CLIMATE AND CLEAN AIR COALITION
TO REDUCE SHORT-LIVED CLIMATE POLLUTANTS

CCAC Oil and Gas Methane Partnership

May 12, 2014

CCAC Oil and Gas Methane Partnership

- Brief Summary of the Climate and Clean Air Coalition
- Why a CCAC Oil and Gas Methane Partnership?
- Process for Developing the Partnership
- Key Components
- Value of Joining
- Next Steps

Climate and Clean Air Coalition

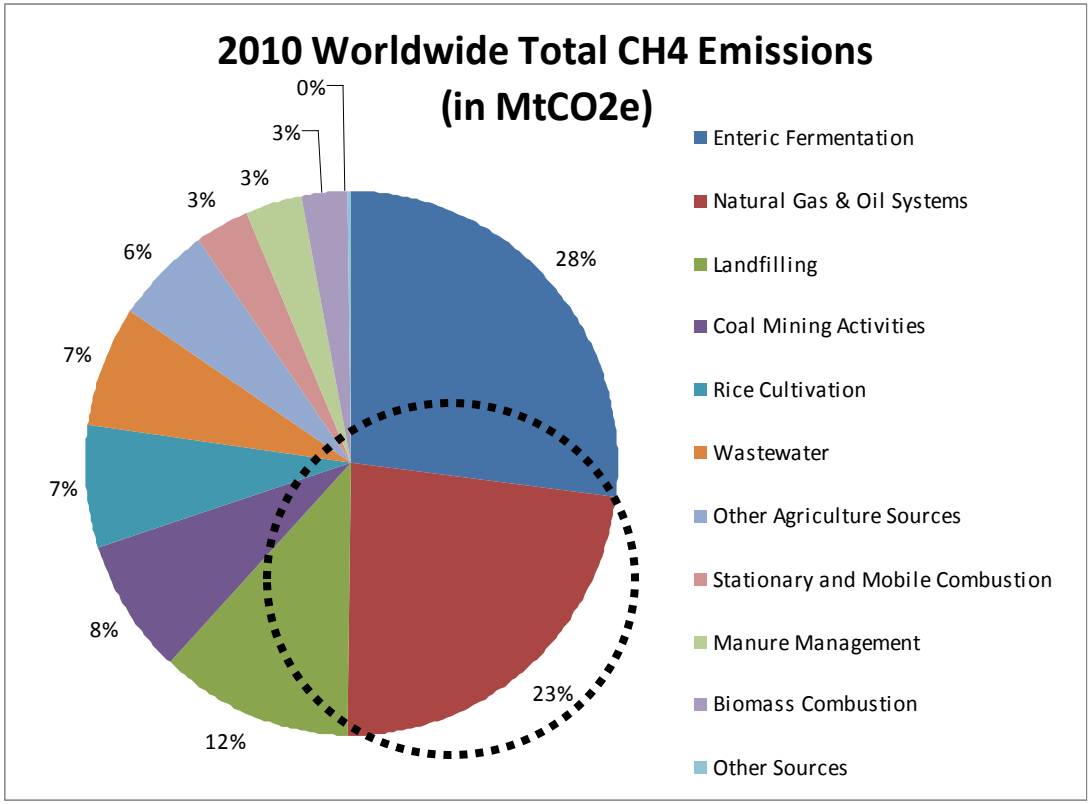
- Founded in February 2012
- 7 partners → now 80
- 39 countries to date and key non-state partners (e.g., World Bank, UNEP, WHO)
- Voluntary international effort bringing together countries, companies, and others to work together to substantially and cost-effectively reduce methane, black carbon, and HFCs
- Action-oriented, ambitious, and high political interest
- 10 initiatives; Science Advisory Panel; UNEP Secretariat

Why a CCAC Oil and Gas Methane Partnership?

1) **High Impact**:

- Methane is about 15 percent of global annual GHG emissions (in terms of CO_2e)

- > 20 percent of global, anthropogenic methane emissions (second only to agriculture)



Why a CCAC Oil and Gas Methane Partnership?

