J.P. Morgan Energy Equity Conference

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TransCanada
In business to deliver

Forward Looking Information and Non-GAAP Measures

This presentation includes certain forward looking information, including future oriented financial information or financial outlook, which is intended to help current and potential investors understand management's assessment of our future plans and financial outlook, and our future prospects overall. Statements that are forward-looking are based on certain assumptions and on what we know and expect today and generally include words like anticipate, expect, believe, may, will, should, estimate or other similar words.

Forward-looking statements do not guarantee future performance. Actual events and results could be significantly different because of assumptions, risks or uncertainties related to our business or events that happen after the date of this presentation. Our forward-looking information in this presentation includes statements related to: future dividend growth, the future growth of our Mexico natural gas pipeline business and our successful integration of Columbia.

Our forward looking information is based on certain key assumptions and is subject to risks and uncertainties, including but not limited to: our ability to successfully implement our strategic initiatives and whether they will yield the expected benefits including the expected benefits of the acquisition of Columbia and the expected growth of our Mexico natural gas pipeline business, the operating performance of our pipeline and energy assets, economic and competitive conditions in North America and globally, the availability and price of energy commodities and changes in market commodity prices, the amount of capacity sold and rates achieved in our pipeline businesses, the amount of capacity payments and revenues we receive from our energy business, regulatory decisions and outcomes, outcomes of legal proceedings, including arbitration and insurance claims, performance of our counterparties, changes in the political environment, changes in environmental and other laws and regulations, construction and completion of capital projects, labour, equipment and material costs, access to capital markets, interest, inflation and foreign exchange rates, weather, cyber security and technological developments. You can read more about these risks and others in our First Quarter 2017 Report to Shareholders and 2016 Annual Report filed with Canadian securities regulators and the SEC and available at www.transcanada.com.

As actual results could vary significantly from the forward-looking information, you should not put undue reliance on forward-looking information and should not use future-oriented information or financial outlooks for anything other than their intended purpose. We do not update our forward-looking statements due to new information or future events, unless we are required to by law.

This presentation contains reference to certain financial measures (non-GAAP measures) that do not have any standardized meaning as prescribed by U.S. generally accepted accounting principles (GAAP) and therefore may not be comparable to similar measures presented by other entities. These non-GAAP measures may include Comparable Earnings, Comparable Earnings per Share, Comparable Earnings Before Interest, Taxes, Depreciation and Amortization (Comparable EBITDA), Funds Generated from Operations, Comparable Funds Generated from Operations, Comparable Distributable Cash Flow (DCF) and Comparable DCF per share. Reconciliations to the most closely related GAAP measures are included in this presentation and in our First Quarter 2017 Report to Shareholders filed with Canadian securities regulators and the SEC and available at www.transcanada.com.

Key Themes

Proven Strategy – Low Risk Business Model

- Over 95% of Comparable EBITDA from regulated assets or long-term contracts

Diversified High-Quality Assets Provide Multiple Platforms for Growth

- Five operating businesses, in three core geographies
- Canadian, U.S. and Mexico natural gas pipelines, liquids pipelines and energy

Visible Growth

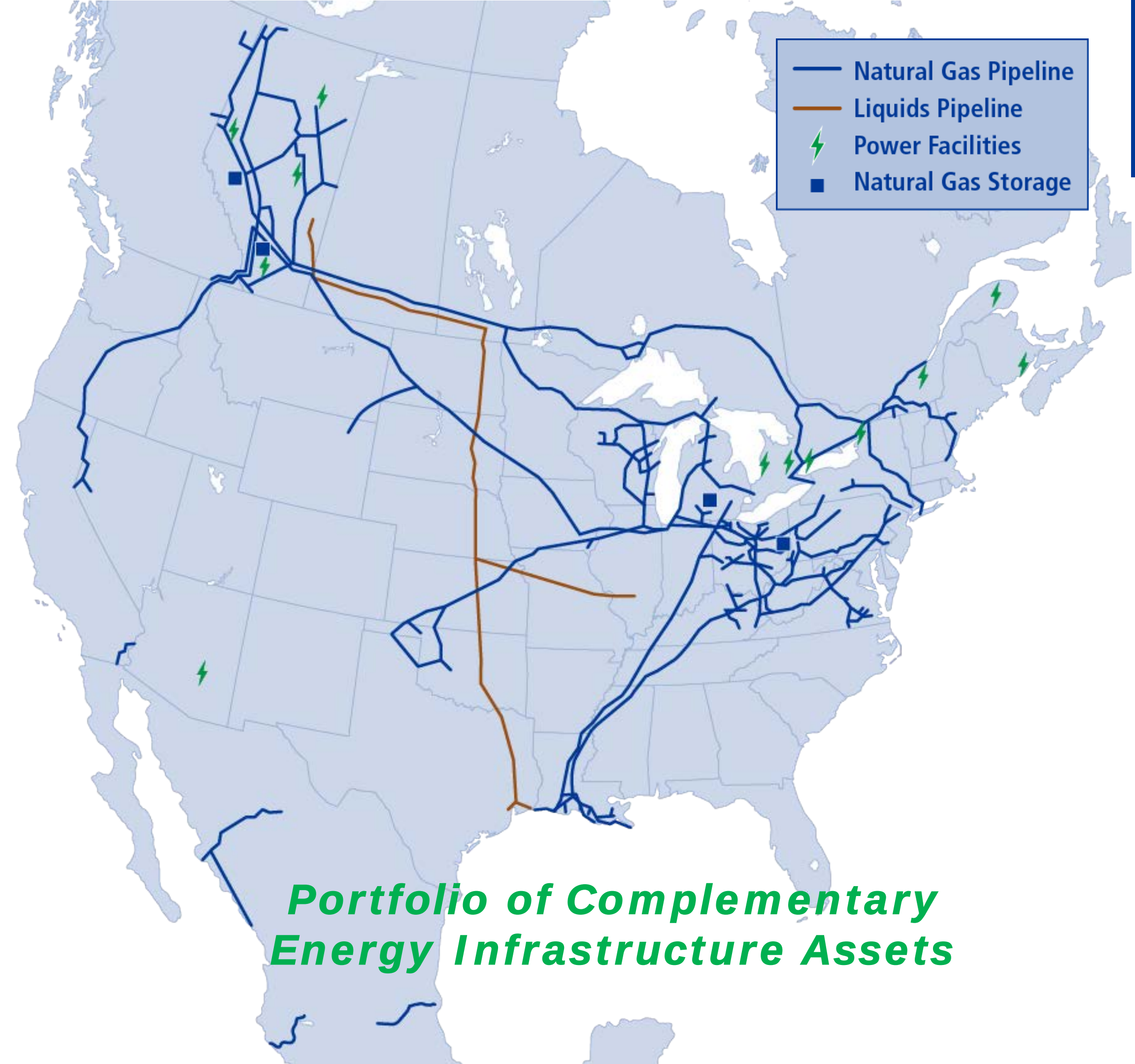
- Advancing $25 billion of near-term growth projects
- Additional organic growth expected from existing base businesses
- Over $45 billion of medium- to longer-term projects

