Unleashing US Natural Gas

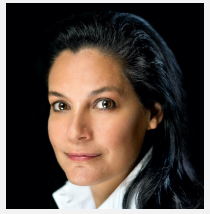
Pathways to Commercializing Carbon Intensity with NextGen Gas

Gulf Coast Energy Forum October 2022 | New Orleans LA

Williams WE MAKE CLEAN ENERGY HAPPEN®

CONTEXTLABS

Brian Vogt
Director
Williams
New Energy Ventures



Rebeca Quintanilla
Senior VP
Global Head of Origination
Context Labs Energy

Williams Climate Commitments and New Energy Ventures

Guiding Principles

Achieve carbon reductions for ourselves, our customers and partners.

Create economic value with actionable investments.

Target opportunities where our midstream competencies provide strong competitive advantages.

Provide scalable options for the future.

Right Here, Right Now Opportunities

Goal: 56% absolute reduction in company-wide greenhouse gas emissions by 2030

Leverage our natural gas-focused strategy and technology that is available today to focus on immediate opportunities to reduce emissions, scale renewables and build a clean energy economy.

Future Innovation and Technologies

Our path to net zero by 2050 involves a combination of immediate and long-term solutions, including investments in renewables, technology and the best and brightest talent who are committed to doing what is right.

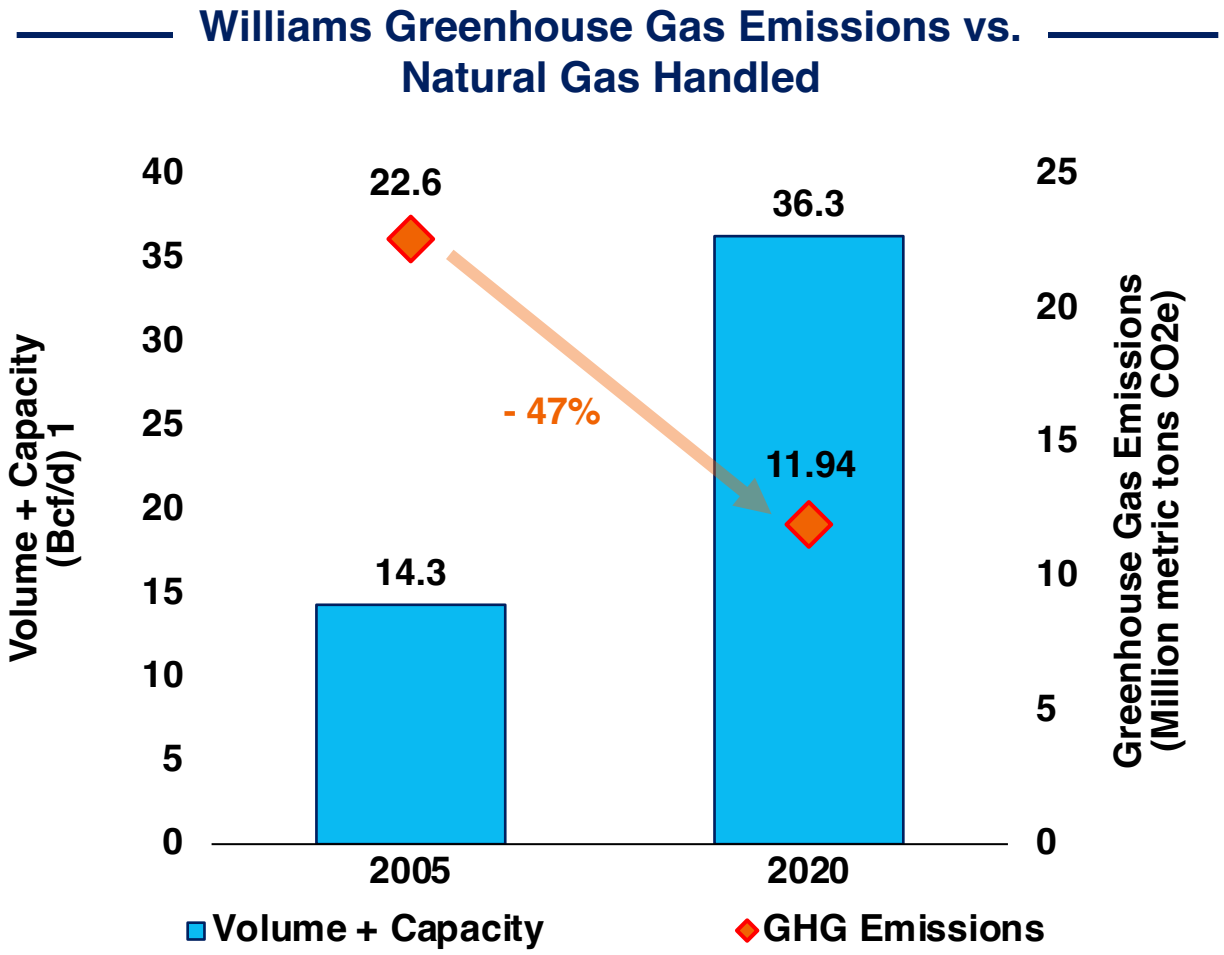
Proof Points for our improvements in emission efficiency

