New Mexico Strategies for Reducing GHG Emissions

Brad Musick
New Mexico Environment Department

Natural Gas STAR Producers Technology Transfer Workshop
September 11, 2007

Governor's Climate Change Advisory Group (CCAG)

- Representatives from industry, NGOs, local governments, agriculture interests, national labs and universities
- Governor's Emission Reduction Targets
  - 2000 levels by 2012
  - 10% below that by 2020
  - 75% below by 2050
- 69 recommendations for meeting the targets were finalized December 1, 2006

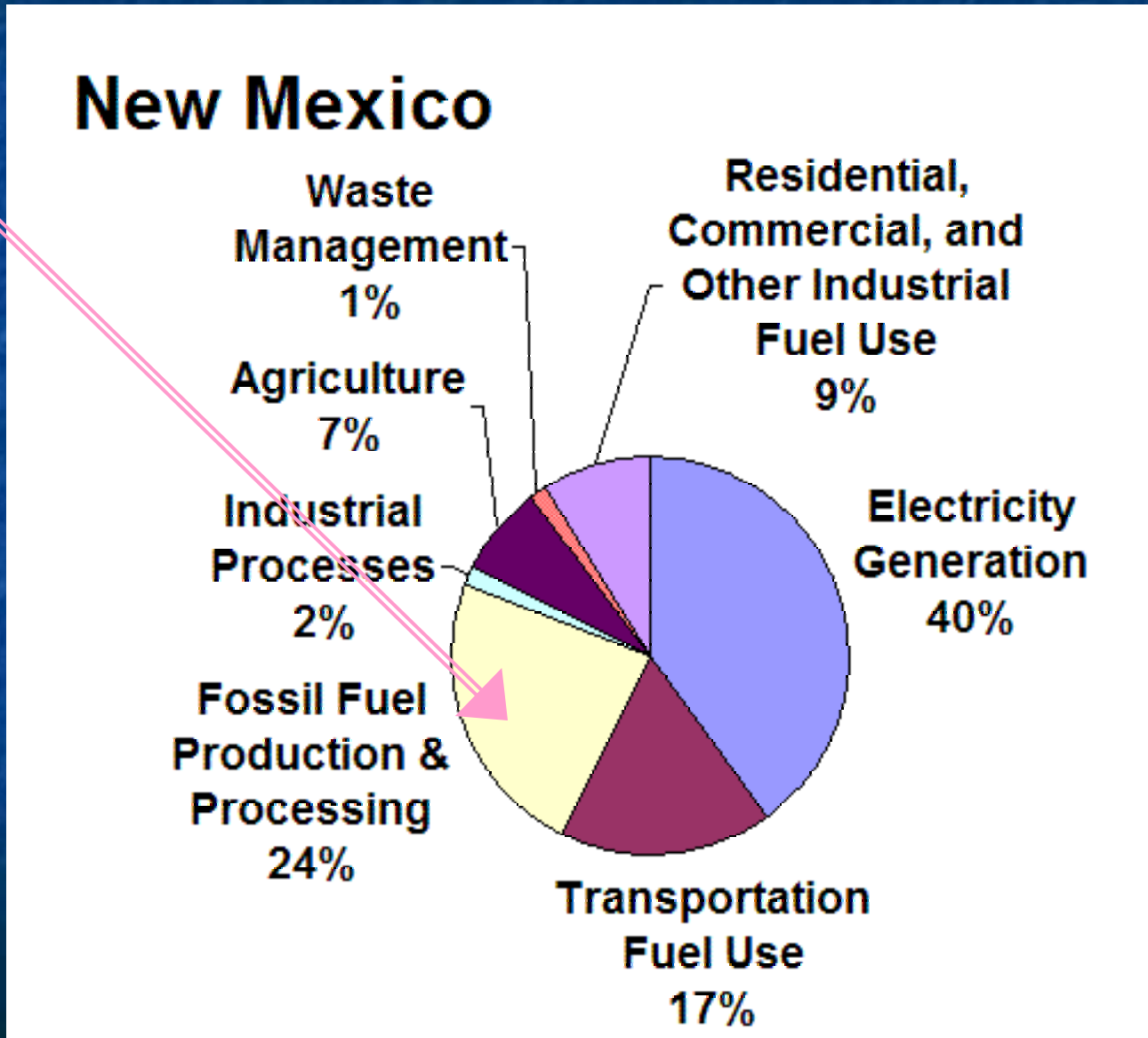
Oil and Gas Industry Greenhouse Gas Emissions Reduction Study

