



GE Gas Power – Hydrogen Update

BofA Securities 2021 Hydrogen Conference

December 17, 2021

Jeffrey Goldmeer, Ph.D., Emergent Technologies Director– GE Gas Power

CAUTION CONCERNING FORWARD-LOOKING STATEMENTS: This document contains "forward-looking statements" – that is, statements related to future events that by their nature address matters that are, to different degrees, uncertain. For details on the uncertainties that may cause our actual future results to be materially different than those expressed in our forward-looking statements, see <http://www.ge.com/investor-relations/disclaimer-caution-concerning-forward-looking-statements> as well as our annual report on Form 10-K and quarterly reports on Form 10-Q. We do not undertake to update our forward-looking statements. This document also includes certain forward-looking projected financial information that is based on internal estimates and forecasts. Actual results could differ materially.

ADDITIONAL INFORMATION ABOUT GE: GE's Investor Relations website at www.ge.com/investor and our corporate blog at www.gereports.com, as well as GE's Facebook page and Twitter accounts, contain a significant amount of information about GE, including financial and other information for investors. GE encourages investors to visit these websites from time to time, as information is updated and new information is posted.

“GE is a 129 year old company. We’ve always had a larger purpose of innovating technology to improve the quality of life for people all around the world. We are committed to decarbonizing the energy sector while ensuring people have access to sustainable, reliable, and affordable electricity. We believe this requires a combination of deploying renewable energy, modernizing the physical and digital grid, and providing a strong baseline of reliable energy like state-of-the-art gas and advanced nuclear. We are investing in breakthrough technologies like hydrogen and carbon capture and sequestration for hard-to-abate emissions.”

