

HOW SHALE GAS HAS CHANGED THE OUTLOOK FOR LNG AND NUCLEAR PLANTS AFTER THE FUKUSHIMA DISASTER

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9th US-EU Energy Regulators Roundtable
Chicago, IL, October 3-4, 2011

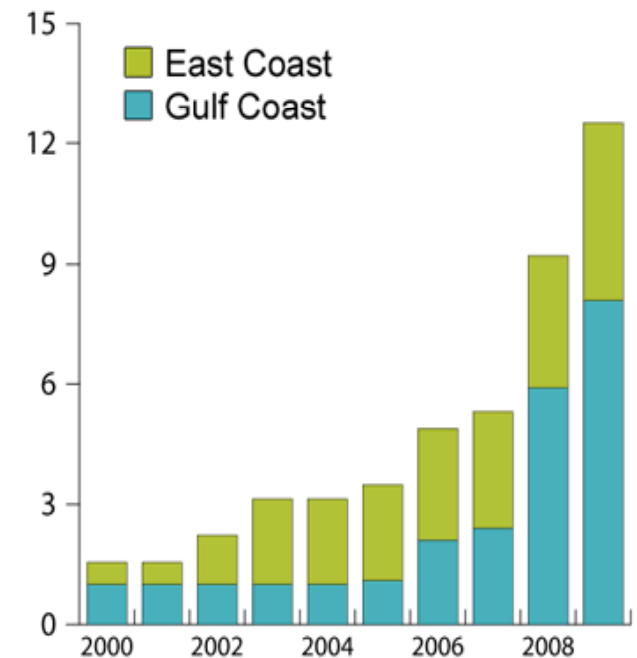
2000: A DECADE OF PROGRESS

- Global LNG Supply
- Unconventional Gas Uneconomic
- 38 LNG Regasification Terminals
- Limited Liquidity
- Global Markets Disconnected
- Security of Supply

PRE-SHALE BOOM - LNG in the US

- Over last 30 years LNG provided 1% - 3% of yearly US natural gas demand
- Today LNG accounts for 1.5% of natural gas consumed in the US
- Domestic production and fluctuating global natural gas demand have helped keep North American LNG prices lower than Asia and Europe

U.S. Capacity to Receive LNG Imports, 2000-2009 (Billion Cubic Feet per Day)

