

Potential Supply of Natural Gas in the United States

Report of the Potential Gas Committee (December 31, 2020)



Press Conference | Washington, DC | October 19, 2021

Executive Summary

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- Potential Gas Committee (PGC):
 - ▣ Group of ~80 volunteer geoscientists and engineers.
 - ▣ Biennial assessments of technically recoverable U.S. natural gas endowment since 1964.
- Assessment as of year-end 2020 (mean values):
 - ▣ 3,368 Tcf of total U.S. technically recoverable gas resources:
 - 6 Tcf or 0.2% decrease over the previous year-end 2018 assessment. This slight decrease breaks a trend of 7 consecutive record-high resource evaluations.
 - Shale gas resources (2,130 Tcf) account for 63% of total gas resources.
 - ▣ Total U.S. future gas supply (reserves+resources) stands at record 3,863 Tcf.

Organization

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Potential Gas Committee (PGC)

~80 volunteers

Kristin M. Carter
President/General Chairperson

Ronald J. Kelley
Chairman of the Board

- Recruits personnel and supervises work
- Develops assessment policy and procedures
- Directs and manages studies of gas resources
- Prepares reports on natural gas resources

Potential Gas Agency (PGA) Colorado School of Mines

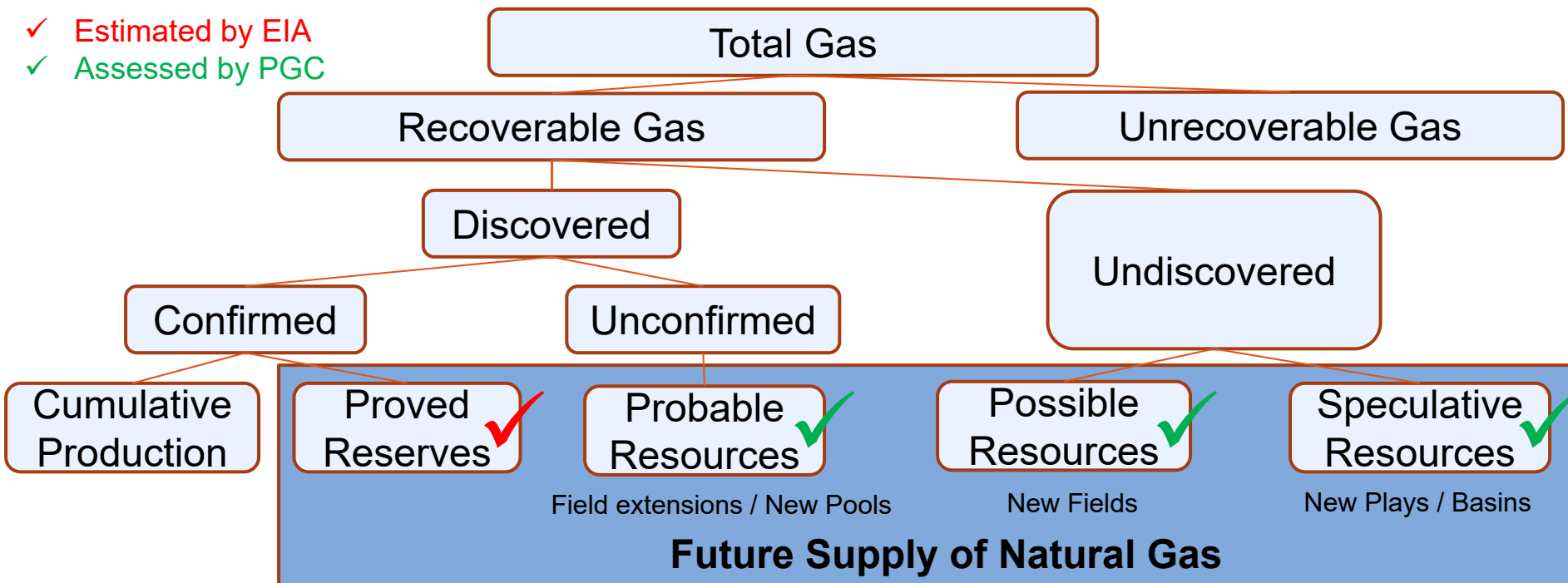
Supported by industry

Dr. Alexei V. Milkov
Director

- Approves criteria and methods
- Ensures maintenance of standards and objectivity
- Reviews and evaluates reports
- Publishes final assessments of gas resources

