

How to Be More Sustainable, Reduce Costs, & Increase Profitability

**West Virginia Governor's Energy
Conference
October 25th and 26th 2022**

**We All Want Clean Air and Clean Water
What about products and profits?**



Can We Have it All?

An Industrial Dream

- ❖ Secure Energy/Feedstock
- ❖ Shorten Supply Lines
- ❖ Increase Profitability
- ❖ Reduce Emissions

We Can Now Reduce U.S. Imports Causing SOx, NOx & CO2



Emissions Advantage:

SHALE CRESCENT USA
SUPPLY CHAINS

≈ **500 MILES**



VS

GLOBAL SUPPLY
CHAINS

≈ **20,000 MILES**



Build in the Center of Customers:

SHORTEN SUPPLY LINES

30% of Canadian population within a 1 day's drive

MARKET DEMAND

70% of North American Polyethylene demand is within a 1 day's drive*

50% of the U.S. population is within a 1 day's drive

MARKET DEMAND

77% of North American Polypropylene demand is within a 1 day's drive*



*Source: IHS Markit

Build on Top of the Feedstock:



A new global leader in natural gas production:

- If Shale Crescent USA were a country, it would be the **3rd** largest producer of natural gas in the world.*
- These 9 countries produce nearly **70%** of the natural gas in the entire world.

*Shale Crescent USA is Ohio, West Virginia, and Pennsylvania.

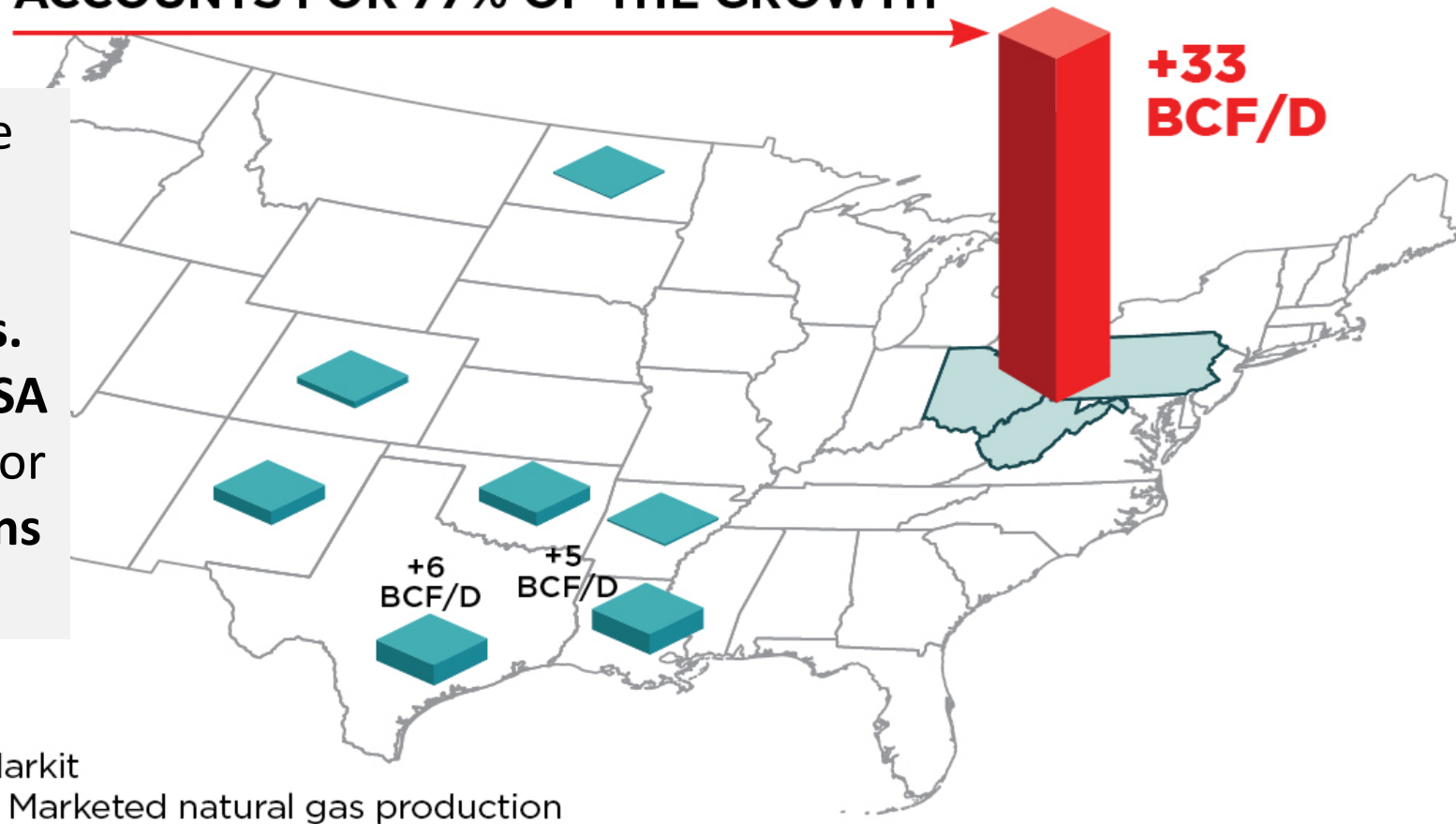
Source: BP Statistical Review, EIA, Shale Crescent USA

Build on Top of the Feedstock:

