Navigating a New Climate for Midstream Investments

November 16, 2016

ICF Webinar

Kevin Petak
Vice President
Kevin.Petak@icf.com

Mike Sloan
Principal and Senior Economist
Michael.Sloan@icf.com

Today's Featured Speakers

Kevin Petak is a Vice President at ICF with over 30 years of experience. He is an expert in natural gas markets, and has led numerous market analyses and studies focused on market assessment and infrastructure analysis. His analyses and studies have been used to support strategic planning, due diligence, and regulatory filings.

Contact Information:
kevin.petak@icf.com

+1.703.218.2753

Mike Sloan is the head of the Gas, NGL, and Oil consulting group at ICF and has more than 35 years of experience in the energy field. He provides a wide variety of market trend and regulatory analysis, expert witness testimony, and demand forecasting services to the natural gas, NGLs and propane industry.

Contact Information:
Michael.Sloan@icf.com

+1.703.218.2758

ICF: Fast-Growing Diverse Consultancy with Domain Expertise in Energy Markets

5,000+ employees

$1.1 billion revenue in 2015

Largest Energy Efficiency Consultancy/ Implementation Firm in North America

GLOBAL PRESENCE
70+ offices

diverse client base

energy
environment
transportation
health care
World-class expertise

Best Global Environmental Consultancy in 5 of 6 categories.
— Environmental Finance Magazine

Headquartered in the Washington, DC area

"One of America's Best Small Companies."
— Forbes 2005-2011

ICF

ICF Energy Solutions

PROJECT AND MARKET ANALYSIS	STRATEGIC PLANNING	TRANSACTION SUPPORT AND ASSET VALUATION
LITIGATION AND REGULATORY SUPPORT	INDEPENDENT ENGINEERING	OPERATIONAL SUPPORT/ ASSET MGMT

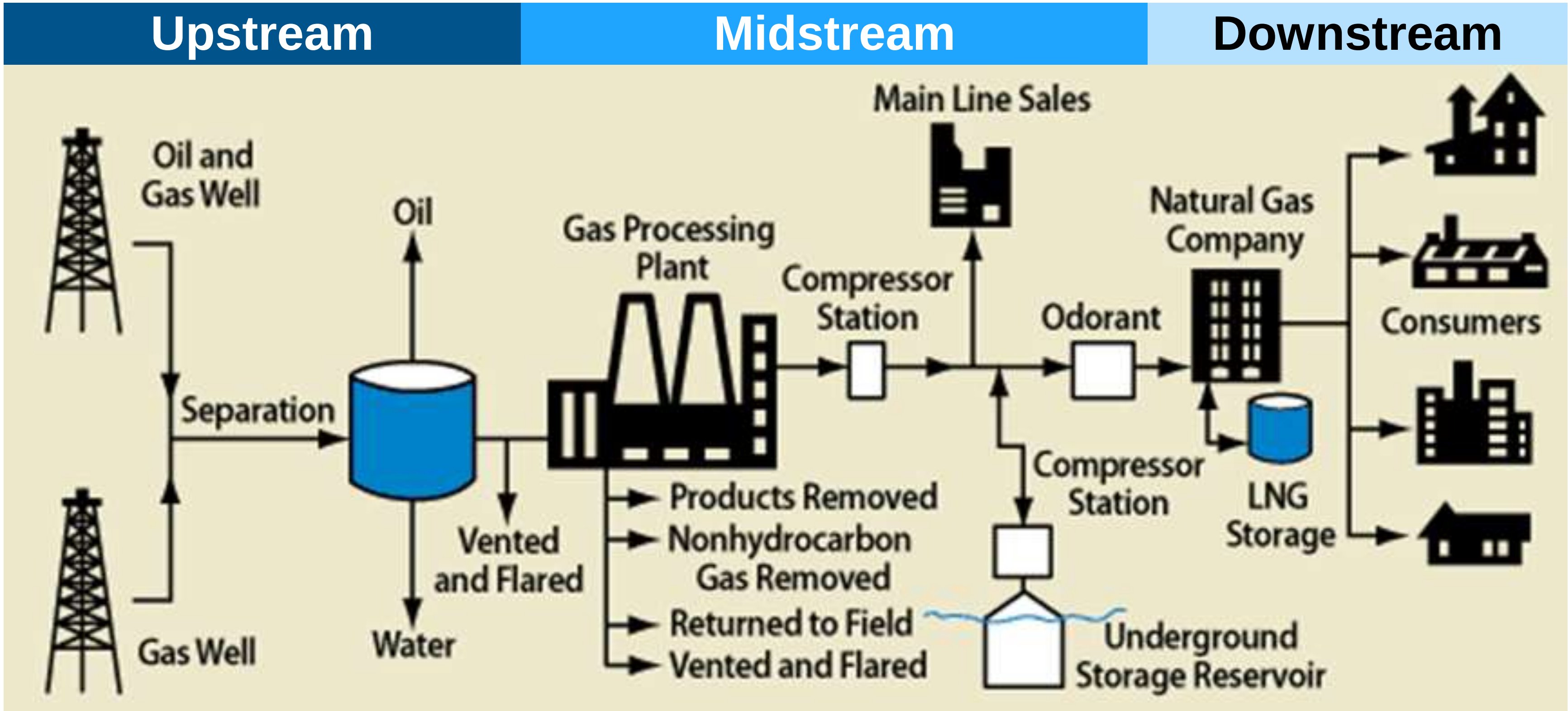
- ❑ IT and Cyber Security
- ❑ Gas Customer Acquisition Analytics
- ❑ Risk and Vulnerability Analysis
- ❑ Environmental Compliance
- ❑ E&P Permitting

