Join the CMOP Network

As part of its outreach efforts, EPA maintains contact with the U.S. and international CMM / CBM industries and encourages interaction between industry participants through the CMOP Network.

Joining the CMOP Network is free and voluntary! As a CMOP Network Member, you:

- Will receive our quarterly newsletter, the *Coalbed Methane (CBM) Extra,* via e-mail.
- Can request to receive our weekly news announcement, the *CBM Note*, via e-mail.
- Can add your organization and contact information to our Network Contacts list featured on the CMOP Web site.

Sign up online today! www.epa.gov/cmop/join/index.html

EPA
United States
Environmental Protection Agency
1200 Pennsylvania Avenue, N.W. (6207J)
Washington, DC 20460

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U.S. EPA Coalbed Methane Outreach Program

Coalbed Methane Outreach Program

Promoting Coal Mine Methane Recovery and Use

EPA United States Environmental Protection Agency

Our Mission

The U.S. Environmental Protection Agency's Coalbed Methane Outreach Program (CMOP) is a voluntary program with a goal of reducing methane emissions from coal mining activities. Our mission is to promote the profitable recovery and utilization of coal mine methane (CMM), a potent greenhouse gas (GHG) that contributes to climate change if emitted to the atmosphere. When collected and used for energy, CMM is a valuable fuel source.

PROGRAM GOALS

- Reduce GHG emissions
- Achieve the profitable recovery and use of CMM
- Promote the use of a clean energy source

Since 1994, CMOP has worked cooperatively with the coal mining industry to reduce CMM emissions. By helping to identify and implement methods to recover and use CMM instead of emitting it to the atmosphere, CMOP has played a key role in the United States' efforts to reduce GHG emissions and address global climate change.

This guide summarizes CMOP activities and also highlights some of the program's accomplishments.

International Activities

CMOP has worked with many coal-producing countries around the world for more than a decade to promote CMM development and use. Today, CMOP conducts its international activities under the auspices of the Methane to Markets Partnership.

On behalf of Methane to Markets, CMOP has: developed comprehensive profiles that characterize the coal and CMM sectors in more than 30 countries; established an online database of more than 200 global CMM projects; launched a number of pre- and full-scale feasibility studies; sponsored technology demonstrations; and supported in-country capacity building through clearinghouses, technology transfer workshops, and study tours. CMOP also maintains strong relationships with several Partner countries, including China, India, Russia, and Ukraine.

For more information on CMOP's international activities and its involvement in the Methane to Markets Coal Subcommittee, visit: www.epa.gov/cmop/international/index.html or www.methanetomarkets.org/coalmines/index.htm.

Methane to Markets

CMOP Accomplishments—U.S. Emissions Reductions

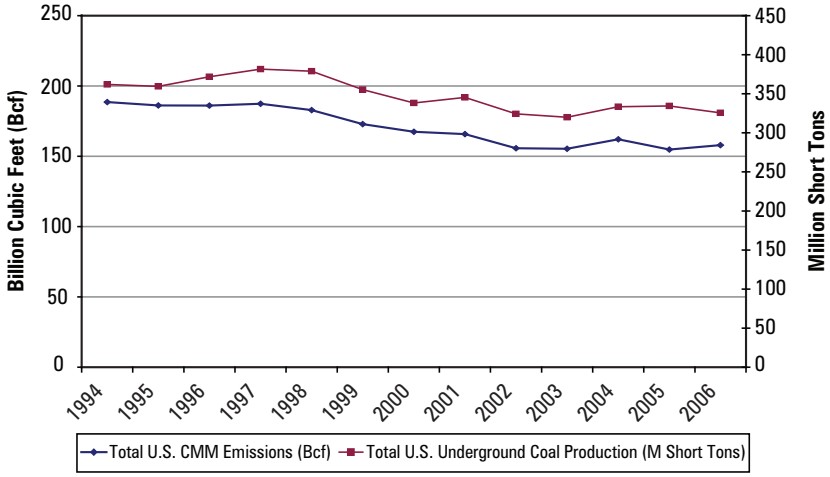
Between the time of the program's launch in 1994 and 2006, CMOP assisted the U.S. coal mining industry in successfully reducing U.S. CMM emissions by about 16 percent. These emissions reductions are the result of active underground mines recovering and utilizing drained gas. Today, the U.S. coal mining industry recovers and uses more than 80 percent of all drained CMM.

U.S. CMM reductions since 1994 have effectively removed the equivalent of more than 216 million metric tons of carbon dioxide (535 billion cubic feet of methane) from the atmosphere. According to EPA, this is equivalent to:

- Removing more than 39 million passenger vehicles from the roads for one year.
- Shutting off more than 46 coal-fired power plants for one year.
- Providing electricity to more than 28 million homes for one year.

These emissions reductions have had an important economic impact as well. Nationally, CMM gas sales generate more than $300 million in revenue each year.

U.S. CMM Emissions Have Declined Since 1994



Source: CMOP Annual Report, August 2008.

What Is Coal Mine Methane?

