NAVIGANT

ENERGY

Ontario Energy Board

2014 Natural Gas Market Review

Stakeholder Conference

Historical Gas Market Review – Session 1

Ontario Energy Board
2300 Yonge Street, 25th Floor
Toronto, Ontario M4P 1E4
West Hearing Room / ADR Room
December 3-4, 2014

Abundant Natural Gas has Changed the Vision of the North American Energy Future – The Marcellus/Utica Loom Over North America - Ontario.

Source: EIA

NAVIGANT ENERGY

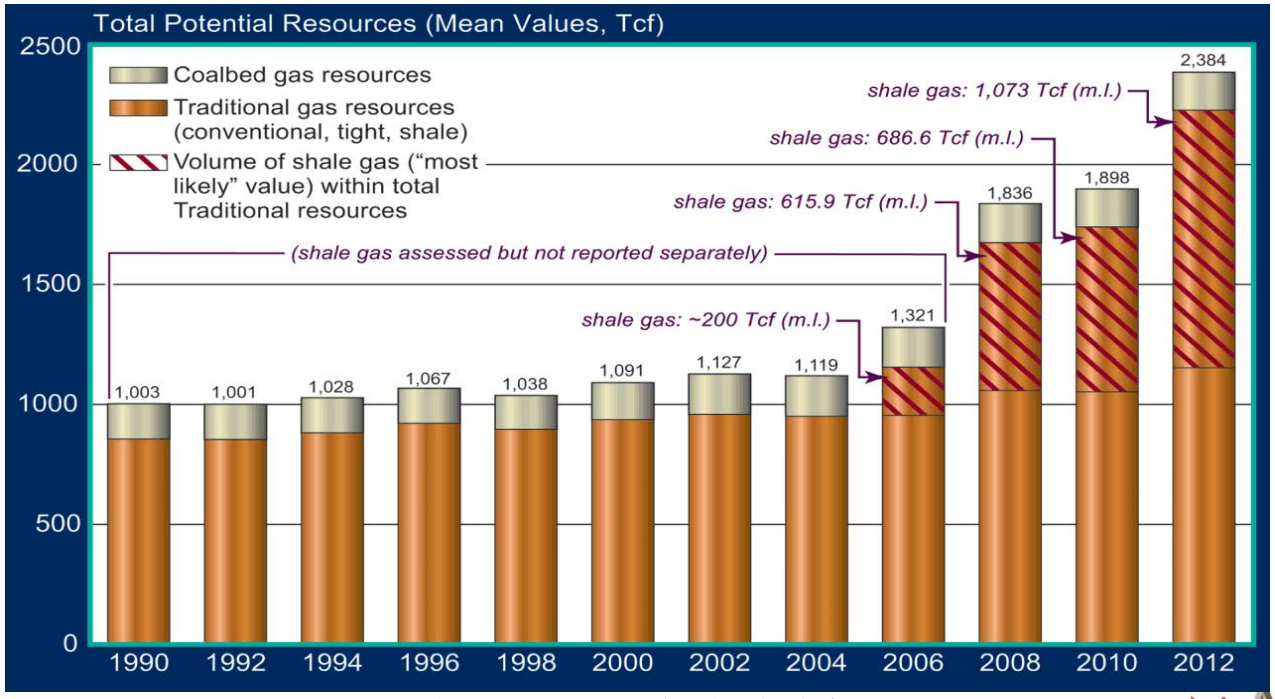
As Recently as 2008, US Gas Industry Representatives Believed Supply was Limited and Would be Unable to Respond to New Gas Demand.

- The Natural Gas Council (INGAA, AGA, ANGA, IGAA, NGSA), others said major increases in demand could only be served by imports of foreign LNG or by opening up restricted drilling areas in the country - like in Yellowstone National Park and Yosemite National Park.
- Conventional wisdom was '**we were running out of gas in North America**'.
- **Then in 2009**, the **Energy Information Administration** reported a 24 percent or 6.2 Bcfd average annual **adjustment in deliverability** of unconventional onshore gas for 2010-2030 in their Annual Energy Outlook 2009 compared to their AEO 2008.
- And like we say - a gas supply **'sea-change'** had begun!

NAVIGANT ENERGY

Industry/Governmental Associations Confirmed What Was First Identified Years Ago (2008).

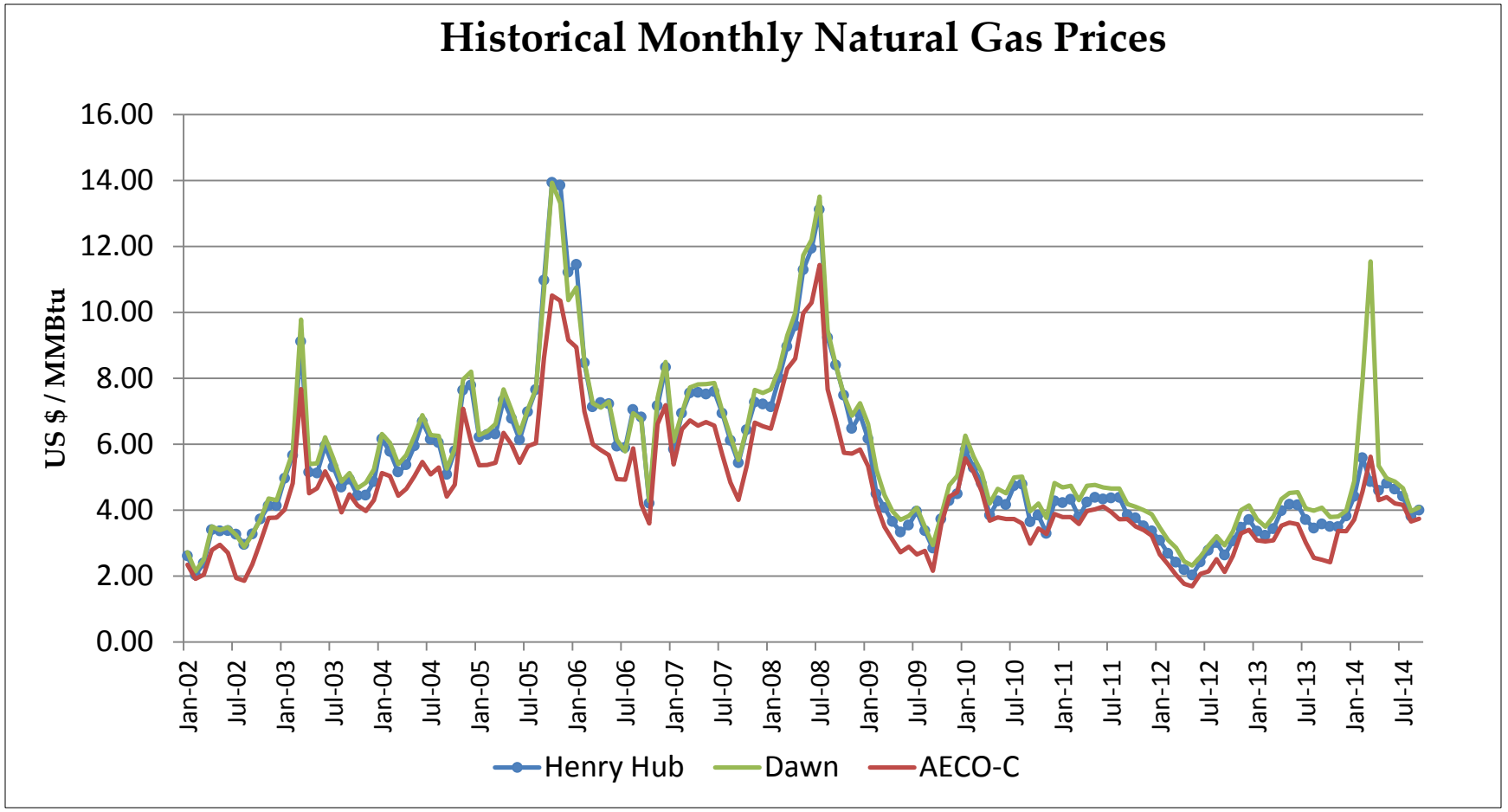
- Navigant first estimated U.S. natural gas resources at over 2,200 Tcf, driven significantly by shale gas resources (842 Tcf). At current consumption rates, that is more than **90** years of supply.
- On April 9, 2013, the Potential Gas Committee estimated U.S. potential future natural gas supply is almost 2,700 Tcf (mean) (based on 2,384 Tcf of potential resources plus 305 Tcf of proved reserves), or more than **110** years of supply at current consumption rates. The driver is a more than 50% increase in the shale gas resource estimate, from 687 Tcf (2010) to 1073 Tcf in two years, and more than double EIA's current estimate of 482 Tcf.



