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# Natural Gas Supply/Commodity Market Place Development in the United States

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# U.S. Background & Historical Development

- 1821, Fredonia, NY - William Hart's 27' well
- Initially for lighting vs. candles, especially street lighting
- Hollowed logs used for piping
- 19<sup>th</sup> Century Manufactured Gas Plants
- Natural Gas Act of 1938
- 1940s interstate pipeline expansion

# Background (continued)

- 1930s-1970s: natural gas wellhead price regulated
- Mid-1970s: gas curtailment era
  - Conservation - factories and schools closed
  - Prohibition for use of fuel for certain end-uses/processes
- Late-1970s: take-or-pay contracts
  - Guaranteed investment payback
  - Required buyer commitment for guaranteed quantity

# U.S. Federal Reaction to Shortage

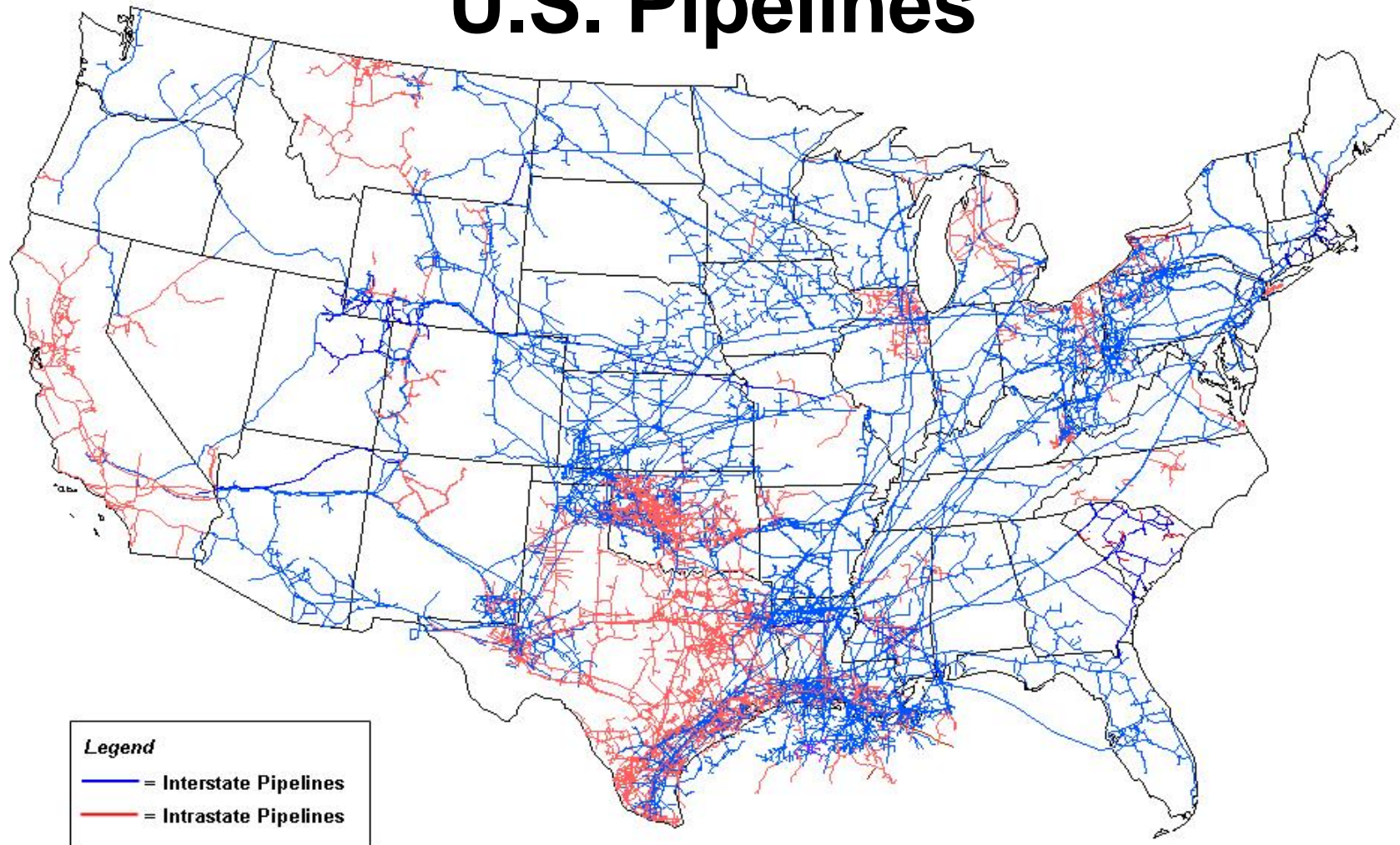
- Natural Gas Policy Act of 1978 – Congress passed to entice drilling, provided partial price decontrols on new production over existing (vintage wells)
- Natural Gas Wellhead Decontrol Act of 1989
  - Removed all price controls
  - No FERC authority over wholesale pricing

