



**ENERGY**  
BAR ASSOCIATION®

# **NATURAL GAS 101: An Operational Perspective**

A Joint Presentation of the Young Lawyers Committee and  
The Natural Gas Regulation Committee

May 26, 2011

# Speakers

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- **Exploration & Production**
  - Lee Fuller, Vice President of Government Relations, Independent Petroleum Association of America
- **Gathering & Processing**
  - Bob Dunn, Senior Vice-President and Founder, Prism Gas Systems
- **Transmission & Storage**
  - Melissa Casey, Director, Transportation Services/1Line, Williams Gas Pipelines – East.
- **Local Distribution**
  - Susan Bergles, Attorney at Law  
Counsel for Northwest Natural Gas Company

**Lee Fuller**



# **EXPLORATION AND PRODUCTION**

**Bob Dunn**



# **GATHERING AND PROCESSING**

# Midstream: a simple explanation



Natural gas has to go from Point A to Point B.

**Point A** involves getting the gas out of the ground and into the pipeline.

**Point B** is where the gas eventually ends up, so you can cook your food and heat your home.



The line that connects Point A to Point B is where the midstream industry takes over.

# Gas processing: connecting A to B



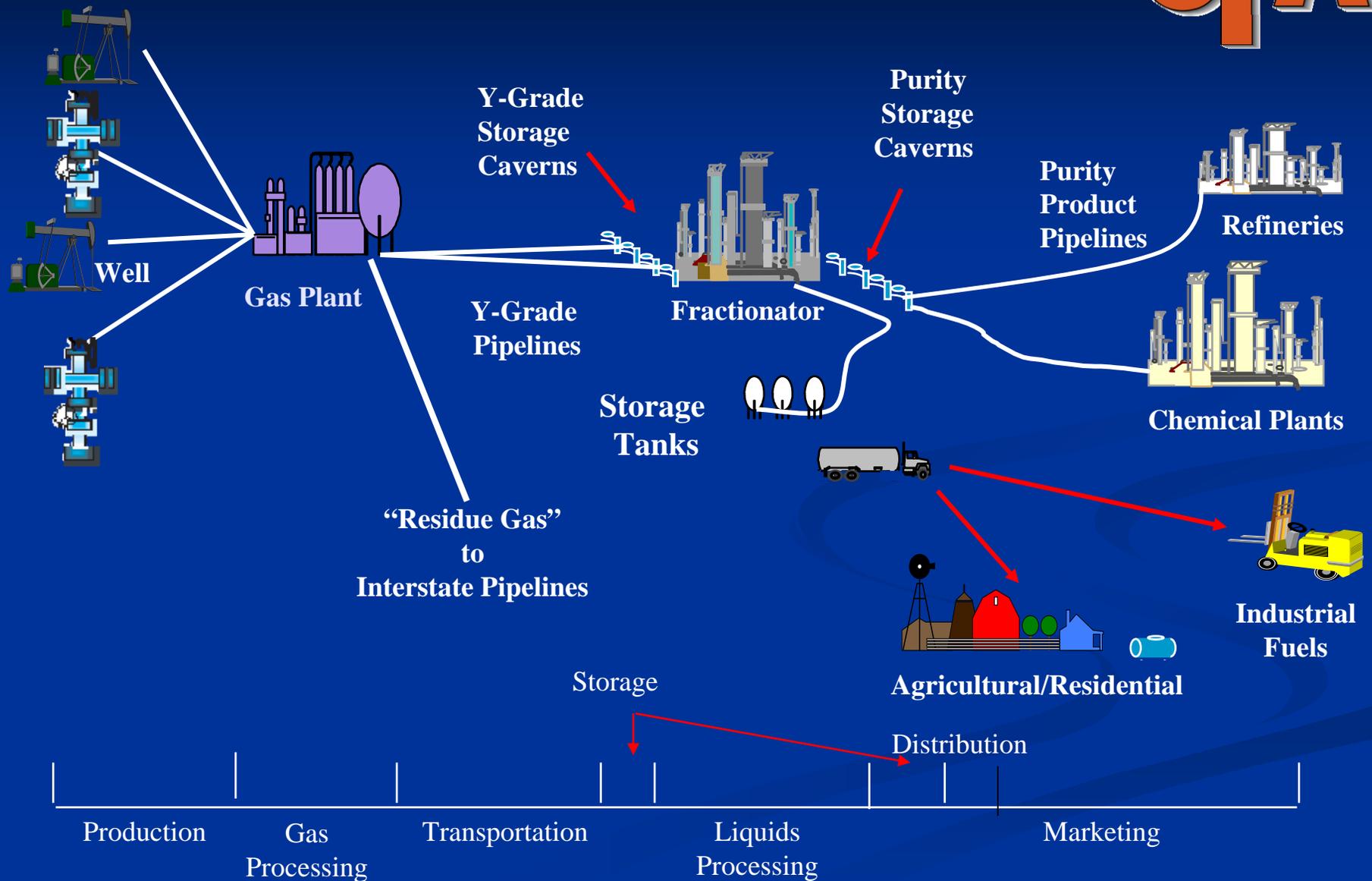
Raw natural gas consists of hydrocarbons:

