



global environmental solutions

Separating myth from reality - Fracking and the social licence

6th Smart Grids & Cleanpower 2014
2-4 June, Cambridge, UK

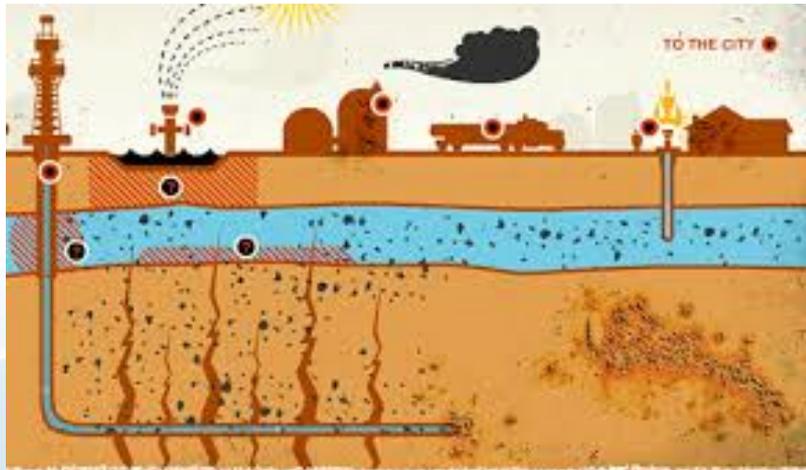
www.hvm-uk.com/smartgrids2014

04/06/2014

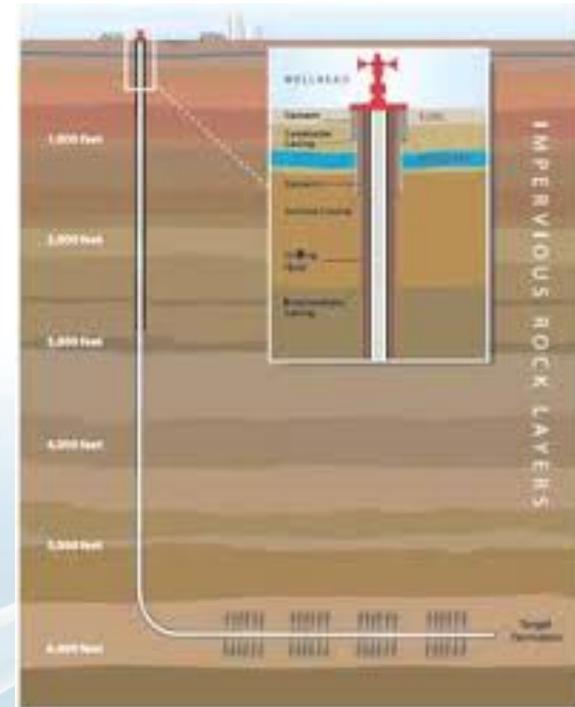
Synopsis

- UK has potential to become a significant shale gas producer...
- but perceived environmental and social impacts on communities have been poorly communicated
- Result; objections, confrontations and a development slowdown
- Developers need new processes to engage and communicate with communities in a fundamentally different way to gain and retain the Social Licence to Operate (SLTO)

Myth and Reality: Water contamination



Source: Google images treehugger.com



Source: Google images ohioenvironmentallasblog.com

2011 research: <1% chance of vertical fractures of 500m+

Myth and reality: Earthquakes



Date	Time (UTC)	Lat	Lon	Depth (km)	Mag	Int	Region
2014/05/08	00:19:53.9	52.007	-3.077	16	1.8		DORSTONE, HEREFORDSHIRE
2014/05/07	16:49:45.3	56.382	-5.482	5	1.1		OBAN, ARGYLL & BUTE
2014/05/02	18:12:57.1	53.189	1.834	10	3.4		SOUTHERN NORTH SEA
2014/04/28	22:05:17.2	52.718	-0.728	2	1.7	3	OAKHAM, RUTLAND
2014/04/28	03:44:06.6	51.843	-4.782	13	1.7		WISTON, PEMBROKESHIRE
2014/04/18	06:50:51.5	52.722	-0.732	2	3.5	4	OAKHAM, RUTLAND
2014/04/17	17:50:55.1	53.210	-1.024	1	1.1	2	NEW OLLERTON, NOTTS
2014/04/17	06:07:14.1	52.725	-0.727	3	3.2	4	OAKHAM, RUTLAND
2014/04/16	19:21:29.6	55.091	-3.660	6	0.7	2	DUMFRIES, D & G
2014/04/16	18:26:39.9	55.087	-3.655	6	1.4	2	
2014/04/15	11:35:26.3	53.212	-1.020	1	1.3		