PGC assesses future supply of natural gas

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7 PGC work areas and 90 geologic provinces

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- Settings:
 - ▣ Onshore
 - ▣ Offshore
- Depth intervals:
 - ▣ Shallow (0-15,000 ft.)
 - ▣ Deep (15,000-30,000 ft.)
- Reservoir types:
 - ▣ Traditional:
 - Conventional and tight
 - Shale gas
 - ▣ Coalbed gas (CBM)

PGC resource assessment methodology

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- Province-level assessments:
 - ▣ Publicly-available data.
 - ▣ Individual expert judgement by practicing geoscientists and engineers.
 - ▣ Group discussions and peer-reviews.
 - ▣ Minimum – Most Likely – Maximum resource values for each province.
- Area-level assessments:
 - ▣ Statistical aggregation of province-level assessments to calculate Mean resources values.
- National-level assessment:
 - ▣ Statistical aggregation of area-level assessments to calculate mean Grand Total resources for the U.S.
 - ▣ Mean values for different types of reservoirs and different resource categories.
 - ▣ Addition of EIA's latest published proved reserves (year-end 2019) to calculate future gas supply.

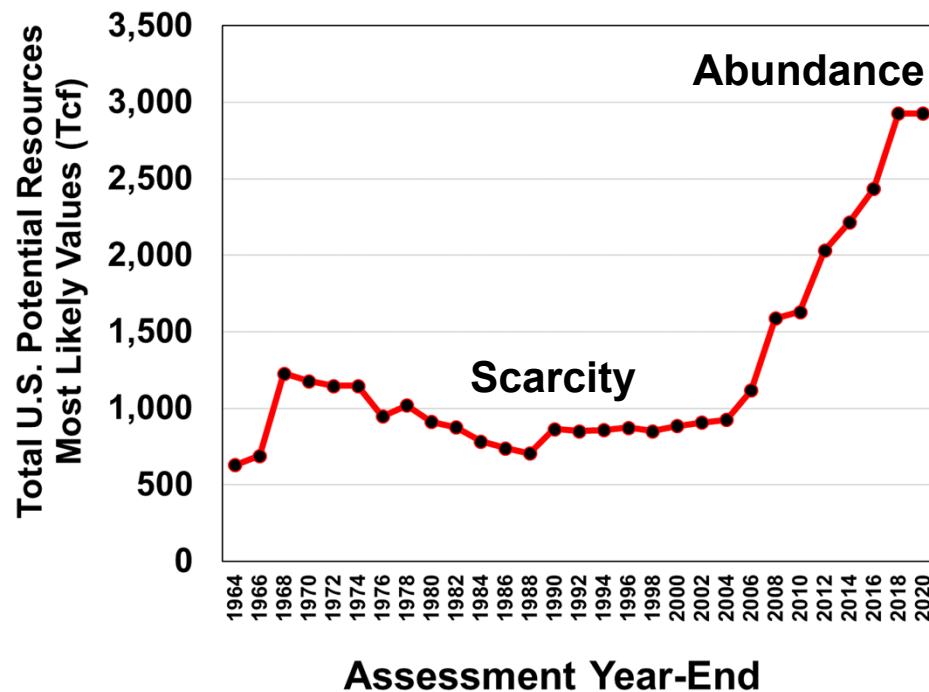
Year-end 2020 assessment results

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	Mean Technically Recoverable Volumes (trillion cubic feet or Tcf) (rounded)
Traditional gas resources (conventional, tight and shale reservoirs)	3,212
Coalbed gas resources	157
Total gas resources	3,368
Proved gas reserves (EIA, year-end 2019)	495
Future gas supply in the U.S.	3,863