Dividend Poised to Grow

- Expected annual dividend growth at upper end of 8 to 10% range through 2020

Financial Discipline

- Value 'A' grade credit rating
- Corporate structure is simple and understandable



Portfolio of Complementary Energy Infrastructure Assets

TransCanada Today

- **One of North America's Largest Natural Gas Pipeline Networks**
  - 56,900 miles of pipeline
  - 653 bcf of storage capacity
  - 23 bcf/d; ~25% of continental demand
- **Premier Liquids Pipeline System**
  - 2,700 miles of pipeline
  - 545,000 bbl/d; ~20% of Western Canadian exports
- **One of the Largest Private Sector Power Generators in Canada**
  - 12 power plants, 6,200 MW
  - Primarily long-term contracted assets following sale of U.S. Northeast Power
- **Enterprise value over $100 billion**

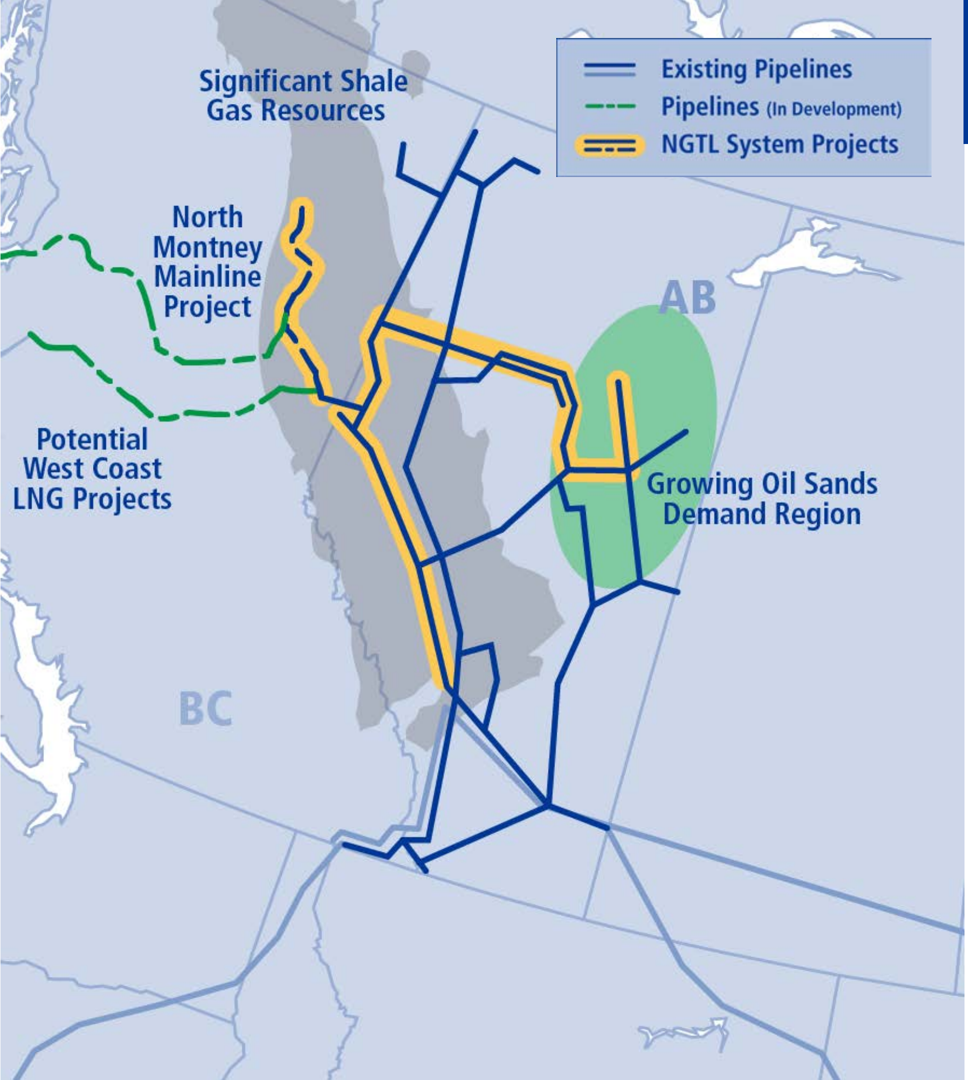
Advancing $25 Billion Near-Term Capital Program

