



Driving Emission Reductions

EPA Natural Gas STAR/Methane Challenge Annual Workshop

November 5, 2019



Kinder Morgan: Leader in Energy Infrastructure



Experienced operator with unparalleled footprint built over decades

Largest natural gas transmission network

- ~70,000 miles of natural gas pipelines
- 657 Bcfd of working storage capacity
- Connected to every important U.S. natural gas resource play and key demand centers
- Move ~40% of natural gas consumed in the U.S.

Largest independent transporter of refined products

- Transport ~1.7 mmbbld of refined products
- ~6,900 miles of refined products pipelines
- ~5,800 miles of other liquids pipelines (crude and natural gas liquids)

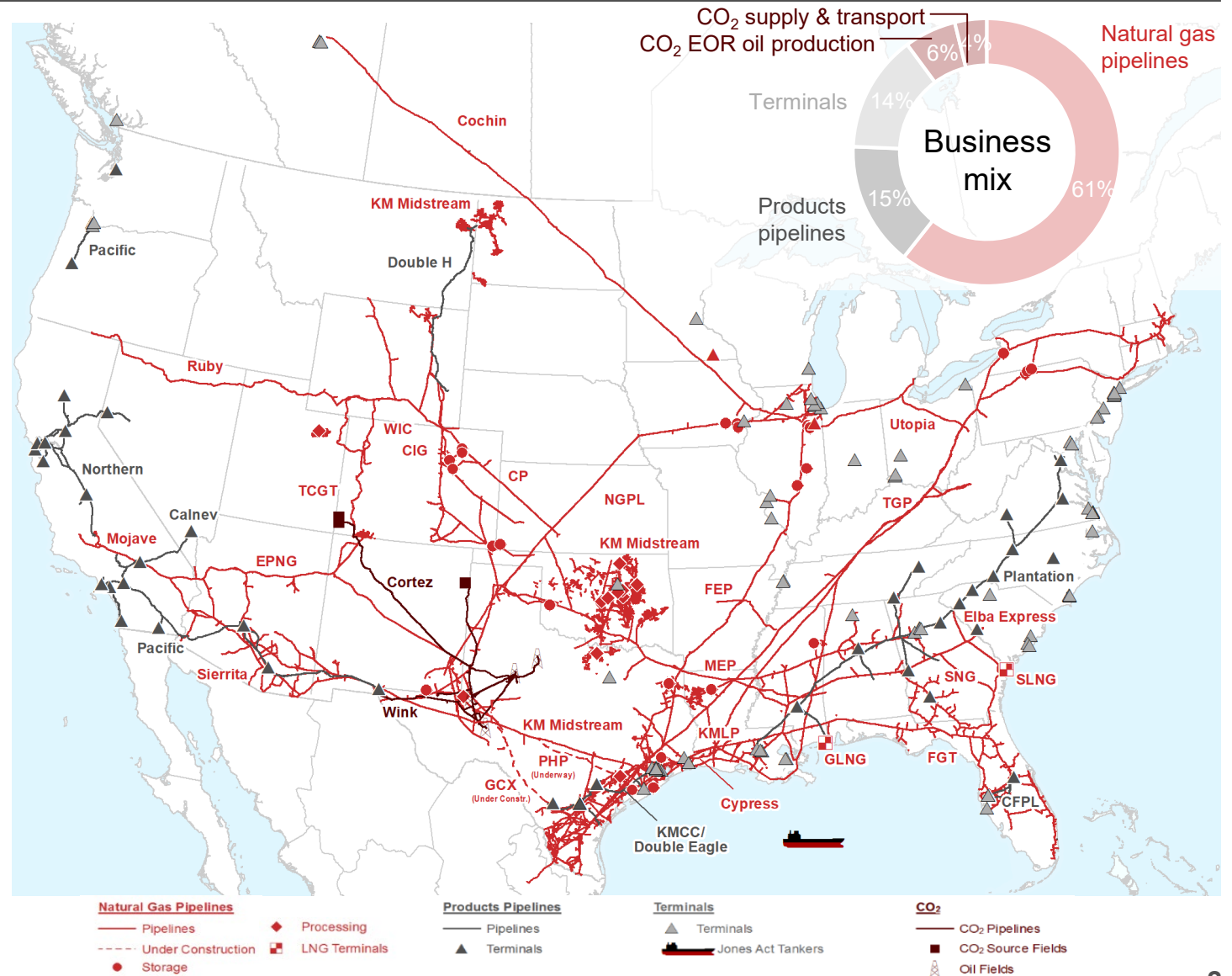
Largest independent terminal operator

