

# Development of Oil and Gas Exploration and Production and Natural Gas Gathering and Processing Greenhouse Gas Accounting Protocols

**A&WMA Specialty Conference:**

*Air Quality Impacts of Oil and Gas Production in the Rocky Mountains*

**Session 7: Climate Policy and Oil and Gas Production**

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The Climate Registry



# Project Resources & Acknowledgements

- Project Sponsors – NMED, CARB, TCR
- Project additional funding support (Chevron, BP, Alberta Environment Ministry, API)
- WRAP staff providing project management, coordinating contractor assistance
  - SAIC and ENVIRON for technical support
  - Ross & Associates for facilitation
- Key resource is in-kind stakeholder expertise of Technical WorkGroup members
  - Expert review & frank advice



# What is a Protocol?

- Framework document that informs consistent, comparable, transparent, accurate GHG inventory methodology
  - Describes how to do reporting
    - Voluntary (The Climate Registry)
    - Mandatory (Western Climate Initiative, EPA)
    - Verification
  - Definitions
  - Scope & boundary requirements
  - Calculations (emission factors, methodologies)
- TCR **voluntary reporting** provides consistent and transparent accounting method for all users – industry, governments, non-governmental organizations
  - Complete “footprint” of GHG emissions is desired
  - Periodic updates include mandatory reporting methodologies
- **Mandatory reporting** uses highly-specified emissions calculation and reporting methods to track and manage emissions for regulatory purposes (considers accuracy, feasibility, cost, and other factors to varying degrees)