Source: Potential Gas Committee / Colorado School of Mines Report, 4/9/13

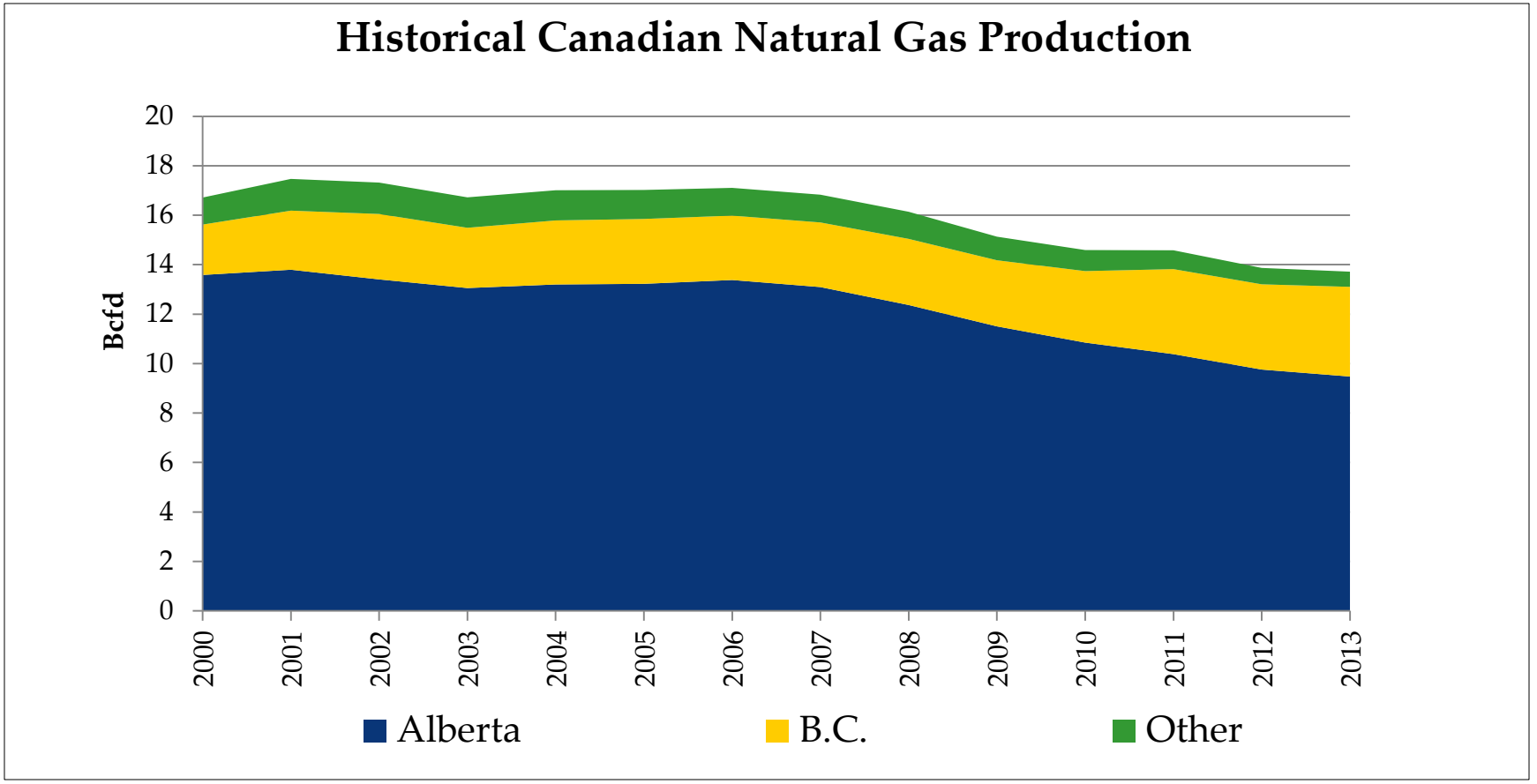
NAVIGANT ENERGY

Increased supply has reduced natural gas prices since 2008…



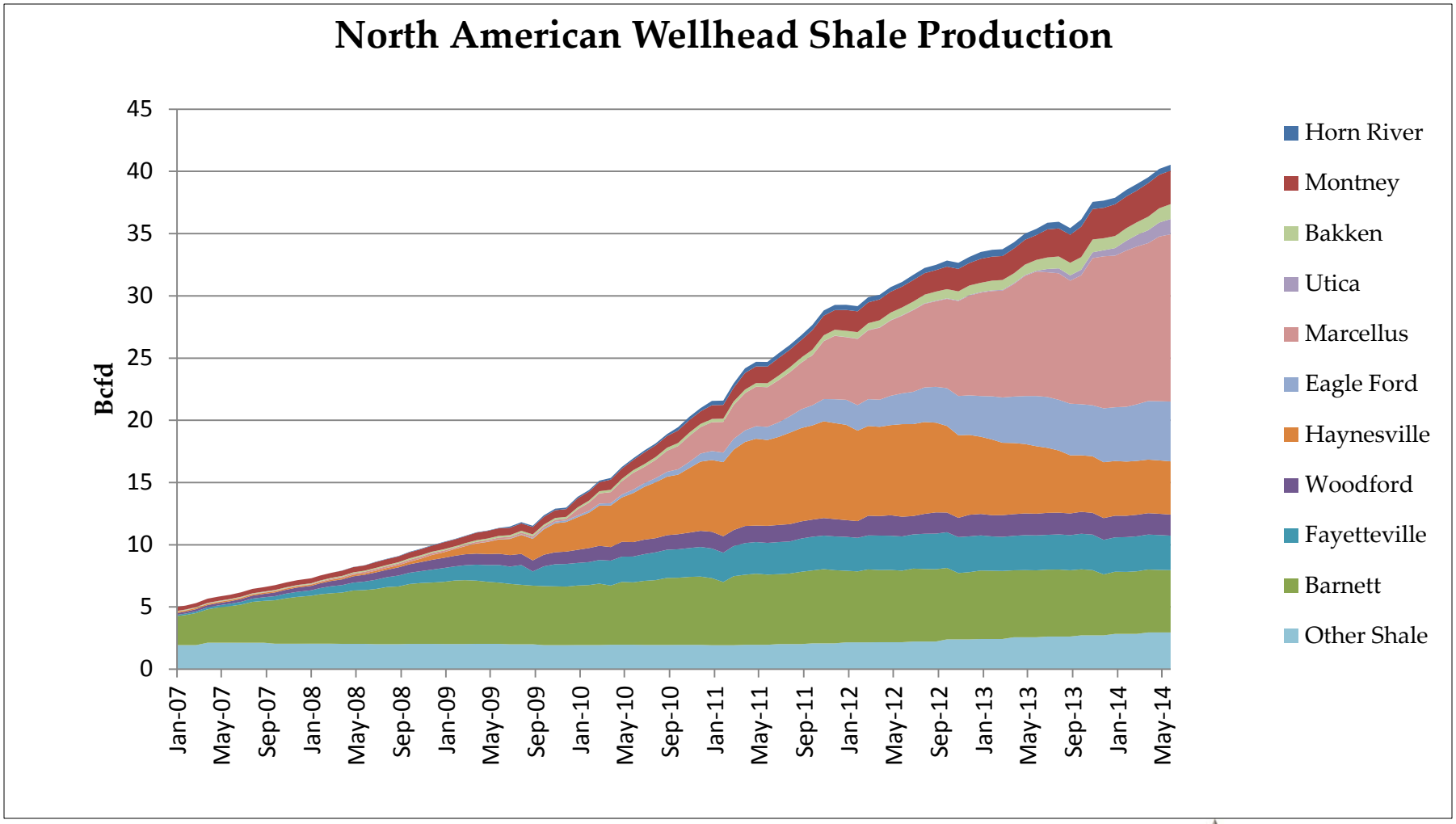
NAVIGANT
ENERGY

Despite an acceleration in the decline of Western Canadian gas production.



