

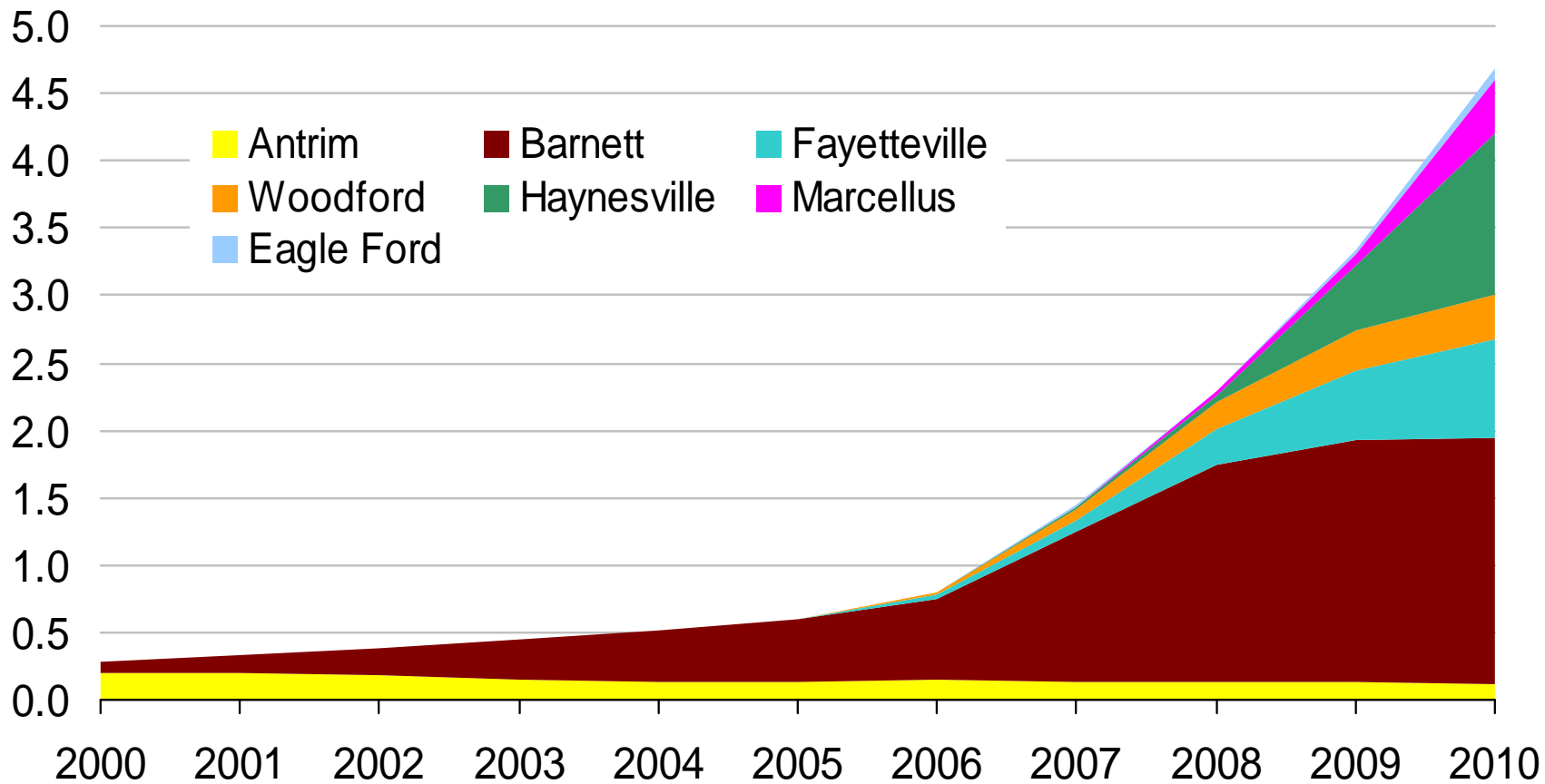
*IMPACT OF NATURAL GAS ON ENERGY
SECURITY AND CLIMATE CHANGE*

