Road to Climate Action Leader™: El Paso Pipeline Case Study

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Overview of El Paso Corporation

$1.3 billion of 2007 EBIT
42,000 miles of interstate pipeline with unmatched connectivity
17 Bcf/d throughput (28% of gas delivered to U.S. consumers)
Nearly $4 billion of organic projects with firm customer commitment

Premier Pipeline Franchise

Top 10 independent E&P

3.1 Tcfe YE 2007 proved reserves
Top 10 independent domestic gas producer
El Paso Corporate: Greenhouse Gas Commitment

“Assess, engage and act”
   - Commitment statement http://elpaso.com/profile/mainneighbor.shtm

Carbon Disclosure Project (CDP) 5 response
   - http://www.cdproject.net/online_response_pf.asp?cid=558&year=2

California Climate Action Registry (CCAR)
   - First company in CCAR history to certify without significant errors
   - First company to achieve Climate Action Leader™ for 2007
   - First natural gas company to join CCAR

Reported third party verified entity wide emissions to DoE’s 1605(b) program in 2007

Serves on Advisory Committee—The Climate Registry (TCR)
   - El Paso Natural Gas and Colorado Interstate Gas are TCR “Founding Reporters”

2008 Southern Gas Association (SGA) Environmental Excellence Award for leadership on GHG matters
2005 Emissions Profile For the Natural Gas Sector

U.S. GHG Emissions by Fuel/Source—2005

<table>
<thead>
<tr>
<th>Fuel/Source</th>
<th>CO2</th>
<th>CH4</th>
<th>Other Gases</th>
<th>Total CO2e</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>47.8</td>
<td>35.2</td>
<td>–</td>
<td>83.0</td>
</tr>
<tr>
<td>Processing</td>
<td>41.1</td>
<td>11.9</td>
<td>–</td>
<td>53.0</td>
</tr>
<tr>
<td>Transmission and Storage</td>
<td>32.0</td>
<td>36.8</td>
<td>–</td>
<td>68.8</td>
</tr>
<tr>
<td>Distribution</td>
<td>–</td>
<td>27.4</td>
<td>–</td>
<td>27.4</td>
</tr>
<tr>
<td>Gas Industry Total</td>
<td>120.9</td>
<td>111.1</td>
<td>–</td>
<td>232.2</td>
</tr>
<tr>
<td>U.S. Total</td>
<td>6,089.5</td>
<td>539.3</td>
<td>631.6</td>
<td>7260.4</td>
</tr>
<tr>
<td>Gas Industry Share of U.S.</td>
<td>2.0%</td>
<td>20.6%</td>
<td>0.0%</td>
<td>3.2%</td>
</tr>
</tbody>
</table>

Relative to total U.S. CO2eq emissions
- Natural Gas combustion ~ 17%
- Natural Gas Industry Share ~ 3%
- Methane emissions ~ 1.5%

Methane Emissions from the gas sector are a small fraction of the total U.S. emissions
Road to Climate Action Leader™—The Vision

- Develop a Sustainable GHG Inventory Management & Compliance Strategy
  - Certified inventory forms the bedrock of most GHG strategies
    - Basis for assessing risks and opportunities
    - Development of sustainable programs and processes
    - Recent federal and state proposals have applicability based on emission “threshold” levels

- Create Leadership Culture
  - Ensure sustainability of GHG efforts
Road to Climate Action Leader™—Why CCAR?

- Reviewed several programs
  - Rigor
  - Credibility
  - Transparency
  - Flexibility
  - Advocacy and leadership opportunities

- Signed on to CCAR on August 3, 2006
  - Participate and lead regulatory, policy, and technical discussions associated with T&D sector
El Paso’s Experience in GHG Emissions Accounting

A three year effort….
Established a process focused on continuous improvement
Road to Climate Action Leader™—
2004 GHG Inventory

2004 GHG Emission Inventory
- INGAA GHG Guidelines
- Direct and Indirect emissions from 5 El Paso pipelines
  - Operational Control
- $\text{CO}_2, \text{CH}_4, \text{N}_2\text{O}$

Third party GAP Analysis against CCAR and ISO
- Completeness
- Accuracy

Goal = develop a GHG Inventory
Road to Climate Action Leader™—2005 GHG Inventory

- Similar in scope to 2004
  → Developed internally

- Process Improvements
  → Enhanced spreadsheets
  → More comprehensive inventory of sources
  → Better Estimation
    - Vast improvement in activity data
  → Need for development of internal GHG database

- Third party pre-certification against CCAR

Goal = verifiable grade inventory
Road to Climate Action Leader™— 2006 GHG Inventories

▲ 2006 GHG Emission Inventory (CA)
   • Comprised of CA assets
   • All applicable GHGs
   • Based on CCAR guidelines & INGAA GHG Guidelines for industry specific emissions
   • CCAR Certification