- Executive Order 2006-69 (Dec. 28,2006):

  "NMED shall conduct a study of voluntary and mandatory mechanisms for reducing greenhouse gas emissions from oil and gas processes by January 1, 2008 and shall submit such study to the [interagency Climate Action Implementation] Team, the Clean Energy Development Council, and the Governor by said date. Proposed mechanisms shall reduce methane emissions in oil and gas operations by 20% by 2020 and carbon dioxide emission from fuel combustion."
- Implements Climate Change Advisory Group Recommendations ES-12 & ES-13

GHG Emissions by Sector

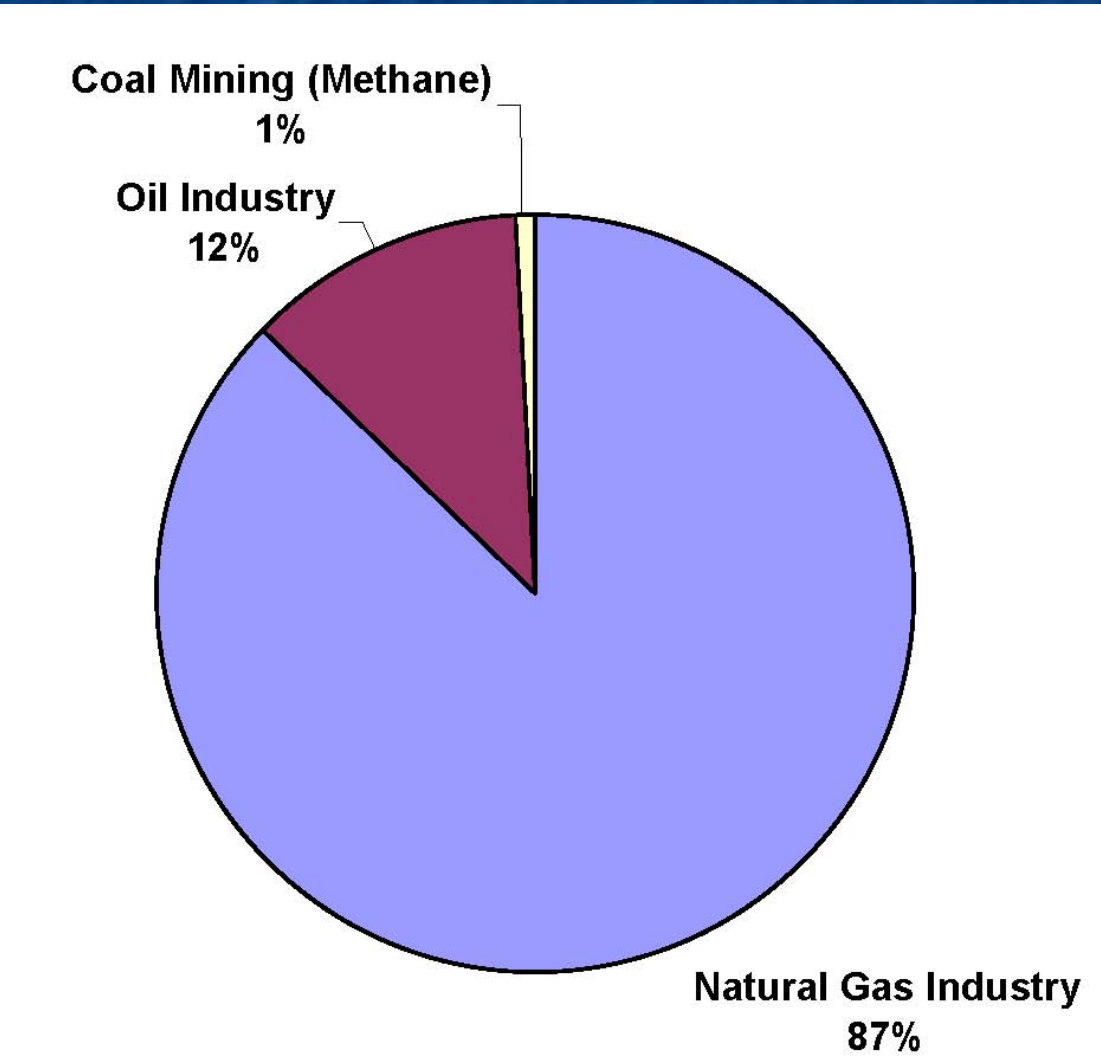
Fossil Fuel P&P



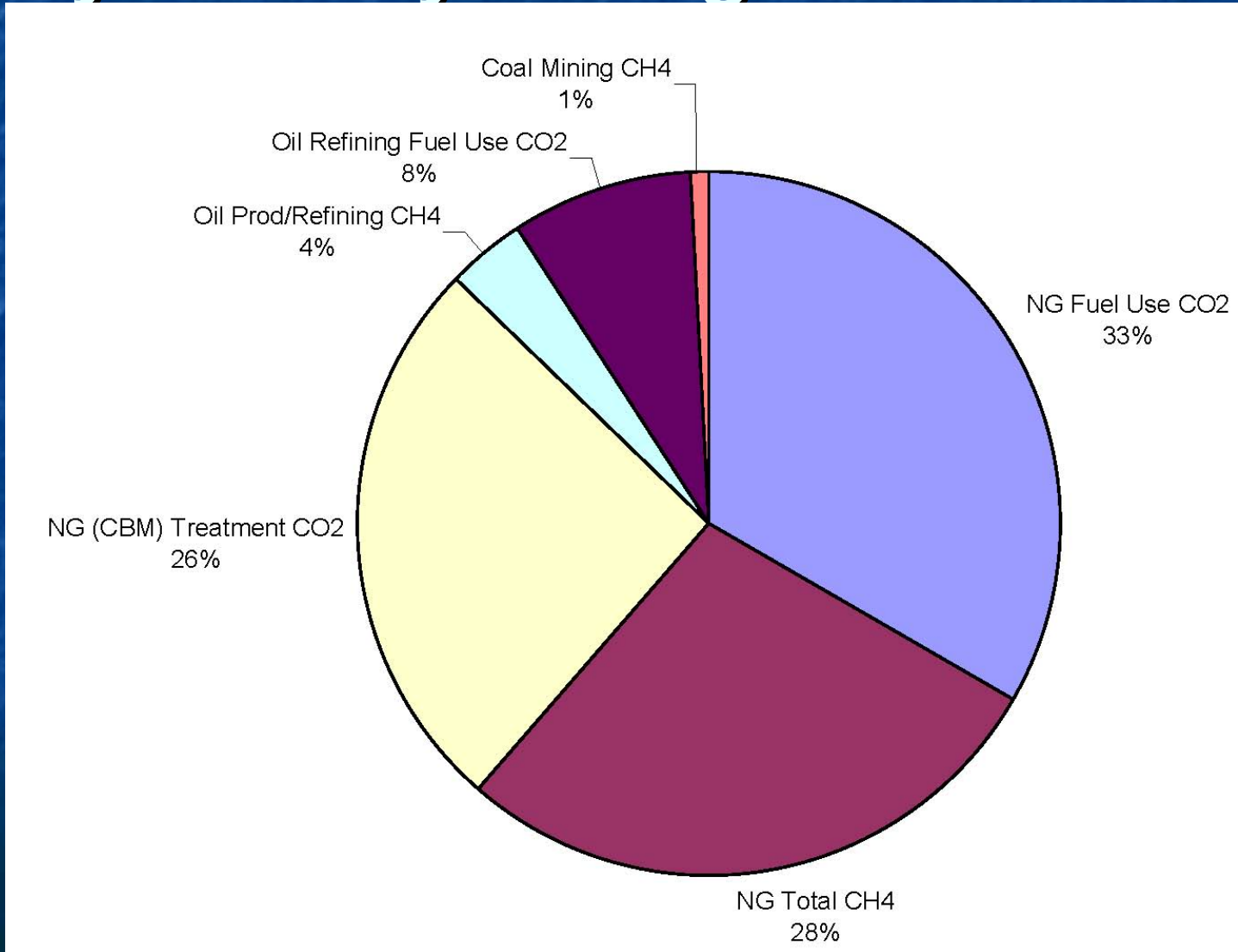
Fossil Fuel P&P GHG Emissions

Chart does not include:

