

Regional energy challenges in New England and Eastern Canada



For 39th Annual Conference of New England Governors and Eastern Canadian Premiers (NEG/ECP)

August 31, 2015 St. John's, Newfoundland and Labrador

By Adam Sieminski

Energy Information Administration



Independent Statistics & Analysis

U.S. Energy Information
Administration

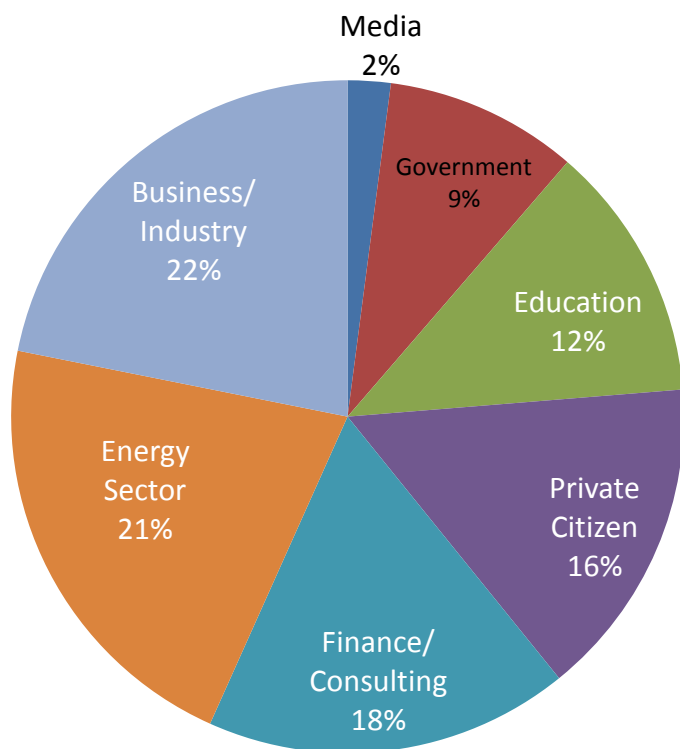
Mandate: EIA collects, analyzes, and disseminates independent and impartial energy information to promote sound policymaking, efficient markets, and public understanding of energy and its interaction with the economy and the environment

Independence: EIA, an element of the Department of Energy, is one of 14 federal statistical agencies; by law, its data, analyses, and forecasts are independent of approval by any other officer or employee of the United States Government

Mission: EIA provides data and analysis to help stakeholders understand the rapidly changing energy landscape across all fuels and all sectors

EIA information is used by a range of stakeholders

EIA Customers



Source: 2014 EIA Web Customer Survey

Examples of Activities

Government

- Executive Agencies – WH, DOE, & EPA use EIA data to track energy markets and program performance and to analyze policy proposals
- Congress – policy development and agency funding
- State Governments – planning and program development

Energy Sector

- Consumers – monitor price forecasts
- Producers – track inventory statistics

Business/Industry

- Manufacturers – market research

Finance/Consulting

- Commodities Analysts – market response to supply data

Media/Education

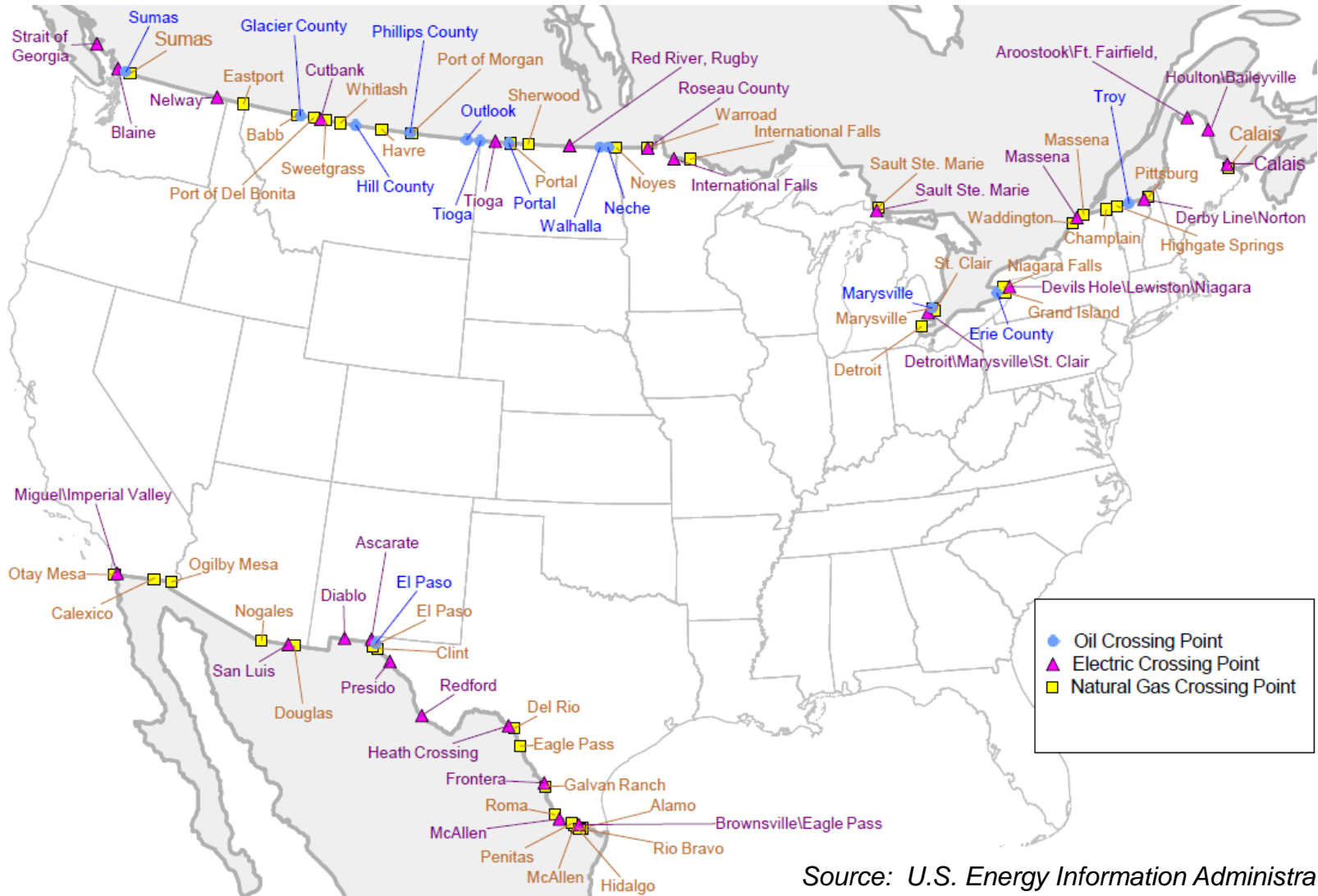
- Journalists – cite energy statistics
- Teachers – use Energy Kids materials
- Researchers – energy forecasting and modeling