GROWTH IN MARKETED NATURAL GAS PRODUCTION 2008–2021

ACCOUNTS FOR 77% OF THE GROWTH

The U.S. has been the **only country** to meet the **Paris Climate Accords**. Natural Gas from SCUSA is the primary reason for **lowering U.S. emissions by 21%**

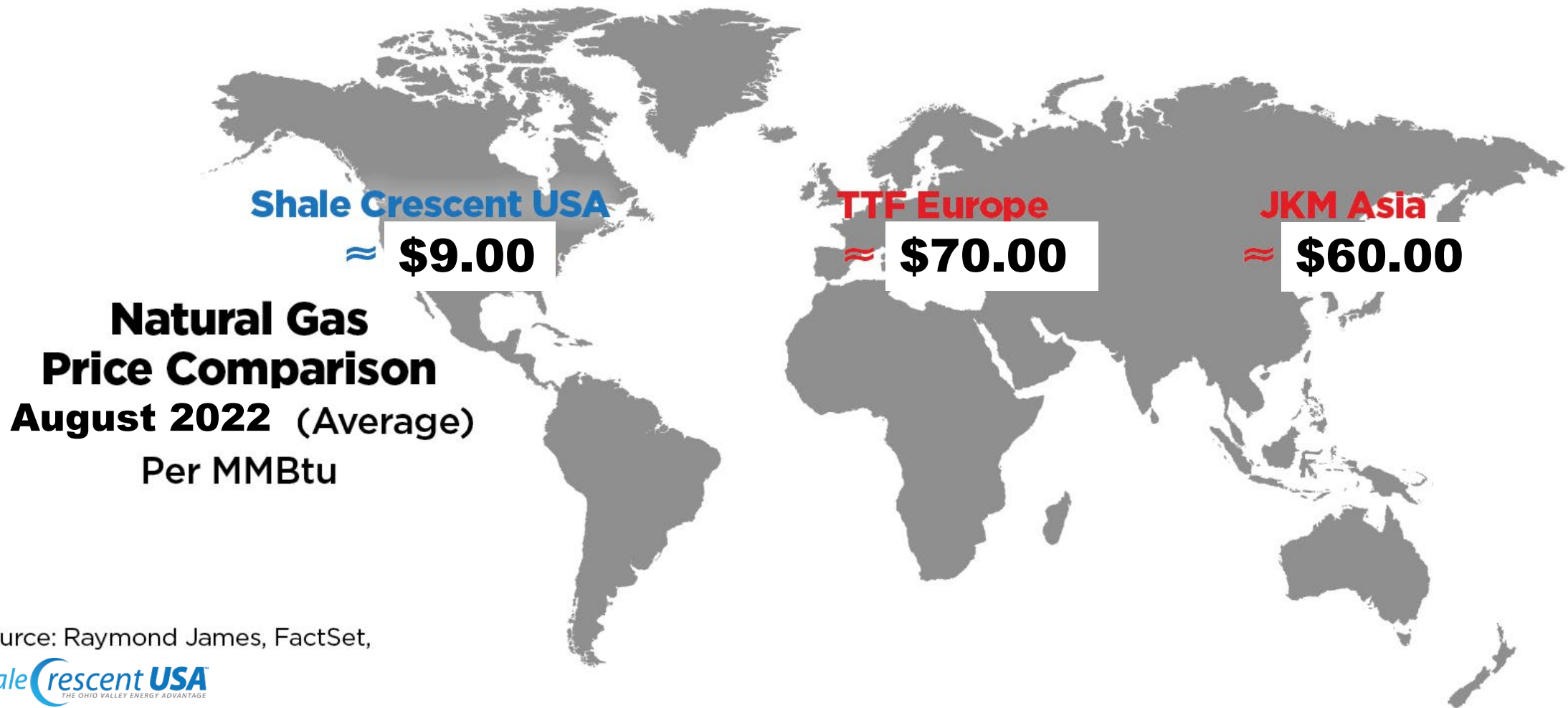


*IHS Markit

