



OVERVIEW OF TODAY'S ENERGY INDUSTRY

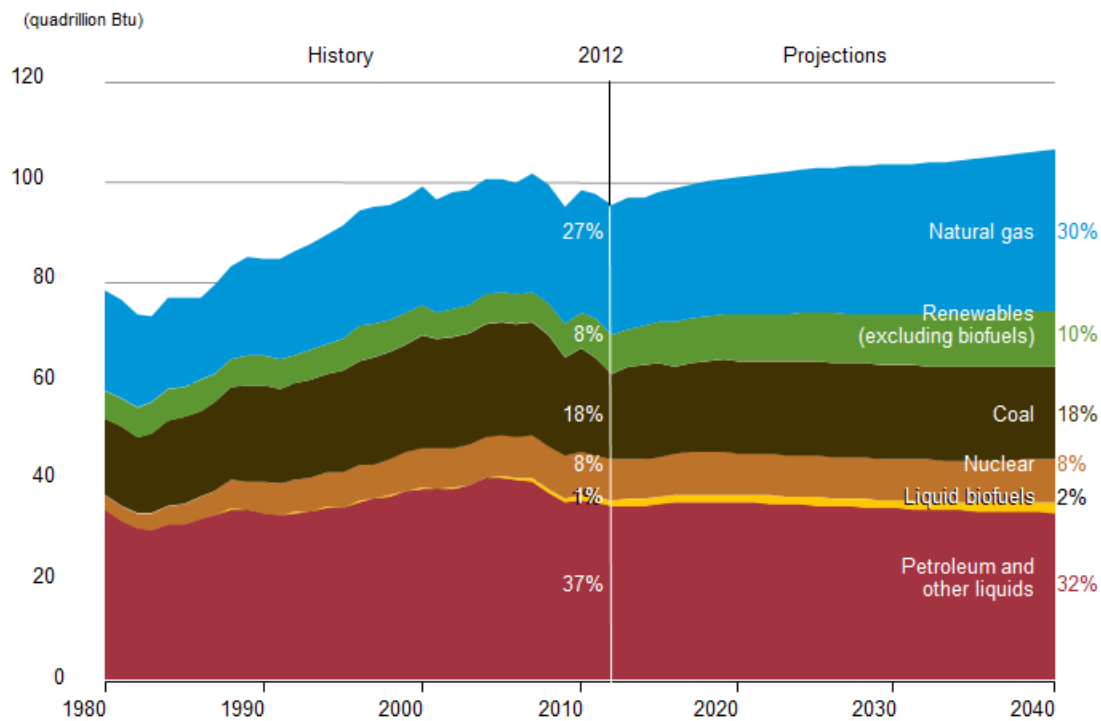
Barry Worthington
Executive Director
United States Energy Association