- 157 terminals
- 16 Jones Act vessels

Largest transporter of CO₂

- Transport ~1.2 Bcfd of CO₂

Leading infrastructure provider across multiple critical energy products



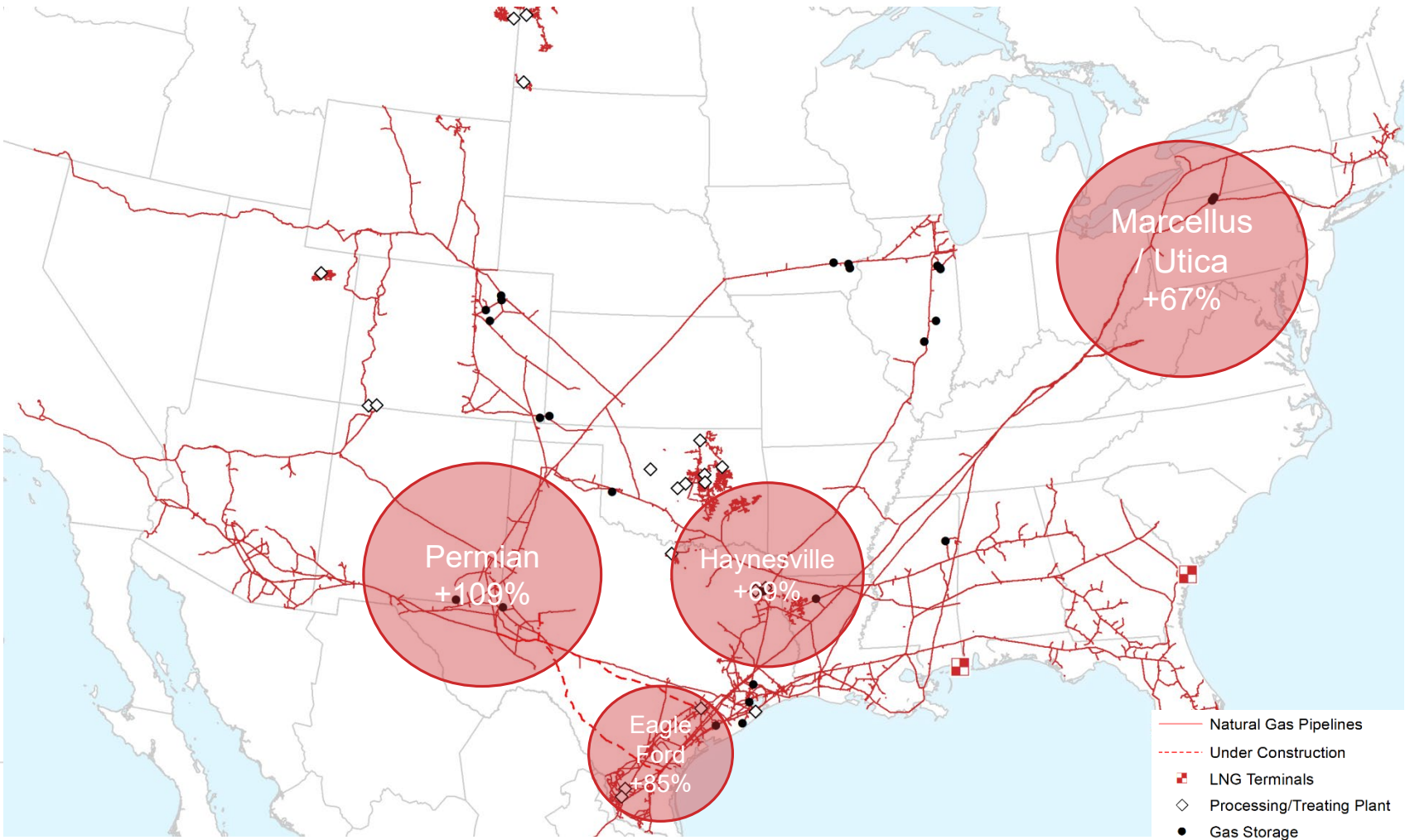
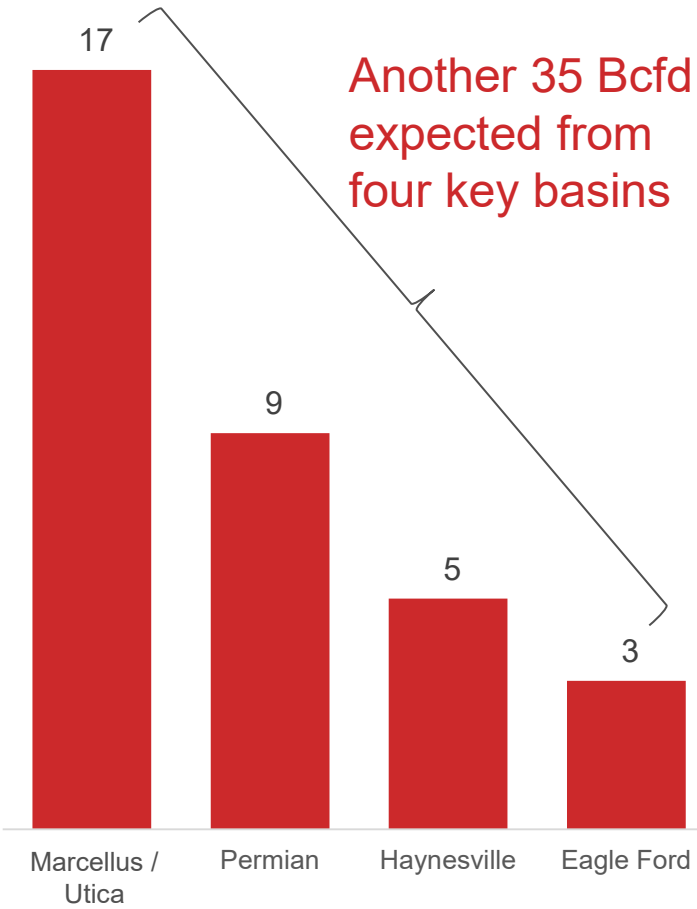
Note: Mileage and volumes are company-wide per 2019 budget. Business mix based on 2019 budgeted Segment EBDA before Certain Items plus JV DD&A.

