Critical Issues Forum

America's Increasing Reliance on Natural Gas: Benefits and Risks of a Methane Economy

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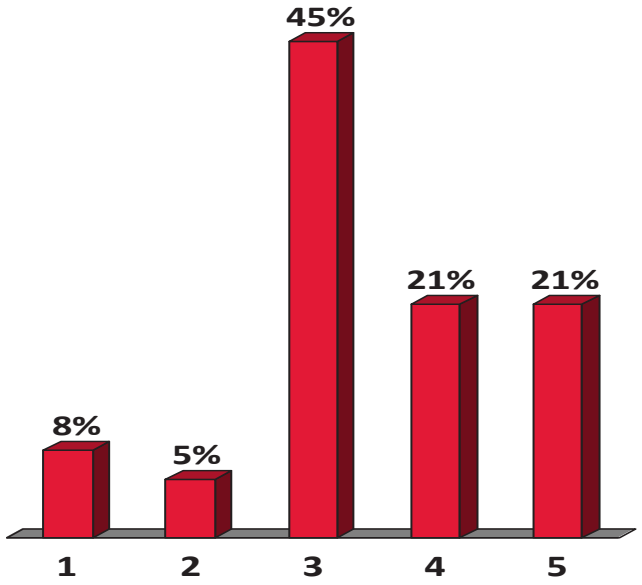
Opening

In 2012, natural gas supplied about 27% of primary energy use in the USA, trailing petroleum at 36% and ahead of coal at 18% (EIA 2014 Annual Energy Outlook). Based on what you know now, what is the probability that natural gas will become the leading fuel in the USA within the next 30 years:

1. less than 20%
2. 20-40%
3. 41-60%
4. 61-80%
5. greater than 80%



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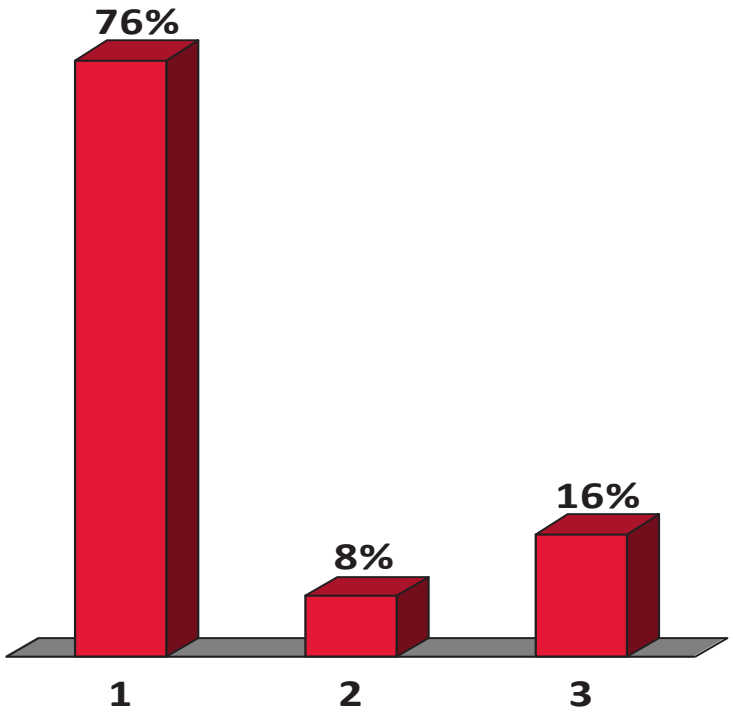
Based on what you know now, is America's increasing reliance on natural gas desirable?

1. Yes
2. No
3. Not Sure



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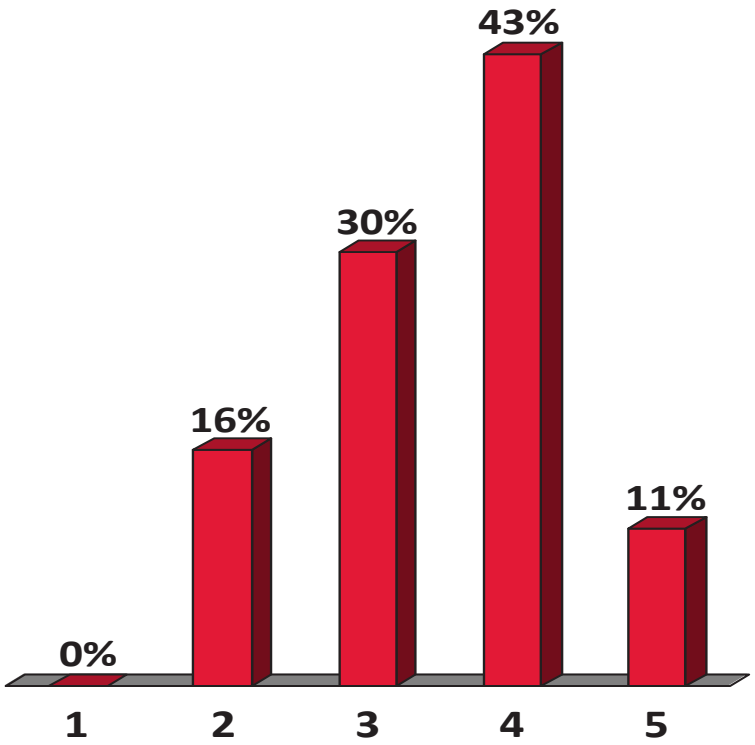
Supply

What fraction of US natural gas will come from shale in 2040?