# Why Oil and Gas?

## Address “Upstream” sources & activities

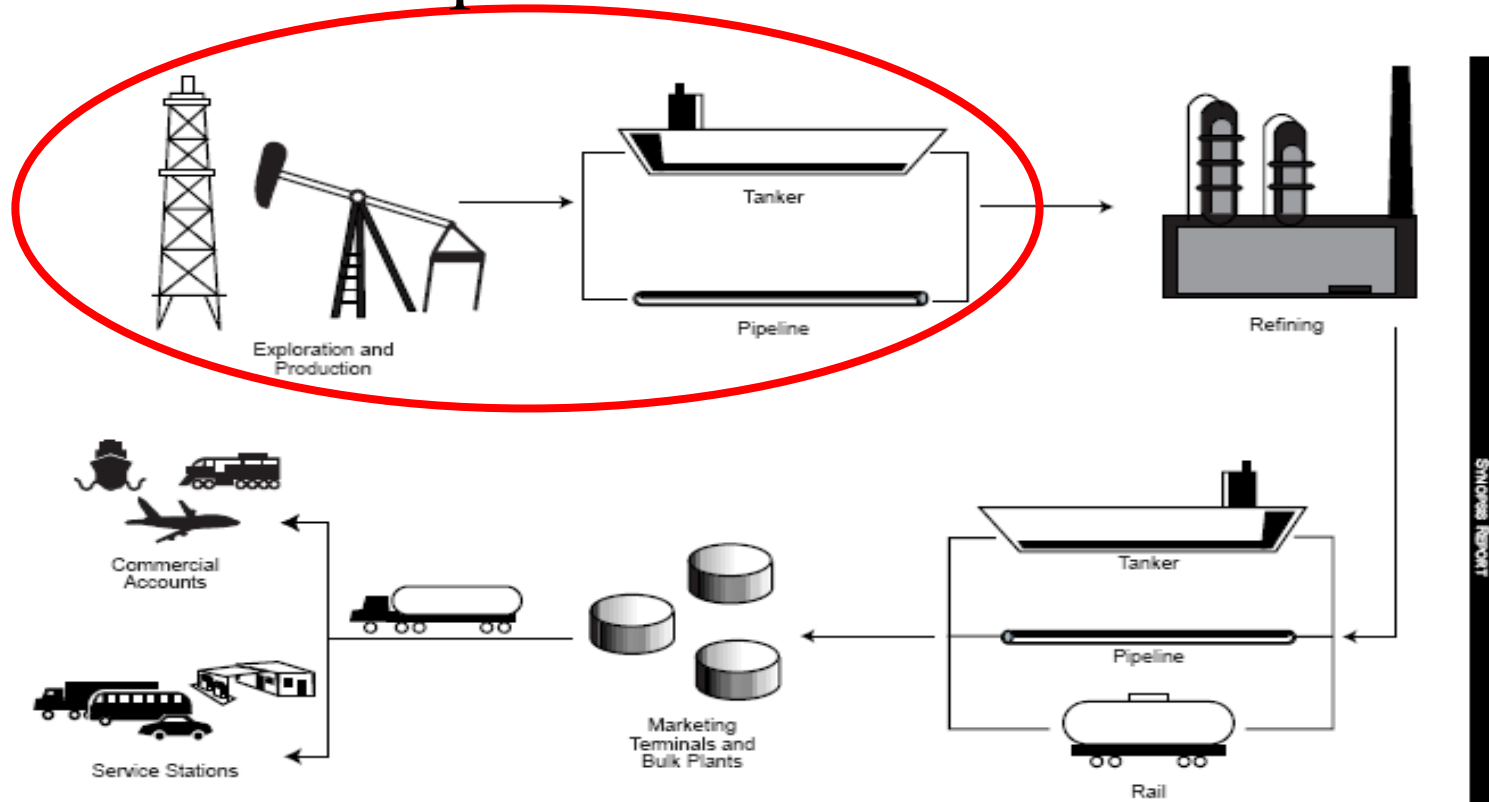


Figure 1—Major Emission Sources for an Integrated Oil Company

Figure 1—Oil and Gas Industry Schematic of GHG Emissions

Source: American Petroleum Institute: *Toward a Consistent Methodology for Estimating Greenhouse Gas Emissions from Oil and Natural Gas Industry Operations*. Page 4.

# Emissions Inventory Sources addressed in Protocols

- Gas Processing Plants
- Compressor Stations
- Wellhead Compressor Engines
- CBM Pump Engines
- Miscellaneous/Exempt Engines
- Drilling/Workover Rigs
- Salt-water Disposal Engines
- Artificial Lift Engines (Pumpjacks)
- Vapor Recovery Units (VRUs)
- Oil/Gas Well Heaters
- Hydrocarbon Liquid Storage Tanks
- Well Completions
- Fugitive Emissions
- Completion Venting
- Well Blowdowns
- Dehydration Units
- Amine Units
- Hydrocarbon Liquid Loading
- Landfarms
- Water Treatment/Injection
- Flaring
- Pneumatic Devices
- Produced Water Tanks
- Crude Oil Transportation

# Project Direction & Advisory Groups

- Project Steering Committee:
  - New Mexico Environment Department
  - California Air Resources Board
  - The Climate Registry
- Technical WorkGroup (~20 members)
  - O&G companies & associations
  - State & Province environmental quality agencies
  - State O&G commissioners
  - EPA & local agency experts
  - Environmental Groups & NGOs
- Protocol Advisory Group
  - TWG & all interested groups/individuals

