Oil and Gas Industry Greenhouse Gas Emissions Reduction Study

Report Issued By
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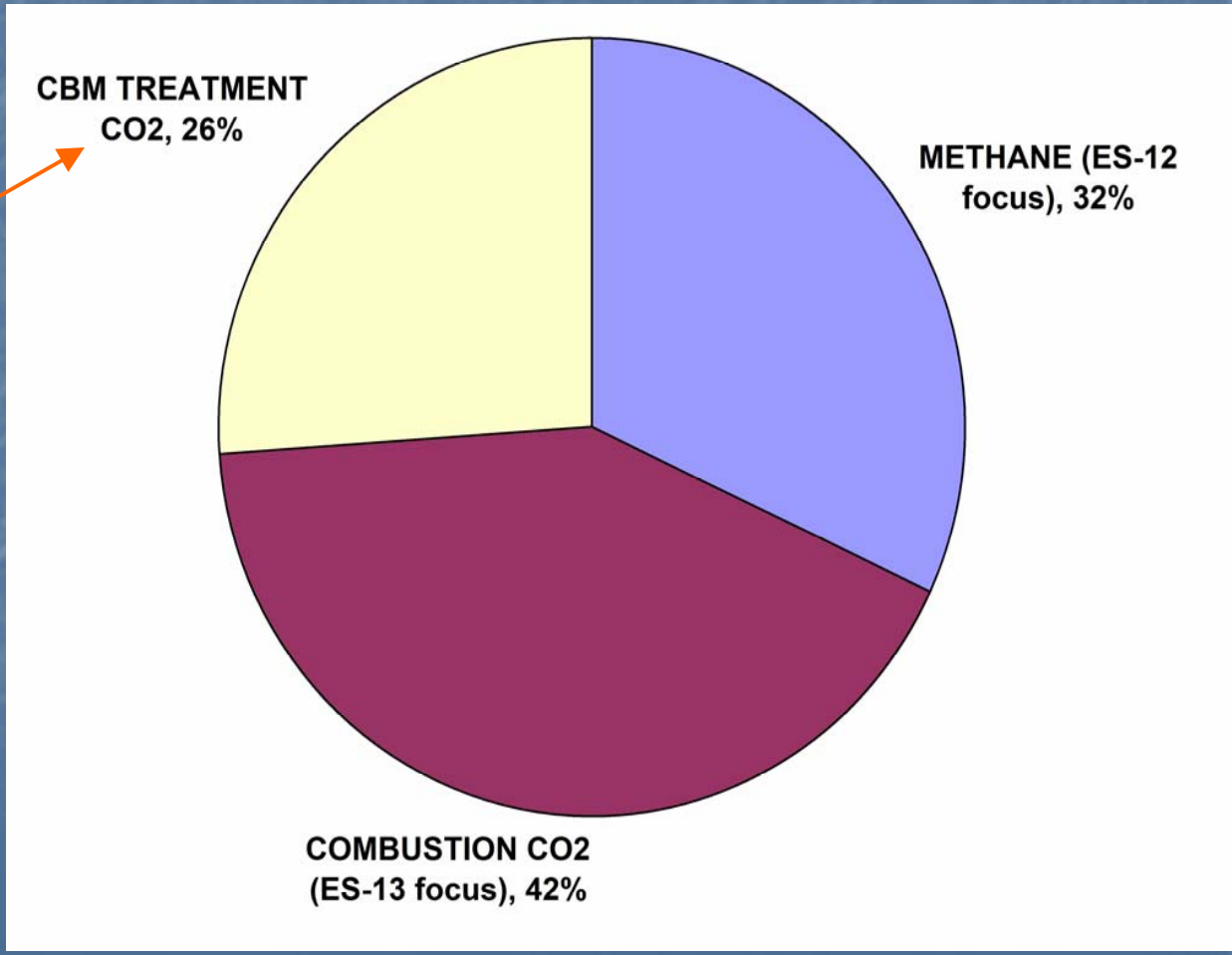
Report Organization

- Background
  - Emissions, industry profile, agencies
- Methane Reduction Measures (ES-12)
- Combustion CO2 Reduction Measures (ES-13)
- Recommendations
- Appendices
  - O&G background material from CCAG Report
  - Gas STAR program information
  - Policy options (Gomez)
  - Economics study (Dixon)

