



## Seeking Growth What will drive US natural gas demand?

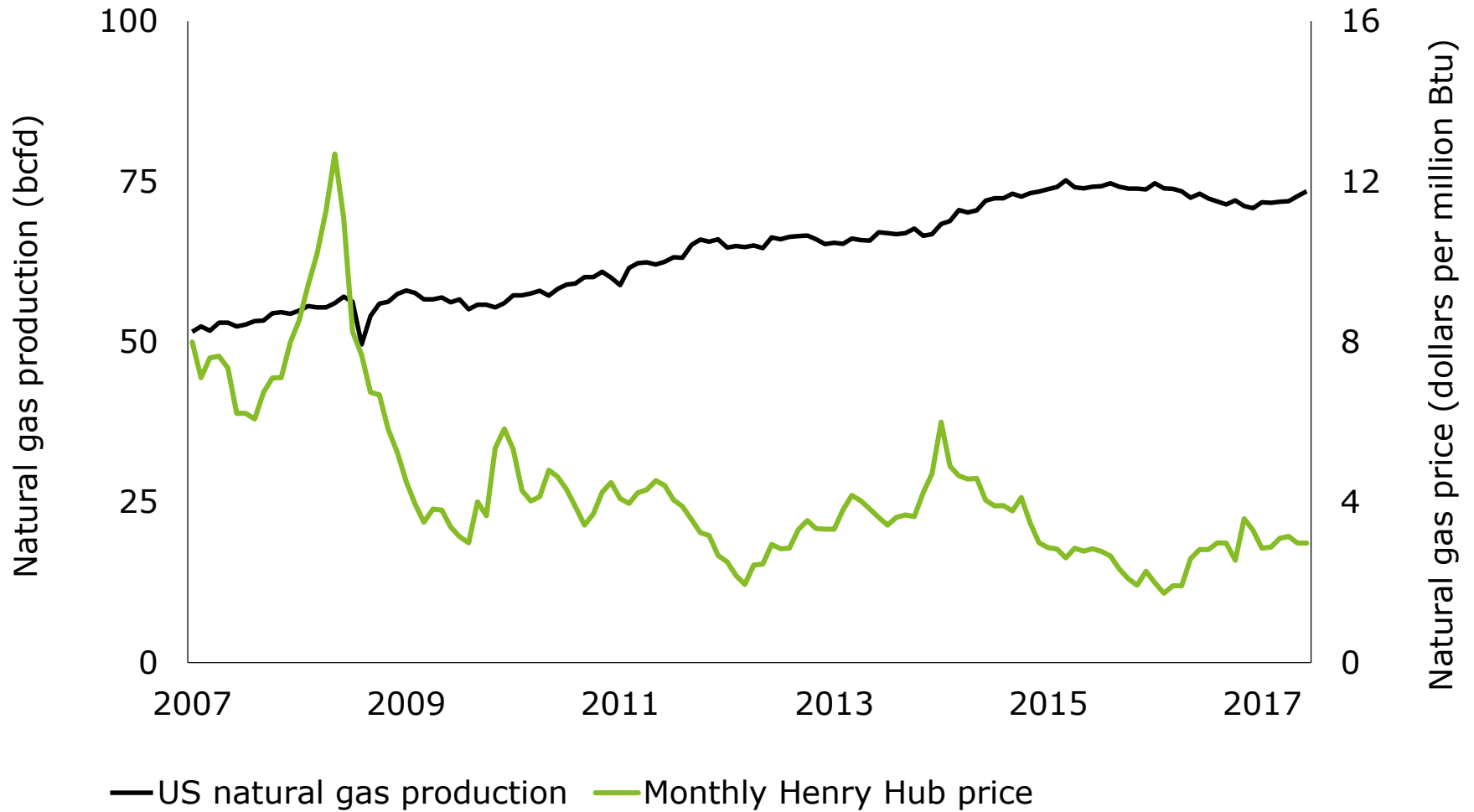
Andrew Slaughter  
Executive Director, Deloitte Center for Energy Solutions, Deloitte Services LP  
January 31, 2018

# Agenda

- Domestic production, prices and resource base
- Prospects for domestic natural gas markets
- US exports and global gas markets
- Concluding thoughts

