



24<sup>th</sup> World Gas Conference  
ARGENTINA | 2009  
5-9 October

The Global Energy Challenge:  
Reviewing the Strategies  
for Natural Gas

## REDUCING FUGITIVE EMISSIONS FROM GAS DISTRIBUTION SYSTEMS BY THE SYSTEMATIC APPLICATION OF PRESSURE PROFILING TECHNOLOGY

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Committee Session 4.2: Wednesday 7 October



Working Committee 4  
Gas Distribution



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## Agenda

1. Environmental emissions
2. Leakage mitigation technologies
3. Pressure management
4. How profile control works
5. Profile control technology
6. National Grid's profiler installation programme

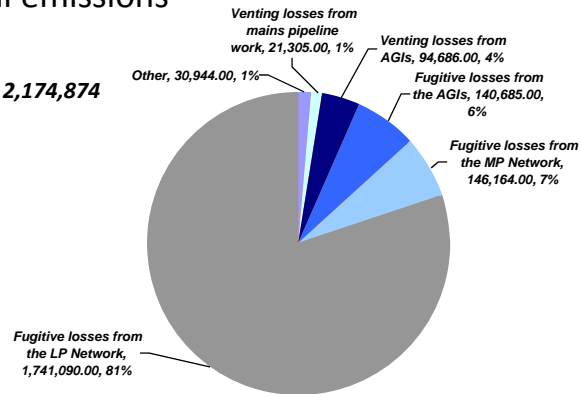


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## 1. Environmental emissions

– Total 07-08 Emissions: **2,174,874 Tonnes CO<sub>2</sub>e**



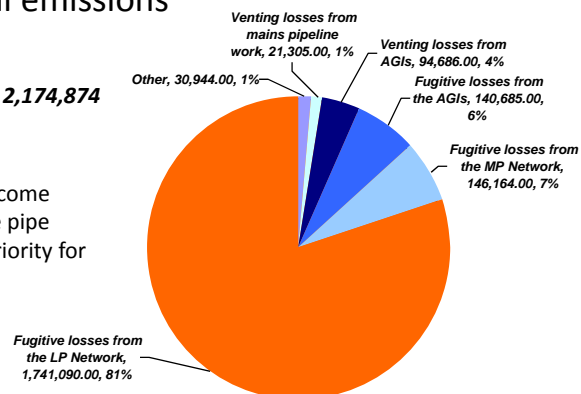
All figures in Tonnes CO<sub>2</sub>e



## 1. Environmental emissions

– Total 07-08 Emissions: **2,174,874 Tonnes CO<sub>2</sub>e**

– 81% of fugitive losses come from the Low Pressure pipe network making it a priority for action



All figures in Tonnes CO<sub>2</sub>e





## 2. Leakage mitigation technologies

- There are several technologies available...



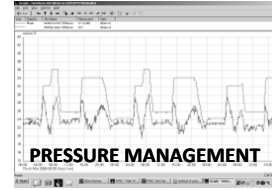
- Replacing pipes reduces leakage by a factor of 50 – so it's a very effective technique.

- However, it is very expensive and as a result the rate of return is typically <1%



- It is possible to treat joints using chemicals carried by the gas.

- Chemicals toxic and only address joint leakage. Different chemicals for different joints complicating implementation.



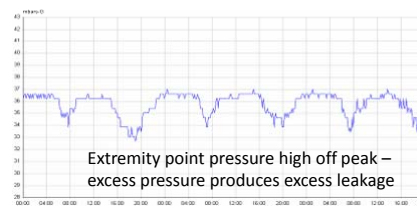
- Reducing pressure reduces leakage.

- This technology is widely applicable, easy to deploy and cost effective but does not improve the pipe itself.



## 3. Pressure management

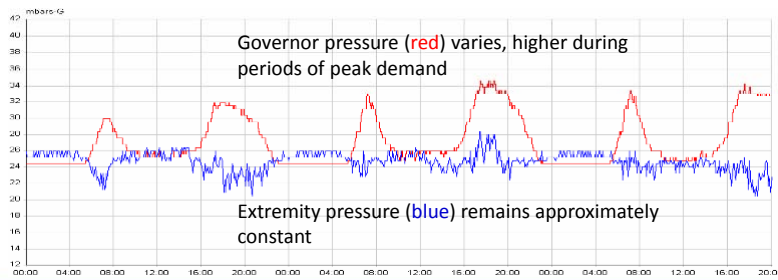
- Customers require an adequate pressure to safely operate their appliances.
- However the higher the pressure within the mains the more leakage.
- Pressure management reduces operating pressures at times of low demand.
- There is a trade off between precision of control action and cost, particularly telemetry cost.



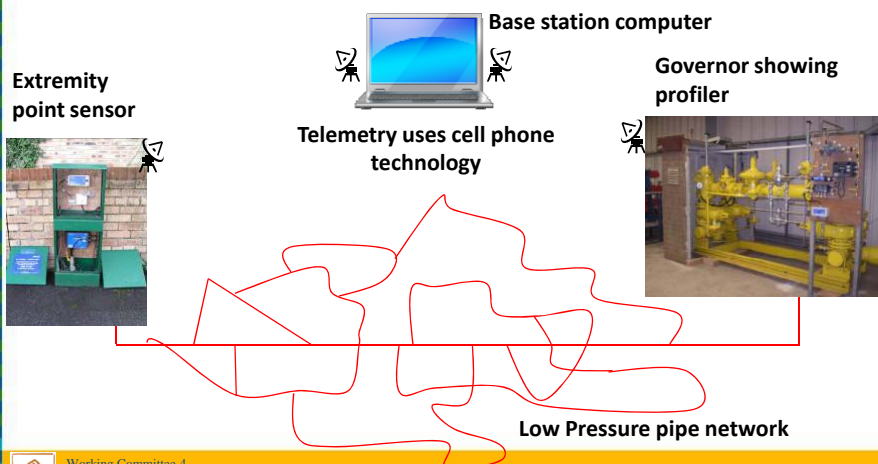


#### 4. How profile control works

- Feedback daily performance (plus exceptions) from extremity monitoring points to controlling computer
- Computer generates next day profile and instructs profiler at governor
- If outturn outside of preset tolerance outstation informs computer which instructs governor to adjust profile



#### 5. Profile control technology





## 6. National Grid's profiler installation programme

- As of April 2008 National Grid had 3,500 profile control systems
  - At 1 Aug 09 over 1,000 new units had been installed
  - target is 5,500 by April 2010
- Investment c. £23m over two years to deliver nearly 2,000 units.
- c. 5% reduction in leakage, over 125,000 tonnes CO2 equivalent on an ongoing basis.



Thank you.