Private Citizens

- Public – research gasoline prices

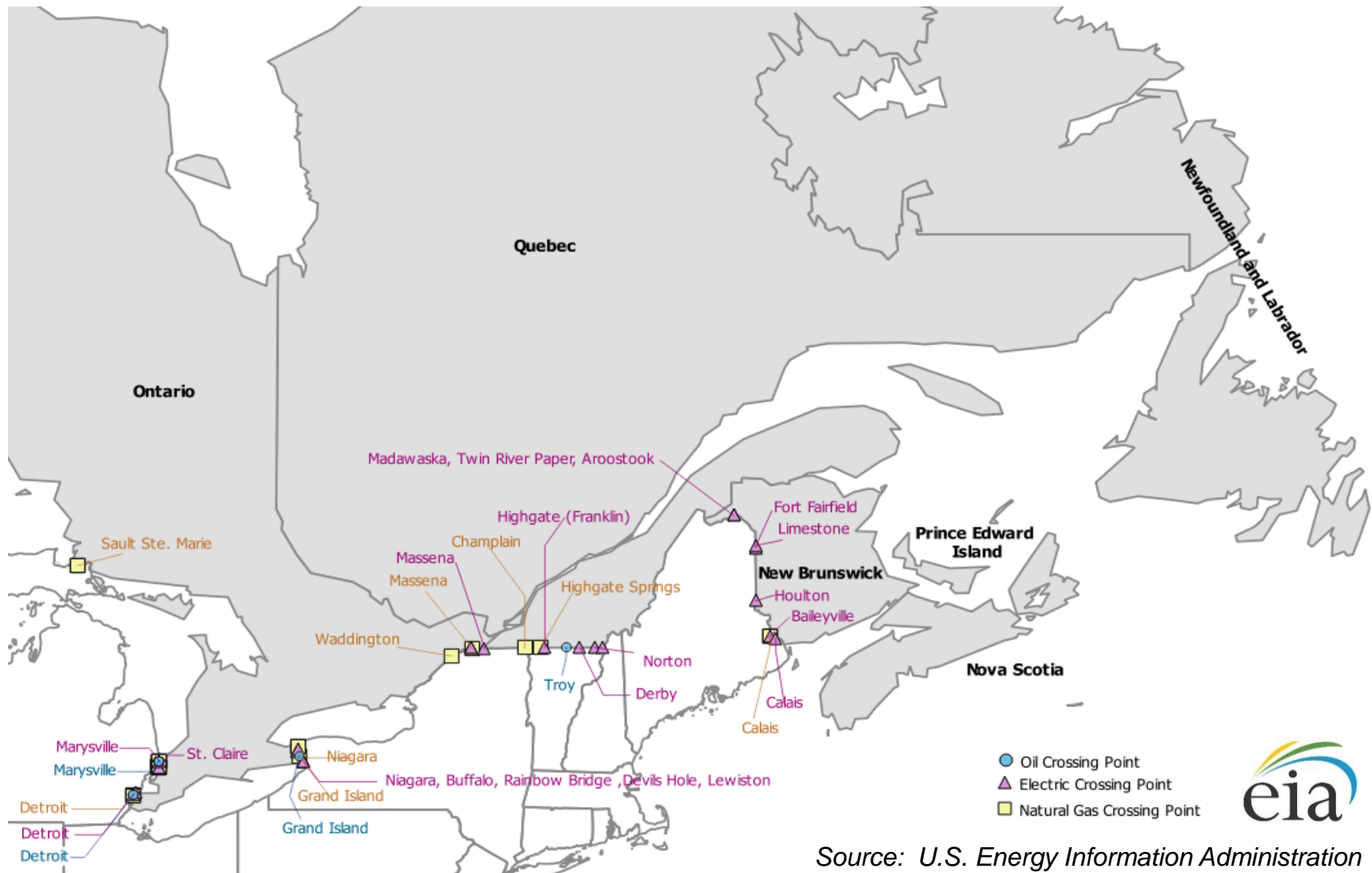
Regional energy trade

North American border crossing points for oil, natural gas, and electricity



Source: U.S. Energy Information Administration

North American border crossing points for oil, natural gas, and electricity



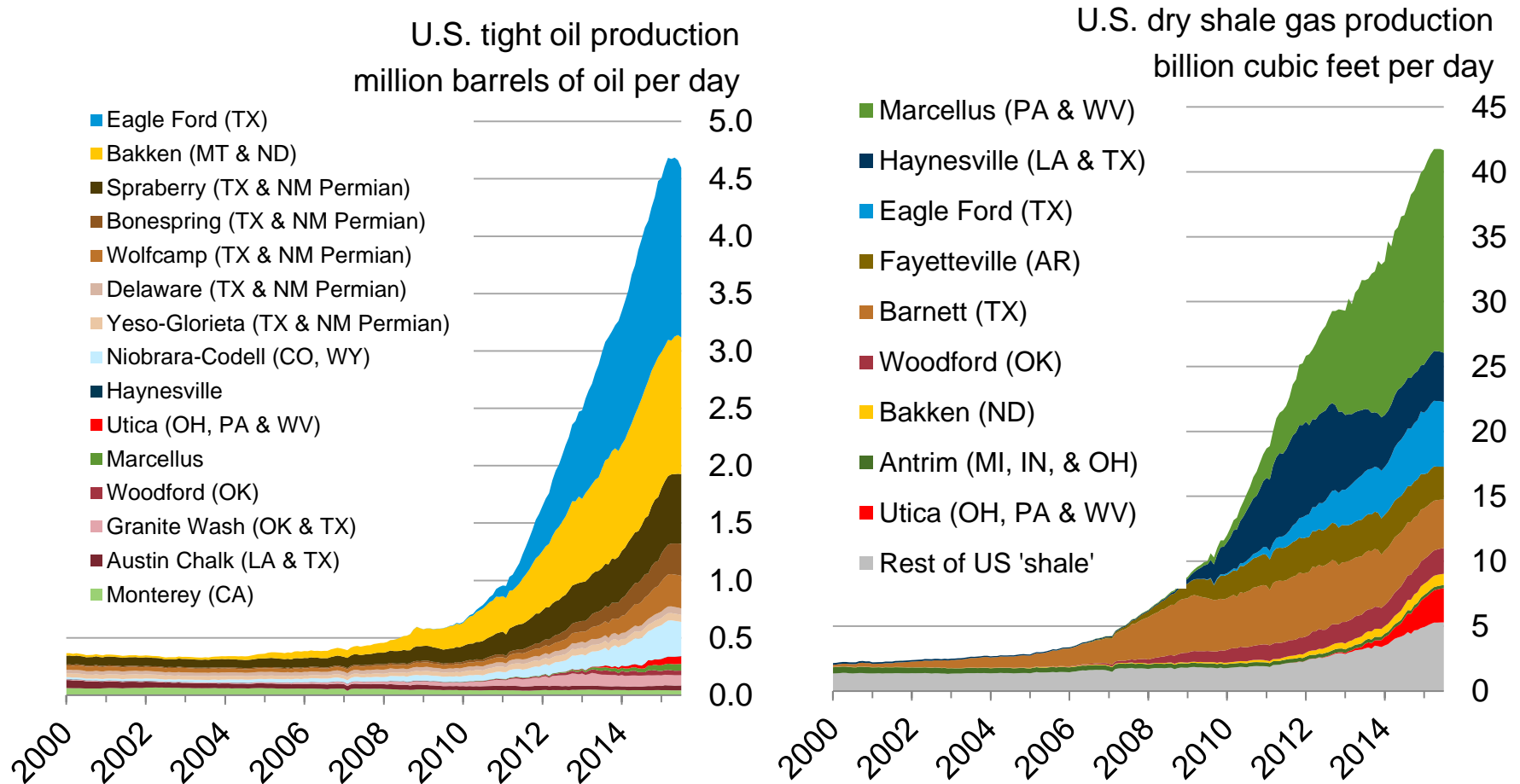
Source: U.S. Energy Information Administration

Natural Gas



Source: U.S. Energy Information Administration, based on data from various published studies

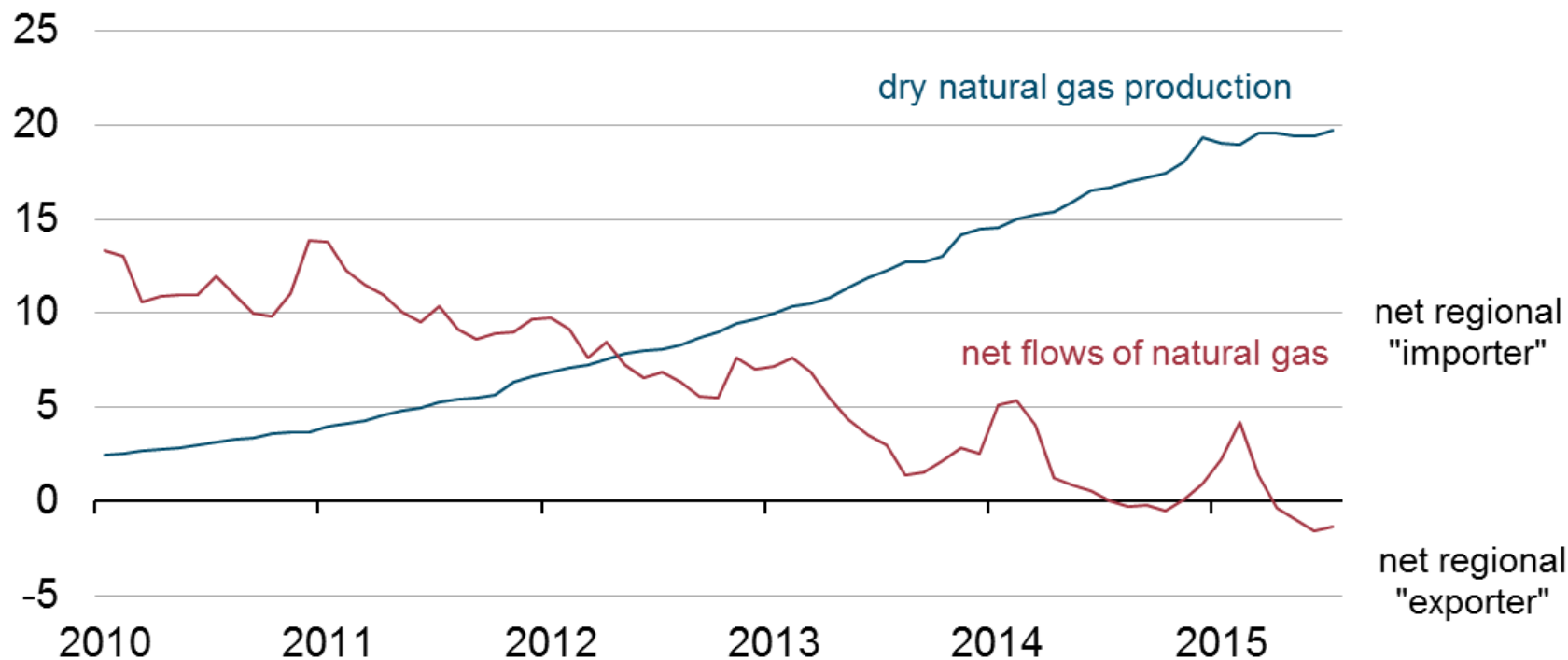
The U.S. has experienced a rapid increase in natural gas and oil production from shale and other tight resources



Sources: EIA derived from state administrative data collected by DrillingInfo Inc. Data are through July 2015 and represent EIA's official tight oil & shale gas estimates, but are not survey data. State abbreviations indicate primary state(s).

Rising production in Marcellus and Utica has turned the Northeastern U.S. into a net exporter of natural gas

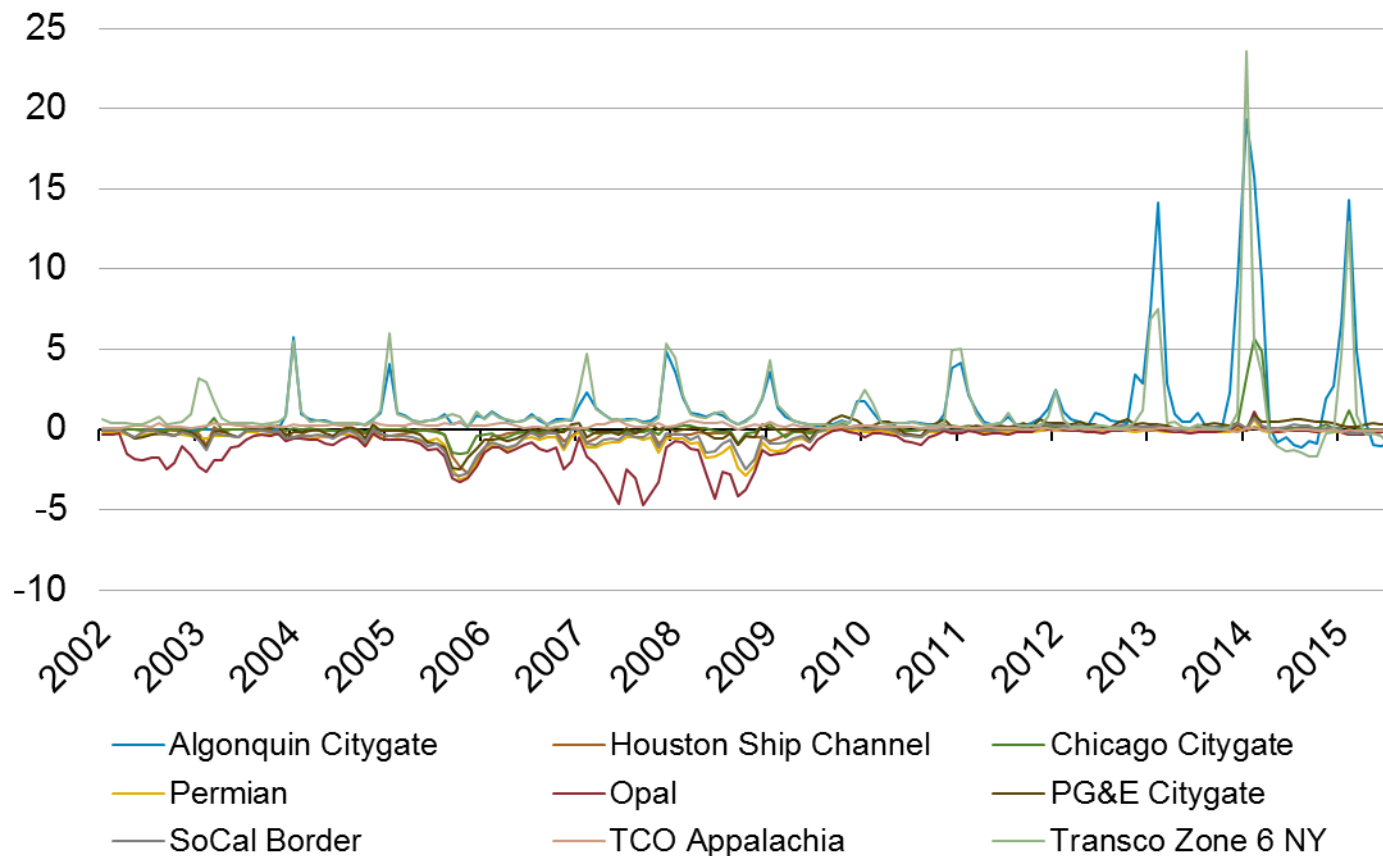
estimated Northeast U.S. daily dry natural gas production and net regional flows
billion cubic feet per day