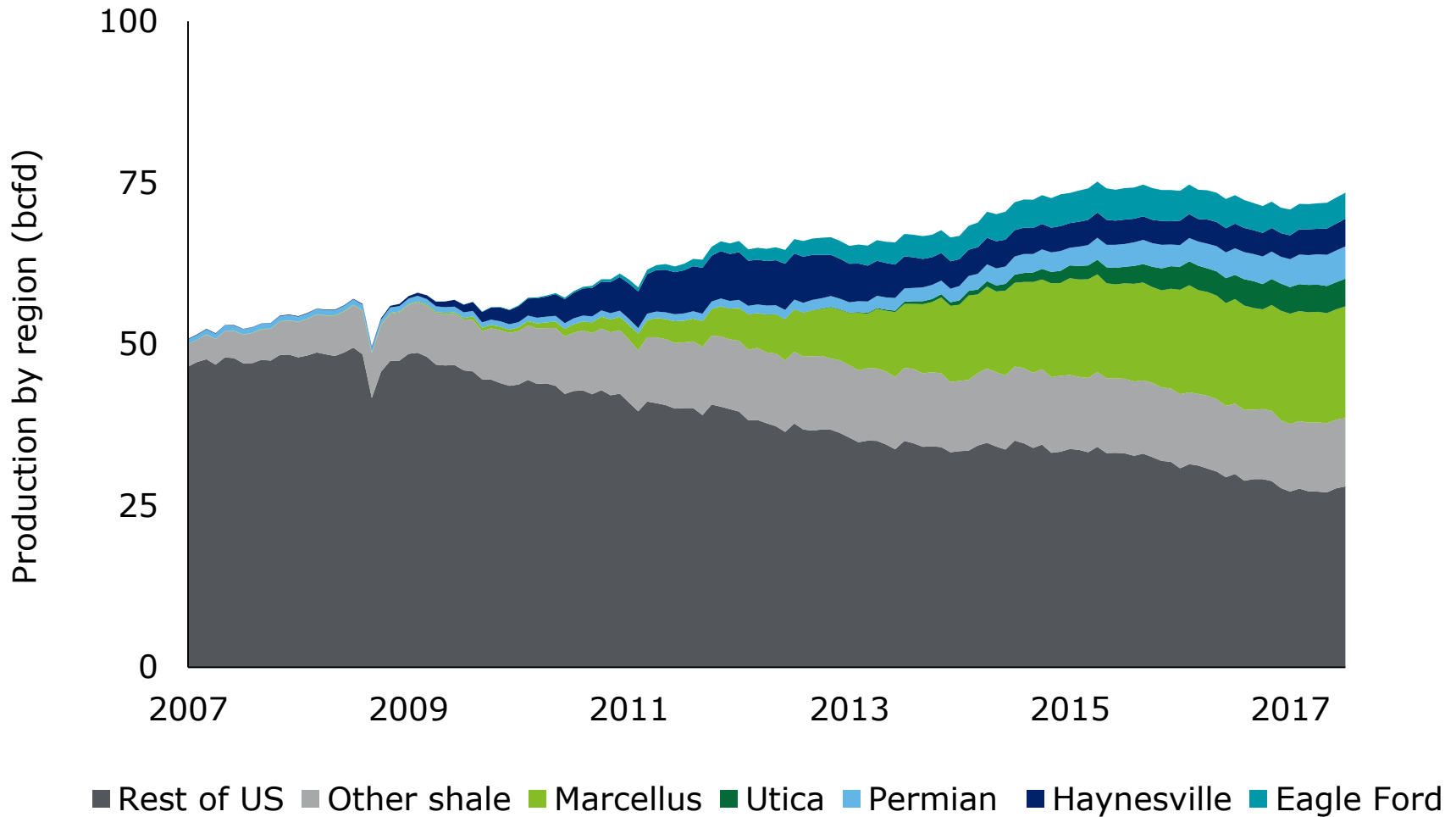
# Domestic production, prices and resource base

# US natural gas supply has risen steadily despite low prices



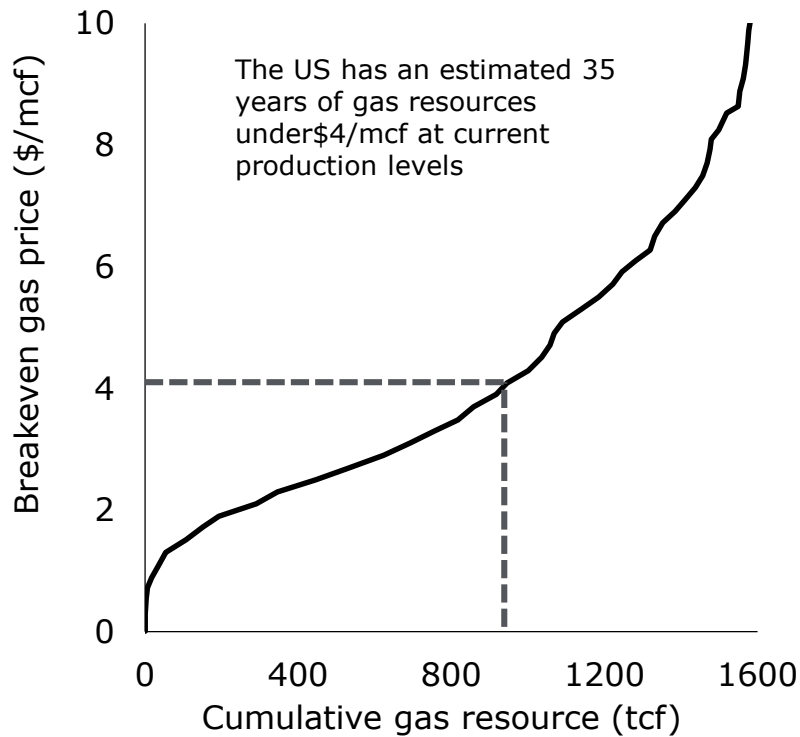
Source: US Energy Information Administration<sup>1</sup>