Navigating a New Climate for Midstream Investments

- **Introduction – Setting the Stage**
- **ICF's Market Outlook – Providing Context for Future Midstream Development**
- **Shifting Focus for Asset Development**
- **Regulatory Environment for Asset Development**
- **Changing Ownership of Midstream Assets**
- **Final Thoughts**

Introduction – Setting the Stage

Natural Gas Market Basics – Division Between the Upstream, Midstream, and Downstream



Summary of Midstream Infrastructure Development

- According to ICF's study for the INGAA Foundation entitled ***'North America Midstream Infrastructure Through 2035: Leaning into the Headwinds'***, CAPEX in the U.S. and Canada during the past five years for gathering, processing, pipelines, and storage has averaged roughly $45 billion per year.
- Almost 70,000 miles of new gas gathering and transmission lines have been placed into service along with over 8 million horsepower of compression over the past five years --- most robust period for infrastructure development during the past few decades.

Most Frequently Asked Question:

With its primary drivers (shale resource development and integrity management rules) still in place, will robust development continue?

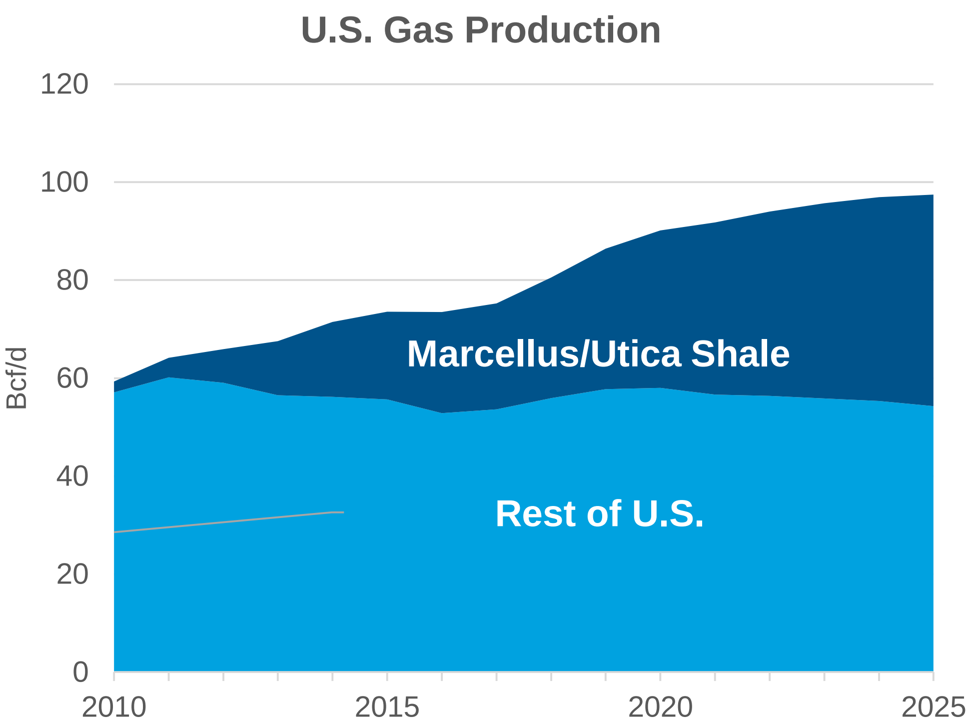
ICF's Market Outlook – Providing Context for Future Midstream Development

Themes Present in ICF's Market Outlook

- North American gas transport patterns are changing dramatically from shifts in supply & demand
- Concentrated market growth in LNG exports and gas-fired power generation is leading to changing service needs
- Project capitalization/funding has become more difficult
- The regulatory environment has increased the difficulty and costs for new projects
- New PHMSA regulations present both challenges and opportunities for existing assets

U.S. Natural Gas Production Mix Will Continue to Shift Toward the Marcellus and Utica