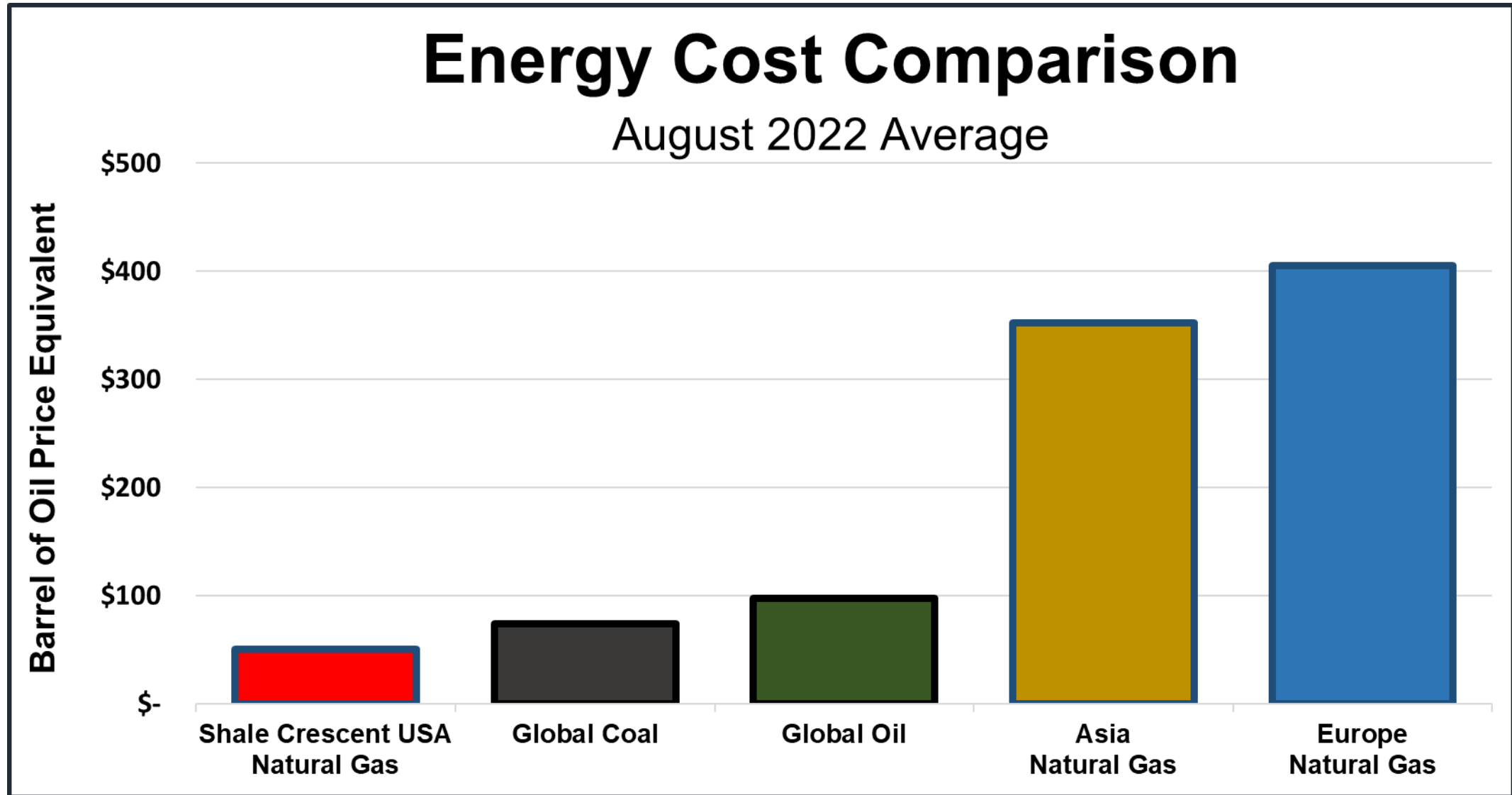
Note: Marketed natural gas production

Source: EIA and Shale Crescent USA

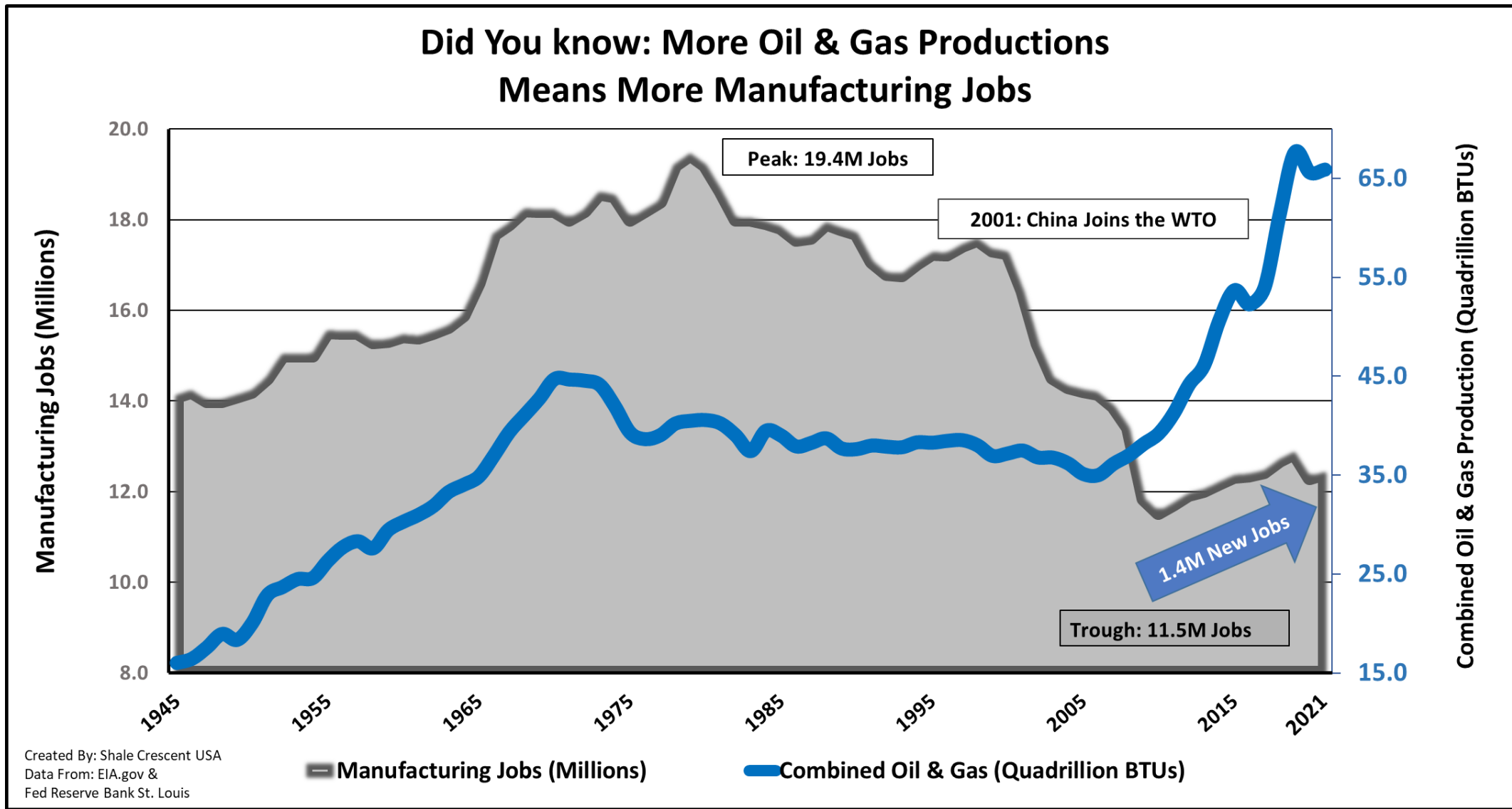
Profitability: Affordable Energy



Shale Crescent USA: Most Affordable

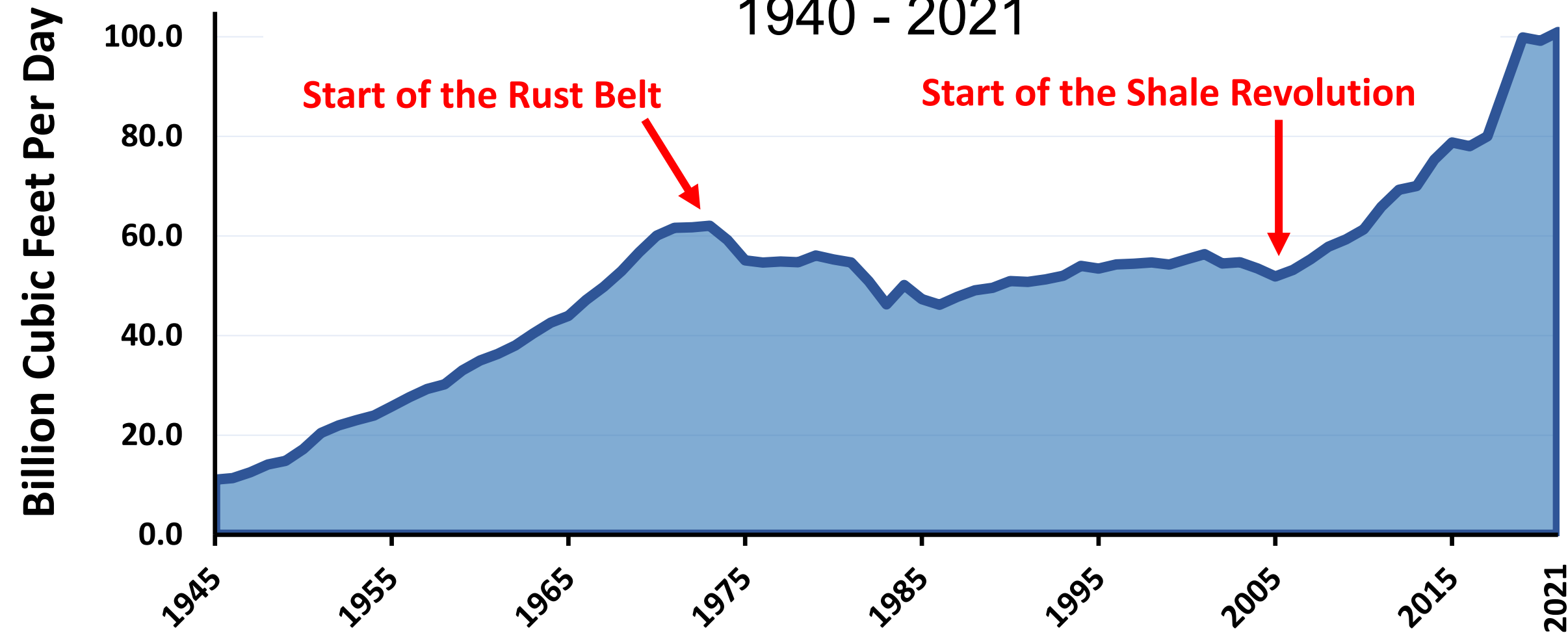


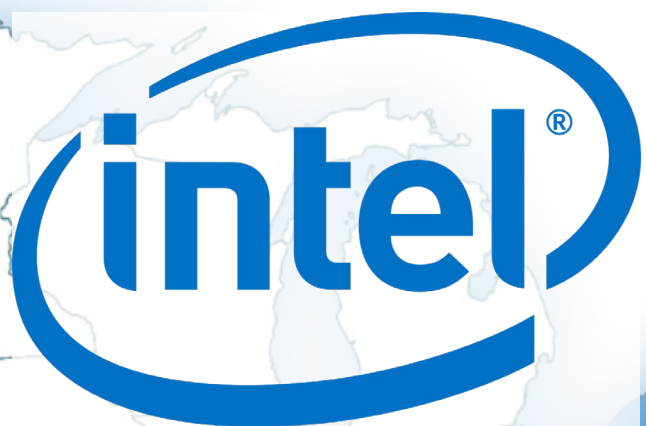
Abundant & Affordable Energy is the Key:



Build on Top of the Feedstock:

U.S. Natural Gas Marketed Production 1940 - 2021





World Class Companies

Investing
**Tens of Billions
of Dollars**
in the

Shale **Crescent USA**
THE OHIO VALLEY ENERGY ADVANTAGE

1,100 acres of these are needed to replace...