- methane
- propane
- butane
- pentane
- plus many more

It also contains undesired materials: sulfur compounds, water, mercury, etc.

**That raw natural gas must be purified, or “processed,” to meet quality standards and specifications set by the major pipeline and distribution companies.**

# A more detailed view



# The end result



Without the act of processing, the delivery of natural gas to your home wouldn't be possible.

Plus, we wouldn't see some of these familiar products on the market without hydrocarbons:



**Melissa Casey**



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# **TRANSMISSION AND STORAGE**

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## **Gas Industry 101**

**Williams**<sup>SM</sup>

**An overview of the gas industry with  
a focus on the transmission  
function.**

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# Agenda

- Transporting Gas
- Firm vs. Interruptible
- Pipeline Map
- Basic Rules of Interstate Transportation
- Services
- Business Processes

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# What is Gas Transportation?

- **Gas Transportation** - service provided by the pipeline for the party that has requested the transportation service. The pipeline is the link between the gas supplies and the markets.
- Involves the **receipt** of the gas by the transporter, the **movement** of gas through the transporter's system and the **delivery** of gas by the transporter for the shipper's account.
- Service can be firm or interruptible.

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## Firm Vs. Interruptible Service

- Firm Service is a service that is offered on a **guaranteed basis**. The pipeline, also known as the Transportation Service Provider (TSP), warrants that it will make the service available on every day of the contract unless prevented by an act of Force Majeure.
- For this firm service, the customer, also known as the Service Requester (SR), will generally **pay a demand and a commodity charge**. The total charge is generally higher than interruptible services.
- Firm services have a **higher priority** than interruptible services. Firm service contracts generally have a term of over a year.