Source: Bentek Energy

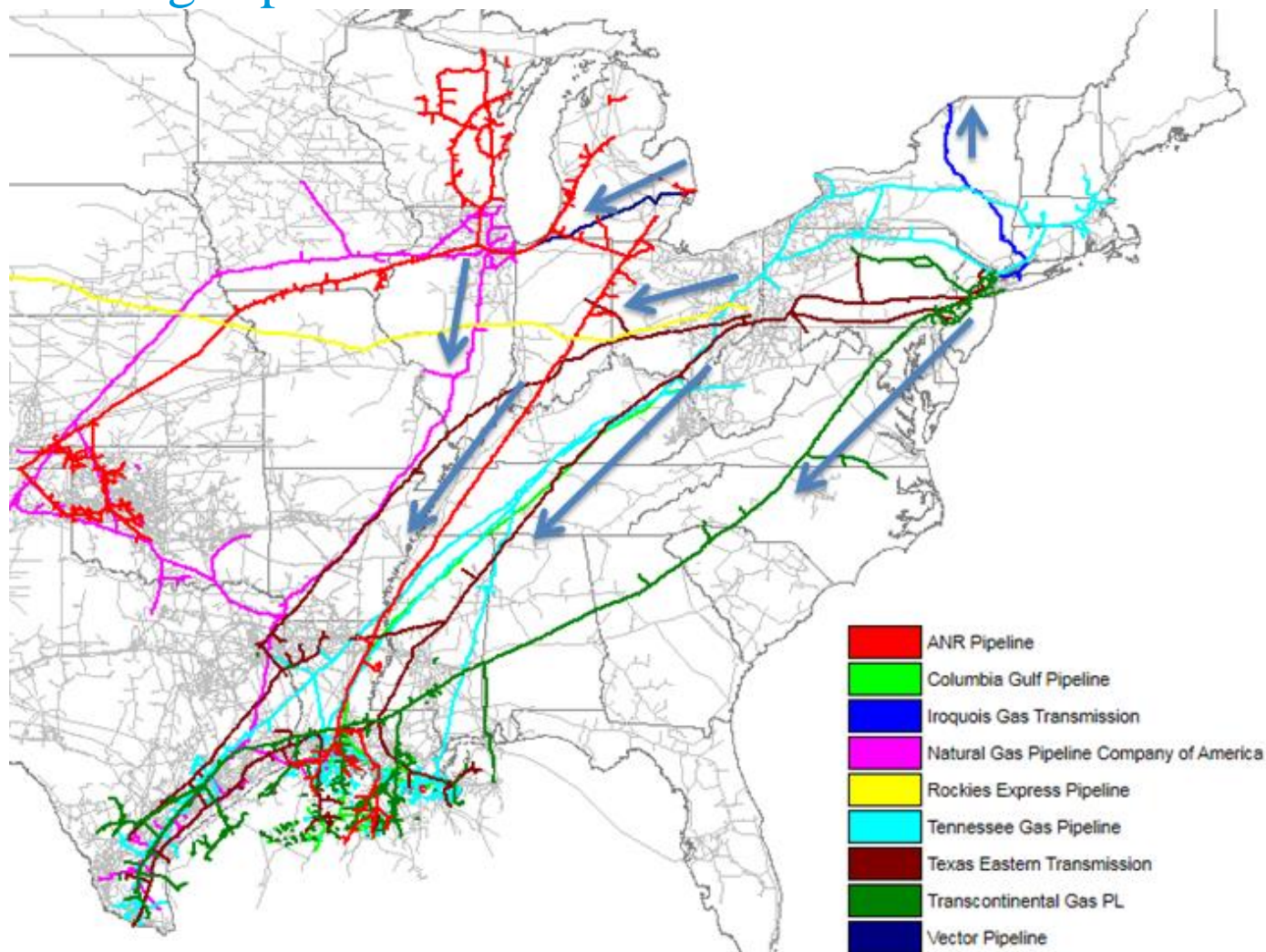
Natural gas prices track closer to Henry Hub except for points in Northeast (NYC and Boston) when constrained, otherwise lower

Average spot natural gas prices differences between key trading points and the Henry Hub
dollars per million British thermal units



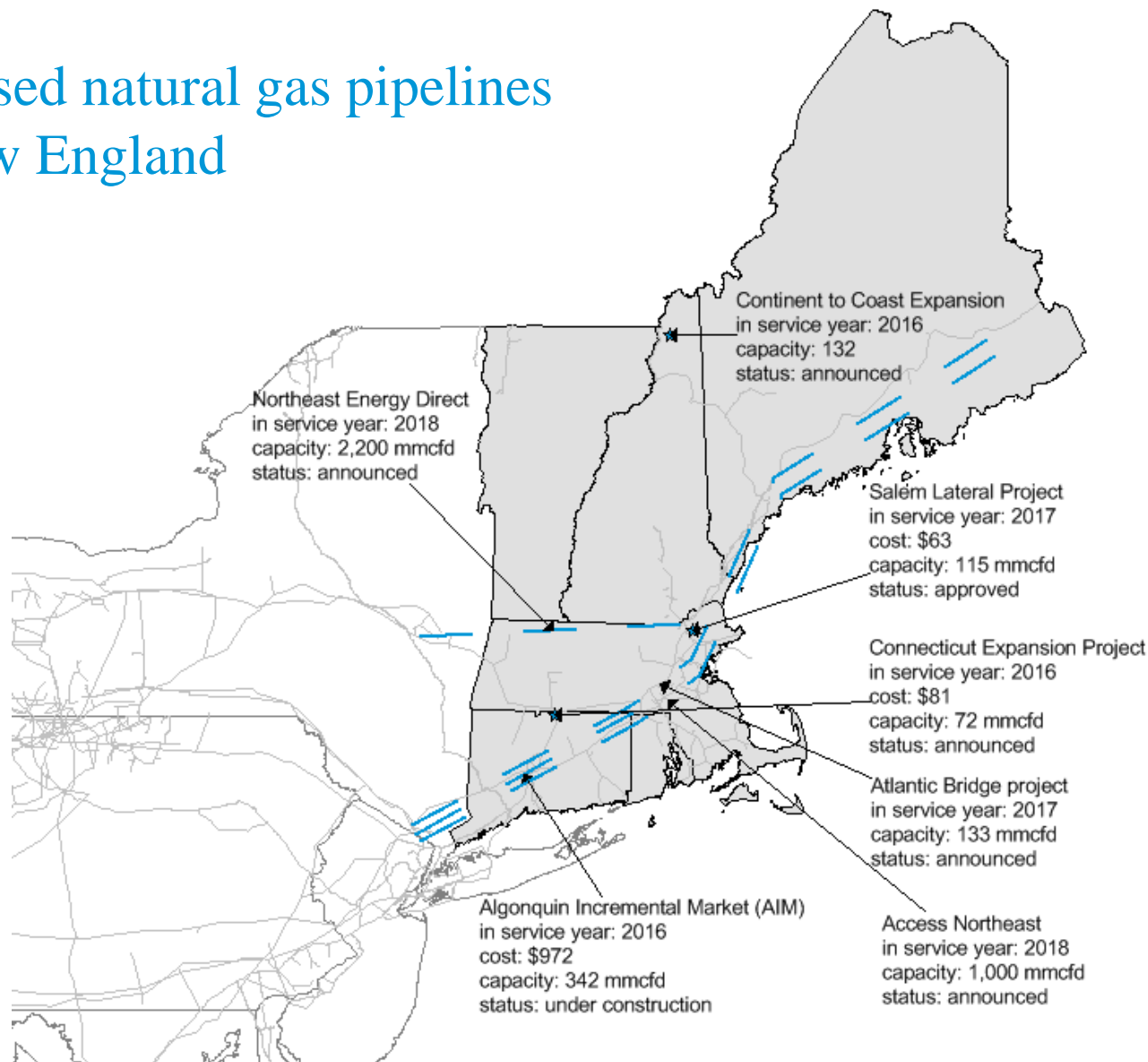
Source: Bloomberg

Recent and planned pipeline reversals reflect high levels of natural gas production in the Northeast