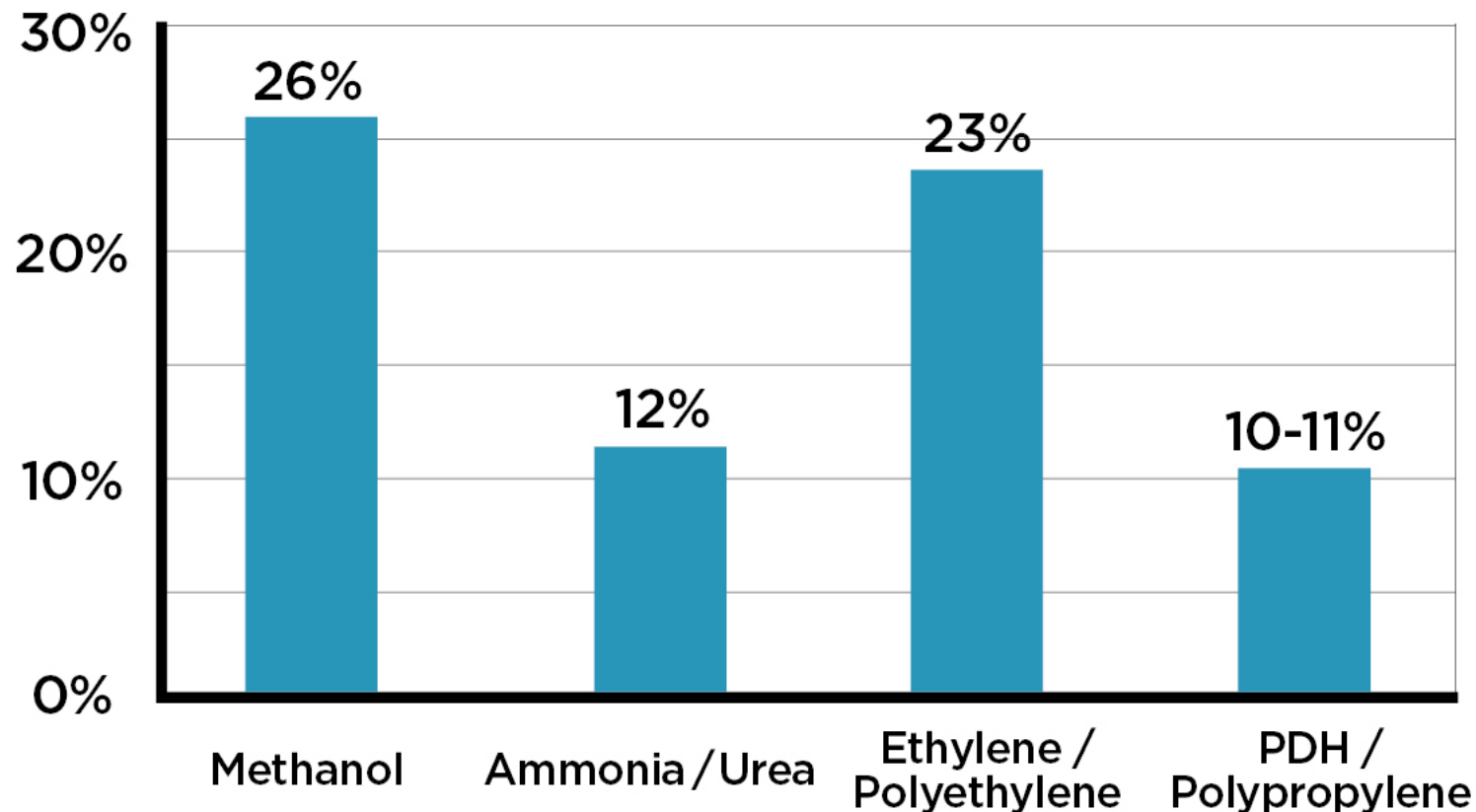
One of these...





Profitability: Cost of Manufacturing Advantage

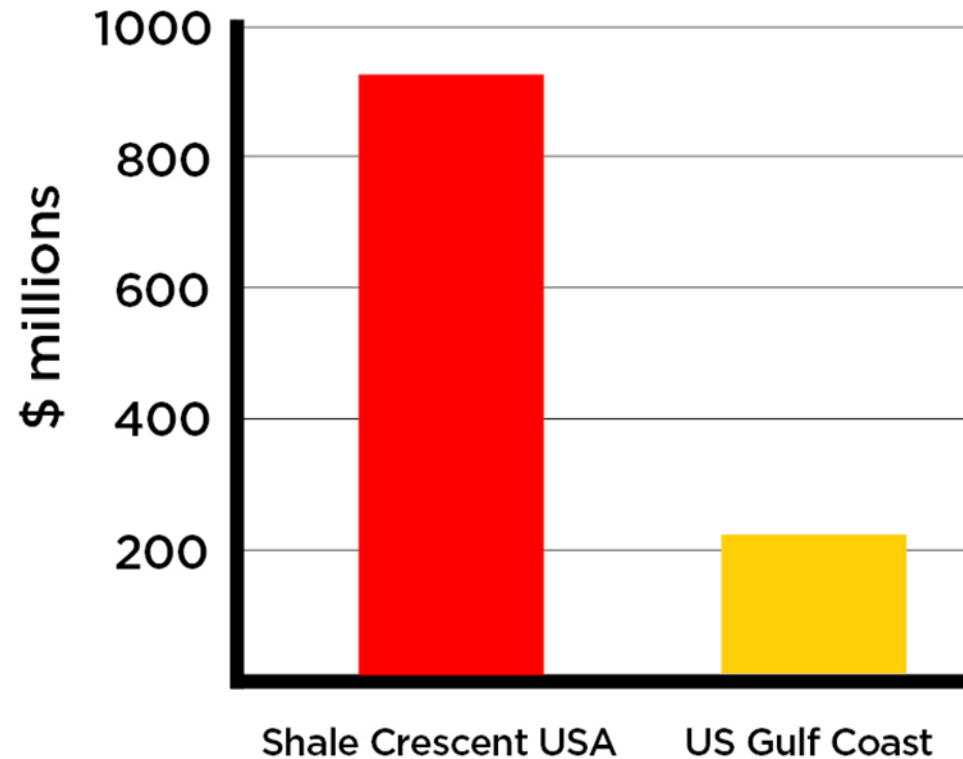
SHALE CRESCENT USA COST ADVANTAGE VS. U.S. GULF COAST (WHEN DELIVERED INTO SCUSA MARKET)