1. 30%
2. 40%
3. 50%
4. 60%
5. 70%



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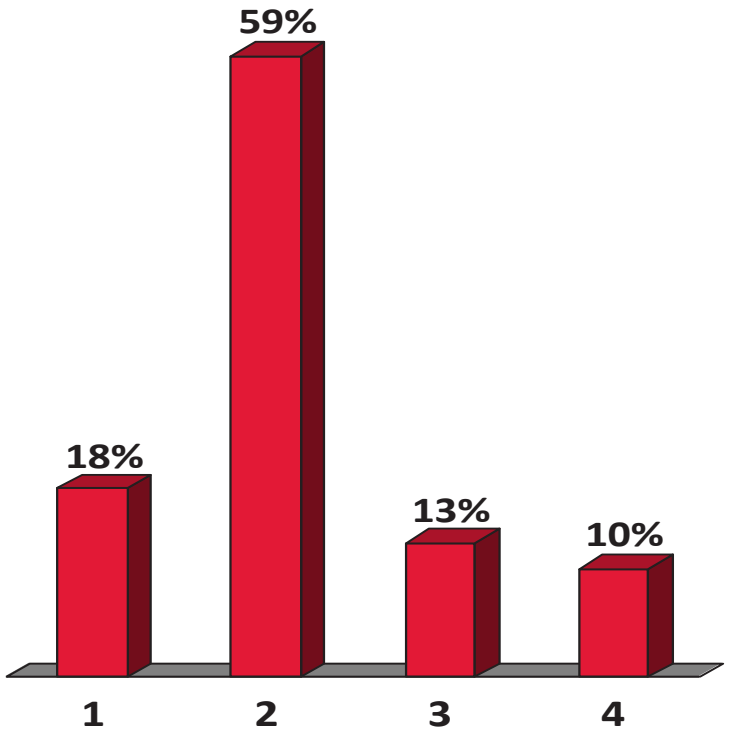
What fraction of gas will come from offshore and Alaska in 2040?

1. 5%
2. 10%
3. 15%
4. 20%



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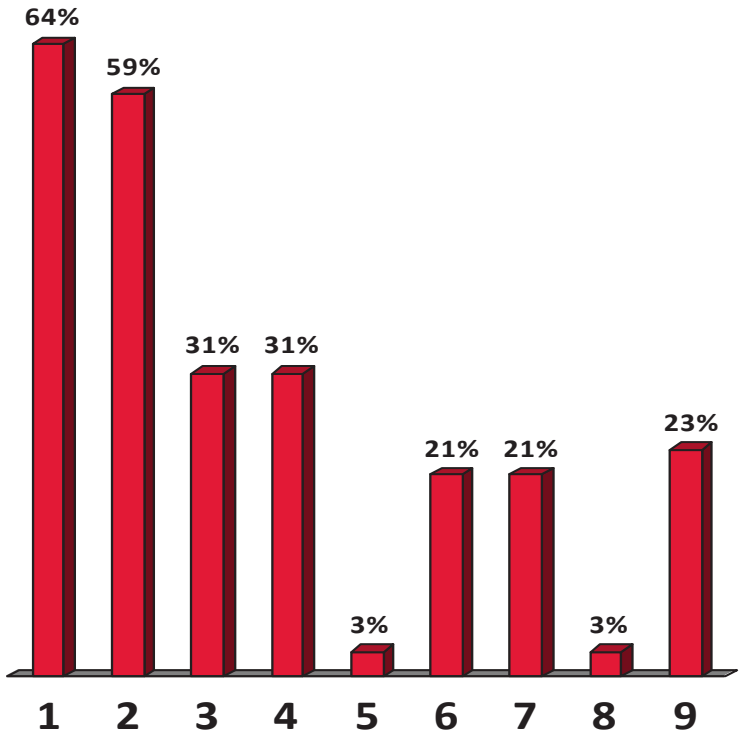
In which three states will onshore gas production grow the most by 2030?
(select three, then press "SEND")

