

Proposed AB 32 Measure

Natural Gas Transmission & Distribution

**Public Workshop
California Air Resources Board
Sacramento, CA
September 16, 2009**

Outline

- Background
- Preliminary Survey Results
- Potential Options to Reduce Fugitive GHG Emissions
- Recent & Future Activities
- Discussion

The Global Warming Solutions Act of 2006 (AB 32)

- The Act requires a Scoping Plan for GHG emission reductions
 - ✓ Maximum technologically feasible
 - ✓ Cost-effective
 - ✓ Real, permanent, quantifiable, verifiable, and enforceable

Scoping Plan

- Approved on December 12, 2008
- Designed to reduce GHG emissions to 1990 levels by 2020
- Included measure to reduce GHG emissions from Natural Gas Transmission and Distribution

2007 Natural Gas T&D Survey

- Collected detailed activity data specific to California
- Included fugitive and combustion sources
- Focuses on fugitive emissions reduction
- Sent to over 20 natural gas companies
- Have operational control of 99% of the pipelines

2007 Natural Gas T&D Survey (continued)

- Mailed out on April 15, 2009
- Provided sixty days to respond
- Received 100 percent response rate
- Utilized emission factors used by industry
- Performed data QA/QC

2007 Natural Gas T&D Snapshot

- Transported about 2.2 trillion-standard-cubic-feet of natural gas
- Used over 13,000 miles of transmission and 200,000 miles of distribution pipelines
- Served about 10.5 million industrial, commercial, and residential customers
- Employed about 5,000 direct and contract employees in the State

Global Warming Potential Values

Natural Gas T&D GHG Emissions (100-Yr Time Horizon)

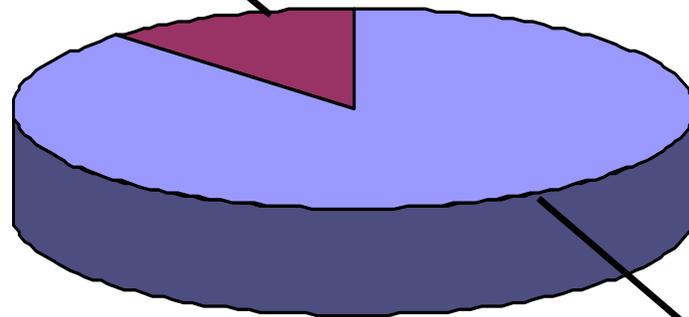
| GHG | SAR (1996) | FAR (2007) |
|-----------------------------------|------------|------------|
| Carbon Dioxide (CO ₂) | 1 | 1 |
| Methane (CH ₄) | 21 | 25 |
| Nitrous Oxide (N ₂ O) | 310 | 298 |

Source: IPCC

Preliminary 2007 Survey Results

**Total GHG Emissions
(3.8 MMTCO₂e, SAR) or (4.5 MMTCO₂e, FAR)**

Combustion (12%)



Fugitive (88%)

Scoping Plan vs. Survey

Natural Gas T&D

Fugitive Emissions Comparison (MMTCO₂e)

| Fugitive Source Category | Scoping Plan (2002-2004 Avg.) | Survey (2007) | |
|--------------------------|----------------------------------|------------------|------------|
| | SAR | SAR | FAR |
| Transmission* | 1.4 | 0.5 | 0.6 |
| Distribution | 0.0 | 2.8 | 3.4 |
| Total | 1.4 | 3.3 | 4.0 |

*The Scoping Plan included NG underground activities, while the survey excluded these activities.

Fugitive Emissions

Natural Gas T&D Survey

| Fugitive Emissions Source | Activity | 2007 Emissions (MMTCO ₂ e) | |
|---------------------------|-----------------|---------------------------------------|------------|
| | | SAR | FAR |
| Pipelines | 210,000+ miles | 2.5 | 3.0 |
| M&R Stations | 15,000 stations | 0.5 | 0.6 |
| Comp. Stations | 28 stations | 0.2 | 0.3 |
| Others | | 0.1 | 0.1 |
| Total | | 3.3 | 4.0 |

Current Requirements

- **District Rules**
 - No GHG rules
 - Criteria pollutants and toxics
 - ✓ Vary by district
 - ✓ Include fugitive and combustion sources
 - Permit requirements
- **Federal Regulations**
 - U.S. EPA
 - ✓ Proposed GHG Mandatory Reporting
 - U.S. DOT
 - ✓ Construction permits and safety hazards

U.S. EPA Natural Gas STAR Program

- A voluntary partnership between government and industry
- Includes cost-effective control technologies
- No verification and auditing provisions
- Several California NG companies participate

Potential Options to Reduce Fugitive Emissions

- Consider cost-effective technologies from the Natural Gas STAR Program
- Reduce methane leaks and venting
 - Utilize new leak detection tools
 - Install cost-effective technologies
 - Implement pipeline cross-compression to reduce venting
- Implement best management practices
 - Practice enhanced directed I&M

Recent & Future Activities

- Formed District Working Group
- Received CEC and ARB funding to conduct source tests
- Coordinate with CEC and CPUC
- Conduct more public workshops, work group or individual meetings
- Scheduled for the Board's consideration in June 2010

For Further Information

- Visit NG T&D website at:
<http://www.arb.ca.gov/cc/gas-trans/gas-trans.htm>
- Subscribe to ARB NG T&D List Serve:
http://www.arb.ca.gov/listserv/listserv_ind.php?listname=gas-trans

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Discussion

Questions or Comments?