2) Practical, Real-World Solutions:

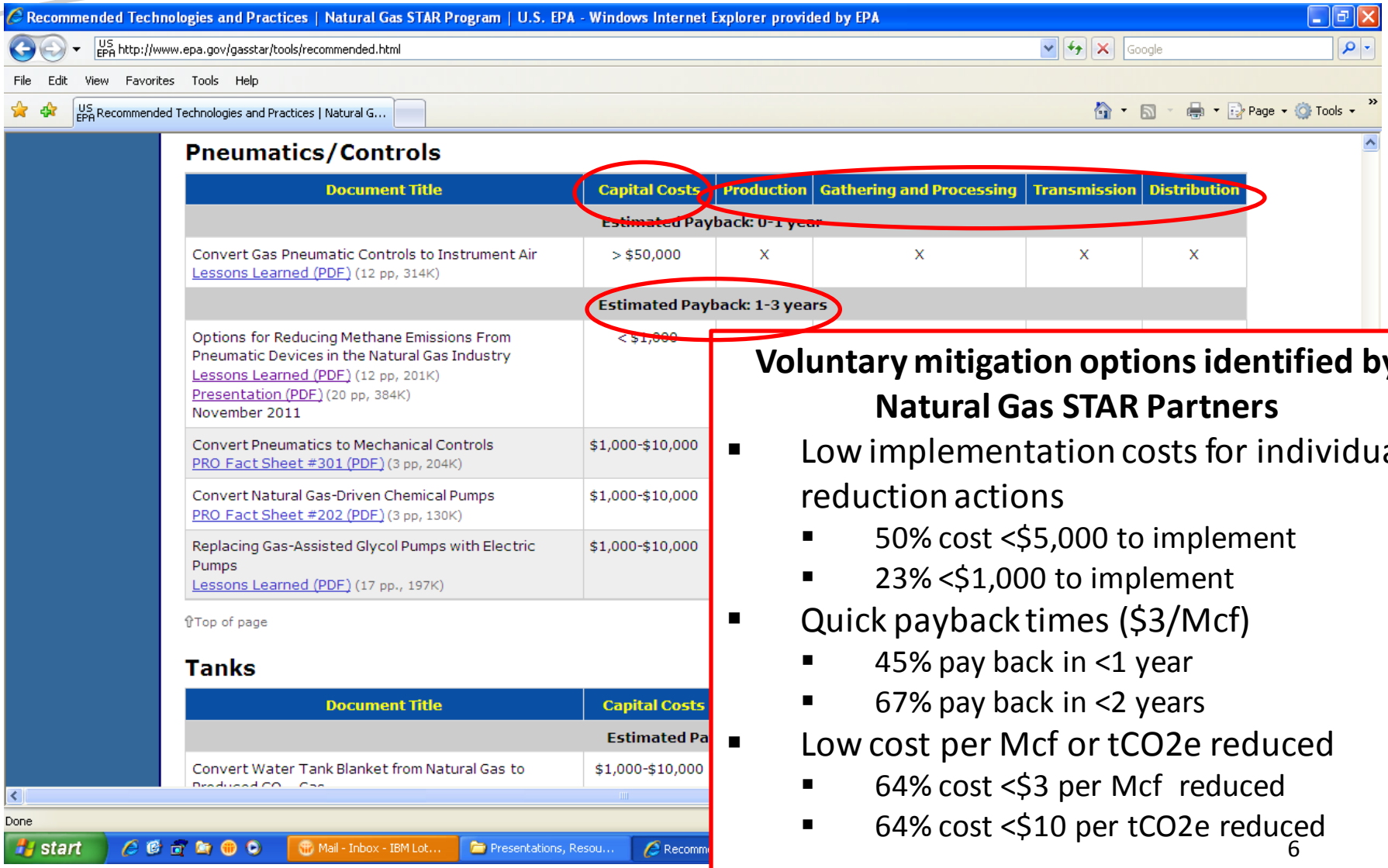
- Wide-ranging benefits from addressing methane emissions (climate, safety, valuable product, etc.)