ROGER MARTELLA
Vice President, Chief Sustainability Officer
GE



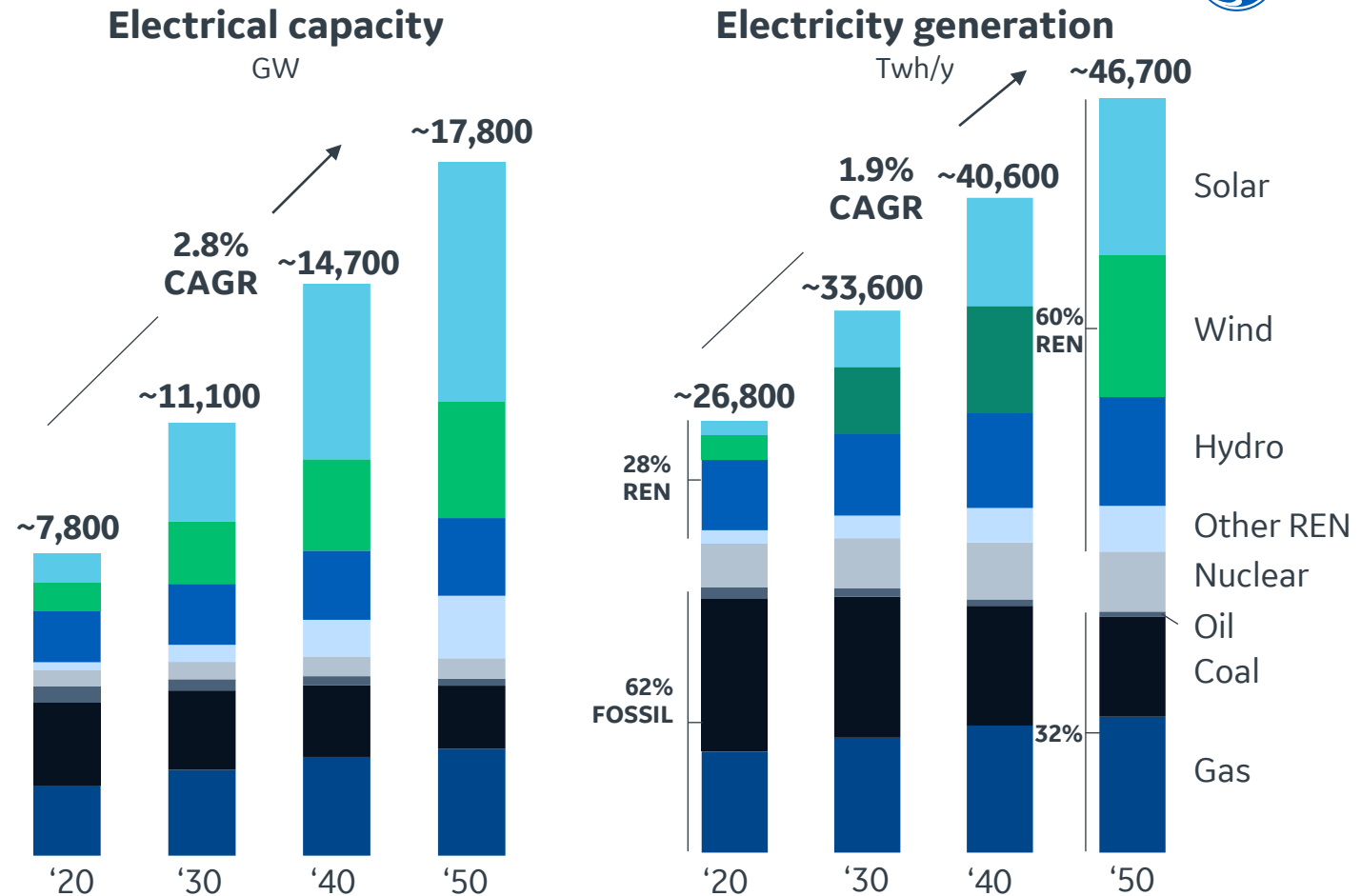


30 YEAR VIEW Capacity vs. Generation

Wind and solar growth ... will be vast majority of global net capacity additions

Coal generation share ... will be down, but not enough

Gas generation ... will play a critical and changing role, as **flexible, affordable, reliable and lower CO₂ power**



Neither **RENEWABLES** nor **GAS POWER** are as effective alone at decarbonization** at the pace and scale needed to meet the goals of the Paris Agreement

**Decarbonization as used herein is intended to mean the reduction of carbon emissions on a kilogram per megawatt hour basis | Source: IEA WEO 2021 – Stated Policies Scenario

Energy Trilemma



Challenges our customers are facing for electricity generation, delivery and consumption

A mix of generation and grid solutions are required to provide the desired balance between:

- Affordability
- Reliability
- Sustainability

The balance varies significantly by region.
Decarbonization actions will be determined locally.



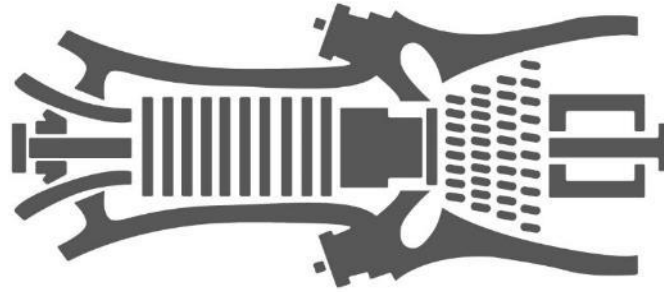
**Affordable, reliable and sustainable energy is a basic human right,
critical to growing economy and fundamental to quality of life in the modern world**

* Decarbonization as used herein is intended to mean the reduction of carbon emissions on a kilogram per megawatt hour basis.

Decarbonizing gas power* ... a range of options



Pre-combustion



Post-combustion

Use a zero or carbon neutral fuel

- Hydrogen (blue, green, pink)
- Synthetic (renewable) methane
- Biofuels
- Ammonia

Remove carbon from the plant exhaust

- Carbon capture (liquid solvents)
- Carbon capture (solid sorbents)
- Oxy-fuel cycles

Gas turbines are a destination technology ... multiple options to achieve lower or zero carbon emissions

*Decarbonization as used herein is intended to mean the reduction of carbon emissions on a kilogram per megawatt hour basis

© 2021, General Electric Company. All rights reserved.