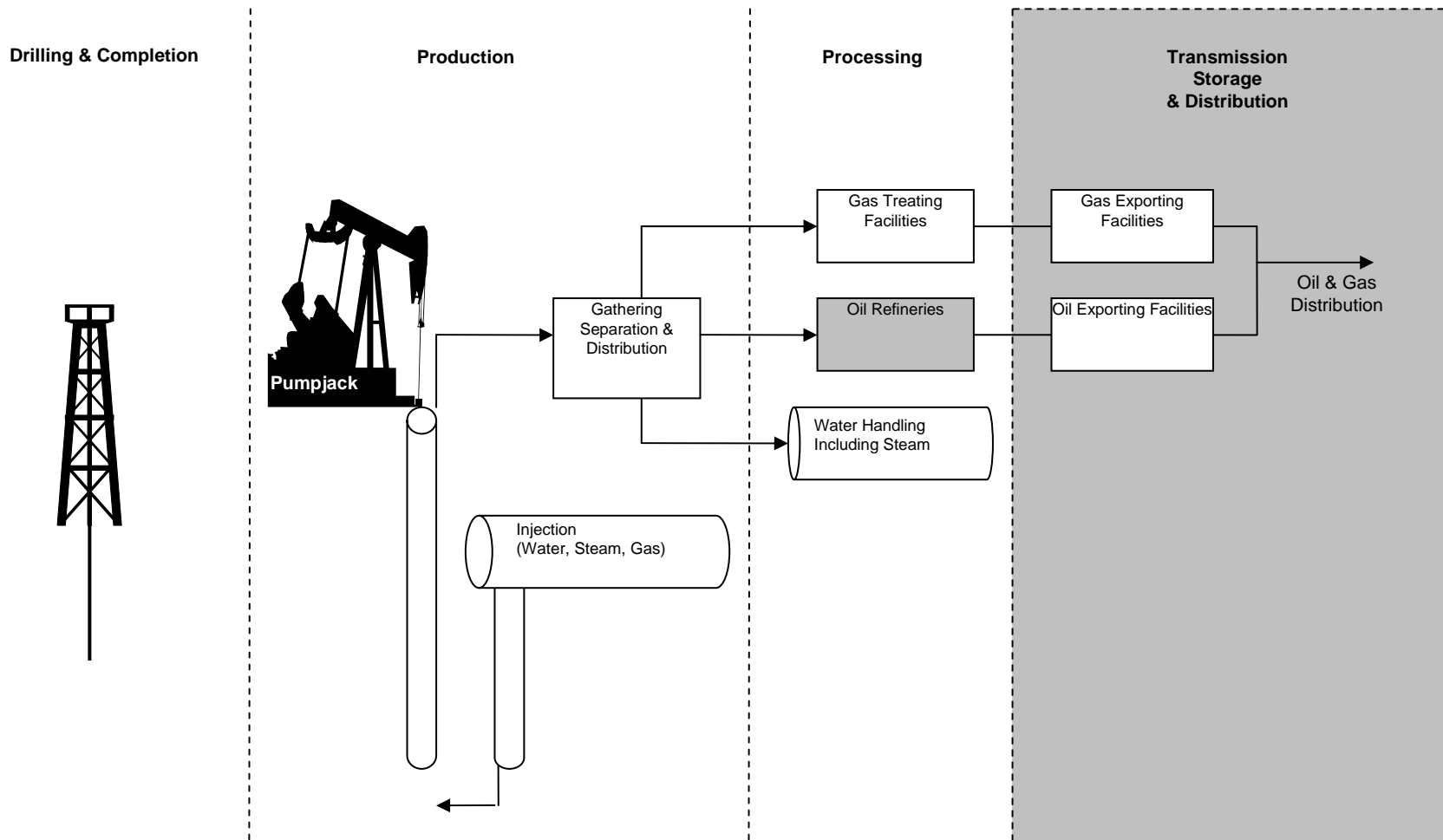
# Scope of emissions quantification methods for ranking high-priority sources & developing reporting Protocols

- North America
- All O&G source activities upstream of:
  - Oil refineries
  - Gas sale pipeline transfer points
- Types of O&G E&P
  - Conventional Oil & Gas
  - Unconventional Gas
    - Tight Sands Gas
    - Gas Shale
    - Coalbed Methane Gas
    - Oil Sands
  - Oil
    - Offshore
    - Enhanced Oil Recovery
    - Oil Sands