- Marcellus-Utica production will double over the next decade and remain the focus for midstream activity despite pockets of growth in other areas
- Other key growth areas include the Permian Basin, SCOOP and STACK, and Haynesville Shale



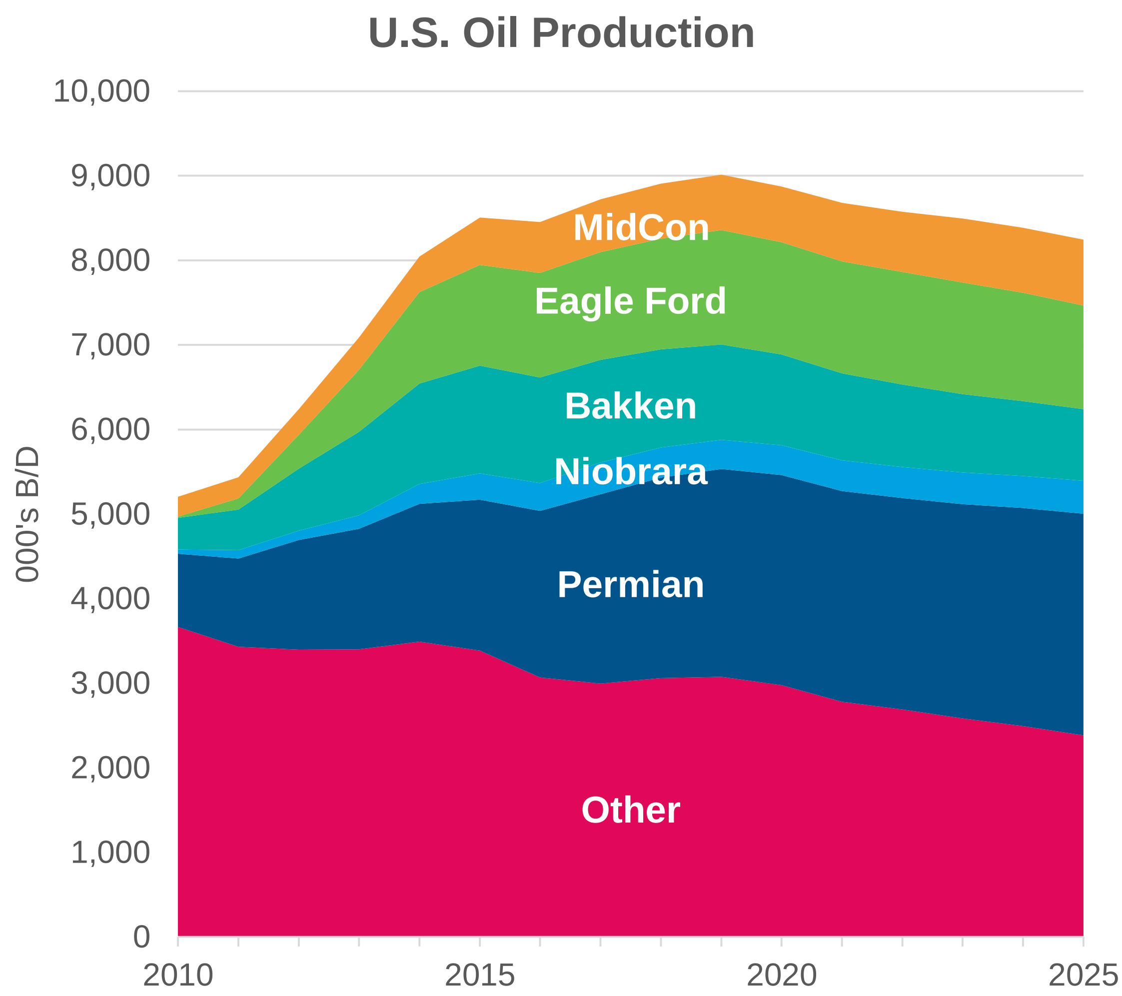
Marcellus & Utica Shales

Year	Well Completions	Production (Bcf/d)
2010	956	2
2011	1,565	4
2012	1,797	7
2013	2,131	11
2014	2,572	15
2015	2,243	18
2016	1,450	21
2017	1,461	22
2018	2,447	25
2019	2,617	29
2020	3,084	32
2021	3,126	35
2022	3,287	38
2023	3,195	40
2024	3,199	42
2025	3,068	43

