



MARKWEST WEST VIRGINIA ASSETS & MIDSTREAM INDUSTRY OVERVIEW

August 2015

MARKWEST
Energy Partners, L.P.

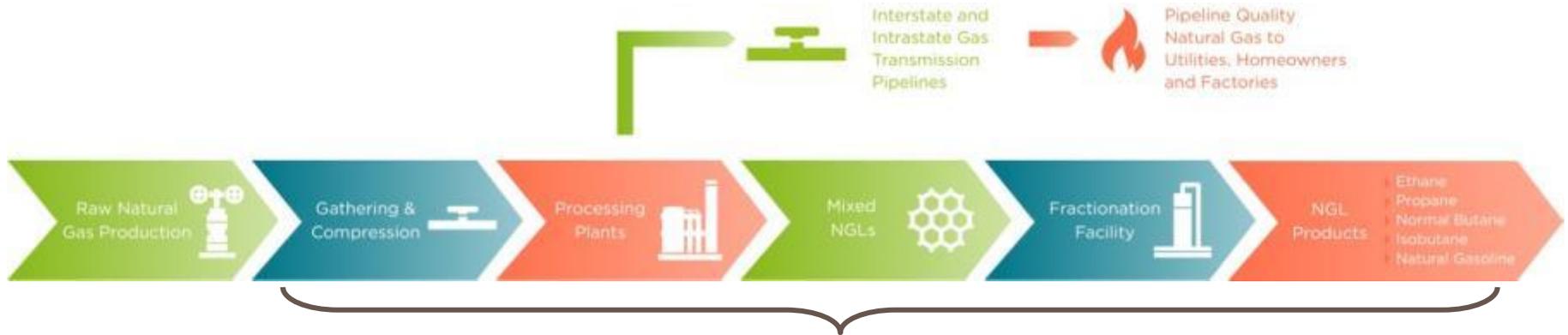


MIDSTREAM INDUSTRY OVERVIEW



THE MIDSTREAM INDUSTRY

Natural Gas Processing & NGL Fractionation Processes



Services provided by MarkWest Energy Partners



NATURAL GAS PRODUCTION

- Using specially drilled wells, producers extract natural gas from the ground in its raw form
- Gathering lines connected to producing wells collect and transport natural gas to processing plants
- Raw natural gas is then processed into two different forms:
 - > Pure methane
 - > Natural Gas Liquids (NGLs)
- NGLs are sent to fractionation facilities to separate into individual products (ethane, propane, Isobutane, butane and natural gasoline)
- Once natural gas is processed and NGLs are fractionated, they are transported to end markets



GAS GATHERING & COMPRESSION

- **Why is gathering and compression needed?**
 - > Gas must be collected or gathered from the wellhead into a central pipeline
 - > Typical wellhead pressure is 30 to 150 psig
 - > Typical pipeline pressure is 750 to 1050 psig
- **Gas is consumed during compression**



TREATING & PROCESSING

- Why do we process?

- > Safety and operational reasons, as well as economic reasons
- > Natural gas is primarily methane; however, the “heavier” hydrocarbon components can condense in pipelines and cause significant operational and safety problems
- > Heavier hydrocarbons are more valuable if removed, purified and sold individually

- Why do we treat?

- > Other common contaminants include oxygen, nitrogen, hydrogen sulfide, carbon dioxide and oxygen
- > The contaminants can cause explosions, cause the gas to burn inefficiently, are lethal and can cause corrosion to pipes and equipment
- > Contaminants typically do not provide any heating value
- > The gas must be “treated” to remove these contaminants from the natural gas