# Succession of FERC Orders

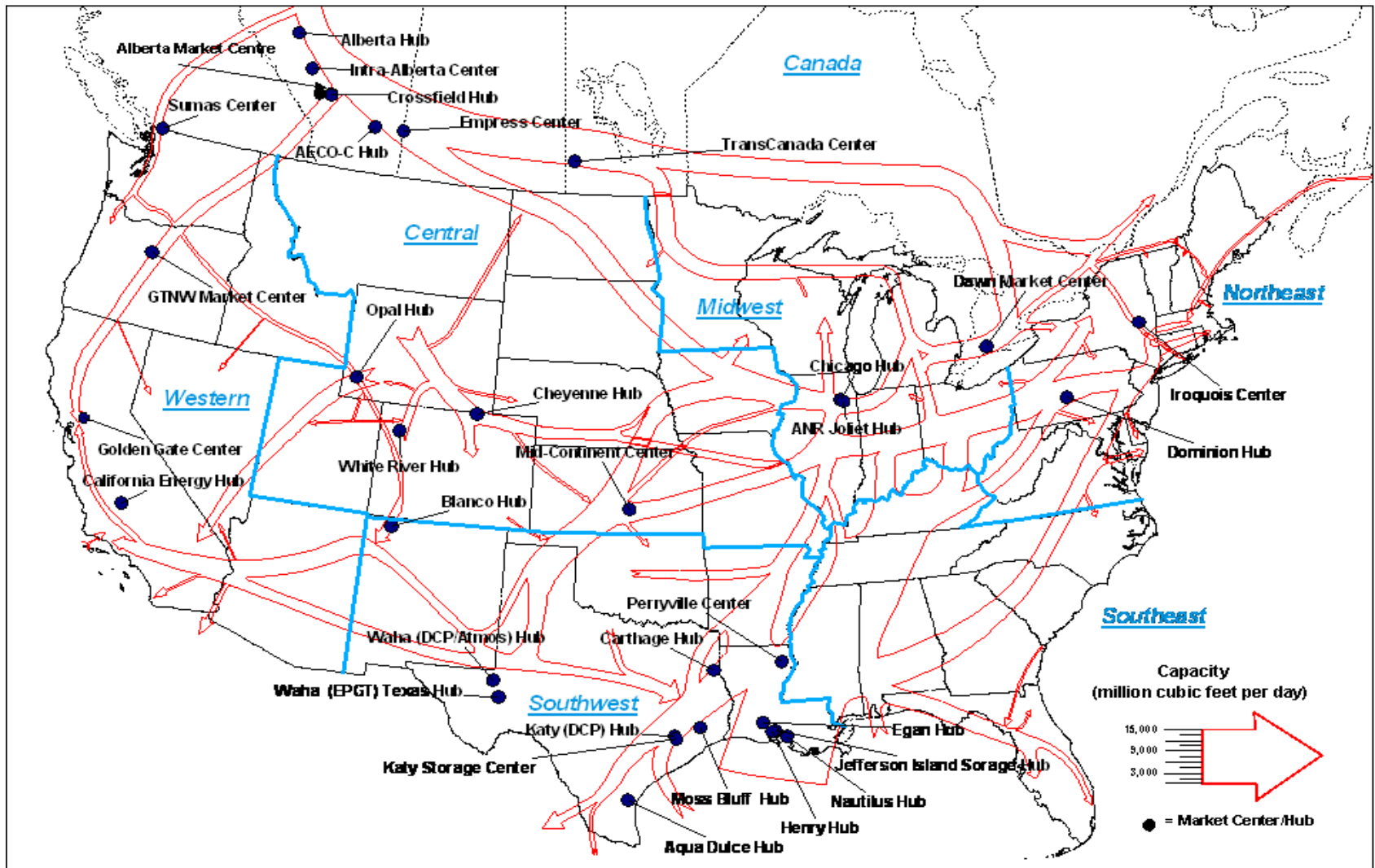
- Order 380: 1984; invalidated Take-Or-Pay contracts; eliminated pipeline minimum bills
- Order 436: 1985; response to FERC loss in U.S. Court of Appeals; non-discriminatory, open-access pipeline structure; direct purchases of natural gas by end users
- Orders 500, 500A, etc.: Began 1987; amended Order 436; resolved lingering court issues and take-or-pay contracts
- Order 636: Issued 1992; changed pipeline rate design from MFV to SFV rate design; removed pipelines from merchant function; provided for open access storage; mandated capacity release mechanisms