Significant natural gas volume growth since 2005

- Transmission capacity up over 100%
- Gathering volumes up nearly 4x

Emissions down while business scales up

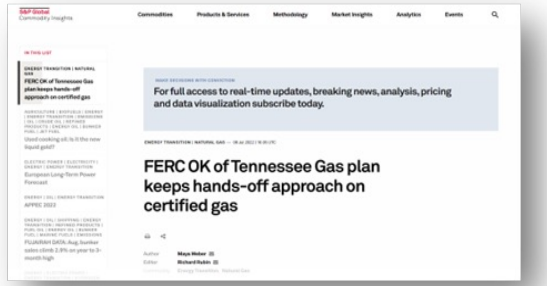
- Improving operations efficiency
- Implementing operating practices focused on safety and emissions reductions
- Modernizing equipment and investing in new technologies



The Certified Gas Market is Facing an Identity Crisis

- **No uniform standard or approach** to certification is causing confusion
  - The market is primarily interested in methane emissions/CO2e reduction rather than other ESG criteria
- **Limited quantification capabilities** combined with an inability to correlate monitoring data with actionable outcomes has raised questions about the effectiveness of current solutions
  - The market wants measured methane/CO2e intensities rather than continued reliance on EPA emissions factors and self-attestation
- **Absence of end-to-end certification** has hindered market development as the focus on wellhead certification only ignores the remainder of the natural gas supply chain
  - The market sees little to no value in wellhead certificates

- **Lessons Learned from the Voluntary Carbon Offset Market:**
  - The early voluntary carbon offset market was plagued by too many programs, a broad diversity of standards or approaches, limited verification protocols, and a general lack of confidence
  - Today value and transactability are directly correlated to trust and transparency



Certified Low Emissions Natural Gas Needs A Full Value Chain Approach That Goes Beyond Monitoring

Carbon intensity and ESG reporting with independent verification will become a requirement for marketing natural gas products

Extend focus to track carbon intensity through entire supply chain

State-of-the-art technology measurements

- Using **multiple** technologies to monitor, quantify, and reduce emissions
- Utilize big data capability to integrate levels of overlapping data
- Advanced analytics prevent and reduce methane emissions

Enable transparency for any certifier or auditor to verify

- Methane and/or carbon intensity
- Data governance
- Operations policies and procedures
- ESG standards

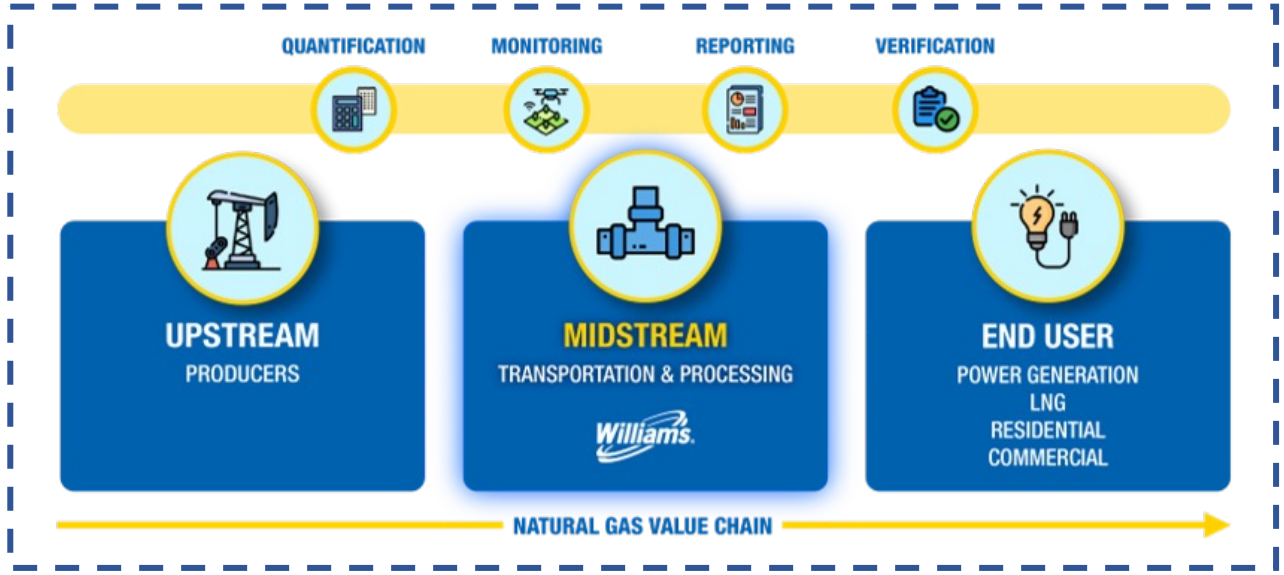
Extend focus beyond methane to all CO_2e