# Five regions have driven US production growth since 2007



Source: US Energy Information Administration<sup>2</sup>

# Domestic resource estimates have grown substantially



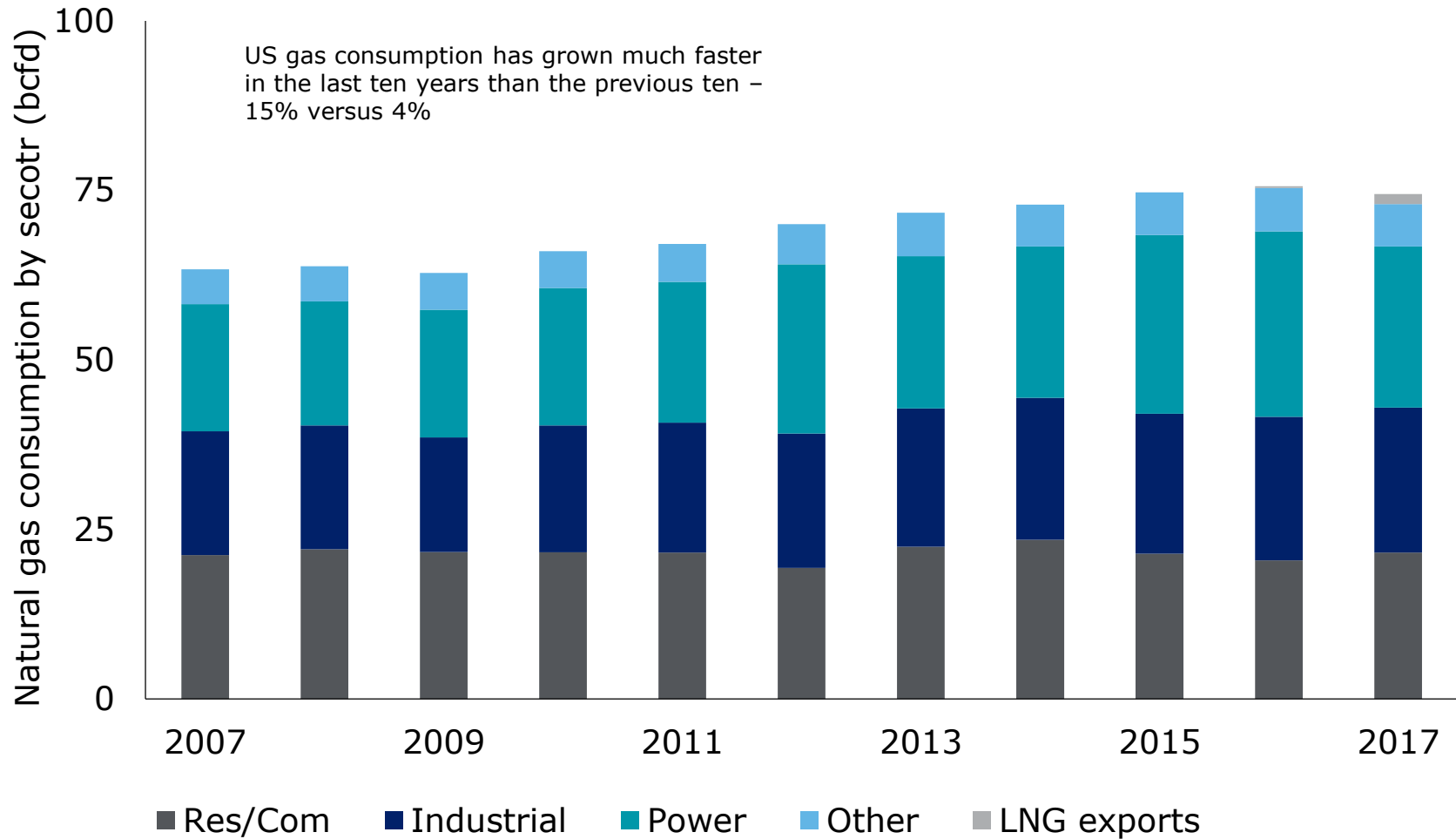
Source: Rystad Energy<sup>3</sup>



Source: Potential Gas Committee<sup>4</sup>

# Prospects for domestic natural gas markets

# Demand growth has been strong for the past 10 years ...



Source: US Energy Information Administration<sup>5</sup>



... But prospects for future growth are likely to be lower<sup>6</sup>

- **Residential and Commercial Sector**

- Expected to continue more or less flat as efficiency gains in buildings and heating/cooking equipment offset demographic and income growth effects

- **Industrial Sector**

- Industrial sector demand correlates strongly with economic growth with potential upside
- \$10 billion investment in new ethane cracking capacity adds 0.5 bcfd of gas demand potential<sup>6</sup>