- CO_2 from oil production fuel use (is included elsewhere in EI)
- CO_2 from CO_2 Production & Processing (Bravo Dome)



Fossil Fuel P&P GHG Emissions by activity and gas



NG = Natural Gas Industry

CCAG Recommendation ES-12

Policy Design:

"The CCAG recommends that:

Subject to verification of technical and economic feasibility and reduction potential:

(a) New Mexico implement, on a voluntary basis, all BMPs, PROs, and available technologies starting in 2007 to reduce overall CO2e emissions due to methane emissions from the oil and gas sector by ~20% by 2020;

(b) New Mexico actively promote participation by oil and gas operators in EPA's Natural Gas Star program and New Mexico's San Juan VISTAS program; and

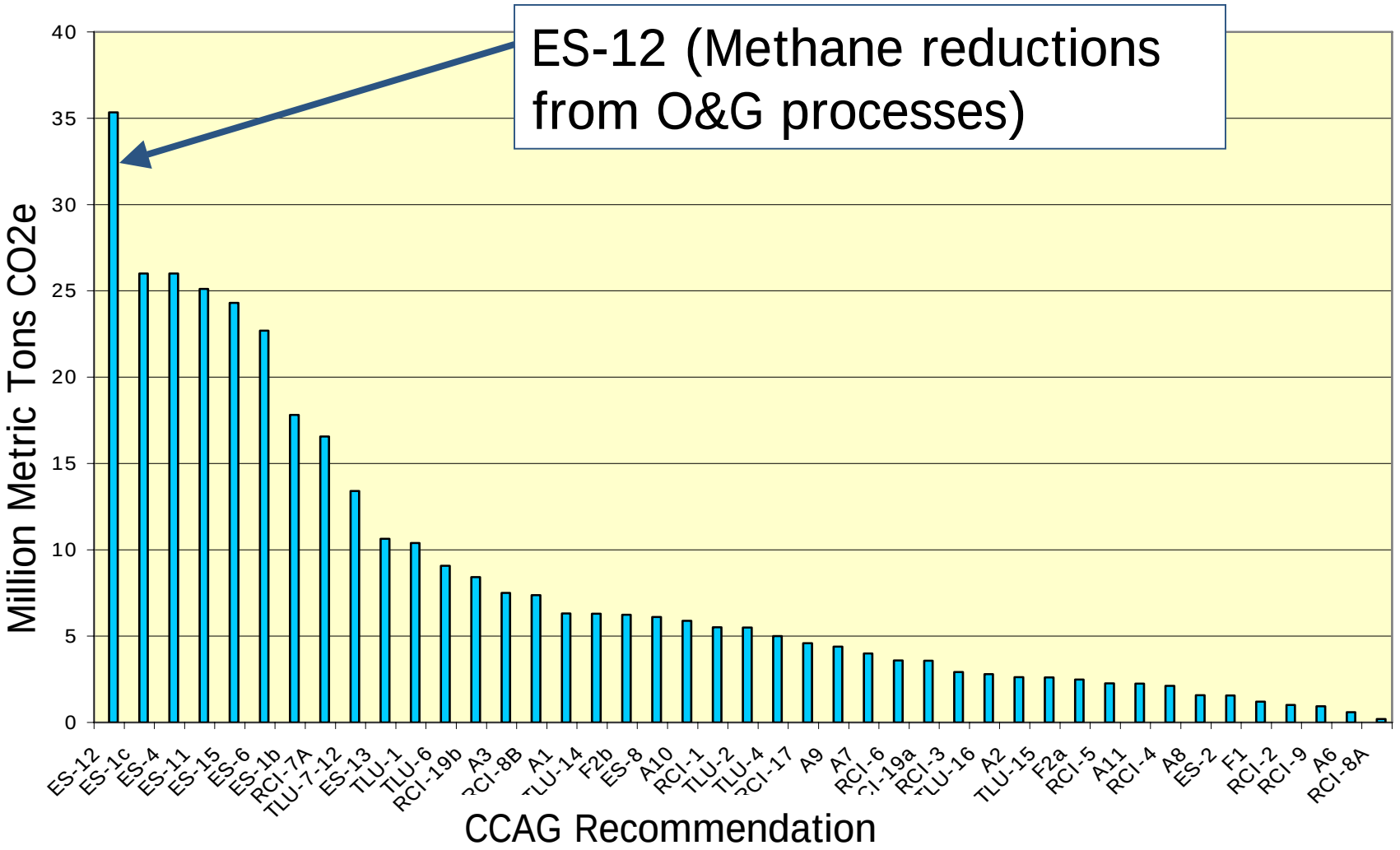
(c) As voluntary measures are implemented, if the State determines that oil and gas operators are not on track to achieve the above goal, the State should implement mandatory approaches where appropriate. Mandatory measures would be implemented only after following formal rule making or statutory change procedures with the appropriate "due process" requirements."