Oil and Gas Industry Emissions

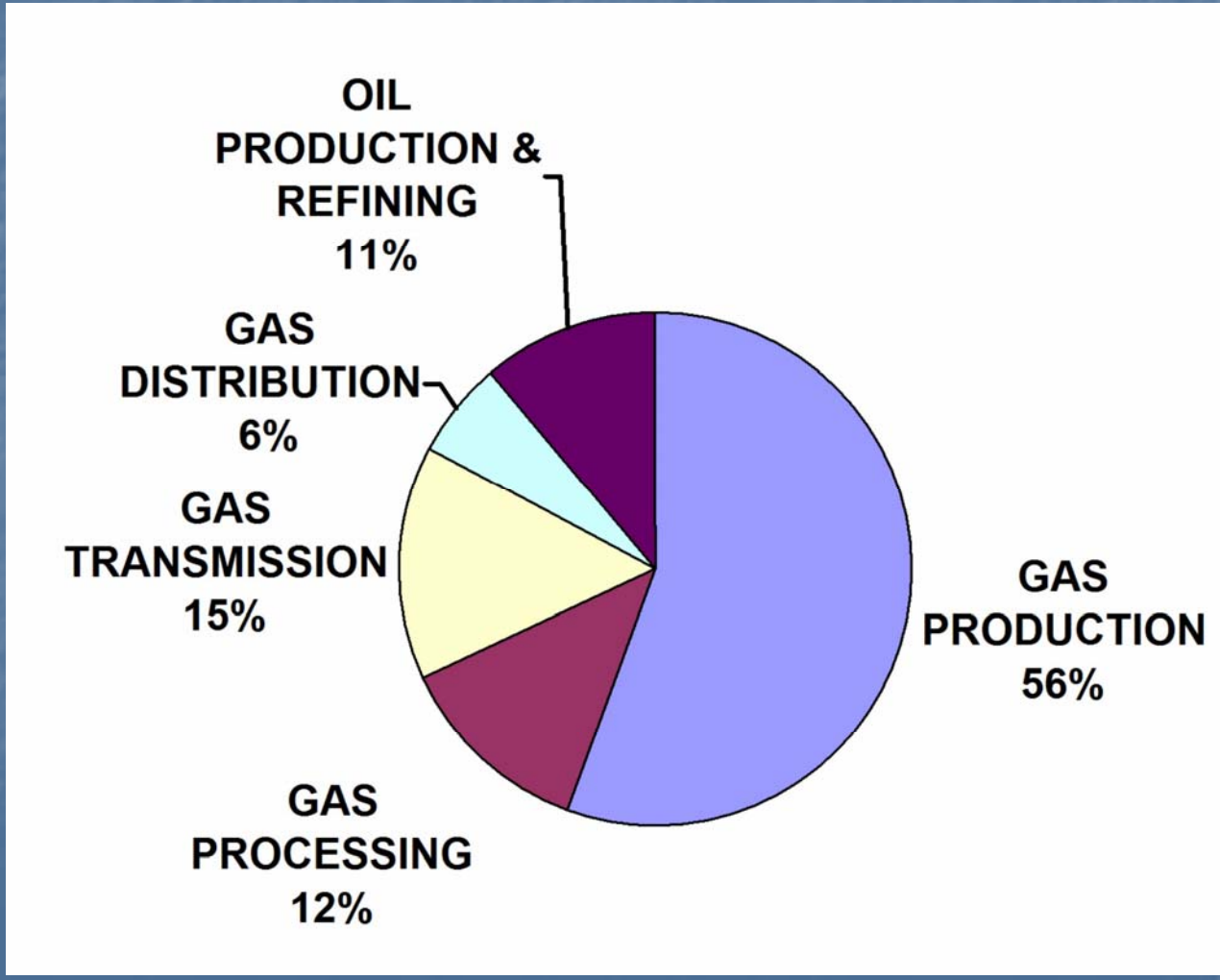
(Global Warming Potential: 1 ton methane = 21 tons CO2)