Preese Hall tremor was Mag 2.3, 2nd May tremor in Rutland was 3.4

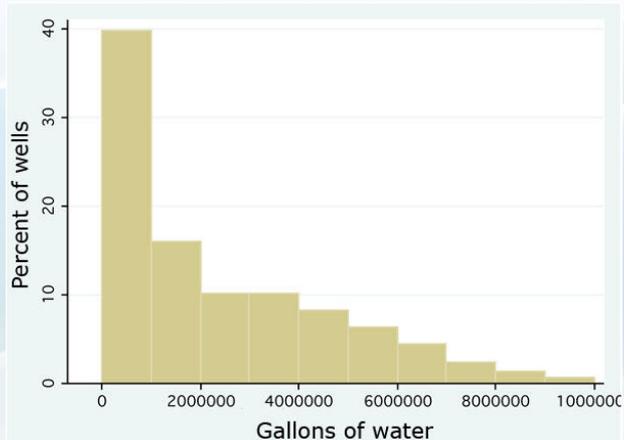
Myth and Reality Water Supply

Table 4: Water requirements per well for fracking by shale play (million gallons)

Shale play	Typical range
Barnett	2.3–3.8
Fayetteville	2.9–4.2
Haynesville	2.7–5.0
Marcellus	4.0–5.6

Sources: Groundwater Protection Council & ALL Consulting (2009) and Clark et al. (2011), which cites Mantell (2010). These values assume one frack per well. Per-well water requirements will be higher if re-stimulation occurs, but there is a dearth of information about water use from re-stimulation.

Source: grist.org



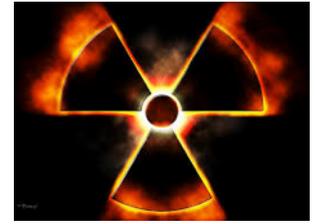
Source: the energycollective.com



Source: Google images www.gracelinks.org

All frack jobs are different - 75% wells require <4.5 m (US) gallons

Myth and Reality NORM



"The shale formations they want to find gas in can have as much as 250 ppm U238..... 80 times as radioactive as "normal average", good old red blooded American conventional gas."

"80 times the radioactivity of normal average gas is going to expose consumers to 1,200 times the radiation dose they'd get if they lived right next door to an operating nuclear reactor."

<http://frackedagain.blogspot.co.uk>

Concentrations of NORM below which activities are not subject to Schedule 23, EPR 2010 controls

Radionuclide	Solid (Bq*/g)	Liquid (Bq/l)	Gaseous (Bq/m ³)
Ra-226+	0.5	1	0.01
Pb-210+	5	0.1	0.01
Po-210	5	0.1	0.01
Ac-227+	1	0.1	0.001
Th-232sec	0.5	0.1	0.001
Th-232	5	10	0.001
Ra-228+	1	0.1	0.01

*Becquerel (Bq) is the SI unit of radioactivity.

Source: Table 1 of Schedule 23 to EPR 2010 (as amended in 2011)