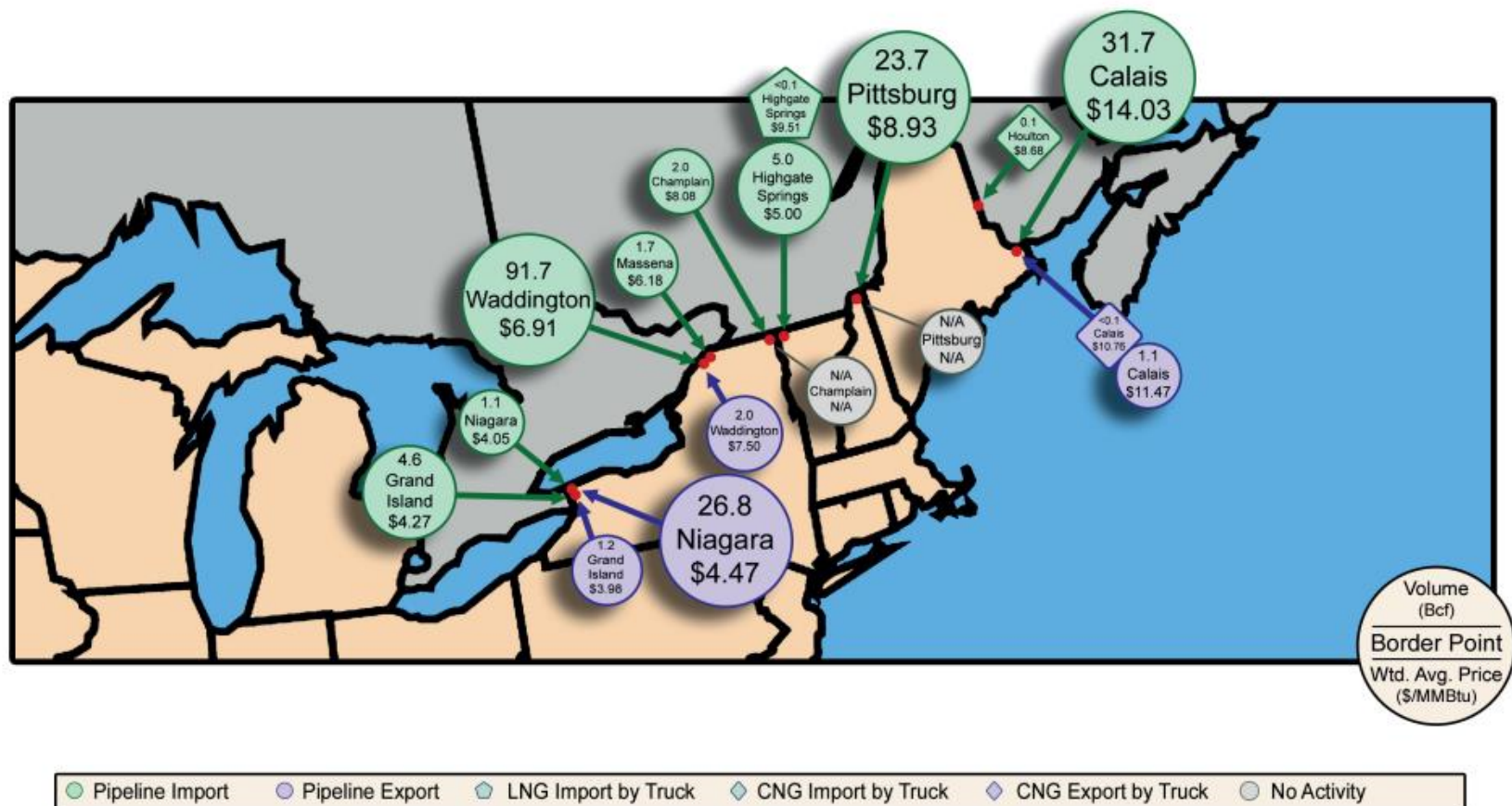
Sources: Federal Energy Regulatory Commission (FERC), trade press, company websites, SNL Financial, and BENTEK Energy LLC (Bentek)

Proposed natural gas pipelines in New England



Sources: Federal Energy Regulatory Commission (FERC), trade press, company websites, SNL Financial, and BENTEK Energy LLC (Bentek)

Natural gas imports and exports by border points



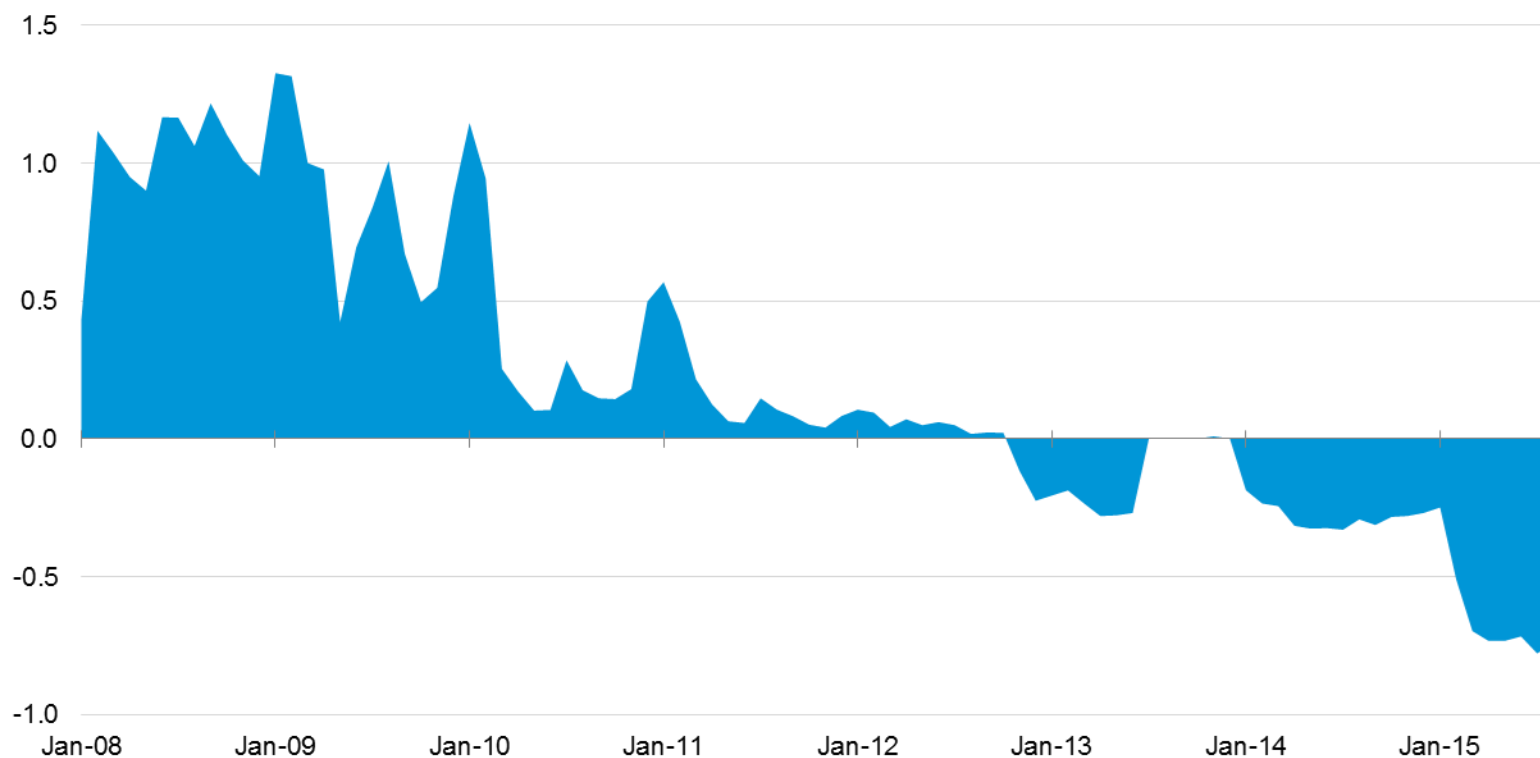
Note: Each shape has Volume (Bcf) on the top, Point of Entry/Exit in the middle and Weighted Average Price (\$/MMBtu) at the bottom. Shape size is an indication of the amount of activity (Volume). There are three size levels shown on this map. CNG is short for Compressed Natural Gas.

Source: Department of Energy, Office of Fossil Energy, Natural Gas Imports and Exports First Quarterly Report 2015

Flows of natural gas at Niagara, 2008 - 2015

Flows from Canada to the United States at Niagara, New York

Bcf/d



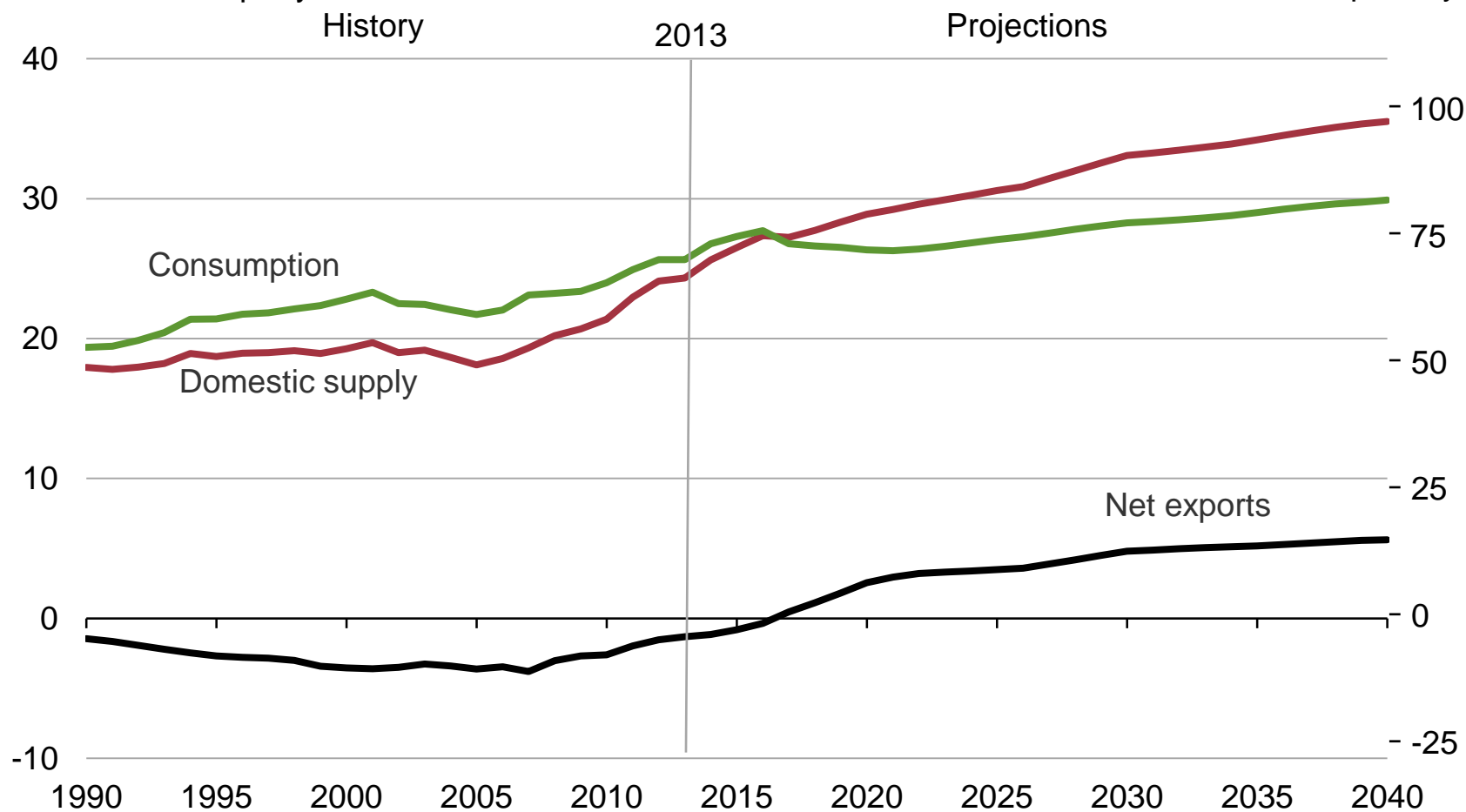
Source: LCIEI; daily throughputs at Niagara