1. Texas
2. PA
3. ND
4. Louisiana
5. Arkansas
6. OK
7. NY
8. California
9. Alaska



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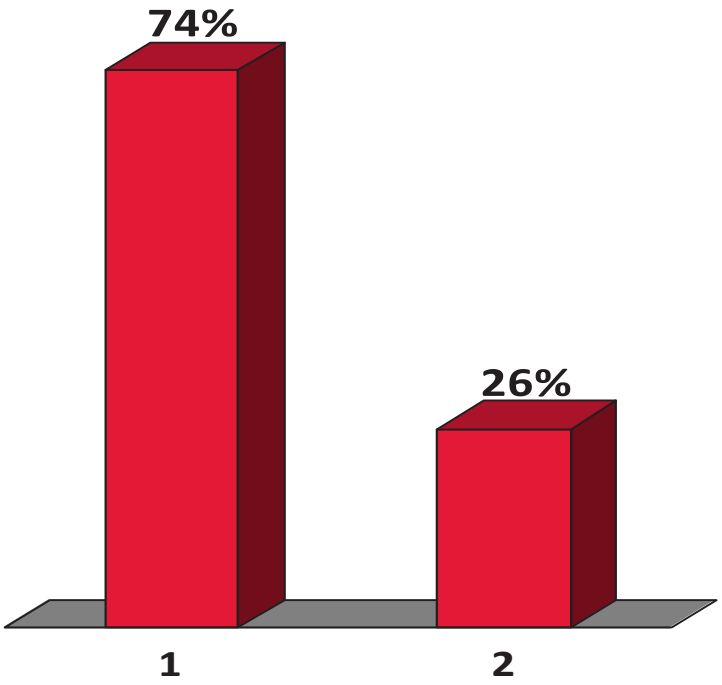
Will the offshore (OCS) of the US East Coast be opened to leasing by 2030?

1. Yes
2. No



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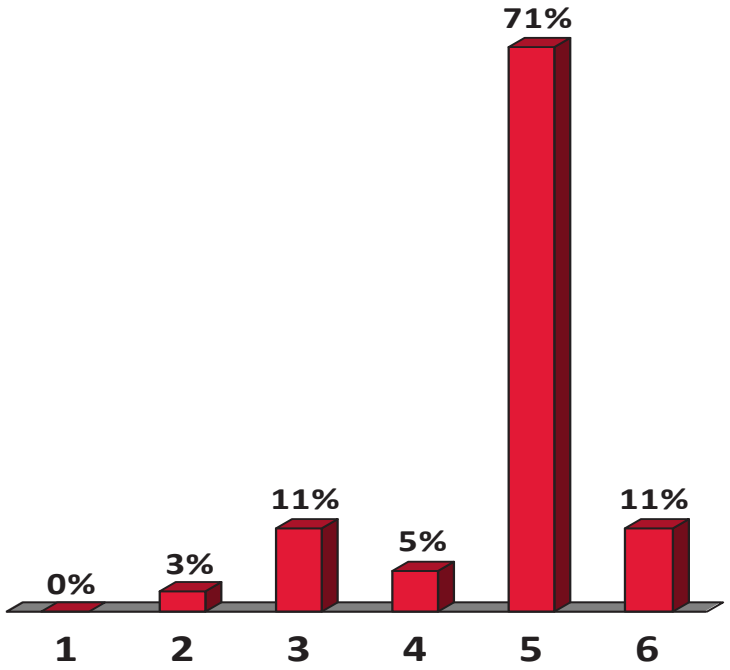
What is the principal barrier to increasing US domestic gas supply?

1. Capital needs
2. Limits to acreage access
3. Regulatory/legal barriers
4. Lack of technology
5. Gas price
6. Other



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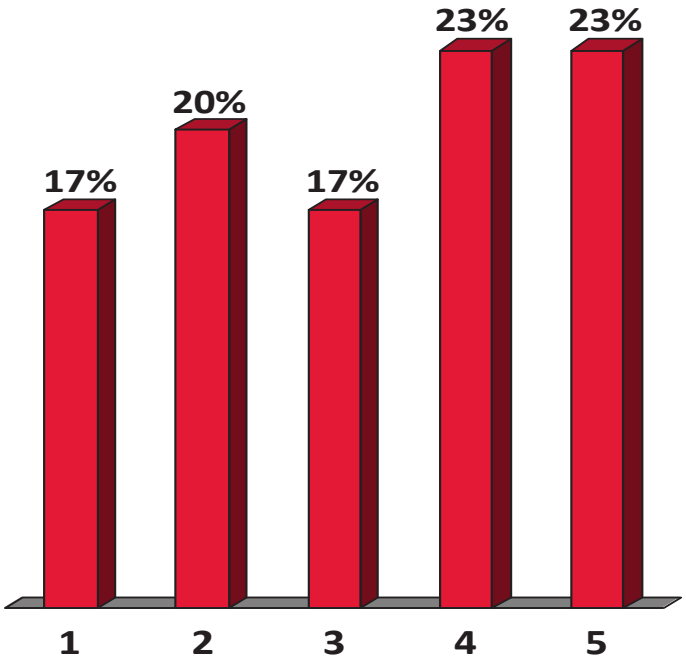
Demand

In 2035, what fraction of USA transportation will be fueled by natural gas, either by gas-generated electricity, compressed natural gas, or hydrogen steam reformed for fuel cells?