Decarbonization / Zero-Carbon Fuel MOUs

Establishing a global footprint with industry leaders



Uniper

(SIGNED OCT 2020)
Significant EU & UK GE fleet.
hydrogen , ammonia, and
biofuel techno-economic
research. [Read more](#)

IHI

(SIGNED JUNE 2021)
Focus on ammonia
combustion in support of
Japanese government's path
to decarbonization through
blue and green ammonia
imports. [Read more](#)

Cricket Valley Energy Center

(SIGNED JULY 2021)
Focus on reduction of carbon
emissions from combined
cycle plant in New York with
green hydrogen. [Read more](#)

GRT Gaz, Ineris, McPhy & French Academia

(SIGNED SEPT 2021)
Hydrogen eco-systems, safety,
transportation, storage and
production/offtakers–
techno-economic evaluations
with pilot experimentation.
[Read more](#)

China Light & Power

(SIGNED SEPT 2021)
Sizeable GE fleet. F class
hydrogen pilots from 5% ('24)
to 100% capability ('35+) for
9FAs. [Read more](#)

Emirates Global Aluminum (EGA)

(SIGNED NOV 2021)
High gas turbine capacity
factor industrial customer &
first mover looking to secure
price premiums for green
aluminum. [Read more](#)

Abu Dhabi National Oil Company (ADNOC)

(SIGNED NOV 2021)
Exploration of hydrogen,
ammonia, and carbon capture
for lower-carbon power
generation supporting large-
scale oil & gas operations.
[Read more](#)



— Technical pathways: CCS

Department of Energy Award for CCS Feed Study



GE Gas Power plans to complete a FEED study for integration of a 95% CCS commercial solution into an existing F-Class natural gas combined cycle site. GE anticipates that their commercial solution will provide advanced operability for a NGCC/CCS site, with a high-level of system integration that achieves lower cost and high efficiency and is scalable to other commercial sites.

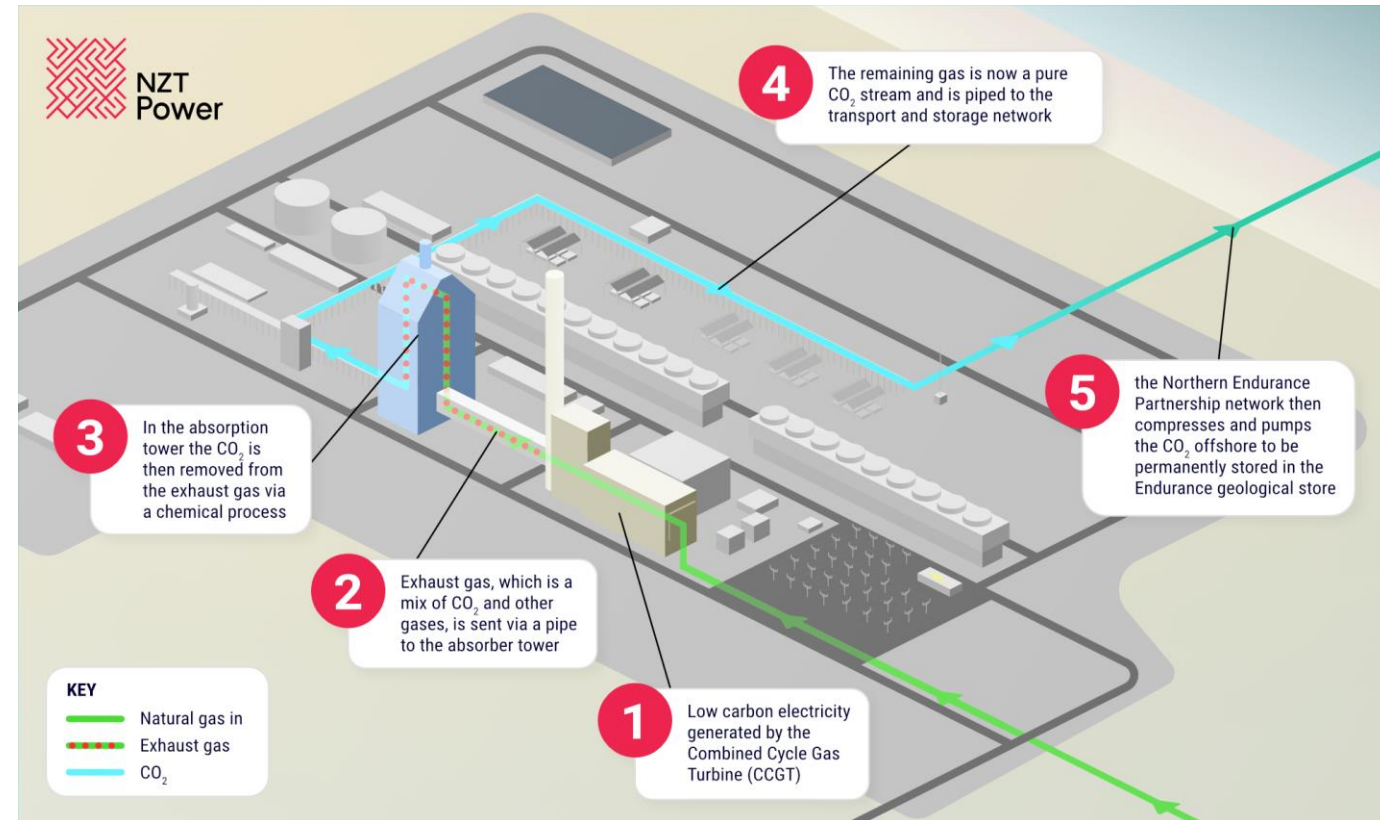
Source: <https://www.energy.gov/articles/doe-invests-45-million-decarbonize-natural-gas-power-and-industrial-sectors-using-carbon>
<https://www.energy.gov/fecm/articles/funding-opportunity-announcement-2515-carbon-capture-rd-natural-gas-and-industrial>