U.S. becomes a net exporter of natural gas in the near future

U.S. dry natural gas

trillion cubic feet per year

billion cubic feet per day

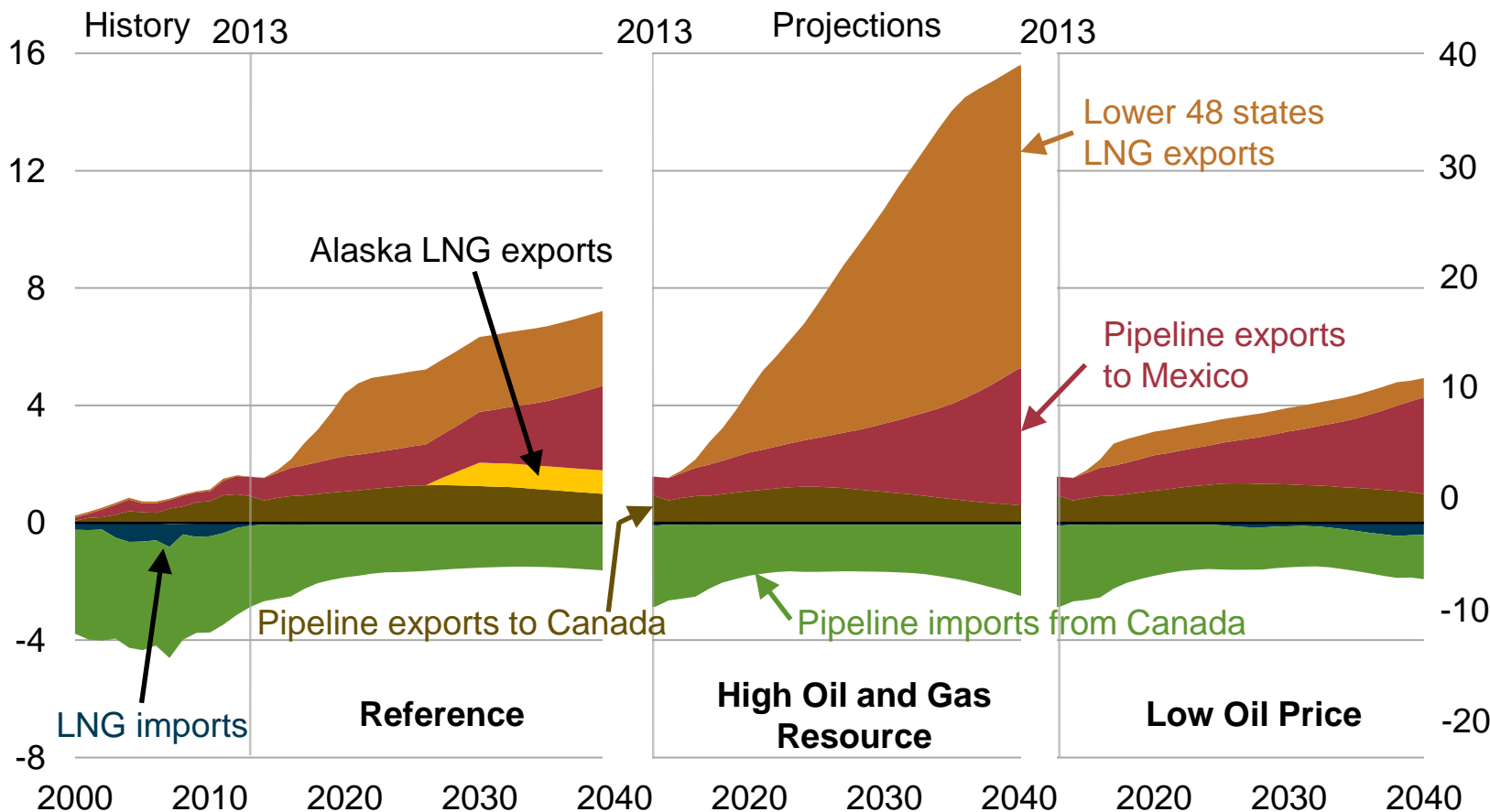


Source: EIA, Annual Energy Outlook 2015

Projected U.S. natural gas trade reflects the spread between domestic natural gas prices and world energy prices, along with resource outcomes

U.S. natural gas imports and exports
trillion cubic feet

billion cubic feet per day



Source: EIA, Annual Energy Outlook 2015

Canadian Liquefied Natural Gas (LNG) Projects



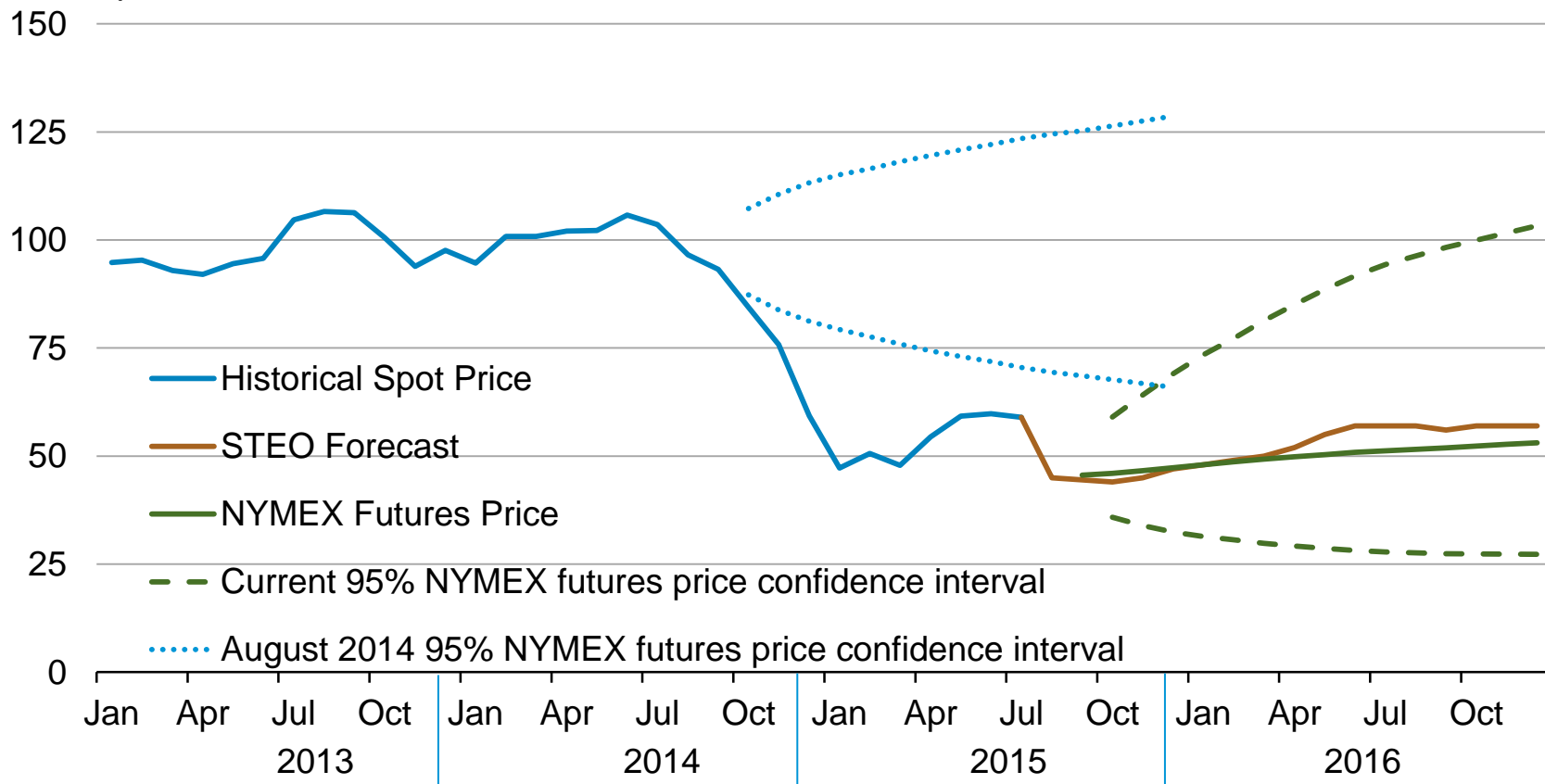
LNG Project Name	Location	Import (Bcf)	Export (Bcf)
AC LNG	Byer's Cove, Nova Scotia	2.64	2.38
Pieridae Energy (Canada) Ltd.	Goldboro, Nova Scotia	1.15	1.61
Bear Head LNG	Point Tupper, Nova Scotia	1.58	1.88
Saint John LNG Development Company Ltd.	Saint John, New Brunswick	0.85	0.78

Source: Canada's National Energy Board, July 2015

For oil prices the market-implied confidence band is very wide

WTI price

dollars per barrel

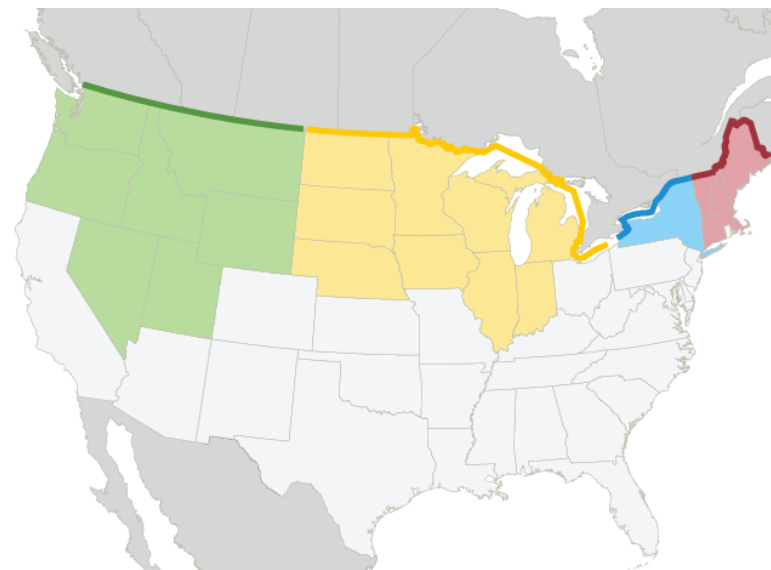
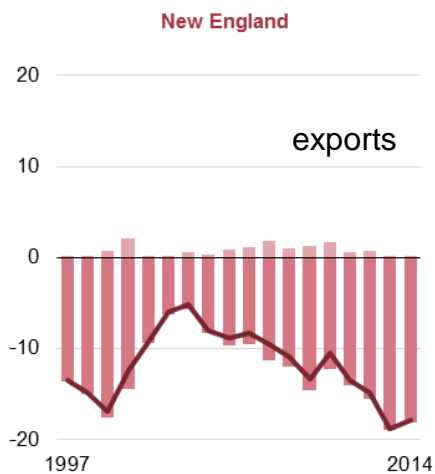
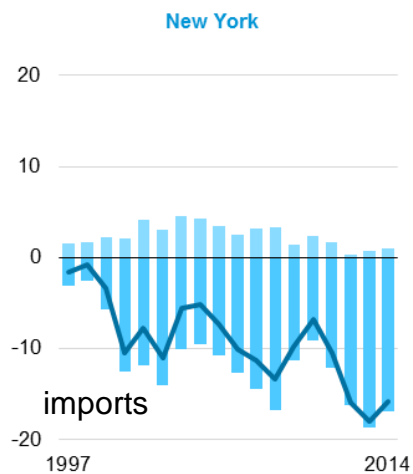
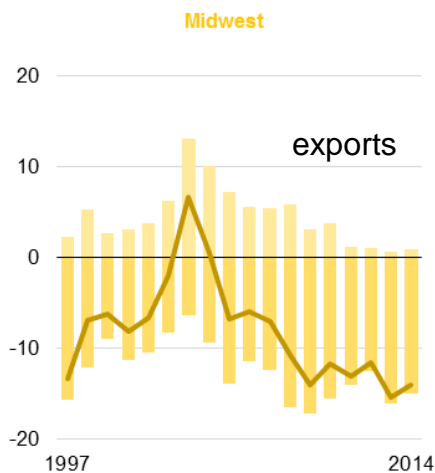
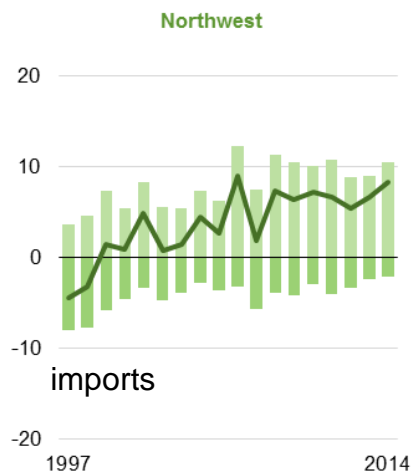