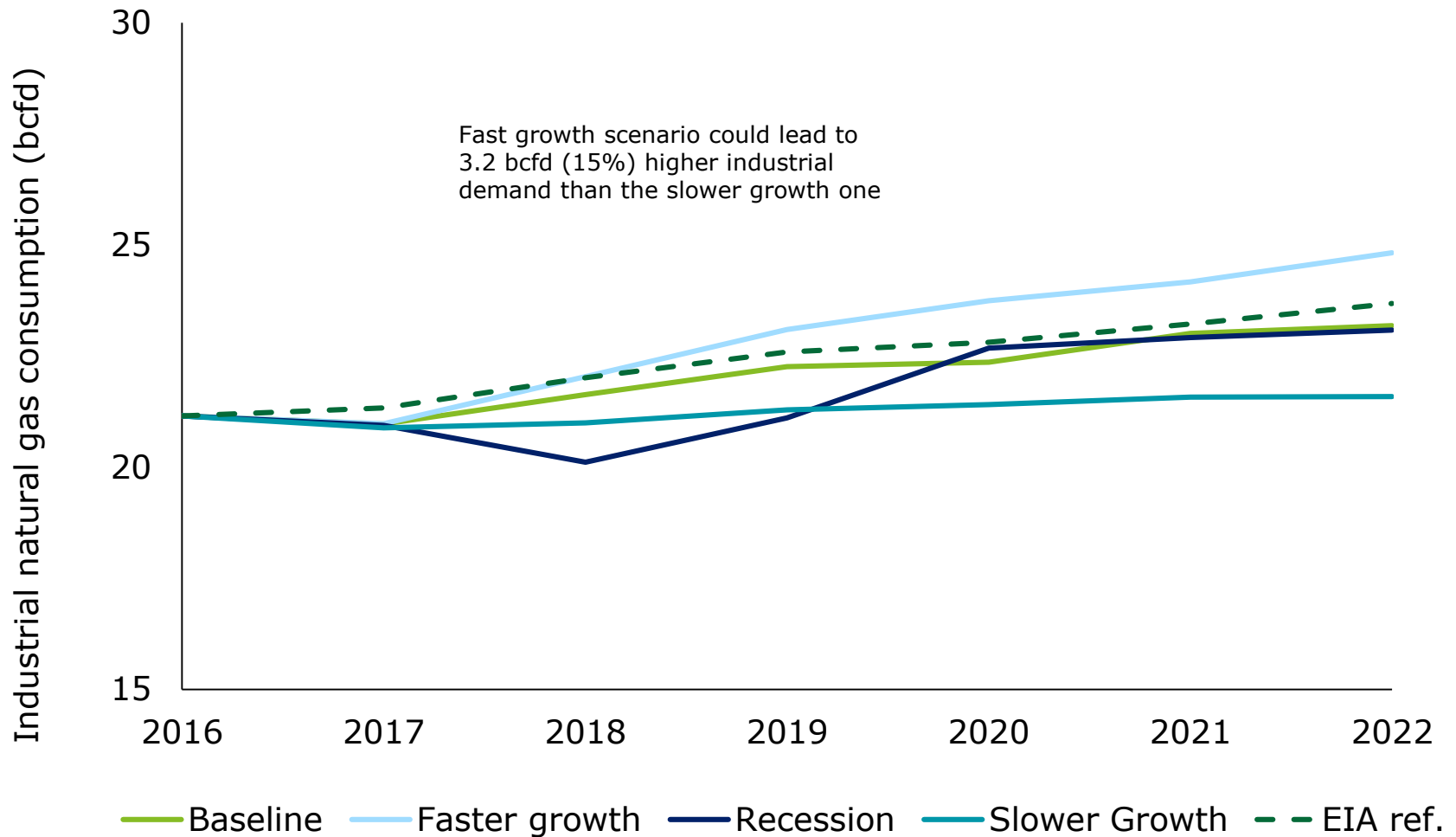
- **Electric Power Sector**

- Growth in the past 10 years has been driven by gas successfully displacing coal generation
- Further displacement potential is likely limited
- Overall electricity demand growth is stagnant and there is increasing competition from renewable and distributed generation sources