Illustrates the configuration of TransCanada's near-term projects

Project	Estimated Capital Cost*	Invested to Date	Expected In-Service Date*
Columbia	US7.1	US1.9	2017-2020
NGTL System	7.1	1.2	2017-2021
Canadian Mainline	0.3	0.1	2017-2018
Tula	US0.6	US0.4	2018
Villa de Reyes	US0.6	US0.3	2018
Sur de Texas	US1.3	US0.2	2018
Grand Rapids	0.9	0.8	2017
Northern Courier	1.0	0.9	2017
White Spruce	0.2	-	2018
Napanee	1.1	0.7	2018
Bruce Power Life Extension	1.1	0.1	Up to 2020+
Foreign Exchange Impact (1.33 exchange rate)	3.2	0.9	-
Total Canadian Equivalent	24.5	7.5	

* *TransCanada share in billions of dollars. Certain projects are subject to various conditions including corporate and regulatory approvals.*

Underpinned by Long-Term Contracts or Cost-of-Service Regulation

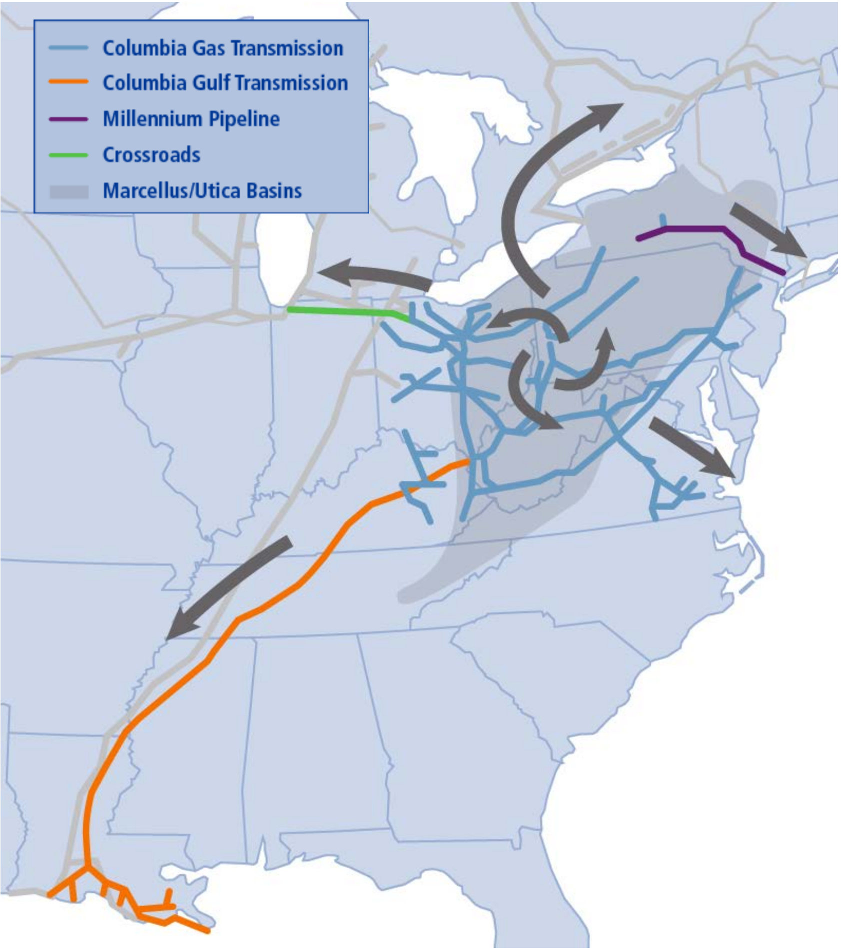


NGTL System's Unparalleled Footprint

- **Primary transporter of WCSB supply**
  - Key connections to Alberta and export markets
  - Field receipts averaged ~11.5 bcf/d in Q1 2017
  - Intra-Alberta peak day deliveries in excess of 6.5 bcf/d
- **$7.1 billion near-term capital program**
  - Expected in-service through 2021
  - $1.6 billion of new facilities entering service in 2017
  - Recently announced $2 billion capacity expansion
- **Additional investment expected to connect growing supply to local and downstream markets**
- **Well situated for West Coast LNG exports**