bp award for CCS Feed Study

Technip Energies and GE Gas Power Awarded FEED Study for Teesside Power, Carbon Capture and Compression Project in the UK



- Technip Energies and GE Gas Power will develop a front-end engineering design (FEED) study for a 'first of a kind' large amine-based post combustion carbon capture at scale solution to integrate with a proposed H-Class natural gas fired power plant at Teesside, England.
- GE Gas Power will provide proven expertise in natural gas combined cycle plant engineering, operability, and plant integration while Technip Energies will focus on carbon capture and compression plant using Shell's Cansolv carbon capture technology.



Picture source: bp

Source: <https://www.bp.com/en/global/corporate/news-and-insights/press-releases/bp-and-partners-award-first-engineering-contracts-advancing-major-uk-power-and-carbon-capture-projects.html>
<https://www.ge.com/news/press-releases/technip-energies-and-ge-gas-power-awarded-feed-study-for-teesside-power-carbon>



— Technical pathways: hydrogen

Recent commercial projects to use hydrogen



Long Ridge Energy (USA)



- Long Ridge Energy intends to begin blending hydrogen in their **new 7HA.02** gas turbine
- The owner's plan is to transition the plant to 100% hydrogen in 10 years

Tallawarra B (Australia)



- EnergyAustralia intends to begin blending hydrogen in their **new 9F.05** gas turbine starting in 2025
- This will be the first 9F gas turbine to operate on blends of hydrogen and natural gas

NYPA Brentwood (USA)



- New York Power Authority intends to soon commence its demonstration of blending hydrogen and natural gas in an existing **LM6000** gas turbine

Cricket Valley (USA)



- Advanced Power & GE plan to develop a hydrogen roadmap for the **3x7F.05** gas turbines at the Cricket Valley Energy Center
- This is expected to advance a hydrogen blending demonstration project planned to begin in 2022

Guangdong Huizhou (China)



- Guangdong Energy Group intends to operate their new **9HA.01** gas turbines on a 10% blend of hydrogen and natural gas starting in 2023



Green Hydrogen Demonstration Ribbon Cutting Ceremony at Brentwood Power Station on Long Island, NY – Oct 2021



We engineer cleaner, more accessible energy that people depend on, powering growth and prosperity everywhere.



The power generation industry is in transition...
growing capacity to meet expanded future demands while targeting
low-to-zero carbon emissions

Gas turbines, which are integral to our power system today,
offer multiple technical pathways to lower and zero carbon emissions
to help meet this challenge

Focusing on hydrogen, GE is the most experienced OEM
in the use of hydrogen and similar low BTU fuels*

CUTTING CARBON

A Conversation About Our Energy Future



<https://www.ge.com/gas-power/future-of-energy/cutting-carbon>



Building a world that works