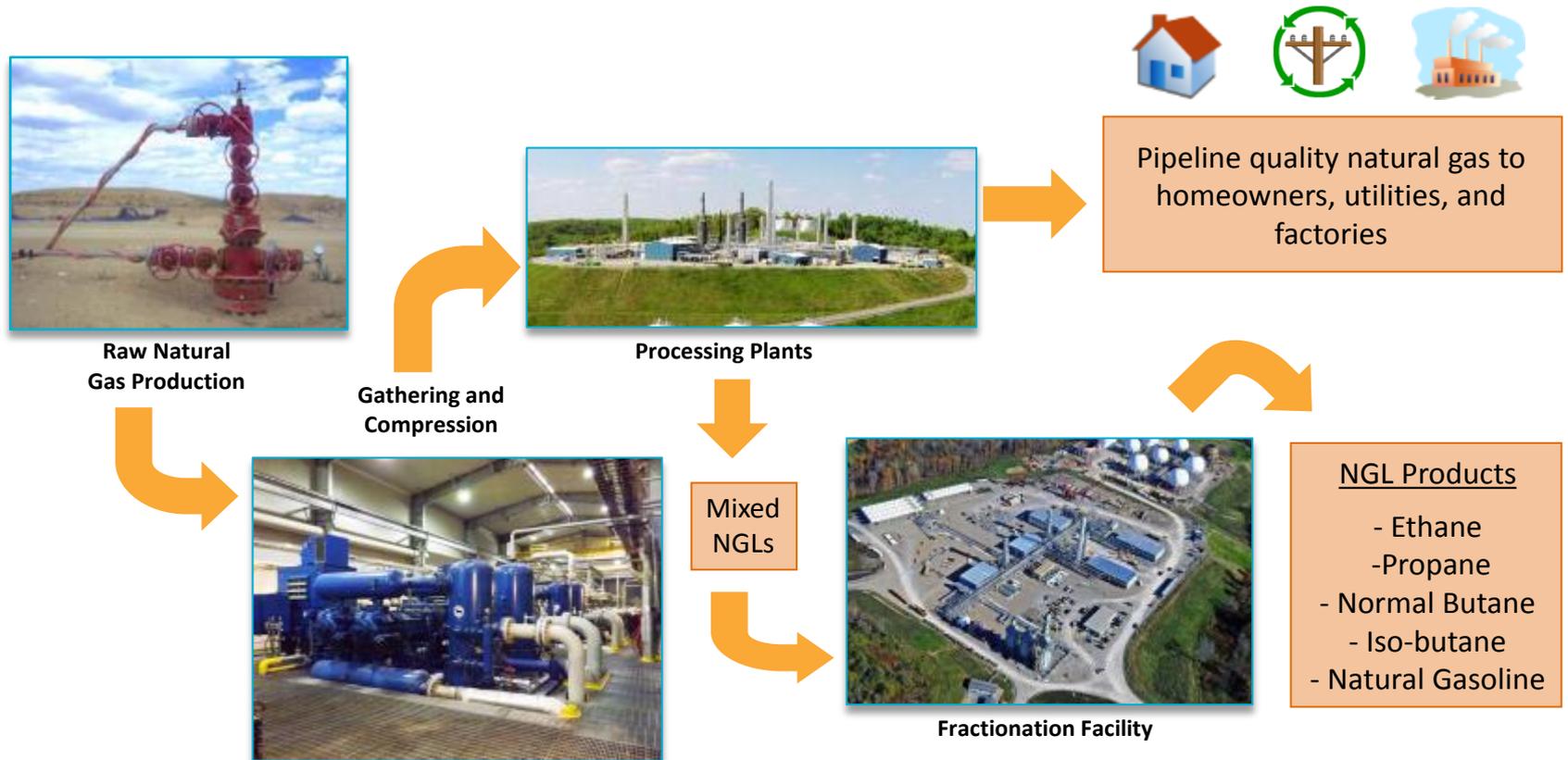
FRACTIONATION

- Why do we fractionate?

- > NGL components are more valuable when they are separated into individual components
 - **Ethane** – building block for petrochemicals and plastics
 - **Propane** – home heating and petrochemicals
 - **Butanes** – refining/petrochemicals
 - **Natural Gasoline** – refining



HOW ARE NGLs PRODUCED?



HOW ARE NGLs TRANSPORTED TO THE MARKET?

Natural gas liquids (NGLs) are transported to end markets such as petrochemical plants, using various methods



by pipeline...
→



←
by truck...



←
by rail...

→
or by barge.



WHERE WE OPERATE

Utica

In the Utica segment, we have a leading position with 925 MMcf/d of processing capacity and 160 MBbl/d* of shared C2+ fractionation capacity. Growing to over 1.5 Bcf/d of processing capacity and 220 MBbl/d* of shared C2+ fractionation capacity

★ Denver Office

Cadiz Office

Canonsburg Office

Southwest

In the Southwest segment, we provide best-in-class midstream services including gathering and processing in many resource plays throughout Oklahoma and Texas with over 2.1 Bcf/d of gathering capacity and 1.2 Bcf/d of processing capacity

★ Tulsa Office

★ Houston Office

Northeast

We are the largest processor of natural gas and fractionator of NGLs in the southern area of the Appalachian Basin

Marcellus

We are the largest processor and fractionator in the Marcellus Shale with over 3.1 Bcf/d of processing capacity and 286 MBbl/d* of shared C2+ fractionation capacity. Growing to over 4.9 Bcf/d of processing capacity and 487 MBbl/d* of shared C2+ fractionation capacity

*Fractionation capacity includes the Hopedale complex that is shared between the Marcellus & Utica

MARCELLUS SEGMENT

Processing
3.1 Bcf/d

Fractionation*
286,000 Bbl/d

Gathering
1.0 Bcf/d

* 120,000 Bbl/d of C3+ fractionation capacity shared with the Utica Segment



> We are the largest processor and fractionator in the Marcellus Shale and provide fully-integrated natural gas midstream services

