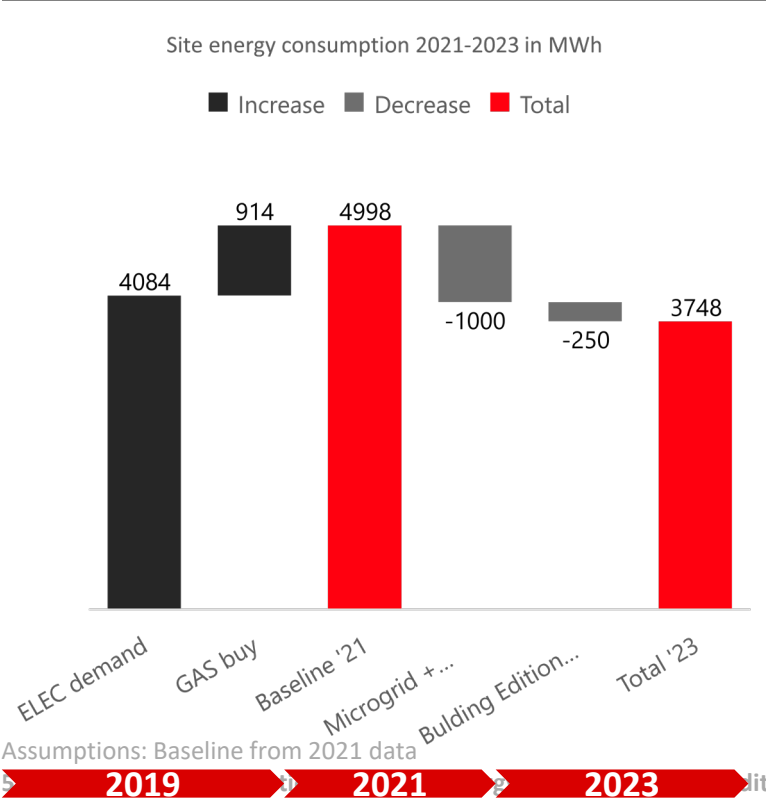


Water

- Separate data for production equipment and building (power)
- Separate data for new building and old (power, gas and water)
- Sub-metering for HVAC and lighting (power)

