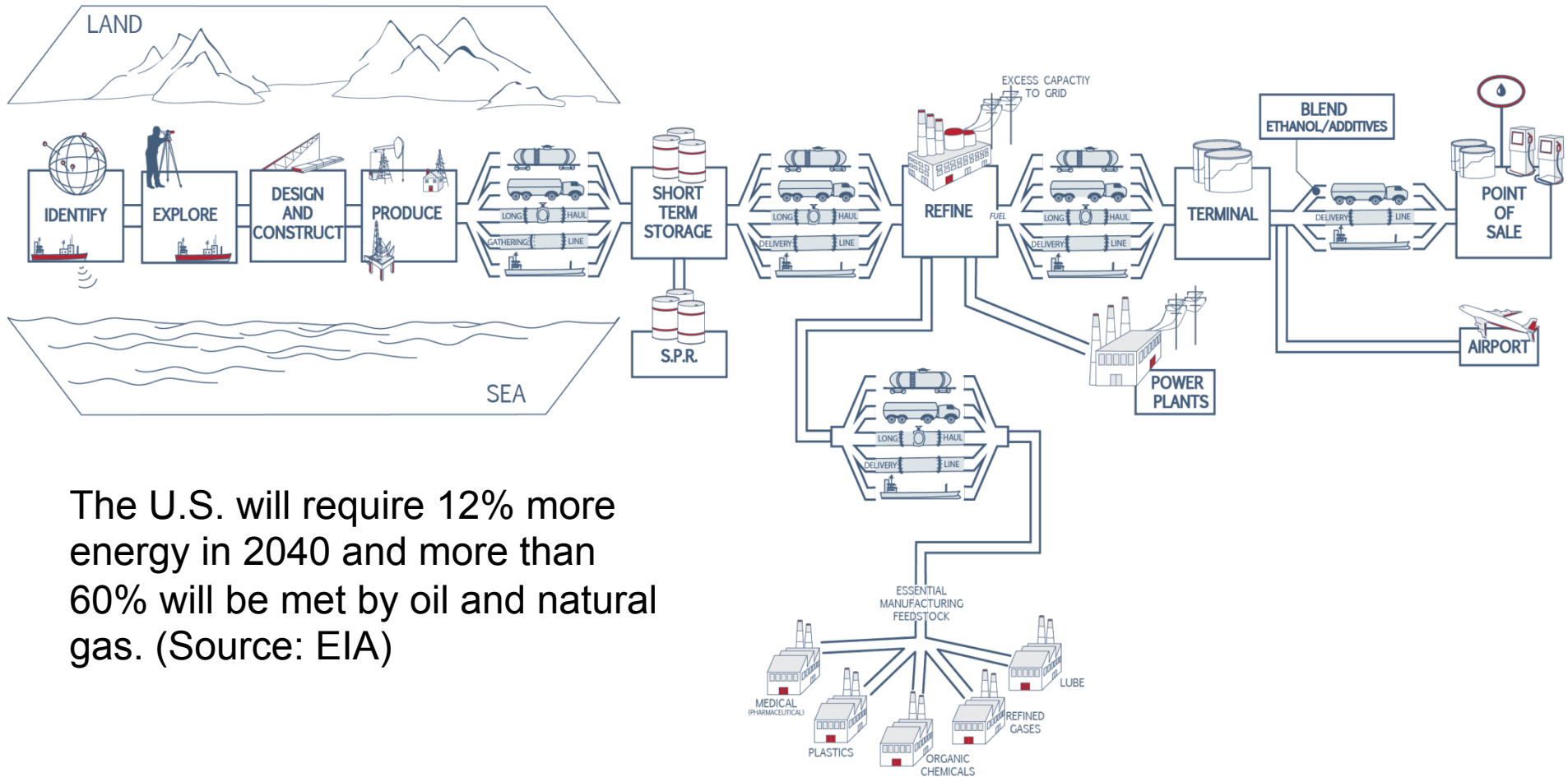


PHMSA Pipeline Safety Management Systems Workshop

Robin Rorick, Group Director, Midstream and Industry Operations
April 22nd, 2015 | Houston, TX