February 24, 2015
Pensacola, Florida

American Association of Port Authorities
Energy Projects Seminar

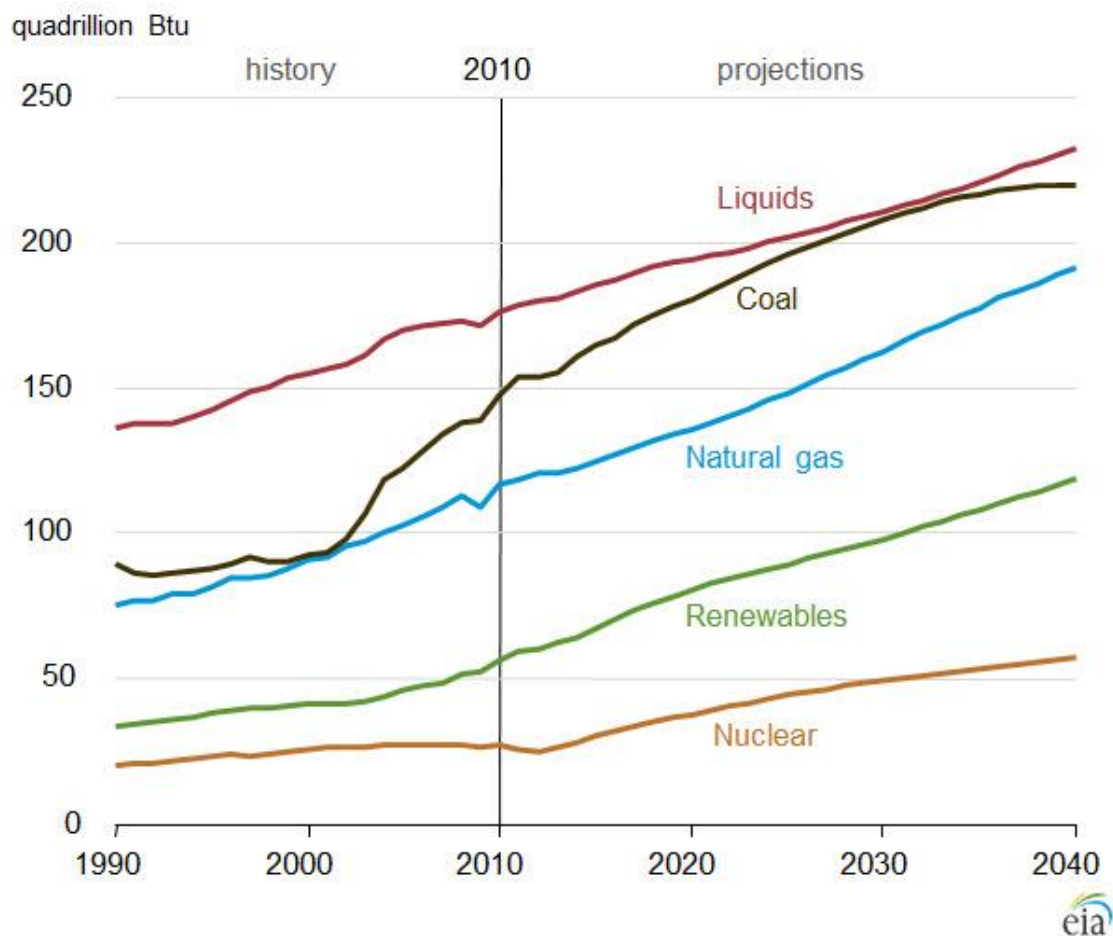
US Energy Consumption

Figure 8. U.S. primary energy consumption by fuel, 1980-2040



Global Energy Consumption

Figure 2. World energy consumption by fuel type, 1990-2040



Energy Imports

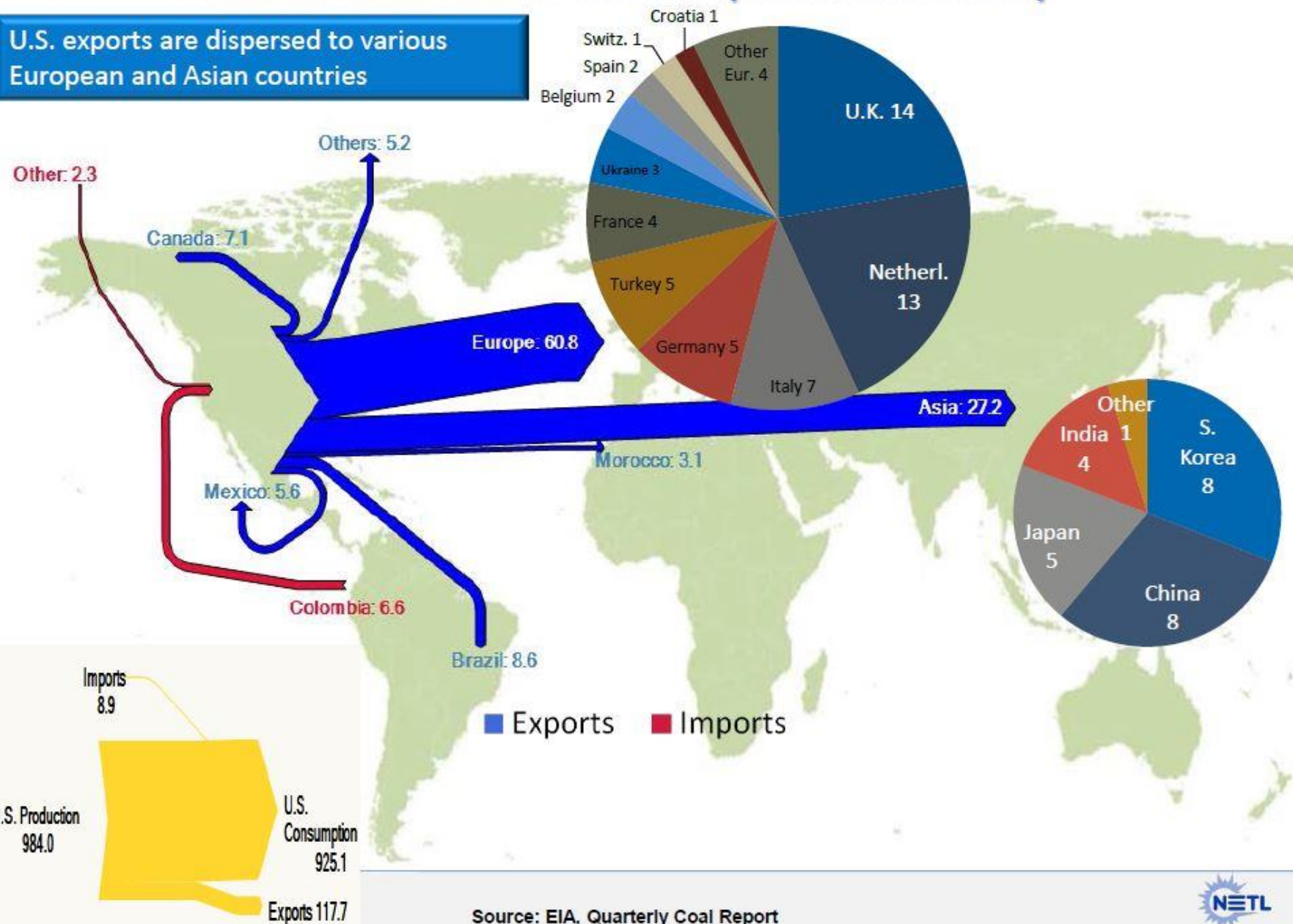
Energy Product	Amount Exported	Unit of measure	Data Yr.
Crude Oil	8526.653	thousand barrels per day	2012
Natural Gas	2883	billion cubic feet	2013
Electrical Power	63.6	billion kilowatthours	2013

Energy Exports

Energy Product	Amount Exported	Unit of measure	Data Yr.
Natural Gas	1572	billion cubic feet	2013
Electrical Power	11.284	billion kilowatthours	2013
Refined Petroleum Products	3137.35	thousand barrels per day	2012
Coal	126,720	thousand short tons	2012
LNG	0.03	trillion cubic feet	2012
Pipeline Gas	1.57	trillion cubic feet	2012
Petroleum Condensate	650,000	barrels per day	2014