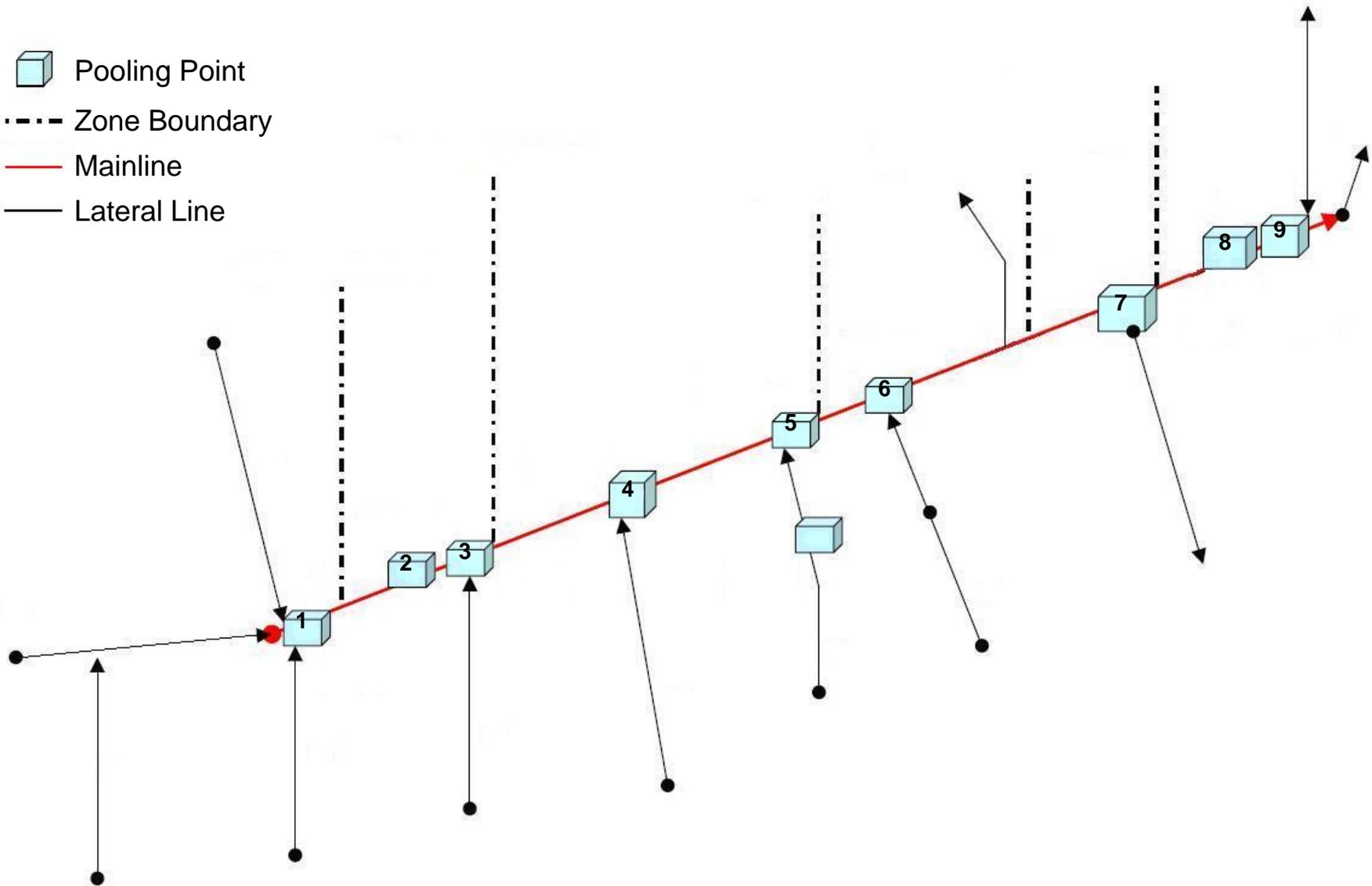
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## Firm Vs. Interruptible Service

- Interruptible Service is a service that is not a guaranteed service. The TSP can generally cease the performance of the service with short or no notice. The TSP will **interrupt** if the pipeline space used for interruptible service is required to serve a higher priority customer.
- The SR of the interruptible service will generally pay only a **commodity charge when the service is utilized**. The total cost of the service is usually less than the cost of a firm service. The interruptible service is less reliable by definition.

# Pipeline Map

-  Pooling Point
-  Zone Boundary
-  Mainline
-  Lateral Line



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# Basic Rules of Interstate Transportation

- Interstate Transportation is the transportation of gas by a pipeline which crosses state boundaries.
- As such, the service:
  - Must be offered on a **non-discriminatory basis**.
  - Must allow firm contract holders to **release to other parties** so some of the reservation costs paid by the firm shipper may be recovered when the capacity would otherwise not be used.
  - Customers must be able to **change their firm receipt and delivery points**. All other receipt points must be made available to the customers on an interruptible basis.
  - Customers have **rights beyond their contract path** but within the same rate zone.

