

West Virginia Oil and Natural Gas Association

West Virginia Energy Summit
October 18, 2017



Tremendous Industry Investment

- Mid-Stream Processing
 - MarkWest Mobley, Sherwood & Majorsville Expansions
 - Williams Ohio Valley Midstream \$4.5 billion investment
 - Oak Grove Gas Processing Plant
 - Fort Beeler Processing Plant
 - Moundsville Fractionalization Plant
- Antero Resources
 - Doddridge Co. Wastewater Facility \$275mm
 - Ohio River Water Pipeline Project \$525mm
- Natural Gas Power Generation
 - ESC Harrison Power \$600+mm
 - ESC Brooke County Power \$800+mm
 - Quantum Utility Generation's Moundsville Power \$600+mm

New Jobs Report

Energizing West Virginia's Jobs and Economy

PricewaterhouseCoopers reports that West Virginia's oil and natural gas industry supported:



70,900

**Direct/Indirect
West Virginia Jobs**



**RANKED
8th
IN U.S.**

**Number of industry
workers as a percentage
of total employment**



\$8 BILLION

**Impact to
State Economy**

The oil and gas industry's ripple effect is becoming more like a tidal wave, and we're proud to play a part in moving West Virginia forward.


wv oil & natural gas association

ENERGIZEWV.COM  



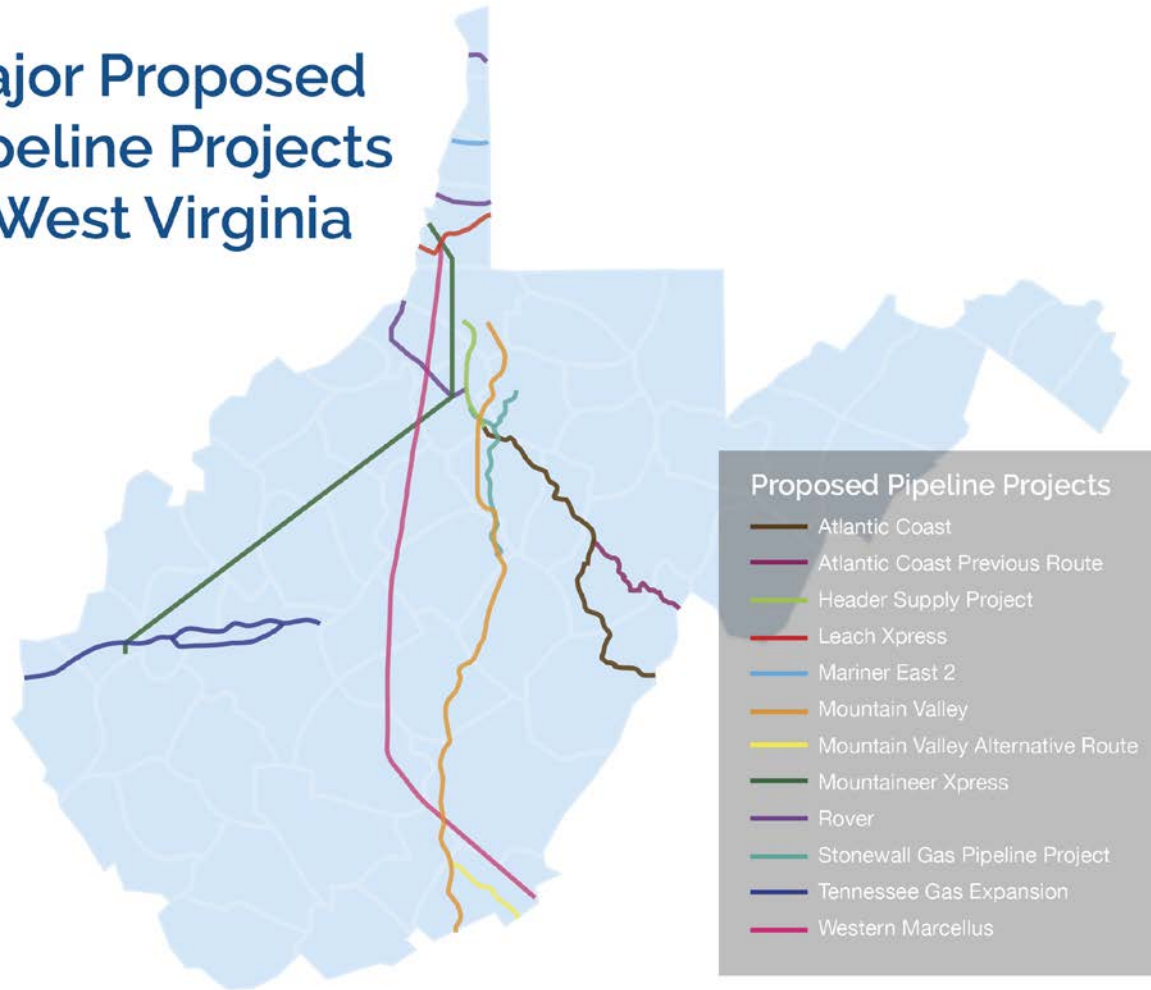
How Do We Maximize the Opportunities Provided by Natural Gas?

