

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

**EPA Emission Inventory Conference – Greenhouse Gases Session 3
September 28, 2010
San Antonio, Texas**

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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)

Project Resources & Acknowledgements



- Project Sponsors



- Project additional funding support (Chevron, BP, Alberta Environment Ministry, API)
- WRAP staff provided project management & coordination of contractor assistance (Tom Moore & Lee Gribovicz)
 - 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

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

Why Oil and Gas?

Address “Upstream” sources & activities

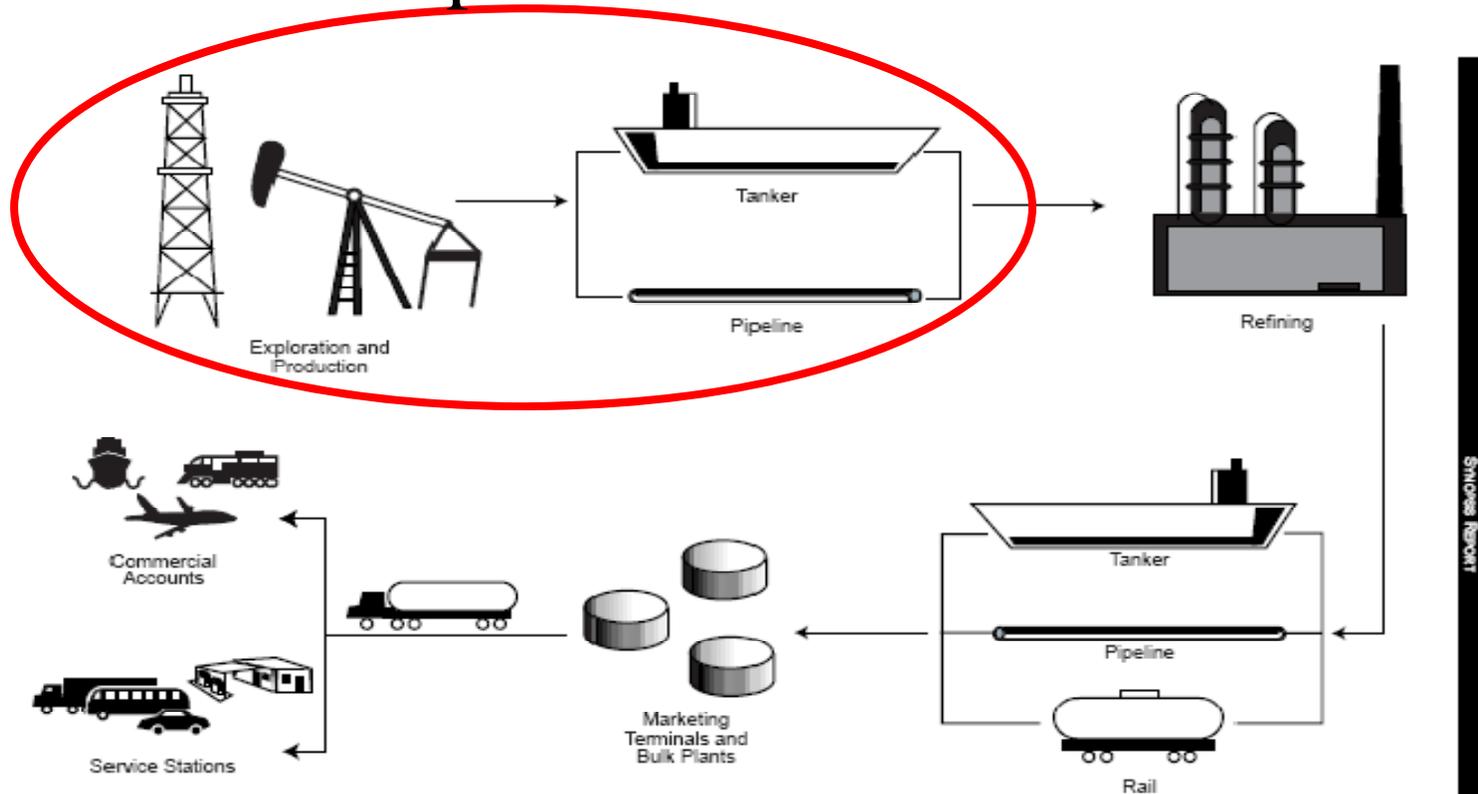


Figure 1—Major Emission Sources for an Integrated Oil Company

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

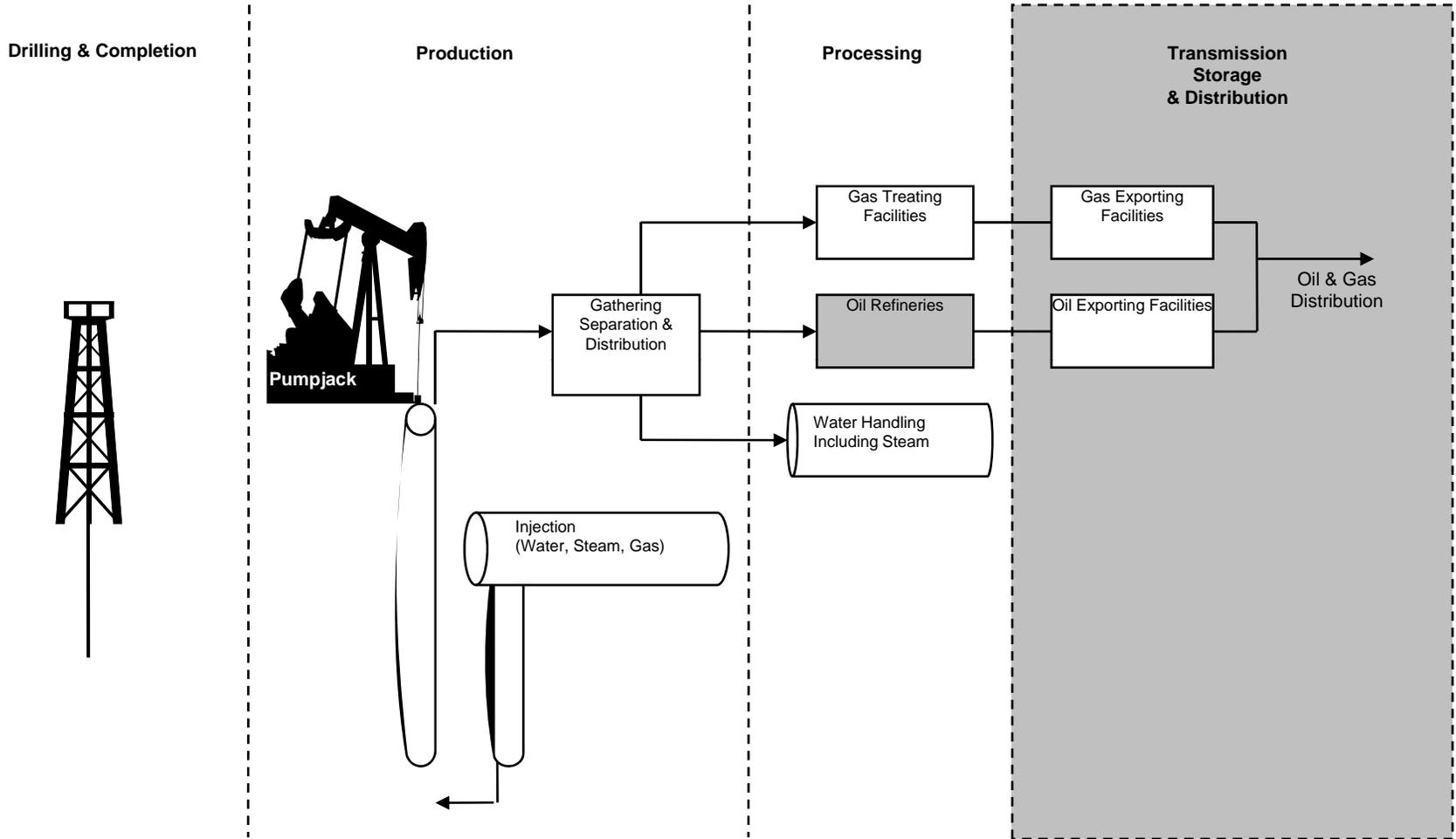
Scope of emissions quantification methods for ranking high-priority sources & developing reporting Protocols