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# Services Offered by Pipelines

- **Firm Transportation**

The highest quality transportation service offered to customers under a filed rate schedule that anticipates no planned interruption.

- **No-Notice Service**

A bundled, city-gate service that allows customers to **receive gas on demand** to meet peak service needs subject to delivering supplies into the pipeline.

- **Interruptible Transportation**

Transportation service **subject to interruption** at the option of the pipeline.

- **Storage Service**

A firm or interruptible service that allows customers to store natural gas that has been transferred from its original location.

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## Services offered by Pipelines (continued)

- **Pooling Service**

A firm or interruptible service that allows customers to **aggregate** natural gas from many receipt points to serve a number of contracts without tying a particular receipt point to a particular contract.

- **Parking Service**

An interruptible service which allows a customer to request that the pipeline **hold** on its system, gas quantities that have been delivered by the customer under any transportation agreement between the pipeline and the customer, and then **return** such gas quantities at the customer's request.

- **Loan Service**

An interruptible service which allows a customer to **receive** gas quantities from the pipeline and then **return** such loaned quantities of gas to the pipeline at the point in which the gas was borrowed.

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## Cust. Services-Services offered by Pipelines (continued)

- **Operational Balancing Agreement (OBA)**

An agreement between a natural gas pipeline and parties at delivery or receipt points, in which parties agree to specified procedures for balancing between nominated levels of service and actual quantities.

- **Pre-Determined Allocation Agreement (PDA)**

A method for designating prior to gas flow the method for **allocating** natural gas **at a point among shippers** or to a specific shipper (as opposed to OBAs, which typically allocate imbalances to the operators of the facilities).