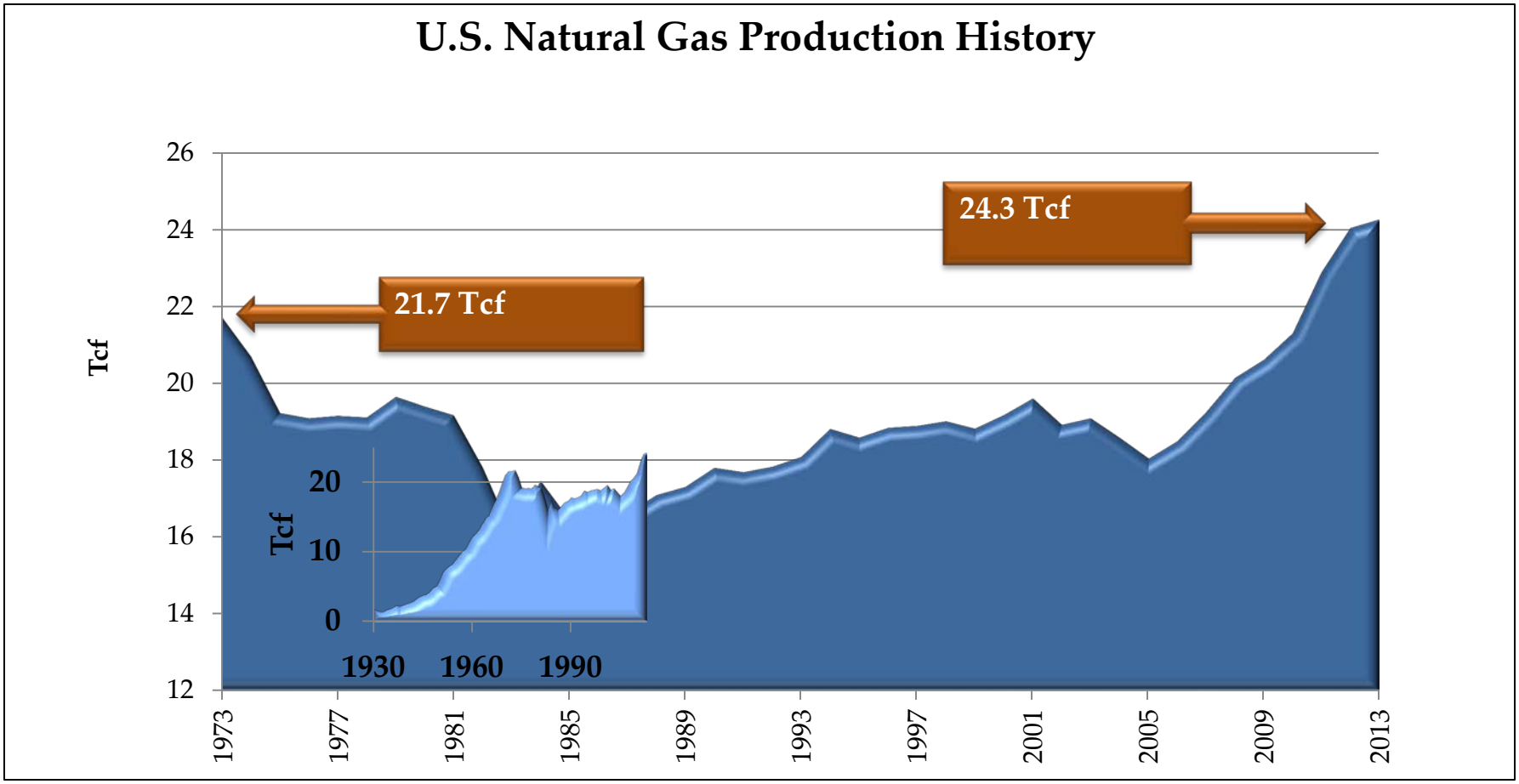
NAVIGANT
ENERGY

The price trend corresponds to the explosive growth in unconventional shale gas production in North America.



NAVIGANT
ENERGY

In fact, shale gas has led to new highs in total U.S. gas production…

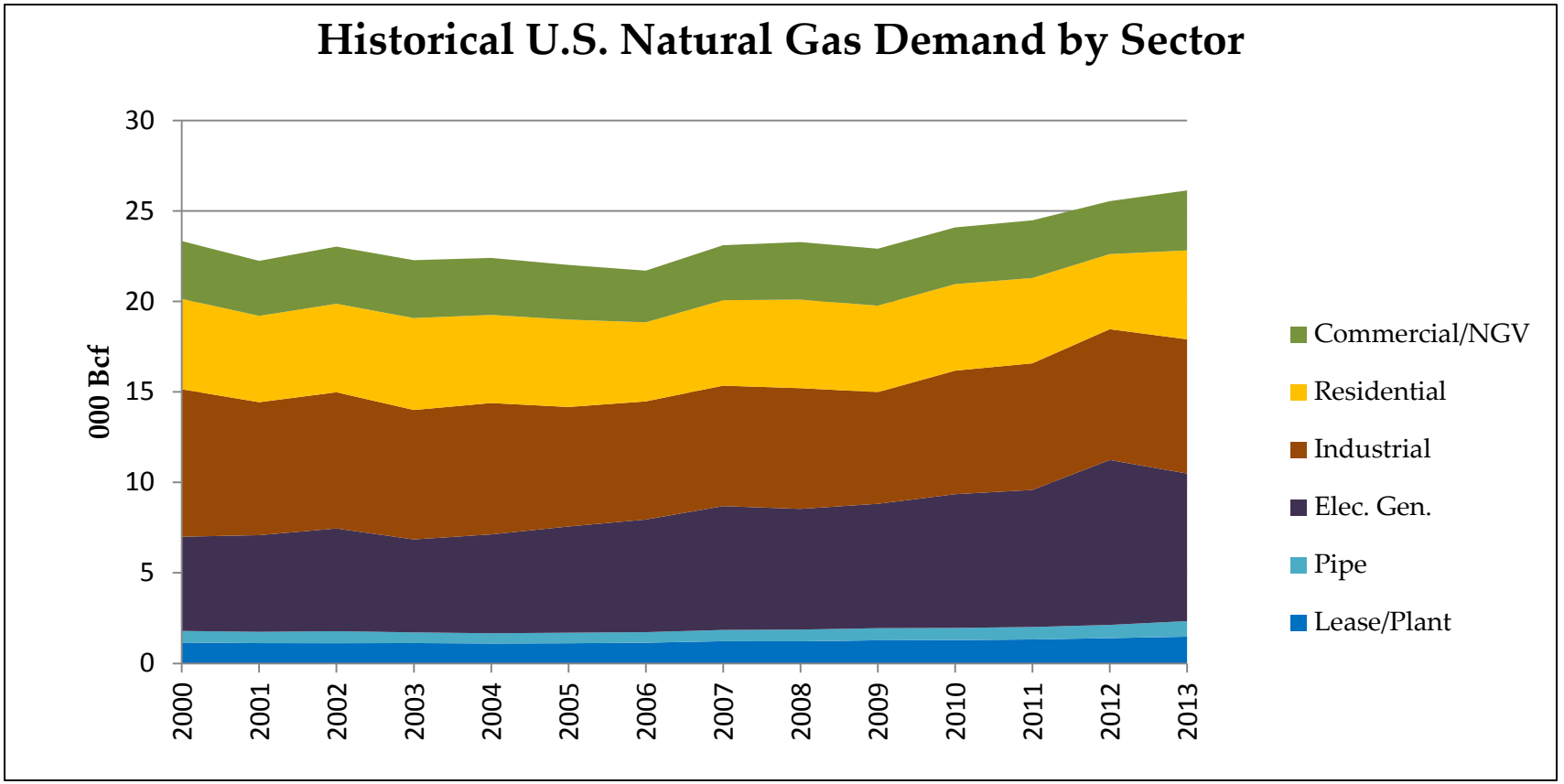


NAVIGANT
ENERGY

On abundance, many potential LNG export projects have been proposed in both the U.S. and Canada.

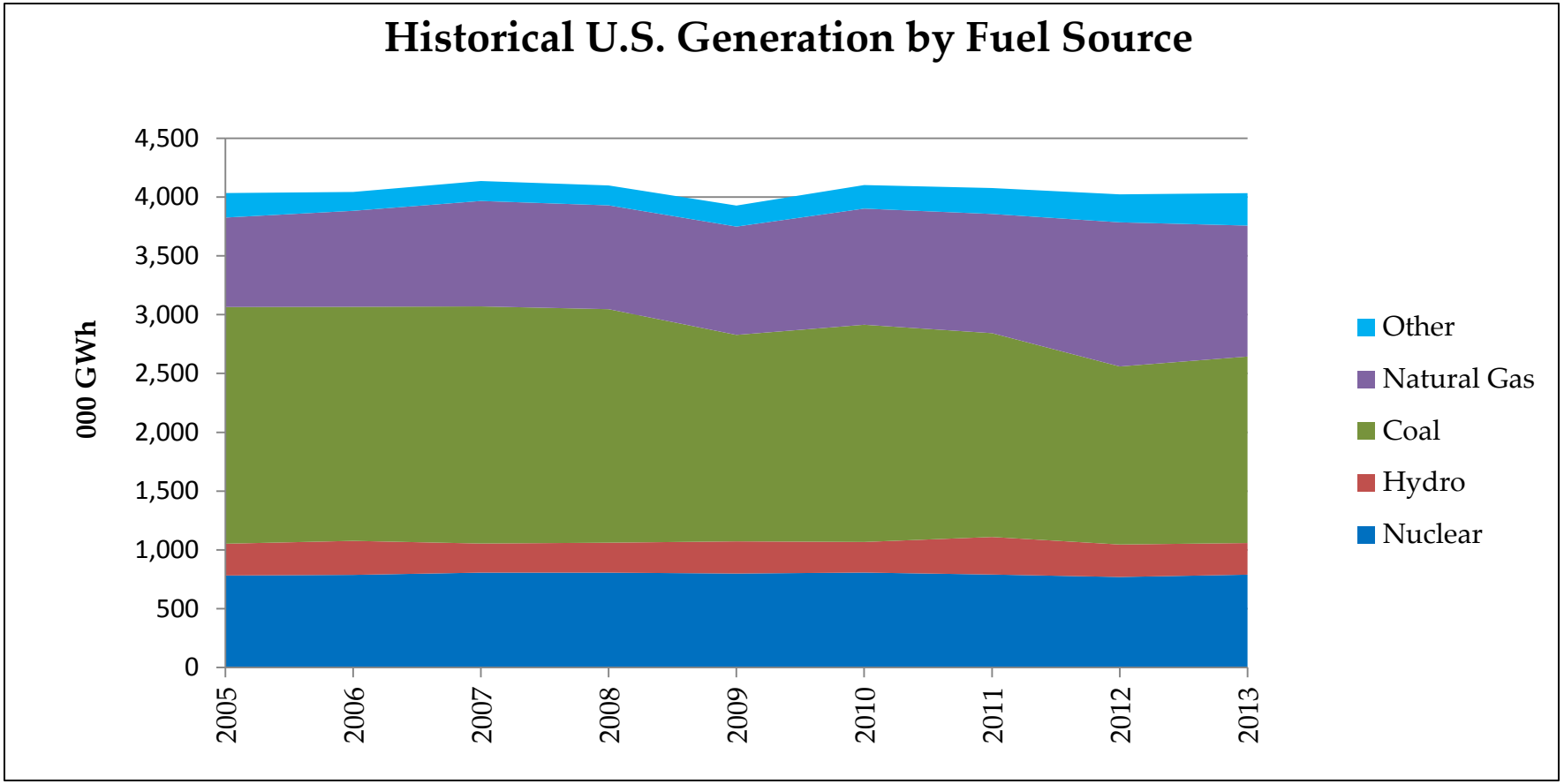
NAVIGANT
ENERGY

Increases in U.S. total gas demand have been driven by the electric generation sector.