**DECEMBER 5, 2010
IGU-WORLDWATCH NATURAL GAS
SYMPOSIUM**

**DAVID GOLDWYN
SPECIAL ENVOY FOR INTERNATIONAL
ENERGY AFFAIRS
U.S. DEPARTMENT OF STATE**

U.S. shale gas production has increased 14-fold in 10 years

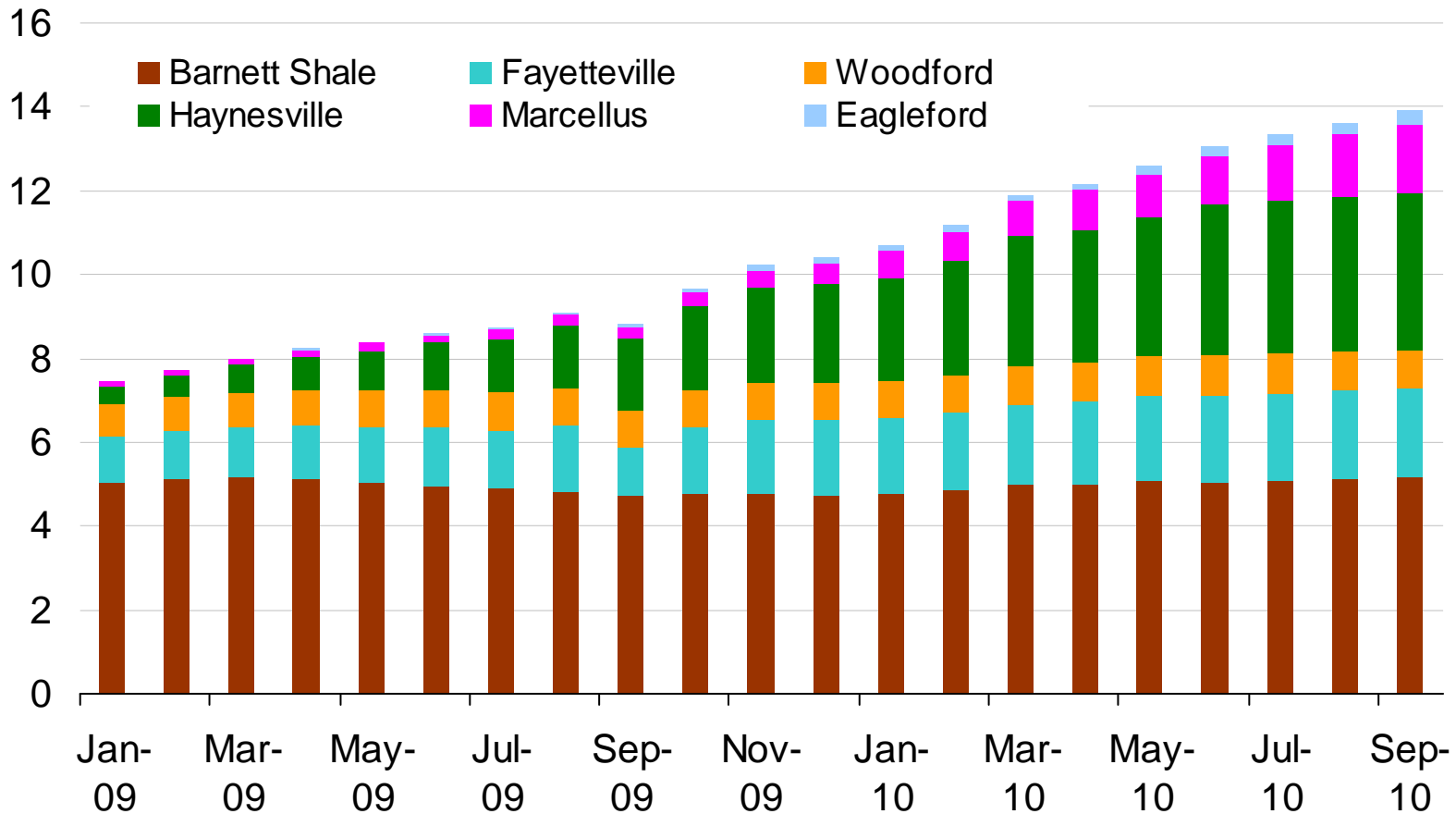
annual shale gas production
trillion cubic feet



Source: EIA, Lippman Consulting (2010 estimated)