- Existing, cost-effective reduction opportunities, relatively common practices in the industry

Benefits of Addressing Methane

- Estimated that upstream oil and gas sector methane emissions represent half of all sector emissions → opportunity for large reduction impacts
- Limiting methane leakage especially important to maintaining climate benefits of natural gas vs. other fossil fuels (coal)
- Conserving methane enhances operational efficiency and production
- Methane projects have lower costs relative to other GHG reduction options:
  - ✓ Capital cost: many projects range from tens of thousand to several million dollars, can be scaled according to available resources
  - ✓ Cost per tCO2e reduced: many projects cost <US$10/$tCO_2e$ reduced, NOT including the value of the gas that is being saved
  - ✓ Reported total and per-ton costs of flare reduction and CCS much higher
- Availability of technically and economically feasible solutions:
  - ✓ Many projects are relatively simple operational changes or maintenance activities
  - ✓ Enables progress in emission reduction efforts in the very near-term

Over 50 Cost Effective Upstream Methane Reduction Opportunities



Voluntary mitigation options identified by Natural Gas STAR Partners

- Low implementation costs for individual reduction actions
  - 50% cost <$5,000 to implement
  - 23% <$1,000 to implement
- Quick payback times ($3/Mcf)
  - 45% pay back in <1 year
  - 67% pay back in <2 years
- Low cost per Mcf or tCO2e reduced
  - 64% cost <$3 per Mcf reduced
  - 64% cost <$10 per tCO2e reduced

Why a CCAC Methane Partnership?

3) Build Upon Existing Efforts:

- CCAC Methane Partnership has been developed hand-in-hand with our GMI / Natural Gas Star / GGFR colleagues
- Opportunity to promote and showcase more comprehensive efforts to address methane emissions
- Scaling-up and accelerating real-world progress

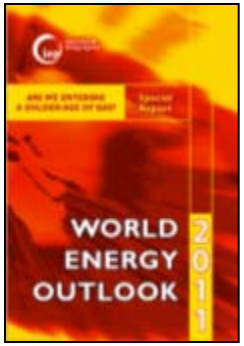
Why a CCAC Methane Partnership?

4) Increased Interest in Methane Emissions by Variety of Stakeholders:

- The time is ripe for a more robust initiative focused on reducing methane emissions

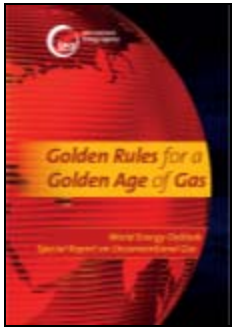
- Greater need for signal to be sent to institutional investors, organizations, and governments

Stakeholder Attention to Methane – IEA



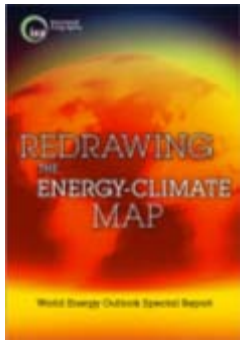
June 2011: Are We Entering a Golden Age of Gas?

"While gas is the cleanest burning fossil fuel, some greenhouse-gas emissions arise during its production and transportation, through venting, leakage, and accidents."



May 2012: Golden Rules for a Golden Age of Gas

"Unconventional gas has higher production-related greenhouse gas emissions than conventional gas…Releases of methane, wherever they occur in the gas supply chain, are particularly damaging, given its potency as a greenhouse gas."



June 2013: Redrawing the Energy-Climate Map

- Global O&G upstream industry estimated to release 45 MMT CH4 (1,115 MtCO2e) in 2010; near-term achievable upstream reductions estimated to be more than 570 Mt CO2e
- Short term reduction opportunities to optimize operational practices upstream, where sources of emissions well known

Stakeholder Attention to Methane – Investors

June 2012: Investor groups issue a joint statement "calling for companies to disclose their methane emissions and control plans . . . and implement best practice control technologies"

"The high global warming impact of methane raises significant climate change concerns, and consequent regulatory and reputation risks for the oil and gas sector."

January 2013: Carbon Disclosure Project (CDP) includes source-specific methane questions in O&G questionnaire

May 2013: Trillium Asset Management requests Range Resources Board of Directors to publish a report on how the company is "measuring, mitigating, setting reduction targets, and disclosing methane emissions"

Investors (continued)

"Ministerial support for the Climate and Clean Air Coalition is welcome and we hope will accelerate global efforts to achieve voluntary reductions by companies."