Source: ICF Strategic Gas Outlook

Oil Production Still Expected to Grow in Some Areas

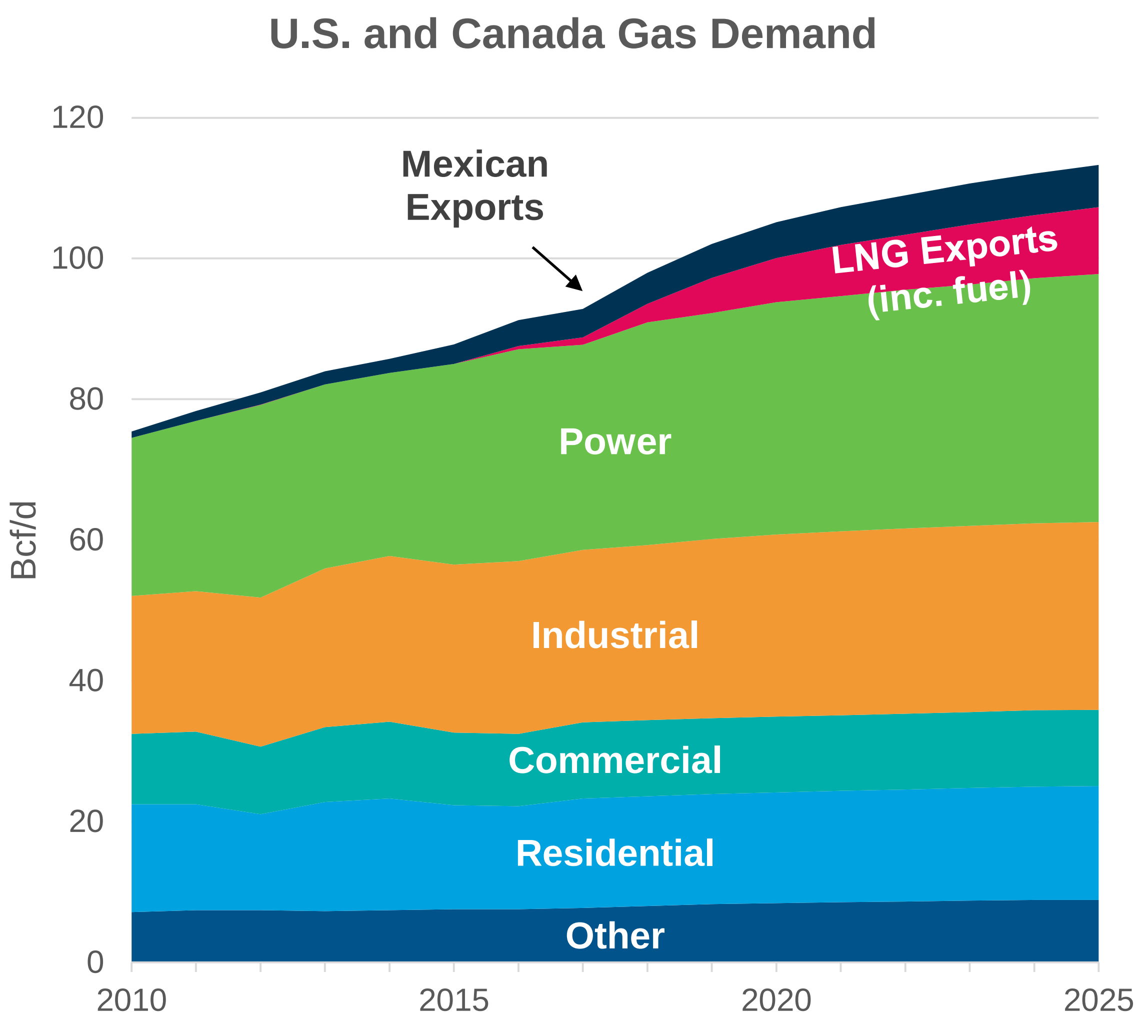
- Low oil prices have resulted in a flatter oil production outlook
- Some oil-prone areas will still experience growth despite low prices
- The Permian Basin has become a leading global low-cost oil resource



Source: ICF DPR

Gas Demand Growth is Concentrated in "New" Markets

- North American gas use rises to over 110 Bcf/d by 2025, on heels of recent increases in gas generation
- Expect an annual average of 2 to 3 Bcf/d of market growth during the next decade
- Growth concentrated in the U.S. Gulf Coasts and Southeast



Source: ICF Strategic Gas Outlook

Marcellus/Utica Supply Growth Will Continue to Impact Basis Differentials and Transport Values for Natural Gas