Venting of CO2 removed from coal bed methane

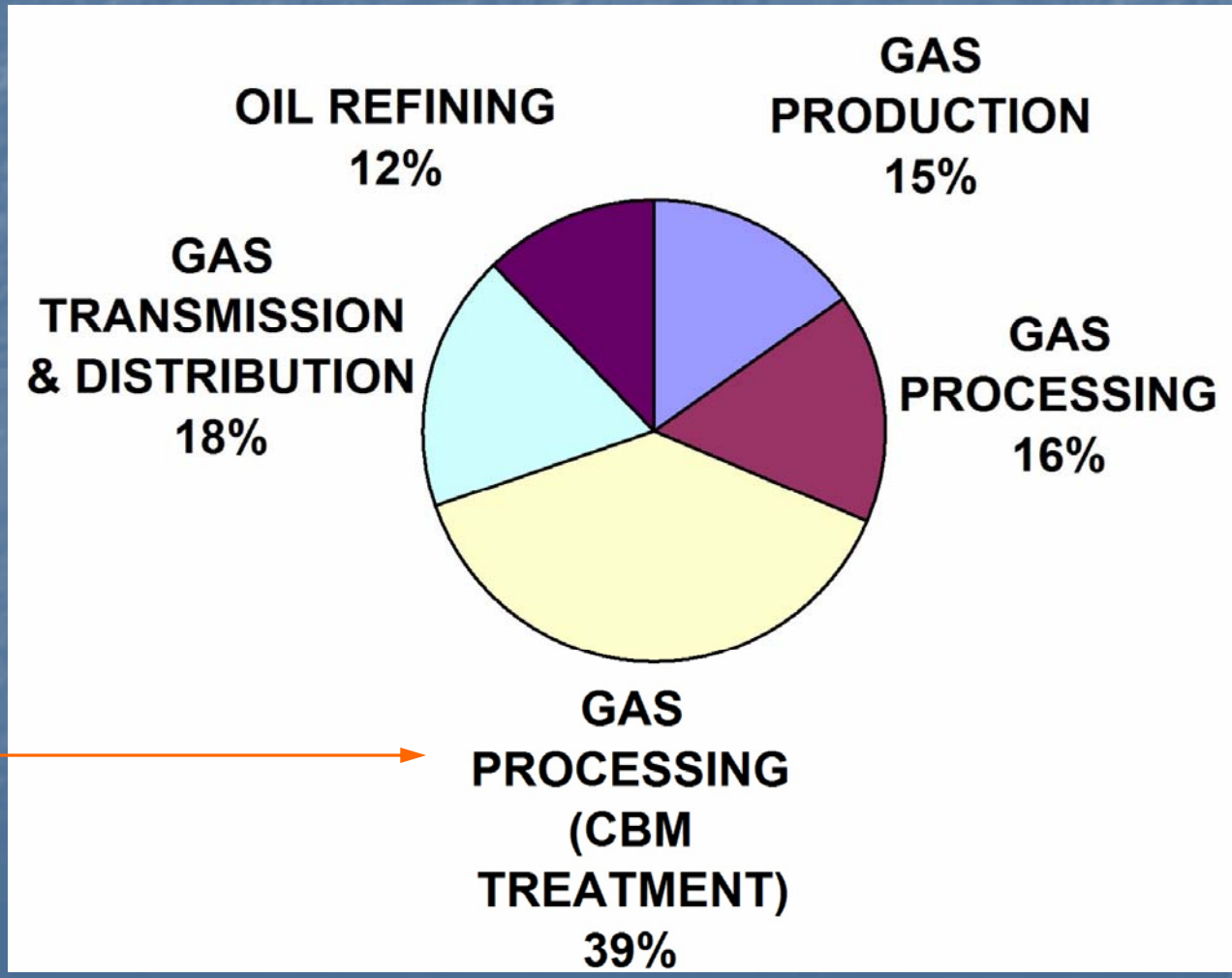


Methane Emissions
by O&G Industry Sector

Mostly from venting and leaks of natural gas



CO2 Emissions
by O&G Industry Sector



Venting of CO2 removed from coal bed methane – not combustion, not in scope of this report.