- 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

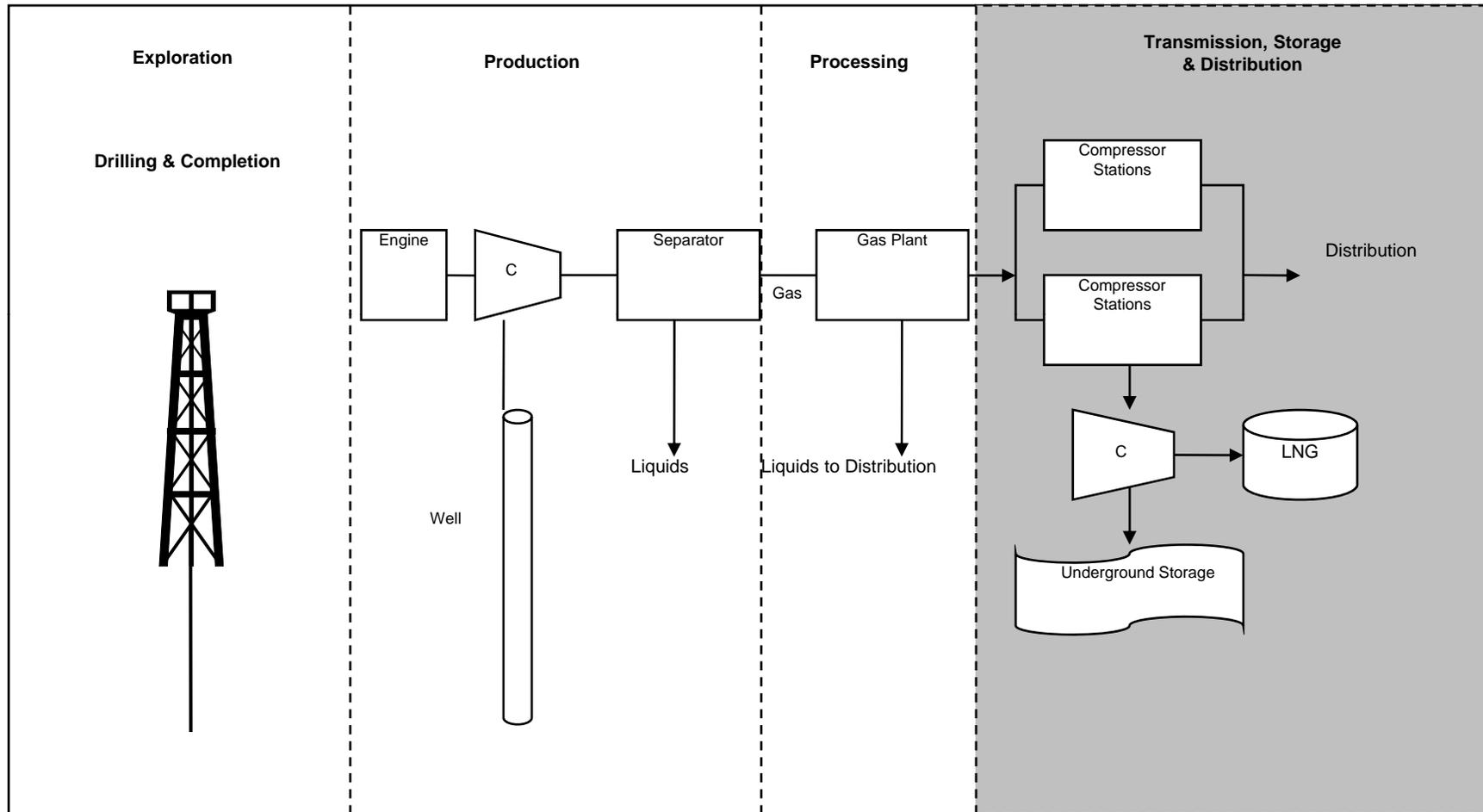
- The O&G Protocols cover all emissions sources in the **exploration and production (E&P)** sector of **oil & natural gas**
- In addition, the O&G Protocols covers all emission sources for:
 - Gas gathering, collection, and processing - through to the *tailgate* of Natural Gas Processing Plants
 - Crude 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.

Project Technical Reports and TCR Protocol complete: Available under “Final Documents” at:

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

- **April 29, 2010 - [The Climate Registry's Oil & Gas Production Protocol](#), Annex II to the General Reporting Protocol, February 2010, Version 1.0**
- **April 22, 2010 - Oil and Gas Exploration and Production Greenhouse Gas Protocol Task 2 Report on Significant Source Categories and Technical Review of Estimation Methodologies - Final Report [PDF](#) (2.8 MB) - this document has been reviewed by the Project Technical WorkGroup and addresses comments received during the Protocol Project.**
- **April 22, 2010 - Task 1 Scoping Paper for the Oil and Gas Industry - Final Report [PDF](#) (2.8 MB) - this document has been reviewed by the Project Technical WorkGroup and addresses comments received during the Protocol Project.**

Work to assist EPA and WCI with developing mandatory reporting protocols

- 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 – suitable for inclusion in the WCI cap-and-trade program
 - *Are there significant additional sources and/or better calculation methods?*
 - Transition & Augmentation of the TWG to support this work
 - Added representatives to broaden the “coverage” of TWG advice
- Started with [WCI O&G Collaborative Meeting 11/19/09](#), continued with TWG calls to review papers through May ‘10
 - Goal was to harmonize WCI reporting requirements with EPA’s
- EPA Subpart W reporting rule comment period ended early June, WCI submitted comments to advance harmonization with EPA

Western Climate Initiative recent publications

- [Transmittal Letter for WCI Comments on Proposed Mandatory Reporting for Oil and Gas Operations \(Subpart W\)](#) – June 09 2010
- [WCI Comments on the Proposed Mandatory Reporting of GHG Emissions from Proposed Reporting for Oil and Gas Operations \(Subpart W\)](#) – June 07 2010
- WCI Issue Papers:
 - [Storage Tanks](#) - March 8th
 - [Instrument Gas and Vented Methane Emissions](#) – March 8th
 - [Compressor Emissions](#) – March 2nd
 - [Sour Gas Treatment](#) – March 2nd
 - [Contractor Emissions](#) – March 2nd
 - [Dehydrators](#) – March 2nd
 - [Well Unloading](#) – March 2nd

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For More Information:

Project webpage:

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

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