

# Accessing the Energy Evolution

Fourth quarter 2019

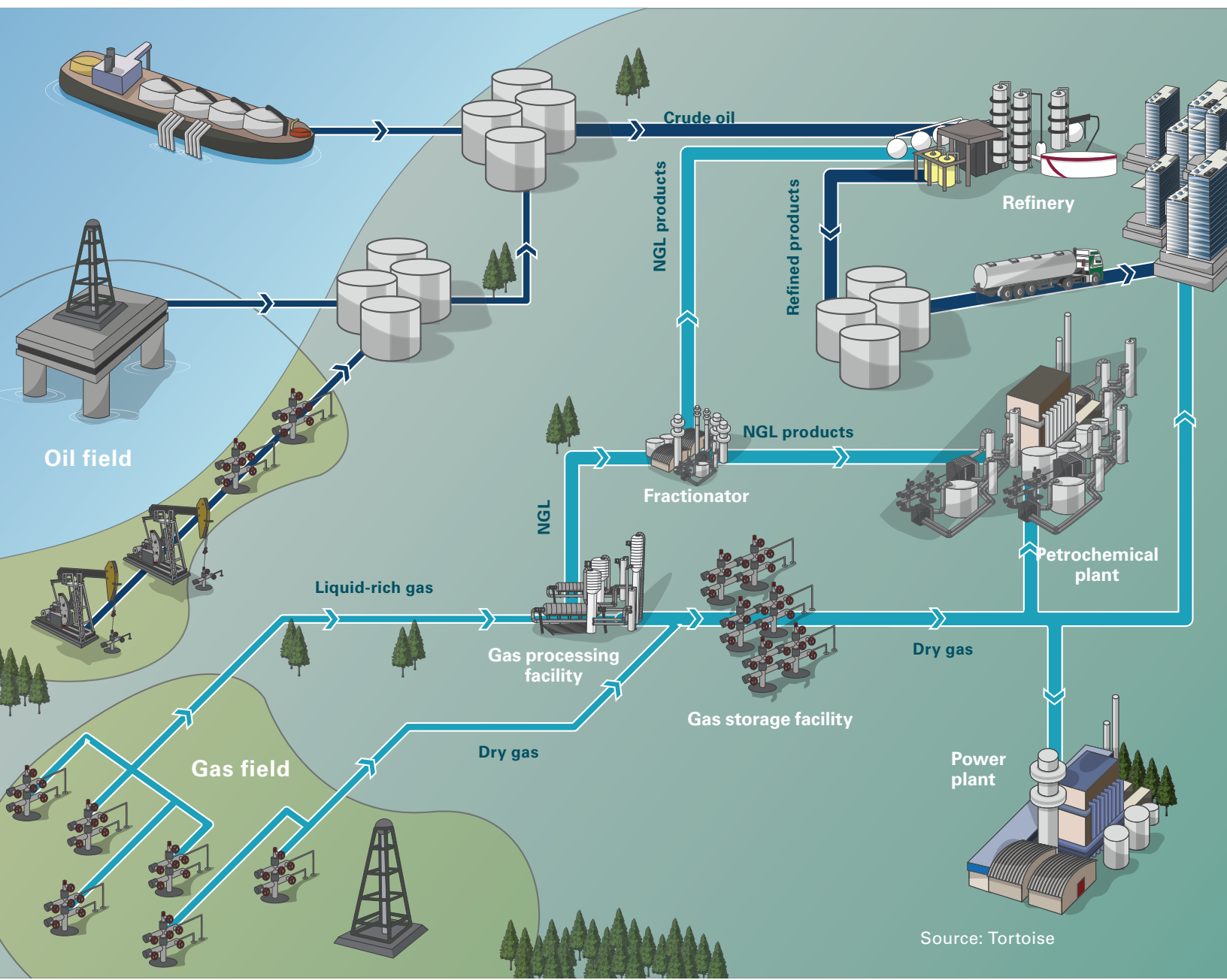


Investing in essential assets

# Advancements in technology create opportunities

- The world is embarking on a significant energy transition
- Technology advancements have increased production of U.S. oil and gas
- Pipelines play an essential role in transporting energy resources to growing areas of demand, including exports to the rest of the world