Corrected translation of ES-12 goal (20% reduction in methane) into tons reduced

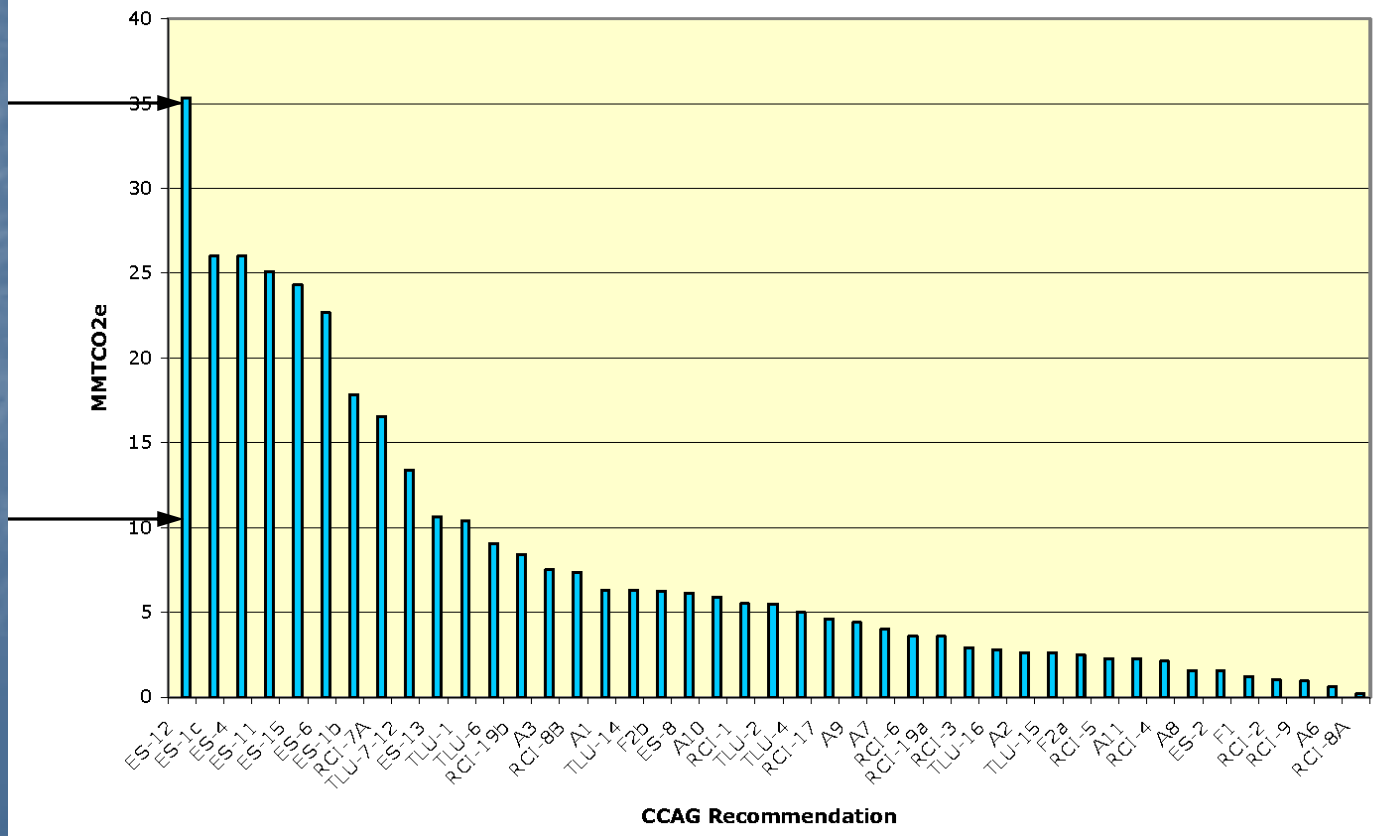
(NOT a re-evaluation of feasibility, just corrected calculation)

ES-12 (CCAG Report)

ES-12 (Corrected)

Figure EX-2

CCAG Policy Recommendations Ranked by Cumulative GHG Reductions, 2007-2020



CCAG ES-12 Recommendation (Methane)

- Promote voluntary reduction measures
  - EPA Gas STAR program
- Track progress
- Mandatory reductions if progress insufficient

This report: focus on tracking progress

Tracking progress for methane: CCAG inventory method

For each subsector (NG production, NG processing, etc.):

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

- US emissions accounts for US Gas STAR reductions
- Essentially uses US-scale emissions factor
- Not adequate for tracking NM progress

Tracking progress for methane: alternatives

- Voluntary reporting of state-level reductions
- Mandatory emissions reporting
  - New rule adopted 2007
  - 2009 emissions from large sources
  - 2010 emissions from smaller O&G sources
- Surveys
- Voluntary reporting through GHG registries

“Waste” Prohibition

- NM Oil and Gas Act prohibits “waste”
- Act’s definition of “waste” includes “surface waste”
- NM regulations include restrictions on waste of gas by release to atmosphere
- Question: Are there any circumstances under which a methane release would be “waste”?