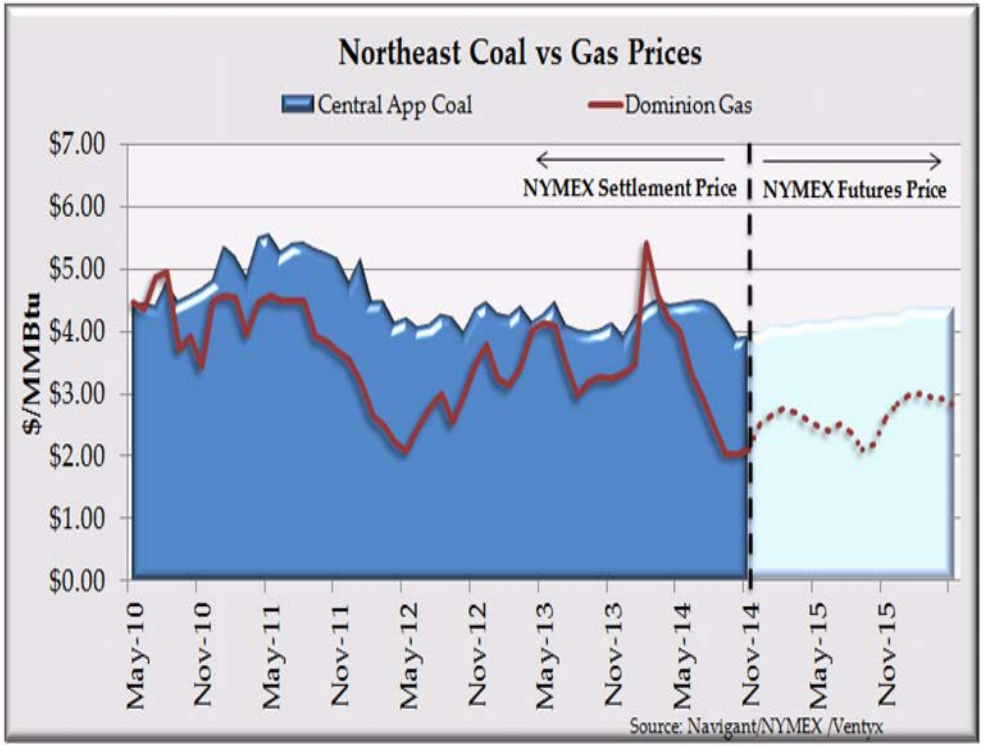
NAVIGANT
ENERGY

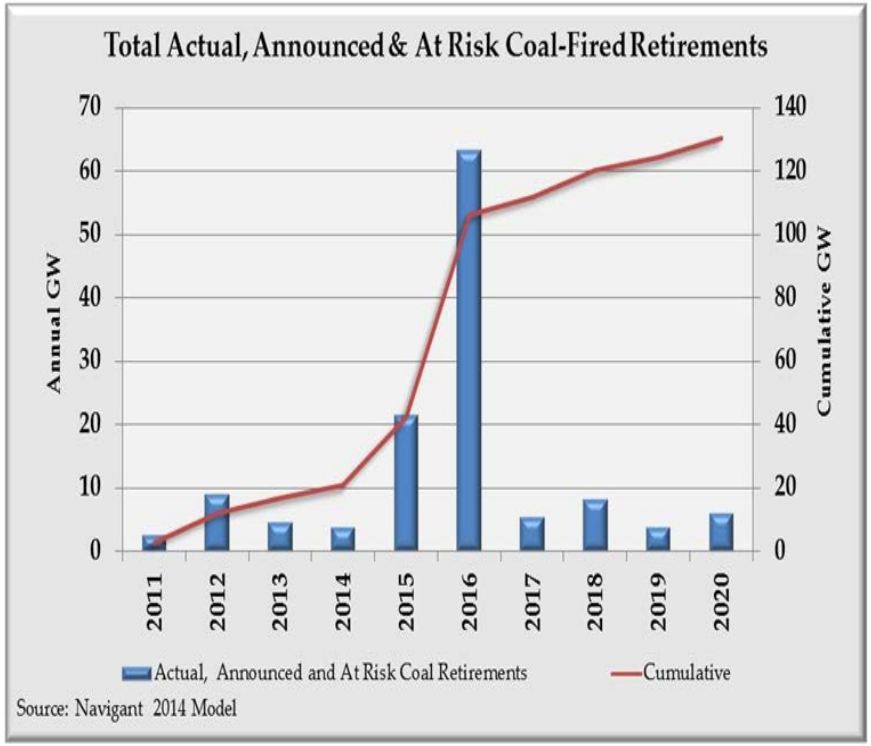
While total electric generation in the U.S. has been flat, there has been an increase in gas-fired generation and a decrease in coal-fired generation.



NAVIGANT
ENERGY

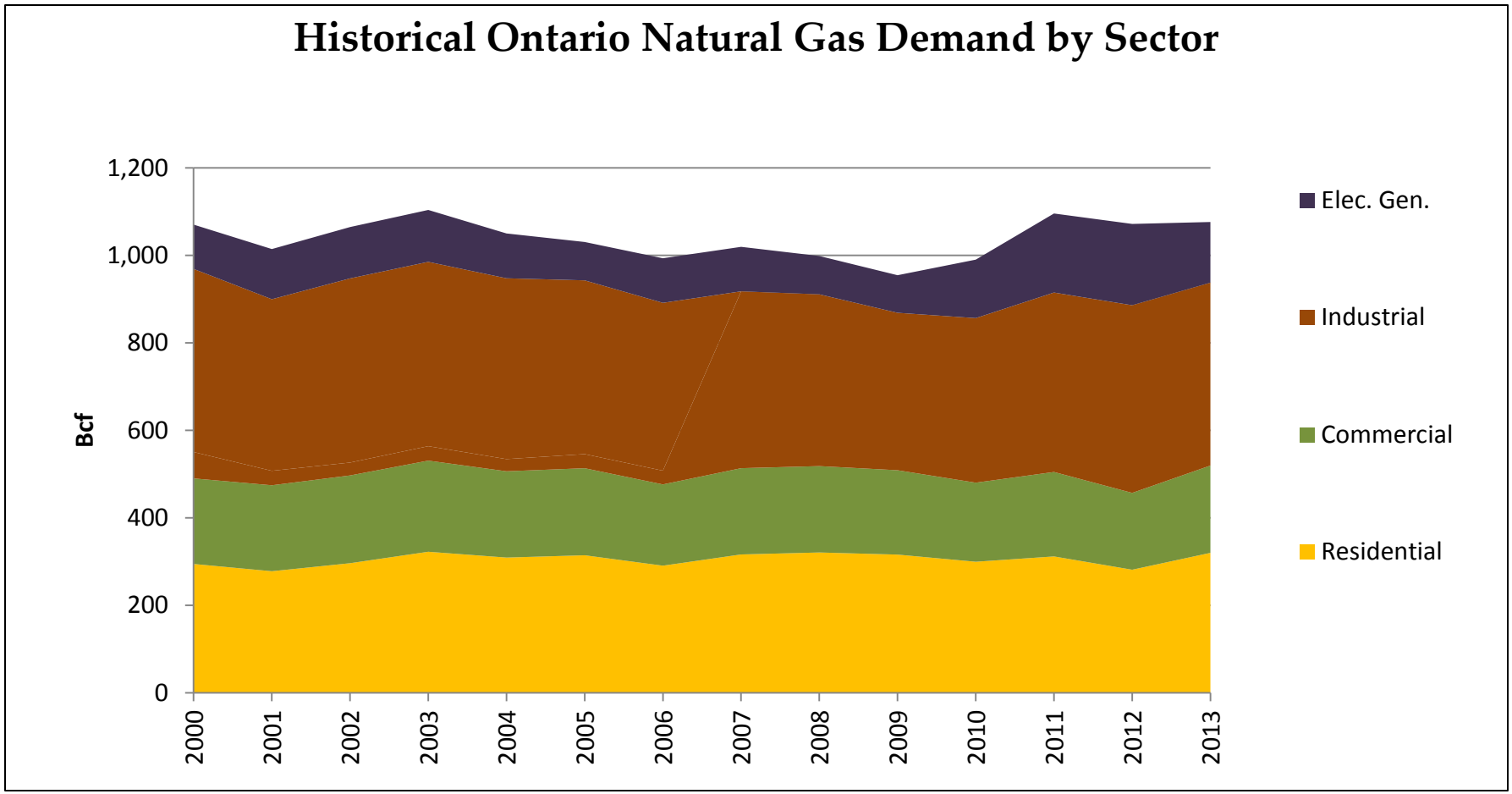
Coal-to-gas switching has been driven both by recent cost advantages for gas, and the beginning of impending U.S. coal retirements.