# Applicability of these Protocols

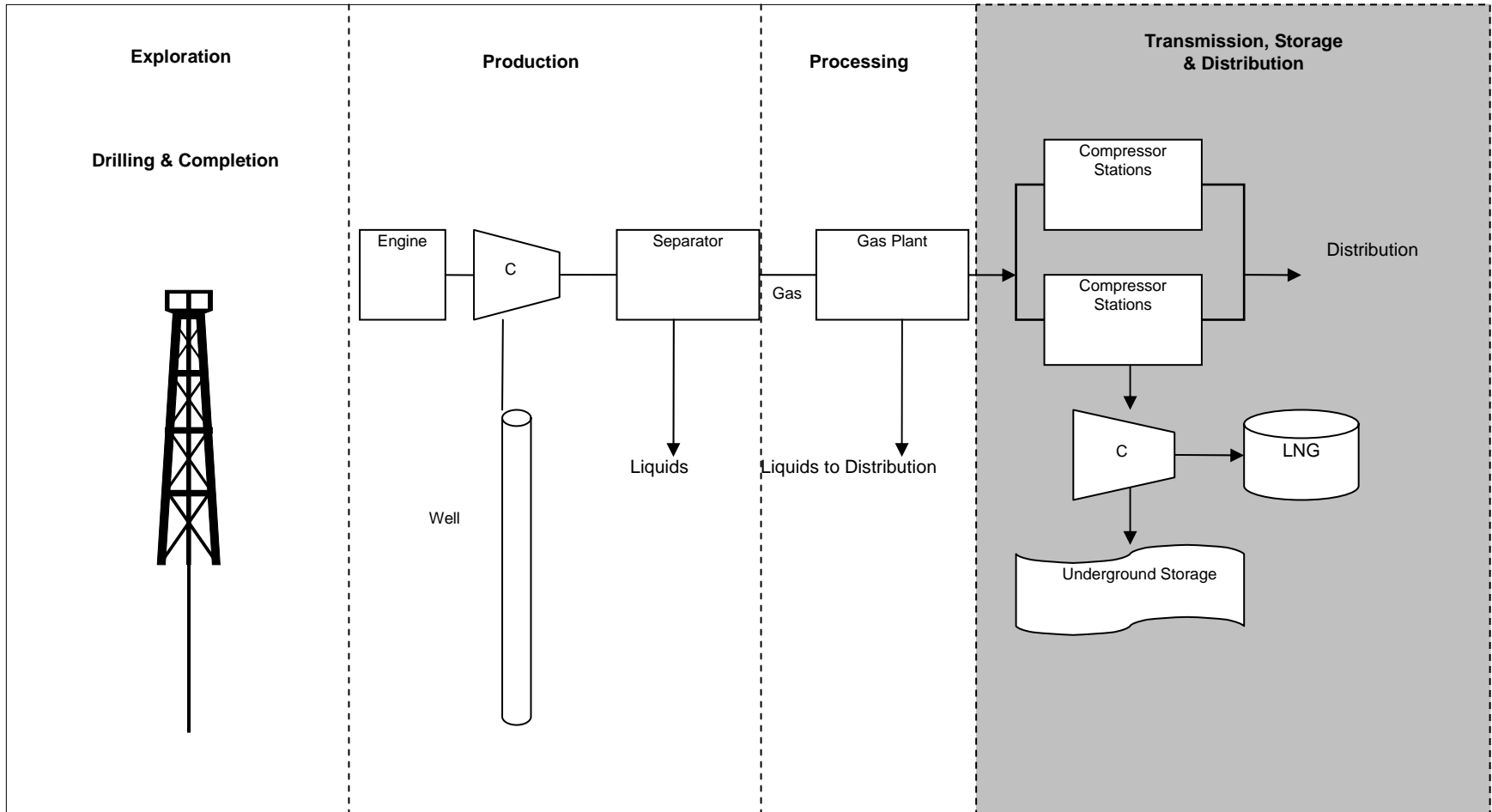
- The O&G Protocols cover all emissions sources in the **exploration and production (E&P)** sector of **oil & natural gas**
- In addition, the O&G Protocols covers all emission sources for:
  - Gas gathering, collection, and processing - through to the *tailgate* of Natural Gas Processing Plants
  - Crude Oil Transportation (including pipelines, trains, trucks, and marine vessels) to the *entry gate* of Oil Refineries
- These “Upstream” O&G Protocols do *not* cover:
  - Oil refining and the downstream distribution of petroleum products
  - The transmission, storage and distribution of natural gas downstream of the processing plant
- These “Upstream” protocols are addressed to *all* companies involved in any way in E&P, natural gas processing, and/or crude oil transportation, including:
  - Oil and Gas leaseholders
  - Support services contractors (e.g., drilling contractors)

# Oil Industry Sector



Upstream O&G Protocols do not address oil operations shown in the shaded area.