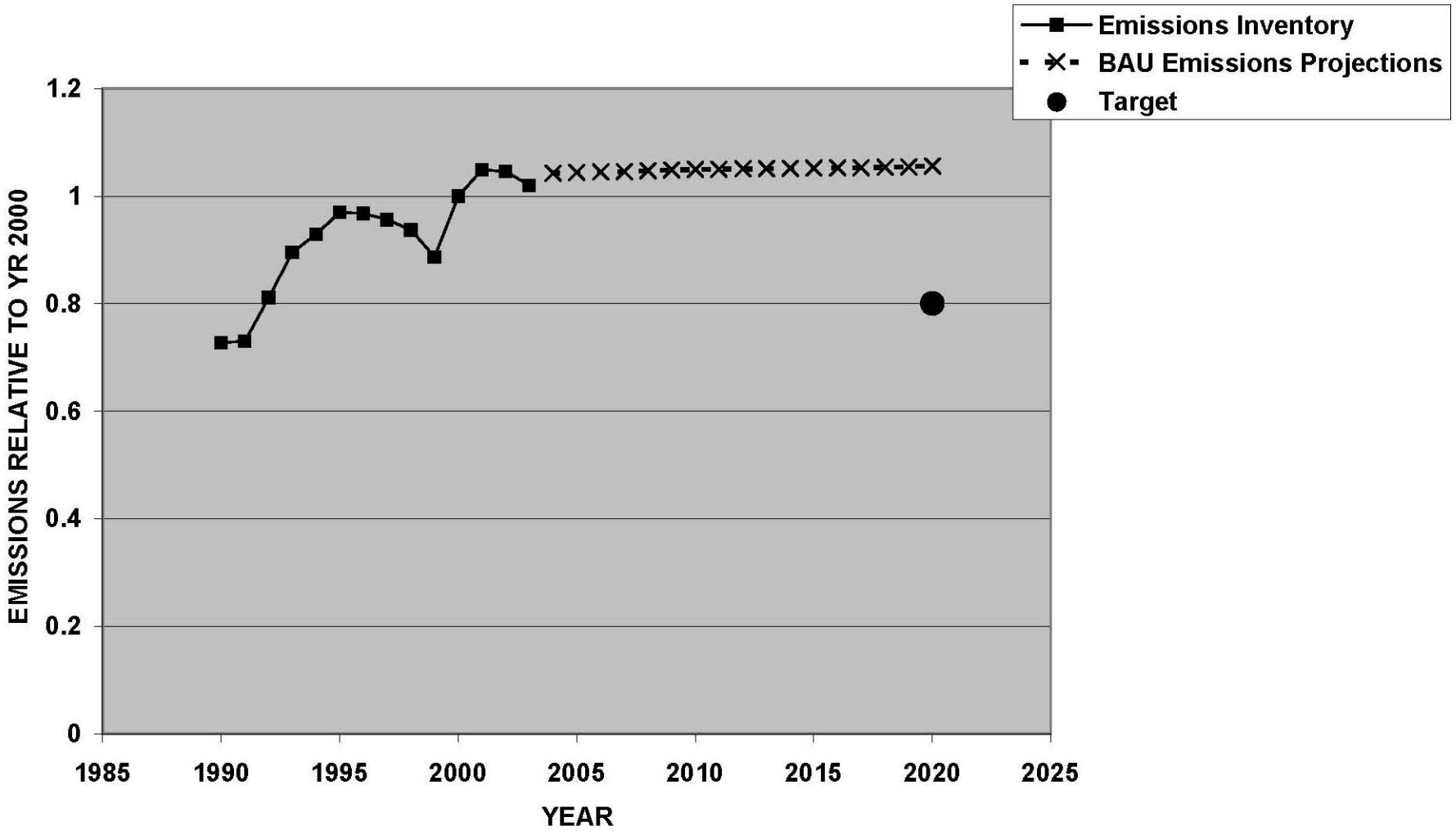
CCAG Recommendation ES-12

Policy Design -- Basically a three-step approach:

- Promote voluntary implementation
- Track progress towards goal (20% reduction by 2020)
- Adopt mandatory measures if progress insufficient

CCAG Recommendations ranked by cumulative emissions reductions




New Mexico NG Industry Methane Emissions
(projection based on flat production after 2004)
Emissions Inventory