The Future of the Natural Gas Marketplace: NextGen Gas

- **Transparent and verified emissions insights for Williams' assets and value chain**
  - Certified end-to-end path specific emissions insights provide optimize natural gas value
  - Wellhead to water/burner-tip emissions certification, independently assured
- **Enterprise-wide GHG mitigation and real-time operationalization**
  - What gets measured, gets improved
  - Use **multiple** technologies and data sources to monitor, quantify, and reduce emissions
- **Differentiated products and services to support customers' needs and ESG commitments**
  - Provide emissions intensity across the supply chain to expand beyond wellhead certified gas/RSG and deliver end-to-end low-carbon and net zero midstream services

Technology Partners

Williams · CONTEXTLABS · ENCINO ENVIRONMENTAL SERVICES · SATLANTIS



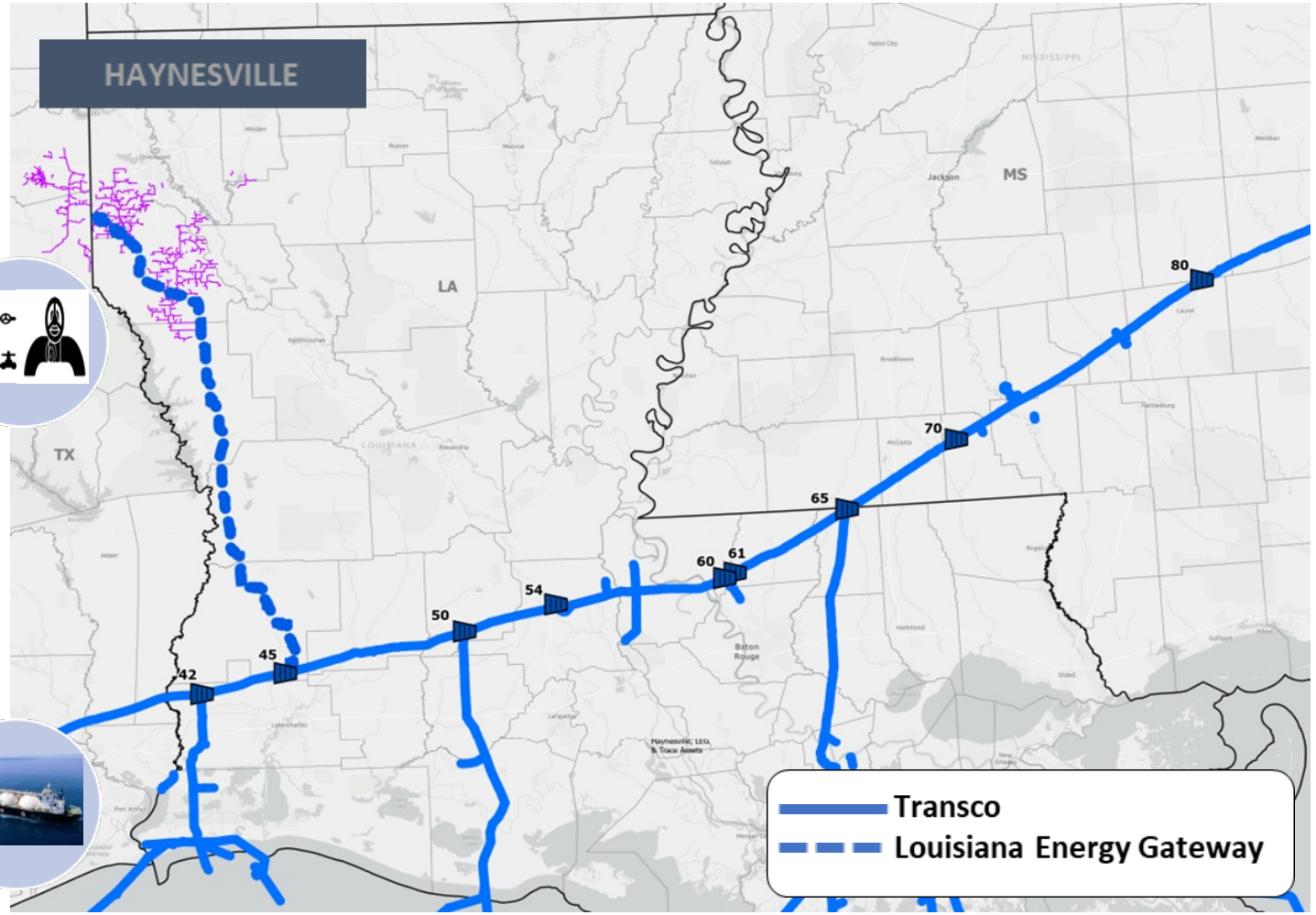
NextGen Gas