Source: EIA, Short-Term Energy Outlook, August 2015

Electricity

U.S. electricity trade with Canada

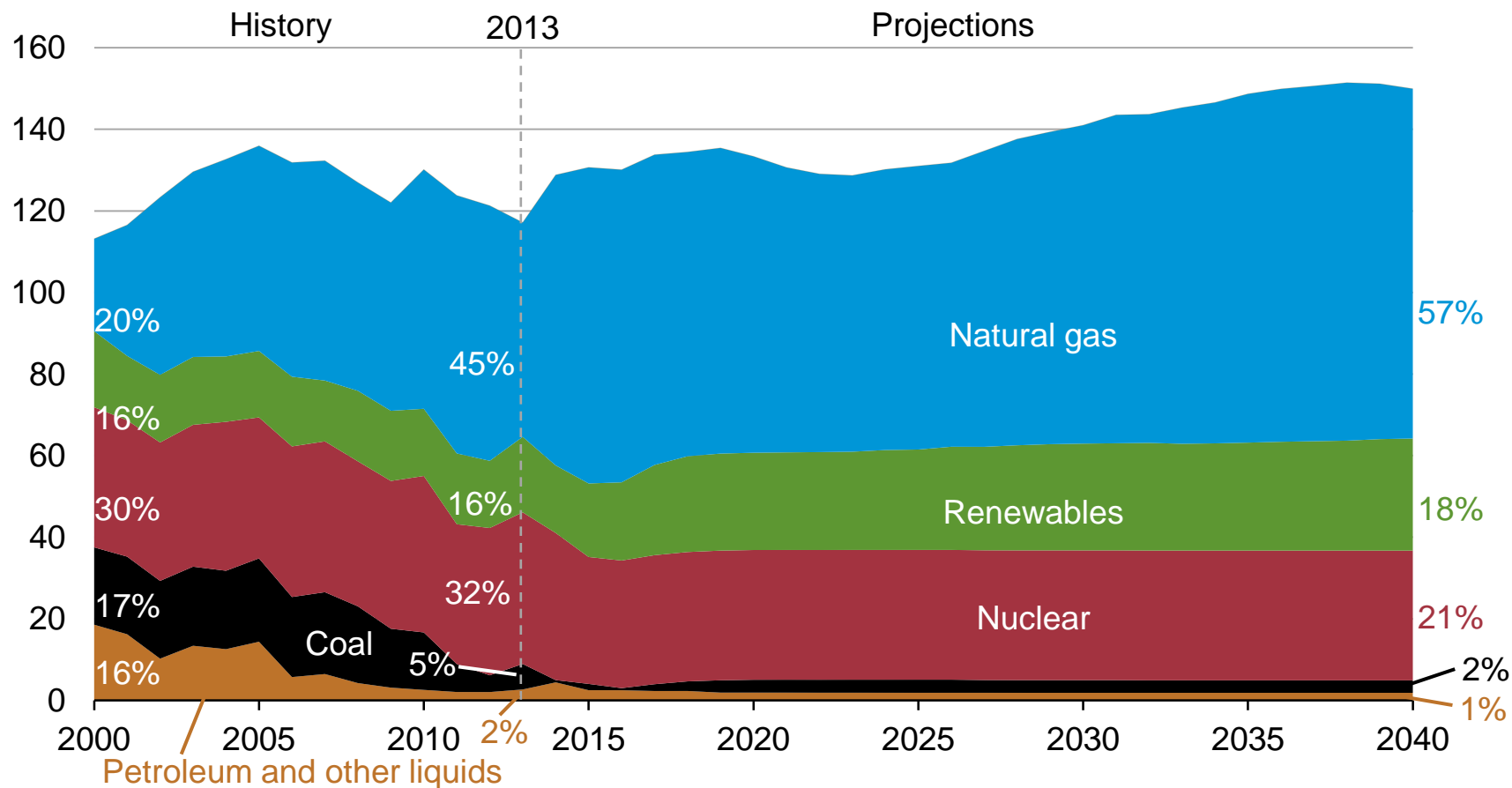
terawatthours



Sources: U.S. Energy Information Administration, based on data from EIA and the National Energy Board of Canada

New England's electricity generation by fuel in the Reference case, 2000-2040

electricity net generation
billion kilowatthours

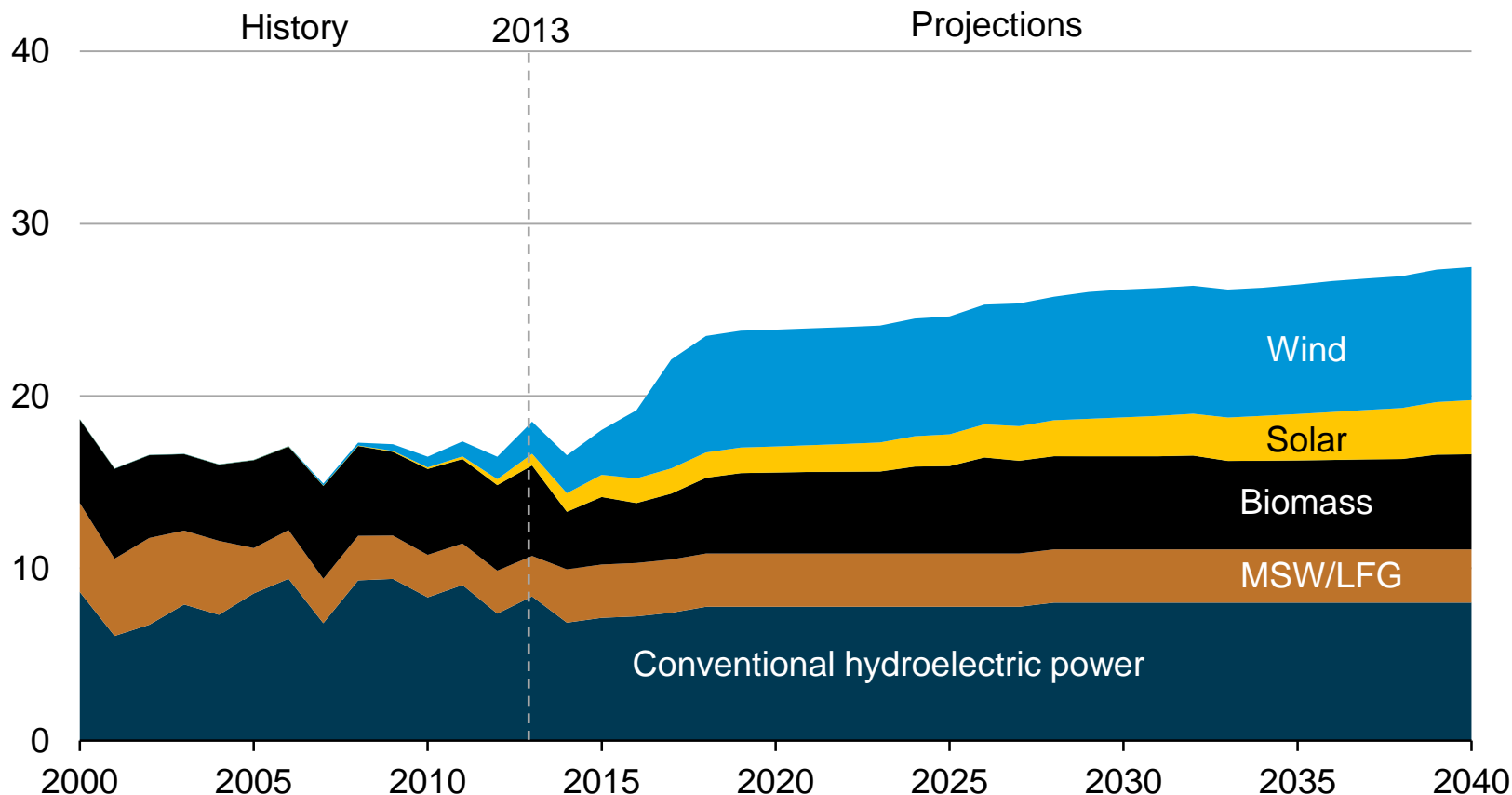


Source: EIA, Annual Energy Outlook 2015

New England's renewable electricity generation by fuel type in the Reference case, 2000-2040

electricity net generation

billion kilowatthours



Source: EIA, Annual Energy Outlook 2015

EPA's Clean Power Plan

Final EPA Clean Power Plan Rule

Sets Carbon Pollution Standards for new, modified and reconstructed power plants. Rule offers flexibility in implementation

Interim and final source-specific CO₂ intensity standards. Goals are measured:

1. Rate-based: pounds per megawatt hour (lb/MWh)
2. Mass-based state goal in total short tons of CO₂

Best System of Emissions Reductions (BSER) Building Blocks:

1. Improving the heat rate of existing coal plants
2. Substitute natural gas for coal
3. Substitute zero emitting renewable sources for existing coal

Overview of the Clean Power Plan Power Plan: <http://www2.epa.gov/cleanpowerplan/fact-sheet-overview-clean-power-plan>

Final EPA Clean Power Plan Rule (*cont.*)

Interstate and international trading of renewable energy generation (including Canadian hydro – must be incremental and installed after 2012, including Evaluation, Measurement and Verification (EM&V) standards.