*Source: IHS Markit

Profitability: PE Plant Manufacturing Advantage

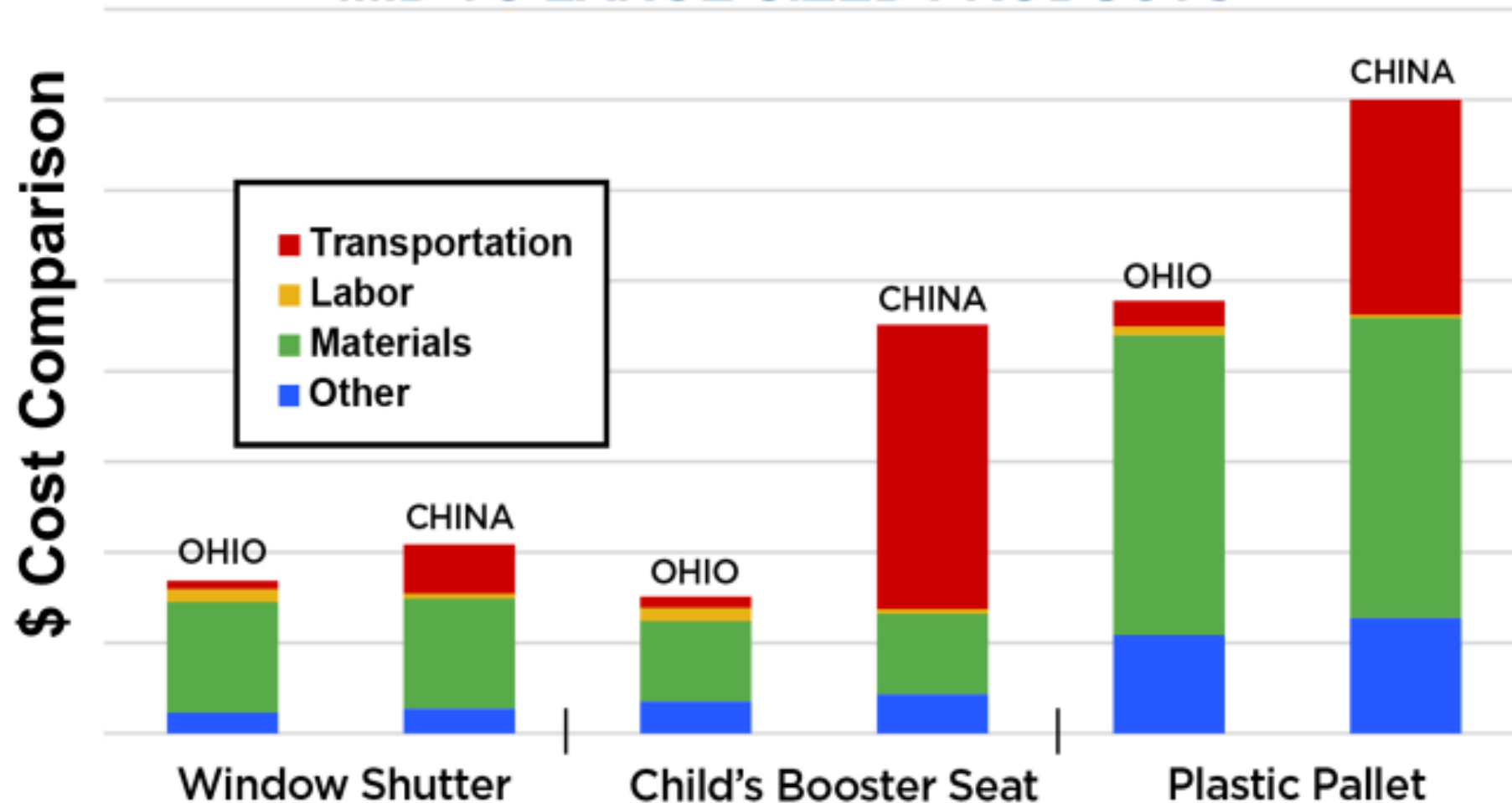
NET PRESENT VALUE IN 2020 SHALE CRESCENT USA VS U.S. GULF COAST APPLYING A 15% DISCOUNT RATE