- Move supply to where it's needed
- Enact pro-development policies to grow the industry
- Create additional end uses:
 - Petrochemical industry
 - Natural gas fired power plants



Interstate Pipelines Proposed

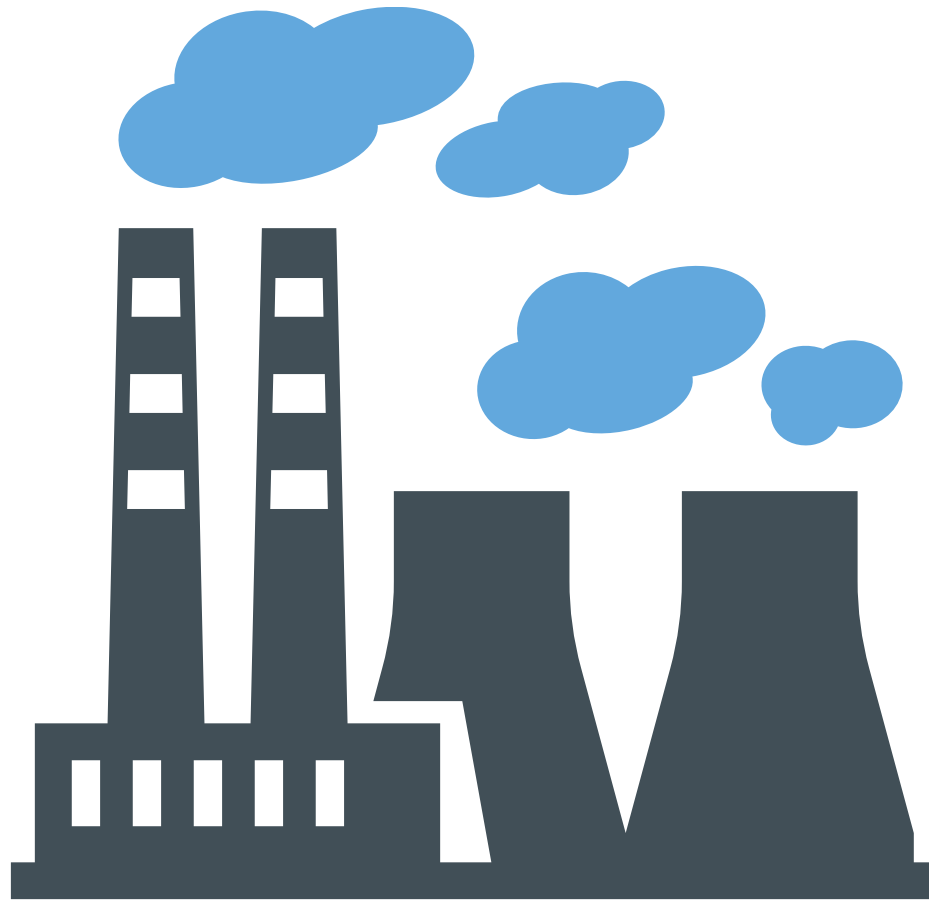
Major Proposed Pipeline Projects in West Virginia