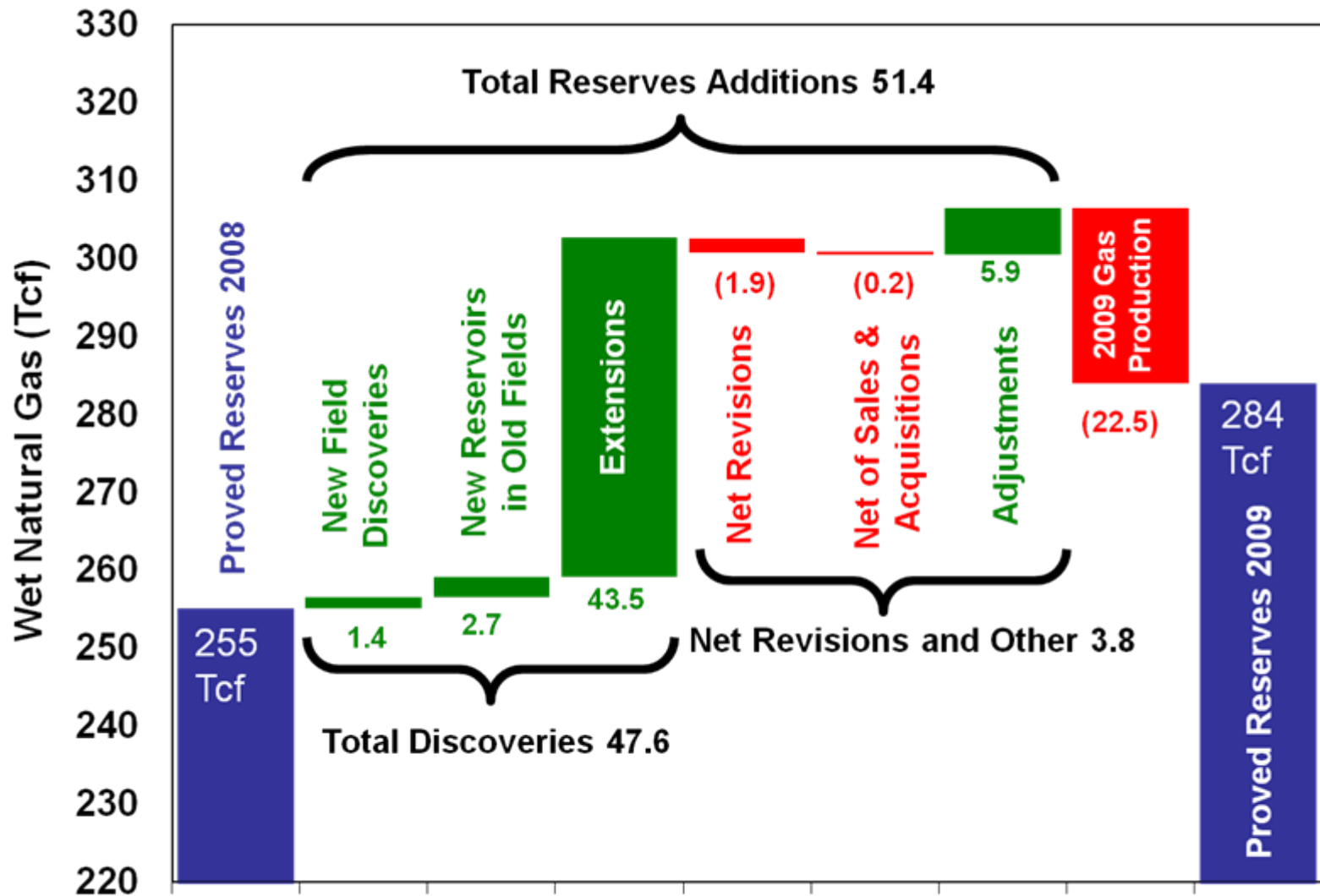
Shale gas production has continued to rise rapidly over the past year