1. 4% or less
2. 6%
3. 8%
4. 10%
5. 12% or greater



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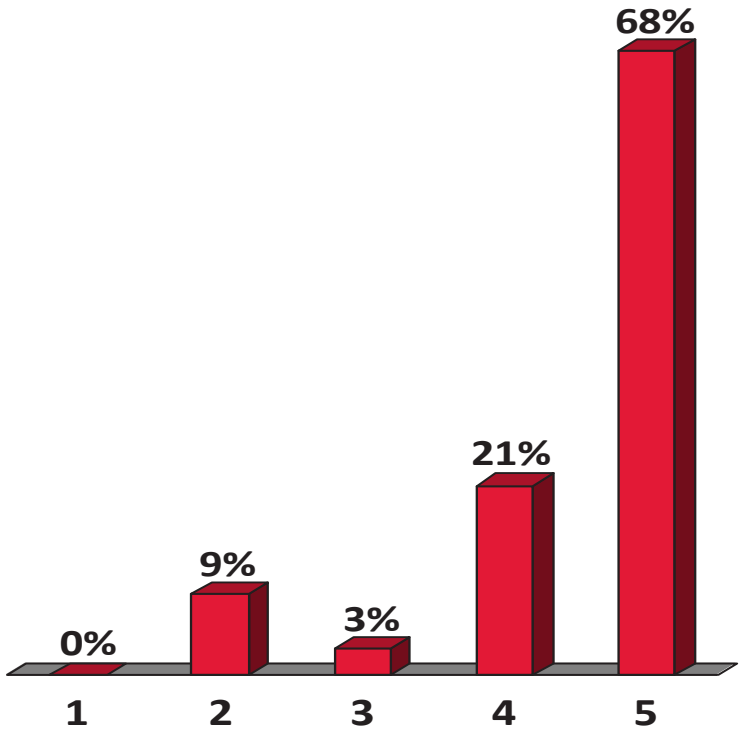
What fraction of USA electricity will be generated by natural gas in 2035?

1. 15% or less
2. 20%
3. 25%
4. 30%
5. 35% or greater



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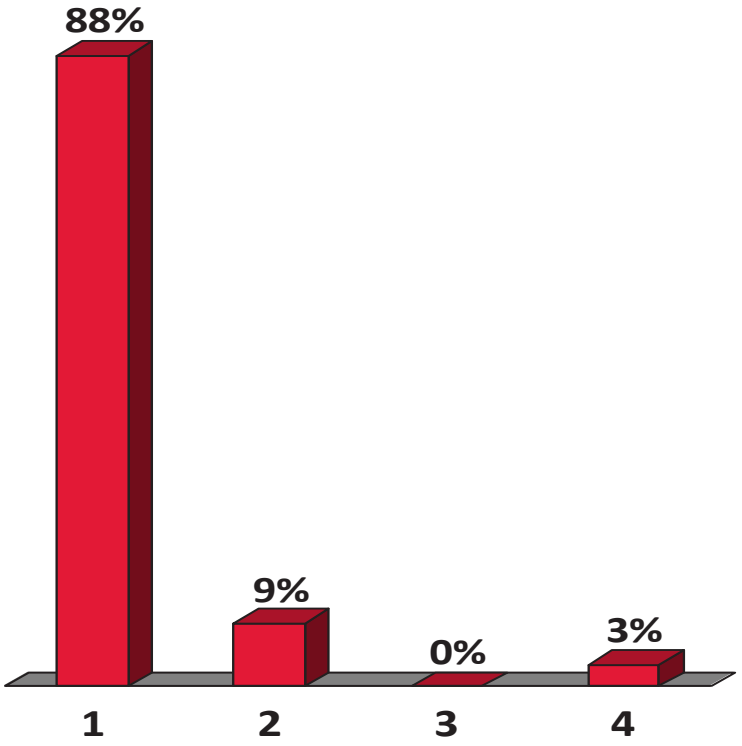
What will be the largest demand sector for natural gas in the USA in 2035?

1. Electric power
2. Industrial
3. Transportation
4. Other



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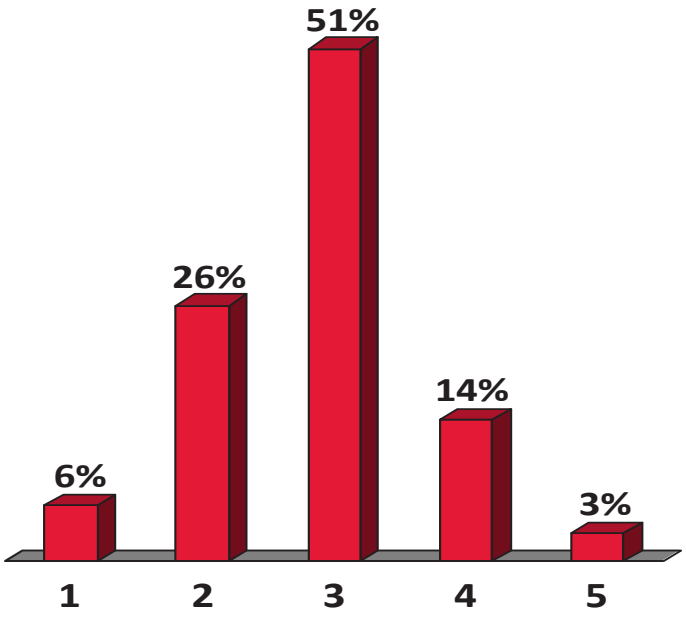
What will be the volume of LNG exports from the USA by 2020?