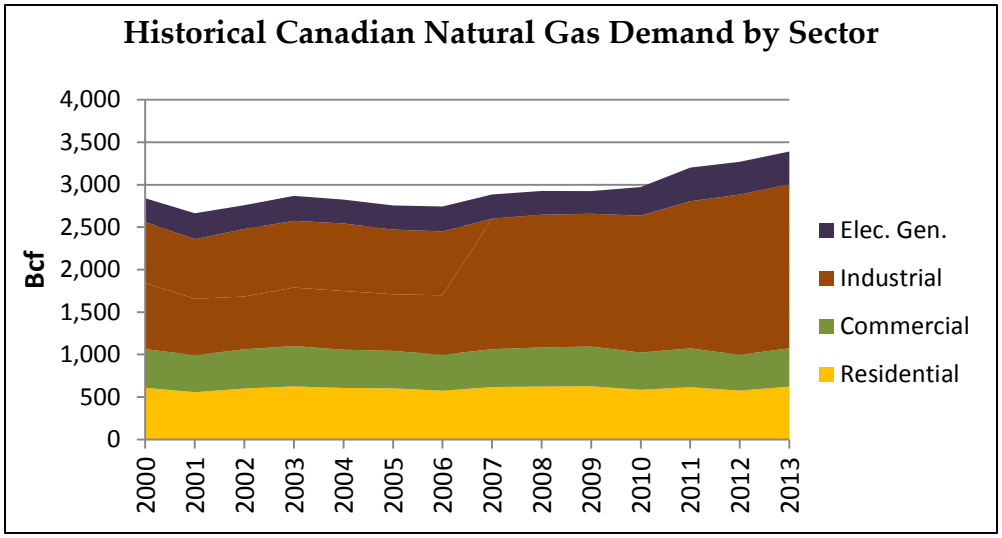
NAVIGANT
ENERGY

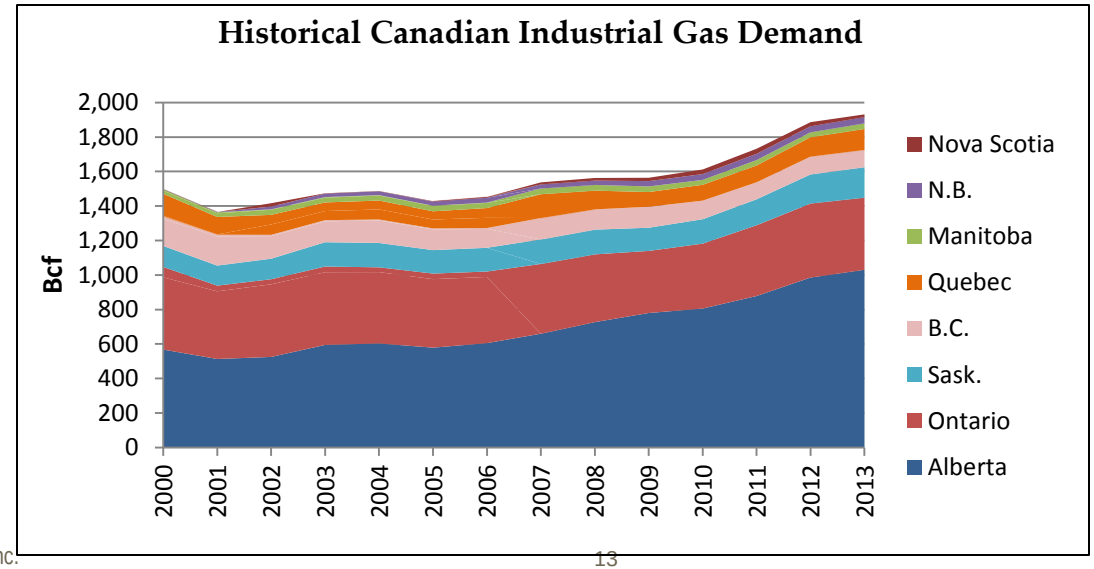
Similar to the U.S., Ontario gas demand and market share has recently been increased by some coal-to-gas switching in the electric generation sector.



NAVIGANT
ENERGY

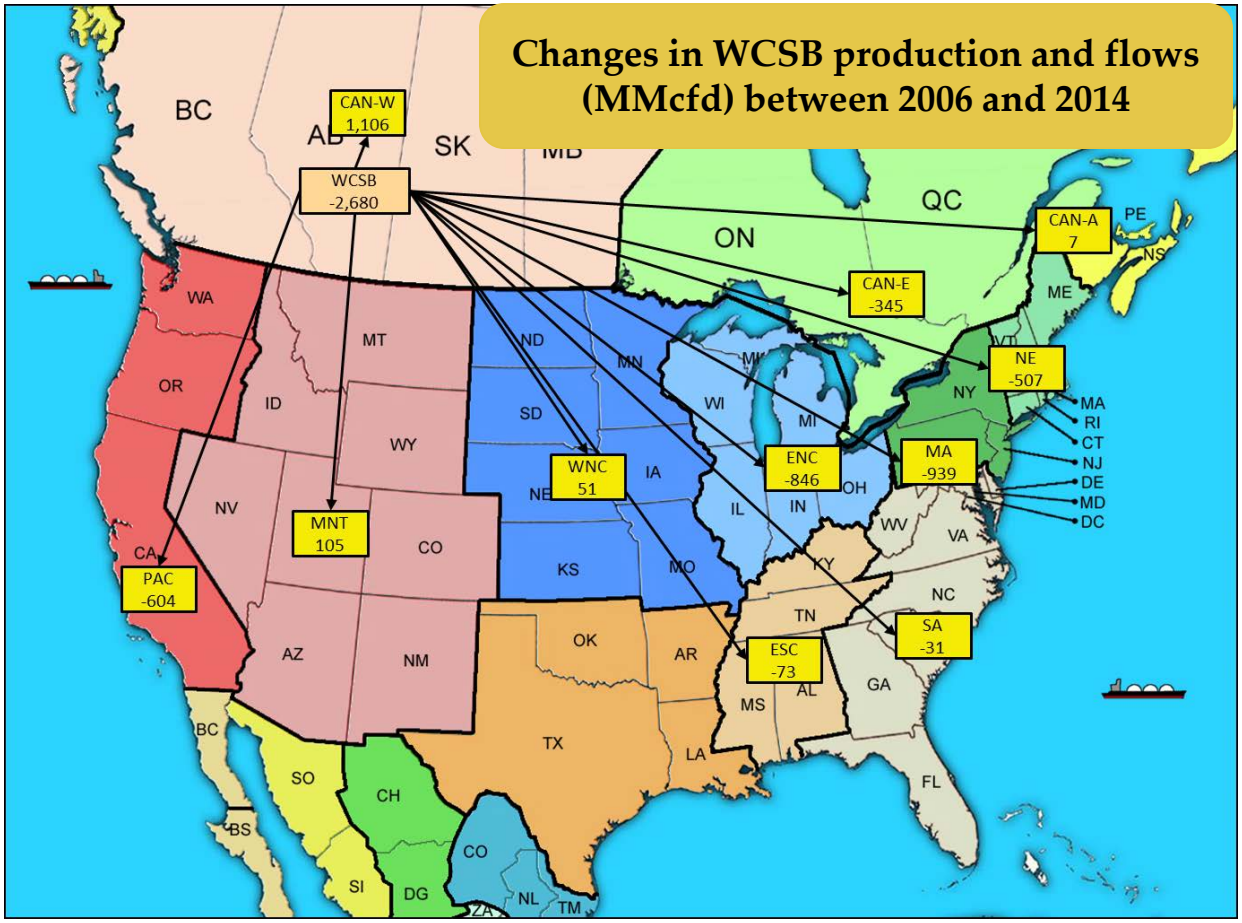
Gas demand in Canada as a whole has been driven by industrial demand growth, focused in Alberta.