Certified Low Emission Natural Gas

NextGen Gas Provides Wellhead to Water Opportunities

Certified Low Emission production and transportation pathway

Connectivity to Multiple LNG Export Facilites



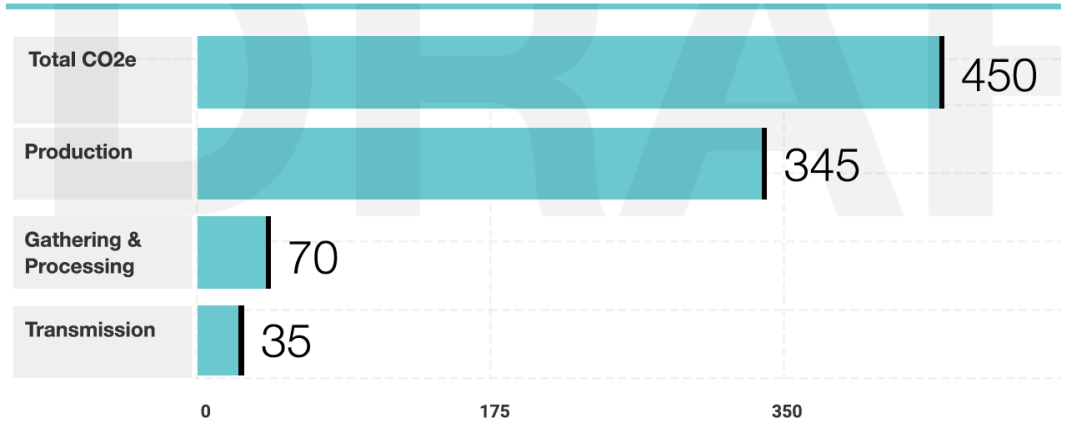
"The Louisiana Energy Gateway is a key component of our low carbon, wellhead to water strategy, proving up what an important role natural gas can play in reducing emissions, lowering costs and providing secure and reliable energy at home and around the world"

An End-to-End Certification Methodology

Attestation of Low Carbon Intensity

From: Upstream Wellpad — To: Public Service E&G

MMBtu	20,000	CH4 Intensity	0.050%



Context Labs Certification Standards

- Scope I, II, and III GHG Emissions Calculated across Upstream, Midstream, and Downstream Assets, backed by blockchain
- Digital Notary verification by KPMG
- Meets and exceeds existing sustainability accounting frameworks

