Natural Gas: 
Part of the Solution, Today and Tomorrow

California Methane Symposium 
Policy Panel 

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SoCalGas/SDG&E
Preview

• Reducing Methane Emissions
• SB1371: Natural Gas Leakage Abatement
• Being Part of the Solution: Renewable Methane and Storage
SoCalGas & SDG&E SERVICE TERRITORY

- Nation’s largest natural gas distribution utility
- In business for 140+ years
- 13 counties, 500+ communities served
- 24.9 million customers
- 6.8 million gas meters
- 24,000+ square miles of service territory
Service Territory Stats
SOCALGAS AND SDG&E

Annual Deliveries
1 TRILLION CUBIC FEET
5% of U.S. Deliveries

Transmission System
3,742 combined miles
3,508 SOCALGAS • 234 SDG&E

Distribution Network
57,930 miles of mains
49,953 SOCALGAS • 7,977 SDG&E

Four Storage Fields
136 BILLION CUBIC FEET
3% of U.S. Storage Capacity

Receipt Capacity
3.9 BILLION CUBIC FEET/DAY
13 COMPRESSOR STATIONS

Cubic Feet/Day
205,662 Cumulative Horsepower

Pressures
1,969 REGULATOR STATIONS
PRESSURES OF ~60 LBS/SQ INCH OR LESS

SOCALGAS AND SDG&E
MARCH 2015 | SOUTHERN CALIFORNIA GAS COMPANY
Despite industry growth (600,000 miles of pipe; 17.5 million customers) EMISSIONS ARE DECREASING

*(MMTCO\textsubscript{2}e)*


1.8% Increase from 2012 to 2013 due to increased
- coal generated electricity with decreased natural gas consumption
- fuels for residential and commercial heating (cooler winter)
- Transportation vehicle miles traveled (VMT)

1990 Level

Graph Data Source: ES-4 DRAFT Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2013

*MMTCO\textsubscript{2}e= million metric tons of carbon dioxide equivalent*
NEW STUDIES SHOW LOWER LEAK RATES primarily due to system modernization and better leak detection

Leak Rate Comparison 2013
(Reported Emissions from Leaks/Delivered Volumes)

* U.S. Distribution, EPA GHG Inventory 2013

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**WHAT HAS DRIVEN EMISSIONS RATES DOWN?**

SoCalGas’ modernization, voluntary & preventative measures

| Original member of EPA’s Natural Gas STAR Program and reduced more than ~800,000 metric tons of carbon dioxide equivalent (CO₂e) |
| Eliminated cast iron pipe more than 20 years ago |
| Perform leakage surveys on transmission, distribution and gas storage facilities |
| Implement Safety & Integrity programs |
| Comply with all Federal and State regulations / requirements |
SoCalGas has deployed technology innovations for **EVEN BETTER LEAK DETECTION**

**MOBILE**
New Mobile methane detection, deployed in 2013

**AERIAL SURVEYS**
Future Technology: Unmanned aerial vehicles (UAVs) to investigate emission sources
PARTNERING: NATURAL GAS VALUE CHAIN STUDIES AND MAPPING PROJECT

Mapping Four Cities in SoCalGas Service Territory

Local Distribution*
With Washington State University

Pump to Wheels
With West Virginia University

*Release Date March 31, 2015
SoCalGas Supported SB1371: Natural Gas Leakage Abatement to optimize Safety and Environmental Goals

Utilities required to:

- Use best, most cost-effective technology
- Repair leaks as soon as possible after discovery
- Quantify, track, evaluate and report emissions
- Calculate and report annual leak rates + mitigation strategies

CPUC required to:

- Establish, Evaluate and Enforce best practices
- Develop implementing rules prioritizing safety, reliability, and affordability of service
**BOTTOMLINE:**
SoCalGas is working collaboratively and independently to reduce methane emissions even further

- **Collaborating with the CPUC to cost-effectively enhance infrastructure safety while yielding environmental benefits**
- **Funding Research, Development & Demonstration (RD&D) for new technologies, and greater efficiencies**
- **Investing in pipeline safety enhancements: ~$1.5B over next five years**
- **Proposed accelerating replacement of pipe and eliminating non-hazardous leaks backlog over 5 years in general rate case filing**
- **Partnering with academia, regulators and industry on studies and programs: Being Part of the Solution**
Methane from Natural Gas is Dwarfed by the Agriculture & Waste Sources

CA 2012 METHANE EMISSIONS*

*Source: California Air Resources Board (CARB) 2014 Greenhouse Gases Emissions Inventory
RENEWABLE Natural Gas Can Eliminate Methane Emissions from the Leading Sources

Convert waste from dairies, farms and landfills into biogas using anaerobic digestion. Extract the methane put in the pipeline for future use.

WHAT’S POSSIBLE

GENERATE 2.5 quadrillion Btu annually – enough to meet the natural gas needs of 50% of all US homes.

REPLACE 75% of all diesel used by CA vehicles.

SUPPLY biogas as a transportation fuel from food and green waste with a NEGATIVE carbon intensity.

SOURCE: Bioenergy Association of California and CARB May 2014 Look-Up Table 30
Natural gas also gives California a practical way to store RENEWABLE ENERGY
POWER-TO-GAS addresses the storage challenge

Excess renewable energy goes through electrolysis, which splits the molecule. Hydrogen and carbon combine through methanization, methane can be stored in the pipeline for future use.

Carbon captured from factories and plants.
We need to think bigger and find solutions across the entire ENERGY SYSTEM
THANK YOU!

SoCalGas | Sempra Energy utility