PGC gas resource assessments, 1964-2020

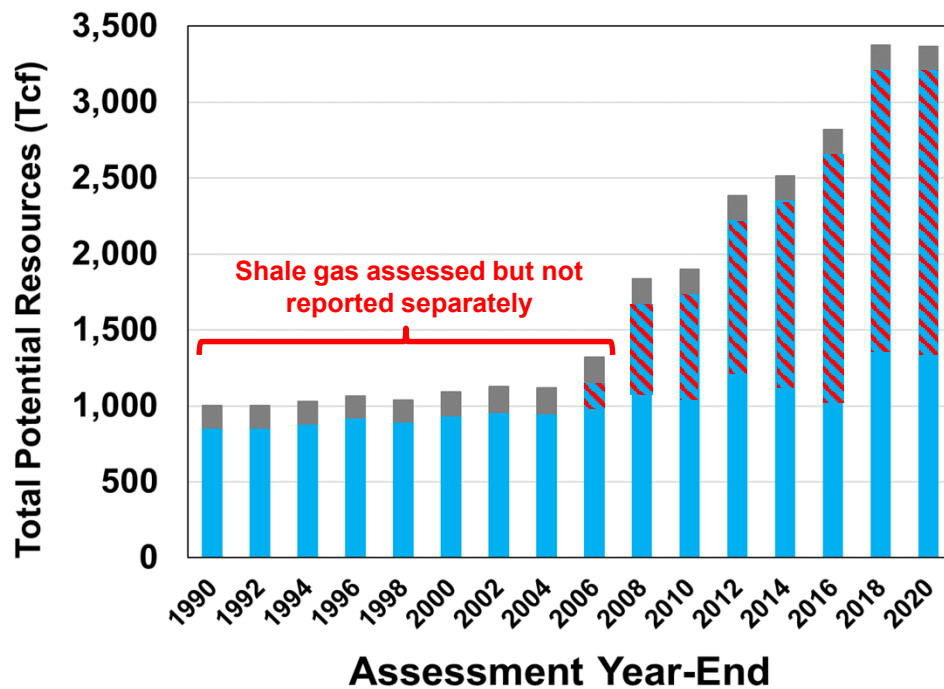
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- PGC is the only organization tracking U.S. gas resources continuously since 1964.
- Summed most likely values for all types of reservoirs and resources.
- Rapid increase of gas resources since 2006 – era of gas abundance.

PGC gas resource assessments, 1990-2020

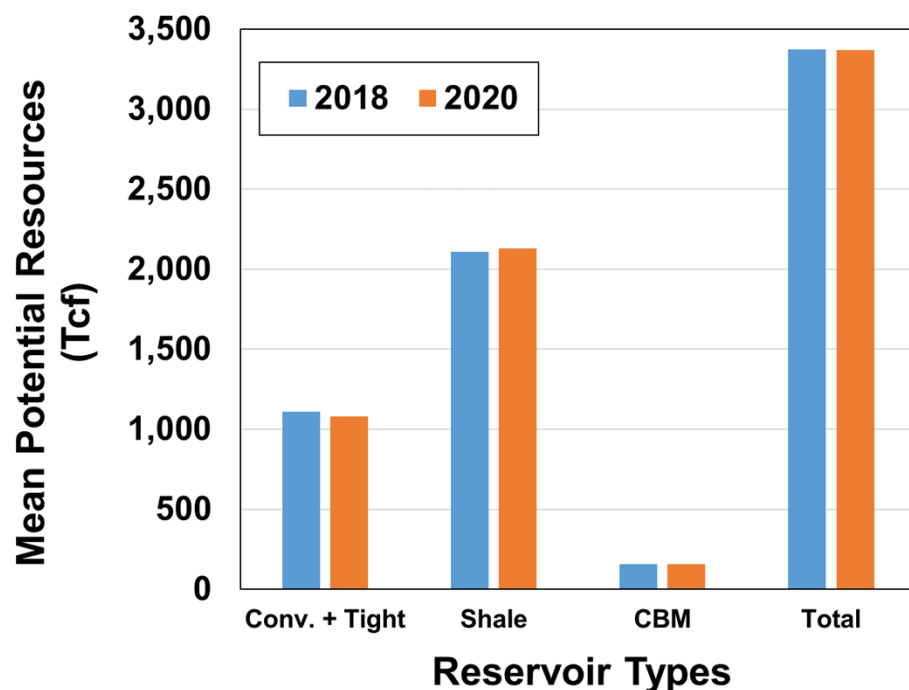
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- Coalbed gas resources (mean values)
 - Shale gas within Traditional resources (most likely values)
 - Traditional gas resources: conventional, tight, shale (mean values)
- Continuous growth of gas resources.
 - Shale gas is responsible for recent increase in gas resources.