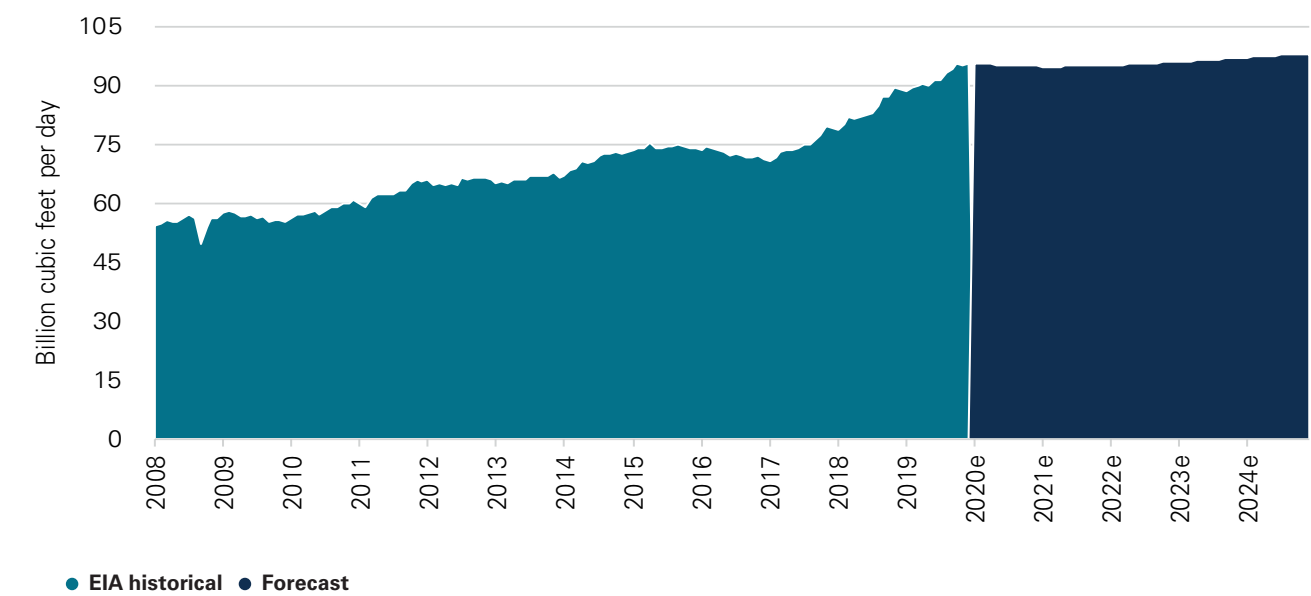
## Energy value chain



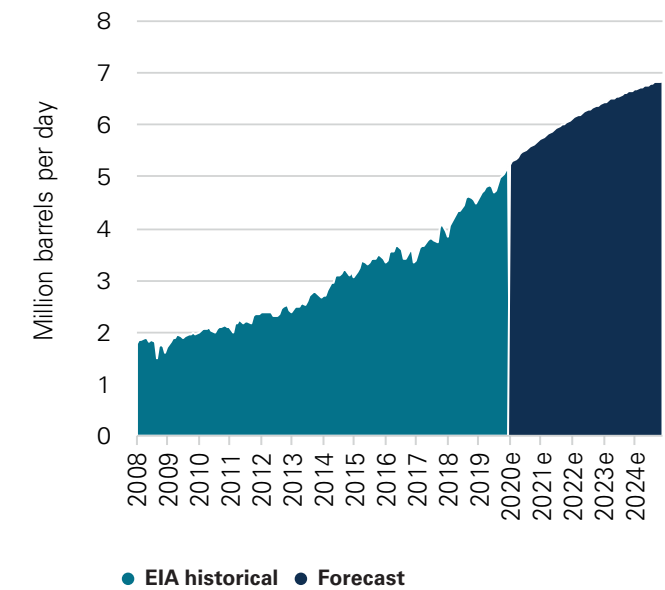
# U.S. producing ample amounts of low-cost, lower carbon energy supply