Faces a number of legal tests: on August 13th fifteen states filed extraordinary emergency petition with D.C. Circuit Court; petitioners seek to block the implementation of the rule prior to the Court's ruling on its legality.

Key Topics and Issues: <http://www.epa.gov/airquality/cpp/cpp-key-topics.pdf>

For more information

U.S. Energy Information Administration home page | www.eia.gov

Data

Crude Oil Imports | www.eia.gov/petroleum/imports/data

Drilling Productivity Report | www.eia.gov/petroleum/drilling/

International Energy Portal | www.eia.gov/international

Monthly Energy Review | www.eia.gov/mer

State Energy Portal | www.eia.gov/state

Analysis

Annual Energy Outlook | www.eia.gov/aeo

International Energy Outlook | www.eia.gov/ieo

Short-Term Energy Outlook | www.eia.gov/steo

Today in Energy | www.eia.gov/todayinenergy

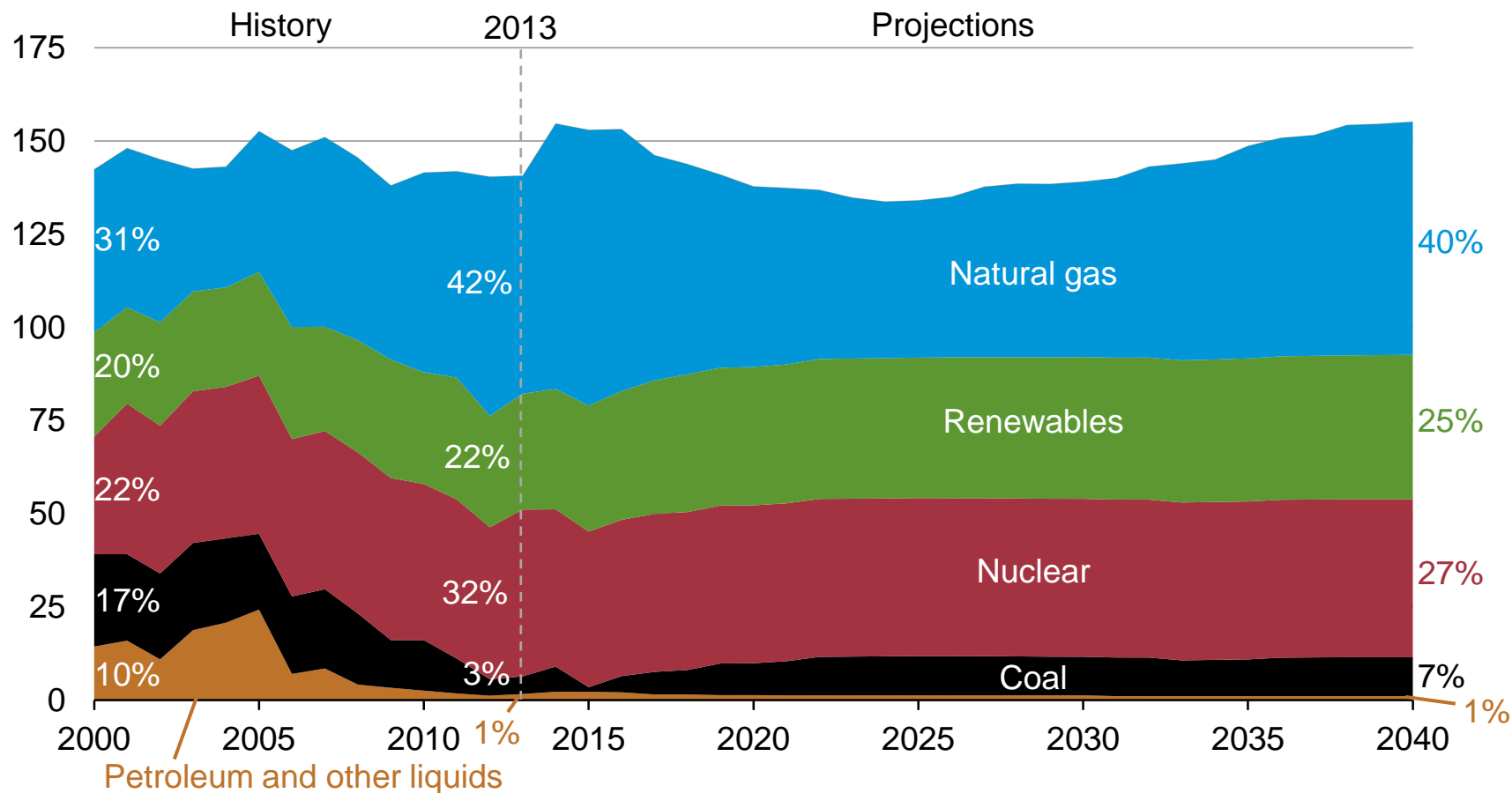
Supplemental Slides

Northeast Power Coordinating Council New York (NYC-Westchester, Long Island, Upstate New York)

New York's electricity generation by fuel in the Reference case, 2000-2040

electricity net generation

billion kilowatthours

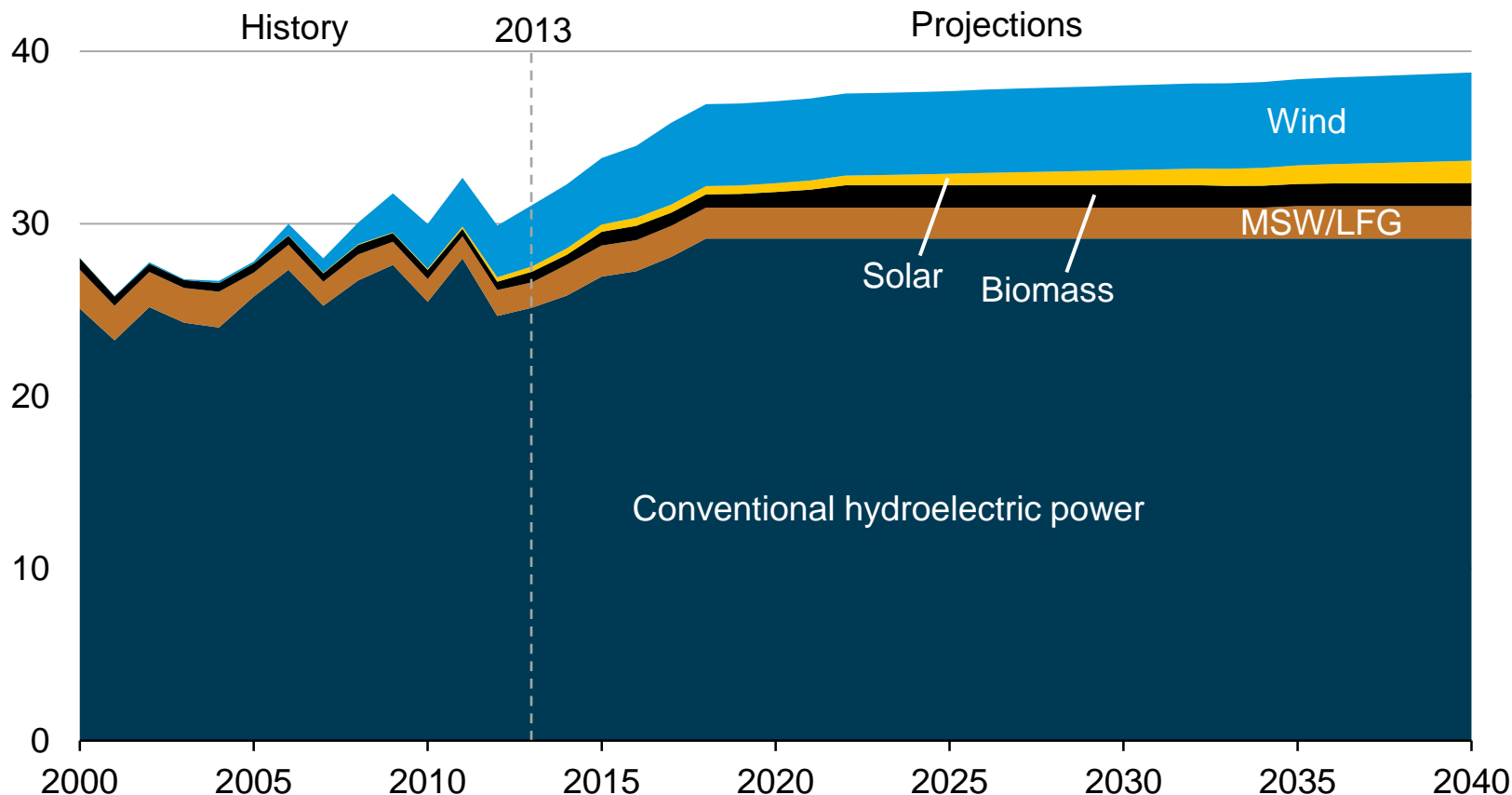


Source: EIA, Annual Energy Outlook 2015

New York's renewable electricity generation by fuel type in the Reference case, 2000-2040