Change in gas resources relative to 2018: Reservoir types

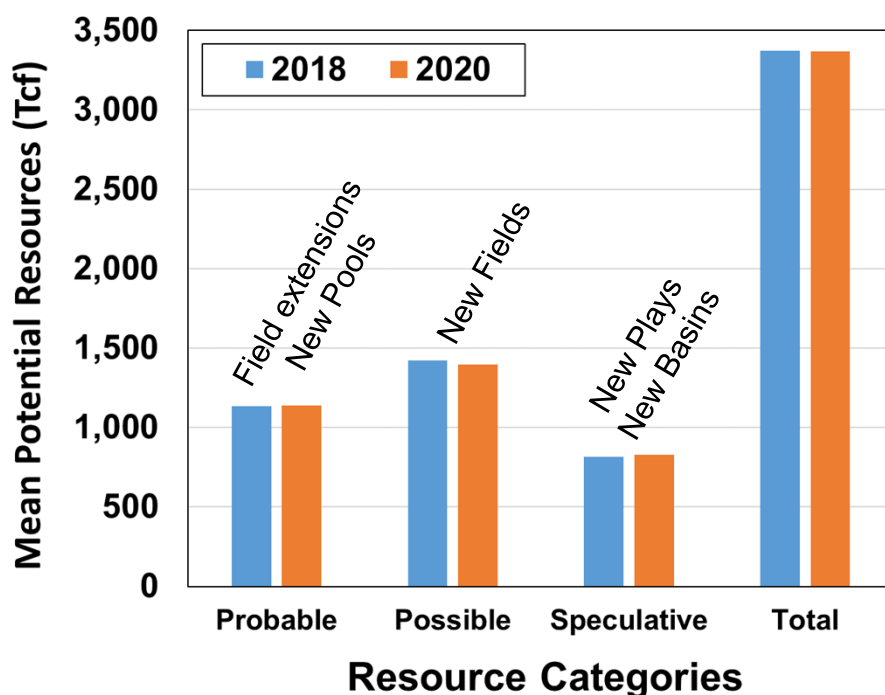
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- Small decrease in gas resources in conventional and tight sand/carbonate reservoirs (29 Tcf or 2.6%).
- Small increase in shale gas resources (23 Tcf or 1%).
- No change in coalbed gas (CBM) resources.
- Total mean potential gas resources decrease of 6 Tcf or 0.2%.

Change in gas resources relative to 2018: Resource categories

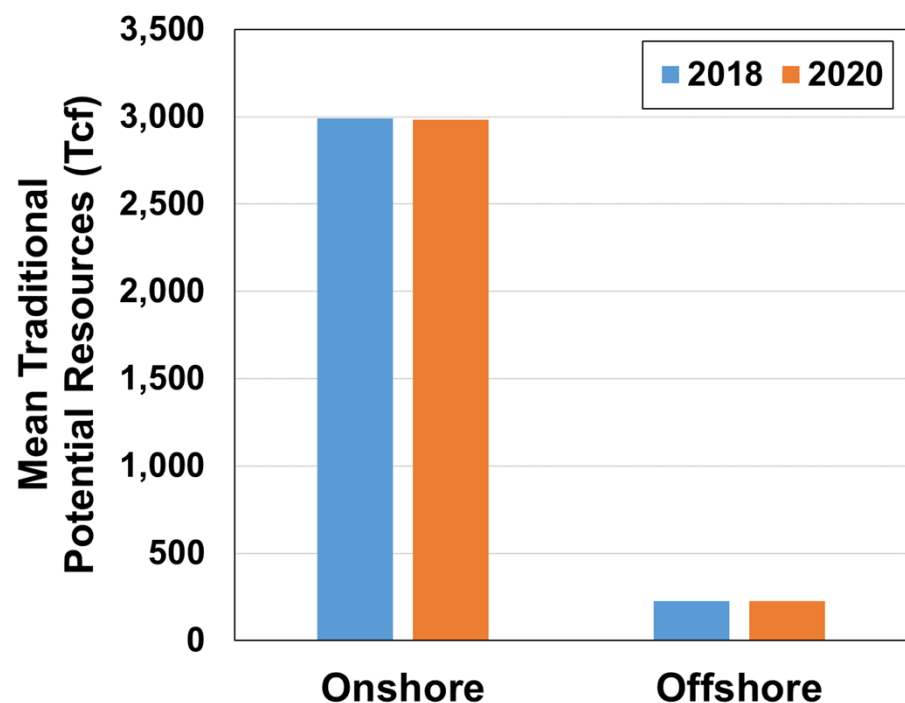
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- Minor changes in all resource categories.
- Overall, only a nominal decrease in mean total potential resources for the U.S.