# RESERVES AND SUPPLY

# U.S. Pipelines



# Gas Market Centers



# Market Centers/Hubs

- Approximately 40
- Transport across multiple pipelines
- Where commodity and capacity actively traded
- Alternate routes to market
- Price discovery/basis differentials



# The Henry Hub

- Most active in North America;
- Accessible to major onshore & offshore producers in Louisiana, 11 different pipelines;
- Owned by Sabine Pipe Line
- High deliverability (salt cavern) storage ready access
- Pricing readily available; trade press
- NYMEX NG Futures designated point of delivery

# PRICING TODAY

# U.S. Natural Gas Pricing Today

- Most supplies traded at market-based prices:
  - Wellhead
  - Index - NYMEX futures contracts or other market centers
  - Daily pricing (very short term supplies)
  - First of month index
  - ICE (Inter-Continental Exchange)
  - City gate
  - Basis differential
  - Futures options

# Factors Affecting Pricing

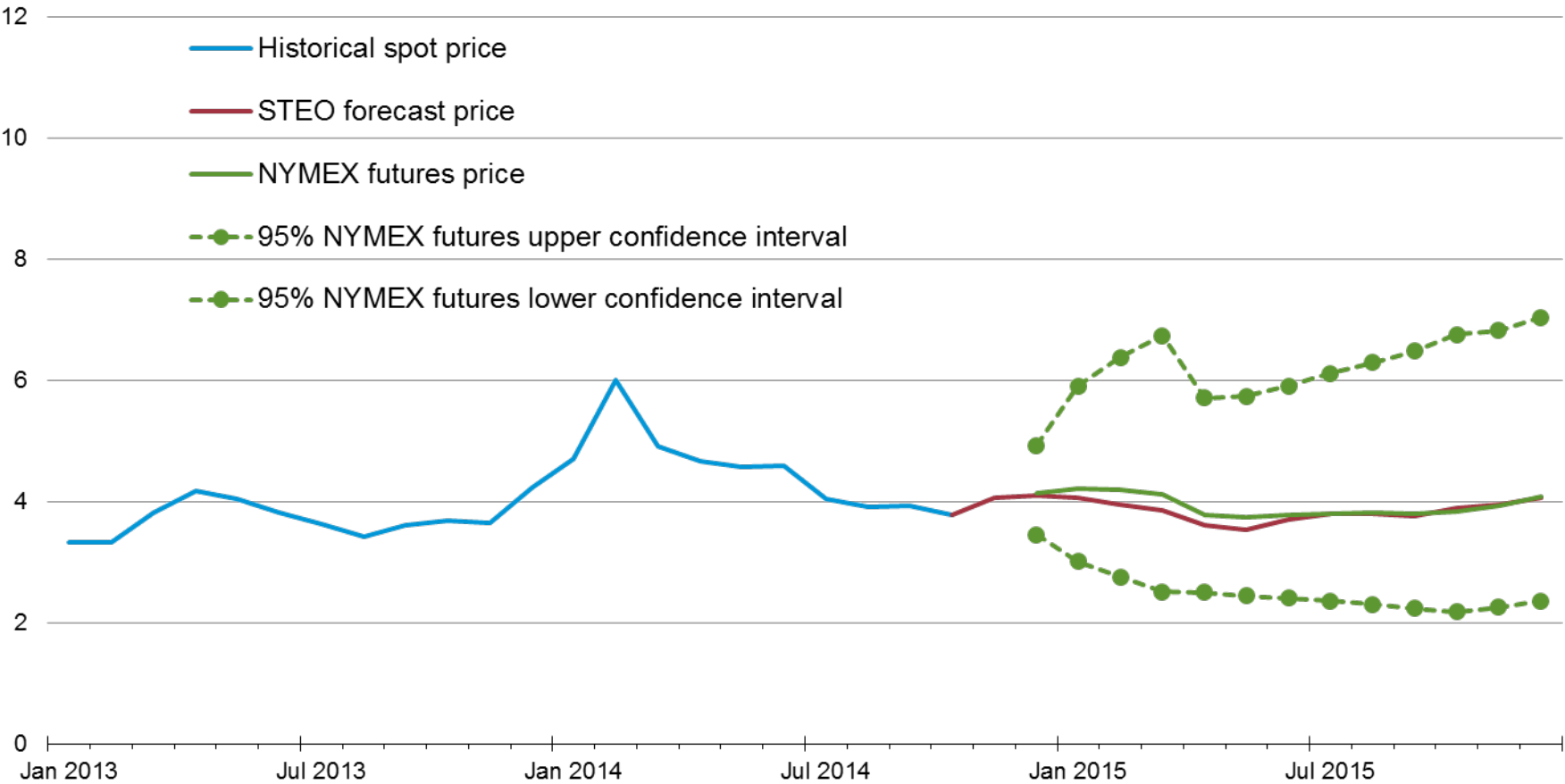
- Immediate and near-term supply
  - Enhanced access to new supplies
  - Anticipated direct use demand
  - Electric generation – fleet outages/emissions requirements
  - Economic conditions
  - Storage inventories
- Severe weather – affects demand & production
- Imports/Exports
  - Canadian pipeline imports
  - LNG imports/exports