- **Other**

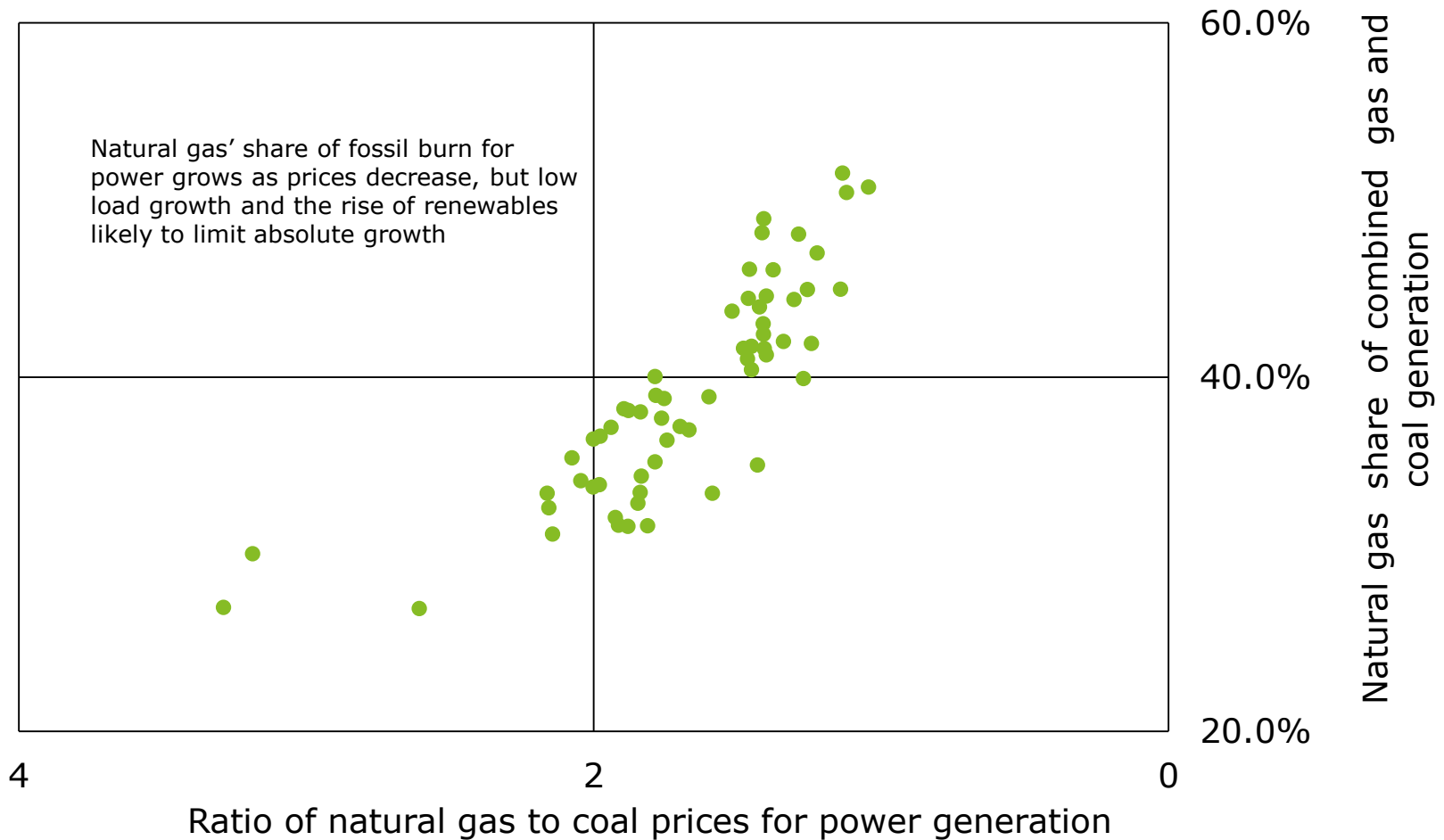
- Lease and plant fuel for oil and gas operations and pipeline fuel consumption should track the overall trends in upstream activity in the US
- Transportation could provide long-term growth potential but lack of infrastructure could remain a significant obstacle to adoption

# Rate of economic growth plays outsized role in industrial demand



Source: Deloitte analysis<sup>7</sup>

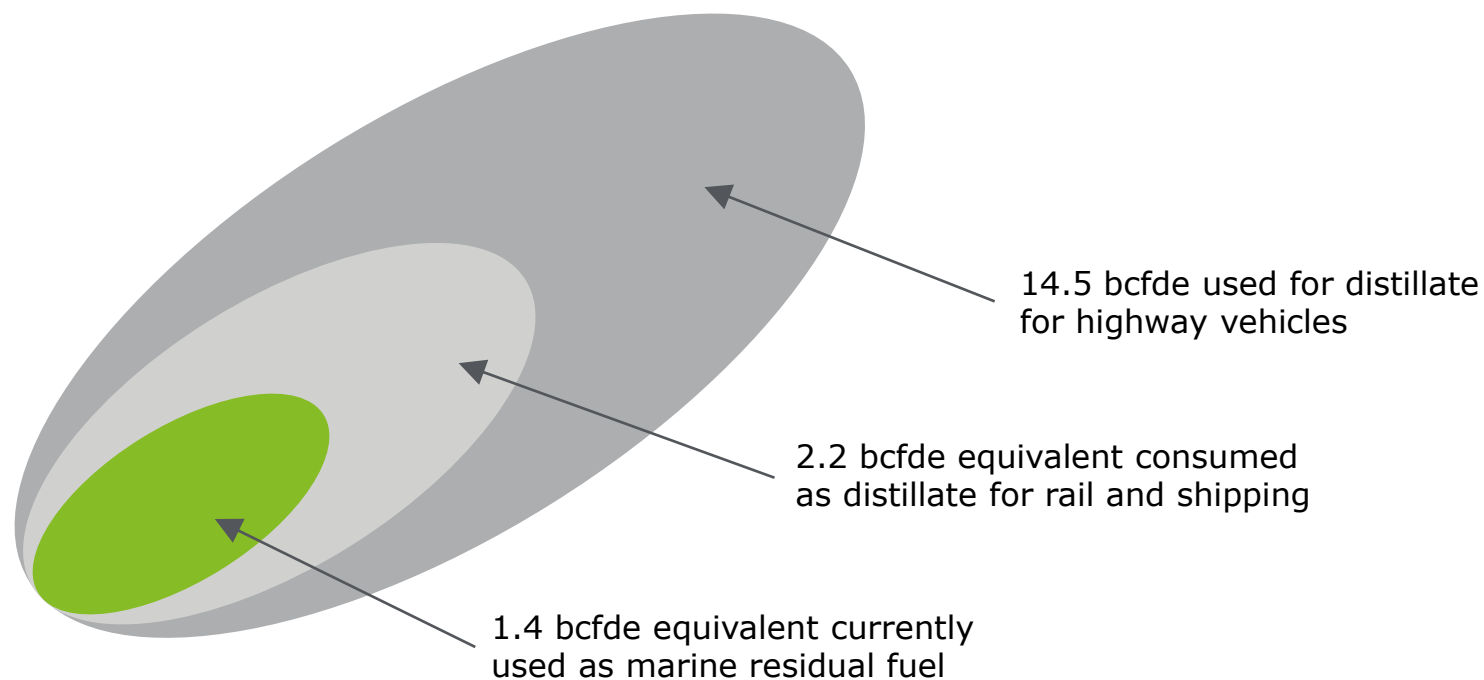
# Power generation consumption highly price-dependent and growth will likely remain muted in the medium-term