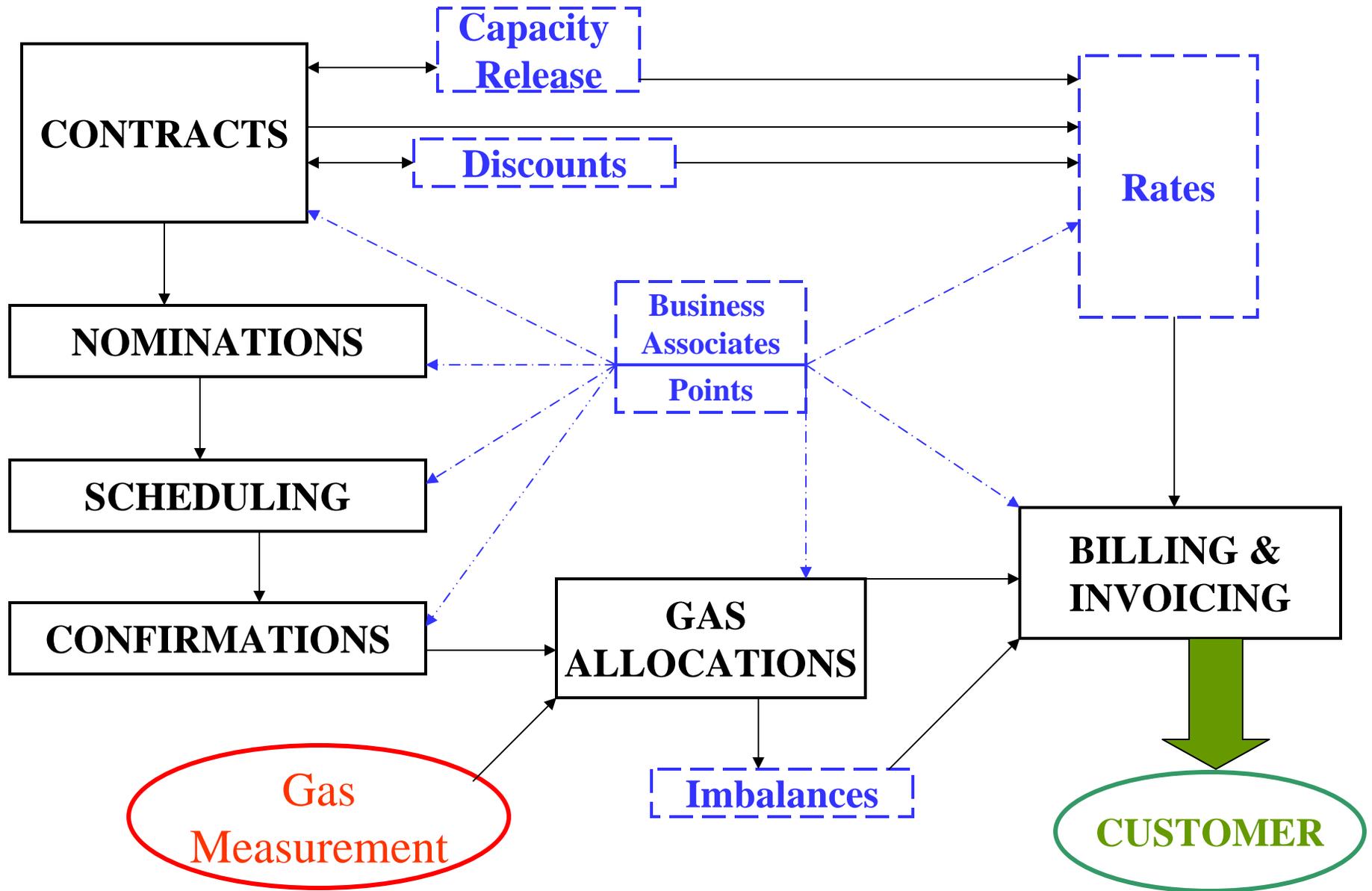
- **Imbalance Resolution**

Mechanism to resolve the **differences between the inputs** for a shipper **and the outputs**. If a point has an OBA then the imbalance resolution provisions address the difference between the amount scheduled and confirmed and the physical measured.

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# Business Processes

# Transacting Business on an Interstate Pipeline



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## Emerging Trends

Shale Gas Supplies

Deepwater Drilling for New Supplies

New Market as Power Generators Convert to Natural Gas

**Susan Bergles**

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# **Local Distribution**

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Natural Gas 101 – An Operational Perspective  
Online Webinar – May 26, 2011