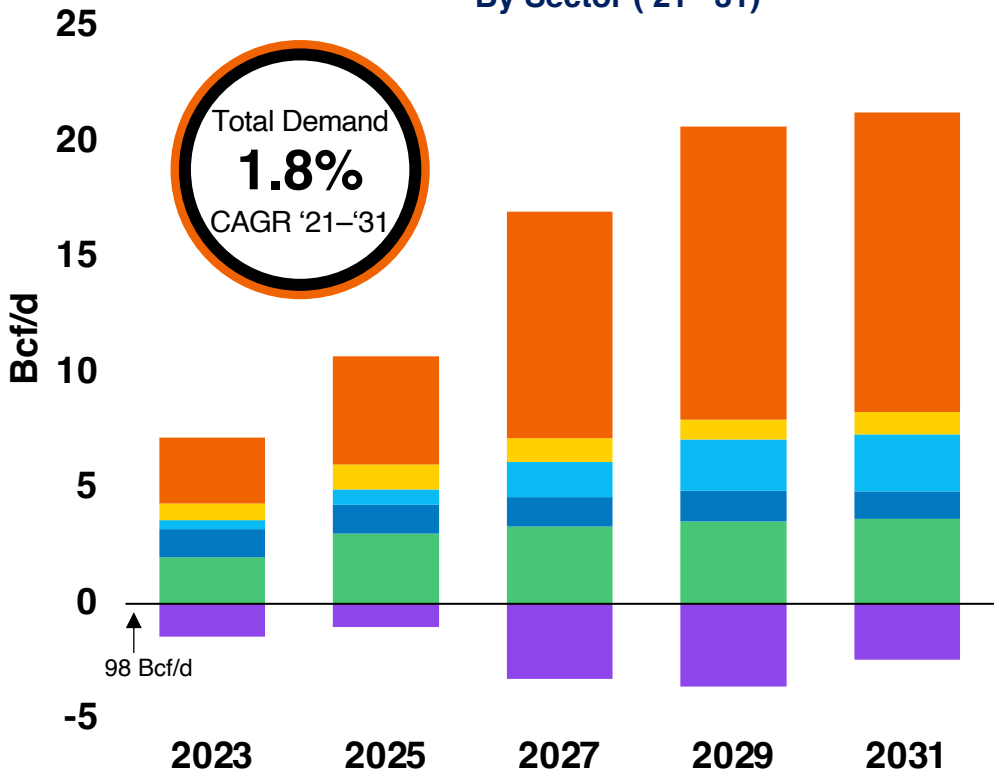
Differentiation

- Integrating multi-source monitoring data, including:
  - Continuous Emissions Monitoring (CEMs)
  - SCADA
  - Remote Ground
  - Airborne, Satellite, UAV
- Blockchain encryption of all data streams

LNG Export Growth Leads U.S. Gas Demand Growth

Projected lower-48 natural gas demand grows by 19 Bcf/d through 2031

Projected Lower-48 Natural Gas Cumulative Demand Growth By Sector ('21–'31)



Expected growth '21-'31

- LNG Exports, +12.9 Bcf/d
- Mexican Exports, +1.0 Bcf/d
- Transport/Other, +2.5 Bcf/d
- Residential/Commercial, +1.2 Bcf/d
- Industrial +3.7 Bcf/d
- Power, -2.4 Bcf/d

Source: Wood Mackenzie North America Gas Strategic Planning Outlook – March 2022

NextGen Gas Can Prove the Low Carbon Potential of US LNG

Unleashing U.S. LNG: The Largest Green Initiative on the Planet

Equal to the Combined Impact of Every Domestic Mainstream Green Solution

RMI

Which Gas Will Europe Import Now? The Choice Matters to the Climate

March 16, 2022

By Sasha Bylsma, Deborah Gord
Lauren Schmeisser, Rose (Yuan)

Russia's ongoing invasion of Ukrain
tragedy on a massive scale, with e

The crisis has also shaken up the e
comes from natural gas, nearly 45
committed to analyzing the conseq
so that future energy choices don't
and stability.

REUTERS

RWE is working with Qatar, U.S. on long-term LNG deals

Chevron

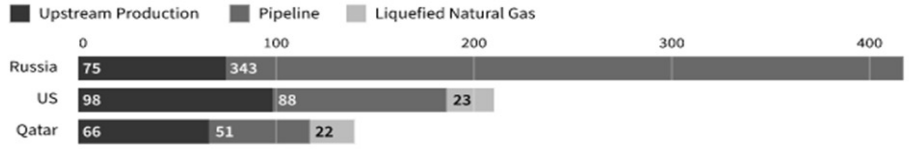
newsroom

chevron delivers first offset-paired LNG cargo

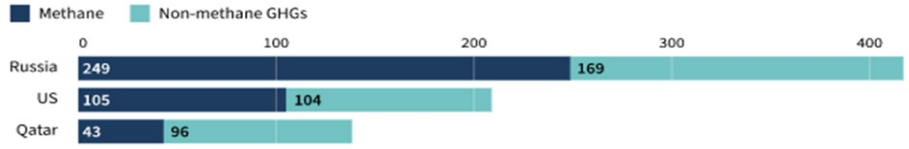
San Ramon, California, September 29, 2022 – Chevron Corporation (NYSE: CVX) today announced that its subsidiary, Chevron U.S.A. Inc. (Singapore Branch) (Chevron), has safely delivered its first shipment of offset-paired liquefied natural gas (LNG) cargo.