> -- Stephanie Pfeifer, Executive Director of the Institutional Investors Group on Climate Change (IIGCC), which represents 77 European investors with $10 trillion of assets under management

"Investors are concerned about the risk posed by [methane] emissions and welcome the initiative by the Climate and Clean Air Coalition to promote voluntary reductions in these emissions, which can be reduced or eliminated through application of current best practices."

> -- Chris Davis, Director of Investor Programs at Ceres and the Investor Network on Climate Risk (INCR), representing 100 U.S. Investors with $11 trillion of assets under management

Stakeholder Attention to Methane – NGOs

February 2012: Environmental Defense Fund: Greater Focus Needed on Methane Leakage from Natural Gas Infrastructure

"…methane leakage from the production, transportation and use of natural gas can offset benefits from fuel-switching."

April 2013: World Resources Institute: Clearing the Air – Reducing Upstream GHG Emissions from U.S. Natural Gas Systems

"Fugitive methane emissions reduce the net climate benefits of using lower carbon natural gas as a substitute for coal and oil for electricity generation and transportation, respectively."

March 2012: Natural Resources Defense Council: Leaking Profits-U.S. O&G Industry Can Reduce Pollution, Conserve Resources, and Make Money by Preventing Methane Waste

"Preventing the leakage and venting of methane from natural gas facilities would reduce pollution, enhance air quality, improve human health, and conserve energy resources."

Stakeholder Attention to Methane – Governments

February 2012: National Oceanic and Atmospheric Administration (NOAA): Hydrocarbon emissions characterization in the Colorado Front Range: A pilot study

"We found gas operations in the region leaked about twice as much methane into the atmosphere as previously estimated."

July 2012: European Commission Directorate-General for Climate Action: Climate Impact of Potential Shale Gas Production in the EU

"…the majority of studies suggest that emissions from shale gas are lower than coal, but higher than conventional gas . . ."

"..estimated the GHG emissions per unit of electricity generated from shale gas to be around 4% to 8% higher than for electricity generated by conventional pipeline gas from within Europe."

"If emissions from well completion are mitigated, through flaring or capture, and utilised then this difference is reduced to 1% to 5%."

Developing the CCAC O&G Methane Partnership

Doing Our Homework:

✓Extensive internal discussions and coordination, including among partners with experience in GGFR, GMI, and Natural Gas Star

✓Extensive consultations with industry on how to design successful partnership that will achieve CCAC goals and be workable for partner companies

✓Focus on value-added of CCAC

✓Did not want a lowest common denominator exercise

✓Building broad internal political support → January 2013 Declaration by 13 CCAC Ministers

CCAC Ministers Statement
(January 25, 2013)

Signed by 13 CCAC Ministers:

- Australia
- Denmark
- France
- Italy
- Nigeria
- Norway (x2)
- Sweden (x2)
- United Kingdom
- United States (x2)
- UNEP

25 January 2013

Accelerating Cost-Effective Reductions of Short-Lived Climate Pollutants from Global Oil and Natural Gas Operations

As partners to the Climate and Clean Air Coalition,[1] we declare our support for substantially reducing venting, leakage, and flaring of natural gas from oil and gas operations worldwide, and invite oil and gas companies to join us in this effort.

While recognizing existing efforts, new impetus is today needed to accelerate action. It is estimated that over 8 percent of total worldwide natural gas production is lost annually to venting, leakage, and flaring. In addition to U.S. $27 to $63 billion in energy and economic losses, these activities result in nearly two gigatons of CO_2 equivalent of greenhouse gas emissions per year, over 80 percent of which are methane emissions – making oil and gas operations the second-largest source of global anthropogenic methane emissions behind agriculture. Flaring also releases substantial amounts of black carbon, which is particularly harmful to human health and areas like the Arctic.

These emissions can be readily and cost-effectively addressed with existing technologies and practices. In fact, a significant portion of leaked and vented methane can be reduced at zero net cost. Emerging technologies are also making it increasingly possible to profitably recover, rather than flare, the valuable light hydrocarbon liquids that are often found in flare streams and that contribute most significantly to black carbon emissions.