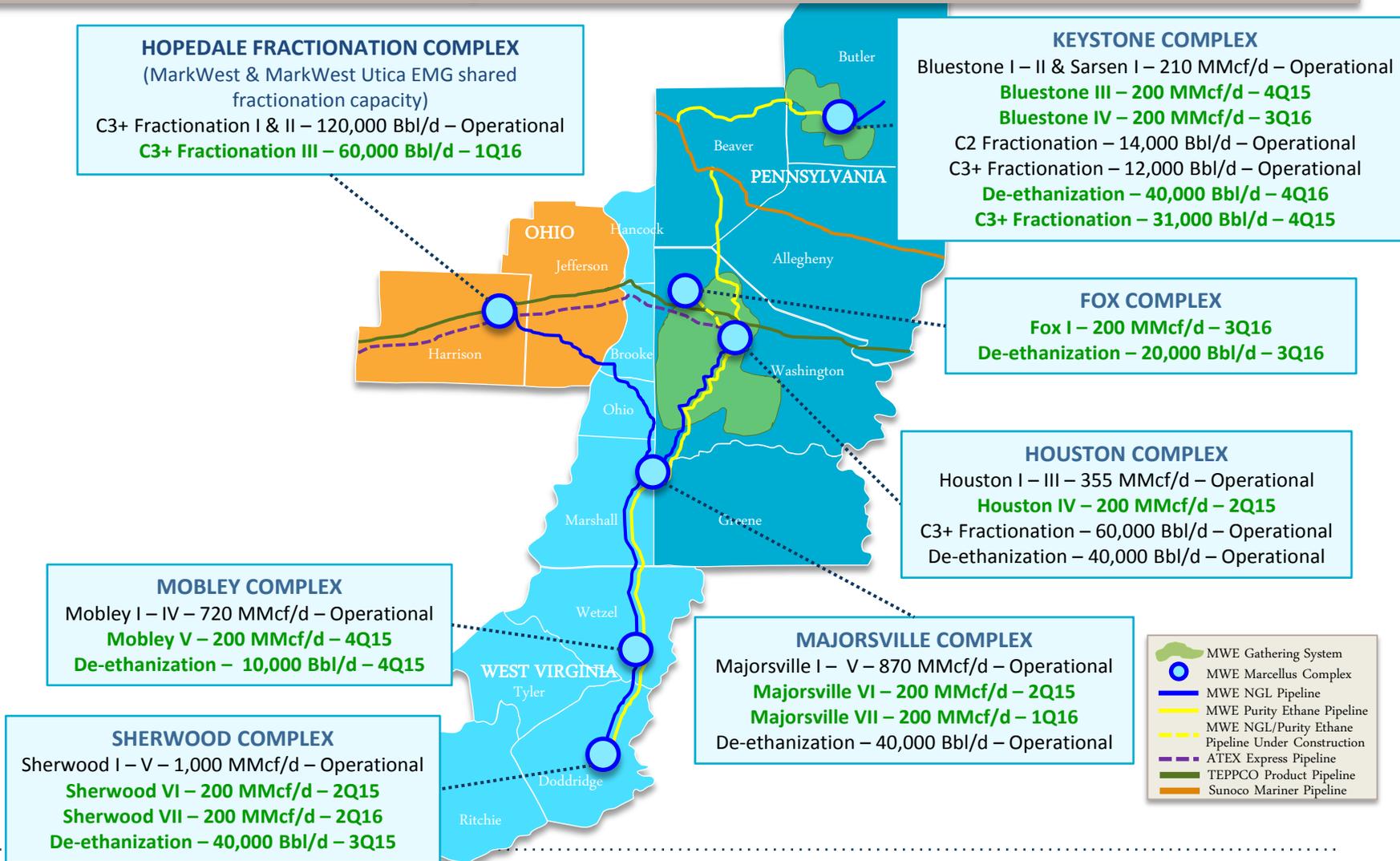


Under Construction

Processing	1.8 Bcf/d cryogenic capacity
Fractionation	201,000 Bbl/d of shared C2+ capacity

MARKWEST MARCELLUS OPERATIONS

27 facilities completed: 15 facilities under construction



JOBS WITHIN THE MIDSTREAM INDUSTRY

- MarkWest Sherwood/Mobley Plant/Majorsville/Cobb/Engineering and construction staffs 140 employees. 2015 plans will add approximately 50 more positions.
 - > 90% of Sherwood/Mobley employees are local residents of West Virginia
- Positions consist of
 - > Engineering
 - > Operators
 - > Technicians
 - > Mechanics
 - > Maintenance
 - > Gas Measurement
 - > Pipeline and Corrosion Technicians
 - > Safety
 - > Environmental
 - > Supervisors
 - > Managers

MAJORSVILLE COMPLEX



MOBLEY COMPLEX



SHERWOOD COMPLEX



SAFETY CULTURE

- Process Safety Management (PSM) Covered Processes
 - Safety Training
 - OSHA Compliance
 - Employee involvement
 - ❖ Safety Committees
 - ❖ PSM Processes
 - ❖ Near Miss reporting
 - Employee wellness
- 
- An aerial photograph of an industrial facility, likely a refinery or chemical plant, set against a backdrop of rolling hills and dense green forest. The facility features several large white storage tanks in the foreground, a complex of processing units with tall distillation columns in the middle ground, and various buildings and infrastructure. The image is overlaid with a semi-transparent blue and white gradient, which serves as a background for the text.

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