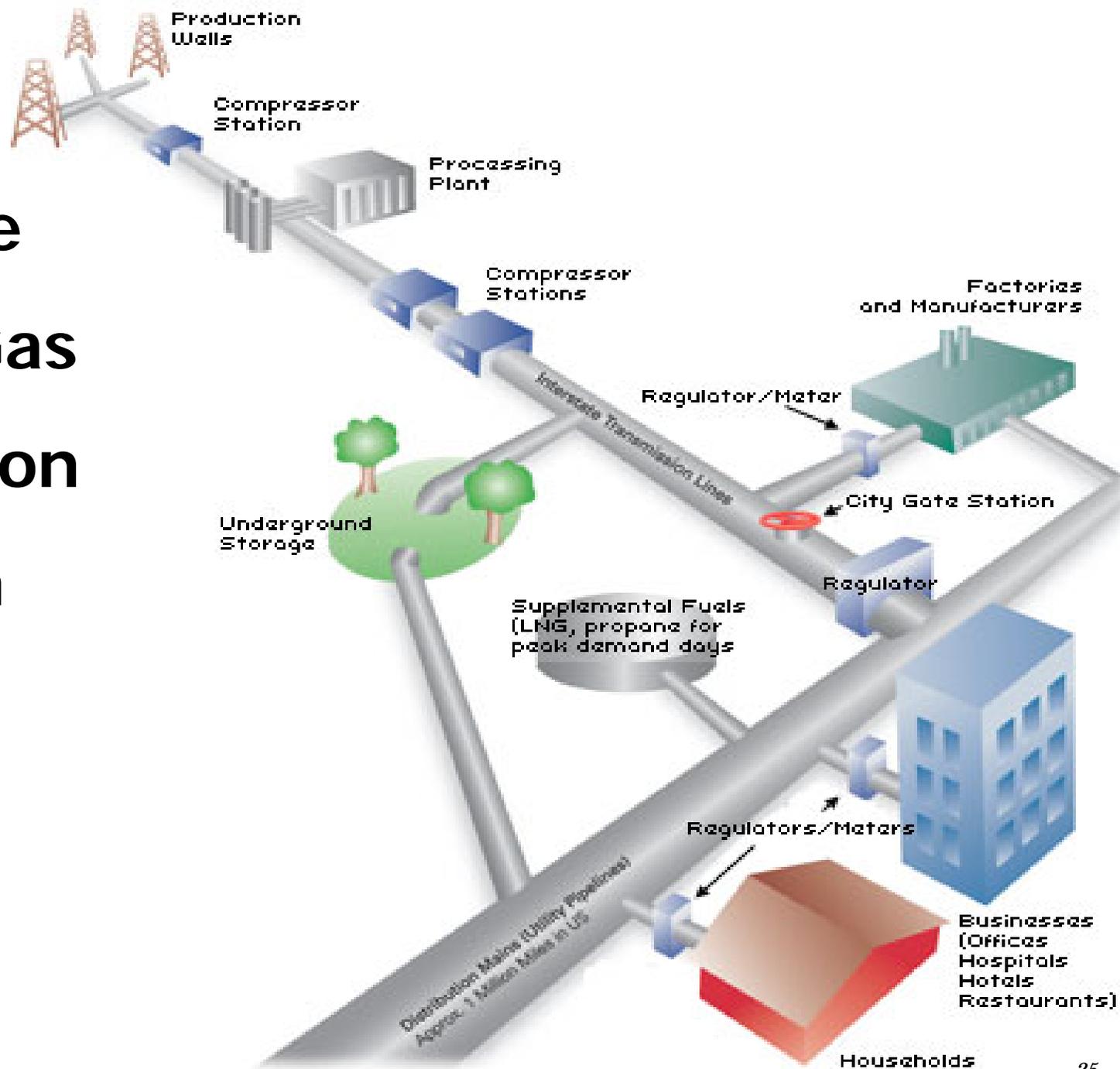
**Local Distribution – The Last Step in the Delivery  
Process**



**SUSAN B. BERGLES**

**ATTORNEY AT LAW  
COUNSEL TO NORTHWEST NATURAL GAS COMPANY**

# How the Natural Gas Distribution System Works



Source: NWGA website

# Local Gas Distribution Companies - Overview

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- **Natural gas distribution is the last step in the delivery process**
- **What is a natural gas LDC?**
  - Generally state regulated entities which operate gas distribution piping systems that serve gas locally to homes, businesses and industrial customers
  - Some are municipally-owned
  - Operate in defined, exclusive service territories
  - Statutorily obligated to provide reliable natural gas service to customers at just and reasonable rates, terms and conditions
  - Local distribution is exempt from FERC jurisdiction under NGA §1(b)
  - NGPA definition
- **Where does transportation end and local distribution begin?**
  - No bright line from FERC; but generally movement through large diameter pipelines at higher pressure (over 350 psia) is considered transportation; particularly if the line is not regulated by a state PUC
  - Supreme Court decision in FPC v. East Ohio Gas Co., 338 U.S. 464 (1950)
  - Congress responded with Hinshaw exemption NGA §1(c)

# Differences from Interstate Pipelines

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- Generally, LDCs operate at lower pressures, use smaller diameter pipes, and the distribution pipes directly connect to the house lines of local homes and businesses
- LDC systems differ among themselves, but generally consist of: high pressure transmission lines, lower pressure mains and service lines, regulators, a wide variety of meters, and odorization equipment
- May include on-system storage, LNG storage, and propane-air