Emissions Intensity of Gas Supplies to Germany

Breakdown of supply chain GHG emissions for Russian, US, and Qatari gas by supply chain segment (in kg CO_2e per barrel of oil equivalent)



Methane in supply chain for Russian, US, and Qatari gas (in kg CO_2e per barrel of oil equivalent)



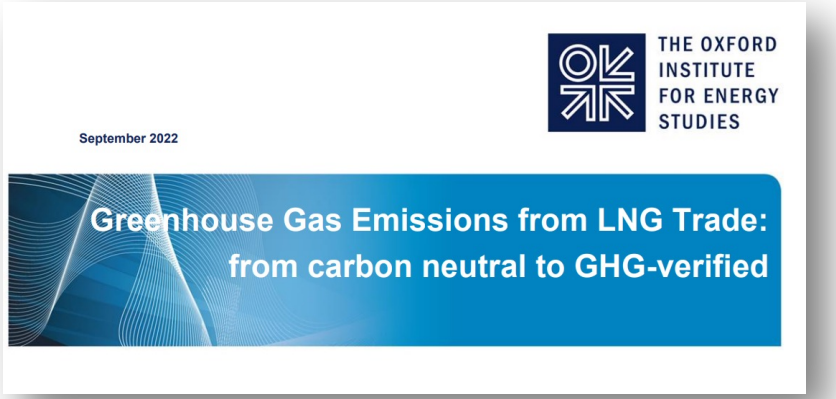
#EUGreenDeal

CARBON BORDER ADJUSTMENT MECHANISM

European Commission

On 14 July 2021, the Commission adopted a proposal for a new Carbon Border Adjustment Mechanism which will put a carbon price on imports of a targeted selection of products so that ambitious climate action in Europe does not lead to 'carbon leakage'. This will ensure that European emission reductions contribute to a global emissions decline, instead of pushing carbon-intensive production outside Europe. It also aims to encourage industry outside the EU and our international partners to take steps in the same direction.

The Future of LNG – Emissions Still Matter



"In 2022, the attention of the gas and LNG world has been diverted by the security crisis in Europe and by global price levels. However, when the crisis passes, attention will return to climate targets and emission reductions. At that time, the LNG community must be able to credibly document its emissions which will become an increasingly critical part of the social license to operate."

- The Oxford Institute for Energy Studies, September 2022

Introducing Context Labs

Our software is designed to **unlock planet-scale outcomes** by turning complex data into continuously proven information

We enable human networks **to spot patterns** and **correlate trends**, revealing the 'Ground Truth' hidden inside the world's most complex problems

With **Decarbonization-as-a-Service** & **CLEAR Path**, Context Labs has created an industry-specific product suite for the Oil & Gas sector

CONTEXTLABS

DaaS Decarbonization as a Service™

CLEAR Path

Immutably™

- **Founded by a team that has developed at-scale platform technology over the past 30 years that has impacted billions of Internet users on a daily basis:**
  - Netscape Communications: Establishing key standards for Internet collaboration, media streaming, and VoIP
  - Oracle: providing core big data and collaborative capabilities for Oracle Fusion (now with other 65,000 customers)
  - A joint venture with China's Sina: providing core underlying technology for its Weibo platform, with over 650 million daily users
- Based upon the Pentalytic™ Framework: Emerging from Founder's MIT Research

