National Conference of State Legislatures

Fueling North America’s Energy Future

July 25, 2010 • Louisville

Robert Ineson • IHS CERA Senior Director
Terms of Use

The accompanying materials were prepared by IHS Cambridge Energy Research Associates, Inc. (IHS CERA), and are not to be redistributed or reused in any manner without prior written consent, with the exception of client internal distribution as described below.

IHS CERA strives to be supportive of client internal distribution of IHS CERA content but requires that

• IHS CERA content and information, including but not limited to graphs, charts, tables, figures, and data, are not to be disseminated outside of a client organization to any third party, including a client’s customers, financial institutions, consultants, or the public.

• Content distributed within the client organization must display IHS CERA’s legal notices and attributions of authorship.

Some information supplied by IHS CERA may be obtained from sources that IHS CERA believes to be reliable but are in no way warranted by IHS CERA as to accuracy or completeness. Absent a specific agreement to the contrary, IHS CERA has no obligation to update any content or information provided to a client.

Please visit IHSCERA.com/event for a listing of upcoming IHS CERA events.
Overview

• An “evolution” in natural gas drilling and completion technology has led to sharp increases in US gas production

• Three key technologies have unlocked gas trapped in shale formations
  — Subsurface computer imaging
  — Horizontal drilling
  — Hydraulic “fraccing”

• These technologies are not new, so even producers were surprised

• Shale skeptics remain vocal, but the weight of evidence is accumulating
Unconventional Gas Has Led to Very Rapid Production Increases in the Lower 48

- **January 2007:** 49.2 Bcf per day
- **July 2008:** 56.3 Bcf per day (shut ins due to low prices)
- **February 2009:** 57.4 Bcf per day
- **June 2010:** 59.0 Bcf per day

Hurdmarines Katrina, Rita

Hurricane Ike

© 2010, IHS CERA Inc. No portion of this presentation may be reproduced, reused, or otherwise distributed in any form without prior written consent.

Source: IHS CERA.
Increase in Initial Production Rates

Source: IHS CERA.

© 2010, IHS CERA Inc. No portion of this presentation may be reproduced, reused, or otherwise distributed in any form without prior written consent.
Current North American Unconventional Gas Hotspots

Source: IHS CERA.
00112-12

© 2010, IHS CERA Inc. No portion of this presentation may be reproduced, reused, or otherwise distributed in any form without prior written consent.
US Natural Gas Reserves and Resources

Shale Resources
Nonshale Resources
Total Potential Resources
Proved Reserves

IHS CERA Estimate
Potential Gas Committee Estimate

Trillion Cubic Feet

2000 2001 2002 2003 2004 2005 2006 2007 2008 2009

Source: EIA, PGC, and IHS CERA.

© 2010, IHS CERA Inc. No portion of this presentation may be reproduced, reused, or otherwise distributed in any form without prior written consent.
Breakeven Henry Hub Price for Natural Gas Resources in Analyzed Plays

Source: IHS CERA.
Note: Proved, possible, and potential resources.

© 2010, IHS CERA Inc. No portion of this presentation may be reproduced, reused, or otherwise distributed in any form without prior written consent.
Environmental Issues

• Fear of contamination of water supplies

• Amount of water used during fraccing

• Surface spills

• Noise and traffic during drilling

• Regulatory treatment is unlikely to derail development

North American Power Generation by Fuel Type

Source: IHS CERA.

© 2010, IHS CERA Inc. No portion of this presentation may be reproduced, reused, or otherwise distributed in any form without prior written consent.
If you have any questions about this presentation or IHS CERA in general, please feel free to contact:

Bob Ineson
800 TRY CERA
+1 281 364 9364
Bob.Ineson@ihscera.com