▲ 2006 GHG Emission Inventory (US Operations)
   • DoE 1605(b)

Goals: (1) Submit Certified inventory to CCAR for CA Ops
      (2) Submit verified inventory to DoE 1605(b)
2006 El Paso’s GHG Emissions

Total Emissions by Emission Category*

<table>
<thead>
<tr>
<th>Emission Category</th>
<th>Emissions MMT CO₂e</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stationary Combustion</td>
<td>6.58</td>
<td>42.3%</td>
</tr>
<tr>
<td>Process &amp; Fugitive</td>
<td>8.21</td>
<td>52.8%</td>
</tr>
<tr>
<td>Mobile Combustion</td>
<td>0.05</td>
<td>0.3%</td>
</tr>
<tr>
<td>Indirects</td>
<td>0.71</td>
<td>4.6%</td>
</tr>
<tr>
<td>Total</td>
<td>15.56</td>
<td>100%</td>
</tr>
</tbody>
</table>

Total Emissions by Gas*

<table>
<thead>
<tr>
<th>GHG</th>
<th>Emissions MMT CO₂e</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH₄</td>
<td>8.70</td>
<td>55.9%</td>
</tr>
<tr>
<td>CO₂</td>
<td>6.72</td>
<td>43.2%</td>
</tr>
<tr>
<td>N₂O</td>
<td>0.14</td>
<td>0.9%</td>
</tr>
<tr>
<td>HFCs</td>
<td>0.001</td>
<td>0.01%</td>
</tr>
<tr>
<td>Total</td>
<td>15.56</td>
<td>100%</td>
</tr>
</tbody>
</table>

*As reported to 1605(b), does not include ANR
GHG Emission Categories and Sources: Natural Gas Transmission

**Direct Emissions**
- **Stationary Combustion**
  - Reciprocating IC engines
  - Turbines
  - Process heaters
  - Process boilers
  - LNG vaporizers
  - Flares/Thermal Oxidizers
- **Mobile combustion**
  - Vehicle fleet
  - Aviation fleet
- **Process/Vented**
  - NG blowdowns
  - Dehydrators
  - Amine units
  - Pneumatic devices
  - Gas-assisted pumps
  - Work-over & Completion Venting
  - Storage Tanks

**Fugitive**
- Transmission and Gathering Pipelines
- Transmission/Storage Station Piping Components
- Reciprocal and Centrifugal Compressors
- M&R Stations
- Storage Wells
- Vehicle Fleet A/C Systems
- Process Plant piping & components

**Indirect Emissions**
- Generation of electricity used by:
  - Stations/office buildings
  - Electric driven compressors
  - Electric driven pumps (pump-jacks)

*Vast number of discrete but “small sources”*
Relative to electric sector, GHG inventorying is a “new” technical challenge
  → 100% of the emissions non directly measured (non CEMS)

Several thousand emission sources for a single company

Over 50% of the emissions profile is methane

High uncertainty of fugitive emission factors
  → Outdated and unrepresentative
    - Not “cap-and-trade” quality

Facility level versus emission unit level combustion (CO2) emissions
  → Lack of fuel metering at every unit

Computation of Indirect Emissions can be time consuming

Frequent acquisition/divestiture activity

Complex ownership

Remotely located
  → Data collection issue
Road to Climate Action Leader™—Lessons Learned (Process)

- Efficient data management → GHG database
- Improve internal processes for activity data and enhance emissions factors for GHG inventory
- Collateral benefits
  - → LAUF Reductions
  - → Fuel efficiency initiatives
Road to Climate Action Leader™—Lessons Learned (Management)

- Management support at Board and Executive Committee level is vital
  - Clear defined goals and roles/responsibilities
    - Footprint? <<< Verifiable/Certifiable grade?
  - Level of effort is directly proportional to the goals chosen
- Communicate inventory goals and needs to Executives, mid-level management and other stakeholders
- Departmental/cross-functional team with a reporting structure and budget
- Inventory Management Plan and Technical Manual
  - Document policies, procedures, and estimation techniques
- GHG IMS or Not?
- Recognition of team efforts!
El Paso’s GHG EI Reporting Recommendations

- Consistent “national” program
  - Single registry
- Consider the majority of the sources (outside power) have limited experience
- Use experience from existing programs
  - CCAR, TCR, CARB: AB32, and 1605(b)
- Seek input from industry “leaders” who have undertaken inventory development
- Limit to Scope I emissions
- Phased approach
- Reporting no more than once a year
- Establish “de-minimis” limit similar to CAA’s Title V program
- Verify or establish quality assurance programs/protocols
QUESTIONS??

THANK YOU FOR THE OPPORTUNITY TO PRESENT EL PASO’S ACCOMPLISHMENTS