Source: Deloitte analysis<sup>8</sup>

Note: Figure includes monthly fuel costs and power generation consumption of natural gas and coal from January 2021 through January 2017

## Baseline estimates for transport consumption are minimal, but long-term opportunities are substantial



Displacing traditional fuel could be difficult and potentially take decades as infrastructure is built out, but might be a multi-billion cubic foot opportunity

Source: *Deloitte analysis*<sup>9</sup>

# US exports and global gas markets

# Exports will be needed to sustain domestic production growth at current price levels

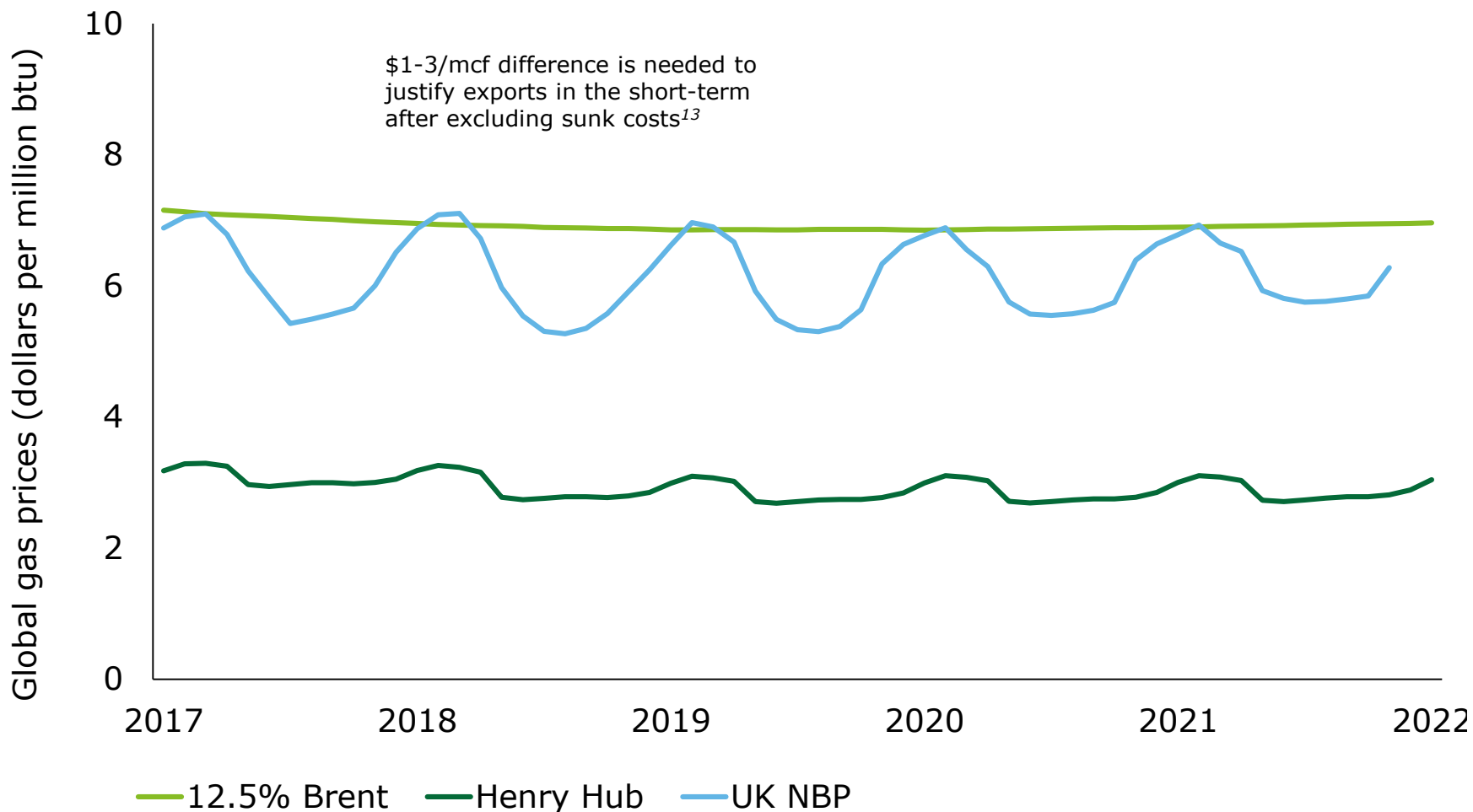
## Exports by pipeline

- Pipeline exports to Mexico have shown strong growth over the past 10 years, more than quadrupling from just 0.8 bcf/d to 3.7 bcf/d<sup>10</sup>
- High gas supply growth in West and South Texas and continuing expansion of cross-border infrastructure should support continued strong growth in this trade
- Mexican infrastructure build-out and economic expansion may be key for further export growth