1. None
2. 2 billion cubic feet (bcf)/day
3. 5bcf/day
4. 8bcf/day
5. 10+bcf/day



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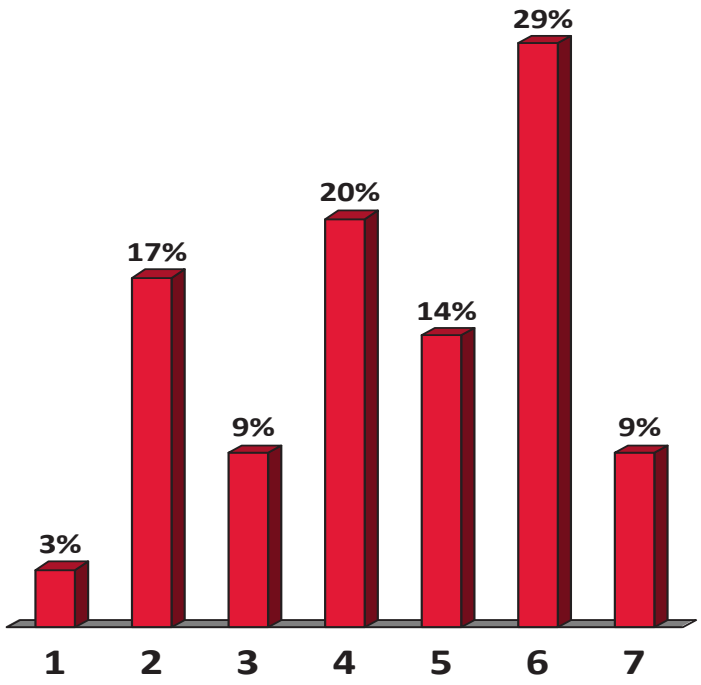
What is the principal barrier to increasing US natural gas demand?

1. Limited supply
2. Gas price
3. Capital needs
4. Regulatory/legal challenges
5. Competition from alternative fuels
6. Lack of infrastructure
7. Other



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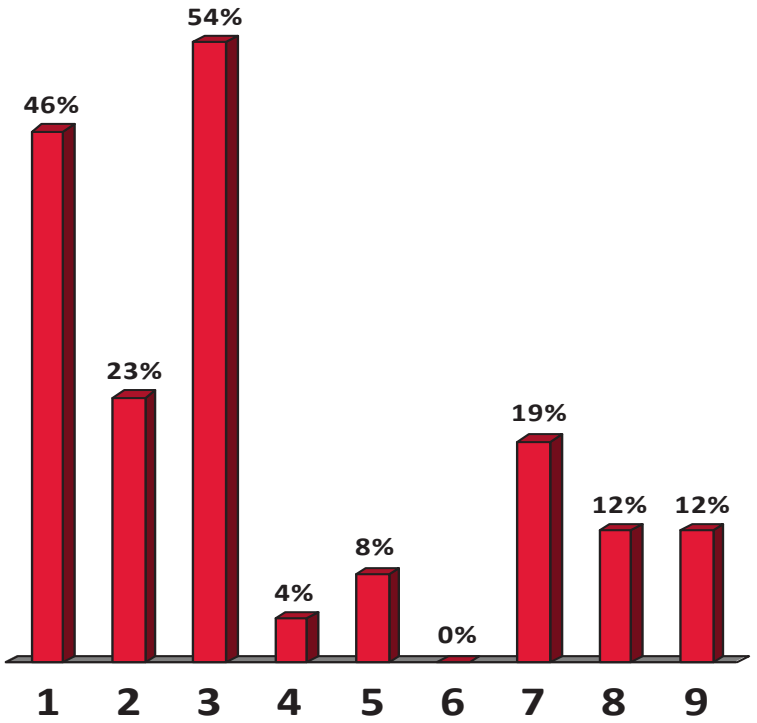
Health, Safety, and Environment

Identify the top 2 major environmental and safety problems of natural gas:
(pick up to two, then press "SEND")

1. Methane as a greenhouse gas
2. Water sourcing
3. Water disposal and/or contamination
4. Site restoration
5. Pipeline leaks
6. Explosions
7. Induced seismicity
8. Competition for surface land use
9. Noise and/or traffic



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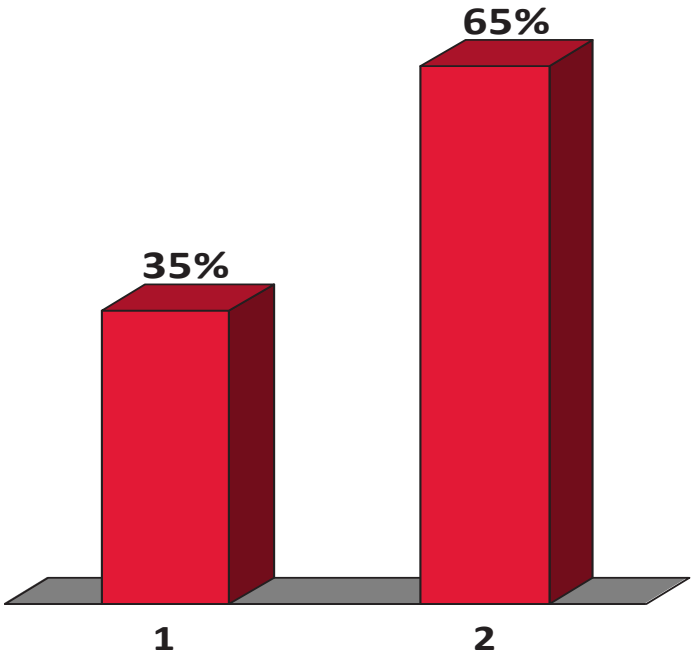
Will carbon capture from natural gas power plants become widely adopted by 2040?