Change in Traditional gas resources from 2018: Onshore vs Offshore

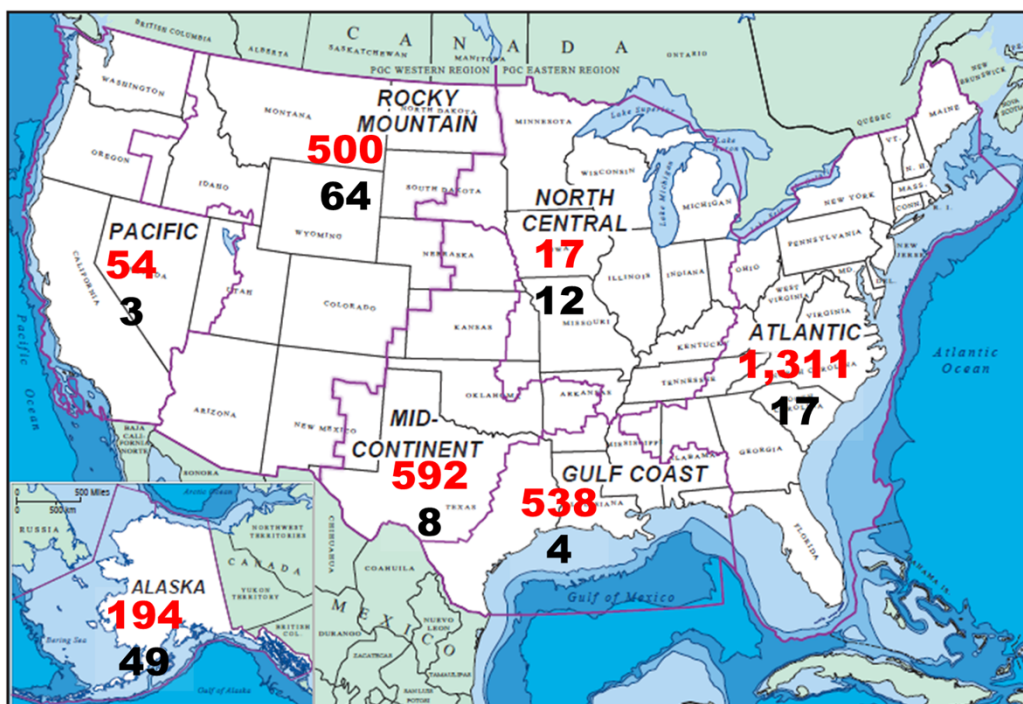
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- Traditional resources:
 - ▣ Conventional and tight reservoirs
 - ▣ Shale reservoirs
- Minor decrease in Onshore gas resources (6 Tcf or 0.1%).
- No change in Offshore gas resources.