# Natural Gas Industry Sector



Upstream O&G Protocols do not address natural gas operations shown in the shaded area.

Where are we with the project now?

# Project Technical Reports

available under “Draft Documents” at:

<http://www.wrapair.org/ClimateChange/GHGProtocol/docs.html>

**09/11/09 Final Draft Oil and Gas Exploration and Production Greenhouse Gas Protocol Task 2 Report on Significant Source Categories and Technical Review of Estimation Methodologies [PDF](#)** (2.8 MB) - this document has been reviewed by the Project Technical WorkGroup and remains open for comment during the Protocol Project. Comments should be sent to Sandra Miranda of the SAIC/ENVIRON Technical Contractor Team at this E-Mail address: ([sandra.miranda@saic.com](mailto:sandra.miranda@saic.com))

**03/06/09 Final Draft Task 1 Scoping Paper for the Oil and Gas Industry [PDF](#)** (1.3 MB) - this document has been reviewed by the Project Technical WorkGroup and remains open for comment during the Protocol Project. Comments should be sent to Sandra Miranda of the SAIC/ENVIRON Technical Contractor Team at this E-Mail address: ([sandra.miranda@saic.com](mailto:sandra.miranda@saic.com))



## The Climate Registry Releases Documents for Public Comment

The Climate Registry (The Registry) has released documents for public comment and feedback:

- [Draft Oil and Gas Production \(O&GP\) Protocol](#)
- [Draft O&GP Addendum to the General Verification Protocol \(GVP\)](#)

The public comment period will be open until **5:00 PM PDT on Friday, September 25, 2009**.

### **Draft Oil and Gas Production Protocol**

The draft Oil and Gas Production (O&GP) Protocol and draft O&GP Addendum to the General Verification Protocol (GVP) are currently available for public comment. The protocol is designed as an appendix to the General Reporting Protocol (GRP), and is intended for Members with O&GP operations to use in conjunction with the GRP. The addendum is likewise designed to be used with the GVP.

Please submit comments no later than **5:00 PM PDT on Friday, September 25, 2009** to Sandra Miranda at [SANDRA.MIRANDA@saic.com](mailto:SANDRA.MIRANDA@saic.com) using the [Protocol comment template form](#) and the [Addendum comment template form](#).

Visit the [O&GP Protocol webpage](#) for additional information.

### **About The Climate Registry**

The Climate Registry is a nonprofit collaboration among North American states, provinces, territories and Native Sovereign Nations that sets consistent and transparent standards to calculate, verify and publicly report greenhouse gas emissions into a single registry. The Registry supports both voluntary and mandatory reporting programs and provides comprehensive, accurate data to reduce greenhouse gas emissions.

For information on joining The Climate Registry, please visit [www.theclimateregistry.org](http://www.theclimateregistry.org).

**available at:**

<http://www.theclimateregistry.org/resources/protocols/oil-and-gas-production-protocol/>

# Major Issues Addressed in Protocols

- Definition of a facility/Aggregation of emissions:
  - **Proposed Solution:** Dispersed emission sources to be aggregated, at a minimum, to “production field” level:
    - *Production field is a well understood, broadly accepted concept within the industry*
    - *Production fields are precisely defined by state, province, or country*
  - Reporters are given the option of aggregating multiple fields together (particularly useful, e.g., for infrastructure common to more than one field)
  - Emissions from sources corresponding to standard definition of a facility (e.g., natural gas processing plants) must be reported by facility