BAU Emissions Projections
Target
EMISSIONS RELATIVE TO YR 2000
1.2
1
0.8
0.6
0.4
0.2
0
1985
1990
1995
2000
2005
2010
2015
2020
2025
YEAR

Where did these NM emissions data come from?

$$NM\ emissions = US\ emissions \times \left(\frac{NM\ \ activity}{US\ \ activity} \right)$$

Where:

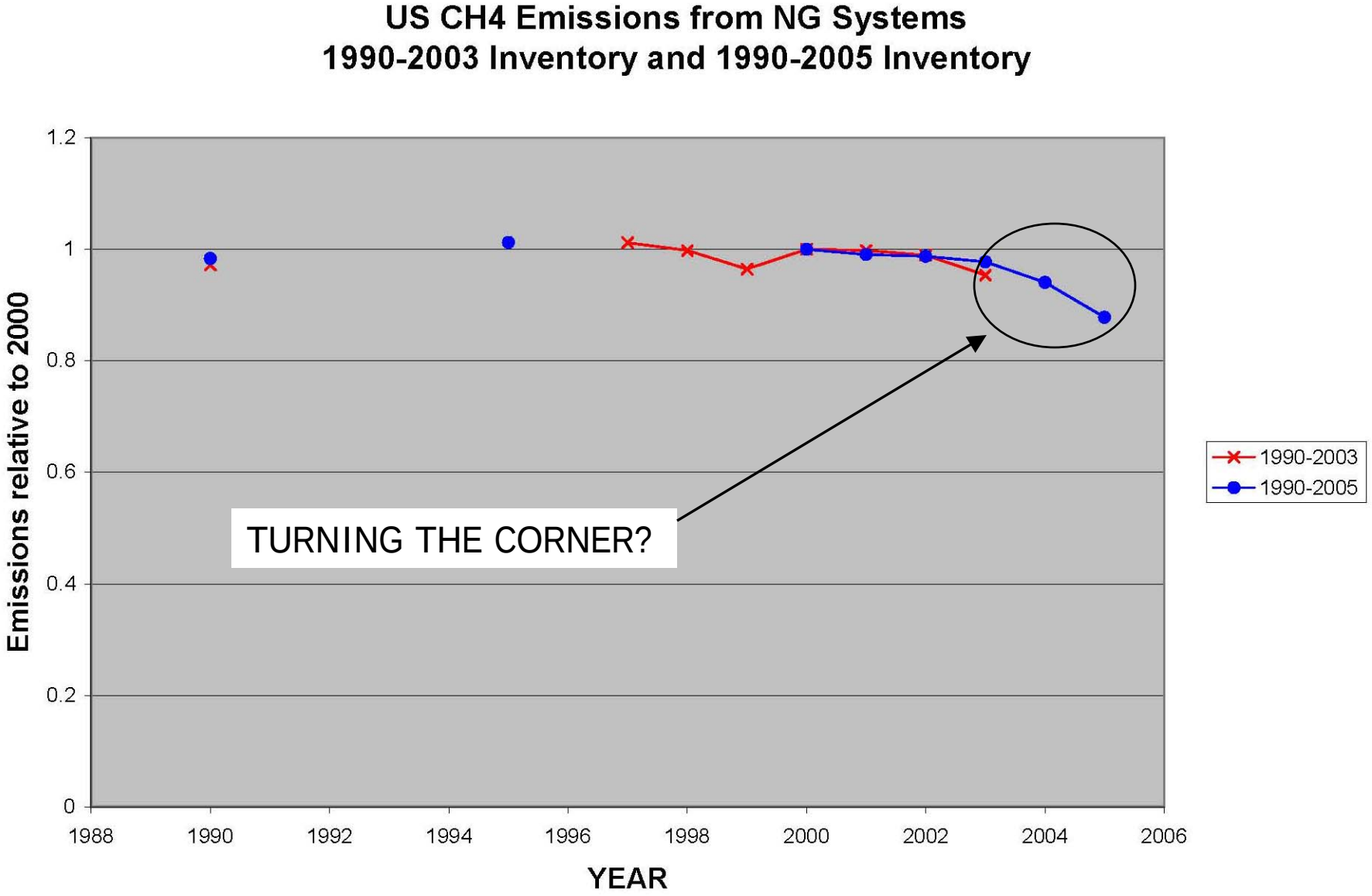
NM & US activity factors for each sector =
NG volume produced, processed, etc. from EIA data