ETHYLENE/POLYETHYLENE FACILITY

Profitability: Plastics Converter Cost Advantage

Ohio vs. China Cost of Manufacturing & Transportation MID TO LARGE SIZED PRODUCTS



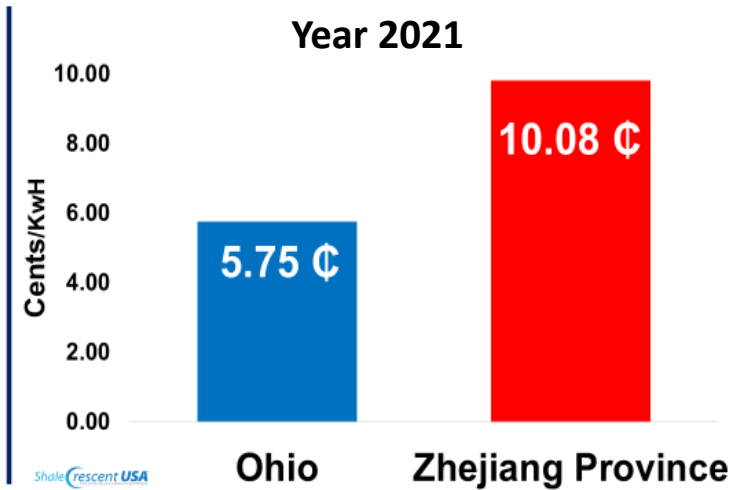
Other: Equipment, Maintenance, Electricity, Lease, Packaging, Working Capital

Profitability: Manufacturing Cost Advantage

Ohio vs. China: Industrial Electric Rates



Source: U.S. EIA, China Briefing, CIEC

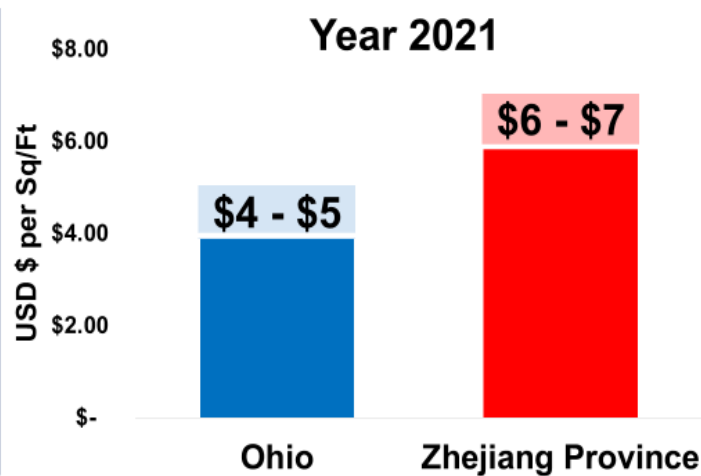


Ohio vs. China: Industrial Lease Rates



ShaleCrescent USA

Source: Loopnet.com, NAI Sofia Group Shanghai

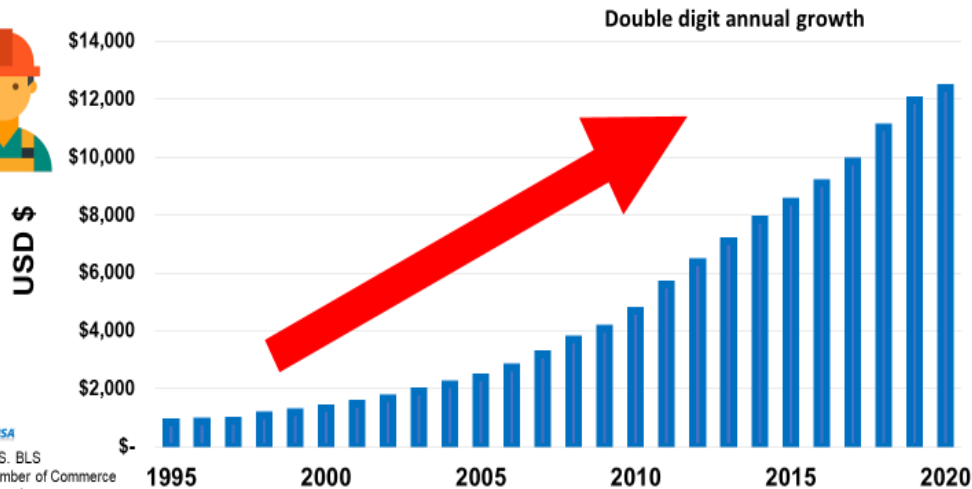


Chinese Manufacturing Labor Rates



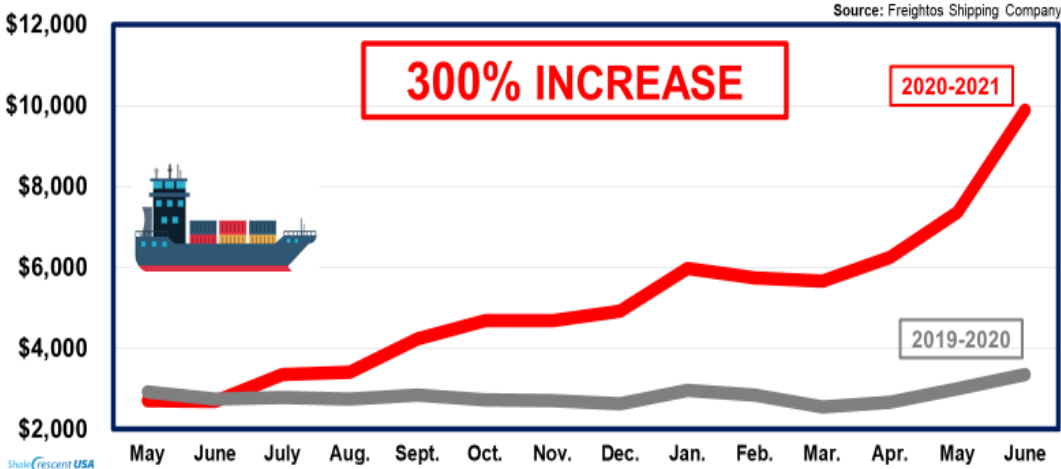
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Sources: U.S. BLS
German Chamber of Commerce
Trading Economics