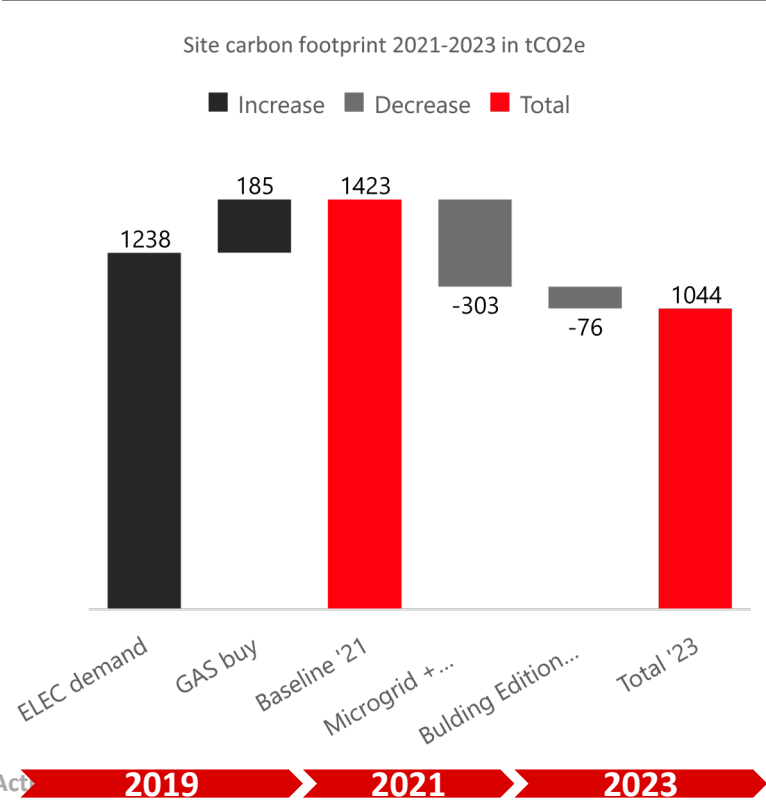
Roadmap 2021-2023

Energy consumption

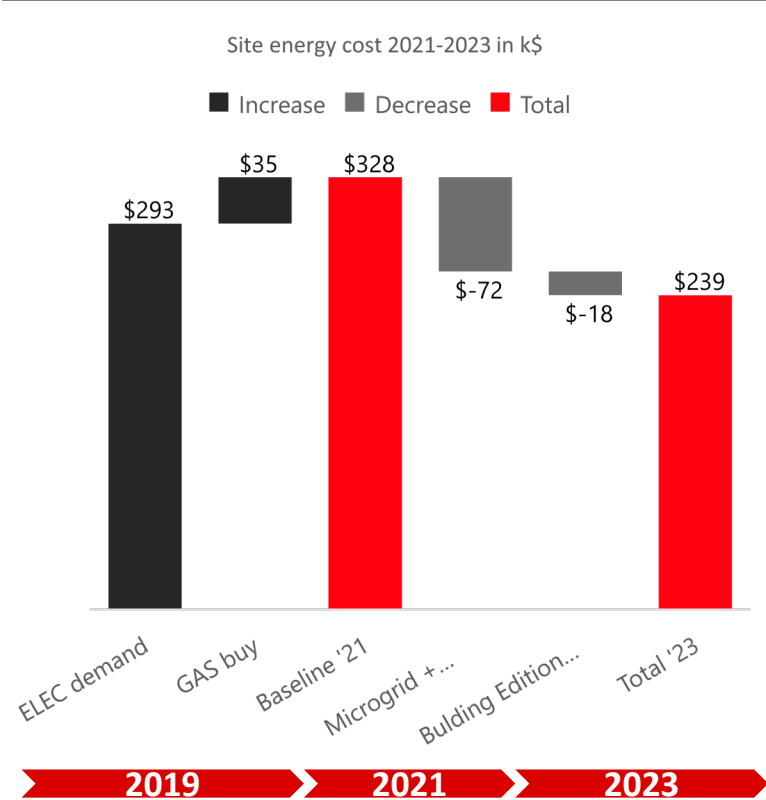


750,000 kWh Solar Production / year
250,000 kWh additional savings with OPTIMAX & BESS