US emissions = US BAU emissions – US Gas STAR emission reductions

US BAU emissions = (EFs from 1992 EPA/GRI Inventory) × (activity driver for current year)

Some questions about NM emissions data

- Recent trends?
  - Can now extend inventory data to 2005
  - May see effect of recent downward trend in US emissions


US CH4 Emissions from NG Systems
1990-2003 Inventory and 1990-2005 Inventory
Emissions relative to 2000
1.2
1
0.8
0.6
0.4
0.2
0
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
YEAR
TURNING THE CORNER?
1990-2003
1990-2005

Some questions about NM emissions data

- Recent trends?
  - Can now extend inventory data to 2005
  - May see effect of recent downward trend in US emissions

  But…still have a fundamental issue:
- Inventory method assumes NM Gas STAR reductions are proportional to US reductions

Options for Better Tracking Data

- Amount NM Gas STAR reductions (MMcf reduced/yr)
  - Still need to determine net CH4 emissions
  - Would need good estimate of BAU emissions

  (Net emissions = BAU – Gas STAR reductions)
  - These data would be useful for other purposes, but not sufficient to track progress.

Options for Better Tracking Data

- Voluntary GHG Registry reporting by major producers & processors
  - The Climate Registry: multi-state registry with startup set for 2008
  - Many majors want to join
  - Need:
    - Approved Oil & Gas Protocol
    - NM data
    - Method for extrapolation to non-reporters

Options for Better Tracking Data

- Proposed NM rules for mandatory GHG emissions reporting
  - Part 87: power plants, cement manufacturing, refineries (not much CH4)
  - Part 73:
    - Add-on to criteria air pollutant reporting by permitted sources
    - Mostly CO2 emissions reporting
    - Title V sources phase in CH4 reporting for 2010 emissions year (gas plants, large compressor stations)

→ Not much help in immediate future!

Options for Better Tracking Data

- Survey: voluntary response, data confidential for individual operators
  - Costs
  - Need high response rate
  - Need good emission factors
- Other ???

Feasibility Analysis

- CCAG: “Subject to verification of technical and economic feasibility and reduction potential...”
  - Use cost & Mcf savings from Gas STAR data
  - Technical limits to BMP/PRO applicability?
  - Economic limits to BMP/PRO applicability?
  - Current uncertainty re future regulation and/or carbon emissions market

Potential Implementation Mechanisms
(from CCAG report)

- Information and education
- Technical assistance
- Funding mechanisms and/or incentives
- Voluntary and or negotiated agreements
- Regulatory standards – coupled with cost and investment recovery mechanisms, if appropriate.
- Other?

For More Information

- Web page for this initiative:
  http://www.nmenv.state.nm.us/aqb/projects/OGER.html

  (includes background on CCAG recommendation, Governor's Executive Order)

- Contact: Brad Musick
  New Mexico Environment Department
  (505) 955-8019
  brad.musick@state.nm.us