Infrastructure will be Critical to Demands



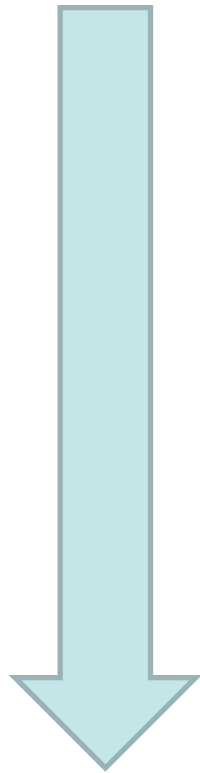
The U.S. will require 12% more energy in 2040 and more than 60% will be met by oil and natural gas. (Source: EIA)

Safety is a Top Value for the Oil and Gas Industry

Major efforts to improve safety across segments:

- **Refinery process safety**
- **Offshore environmental and safety management systems**
- **Working with the Rail Industry on Crude by Rail Safety**
- **Pipeline Safety Management Systems**

Management and Leadership Commitment



Leadership

Top Management

Management

Implementation

Achieving Safety Excellence Is A Journey



Safety Leadership within Pipeline Industry

Safety and Management Strategies

- Safety Management Systems
- Construction Quality Management Systems
- Industry-wide sharing, learning, and improvement program

Pipeline Integrity

- Assessing and Managing Pipeline Cracking
- Data Integration
- Hydro-testing

Emergency Response

Leak Detection

Development of API RP 1173 – Key Components

- Importance to API and entire industry
- API commitment of time and resources for development and maintenance
- Broad participation (liquids and gas, large and small) ensures comprehensive document
- Encouraging all operators to consider adopting this RP

Implementing the SMS RP

- Universal
 - Ensure technical information is available to all operators

- Measurable
 - Key metrics will be suggested and collected

- Educational
 - Develop materials for atypical audiences

Recent Headlines Underscore US Energy Renaissance

- “U.S. RISES TO NO. 1 ENERGY PRODUCER”
- “THE U.S. IS AN ENERGY SUPERPOWER”
- “U.S. FRACKING SUCCESS THREATENS RUSSIAN ECONOMY, STRATEGY”

Economic Impacts of Infrastructure Development

- ***Oil & Natural Gas Transportation & Storage Infrastructure: Status, Trends, & Economic Benefits – IHS, December 2013***
- Total Supported Employment:
 - **1.15 million jobs** will be supported on average from 2014-2025
 - **803,000 jobs** resulting from pipeline investment
 - Including 515,000 manufacturing jobs
- Capital Expenditures:
 - Updating U.S. infrastructure could generate an estimated **\$1.14 trillion** in capital between 2014 and 2025
- Gross Domestic Product Impact:
 - **\$120 billion** in value added contributions per year from 2014-2025
- Federal and State Government Revenues:
 - Investments in infrastructure could generate up to **\$27.5 billion** in average annual revenue to the government

Pipelines will be Needed

Expected North American Major Crude Oil Pipelines (2020)



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Economic Impacts of Oil and Gas Development

- *America's New Energy Future: The Unconventional Oil and Gas Revolution and the US Economy; Volume 3: A Manufacturing Renaissance – IHS, September 2013*
- Total Supported Employment:
 - **2.1 million jobs** supported in 2012
 - **3.9 million jobs** supported in 2025
 - Including 515,000 manufacturing jobs
- Capital Expenditures:
 - **\$121 billion** in 2012, rising to **\$240 billion** by 2025
 - **\$2.75 trillion** in capex cumulative between 2012 and 2025
- Gross Domestic Product Impact
 - **\$284 billion** in value added contributions in 2012
 - Increases to **\$533 billion / year** in 2025
- Federal and State Government Revenues
 - **\$74 billion** in 2012
 - **\$240 billion** in 2025
- Average Increased disposable household income due to lower energy prices
 - **1,200** in 2012, rising to **\$3,500** in 2025