billion cubic feet per day



Source: EIA, Lippman Consulting

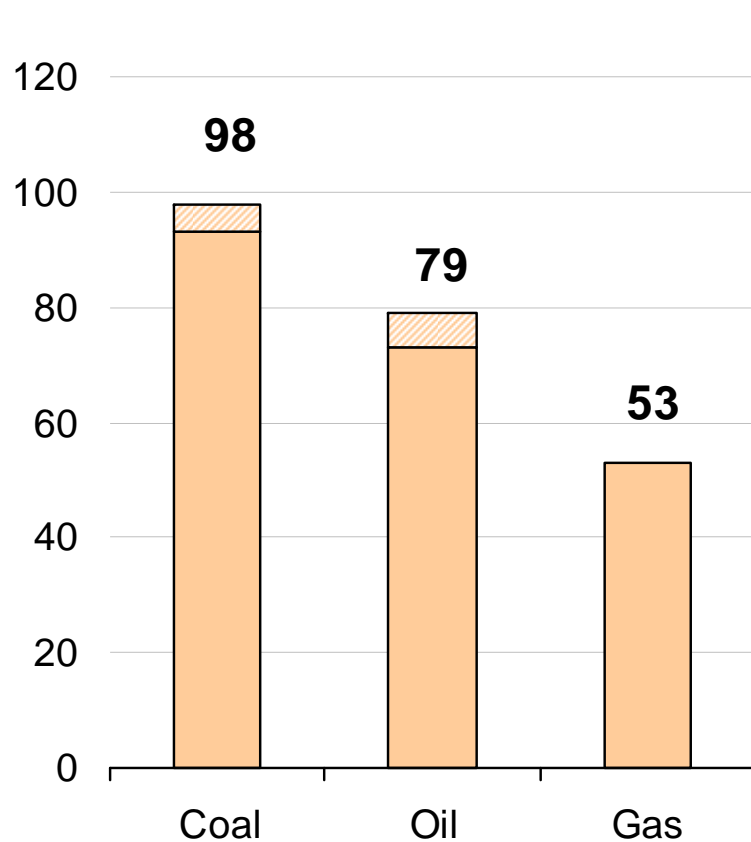
In 2009, U.S. proved reserves of natural gas increased by more than 11 percent, despite lower natural gas prices



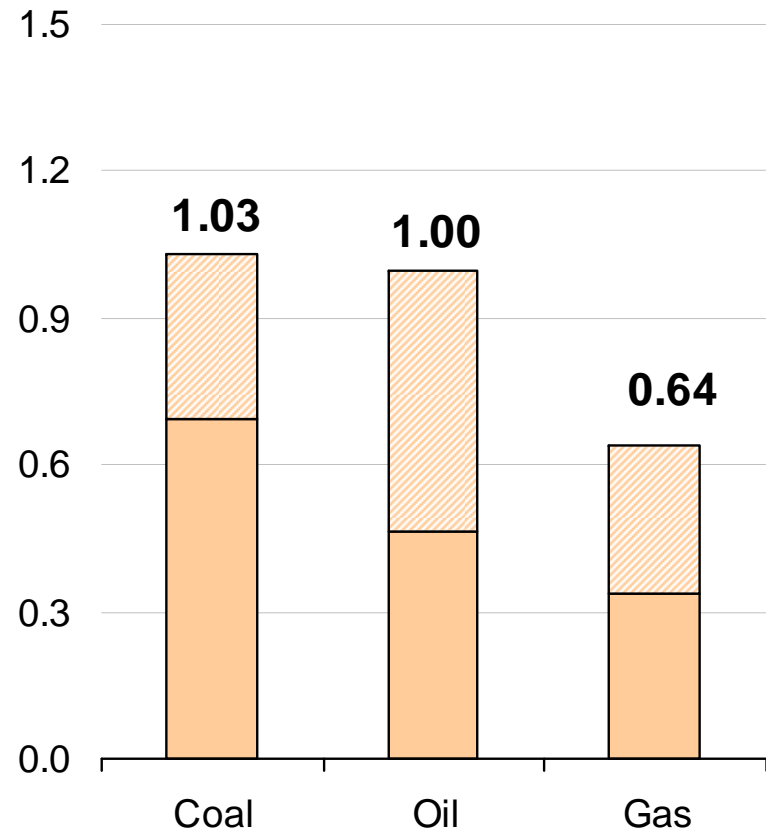
Source: EIA, Summary: U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves, 2009