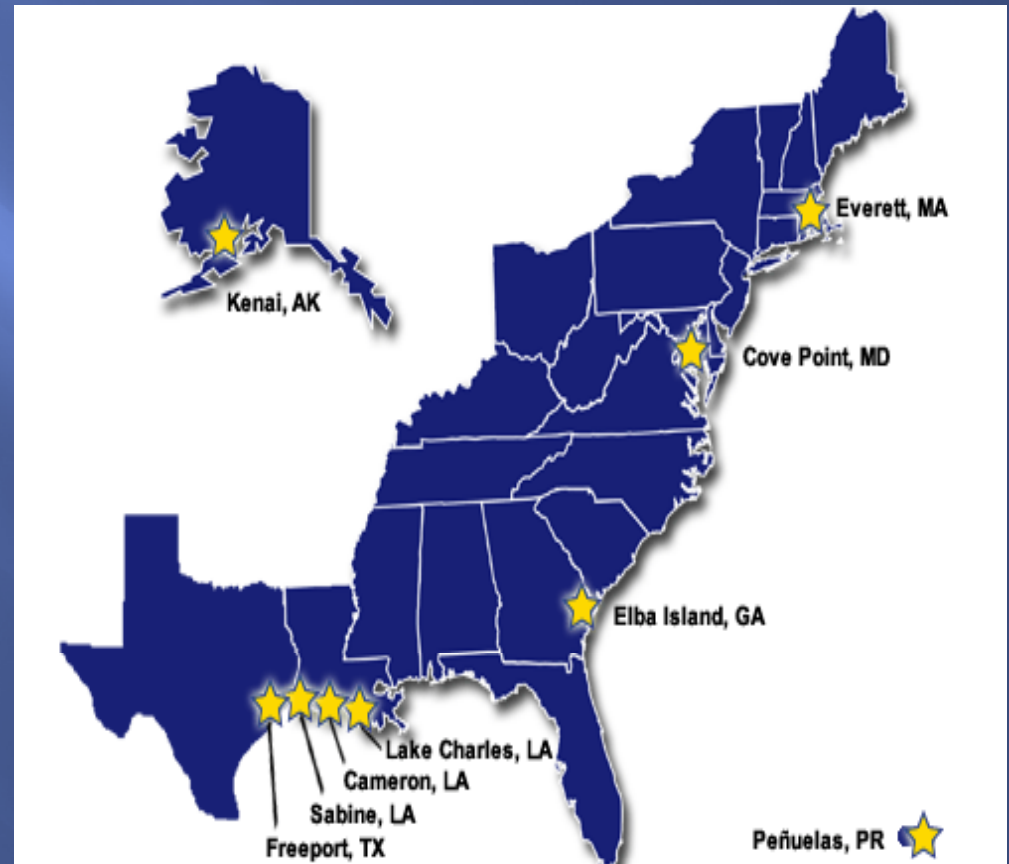


Source: Energy Information Administration, Office of Oil and Gas

PRE-SHALE BOOM - LNG IN THE US

- US capacity to receive LNG imports had grown significantly:
 - 9 import terminals