An Introduction to Context Labs Technology

Immutably™

- Scrivener
- EdgeShare
- Proofworks
- ProvenPaths
- Impact Analytics
- AlphaESG

Context Labs Core Tech Stack + Platform microservice components

- Ingest
- Encrypt
- Contextualize

DaaS Decarbonization as a Service™

A tailored solution for the Energy sector

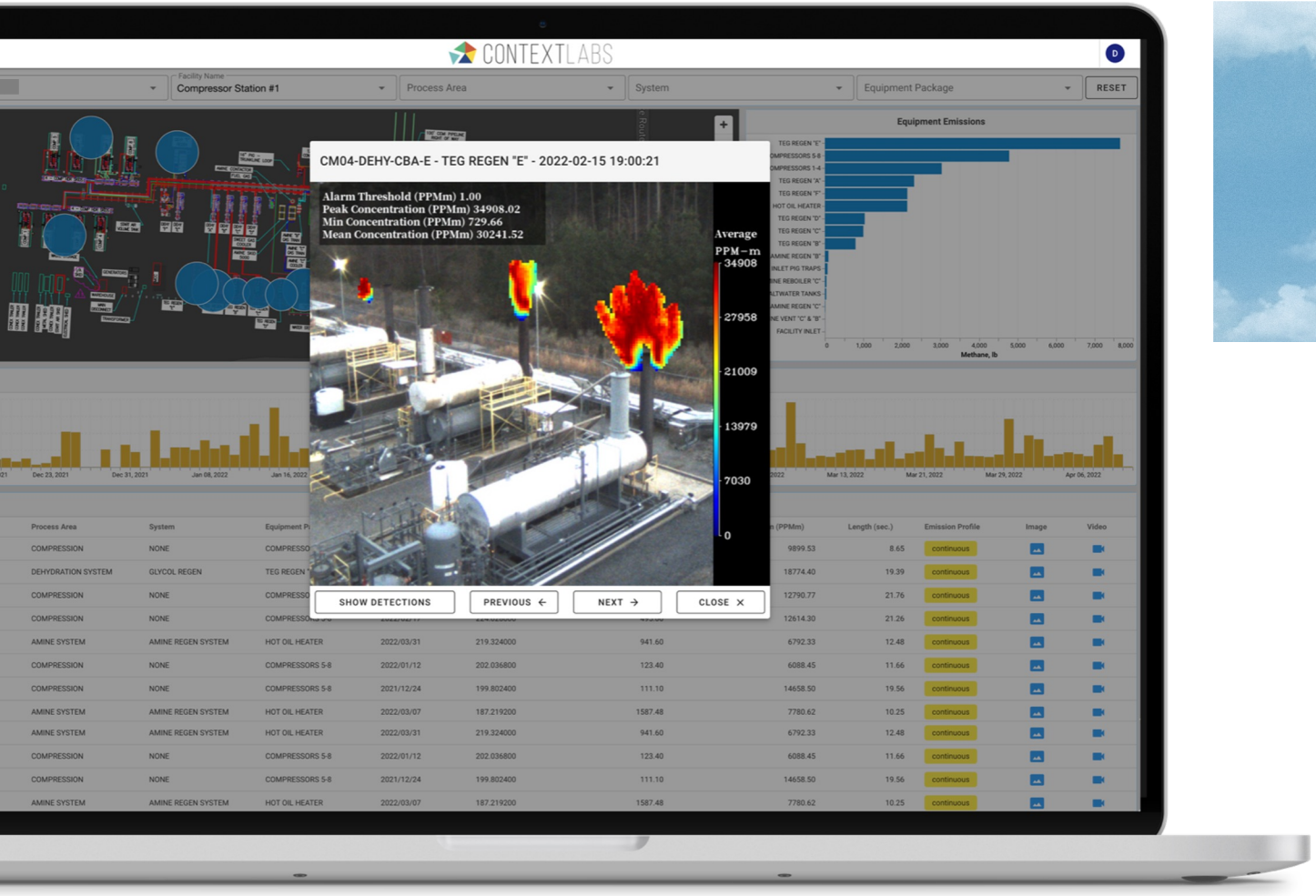
- Measure
- Monitor
- Mitigate

CLEAR Path

An Environmental Attribute Registry to catalyze change in environmental commodities markets

- Monetize

A Data Fabric Platform to Service the Decarbonization Cloud



A vertically integrated solution that fits seamlessly into field operations

Prove performance to any stakeholder through immutable provenance linked to each event