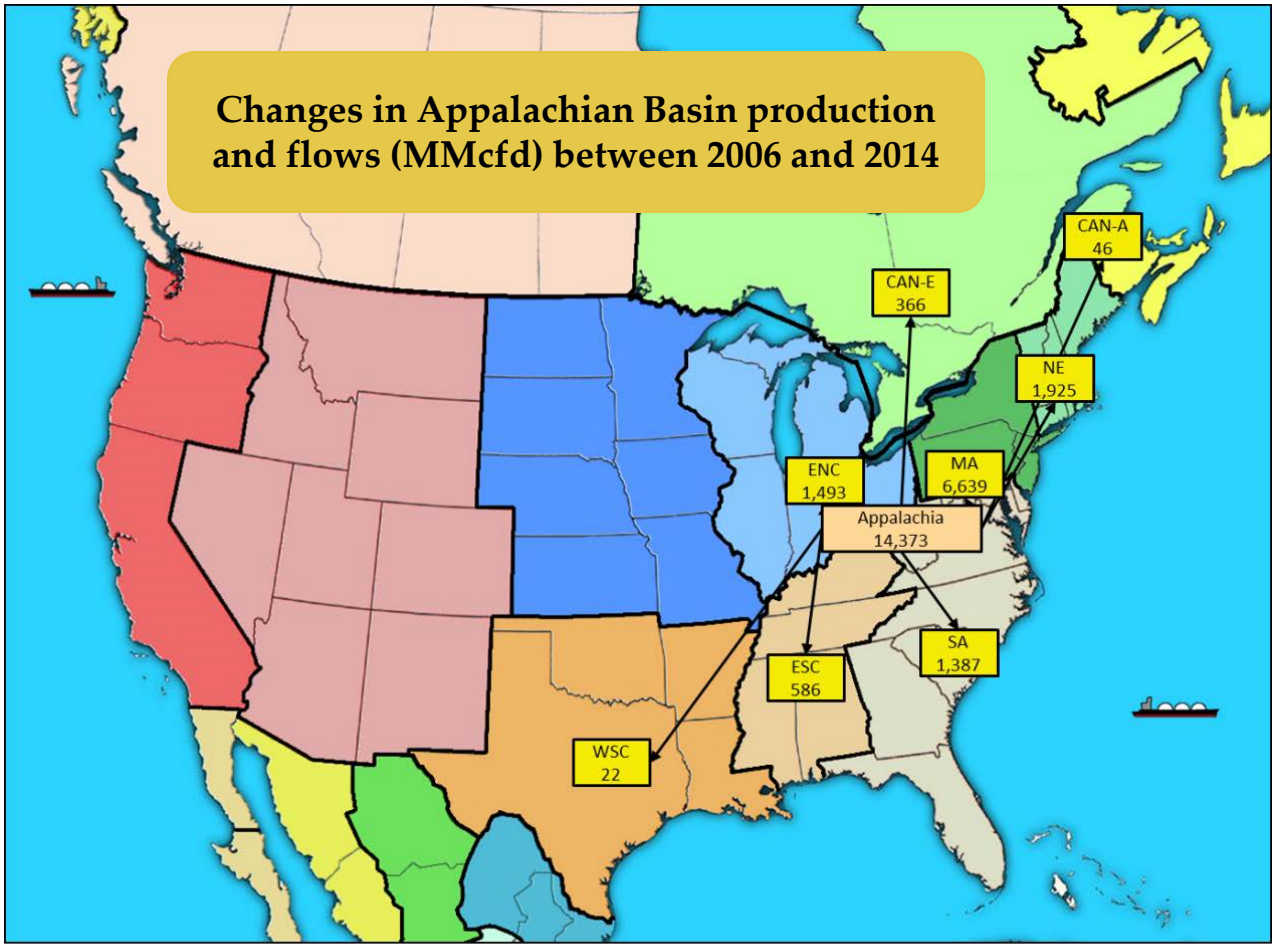


NAVIGANT
ENERGY

The changes in the North American gas production patterns have led to changes in gas flows. The decreases in Alberta production show up as decreased flows to the U.S. and eastern Canada.

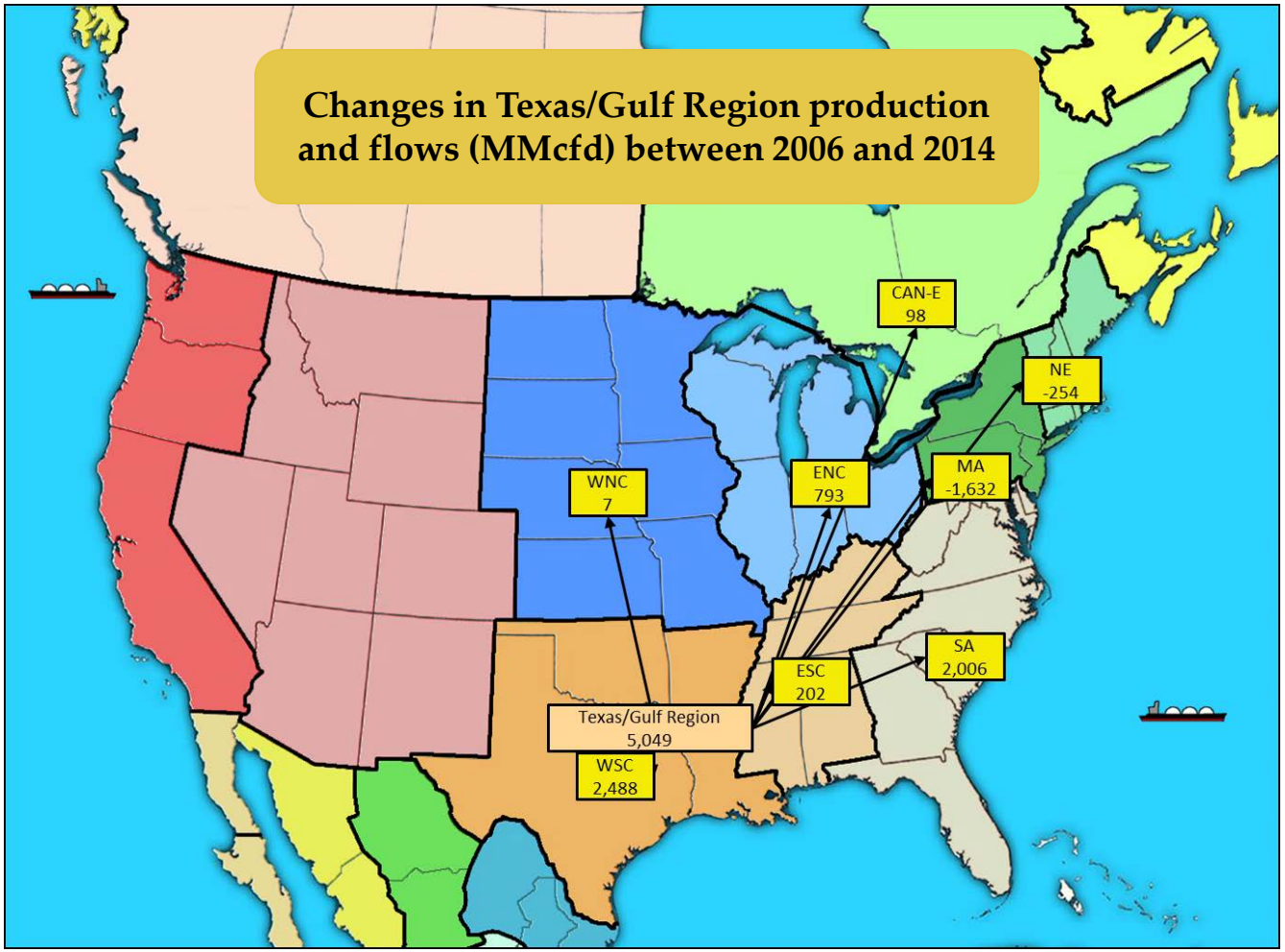


The increases in Marcellus production have shown up as large volumes serving the U.S. Northeast, as well as flows to other regions including Ontario and the Maritimes and to the U.S. South and Midwest.