Substantial Growth Projected for U.S. Natural Gas Supply

Kinder Morgan network connects key supply basins to multiple demand points along the Gulf Coast

KEY BASINS DRIVING U.S. GROWTH

2018 to 2030 growth in Bcfd



Total U.S. natural gas production to grow by over 30 Bcfd or nearly 40% by 2030

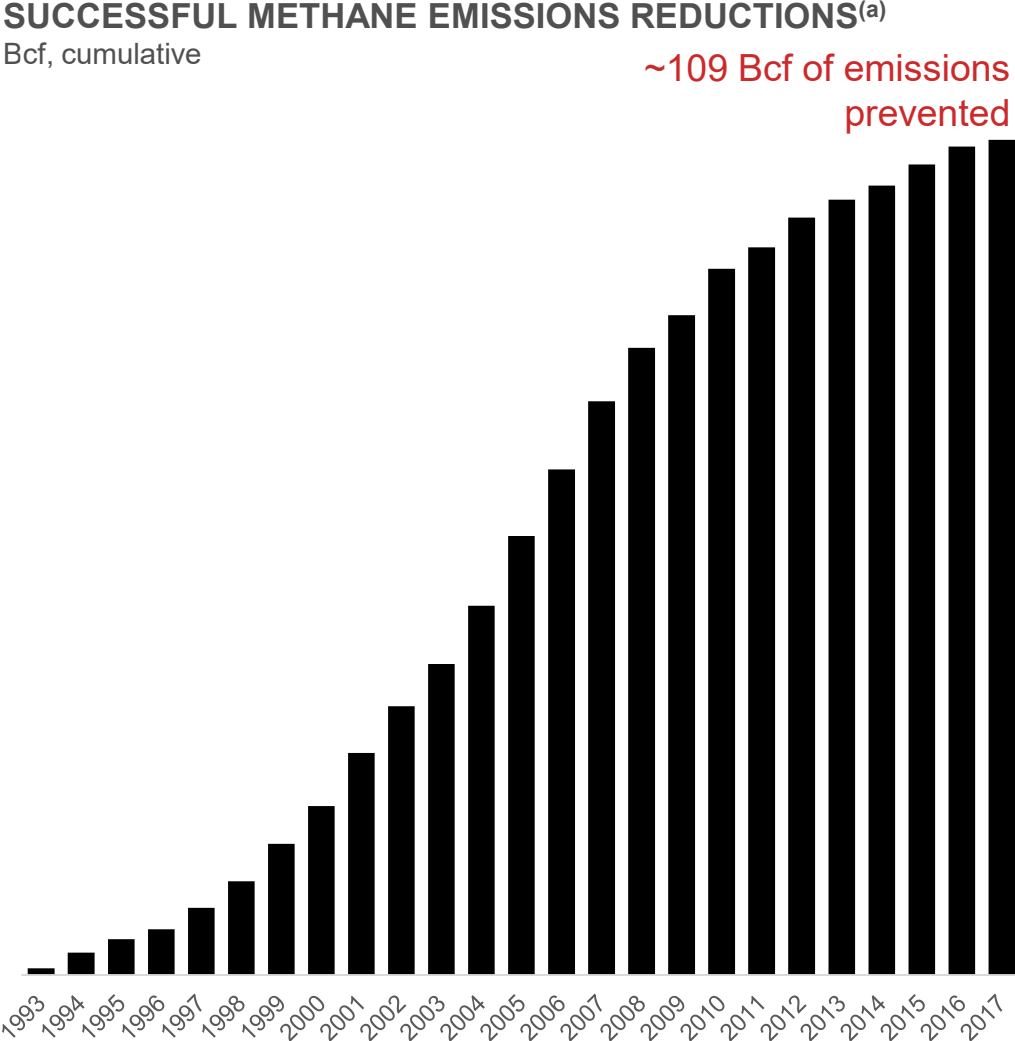
Source: WoodMackenzie, North America Gas Markets Long-Term Outlook, Fall 2018. Growth relative to projected 2018 production levels at the time of the report.

- **1993**: Became partner of EPA's Natural Gas STAR Program
- **2014**: Joined ONE Future Coalition
- **2016**: Charter member of Methane Challenge-ONE Future option
- **Jan. 1, 2017**: start date of Kinder Morgan's commitments under Methane Challenge
 - **2017**: rolled out Methane Challenge tools and tracking systems to be used by stakeholders, conducted training
 - **2017**: updated emission reporting tools for tracking and reporting methane reductions
- **2018**: finalized and rolled out internal policy and procedures implementing program
- **2019 & Beyond**: Continuous Improvement, we cannot be satisfied until the emissions are as low as possible

Contributing to a Lower-Carbon Future with Natural Gas

Long-standing commitment to reducing methane emissions | On-going enhancements to sustainability disclosures