In many cases, natural gas can be an effective “bridge” to a low-carbon energy economy

kg of CO2 per million Btu



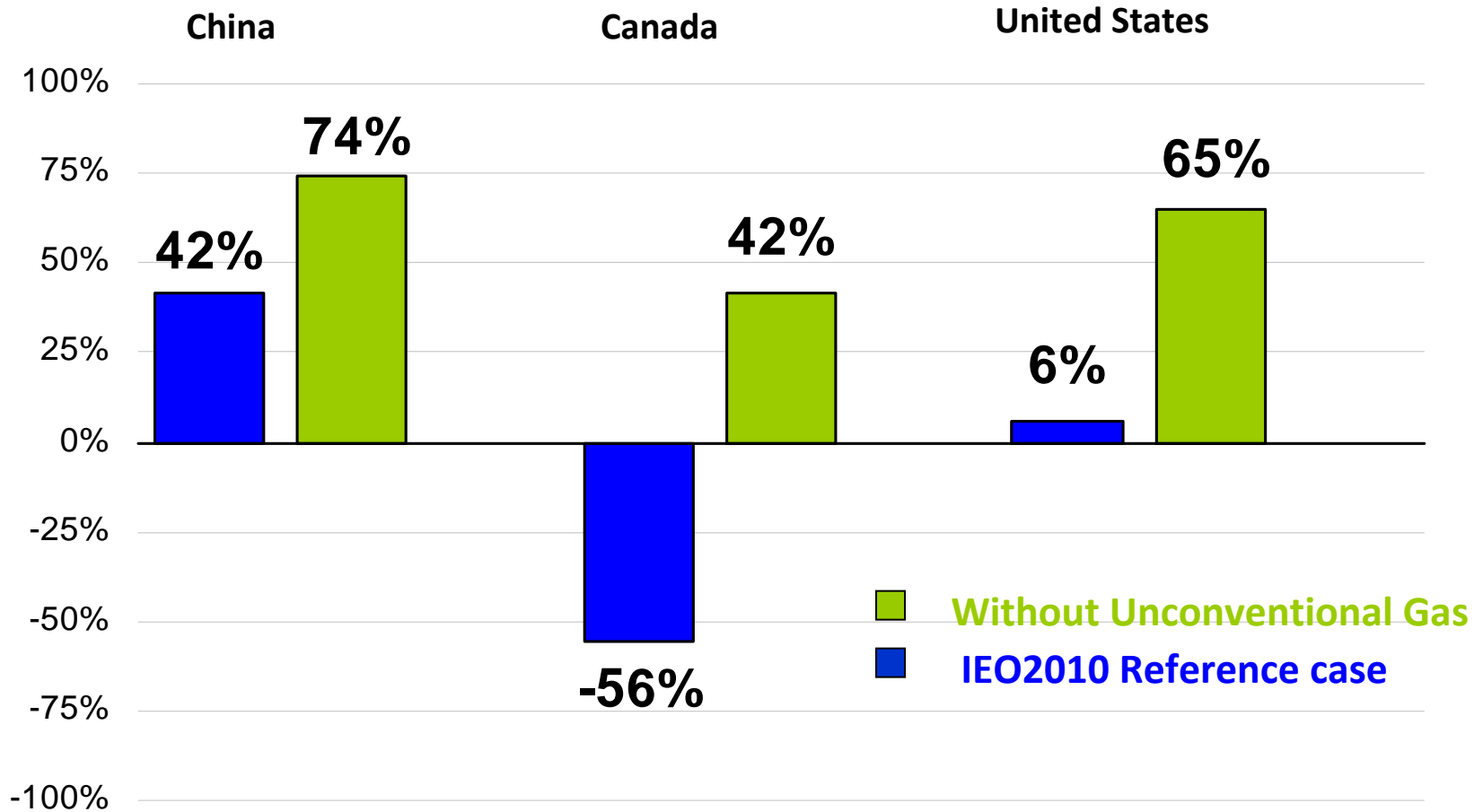
kg of CO2 per kilowatthour



Source: EIA

Without unconventional supplies, gas import dependence could be substantially higher