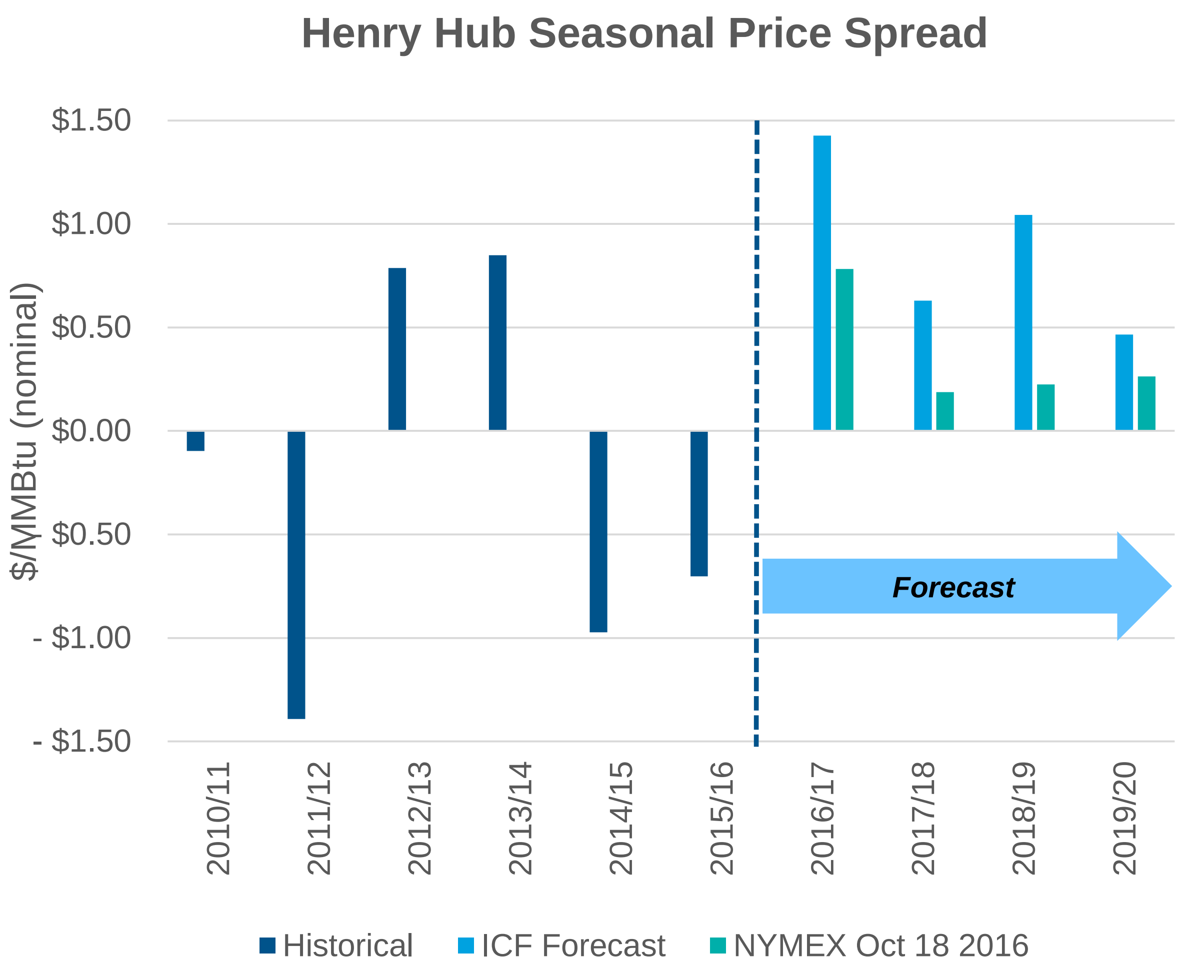
Marcellus and Utica prices will remain at depressed levels compared to other locations, preserving premium values for gas transport from the area

Average Price Difference (i.e., Basis) Versus Henry Hub (Nominal $/MMBtu)	Past 24 Months	Next 12 Months	Following 48 Months
Marcellus and Utica Supply	($1.03)	($0.98)	($0.80)
Algonquin Citygates (New England)	$1.54	$2.18	$2.64
Chicago Citygates	$0.08	($0.07)	($0.12)
West Texas (Waha)	($0.15)	($0.27)	($0.28)
Opal (Rocky Mountains)	($0.15)	($0.35)	($0.37)
AECO (Western Canada)	($0.67)	($0.88)	($1.01)
SoCal Border	$0.13	$0.03	$0.18

Source for Historical Price Information: SNL

Demand Changes Support Rising Seasonal Values for Gas Storage in Select Market Areas

- Henry Hub seasonal price spreads will average over 70 cents per MMBtu during the next few years
- Growing demand in power and LNG sectors creates opportunities for gas storage
- ICF expects increased intrinsic and extrinsic values for gas storage