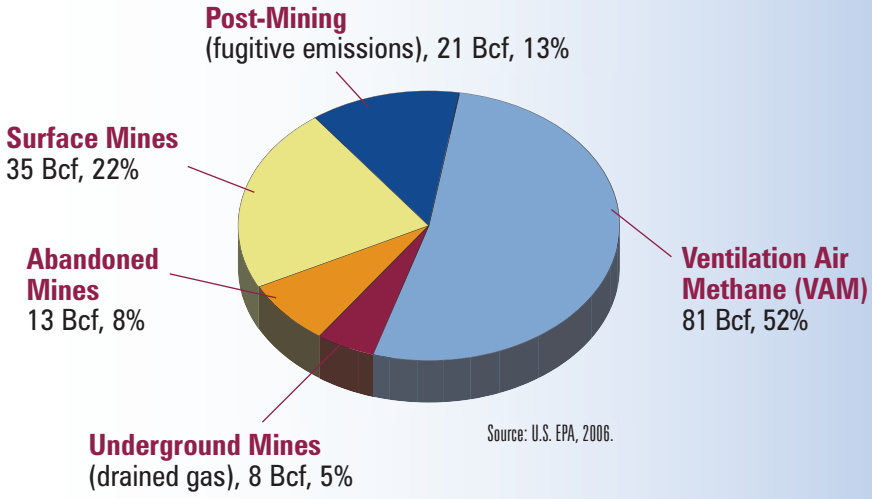
Coal mine methane (CMM) refers to methane released from the coal and surrounding rock strata due to mining activities. In underground mines, it can create an explosive hazard to coal miners. Underground mines are the largest single source of CMM emissions. Mines tend to emit more methane the deeper they are, but their methane levels depend on many factors.

Sources of CMM

Coal mine methane is emitted from several sources:

- Underground mine ventilation systems, which emit large quantities of very dilute methane known as Ventilation Air Methane (VAM).
- Underground mine degasification (or "drainage") systems are needed at some very gassy mines to remove methane from the coal seams. This can be done in advance of mining ("pre-mine drainage") from the surface or from inside the mine, during or after mining ("gob" or "goaf" wells).
- Abandoned (permanently closed) mines emit abandoned mine methane (AMM) through vent holes, fissures, or cracks.
- Surface mines emit methane as the coal seam is directly exposed to the atmosphere.
- Post-mining operations—when coal is stored in piles and transported—produce fugitive methane emissions.

2006 U.S. CMM Emissions



Source: U.S. EPA, 2006.

Recovery and Use of CMM

Technology is readily available to recover methane—the major component of natural gas—from coal mines. Specific end uses for CMM depend on the gas quality, especially the concentration of methane and the presence of other contaminants.

Worldwide, CMM is most often used for power generation, district heating, boiler fuel, and town gas, or it is sold to natural gas pipeline systems.

BENEFITS OF CAPTURING AND USING CMM

- Reduces GHG emissions
- Conserves a local source of valuable, clean-burning energy
- Enhances mine safety by reducing in-mine concentrations of methane
- Provides revenue to the mine

CMM can also be used in many other ways:

- Coal drying
- Heat source for mine ventilation air
- Supplemental fuel for mine boilers
- Vehicle fuel as compressed or liquefied natural gas (LNG)
- Manufacturing feedstock
- Fuel source for fuel cells

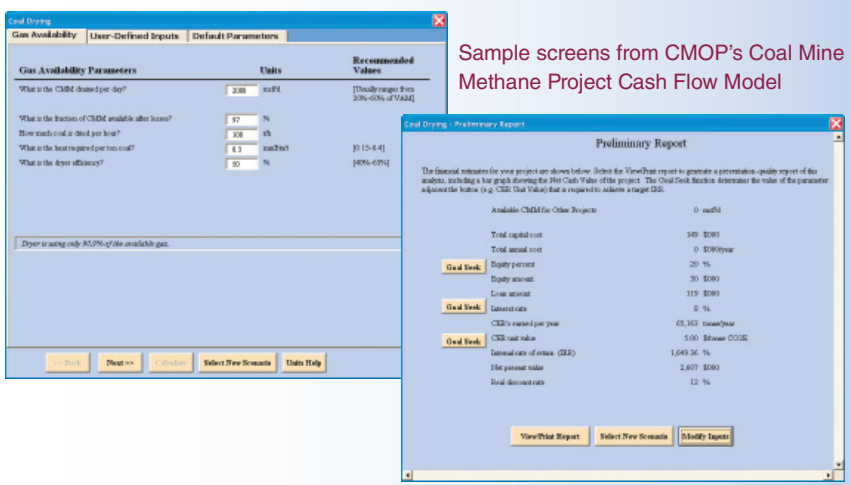
In the United States, nearly all CMM recovered for use from active mines is injected into the natural gas pipeline system.

CMOP Domestic Activities

EPA's Coalbed Methane Outreach Program (CMOP) is engaged in numerous domestic and international outreach efforts.

CMOP works cooperatively with the private sector to support project development. The program helps to overcome institutional, technical, regulatory, and financial barriers to implementation, and communicates the benefits of CMM recovery to interested and necessary audiences. Specific program activities include:

- Identifying, evaluating, and promoting CMM recovery and use opportunities.
- Conducting feasibility and pre-feasibility studies at U.S. mines and supporting cutting-edge technology demonstrations.
- Preparing and disseminating reports on key technical, economic, and legal issues.
- Interfacing with the mining industry, CMM project developers, and the financing community to advance project development.
- Organizing conferences and workshops to discuss leading technology and policy developments.



Sample screens from CMOP's Coal Mine Methane Project Cash Flow Model

How to reach CMOP: www.epa.gov/cmop