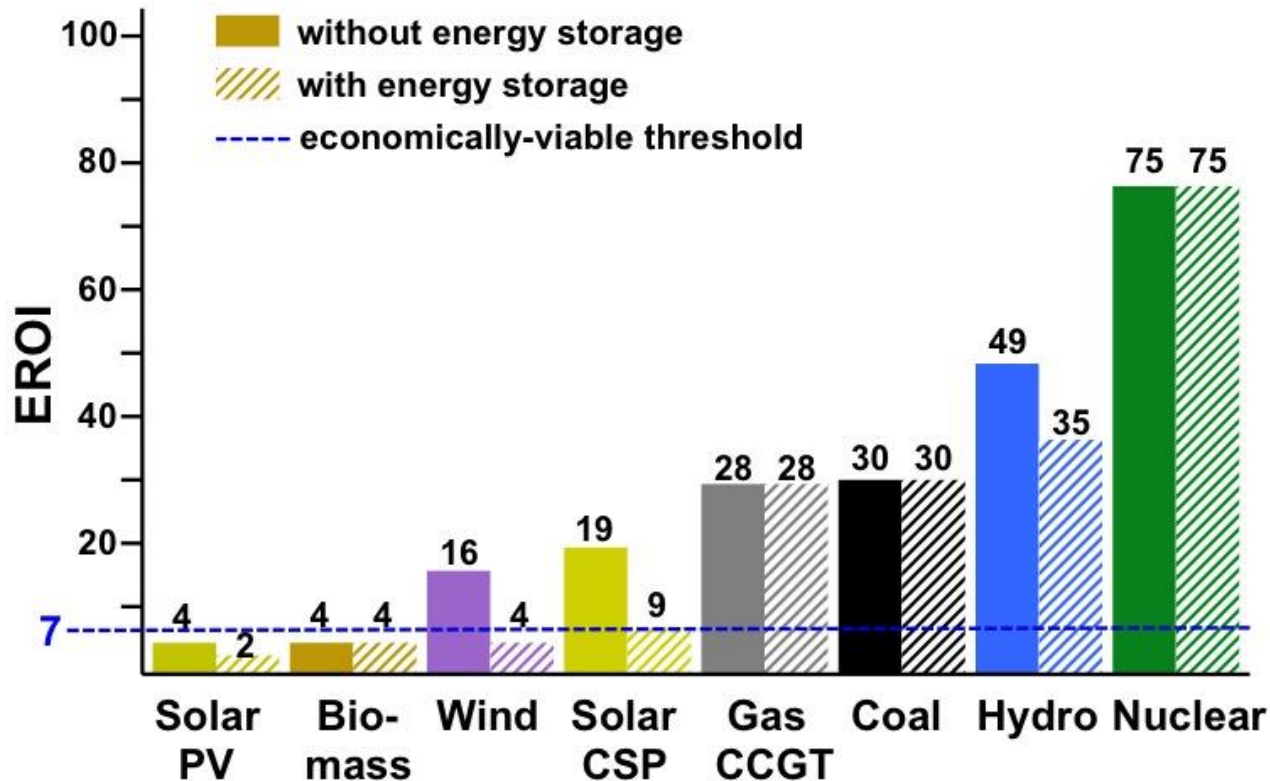
2013 U.S. Coal Trade (million short tons)

U.S. exports are dispersed to various European and Asian countries



Source: EIA, Quarterly Coal Report

Energy Returned On Investment relative to the breakeven value of 1



Energy Returned on Investment, or EROI, with and without energy storage (buffering or load following). CCGT is combined-cycle natural gas turbine. Nuclear is conventional Pressurized Water Reactors, fast reactors are several times higher. Solar CSP is concentrated solar (à la Ivanpah), solar PV is photovoltaic solar cells like on rooftop solar. Energy sources must exceed the economic threshold of about 7 (blue line) in order to yield the surplus energy required to support a modern society. EROI is similar to Energy Returned on Energy Invested (EROEI). After Weißbach (2013)

Issues Re Expanded Exports

- LNG proposed terminal
- LNG proposed import terminal in 2002
- Crude oil export prohibitions
- Coal
- Refined Products

Gaze into the Future

- Offshore wind
- Robust trade
- Oil and natural gas storage
- Carbon dioxide imports
- Carbon dioxide offshore storage
- Methane Hydrates

Concluding Remarks

- Imports shrink
- Exports expand
- Electrification of ports
- Chaos reigns
- Change has never been more rapid
- Shipping will attract attention of climate change concerns



OVERVIEW OF TODAY'S ENERGY INDUSTRY

Barry Worthington
Executive Director
United States Energy Association

February 24, 2015
Pensacola, Florida

American Association of Port Authorities
Energy Projects Seminar