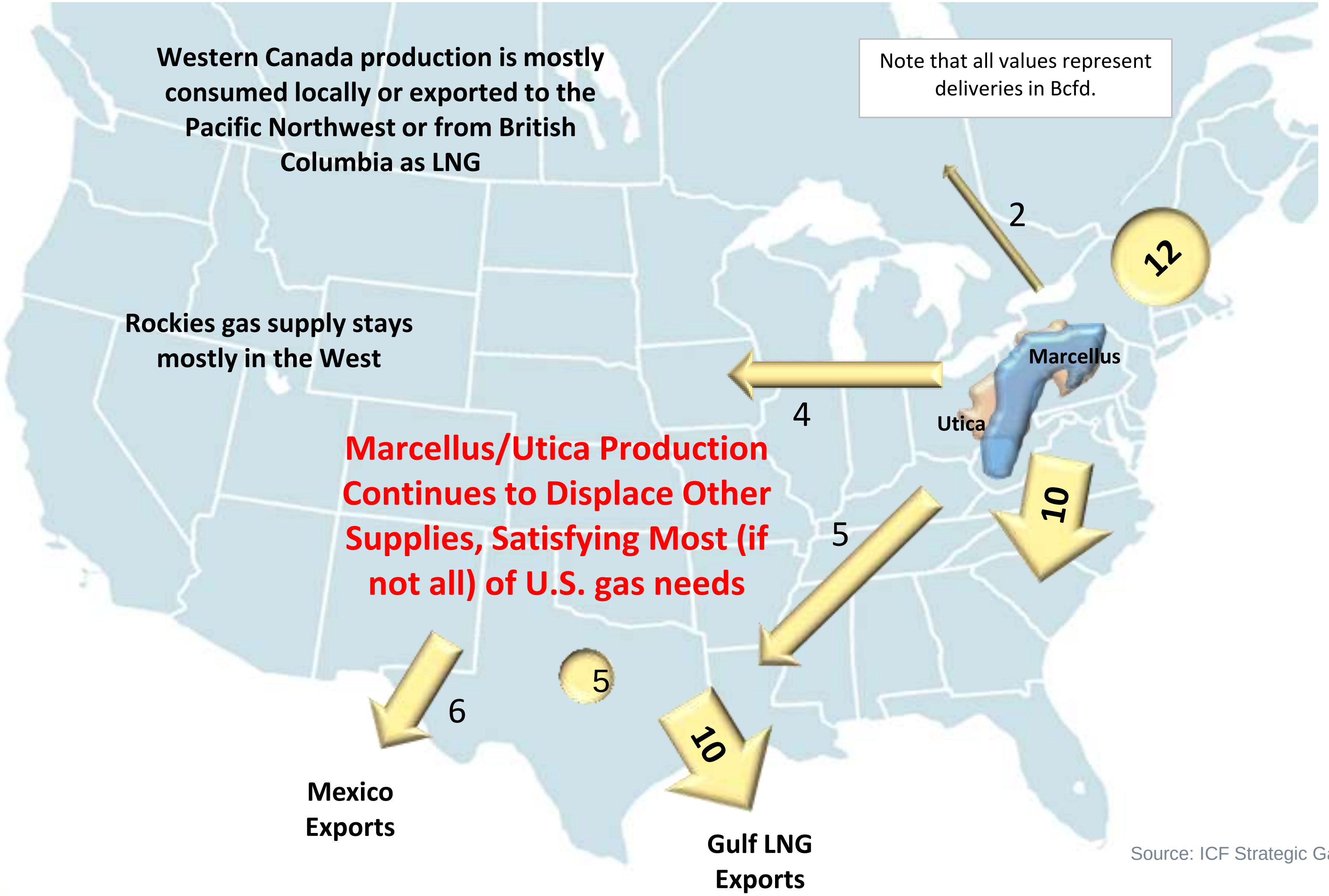


The seasonal spread is the difference between average price in the withdrawal season and average price in the injection season

Source: ICF Strategic Gas Outlook

Shifting Focus for Asset Development

The Changing Paradigm in North American Markets Promotes North-to-South Transport



Source: ICF Strategic Gas Outlook

ICF

Markets Increasingly Sourced with Marcellus/Utica Gas Supply in the Future

Census Region	**Past Five Years (% supply mix)**				**Next Decade (% supply mix)**			
	Marcellus & Utica	Gulf Coast & Midcon	Rockies & Western Canada	Other	Marcellus & Utica	Gulf Coast & Midcon	Rockies & Western Canada	Other
New England	47	10	19	24	84	0	10	6
Mid Atlantic	65	25	7	3	99	0	0	1
South Atlantic	10	83	0	7	62	36	0	2
East North Central	8	35	54	3	38	12	48	2
East South Central	18	80	0	2	75	24	0	1
West North Central	0	61	49	0	0	48	52	0
West South Central	2	98	0	0	12	88	0	0
Mountain	0	11	89	0	0	11	89	0
Pacific	0	5	86	9	0	8	86	6
Total U.S.	**26**	**50**	**22**	**2**	**40**	**40**	**19**	**1**

Source: ICF Strategic Gas Outlook

ICF

Implications of Supply and Demand Changes for Midstream Infrastructure Development

- Market growth and shifting supplies will continue to foster midstream infrastructure development.
- Development in areas with lower cost supplies will be more robust.