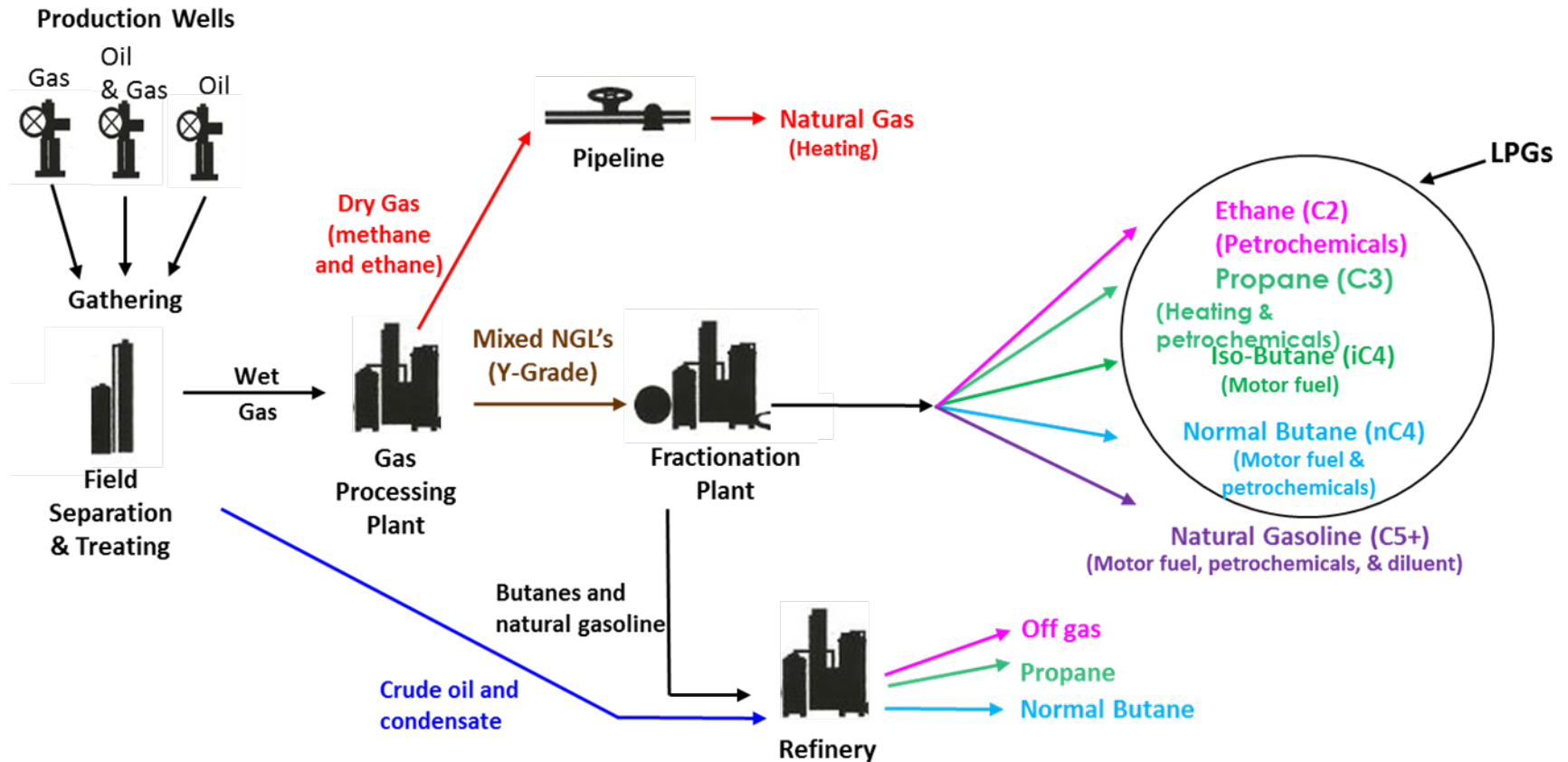
Largest Private Sector Infrastructure Investment in WV History

- Construction related impact in West Virginia:
\$5.7 billion
- Combined jobs during construction:
18,000+ jobs
- Estimated capital investment property taxes:
\$61.1 million

Downstream Opportunities



Natural Gas to Petrochemicals



Product	Normal Use	Consumer Items	Refinery Alternative to Sales
Ethane, Off Gas	Refinery fuel, further split for petrochemicals processing (ethylene)	PVC pipes, bottles (PE), Ziploc bags, films, solar panel components	Refinery fuel
Propane	Home heating, industrial fuel, petrochemical processing (propylene)	Home heat, grills, auto/truck fuel, forklifts, agricultural weed control, plastics, packaging, windmill blades	Refinery fuel
Propylene	Polypropylene, cumene, acrylonitrile	Plastic storage totes, toys, disposable bottles (PP), packaging, see cumene below	Alkylate, fuel, cumene
Benzene	Cumene, styrene	Styrofoam, nylon, polymers, elasticizers (asphalt SBS), rubber, fiberglass, see cumene above	Cumene to gasoline blending
Toluene	Xylene, gasoline blending, solvents	Detergents, paint, paint thinner, insecticides, adhesives, see xylene below	Blend to gasoline
Xylene	Polyester, plastics, gasoline blending	Plastic bottles (PET), clothing, dyes, paint, paint thinner, adhesives	Blend to gasoline
Cumene	Phenol	Polycarbonate lenses, street light covers, headlights, sauder furniture, pressboard construction materials, reusable bottles, electronics, CDs, appliances	Decreased rates; blend to gasoline
Sulfur	Sulfuric acid; fertilizers	Fertilizer, paper, water treatment, tires, batteries, detergents	Prill & export; landfill