## Exports by LNG

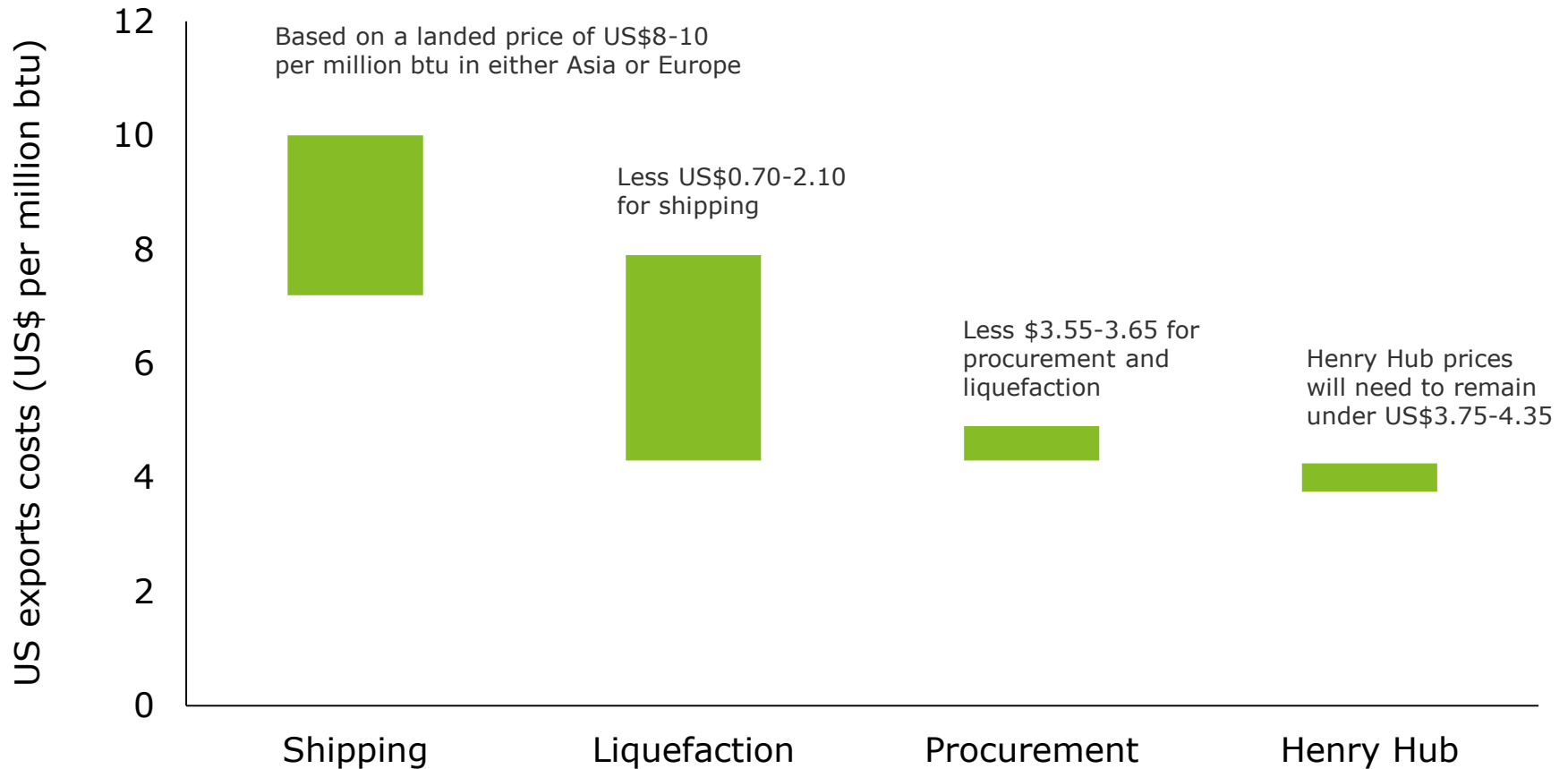
- About 8.5 bcf/d of US Lower 48 LNG export capacity is currently in operation or under construction<sup>11</sup>
- That number could potentially double over the next decade if other project proposals move ahead
- Near-term utilization could be constrained with low oil-indexed cargo prices and oversupply of liquefaction capacity
- Looking further out, the US gas will need to be priced competitively to win markets with Henry Hub remaining below \$4.35/MMBtu<sup>12</sup>

# Short-term exports likely driven by regional price differentials



Source: Deloitte analysis, Bloomberg<sup>14</sup>

# Longer-term exports will likely need to compete with Brent-indexed LNG contracts from countries like Qatar and Australia



Source: Deloitte analysis<sup>15</sup>



# Concluding thoughts

# Outlook for US natural gas remains strong, with some headwinds



US gas production has increased 50% in 10 years at incredibly low prices, with room to grow for potentially decades



Domestic demand expected to grow slowly with some volatility in power sector and moderate upside from industrial consumption



LNG exports globally show long-term potential, but face overcapacity issues in the next few years, pipeline exports face fewer challenges



Significant upstream investment will likely be needed across a range of scenarios, but midstream and downstream may be more variable

# Questions?

# Deloitte Center *for* Energy Solutions

The Deloitte Center for Energy Solutions (the “Center”) provides a forum for innovation, thought leadership, groundbreaking research, and industry collaboration to help companies solve the most complex energy challenges.