Use of Assets	Risk Management
Existing assets will either be displaced or used differently as supplies continue to shift.	Geographic diversification of the midstream footprint will reduce portfolio risk.
Tying existing assets to areas where supplies are growing or where demand is increasing will maintain or improve asset values.	Tying assets to different types of demand will also reduce risk.

- Services need to be flexible to accommodate uneven demand and to better match supply with demand, both geographically and temporarily

ICF

Midstream Expenditures will be Concentrated in a Number of Areas

- Marcellus and Utica supply growth will promote over 40% of the pipeline development and over 30% of the total midstream infrastructure development during the next decade
- Traditional supply areas, such as the Permian Basin (in the Southwest) will also require a significant amount of new infrastructure

INGAA Low Case CAPEX (Billions of 2015$)

	Pipeline and Gathering Line (includes compressors and pumps)		Other Midstream Infrastructure	
	2011-15	**2016-25**	**2011-15**	**2016-25**
Central	$17.3	$5.1	$3.4	$2.3
Midwest	$9.4	$11.6	$2.5	$2.4
Northeast	$26.3	$45.7	$11.9	$16.6
Offshore	$0.3	$0.4	$0.2	$0.1
Southeast	$8.9	$7.1	$1.9	$1.5
Southwest	$45.2	$22.3	$24.0	$59.5
Western	$3.6	$0.7	$1.2	$0.4
Canada	$21.1	$23.8	$4.3	$5.0
Arctic	$0.1	$0.1	$0.0	$0.0
U.S. and Canada	**$132.3**	**$116.7**	**$49.2**	**$87.8**

Source: North America Midstream Infrastructure through 2035: Leaning into the Headwinds, INGAA Foundation, April 12, 2016 by ICF.

ICF

Regulatory Environment for Asset Development

Regulatory Framework for Energy

Basic Comparison of Regulatory Authority between Electricity and Natural Gas		
	Electricity	**Natural Gas**
FERC	• Regulates wholesale sales of electricity and transmission of electricity in interstate commerce	• Regulates natural gas transportation in interstate commerce (Pipelines)
	• Establishes rates (market-based or cost-of-service-based)	• Establishes rates (market-based or cost-of-service-based)
	• Oversees mandatory reliability standards for the bulk power system	• Siting and approval for pipeline, storage and LNG terminal construction, operation and abandonment
	• ***Does not*** site or approve electric generation, transmission, or distribution facilities - no "upstream" authority for generators or their fuel suppliers	
NERC (& RRO's)	• Ensures reliability of bulk power system by establishing and enforcing standards	• No authority
ISO's/RTO's	• FERC-derived authority to operate efficient, reliable wholesale electric grid for transmission of electricity in interstate commerce	• No authority
State Commission	• Regulates retail sales of electricity	• Regulates retail sales of natural gas (LDCs)
	• Establishes retail rates	• Establishes retail rates
	• Siting and approval of electric generation, transmission, and distribution facilities	

Source: MISO

ICF

Observations about Recent Trends in the Regulatory Environment

- Infrastructure development becoming more difficult and project timelines have lengthened
- Approvals processes are more contested due to increased number of intervening parties

As a result, future development will experience:

- Additional costs
- More uncertain market development
- New planning process with a focus on patience and flexibility and contingency planning

The Road Ahead for Pipeline Projects is "Bumpy", and Market Needs are Likely to Outpace Development

Moving Forward

- AIM (Spectra)
- Diamond East (Williams)
- Backhaul Project (Panhandle Eastern)
- Western Marcellus (Williams)
- WB Express (Columbia)
- Northern Supply Access (TGT)
- Gulf Markets Expansion (TETCO)
- Leach Xpress (Columbia)
- Zone 3 Enhancement (REX)
- Mexican Export Projects (Various Companies)
- Eastern Canada Expansions (TCPL, Union, Enbridge)

Facing Opposition

- Atlantic Bridge (Spectra)
- Atlantic Coast Pipeline (Dominion)
- Atlantic Sunrise (Williams)
- Rover (ET)
- NEXUS (Spectra)
- C2C (PNGTS)
- Mountain Valley Pipeline (EQT/NextEra)
- Sabal Trail (Spectra/NextEra)
- Penneast (AGL)
- Eastern System Upgrade (Millennium)

On Hold (for now)

- Northeast Energy Direct (Kinder Morgan)
- Access Northeast (Spectra)
- Constitution (Williams)
- South to North (Iroquois)
- Northern Access 2016 (National Fuel)

ICF

Changing Ownership of Midstream Assets

Key Recent Midstream Deals Indicate Changes Occurring across the Sector

- Increasing emphasis by Utilities to participate in midstream infrastructure
- Emphasis on growing and diversifying the asset base