1. Yes
2. No



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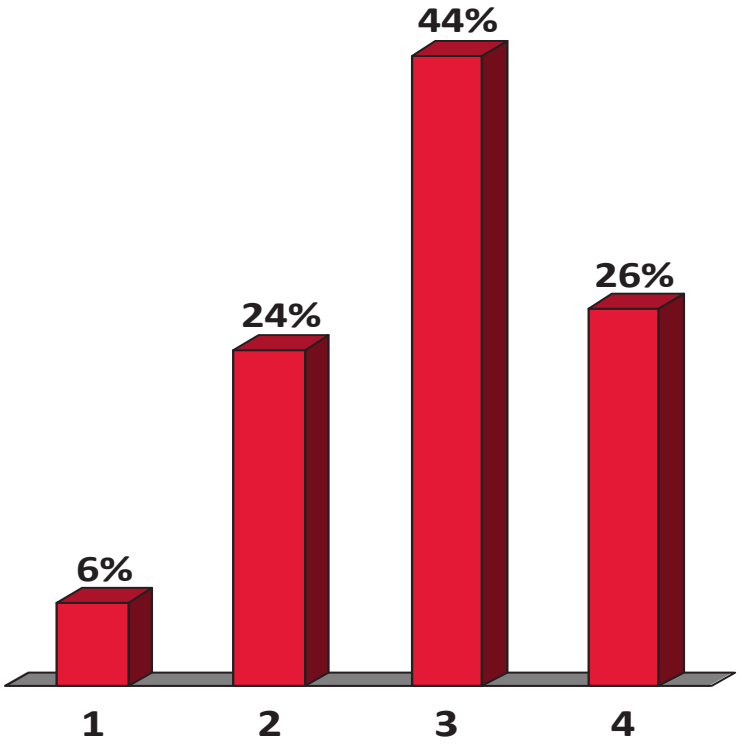
What fraction of fugitive emissions (accidental leaks and routine venting) will be reduced compared to current levels by 2030?

1. None
2. One-quarter
3. One-half
4. Three-quarters or more



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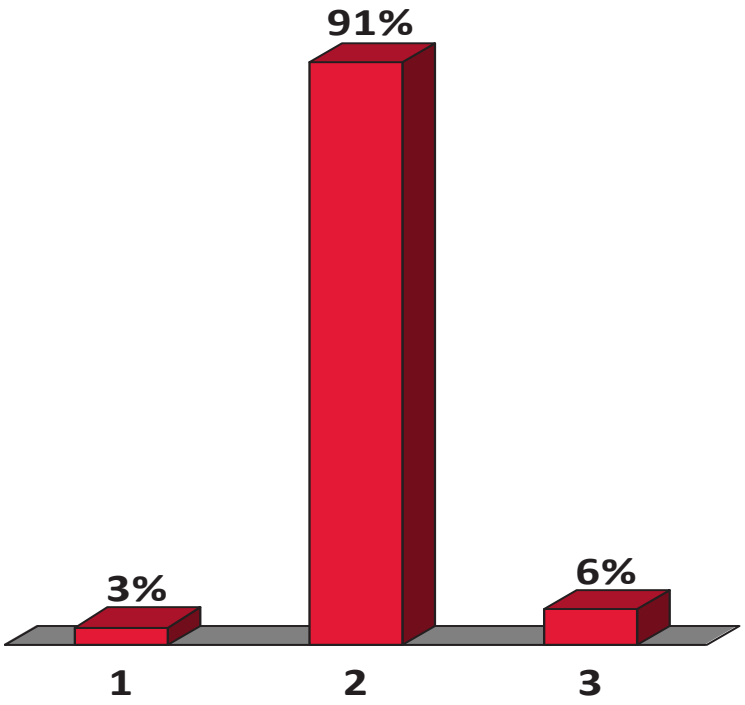
Will investment in technology alone resolve environmental , health, and safety concerns?

1. Yes
2. No
3. Not sure



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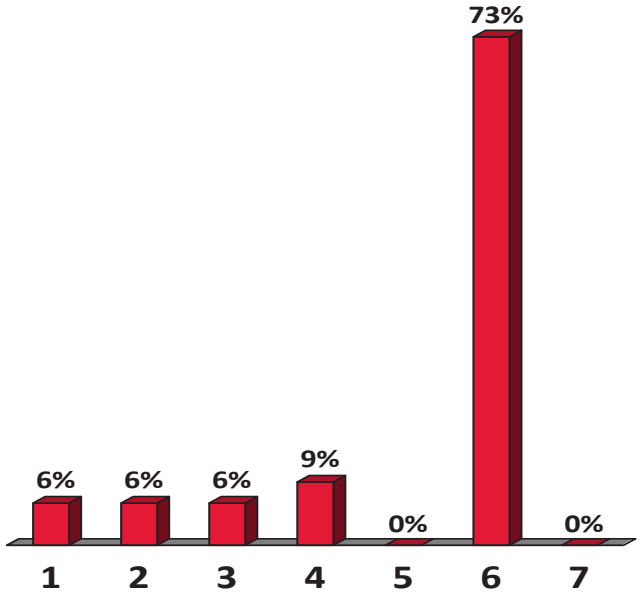
What is the principal benefit of NOT increasing US domestic natural gas production and consumption?