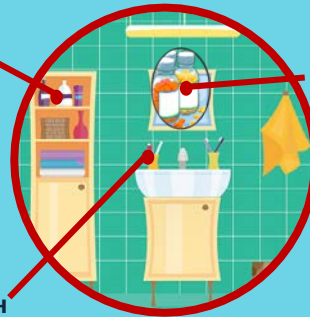
Other Products from Shale You Use Every Day

WINDOW
FRAMES



ELECTRONICS

TOILETRIES



MEDICINE

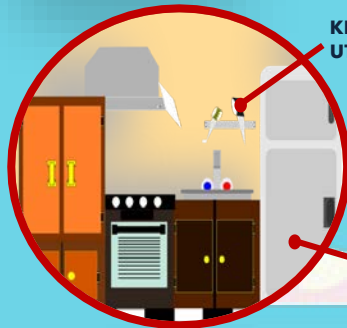
TOOTHBRUSH

CLOTHING



SHOES

KITCHEN
UTENSILS



APPLIANCES

SIDING



PAINT

CARPET

AUTOMOBILE



FERTILIZER



So how do we get there?

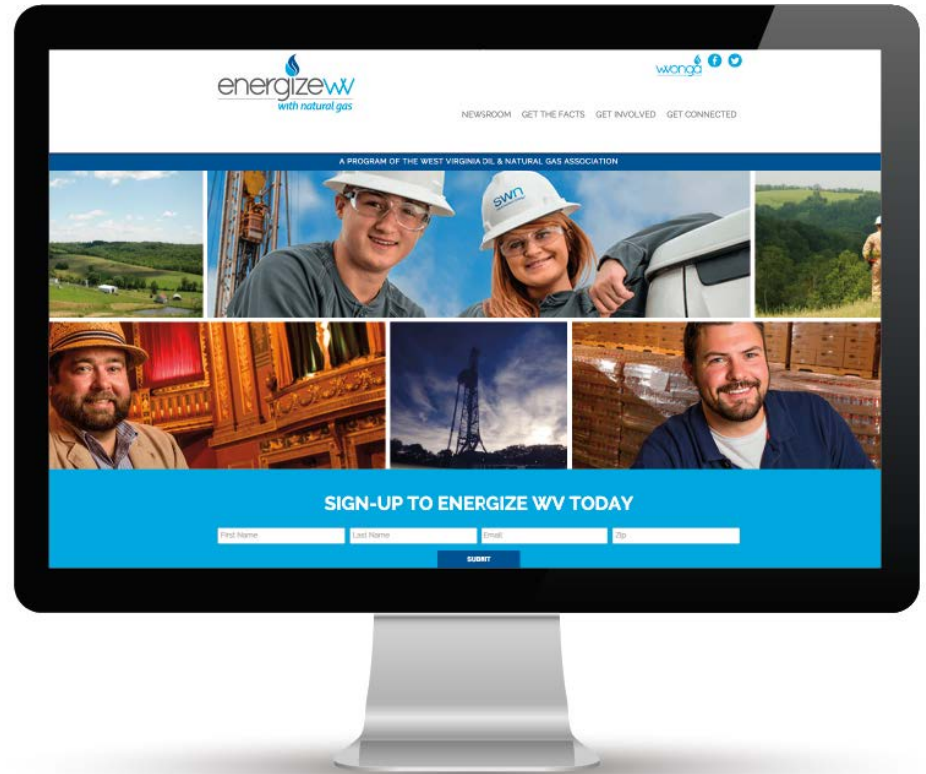
- US jobs related to plastics manufacturing alone are expected to grow by 462,00 (>20%) over next decade due to shale gas boom
- Marcellus and Utica Shales driving US natural gas production
- Ethane storage key to developing chemical manufacturing industry
- A storage facility tied into overall play via massive piping infrastructure
- Appalachian basin provides:
 - Access to markets
 - Competitive pricing advantage of valuable hydrocarbons
- WV has a long history in using natural gas to make chemicals
 - Clendenin, WV is site of worlds first commercial ethylene plant
 - Union Carbide 10,000 lb/day ethylene plant in 1921

Conclusion

- West Virginia is primed for resurgence of manufacturing industry
 - Natural gas resources
 - Appalachian basin produces 33% of US natural gas
 - 25-30% of NGL's
 - Lowest cost NGL's and natural gas are here for next century
 - Appalachian manufacturers of base and derivative products have a significant price advantage
 - Infrastructure opportunities

Help Us Grow Opportunity in WV

- Join EnergizeWV and Show Your Support!
- www.EnergizeWV.com



Thank You!