Uniquely Positioned to Capture Supply & Demand Growth

Columbia – Premium Natural Gas Pipeline Network



- **Strong incumbency position in U.S. Northeast**
  - Well situated to connect Marcellus and Utica supply to domestic and LNG export markets
- **Realizing US$250 million of annualized benefits with full impact expected in 2018**
- **Advancing US$7.1 billion near-term capital program**
  - Projects underpinned by long-term contracts
  - US$2.3 billion expected to be in-service in 2017
- **Appalachian production expected to grow from ~20 bcf/d in 2015 to over 30 bcf/d by 2020**
  - Additional investment opportunities expected to connect growing supply to market

Premium Natural Gas Pipeline Network Complements Our Existing Assets

Mexico – Solid Position and Growing

- **Four revenue-generating pipelines**
  - Tamazunchale
  - Guadalajara
  - Mazatlán
  - Topolobampo
- **Three new projects expected to enter service in 2018 will increase portfolio to ~ US$5 billion**
  - Tula – US$0.6 billion
  - Villa de Reyes – US$0.6 billion
  - Sur de Texas – US$1.3 billion*
- **All underpinned by long-term contracts with the Comisión Federal de Electricidad**
- **Once completed, portfolio expected to generate annual EBITDA of ~ US$575 million**
- **Well positioned to connect U.S. natural gas supply to growing power generation and industrial markets in central Mexico**

Developing an Integrated Natural Gas Delivery System

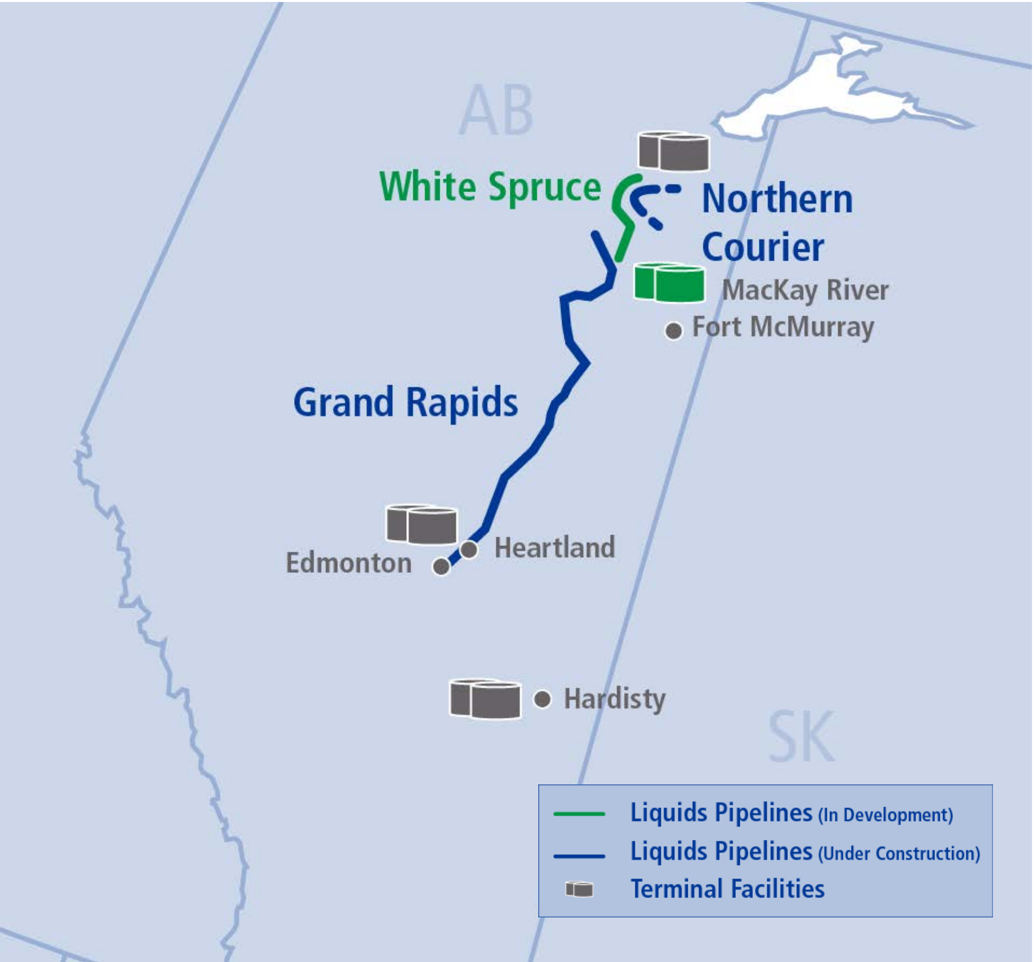
* *TransCanada's 60% share*

Keystone – A Premier Liquids Pipelines Business

- 545,000 bbl/d of long-term, long-haul contracts with fixed monthly payments
- Transports ~20% of western Canadian crude oil exports
- Provides market access to ~6 million bbl/d of refining capacity
- Safely moved over 1.5 billion barrels since operations commenced
- New market connections could provide opportunities for growth