## U.S. production outlook

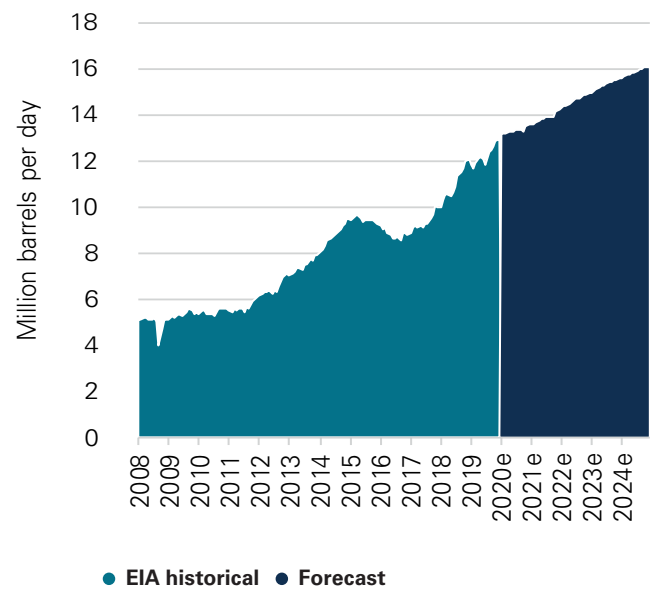
### Natural gas



### Natural gas liquids (NGLs)



### Crude oil

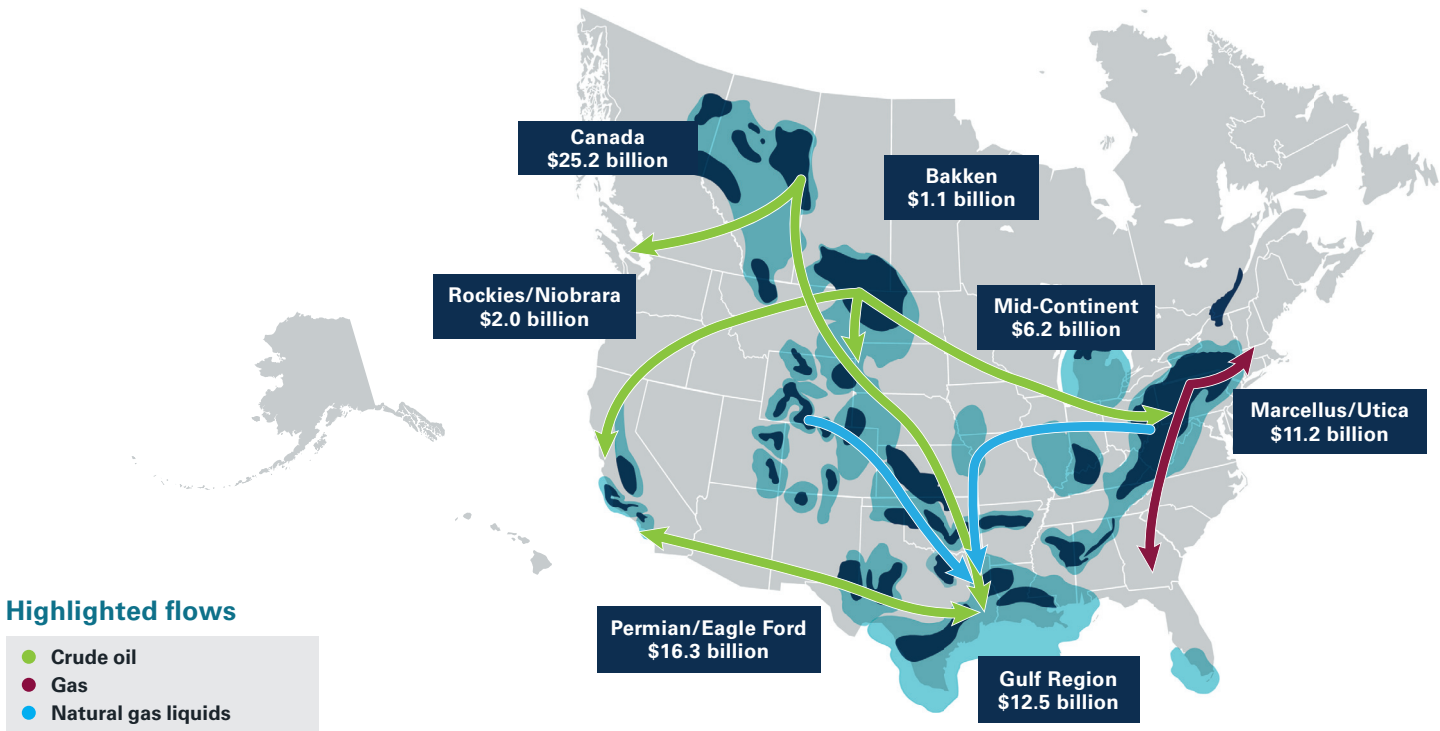


Source: EIA and Tortoise estimates as of 12/31/2019.  
The projections on this page are based on industry estimates and are no guarantee of future outcomes.

# Robust buildout of energy infrastructure required to facilitate exports to the rest of the world

## Infrastructure growth initiatives 2019e - 2021e

Approximately \$108 billion in pipeline and related projects



Source: company filings and Tortoise estimates as of 12/31/2019. Note: Total capital investment also includes miscellaneous other projects totaling approximately \$34 billion. The projections on this page are based on industry estimates and are no guarantee of future outcomes.