Purchaser/Acquisition	Date of Announcement	Date of Completion	Deal Value (US$ Billion)
Southern Company acquisition of AGL Resources	Aug. 24, 2015	July 1, 2016	$8.0
Duke Energy acquisition of Piedmont Natural Gas	Oct. 26, 2015	Oct. 3, 2016	$6.7
Dominion Resources acquisition of Questar Corp.	Feb. 1, 2016	Sept. 16, 2016	$4.4
TransCanada acquisition of Columbia Pipeline Group	Mar. 17, 2016	July 1, 2016	$13.0
Consolidated Edison acquisition of Crestwood Assets	Apr 21, 2016	June 6, 2016	$1.0
Enbridge Inc. acquisition of Spectra Energy	September 6, 2016	Pending	$28.0

Source: ICF, Scaling up to face Midstream Challenges. October 2016

Common Themes Across Each of the Recent Transactions

- Cash flows for the acquired entities are relatively steady and predictable
- The project queue of acquired forms offer outstanding potential for growth
- High potential for operational synergies between the purchaser and acquired entity
- Each of the acquisitions has an element of diversification and risk reduction

Deal	Operational Synergies	New LDC Service Areas	Vertical Integration
Southern / AGL		X	X
Duke / Piedmont		X	X
Dominion / Questar	X	X	
TransCanada / Columbia	X		
Con Edison / Crestwood		X	X
Enbridge / Spectra	X		

Source: ICF, Scaling up to face Midstream Challenges. October 2016

Cash Flows for Acquired Companies are Either Increasing or are Relatively Steady

- Risk of rate-based assets is generally less that the risk of assets that are directly tied to commodity markets
- The recently acquired entities provide significant geographic and asset diversity at relatively low risk

Historic Revenue by Company vs. Henry Hub

Year	Henry Hub	Spectra	Piedmont	Questar	CPG
	($/MMBtu)	($Millions)			
2012	$2.75	5,542	1,148	285	1,036
2013	$3.73	6,087	1,307	272	1,253
2014	$4.37	6,323	1,504	268	1,438
2015	$2.62	5,058	1,409	268	1,478

Source: SNL

ICF

Key Midstream Projects of Combined Entities

Pending Pipeline Projects by Midstream Company

Combined Company	Project Name	Capacity (MMcfd)	Status	Estimated Cost ($M)
Dominion-Questar	Clarington Project	250	Construction	77
	Supply Header Project	1511	FERC APL	500
Dominion-Questar & Duke Piedmont	Atlantic Coast Pipeline	1500	FERC APL	5100
Enbridge-Spectra	Appalachian Lease Project (TEAL)	950	FERC APL	185
	Gulf Markets Expansion	400	FERC APV	26.5
	Access South	320	FERC APL	256
	Access Northeast	925	FERC Pre-Filing	3000
	NEXUS	1500	FERC APL	2000
SouthernCo-AGL & Enbridge-Spectra	PennEast	1107	FERC APL	1130
TransCanada-CPG	WB Xpress	1300	FERC APL	850
	Rayne Xpress	621	FERC APL	400
	Mountaineer XPress	2700	FERC APL	2030
	Leach Xpress Project	1530	FERC APL	1400

*Source: Point Logic, Pipeline Websites, * FERC APL – FERC Application Filed. FERC APV – FERC Approved.*

Final Thoughts

Final Thoughts:
The State of the Gas Market

- The gas market is shifting to a tighter supply & demand balance.
- Future market development will be driven by changes in natural gas markets and demand, rather than supply.
- Market growth will still be met primarily by growth in Marcellus/Utica production.
- There are select areas outside of the Marcellus/Utica that are still experiencing growth and present opportunities.
- ICF expects gas markets to experience increased prices and volatility.
- E&P producers will not support midstream investments as they have over the past years.
- LDC's, power generators, and other natural gas consumers will need to take a greater role in defining the development of the market.
- U.S. election results may impact the regulatory climate for natural gas and future emission regimes.

Final Thoughts:
Midstream Investment Climate

- Views and assumptions of gas markets and midstream development need to be revisited.
- While still robust, future midstream investment will be reduced compared to the past 5 years.
- The regulatory and political climate have created additional costs and hurdles to project development, but also new opportunities.
- Prices in the Marcellus/Utica areas will remain depressed relative to other supply basins, creating further value in gas transport.
- New strategies for existing assets may be needed to optimize value.
- Midstream consolidation has created opportunities for optimized investment portfolios, risk mitigation, and enhanced profitability.
- Midstream market needs are likely to outpace development in this new environment, creating possible market disruptions.

ICF

Questions & Contact Information

Kevin Petak, Vice President, ICF

kevin.petak@icf.com

+1.703.218.2753

Mike Sloan, Head of Gas, NGLs, Oil Consulting, ICF

michael.sloan@icf.com

+1.703.218.2758