We are inviting oil and natural gas companies to work with the Climate and Clean Air Coalition to collaboratively design mechanisms and voluntary commitments to achieve substantial global methane and black carbon emission reductions. Such reductions would increase the volume of hydrocarbons going to productive use, improve operational efficiencies, and lead to substantial climate and health benefits.

We aim to help companies accelerate and expand voluntary emission reductions where there are cost-effective opportunities to do so, and to showcase progress by companies that are already taking significant action. This effort will build upon and scale-up the achievements of the Natural Gas STAR International Program, the Global Methane Initiative, and the Global Gas Flaring Reduction Partnership.

The Coalition stands ready to mobilize needed technical and policy capacity-building, and to provide forums and opportunities to recognize efforts by leading companies.

[1] The Coalition (www.unep.org/CCAC) was launched in February 2012 with the goal of working collaboratively with countries, companies, financial institutions, and others to accelerate major, near-term reductions of methane, black carbon, and hydrofluorocarbon (HFC) emissions. These short-lived pollutants are responsible for a substantial fraction of current global warming and extensive health and environmental impacts. Since February, the Coalition has grown to more than 50 partners, established a Science Advisory Panel to ensure efforts are guided by cutting-edge science, and launched multiple initiatives to quickly reduce these emissions worldwide.

CCAC O&G Methane Partnership Overview

The CCAC Methane Partnership is designed so participating companies can more fully understand and manage their methane emissions over time, and be recognized for their past, current, and future leadership and progress

Technology application approach

Implementation flexibility

Transparency and recognition

Goal → Meaningful and Implementable Partnership

CCAC Methane Partnership

Technology Application Approach → 9 core **emission sources***

- Natural gas driven pneumatic devices, pumps
- Centrifugal compressors with wet (oil) seals
- Glycol dehydrators
- Well venting of liquids unloading
- Casinghead gas venting
- Fugitive equipment and process leaks
- Reciprocating compressor rod seal/packing
- Hydrocarbon liquid storage tanks
- Well venting/flaring during well completion for hydraulically fractured wells

* Participating companies agree to include, at a minimum, these sources within the scope of their participation in the CCAC Methane Partnership

CCAC Methane Partnership: Key Components

Develop Implementation Plan within six months of joining, describing:

- Scope of participating company's assets / operations that will participate in the initiative
- Any additional emission sources beyond the "core" types
- General criteria used to determine whether a particular methane emission reduction opportunity is feasible to implement
- Voluntary commitment to implement emission reduction opportunities identified and deemed to be feasible
- The expected pace of a company's actions under the Partnership
- A company may amend its Implementation Plan as necessary

CCAC Methane Partnership: Key Components

Conduct Emissions Survey for all participating assets or operations to:

- Identify the presence and number of core emissions sources
- Quantify the number of controlled sources and method of control
- Quantify emissions from uncontrolled sources

Evaluate and Implement Mitigation Options for each uncontrolled source, implement mitigation opportunities to the greatest extent feasible based on partner-company-specified criteria, including:

- Technical viability
- Operational safety and reliability
- Operational efficiency improvements
- Economic costs and benefits
- Environmental and safety benefits

CCAC Methane Partnership: Key Components

Annual Reporting – Submit annual progress reports:

- Assets/operations surveyed during previous year
- Results of Emissions Surveys conducted during previous year
- Results of Opportunity Evaluations conducted during previous year
  - Number of uncontrolled sources evaluated for mitigation, number of sources that will be controlled (including timing), number of sources that will not be controlled (with brief explanation)
- Technical description of methane prevention/reduction activities undertaken during the previous year
- Estimated/measured methane reductions achieved from reduction activities undertaken during the previous year
- A schedule of methane reduction activities planned for next year
- Progress towards achieving overall milestones as specified in the Implementation Plan

Streamline reporting with other programs wherever possible

CCAC Methane Partnership: Key Components

Public Reporting of Progress – CCAC will publically share company-specific information in order to recognize achievements and progress:

- Scope of company operations/assets included in the Partnership
- Progress in analyzing methane emissions and accomplishing actions and milestones described in the Implementation Plan
- Progress in mitigating methane emissions