 - 1 export terminal
 - 22 additional terminals proposed

Source: Federal Energy Regulatory Commission, LNG, Terminals, 2009



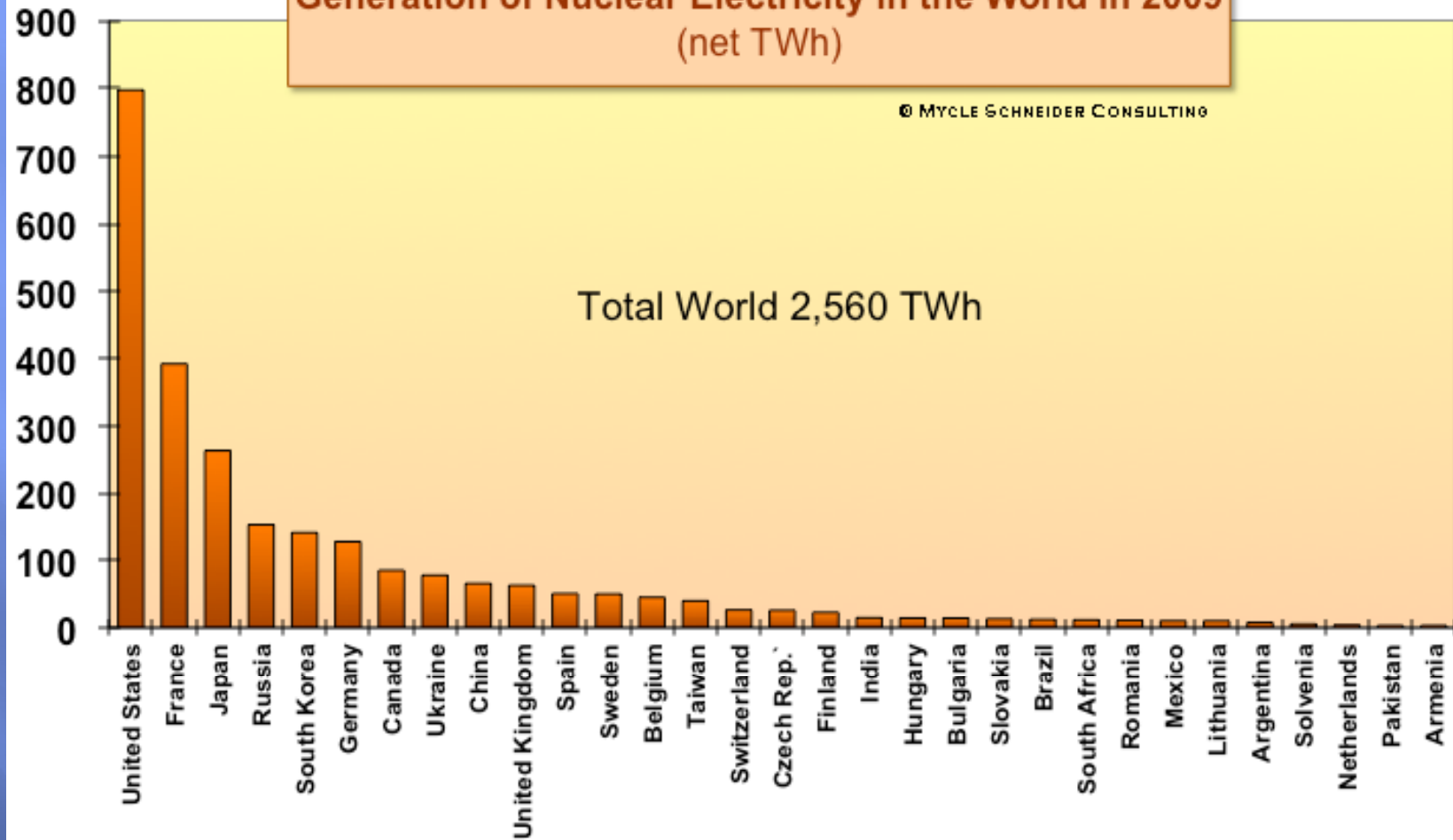
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TWh