- **25+ years of commitment** to reducing methane emissions helped to achieve a **16% decline in U.S. methane emissions since 1990** while U.S. natural gas production has increased more than 50%
- Contributed to a **12% reduction in U.S. greenhouse gas emissions** over the last 10 years, including a **28% reduction in emissions from electricity generation**
- As a founding member of ONE Future, we have **committed to a methane emission intensity target of 0.31%** across our transmission and storage operations by 2025
- **Collaborate with industry** peers, agencies, and Environmental Defense Fund (EDF) to develop methane emission measurement and reduction technologies and best practices
- **Rated by EDF in top quartile of midstream sector** for methane disclosures and establishing quantitative methane targets
- **Released first Environmental, Social and Governance Report (ESG)** in October 2018 with **plans to file 2 degree scenario analysis** in 2019 ESG report
- **Multiple on-going energy management programs** to reduce our electricity usage and Scope 2 GHG emissions



Source: EPA Inventory of U.S. Greenhouse Gas Emissions & Sinks: 1990-2017 (published 04/11/2019). Emissions reductions statistics refer to changes through 2017, the latest available.
a) Kinder Morgan's EPA Natural Gas STAR Summary Report (September 2018)

What is the Program and How Was It Implemented?

- Operation & Maintenance (O&M) Procedure: O&M 1229 Methane Emissions Management, Reductions and Reporting
 - Annual Leak Surveys at Compressor Stations Using OGI Cameras
 - Leaks that can be repaired are and reductions documented
 - Leaks that cannot be repaired are tracked in database until repaired
 - Periodic reports to management on progress
 - Pipeline Blowdown Emissions Reductions
 - Each planned blowdown must be evaluated using checklist
 - Documentation required when blowdown emissions cannot be reduced because of customer commitments
 - Reduction options are (1) eliminate need for the blowdown, (2) reduce blowdown emissions with internal/customer compression, or (3) reduce emissions using portable rental compression, flare or similar equipment

Kinder Morgan – Methane reductions

■ ONE Future-Methane Challenge Commitments include:

- Equipment leak detection & repair at T&S stations (Phase-In 2017 to 2021)
- Reduce Transmission Pipeline Blowdown Emissions
- Through R&D and lessons learned look for and implement additional means to reduce methane emissions

■ Results

■ Year 1: 2017 Methane Reductions (volume)

- T&S Equipment Repairs = 176,511 MCF
- T&S Compression Sleeves - Avoided Blowdown Volumes = 1,351,686 MCF
- T&S Pipeline Drawdowns - via Reserve Equipment = 1,764,131 MCF
- Total = 3,292,328 MCF [\$8.23 million in gas value @ \$2.50 per MCF]

■ Year 2: 2018 Methane Reductions (volume)

- T&S Equipment Leaks Repairs = 433,370 MCF
- T&S Compression Sleeves - Avoided Blowdown Volumes = 1,127,446 MCF
- T&S Pipeline Drawdowns - via Reserve Equipment = 1,509,997 MCF
- Total = 3,070,812 MCF [\$7.68 million in gas value @ \$2.50 per MCF]

Kinder Morgan – 2017 and 2018 Methane Emission Intensity data

■ **ONE Future Emissions Intensity Target for T&S was 0.31% by 2025**

■ **What is Methane (CH₄) Emission Intensity?**

(Total CH₄ Emissions for T&S / Total CH₄ Gas Throughput for T&S) X 100

— 2017 Total CH₄ Emissions = 4,786,356 MCF

— 2017 Total T&S CH₄ Throughput = 12,695,538,127 MCF

— 2018 Total CH₄ Emissions = 2,714,135 MCF

— 2018 Total T&S CH₄ Throughput = 13,262,877,435 MCF

■ **2017 CH₄ Emission Intensity (for T&S Assets) = 0.04%**

■ **2018 CH₄ Emission Intensity for T&S Assets (to be reported) = 0.02%**