# Factors Affecting Pricing

- Electric generation requirements
  - Generation fleet availability or outages
  - Emissions levels & requirements
- Oil prices
  - Domestic and international markets
  - Fuel switching capability for major end-use customers

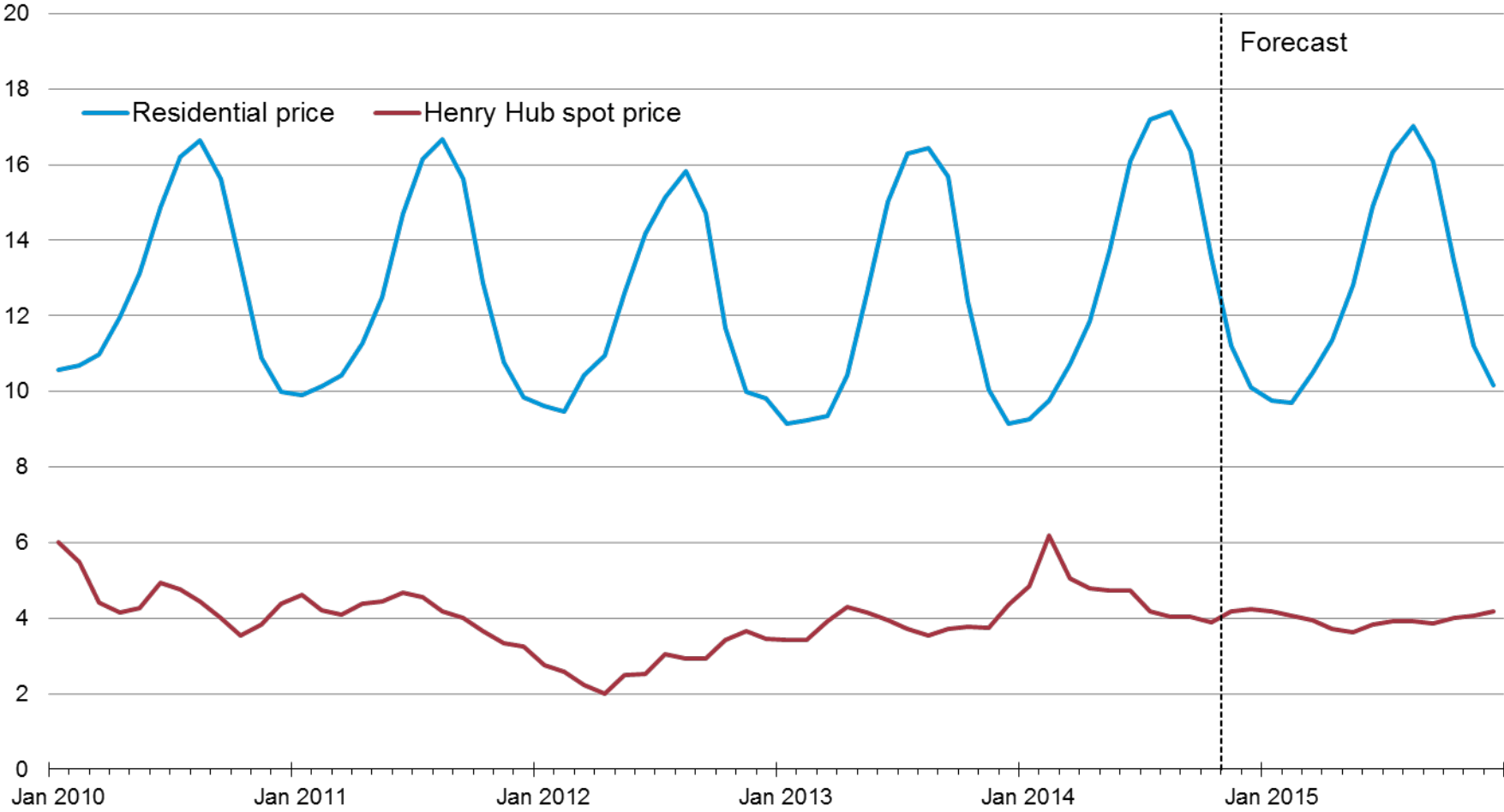
Henry Hub Natural Gas Price

dollars per million Btu



# U.S. Natural Gas Prices

dollars per thousand cubic feet



Source: Short-Term Energy Outlook, November 2014.

**Questions?**

**Thank you.**