# Major Issues Addressed in Protocols, continued

- Direct emissions from Stationary Combustion:
  - **The Issue:** Reporting methods for calculating emissions from stationary combustion devices require, at a minimum, fuel consumption data
  - But the Upstream O&G sector is characterized by numerous small combustion devices that lack fuel consumption meters, e.g.:
    - Internal combustion engines
    - Small natural gas turbines
    - Drill rig and workover rig engines
    - Heaters and boilers
  - **Proposed Solution:** TCR Voluntary Reporting Protocol provides alternative methodologies for calculating stationary combustion emissions based on load factors and time of use:
    - *The alternatives are to be used only when fuel consumption data are lacking and*
    - *Time of use is metered or the unit runs continuously*

# Additional Issues

- Should reporting be required from drilling, completion, and workover activities (usually done by contracted firms):
  - **The Issue:** These activities that have been seen as integral and central to the oil and gas production process, **but**
  - These activities are generally outsourced by oil and gas leaseholders, and the contracting firms are [generally] highly dispersed and fragmented
  - Hence the following questions are being raised:
    - Should these emissions from drilling, completion, and workover activities be reported by O&G leaseholders?
    - When leaseholders cannot obtain activity data from their contractors, what default methodologies should they use to estimate these emissions?

# Reporting of Emissions from Drilling, Completions, & Workovers

## – Pros:

- *Emissions from drilling, completion, and workover activities can be significant (up to 10% of GHG emissions from upstream O&G operations)*
- *Understanding these emissions will help upstream O&G leaseholders understand their full GHG risk exposure (as these emissions may be required under mandatory reporting programs)*
- *While upstream O&G leaseholders do not directly control their contractors' emissions, they have the ability to select more efficient contractors and/or require that their contractors use lower-emitting technologies/fuels*

## – Cons:

- *It may be difficult to obtain the data needed to report these emissions from the contractors*
- *TCR would need to provide default methods for use when activity data is unavailable*
  - *Such methods may lead to very rough conservative emissions estimates*

# Next steps to develop a mandatory reporting protocol

- Sponsored by WCI Reporting Committee, directed effort for WCI partners
  - To be based on work already completed in the project defining what the emitting sources are, the relative importance of those emission sources, and the range of calculation approaches available
  - *Are there significant additional sources or better calculation methods?*
- “Mandatory reporting protocol and related analysis/evaluation of methods” task
  - Task to be developed by WCI
  - Work on this task would be supported through TWG review
  - To support implementation of WCI and EPA reporting requirements
    - EPA reporting rule may be final as early as Fall 2009 (does not include all sources in the Protocol Project)
    - Data collection to start (as soon as → 1/1/2010)
- Transition & Augmentation of the TWG to support this task
  - Additional TWG representatives will be needed, to reasonably broaden the “coverage” of TWG advice
    - Maintain active participation
    - Include WCI Partner representatives with upstream O&G activities in their jurisdiction
    - Fill in missing perspectives
      - Specific sectors
      - Key upstream O&G organizations

## Project Schedule

- October 2007 Scoping meeting, develop project and funding sources
- September 2008 Project start, Technical Support Contractor RFP
- October Review bids, Contractor interviews
- November Issue contract, begin regular Technical WorkGroup calls
- February 2009 Draft background technical paper, TWG meeting
- April Draft report on significant sources ranking by basin/production type for WCI partner jurisdictions
- May TWG meeting, outline for TCR protocol
- June Begin TCR protocol drafting with TWG
- July TWG meeting to review TCR protocol
- September TCR Protocol Public Comment period, additional review by TWG and Protocol Advisory Group, complete significant sources ranking report
- November TWG call to discuss comments on TCR protocol, call or meeting to discuss next steps to support WCI mandatory reporting protocol task
- January 2010 Protocol approval by TCR Board

# **Oil & Gas Exploration & Production and Natural Gas Gathering & Processing Greenhouse Gas Accounting Protocol Project**

For More Information:

Project webpage:

<http://www.wrapair.org/ClimateChange/GHGProtocol/index.html>

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