1. Reduced greenhouse gas emissions
2. Reduced impacts on landscape, agriculture
3. Public health
4. Less chance of gas contaminating water supplies
5. Less water consumption
6. It depends on the alternative to natural gas use
7. Other



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Enablers and Barriers to a Methane Economy

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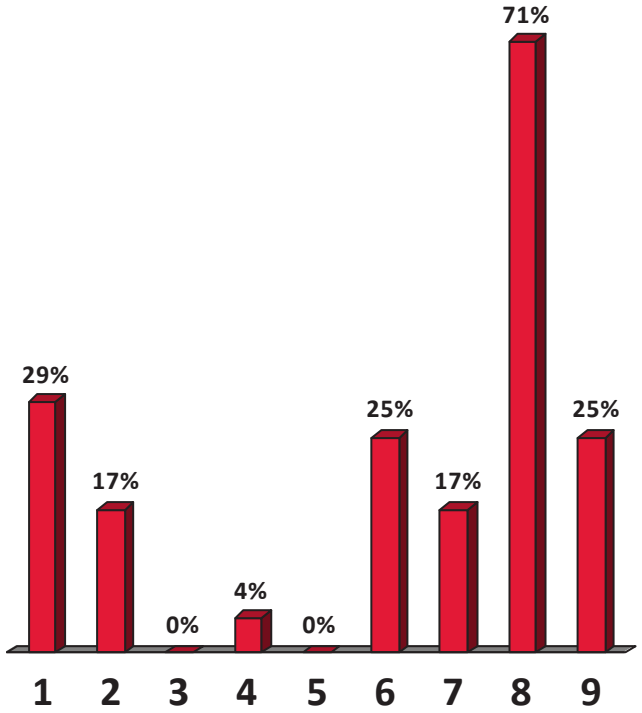
Identify the 2 greatest <u>social and political challenges</u> that a methane economy faces:
(pick up to two, then press "SEND")

1. Siting pipelines and facilities
2. Workforce development
3. Limits on gas exports
4. Access to offshore and Arctic acreage
5. Subsidies for renewables
6. Social license to develop and transport resources
7. Lack of coherent national energy policy
8. Lack of public understanding of energy needs and potential sources to meet those needs
9. The pervasiveness of misinformation and misunderstanding in public discourse



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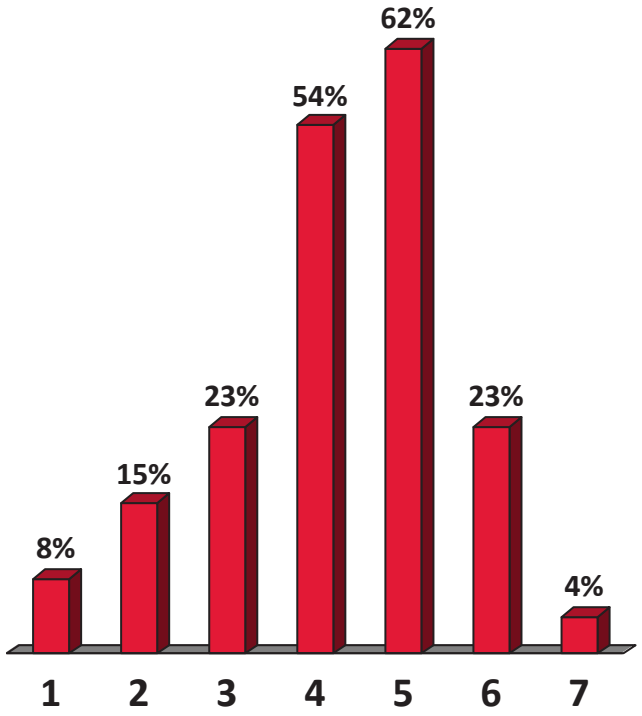
Identify the 2 greatest <u>economic</u> challenges that a methane economy faces:
(pick up to two, then press "SEND")

1. Competition from cheap coal
2. Competition from other fuels
3. Investment capital
4. Availability of necessary infrastructure
5. Natural gas prices and sufficient returns
6. Widespread acceptance and use of natural gas as transportation fuel
7. Timing/economics of production on Federal lands