2020 gas resource assessment for Areas

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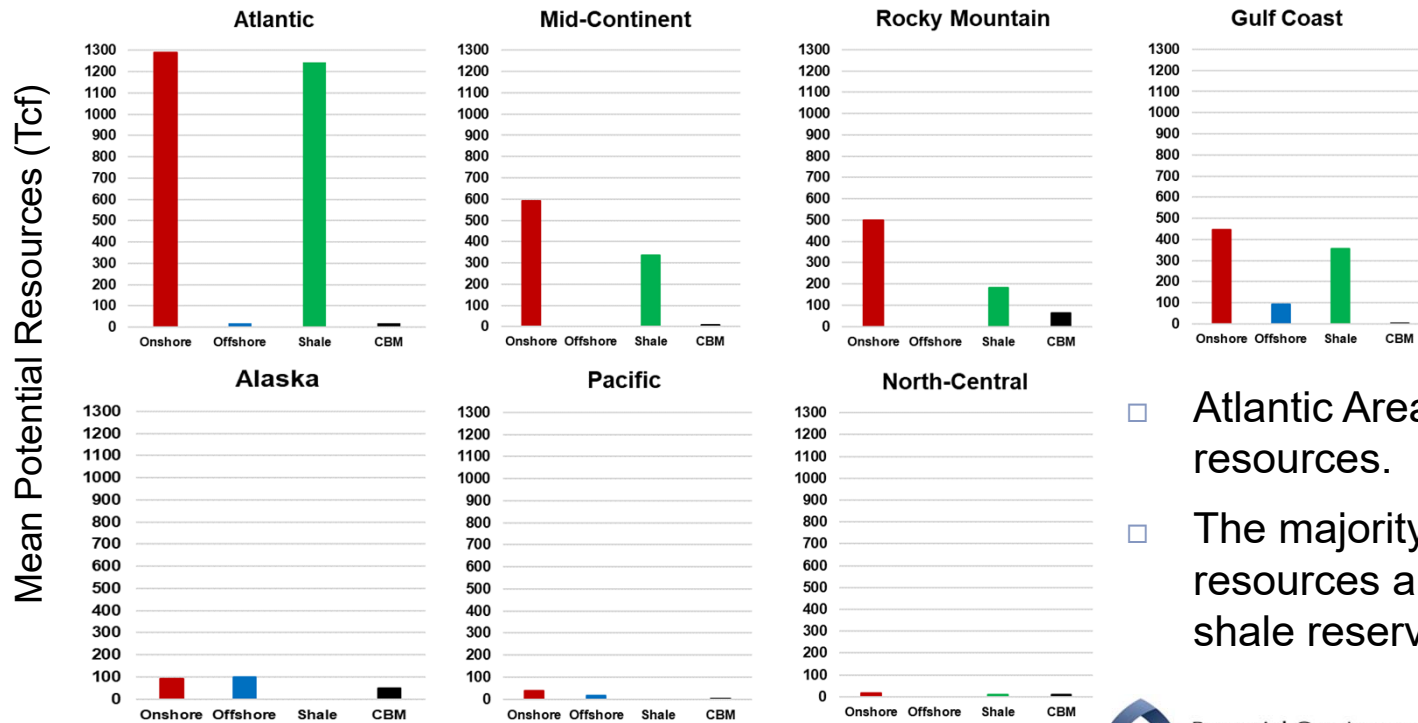


Red values – Total Traditional resources (conventional, tight, shale reservoirs) (mean values, Tcf)

Black values – Coalbed gas resources (mean values, Tcf)

Comparison of gas resources in Areas

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- Atlantic Area has most gas resources.
- The majority of gas resources are in onshore shale reservoirs.

Areas ranked based on total gas resources (includes traditional and coal gas)

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PGC Assessment Area	Mean Technically Recoverable Volumes (trillion cubic feet or Tcf, rounded)	Proportion (%, rounded)
Atlantic	1328	39
Mid-Continent	600	18
Rocky Mountain	564	17
Gulf Coast (incl. Gulf of Mexico)	542	16
Alaska	243	7
Pacific	56	2
North Central	28	1

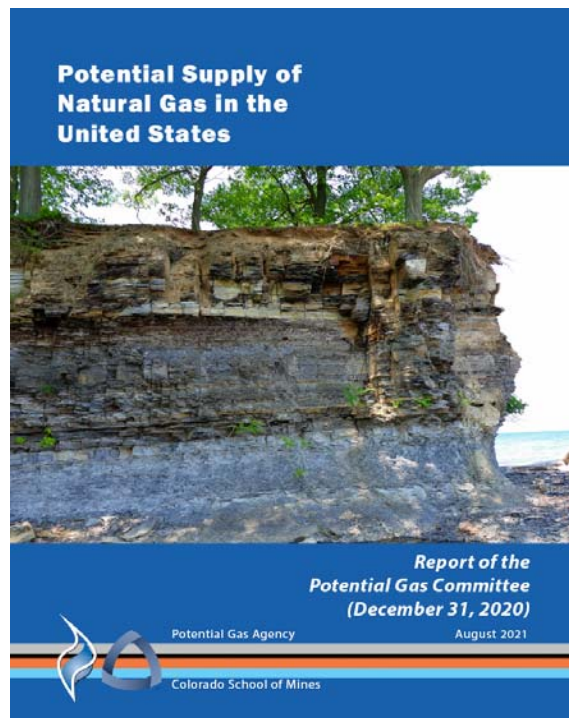
Summary of PGC year-end 2020 assessment

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- 3,368 Tcf of total U.S. gas resources (mean value).
- 6 Tcf or 0.2% decrease from the previous year-end 2018 assessment.
- Atlantic Area dominates with 39% of total U.S. gas resources.
- Small increase in shale gas resources (23 Tcf or 1%). Shale gas now accounts for 63% of total U.S. gas resources.
- Total U.S. future gas supply (reserves+resources) stands at record 3,863 Tcf. This is a small increase of 25 Tcf over the previous year-end 2018 assessment.

Contact PGA to obtain PDF of the Report

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