Generation of Nuclear Electricity in the World in 2009
(net TWh)

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Total World 2,560 TWh

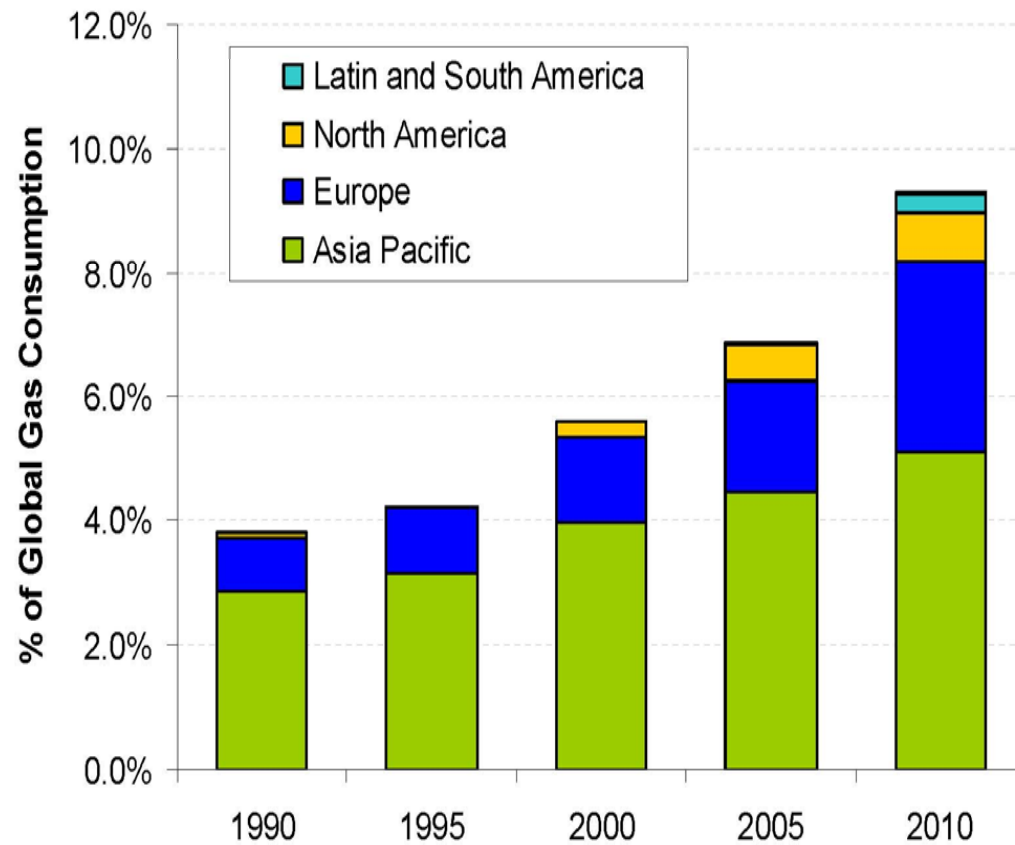


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2010: A DECADE OF PROGRESS

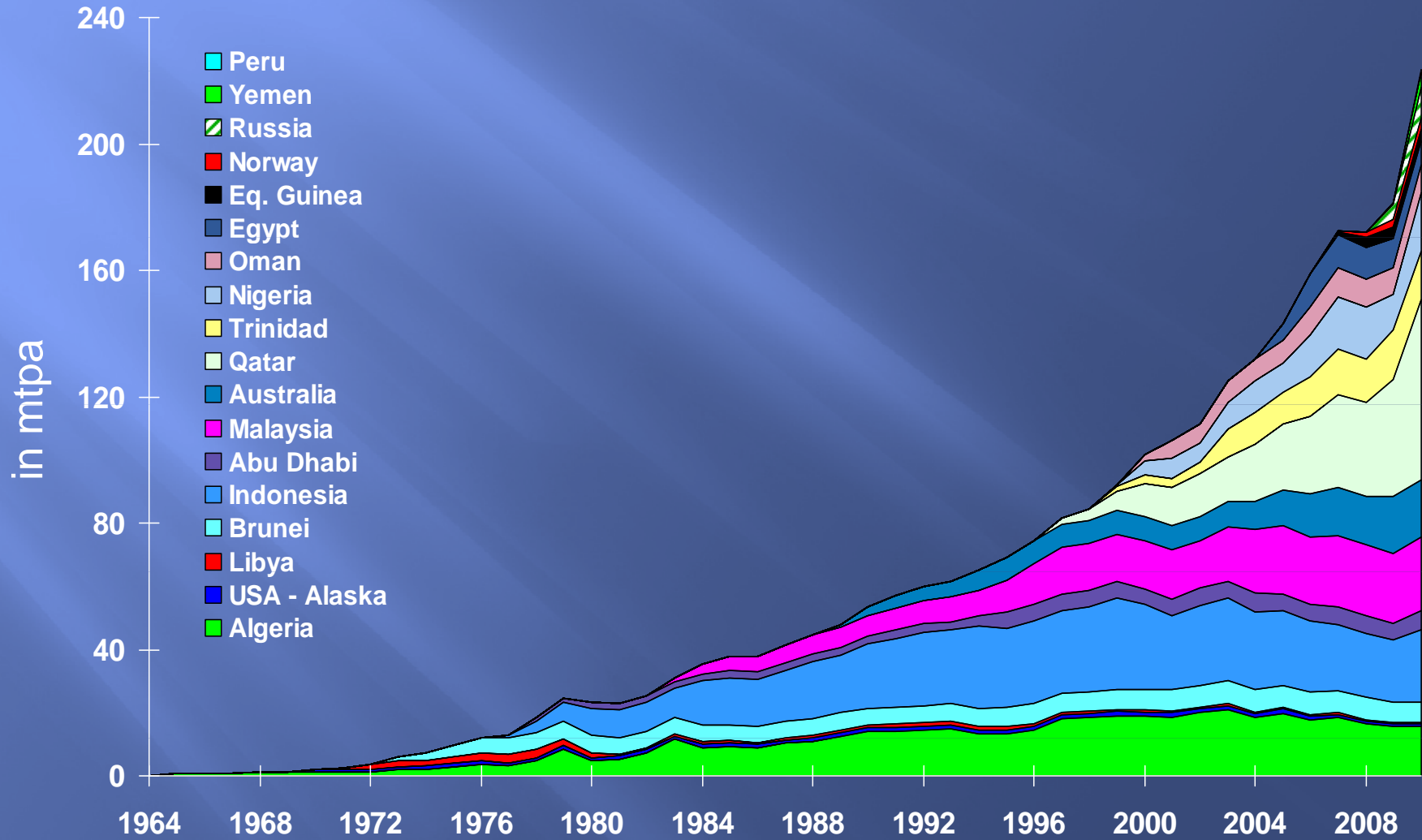
- Global LNG Supply 221 MTA
- Unconventional Gas Flourishing
- 84 LNG Regasification Terminals
- Transparent Fuel Market
- Global Gas Market Emerging
- GHG Emissions Reduction