Carbon footprint



Energy Cost

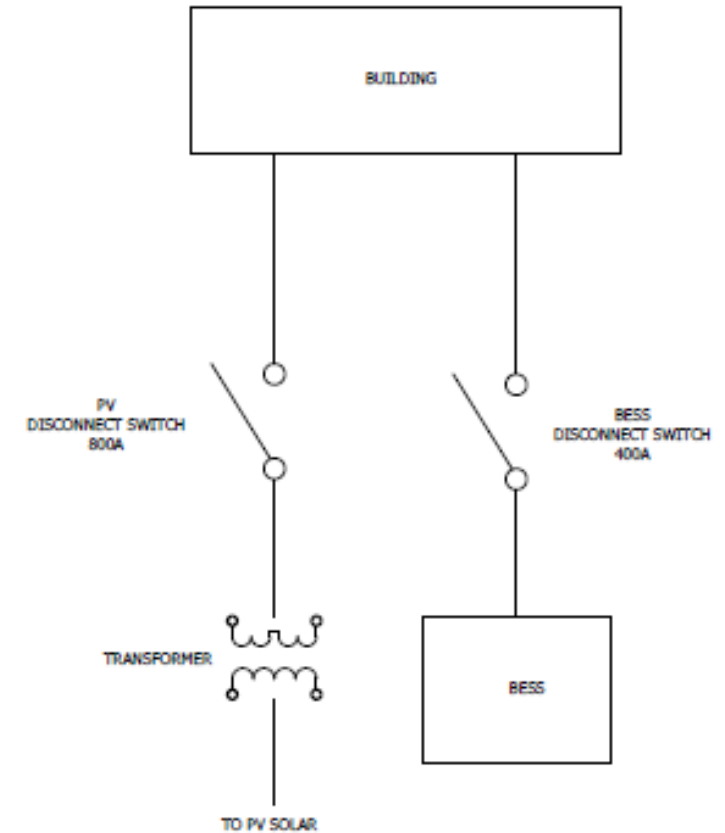


Project Overview

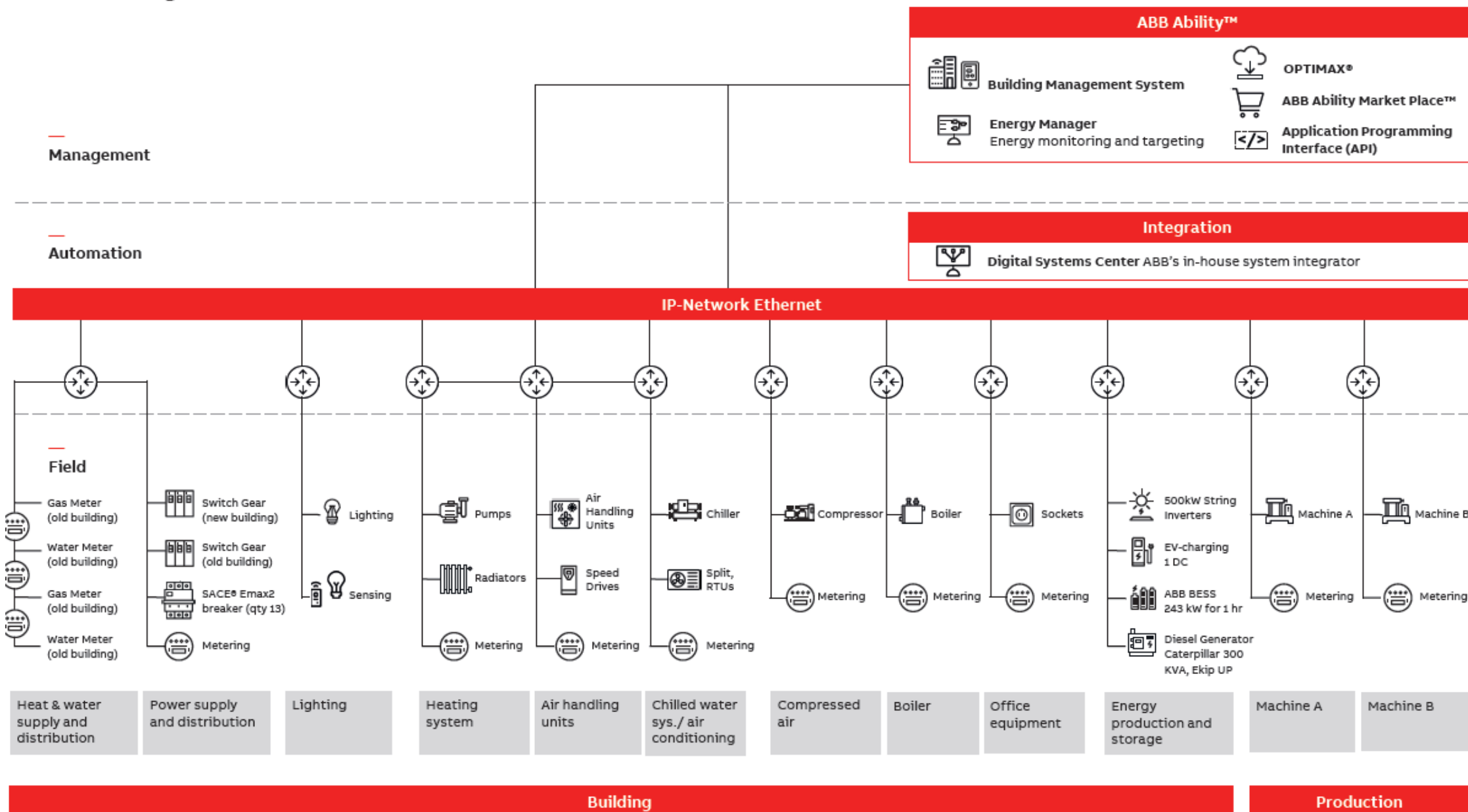
ELSP USA Senatobia, MS Customer Demonstration Site

Microgrid location – Across the road, east of existing building.