Critical Infrastructure with Strong Operational Track Record

Building a Regional Liquids Pipeline System



- **Construction of $1 billion Northern Courier advancing**
  - 25-year contract with Fort Hills Partnership
  - Expected to be in-service in 2017
- **Construction of $900 million* Grand Rapids project progressing**
  - 50/50 joint venture and 25-year contract with Brion Energy
  - Expected to be in-service in 2017
- **$200 million White Spruce pipeline will transport crude oil to the Grand Rapids system and is expected to be in-service in 2018**
- **Additional market connections could provide opportunities for growth**

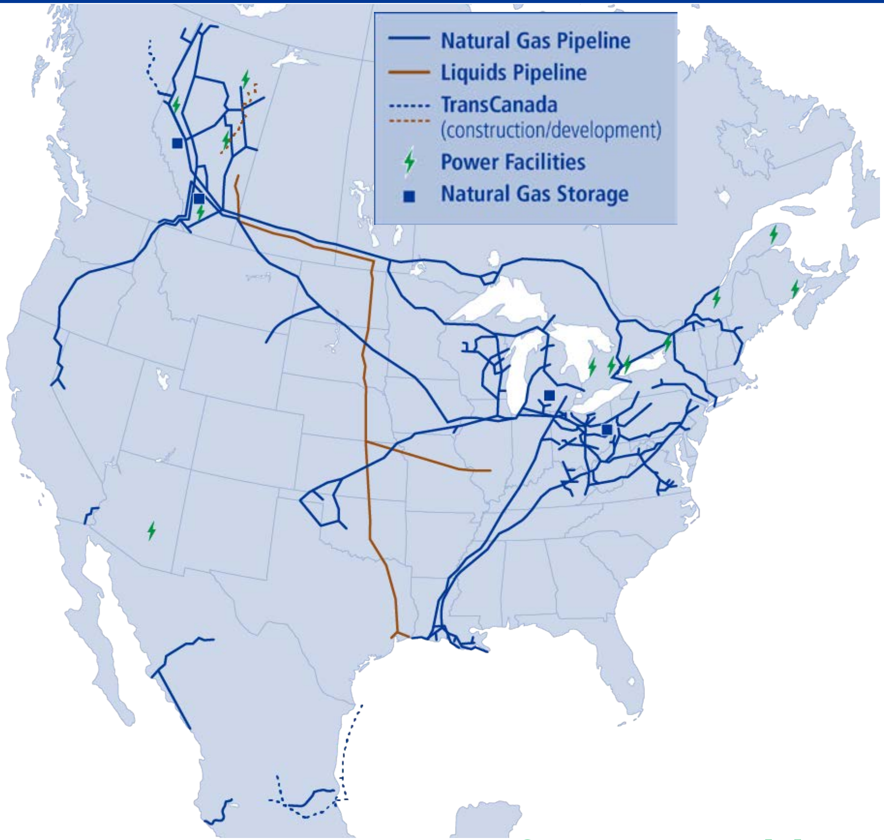
TransCanada's share

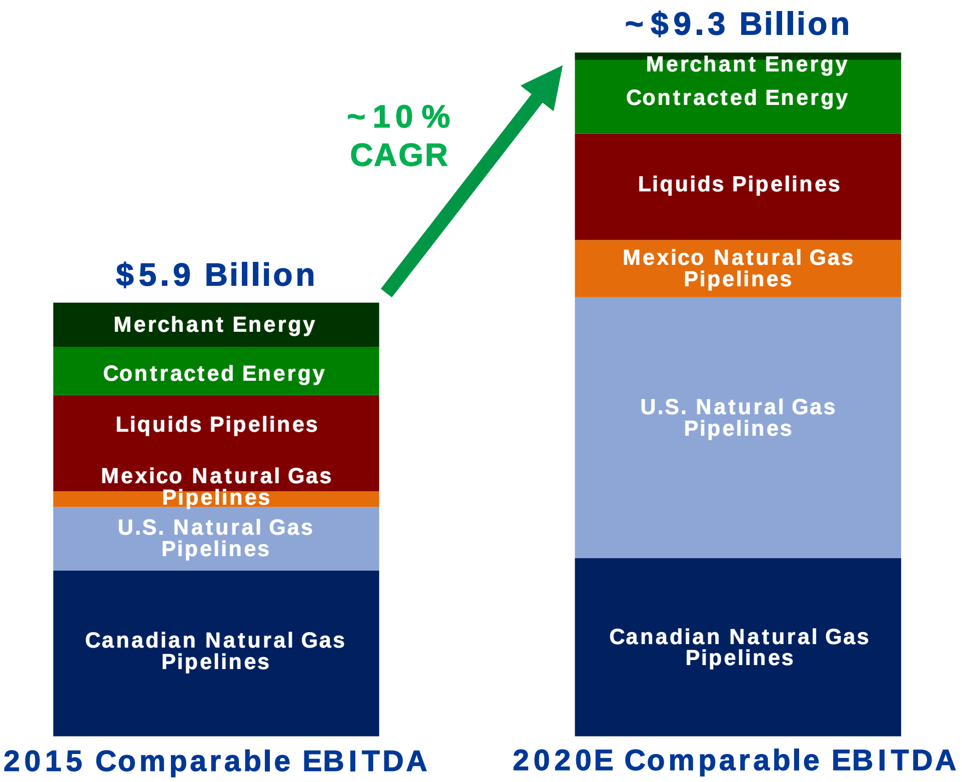
Well Established Energy Platform

- **Completed sale of U.S. Northeast Power assets**
  - Columbia acquisition bridge facilities fully retired