Through the Center, Deloitte’s Energy & Resources group leads the debate on critical topics on the minds of executives—from the impact of legislative and regulatory policy, to operational efficiency, to sustainable and profitable growth. We provide comprehensive solutions through a global network of specialists and thought leaders.

With locations in Houston and Washington, DC, the Center offers interaction through seminars, roundtables, and other forms of engagement, where established and growing companies can come together to learn, discuss, and debate.

[www.deloitte.com/us/energysolutions](http://www.deloitte.com/us/energysolutions)

 [@Deloitte4Energy](https://twitter.com/Deloitte4Energy)

For more on natural gas and LNG, please visit [Seeking growth: What will drive US natural gas demand?: Understanding US natural gas consumption](#) and [LNG industry trends: Deloitte’s four-part series on LNG](#)

# References

- <sup>1</sup> Monthly Henry Hub spot prices and US dry natural gas production, US Energy Information Administration, <https://www.eia.gov/naturalgas/data.php#summary>, accessed October 12 2017.
- <sup>2</sup> Dry shale gas production estimates, US Energy Information Administration, <https://www.eia.gov/naturalgas/data.php#summary>, accessed October 12 2017.
- <sup>3</sup> Breakeven gas price by US natural gas assets, UCube Database, Rystad Energy, accessed October 2 2017.
- <sup>4</sup> Potentially gas resources, Biennial Reports 200-2017, Potential Gas Committee, <http://potentialgas.org/biennial-report>, accessed October 2 2017.
- <sup>5</sup> Natural gas consumption by end use plus net imports, US Energy Information Administration, <https://www.eia.gov/naturalgas/data.php#summary>, accessed October 12 2017.
- <sup>6</sup> *Seeking growth: What will drive US natural gas demand?*, Deloitte Center for Energy Solutions, <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/energy-resources/us-er-natural-gas-demand.pdf>, accessed October 12 2017.
- <sup>6</sup> Ibid.
- <sup>7</sup> Ibid.
- <sup>8</sup> Ibid.
- <sup>9</sup> Ibid.
- <sup>10</sup> US natural gas pipeline exports to Mexico, US Energy Information Administration, <https://www.eia.gov/dnav/ng/hist/n9132mx2A.htm>, accessed October 13 2017.
- <sup>11</sup> North American LNG import/export terminals approved, US Federal Energy Regulatory Commission, May 1 2017, <https://www.ferc.gov/industries/gas/indus-act/lng/lng-approved.pdf>, accessed October 13 2017.
- <sup>12</sup> *Building an industry: Can the United States sustainably export LNG at competitive prices?*, Deloitte Center for Energy Solutions, <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/energy-resources/us-er-lng-update-part-three.pdf>, accessed October 12 2017.
- <sup>13</sup> Jason Bordoff and Akos Losz, *If you build it, will they come? The competitiveness of US LNG in overseas markets*, Center on Global Energy Policy, Columbia University, November 2016, <http://energypolicy.columbia.edu/sites/default/files/energy/Competitiveness%20of%20US%20LNG%20in%20Overseas%20Markets.pdf>, accessed October 13 2017.
- <sup>14</sup> Henry Hub, ICE UK NBP and Brent monthly futures November 2017-December 2022, Bloomberg, accessed October 13 2017.
- <sup>15</sup> *Building an industry: Can the United States sustainably export LNG at competitive prices?*, Deloitte Center for Energy Solutions, accessed October 12 2017.
- <sup>16</sup> *Seeking growth: What will drive US natural gas demand?*, Deloitte Center for Energy Solutions
- <sup>17</sup> Ibid.



Official Professional Services Sponsor

Professional Services means audit, tax, consulting, and advisory.

36 USC 220506

This publication contains general information only and Deloitte is not, by means of this publication, rendering accounting, business, financial, investment, legal, tax, or other professional advice or services. This publication is not a substitute for such professional advice or services, nor should it be used as a basis for any decision or action that may affect your business. Before making any decision or taking any action that may affect your business, you should consult a qualified professional advisor.

Deloitte shall not be responsible for any loss sustained by any person who relies on this publication.

#### **About Deloitte**

Deloitte refers to one or more of Deloitte Touche Tohmatsu Limited, a UK private company limited by guarantee ("DTTL"), its network of member firms, and their related entities. DTTL and each of its member firms are legally separate and independent entities. DTTL (also referred to as "Deloitte Global") does not provide services to clients. In the United States, Deloitte refers to one or more of the US member firms of DTTL, their related entities that operate using the "Deloitte" name in the United States and their respective affiliates. Certain services may not be available to attest clients under the rules and regulations of public accounting. Please see [www.deloitte.com/about](http://www.deloitte.com/about) to learn more about our global network of member firms.