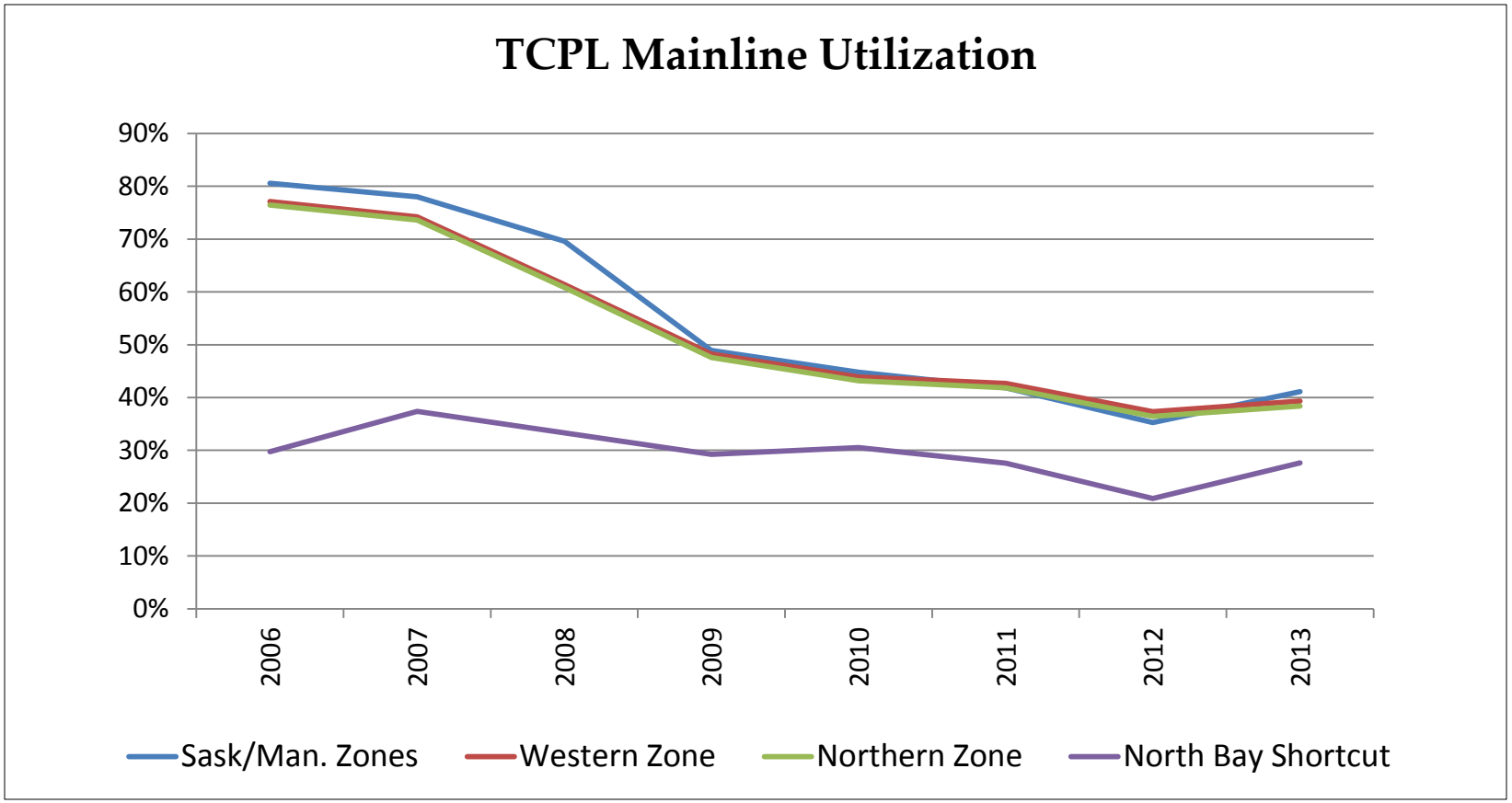
NAVIGANT ENERGY

Because of the large Marcellus production, traditional U.S. Gulf supplies going to the U.S. Northeast have been reduced, with increased flows in the region and to others.



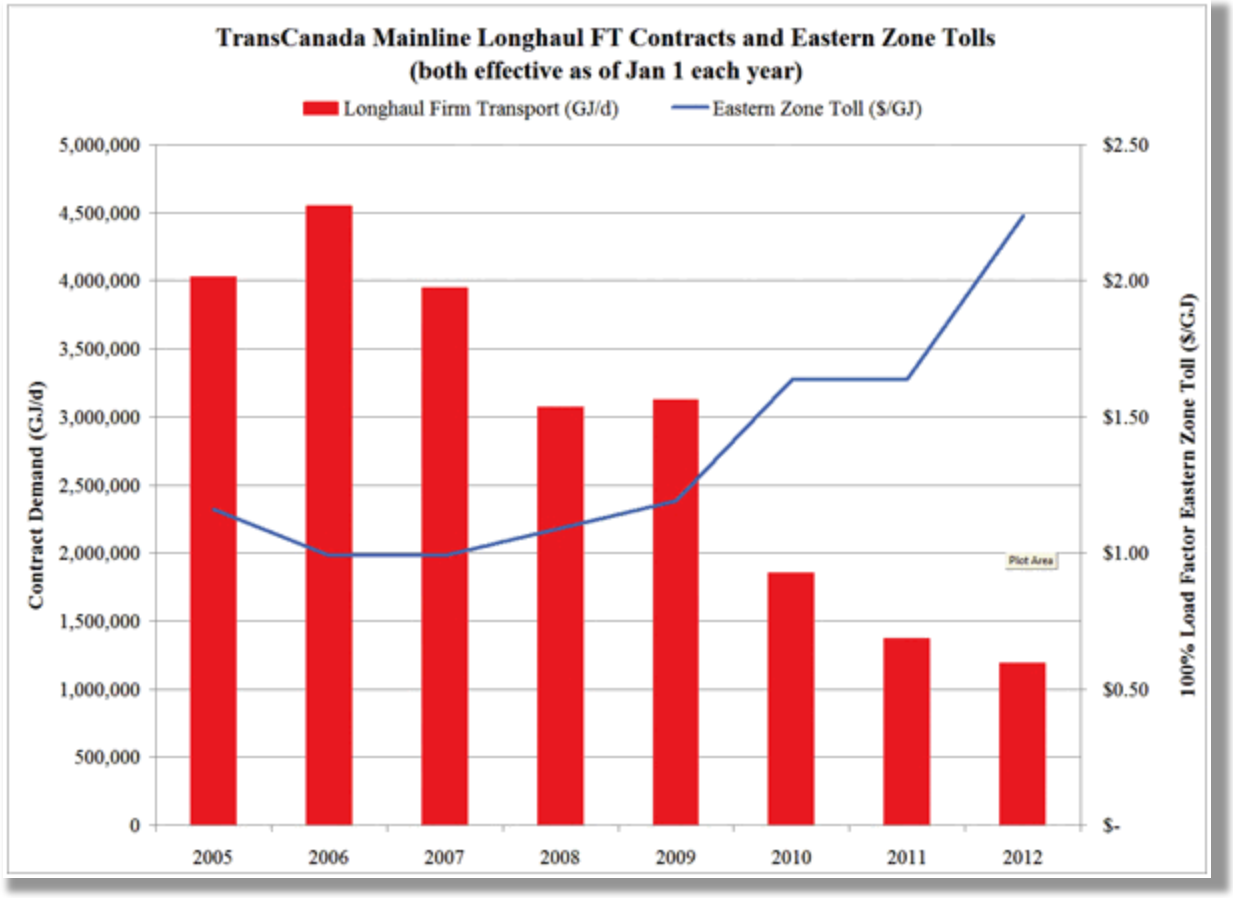
NAVIGANT
ENERGY

The change in flows from the WCSB is evidenced by the TCPL Mainline utilization, which has dropped significantly in all zones --



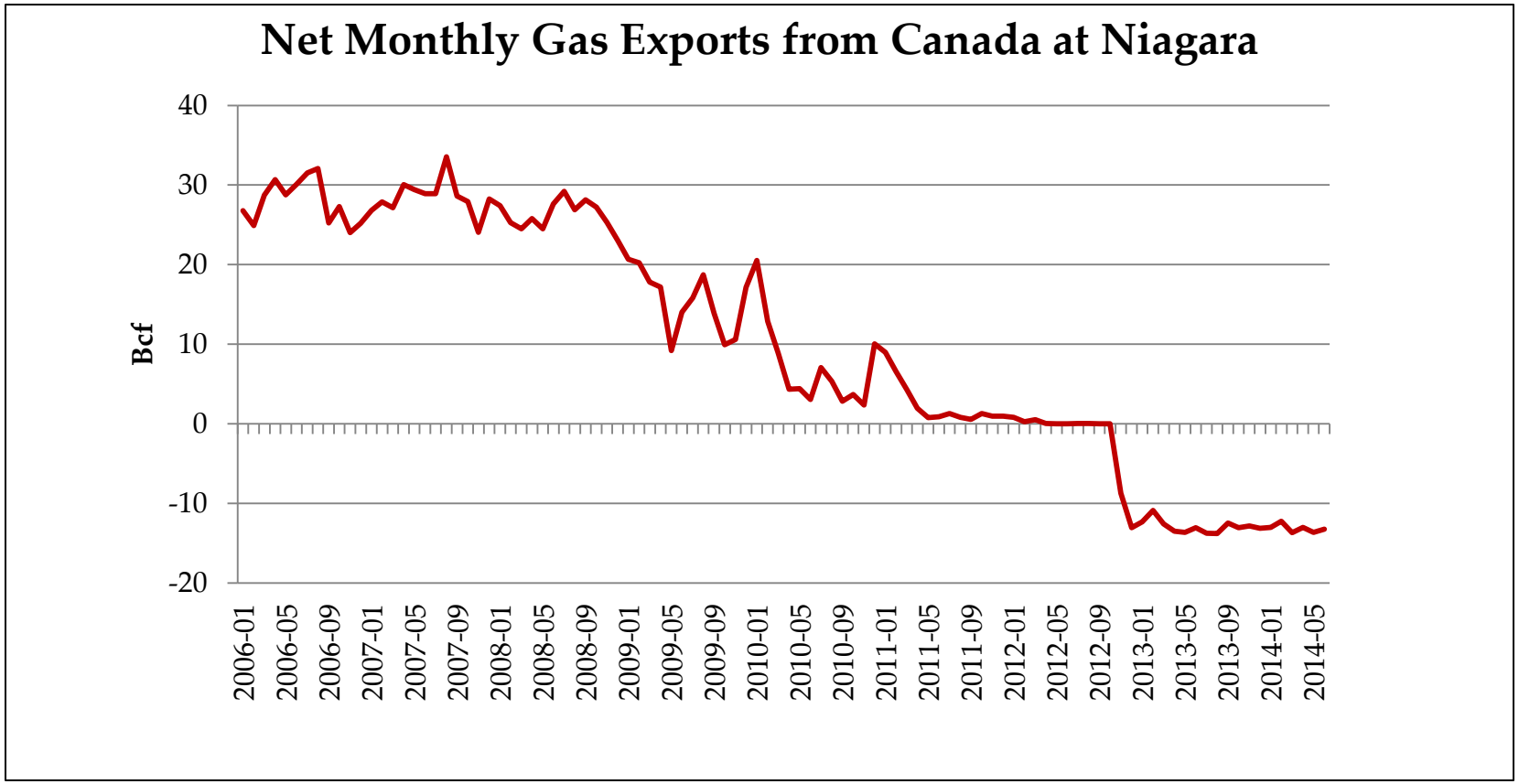
NAVIGANT
ENERGY

Due to TCPL (Canadian) rate structures, transport rates increased in order to maintain the Mainline's rate of return. Higher rates on lower utilization – an untenable construct long term. A 'Black Swan'