  - Monetization of marketing business also underway
- **Balance of portfolio underpinned primarily by long-term contracts with solid counterparties**
  - 6,200 MW of power generation
  - 118 bcf of natural gas storage capacity
  - Generated EBITDA of $765 million in 2016
- **Construction progressing on $1.1 billion Napanee project; expected in-service in 2018**
- **Work continues on Bruce Power refurbishment**
- **Continue to pursue contracted growth opportunities in our core geographies**

~95% of Generating Capacity Underpinned by Long-Term Contracts

Columbia Acquisition & Near-term Capital Program Drive Significant Growth

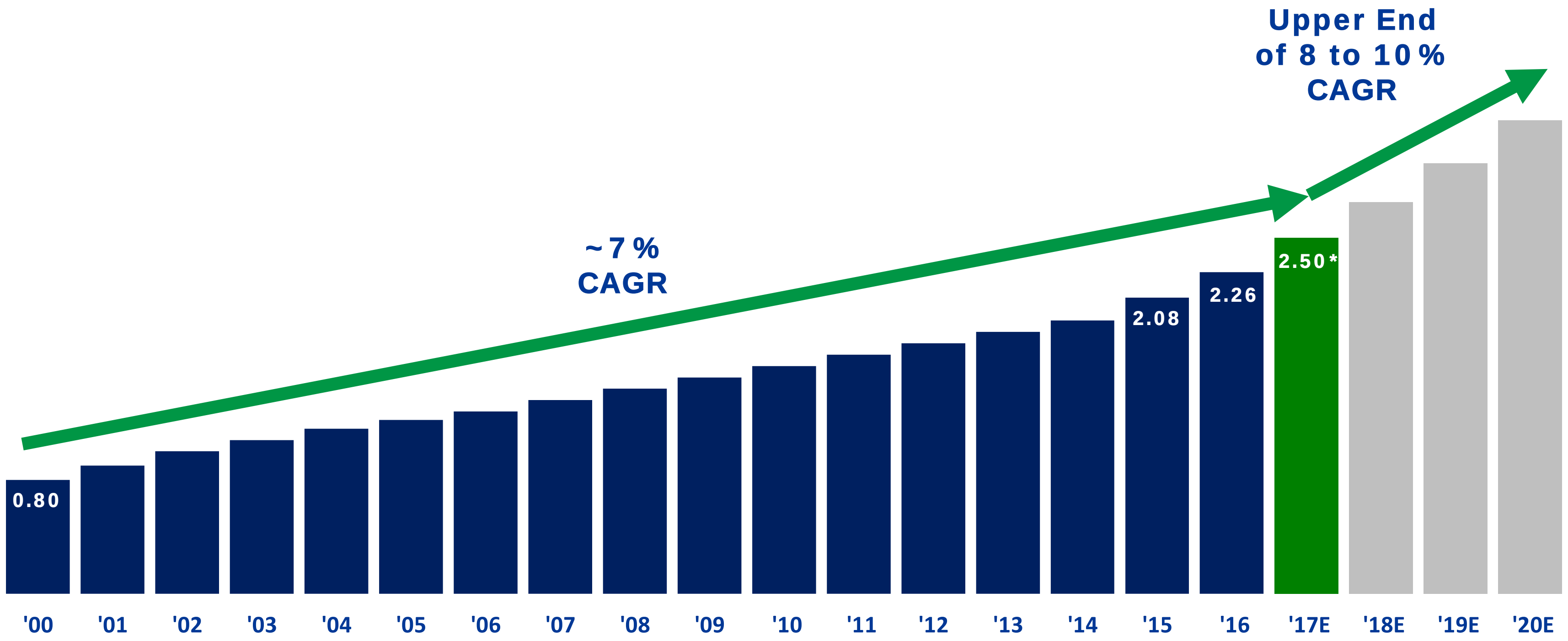




Over 95% of Comparable EBITDA to come from Regulated or Long-Term Contracted Assets

** Comparable EBITDA is a non-GAAP measure. See the non-GAAP measures slide at the front of this presentation for more information.*