Gas Processing Issues

- Court case: NM gas processor had 22 Bcf unaccounted-for gas over 4 years
- Gas Processing Tax reports provide data on deductions for losses (incl. fuel use, flaring, force majeure)
- Do “percent-of-proceeds” contracts with producers reduce processor incentives for reducing leaks and fuel use?

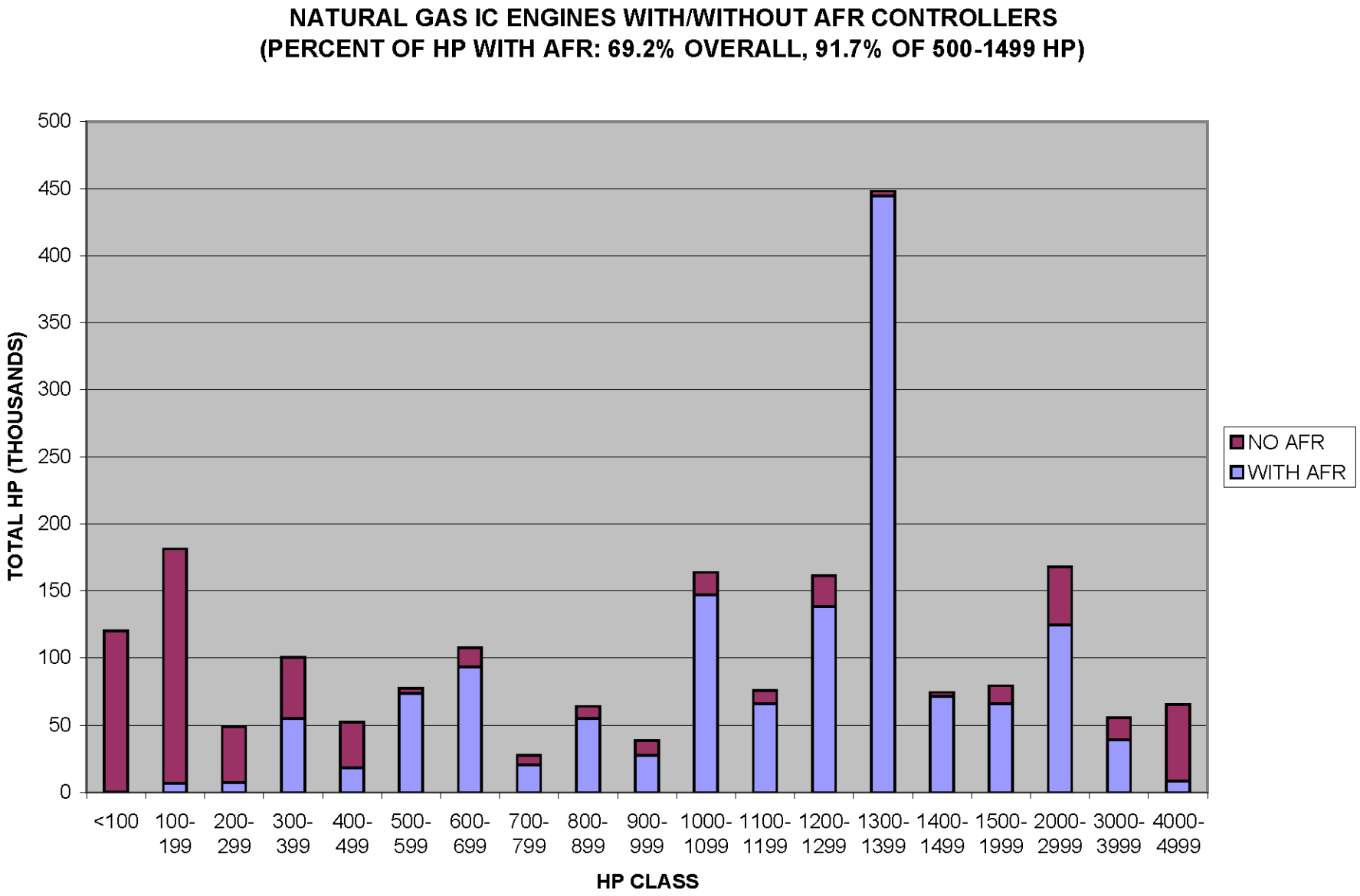
Combustion CO2 Reduction (CCAG ES-13)

- Improve Compressor Efficiency
  - Air-Fuel Ratio Controllers
- Waste Heat Recovery for Compressors & Boilers
  - Install combined heat and power systems
- Replace gas-driven with electrical compressors
  - No net GHG reductions given current dominance of coal-fired electricity generation

Combustion CO2 Reduction (CCAG ES-13)

- EI & Tracking Progress – later today
- Implementation Strategies
  - Education
  - Financial Incentives
  - Mandates/standards – with cost recovery mechanisms if appropriate
  - Data for assessing technical & economic feasibility/impacts?