Source: EA

NORM is 'normal' but controlled and regulated

Myth and Reality Wellpad density

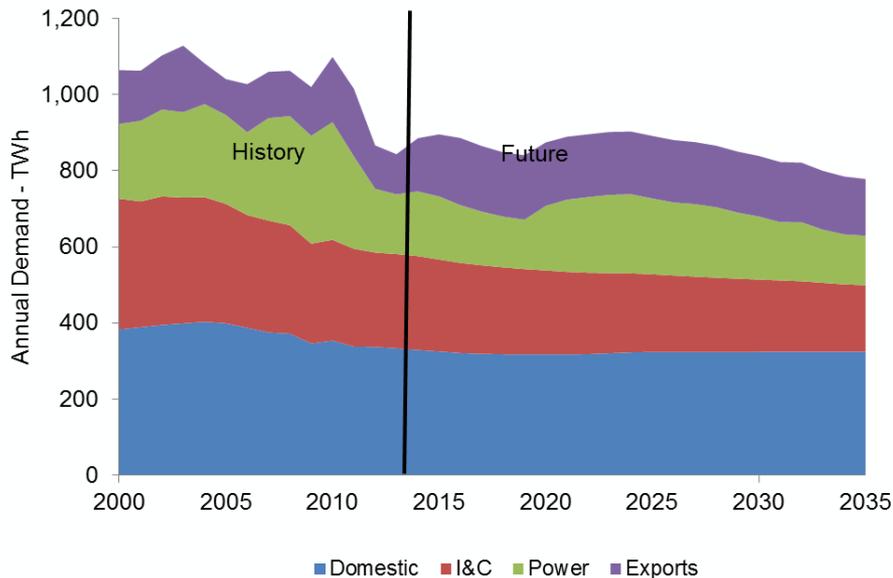


Source: Google images frackland.blogspot.com

- Unlike US, UK gas owned by the state
- Multi well sites now the norm
- Horizontal reach 3000m+
- IOD estimates of wellpad recovery range from 30 to 130bcf
- Some estimate more than 10 times this
- Strong UK Regulation and approval process

UK wellpad density in the UK nothing like USA

Myth and Reality Natural Gas



- >60% UK gas consumption is for households and business
- A cold February day?
- CCGT 1:1 back up

Source: National Grid 2013 10 yr statement

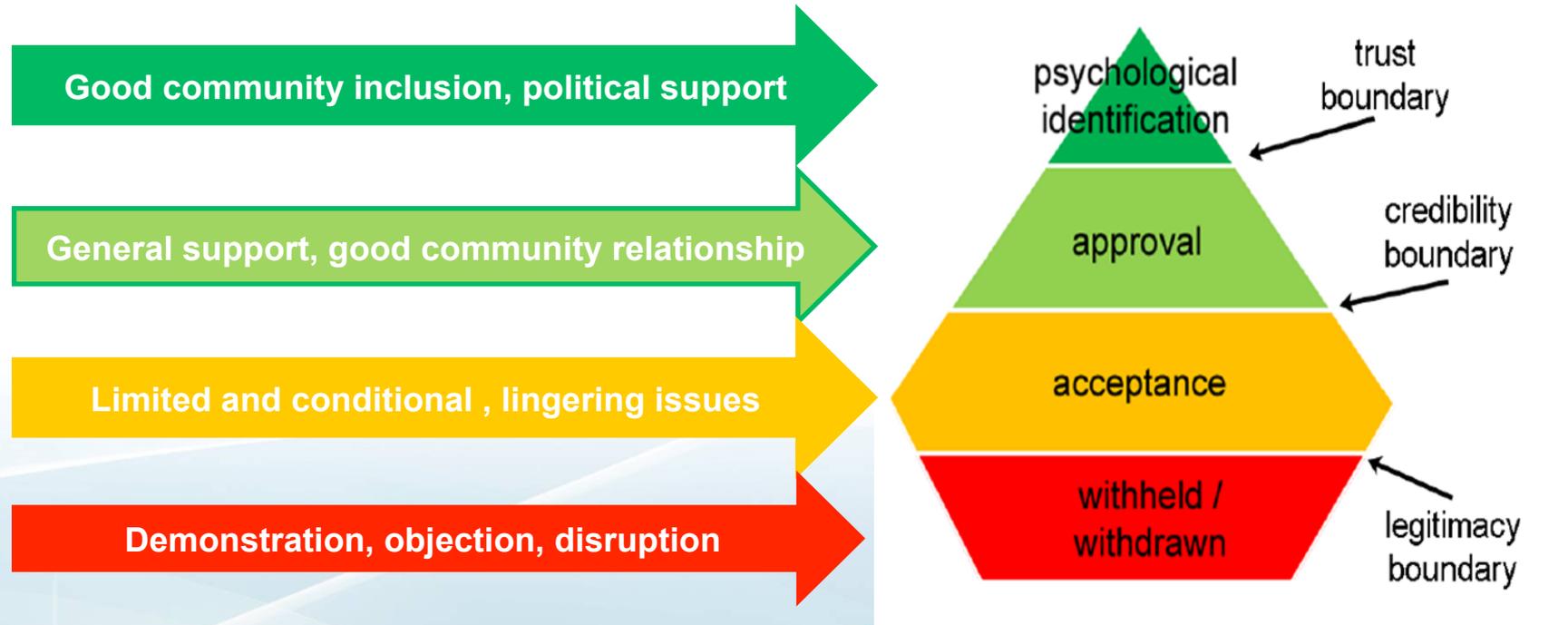
Which gas? Imported or shale?