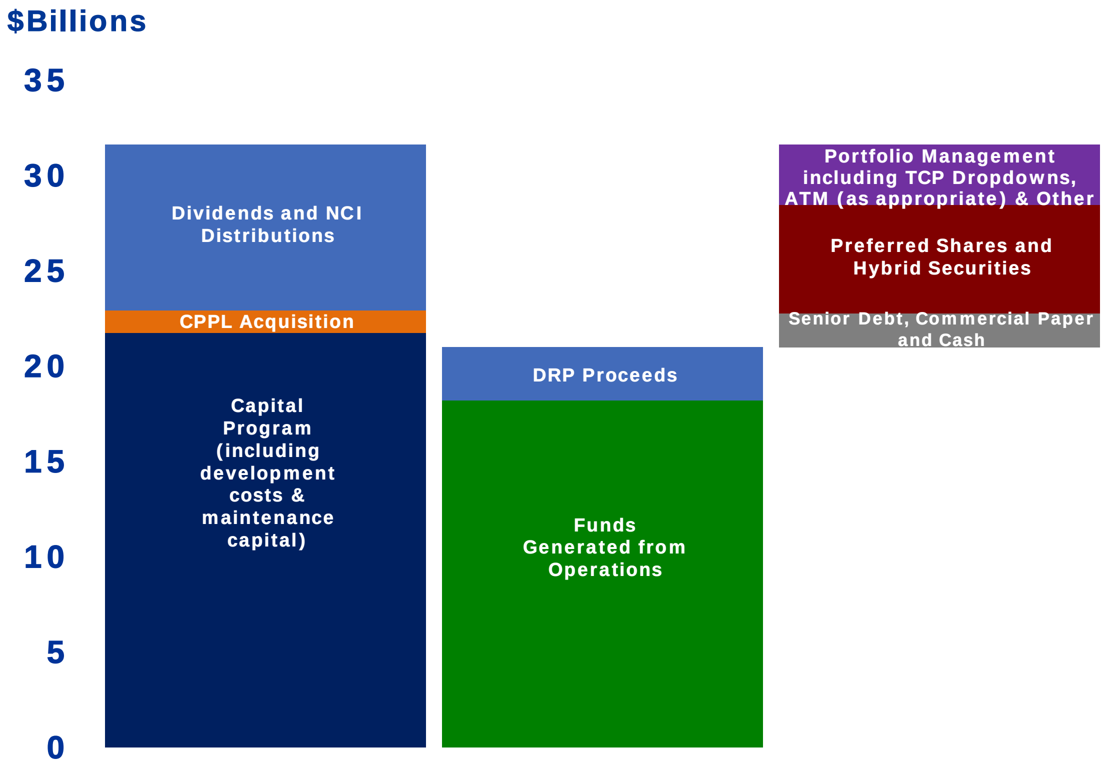
Dividend History and Growth Outlook



Seventeenth Consecutive Annual Dividend Increase in February 2017

** Annual rate based on second quarter dividend of $0.625 per share*

Funding Program for Near-Term Growth Portfolio



2017 – 2019 Outlook

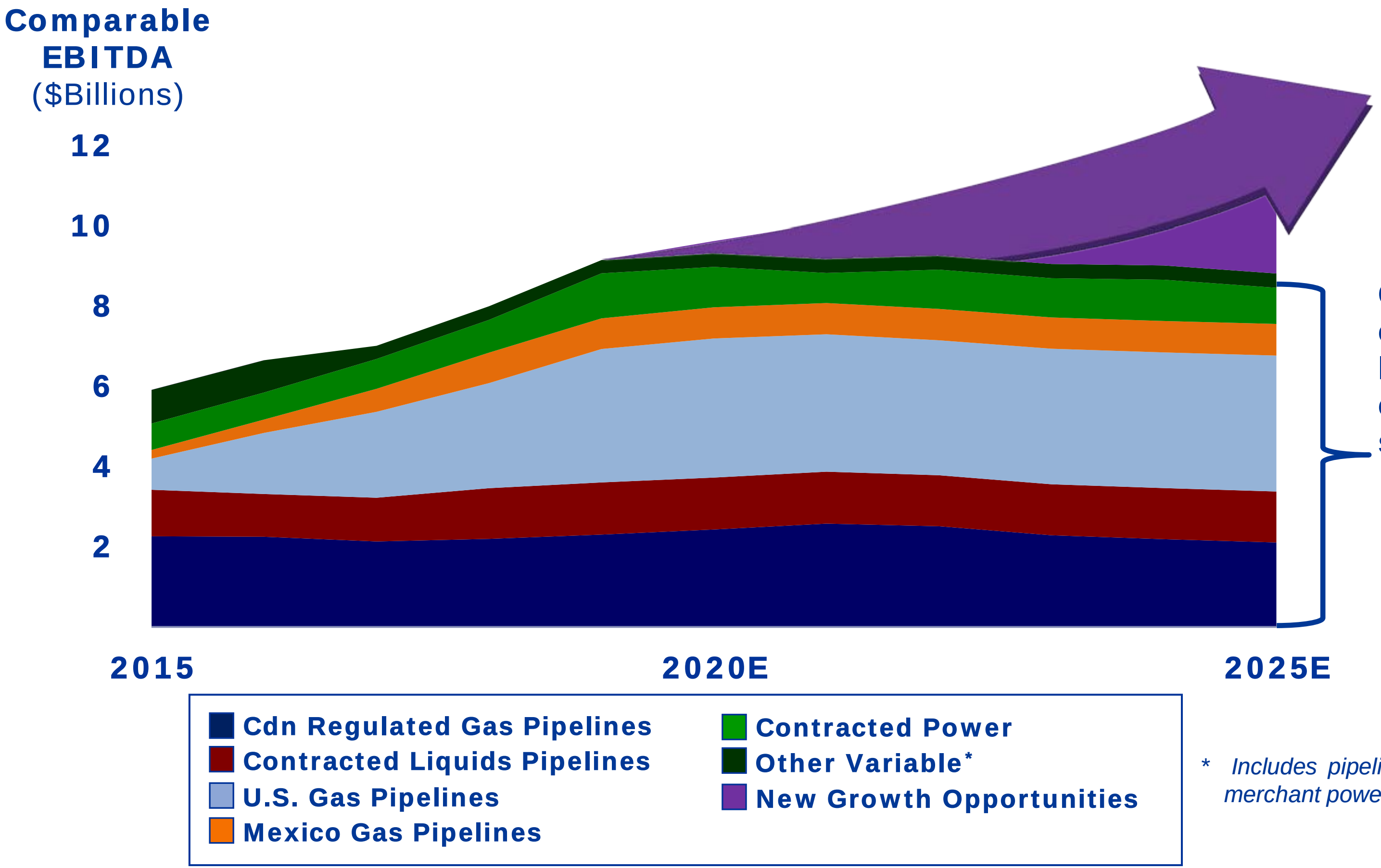
Numerous Levers Available to Fund Near-Term Capital Program