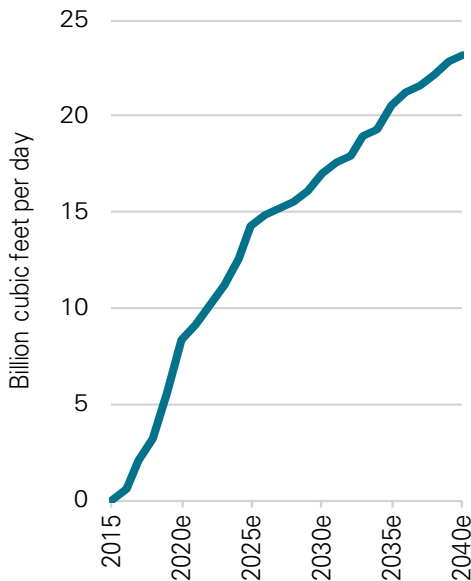
## Midstream pipeline attributes

Real asset class fundamentals	Operating characteristics
Essential assets	Critical assets that fuel the North American and global economies
Long-lived	Economic lives > 50 years
Stable recurring revenues	Generally operated with fee-based, long-term contracts
Inelastic demand	Transports energy commodities used for daily needs
High barriers to entry	Capital intensive construction
Monopolistic	Regulatory oversight

# U.S. is exporting low-cost, lower carbon energy to the rest of the world

## Natural gas exports<sup>1</sup>

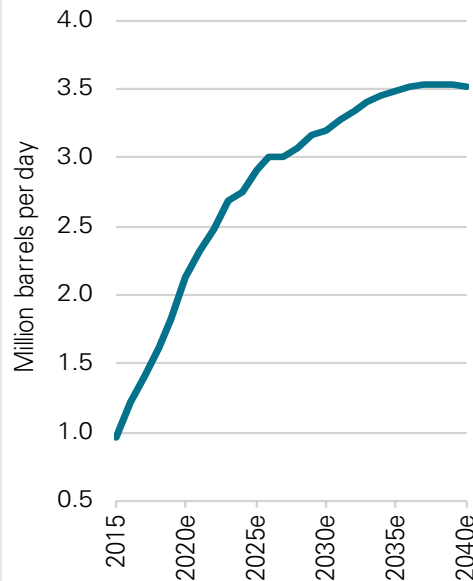
Liquefied natural gas now transported internationally



- Impending wave of LNG project buildouts as countries transition from coal to natural gas and renewables
  - India's demand for LNG is set to increase in its effort to double its share of natural gas in the energy mix by 2030 by deploying more than \$140B in committed investments
  - South Korea remains a top importer of U.S. LNG and is likely to continue increasing demand

## NGLs exports<sup>2</sup>

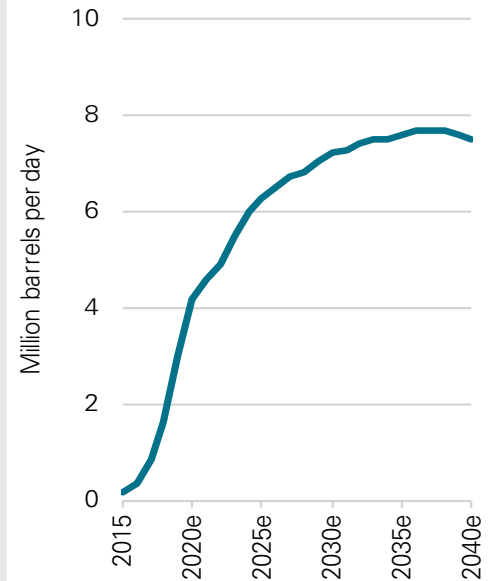
Ethane used for various consumer products now being shipped internationally



- Exports to high demand regions such as China, India and Europe remain primary outlet for excess inventory
- Current loading dock capacity for LPGs nearly maxed out, incentivizing approximately 900,000 b/d of capacity additions by midstream operators in 2020

## Crude oil exports<sup>3</sup>

After 40 years, U.S.-produced crude oil now exported outside North America



- International Maritime Organization 2020: increases demand for low sulfur light oil with a low residual fuel oil cut
- Shale oil is low in sulfur, easy to refine and contains a higher light-end cut with less "bottom-of-the-barrel" material



## About Tortoise

Tortoise invests in essential assets – those real assets and services that are indispensable to the economy and society. With a steady wins approach and a long-term perspective, Tortoise strives to make a positive impact on clients and communities.



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For additional information visit [www.tortoiseadvisors.com](http://www.tortoiseadvisors.com)