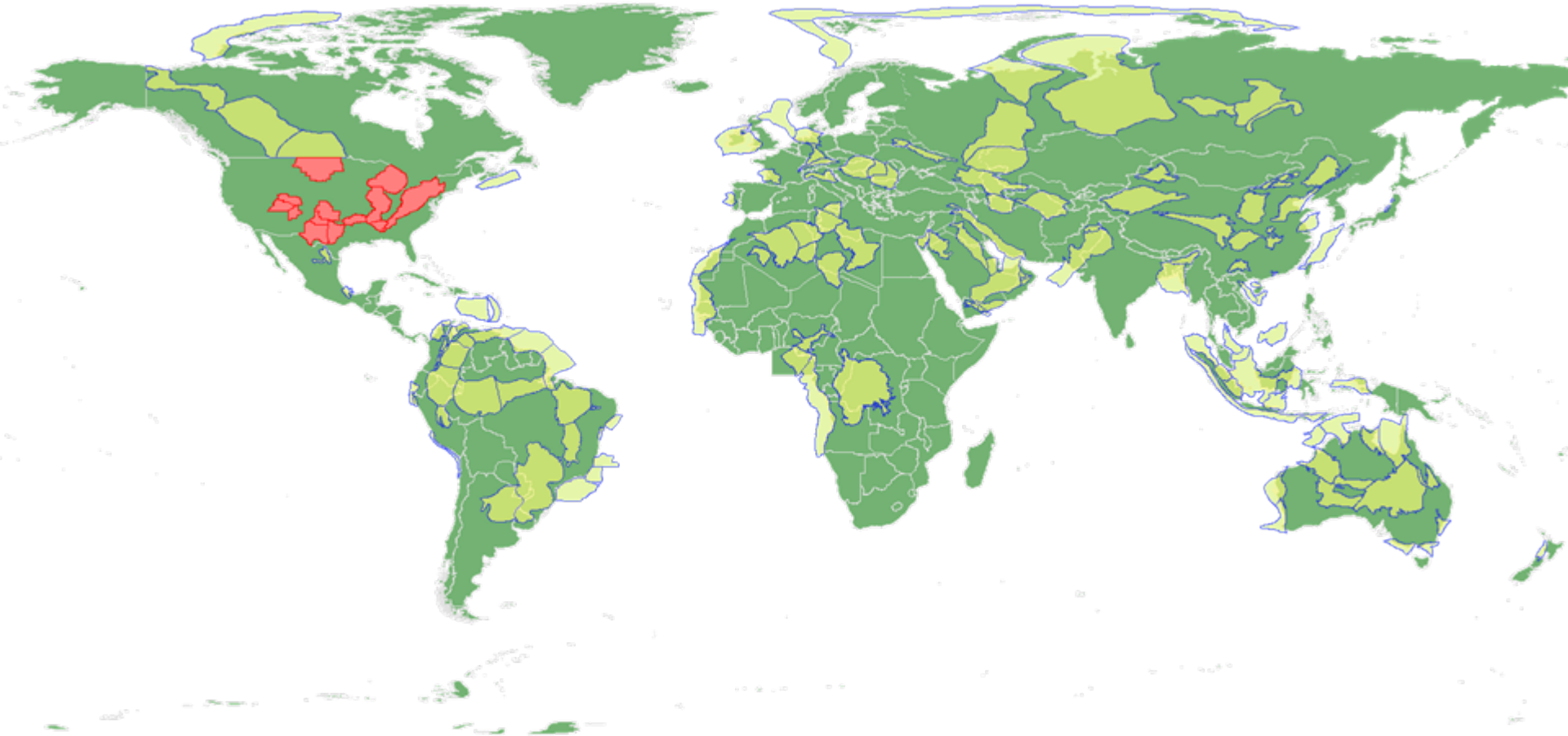
Import dependence in 2035
percent



Source: EIA, *International Energy Outlook 2010*

Worldwide shale gas basins

(red denotes in-production)



While shale gas production is currently limited to the U.S. and Canada, exploration is ongoing in Poland, Hungary, China, India, South Africa, Germany, Austria, the UK, Sweden, Argentina and many other locations.

Source: Schlumberger

Global shale gas resources



Source: Halliburton

GSGI Regulatory Conference

Participants

- Armenia
- Bulgaria
- Chile
- China
- Colombia
- Estonia
- Georgia
- India
- Indonesia
- Jordan
- Latvia
- Lithuania
- Morocco
- Pakistan
- Peru
- Poland
- Romania
- South Africa
- Ukraine
- Uruguay