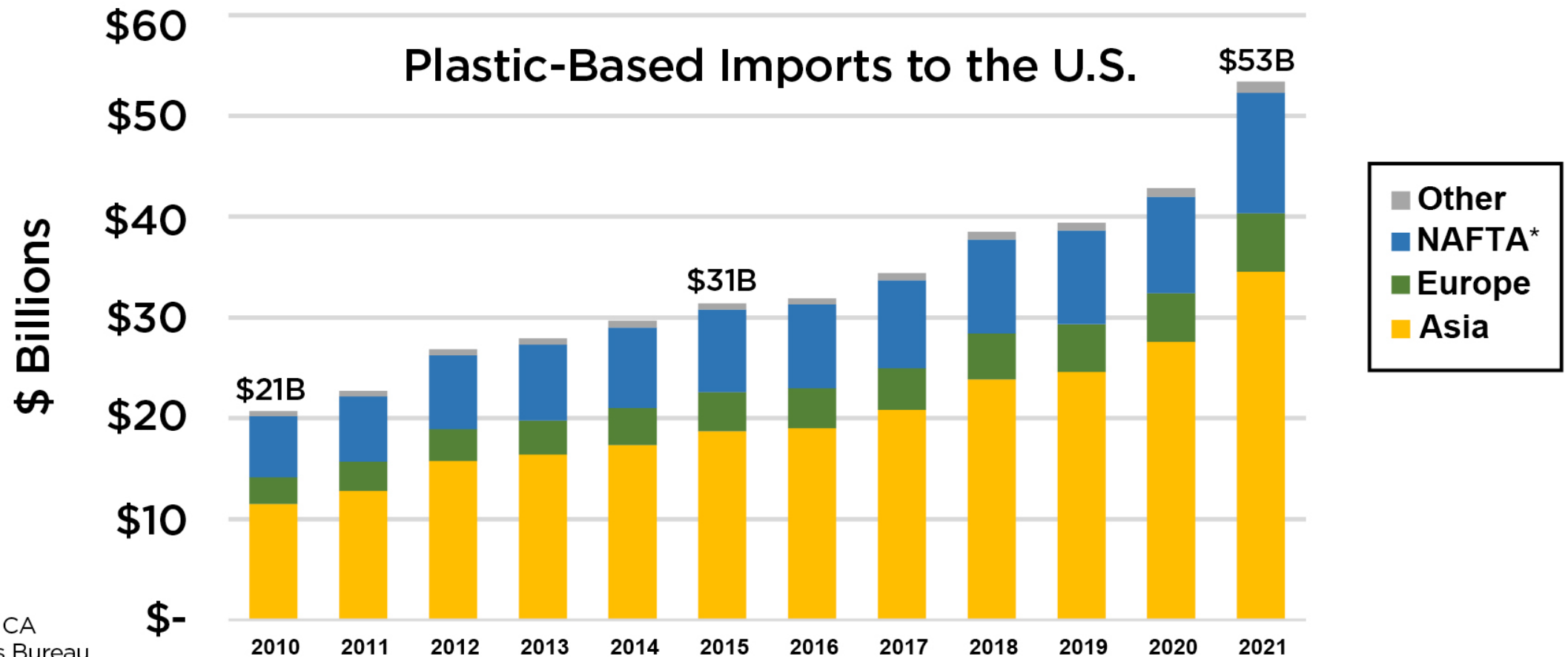
Transportation: China to North American East Coast

Source: Freightos Shipping Company



Capturing Market Share: Plastics Converter

U.S. MANUFACTURERS ARE COMPETITIVE TO CAPTURE THE ANNUAL \$53 BILLION OF IMPORTED PLASTIC-BASED GOODS



*NAFTA is now USMCA
SOURCE: US Census Bureau

The USA Leads the World in Emissions Reduction as per IEA March 2022

- ❖ USA only major country to meet Paris Targets
- ❖ USA lowered emissions 21% since 2005 to 4.6GT
- ❖ Use of natural gas has increased
- ❖ U.S. consumers saved over \$1.1 Trillion because of lower natural gas prices since 2010
- ❖ Chinese emissions doubled to 12 GT since 2005
- ❖ SCUSA's natural gas is a major reason for reductions

We Can Have It All!

Shale **Crescent** **USA**[™]
THE OHIO VALLEY ENERGY ADVANTAGE

- ❖ Secure Energy/Feedstock
- ❖ Short Supply Lines
- ❖ Increased Profitability
- ❖ Reduced Emissions & High Wage U.S. Jobs





Shale Crescent USA

An American Legacy
Reborn.

Thank You:



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Regional Organizations