The Social Licence to Operate (SLTO)

- Public consent crucial to unconventional gas development
- Very effective opposition groups
- Import of emotional (and in some cases mythical) arguments from the USA
- Industry failure to present their case effectively – so far



Boundary breaking...



*Thomson, I. & Boutilier, R. G. (2011).

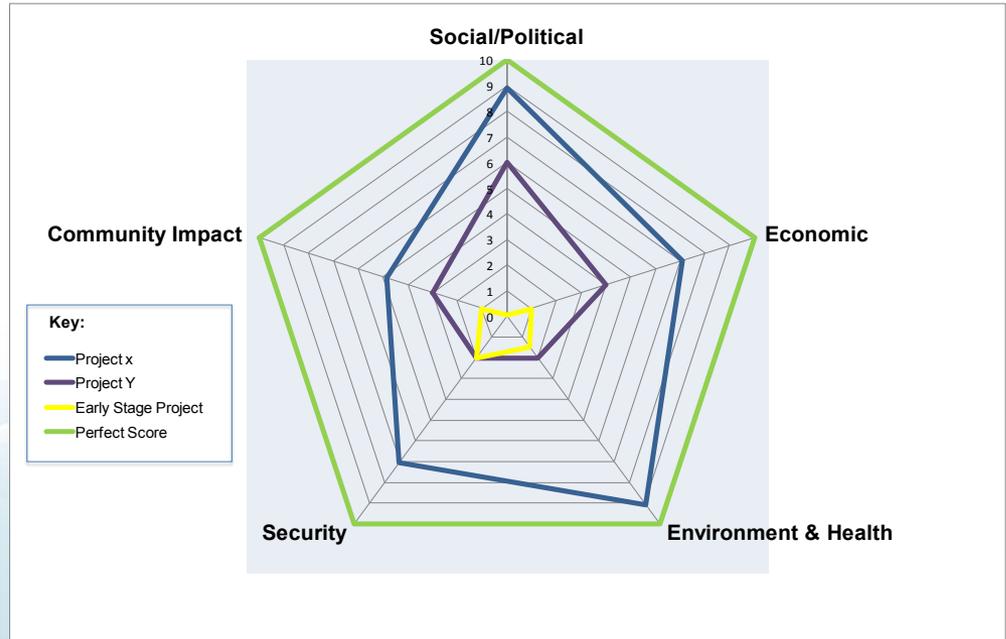
- Shale gas still 'in the red'
- So what can be done?

A structured approach to SLTO

- Achieving/retaining the SLTO is huge challenge
- Debate opinionated and unstructured
- Industry on the back foot, accused of tokenism (at best)
- Early Stage Engagement process
- Arguments supporting controlled and regulated development must be data driven and evidence based
- Project/Corporate responsibility/accountability for SLTO
- Answer the questions communities want to ask – versus the questions industry wants to answer

Divorcing Myth from Reality

- **5 Themes**
 - Community impact
 - Security
 - Environment and health
 - Economic
 - Social and Political
- **Progressive scoring**
 - Level 1: Legal consent+
 - Level 2: Transparency, documentation, communication
 - Level 3: Improvement & revision



Summary and food for thought

- Little drilling, no horizontal fractures, no flow data
- Effective opposition
- Myth and reality remain divorced in much public opinion
- Need to apply science, data and structure
- Pre project communication and transparency key
- MI-SLTO tool provides a start point
- tsmith@slrconsulting.com