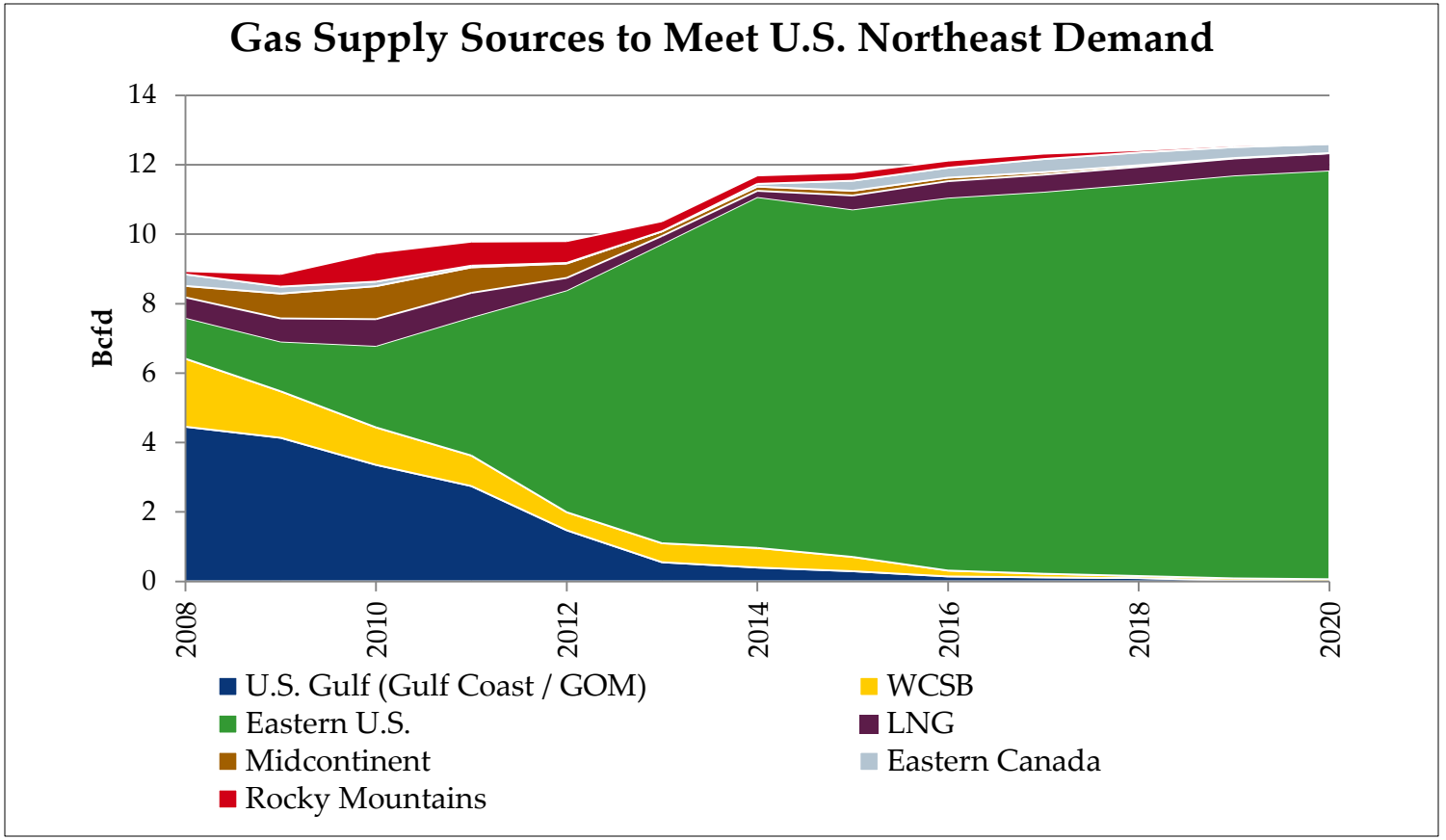
NAVIGANT
ENERGY

Culminating in 01/2013 by a flow transformation at Niagara, NY from Net Canadian exports to Net Canadian imports. First time ever!



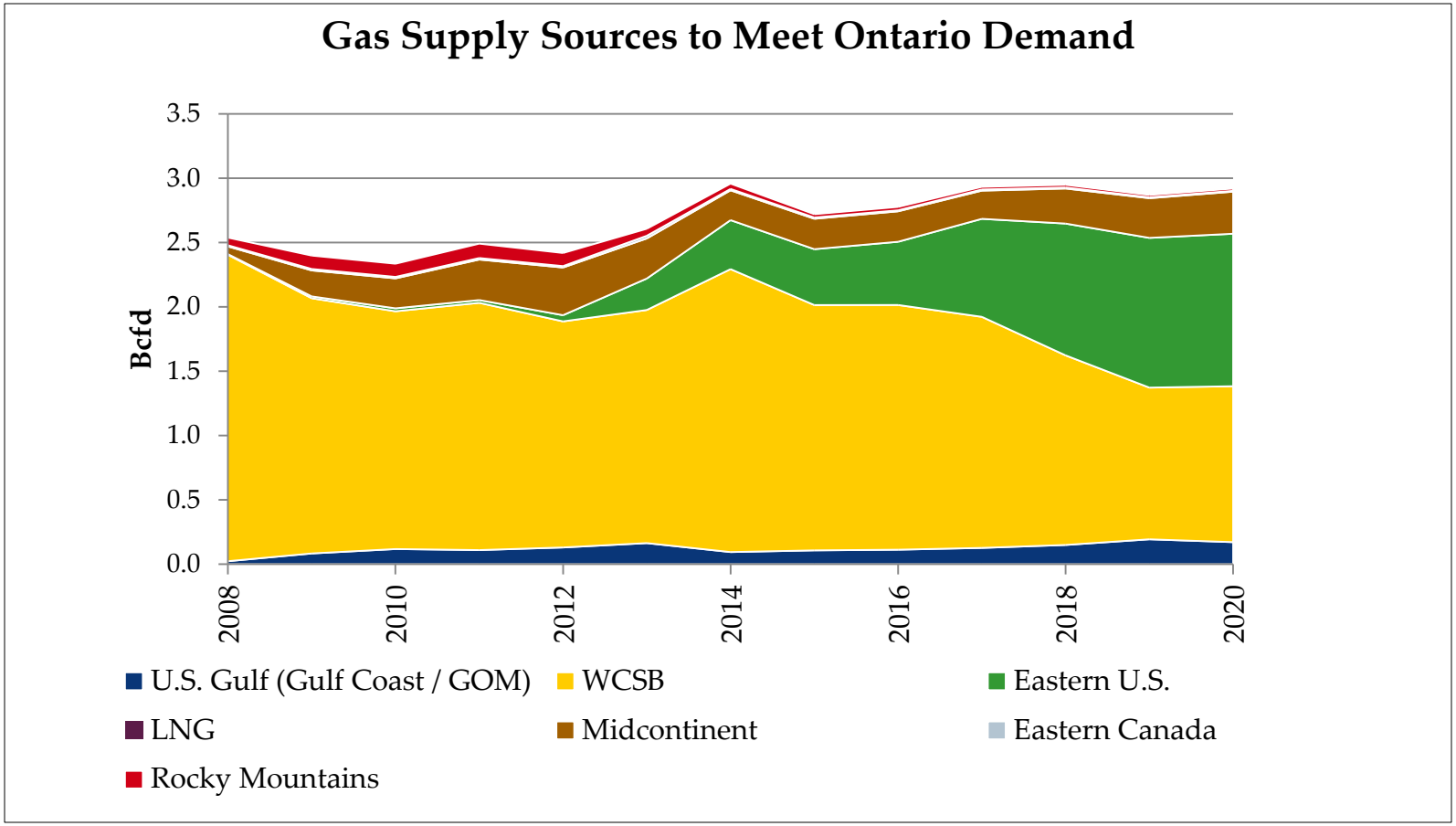
NAVIGANT
ENERGY

Looking forward, WCSB supplies continue to be displaced by Marcellus supplies in the U.S. Northeast. It's just beginning…



NAVIGANT ENERGY

And to be repeated in Ontario?



NAVIGANT
ENERGY

Key CONTACTS

Gordon Pickering
Director
Folsom, CA
(916) 631-3249
gpickering@navigant.com

Jeff Van Horne
Managing Consultant
Folsom, CA
(916) 631-4002
jvanhorne@navigant.com

Todd Williams
Managing Director
Toronto, Canada
(647) 288-5204
twilliams@navigant.com

NAVIGANT
ENERGY