electricity net generation

billion kilowatthours



Source: EIA, Annual Energy Outlook 2015

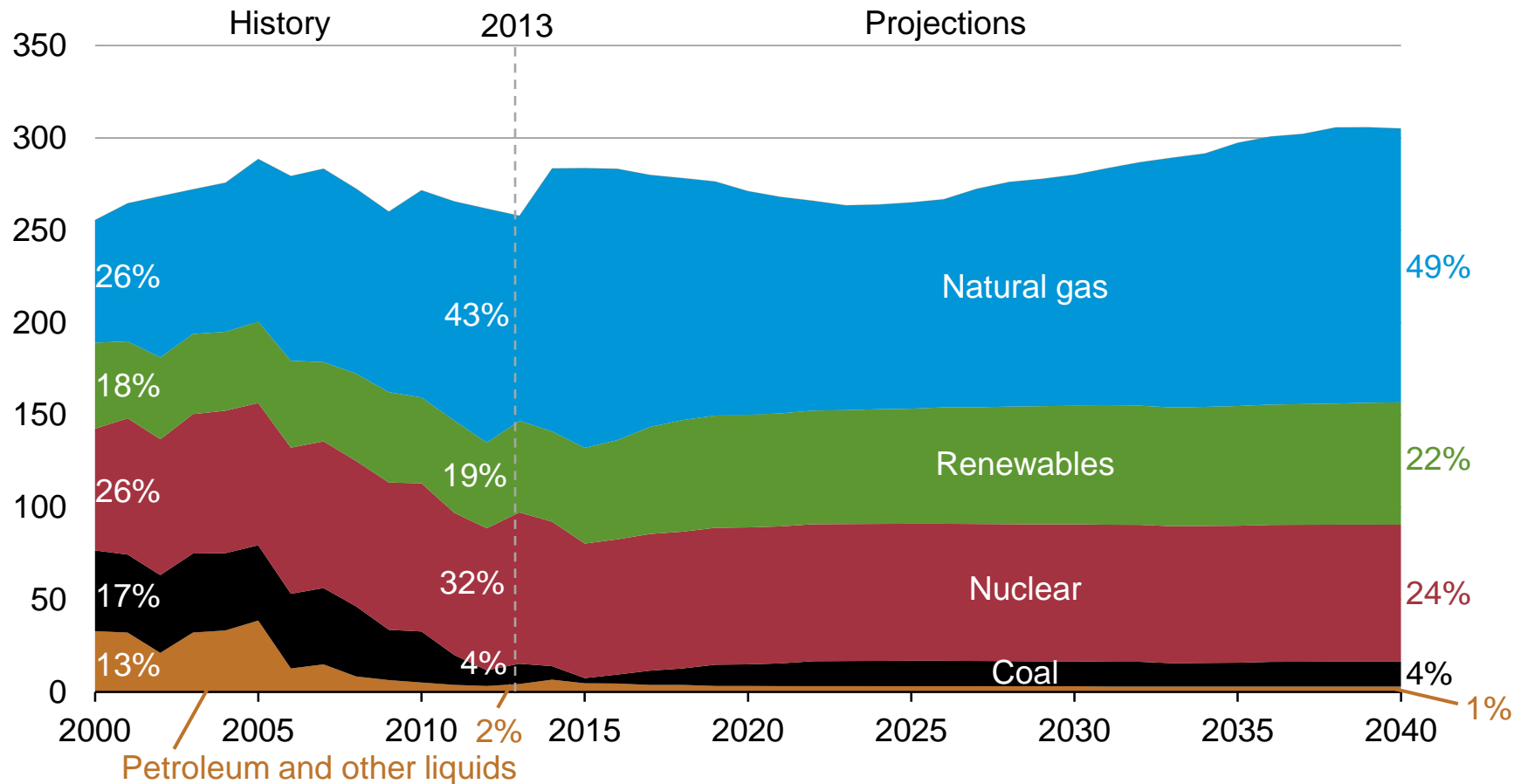
Northeast Power Coordinating Council

New England + New York

New England and New York's electricity generation by fuel in the Reference case, 2000-2040

electricity net generation

billion kilowatthours

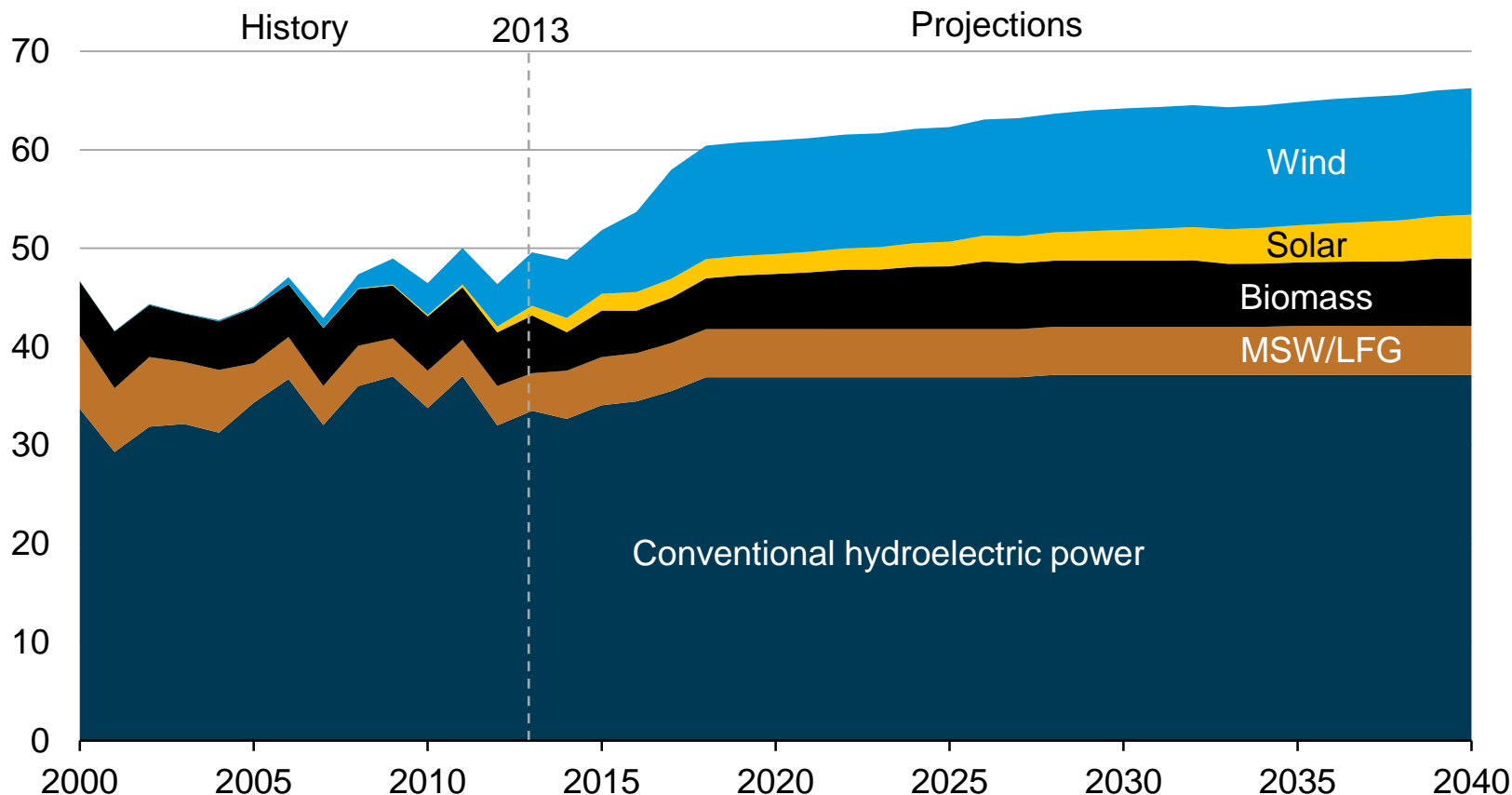


Source: EIA, Annual Energy Outlook 2015

New England and New York 's renewable electricity generation by fuel type in the Reference case, 2000-2040

electricity net generation

billion kilowatthours



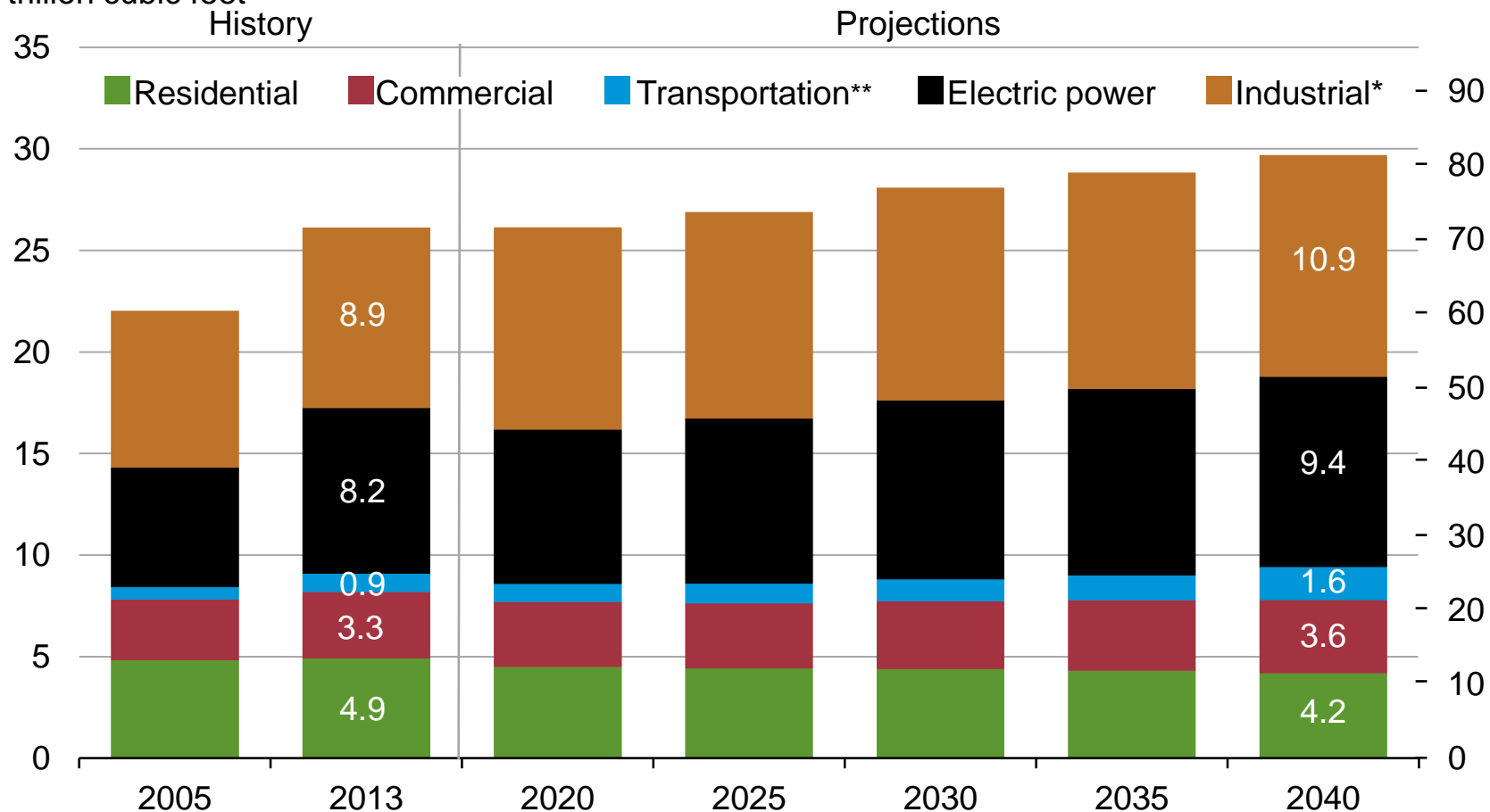
Source: EIA, Annual Energy Outlook 2015

Natural gas consumption growth is driven by increased use in all sectors except residential

U.S. dry gas consumption

trillion cubic feet

billion cubic feet per day



Source: EIA, Annual Energy Outlook 2015 Reference case

*Includes combined heat-and-power and lease and plant fuel

**Includes pipeline fuel