GLOBAL GROWTH OF LNG TO DATE

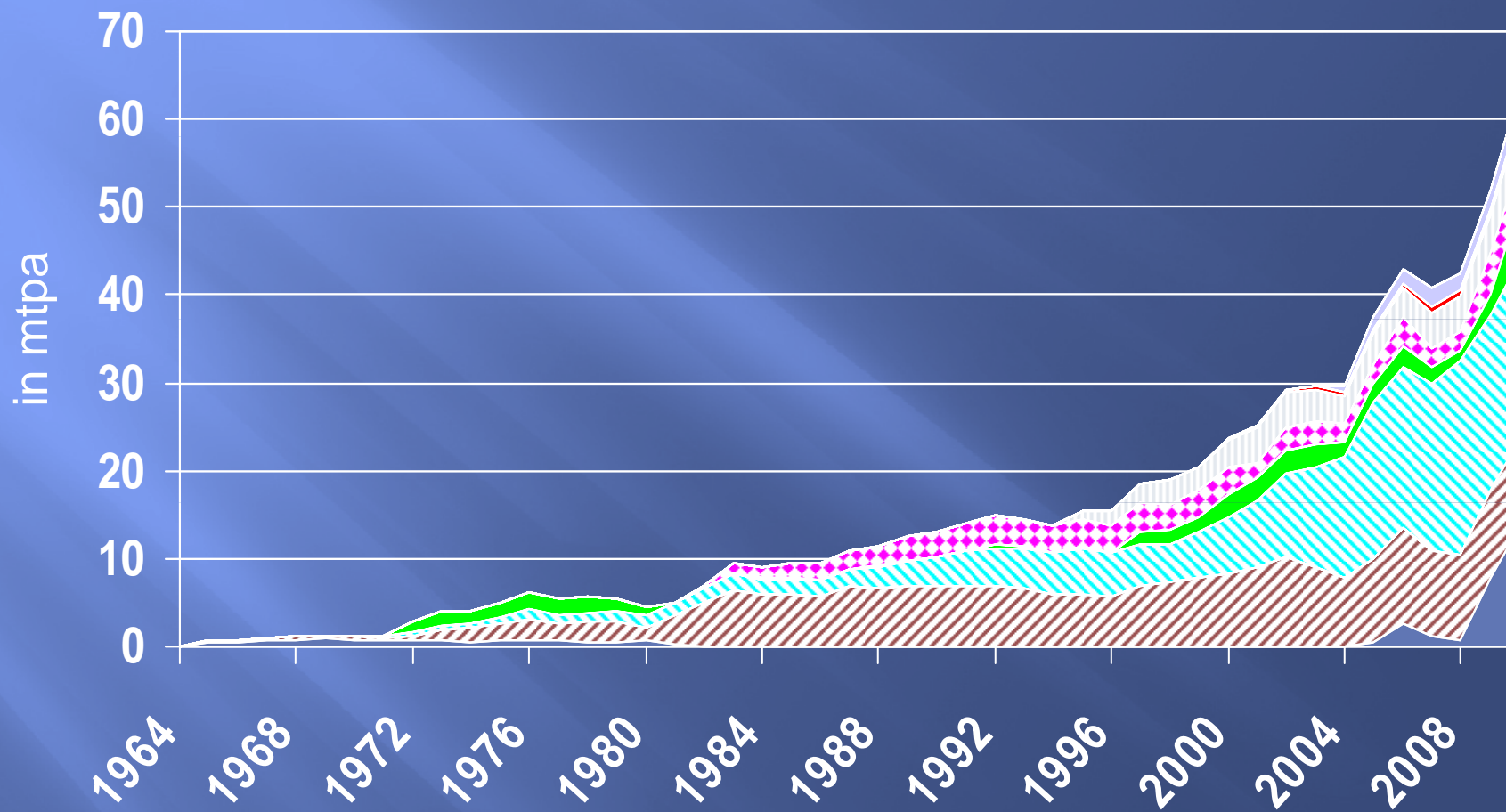


Source: BP Statistical review, EIA

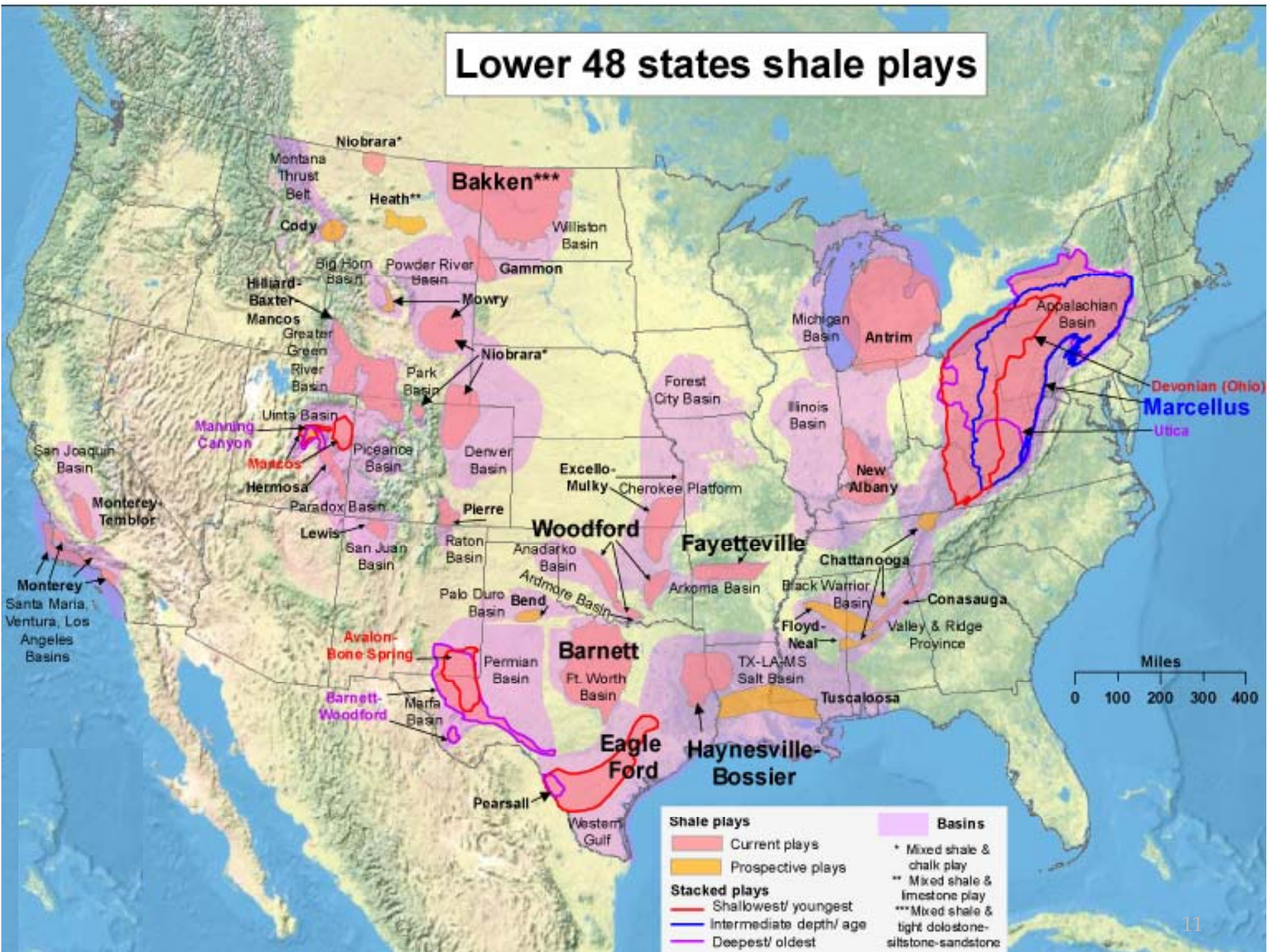
LNG TRADE BY EXPORTER 1964–2010 (E)



EUROPEAN LNG IMPORTS 1964-2010 (E)



Lower 48 states shale plays



U.S. AND JAPAN ENERGY RESOURCES

- In 2010, U.S. nuclear power supplied about 20% of the electricity generated, compared to 45% coal, about 24% natural gas, about 10% for renewables, and less than 1% for oil.
- According to EIA, Japan has few domestic energy resources and is only 16% energy self-sufficient.
- Japan was the world's third largest producer of nuclear power.
- Japan is the world's largest importer of LNG and coal and the third largest net importer of oil.
- Japan relies on LNG imports for most of its natural gas needs.

2011: RECENT EVENTS REFLECT THE INCREASING GLOBALIZATION OF GAS

- * April: Fukushima Tragedy
- * May: DOE Approval for US LNG Exports
- * June: Decision by Chancellor Merkel regarding nuclear energy in Germany
- * June: IEA Study on “Golden Era of Gas”
- * June: Italy vote regarding future of nuclear

FUTURE IMPLICATIONS FOR US POWER GENERATION

- According to EIA's latest energy outlook, LNG imports will fall in both 2011 and 2012 from levels in 2010.
- Growing domestic natural gas production has reduced reliance on natural gas imports and contributed to the potential for LNG exports.
- The prospects and impact of the export of domestically produced LNG are still in the early stages.
- However, DOE has already authorized LNG exports to some countries with new requests being recently filed.

IMPLICATIONS FOR GLOBAL POWER GENERATION

- More regulatory review and a shift in global energy mix.
- Lower natural gas prices will continue to present challenges for new nuclear plants in the U.S. and possibly in other countries.
- Japan will likely require additional natural gas and oil to provide electricity.
- Japan has over 40 operating LNG import terminals.
- Japan is likely to import more spot LNG and other fuels to compensate for the loss of nuclear power.
- Some pro-nuclear power countries are now reevaluating their future use of nuclear power. Germany will shut most of its nuclear plants permanently over the next eleven years.