# LDC Customers and Services

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- **Types of LDC customers: retail, commercial, and industrial**
- **Types of LDC services:**
  - Sales Service – to Core/Retail (firm and interruptible services)
  - Transportation Service (firm and interruptible)
  - Retail unbundling (customers purchase gas commodity directly from suppliers/marketers)
- **LDCs connect to interstate pipelines at “citygate” points**
- **LDCs purchase natural gas commodity at wholesale from producers/marketers**
  - Receive the gas from the supplier at the citygate; and/or
  - Receive the gas at upstream points and move the gas on interstate pipeline capacity

# LDC Resources Used to Serve Core Customers

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- **Typical LDC resources include:**
  - Gas purchased outside of the LDC's service territory
  - Supplies previously purchased and held in storage facilities outside of the LDC's service territory
  - Supplies previously purchased and held in peaking facilities inside the LDC service territory
  - Supplies purchased from local production wells in the state
  - Diversion of supplies from interruptible customers under state-approved tariff curtailment provisions

## LDC Operations - System

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- **Movement on LDC systems involves moving smaller volumes of gas at lower pressures to numerous individual customers**
- **To ensure flow, gas may be periodically compressed at compressor stations, but the pressure required on LDC systems is much lower than on an interstate pipeline**
- **Supervisory control and data acquisition (SCADA) systems monitor gas flows on the distribution network**
- **To detect leaks, gas is odorized at the citygate with mercaptan**
- **System piping is steel for higher pressure mains and polyethylene (plastic) in lower pressure mains and service lines. Older cast iron systems still exist in some areas.**

## LDC Operations - Service

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- Generally, customers do not make nominations
- Gas consumed at the residence or business is measured by a onsite meter
- Customers are billed according to use and rate schedule
- LDCs purchase a baseload amount of natural gas commodity supplies to meet average core daily use and purchase spot commodity supplies to meet any increased daily needs
- Storage or on-system needle peaking storage is used as an additional resource to meet core needs

# Regulation of LDCs

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- Generally state public utility commissions have oversight of the LDCs operating within a state
- State PUCs ensure the natural gas needs of LDC customers are met in a cost-effective way:
  - Adequate supply
  - Reliable service
  - Reasonable prices
- State statutes and administrative rules govern activities
- Siting and construction activities may require other state agency authorization
- LDCs provide services set forth in state-approved tariffs at state-approved rates
- Periodic rate case proceedings set regulated returns for the distribution service

# LDC Focus on Safety

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- **LDC safety programs include:**
  - Leak detection response
  - Safety education
  - One Call Systems
  - Emergency plans and responsiveness
  - State statutes and regulations adopt DOT safety requirements

# LDC Gas Supply Planning – IRP Process

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- Generally, LDCs do not make a profit on gas commodity purchased for core customers
  - Purchased Gas Adjustment (PGA) mechanisms are used to pass gas commodity costs through to customers, subject to state commission review and approval
- Through an Integrated Resource Planning (IRP) process, LDCs determine a resource strategy that best fits the future needs of their systems and customers
- IRP processes look at existing resource portfolios, demand forecasts, energy efficiency and conservation programs, supply-side resource forecasts, distribution planning, environmental and regulatory considerations, assessment or risks, modeling, and advisory group, public, and regulatory commission participation
- IRPs plan 20 years out, but are updated every 2 years or as required by the PUC
- Plan for annual average day gas usage and peak day needs; LDC peak day criteria varies.
- End result = an integrated resource portfolio that is designed to serve customer needs into the future while balancing costs and risks

# Emerging Issues and Trends

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- **Risks and realities of shale gas**
- **Aging LDC infrastructure**
- **Integration of renewable power**
- **Dodd-Frank Wall Street Reform and Consumer Protection Act**

**QUESTIONS?**



# **GUEST SPEAKER BIOGRAPHIES**



# LEE FULLER



**Lee Fuller**, Vice President of Government Relations, joined the IPAA staff in 1998 and is responsible for coordination of legislative and regulatory activities.