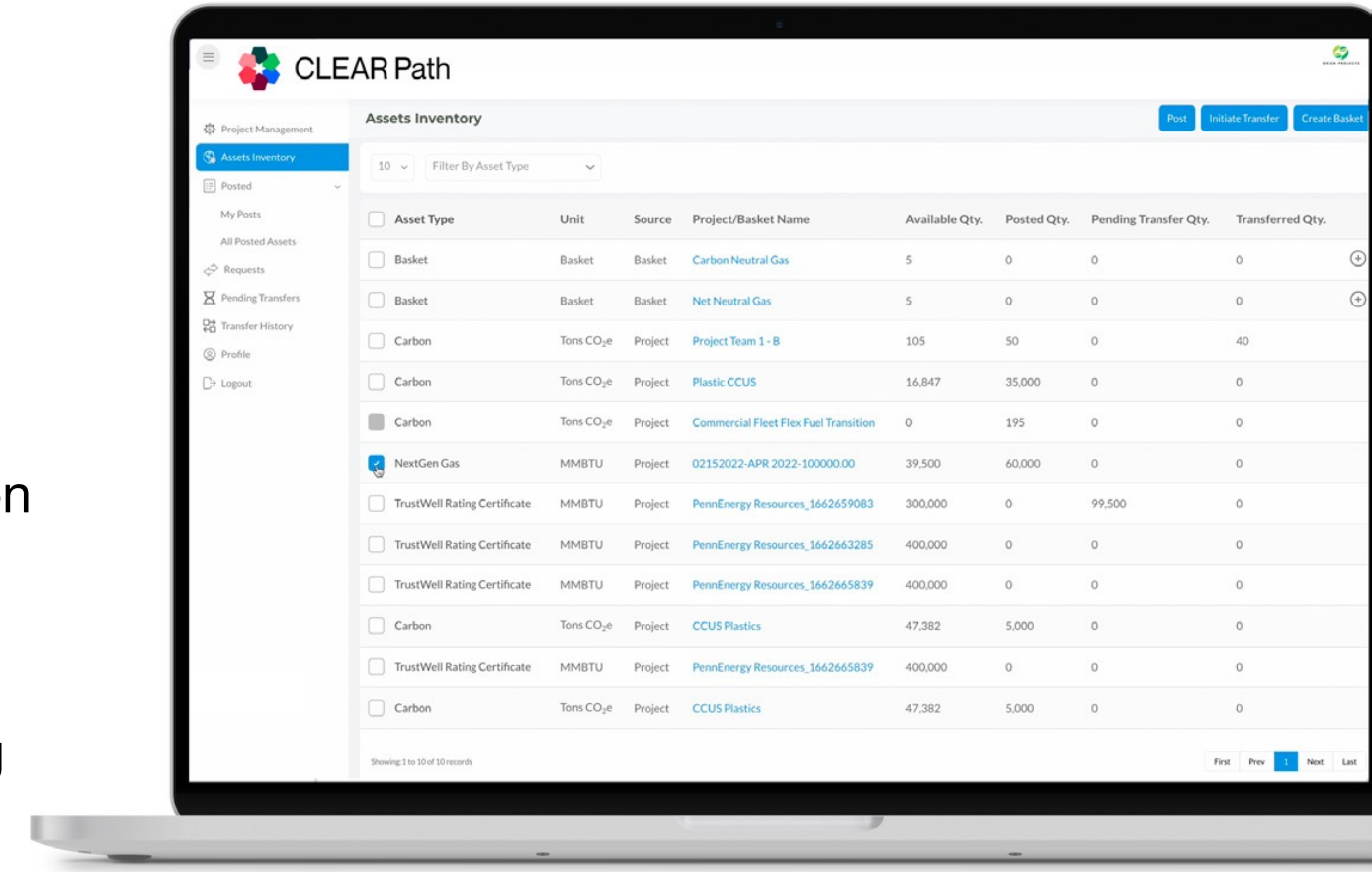
Real-time equipment-level monitoring + AI-based analytics:

- Incorporate real-time emissions measurement into operational decision-making
- Isolate upset conditions from routine operations to respond effectively
- Select transmission paths based on measured carbon intensities

For illustrative purposes only

Introducing CLEAR Path

- A platform to house the full breadth of certifications and credits
  - Attestation of Low Carbon Intensity energy pathways (RSG, NextGen Gas)
  - Carbon, Water, Plastic Credits
- Accelerate project creation and verification
- Blockchain encryption to prevent double-counting
- Transactability into any third-party trading platform



Reliable **Efficient** **Flexible** **Accurate**

What's Next

Williams and Context Labs realize the entire natural gas value chain must be monitored, measured, and verified to secure natural gas's role in a clean energy future.

Williams is excited to explore an opportunity to partner with our customers to provide Certified NexGen Gas solutions.

Williams Decarbonization Cloud Powered by DaaS™

Visit with the Williams team to explore certified pathway options available this year and visit the Context Labs' Kiosk to Schedule a Demonstration

Sign up to further explore opportunities

- Initiate path-specific projects to demonstrate traceable end-to-end emissions
- Create and transact a certified Low Carbon Intensity product
- Pair with Immutably™-derived Asset Grade offsets to create Net-Zero pathways
- Serve growing demand for transparent deliveries of natural gas and NGLs

CLEAN, AFFORDABLE AND RELIABLE ENERGY

WE MAKE CLEAN ENERGY HAPPEN®

Williams®