Post-report analysis of AFR frequency



Economic Analysis

- Contracted with UNM Econ. Dept. for pilot study
- 20% methane reduction is economically feasible
  - Clean technology requirements for new wells
  - Attrition of older low-producing wells
  - Retrofit of existing wells
  - Leak detection and repair programs for processing, transmission, and distribution sectors
- Need better data on production sector emissions and economics

Policy Options (draft paper)

- Revolving Loan Fund
- Break on Regulation – Shorter Reporting Form
- Educational Programs
- Subsidies for New Technology/Retrofits
- Carbon Tax
- Cap and Trade Policies
- Transparency Requirement
- Tax Credits for Production of Renewable Energy
- Tax Incentive for Participation in Gas STAR
- Legislation Requiring Reduction

NMED Recommendations

- Highest priority: meaningful and accurate metric(s) of progress
- NMED work with OCD and stakeholders to develop tracking system
- NMED work with EPA to step up Gas STAR outreach
- NMED review Four Corners Air Quality Task Force recommendations for potential GHG reductions
  - Heightened importance under new ozone standard
- Continuing stakeholder working group on O&G GHG emissions to work on implementation mechanisms

Outreach & Education
Gas STAR + SJ VISTAS

- Some commenters question value of outreach
- Would it be effective?
- Suggested priorities?
- Suggested roles for:
  - US EPA
  - NMED
  - OCD, other state agencies, tribal agencies
  - Industry
  - Environmental groups
  - Partnership organizations
- Resources?

BREAK

Next session:

Emissions Inventory

Tracking Progress

EI & Tracking Issues (from comments)

- If we do new inventory with more accurate bottom-up methods:
  - Compare with CCAG 2000 emissions to evaluate progress? – NMED thinks not
  - Set new goal, relative to new base year?
- Take into account reductions made earlier
  - State-level reduction data not available to NMED
  - How? (actual emissions total already reflects reductions)
  - How far back?
  - Absolute reduction amount (tons) not very meaningful without total emissions

EI & Tracking Issues

- Need standard methods for methane
  - O&G Production and NG processing protocol development
- WRAP O&G inventory for criteria pollutants as a model approach
  - Permitted source emissions from permit data and/or emissions reporting
  - Unpermitted sources from third-party survey
  - Methane?
  - Resources?

Combustion CO2 CCAG EI Methods

- Based on NM-level data, mostly reported by industry
- NG Production: field fuel use from EIA
  - OCD compiles from OCD forms C115, reports to EIA
- NG Processing: plant fuel use, reported directly to EIA (Form 64a)
- NG T&D: pipeline and distribution use from EIA (Form 176)
- Oil Production: included elsewhere in EI
- Oil Refining: fuel use from air quality permits
  - Based on permit limits
  - Fuels: Still gas, NG, FO, CO, Diesel

Combustion CO2 Reduction

- Tracking Progress
  - Is EIA data (used in CCAG EI methods) questionable?
  - May need to rely on data reported under new rule and/or fuel type and use from Title V emissions inventory
  - Also need unpermitted source inventory (from industry)
  - EIA data covers entire state, NMED data excludes tribal lands

NMED Recommendations
Deletions, Additions?

- Highest priority: meaningful and accurate metric(s) of progress
- NMED work with OCD and stakeholders to develop tracking system
- NMED work with EPA to step up Gas STAR outreach
- NMED review Four Corners Air Quality Task Force recommendations for potential GHG reductions
- Continuing stakeholder working group on O&G GHG emissions to work on implementation mechanisms

NEXT STEPS?

- Other initiatives in progress
  - WCI decisions
  - EPA reporting rule (final June 2009)
  - Oil & Gas protocol development
  - IPAMS-WRAP Phase 3 emissions inventory
  - Four Corners ozone
- ?