Partner companies can add contextual information as appropriate

CCAC seeks continued improvement of Implementation Plans and Partnership overall

Partnership Added-Value

Programmatic Components		Nat'l Gas STAR Int'l	Nat'l Gas STAR (US only)	GMI	GGFR	CCAC (as proposed)
Methane Venting/Leakage Focus		X	X	X	X*	X
Global		X		X	X	X
Pre-Defined, Broad Operational Participation						X
Inventory Component						X
Implementation Plan Requirement		X	X		X**	X
Project Analysis Requirement						X
Annual Reporting Requirement		X	X			X
Annual Reporting Components	Facilities Surveyed					X
	Emissions					X
	Reductions	X	X			X
	Projects Implemented	X	X		X***	X
	Reason for Reduction Projects Not Implemented					X
	Reduction Projects Planned for Next Year					X
	Implementation Plan Progress					X

* Continuous (due to lack of flaring facilities) and non continuous venting (upstream)
** Voluntary Gas Flaring Reduction Implementation Plan (not submitted to GGFR)
*** Phase IV KPI

CCAC Partner Contributions

- **CCAC has dedicated over $1 million so far to fund the Administrator** coordinating implementation of partnership:
  - ✓ Independent, multilateral administrator
  - ✓ UNEP-hosted CCAC Secretariat
  - ✓ Ensure confidentiality of sensitive data
  - ✓ Engage with key stakeholders on an ongoing basis
  - ✓ No dues or fees envisioned from companies
  - ✓ Currently hiring – please let us know of quality candidates

- **Technical support and capacity-building** to assist companies in
  - ✓ evaluating their methane emissions
  - ✓ analyzing and implementing methane emission reduction projects

CCAC Partner Contributions (continued)

- Encourage development of **policies and practices that promote and support oil and gas methane emission reduction activities** within CCAC country borders

- **Country-to-country engagement** and sharing of best practices with other national governments and affiliated oil and gas companies to encourage and support oil and gas methane emission reduction activities outside current CCAC country borders

- Provide forums and opportunities to **recognize past, present, and future efforts by leading companies,** which includes vital messaging to institutional investors and other key stakeholders:
  - ✓ High-level recognition of leadership by participating companies – e.g., minister events, media outreach, etc.
  - ✓ Utilize / leverage high-level political interest in the CCAC

Value of Joining CCAC Oil & Gas Methane Partnership

- **Greater Methane Reductions and Climate Benefits**
  - ✓ Reduce methane emissions in systematic and comprehensive (yet flexible) manner
  - ✓ Contribute toward achieving corporate greenhouse gas reduction goals and/or sustainability objectives
  - ✓ Limiting methane emissions key to maintain climate benefits of natural gas

- **CCAC Partner Contributions** available to participating companies (e.g., technical support; policy development; country-to-country outreach; fund administrator)

- **Credibly Demonstrate Leadership and Aggressive Action**
  - ✓ Take next step by joining more robust, high-profile CCAC Methane Partnership during period of increasing focus on methane emissions;
  - ✓ High-profile opportunities to highlight past and present leadership in reducing methane emissions.

Value of Joining CCAC Oil & Gas Methane Partnership (continued)

- **Address Stakeholder Concerns and Get Ahead of Curve**
  - ✓ Help address questions about emission levels, corporate actions, and management approach by key stakeholders (e.g., national and local governments, investors, NGOs, surrounding communities, etc.)
  - ✓ Get ahead of the curve on emerging global issue

- **Help Build Industry-Wide Buy-In to Reduce Methane Emissions**

- **Cost-Effective**
  - ✓ Leverage relatively low-cost, scalable, operationally-simple actions to reduce greenhouse emissions and bring additional valuable product to market in targeted, flexible Partnership structure
  - ✓ No anticipated fees or dues

Next Steps

- **Several Companies Already in Process of Signing MOU to Join**
- **Looking for Other Companies to Become Founding Partners**
- **Break-Out Session at May Abu Dhabi Ascent**
- **Planning for High-Profile Launch Event at UN Secretary General's Leader-Level September Climate Summit**

Dave Turk
Deputy Special Envoy for Climate Change
U.S. Department of State
turkdm@state.gov, +1-202-647-9807

www.unep.org/ccac