Fuller has 33 years of experience in federal policy issues. Fuller served as staff on the U.S. Senate Committee on Environment and Public Works from 1978 through 1986. In 1985 and 1986 he was the Minority Staff Director, serving under Senator Lloyd Bentsen. During this time, Fuller was involved with all major legislation developed by the Committee.

Subsequent to his service in Congress, Fuller has served as a vice president of the Smith-Free Group (and its predecessor organizations, Walker-Free Associates and Charles E. Walker Associates) and of Jellinek, Schwartz and Connolly, Inc., and as a senior legislative associate with Van Scoyoc Associates. At these firms he concentrated on developing, implementing and advocating policy strategies for clients involved with environmental legislation including proposals to restructure the regulation of oil and gas production wastes, the application of Superfund to oil and gas production facilities, and the air toxic provisions of the Clean Air Act as they apply to oil and gas production facilities.

Before coming to Washington, Fuller worked for Exxon Company, USA, at its Baytown, Texas, refinery providing technical support for process operations and managing environmental compliance issues. He graduated from Lehigh University as a Chemical Engineer.

# BOB DUNN



**Bob Dunn** is Senior Vice President and a founder of Prism Gas Systems. Prism is a midstream acquisition company that was created in January 2000 in partnership with Natural Gas Partners. Since its founding, Prism has made several acquisitions in east Texas and the Texas gulf coast. In November 2005, Prism was sold to Martin Midstream Partners. Prism has grown to be approximately 25% of Martin Midstream. Prior to founding Prism, Mr. Dunn was Vice President of gathering and processing for UPFuels until its sale to Duke Energy. In this role, Mr. Dunn was responsible for the 7th largest domestic gathering and processing company, which had 19 gas plants and over 4,000 miles of gas gathering with throughput of 1.6 BCF/day. Prior to managing the gathering and processing business, Mr. Dunn had numerous financial roles with Union Pacific Resources and Occidental Oil and Gas Company. Mr. Dunn began his career at Brown & Root, a major engineering and construction company. Mr. Dunn received his MBA from Harvard Business School in 1975 and is a 1973 graduate of the University of Tennessee with a BS in civil engineering. Mr. Dunn is the past president of the Gas Processor's Association which is the association that represents midstream companies.

# MELISSA CASEY



**Melissa Casey** is currently the Director of Transportation Services/1Line for Williams Gas Pipelines – East. Williams is an integrated natural gas company focused on exploration and production, midstream gathering and processing, and interstate natural gas transportation.

Melissa oversees the interruptible transportation contract administration, nomination, scheduling, confirmation, allocation, imbalance resolution and invoicing functions for Transcontinental Gas Pipeline, LLC (Transco), Gulfstream Natural Gas System, LLC, Pine Needle LNG Company, LLC., and Cardinal Gas Transmission, LLC. In addition, Melissa's responsibilities include management of 1Line, a customized transactional business application, and the oversight of the company's participation in the industry's standards organization, NAESB. Melissa Casey's career in the transportation and storage of natural gas spans 26 years with Transco/Williams in various areas of Commercial Operations, Human Resources and Accounting. Melissa is a graduate of Stephen F. Austin State University with a BBA in Accounting.

# SUSAN BERGLES

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**Susan Bergles** is an energy lawyer with a practice focused on natural gas matters, including federal and state regulation, rate and tariff matters, natural gas contracting, natural gas storage, and regulatory compliance. As a consultant, she has represented Northwest Natural Gas Company (NW Natural) regarding natural gas regulatory and contract matters since 2000. Prior to moving to Baltimore, Maryland, she worked in-house for NW Natural at its offices in Portland, Oregon. Susan also worked in-house for Texaco Inc. at its offices in Houston, Texas in the Energy Law Section which provided legal support to other U.S.-based departments regarding natural gas matters, including federal and state natural gas regulation and natural gas contracts.