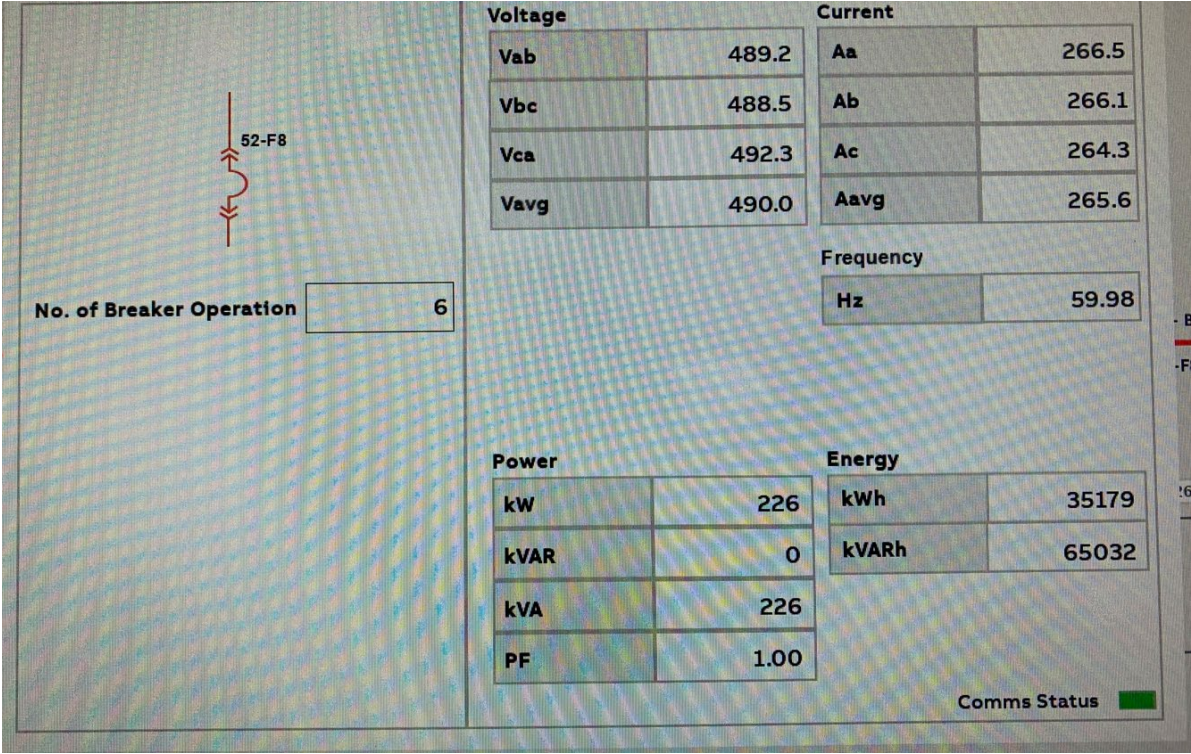
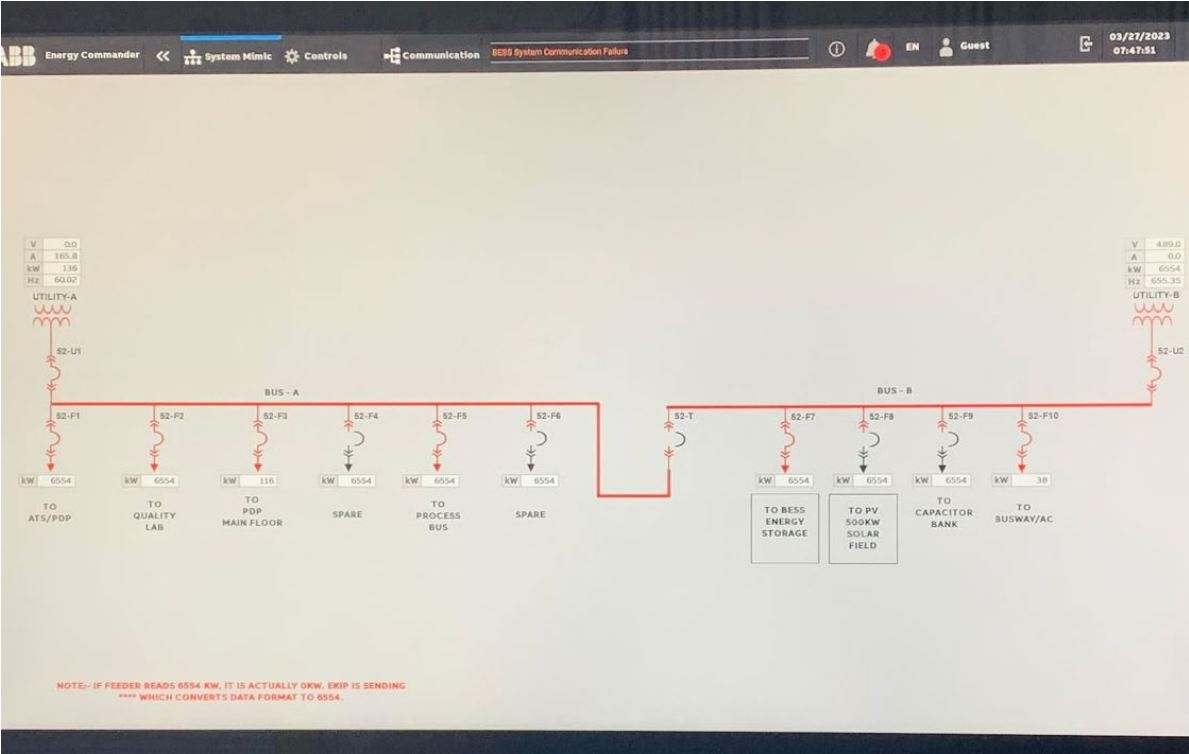
1. ABB will buy the land
2. Away from future expansion
3. Good sun exposure
4. BESS near building



Factory architecture



Energy and Asset Manager



Data!



Contact



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Q&A



ABB