- Strong, predictable and growing cash flow from operations
- Dividend Reinvestment Plan
- Access to capital markets including:
  - Senior debt
  - Preferred shares and hybrid securities
- Portfolio management including dropdowns to TC PipeLines, LP
- At-The-Market (ATM) program, as appropriate

Funding Program Manageable

Completion of $25 Billion Near-Term Capital Program Does Not Require Discrete Equity

Stability and Longevity of Core Asset Base + $25 Billion of Visible Growth with Upside



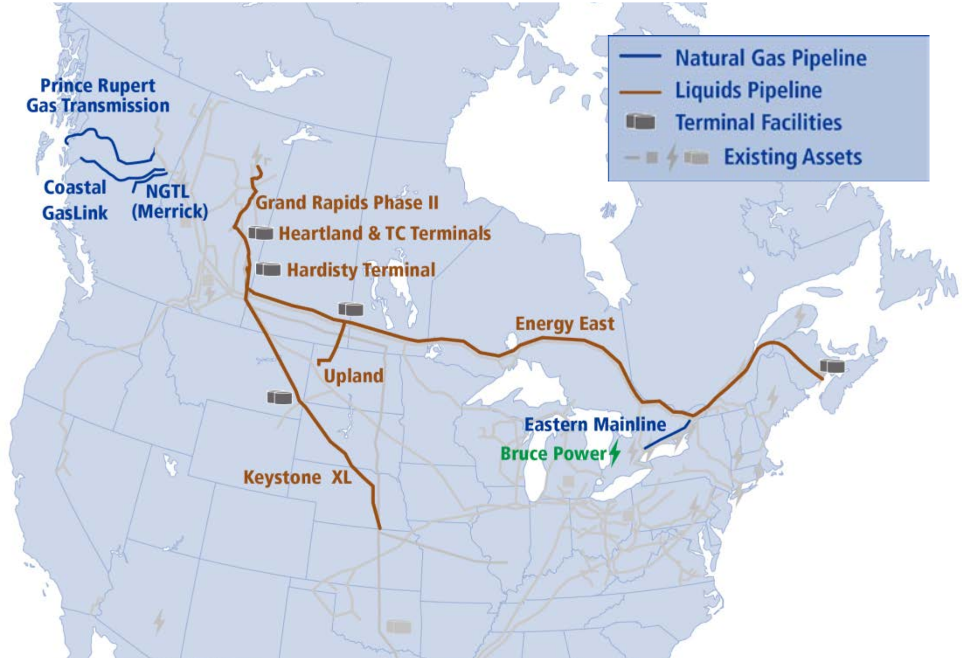
Generated by predictable cost of service and long-term contracted cash flow streams supported by:

- Solid counterparties
- Minimal volumetric risk
- No commodity price risk

** Includes pipeline capacity not under long-term contract, merchant power and unregulated natural gas storage.*

Comparable EBITDA is a non-GAAP measure. See the non-GAAP measures slide at the front of this presentation for more information.

$45 Billion+ of Long-Term Projects*



- **Bruce Power Life Extension Agreement**
  - First Major Component Replacement outage occurs in 2020
  - Expected investment of $5.3 billion post 2020
  - Extends operating life of facility to 2064
- **Four transformational projects**
  - Keystone XL (US$8 billion)
  - Energy East ($15.7 billion) and related Eastern Mainline Project ($2.0 billion)
  - Prince Rupert Gas Transmission ($5 billion)
  - Coastal GasLink ($4.8 billion)

** TransCanada share in billions of dollars; Bruce Power in 2014 dollars. Certain projects are subject to various conditions including corporate and regulatory approvals.*

Key Takeaways

Track Record of Delivering Long-Term Shareholder Value

14% average annual return since 2000

Visible Growth Portfolio

$25 billion to 2020
Additional opportunity set includes over $45 billion of medium to longer-term projects

Attractive, Growing Dividend

4.0% yield
8-10% expected CAGR through 2020

Strong Financial Position

'A' grade credit rating
Numerous levers available to fund future growth

Attractive Valuation Relative to North American Peers

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