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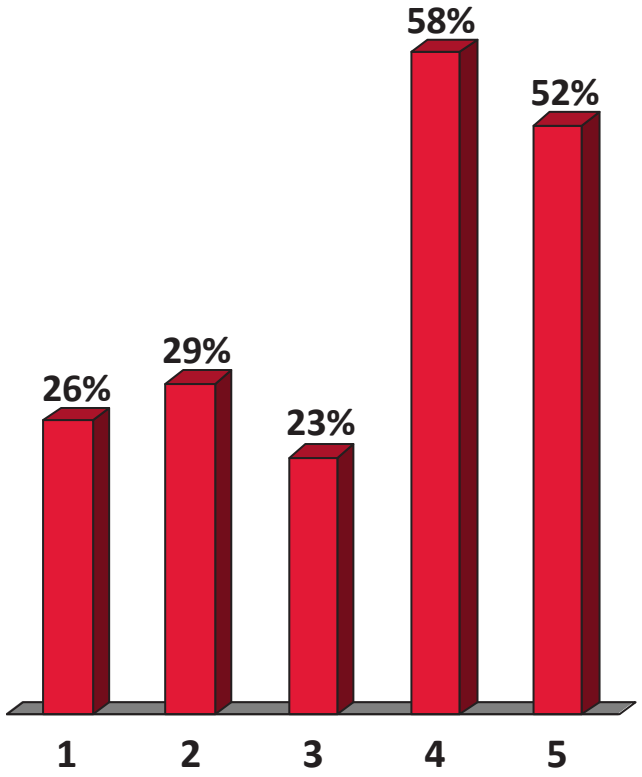
Identify the 2 greatest technical challenges that a methane economy faces: (pick up to two, then press "SEND")

1. Cost of supply (Maintaining efficiency improvements in gas production)
2. Increasing demand (Unlocking gas for transport)
3. What's beyond shale gas? (Assessing the long term supply)
4. Advancing drilling and completion technologies applicable to more difficult resource plays
5. Developing a comprehensive geoscientific understanding of mudrock petroleum systems



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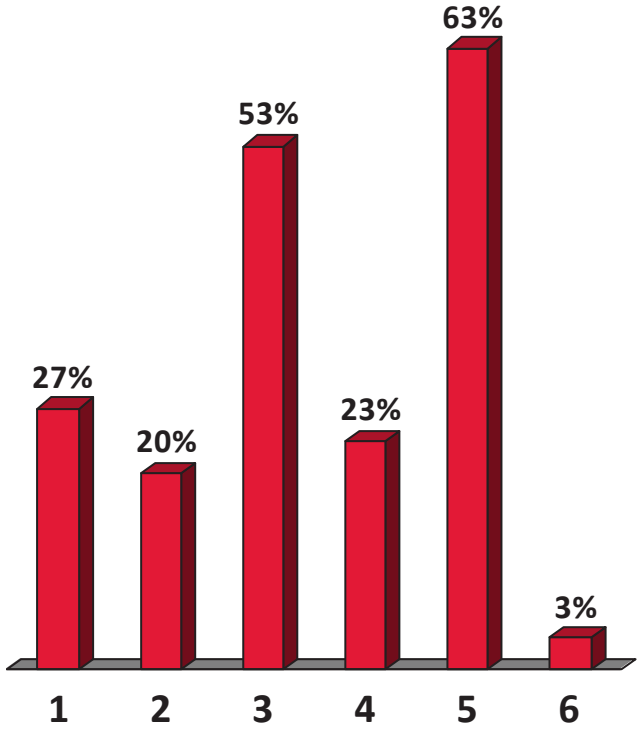
Identify the 2 greatest governmental and regulatory challenges that a methane economy faces:
(pick up to two, then press "SEND")

1. Conflict between Federal and state regulatory authorities
2. Lack of comprehensive national energy policy
3. Ability of regulatory frameworks to quickly adapt to technological innovations
4. Timeliness of regulatory processes
5. Political will to make hard decisions
6. Access to Federal lands (including the OCS)



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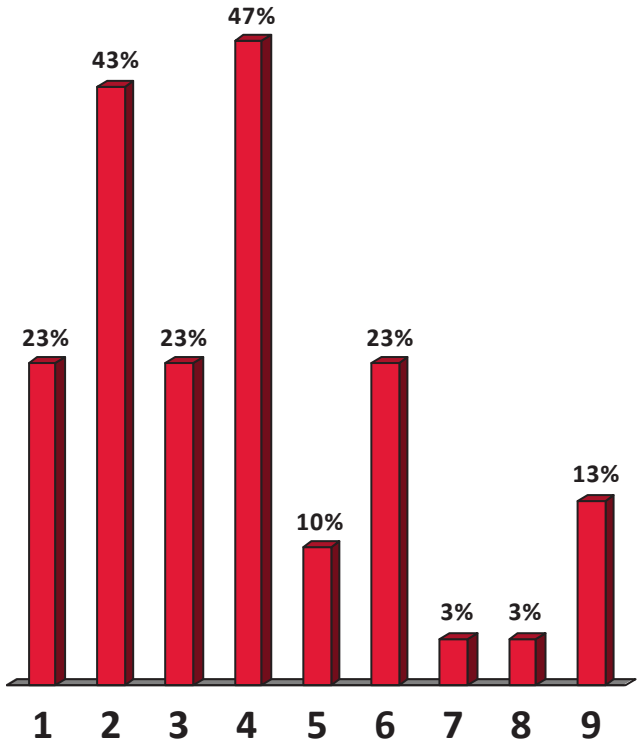
Identify the 2 principal enablers to achieving a methane economy: (pick up to two, then press "SEND")

1. Favorable geology
2. Continued technological innovation
3. Favorable gas infrastructure (pipelines, etc)
4. Continuously improving health, safety, and environmental performance
5. Market based energy industry
6. Private ownership of mineral rights including oil and gas
7. Mature EP industry with multiple competitors
8. Sufficient access to capital
9. Favorable regulatory/legal environment



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