API Climate Challenge Program

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Background

- **API**: 400 member companies engaged in all aspects of the petroleum industry
- API supports Administration’s approach
  - Scientific investigation to reduce uncertainties
  - Near-term cost-effective voluntary actions
  - Long-term technology development – innovative, cost-effective GHG reductions
- Petroleum Industry Sector Partnership – 2/12/03
API Climate Challenge Program

**Goal:** 100% of API oil and gas sector membership will develop GHG management plans with one or more of these programs:

- *Climate Action Challenge* - near-term industry GHG intensity reduction
- *Climate R & D Challenge* – long-term technology development to reduce GHG intensity
- *Climate GHG Estimation & Reporting Challenge*
I. Climate Action Challenge

- Improve member’s aggregate refinery energy efficiency by 10% from 2002-2012.
- Monitor & report on implementation of the following GHG reduction efforts:
  - Reducing methane venting and flaring from oil/gas exploration and production
  - Expanding use of CHP at refineries and oil and gas production operations
GHG Reduction Efforts (cont’d)

- Reducing methane emissions from transportation/distribution of natural gas
- Reducing CO2 venting – e.g., amine acid gas separation plants
- Expanding carbon capture, including sequestration
- Improving energy efficiency while meeting energy needs of expanding economies
- Increasing participation in cost-effective voluntary programs e.g., Natural Gas STAR and CHP Challenge
II. Climate R & D Challenge

- Technology R&D to reduce GHG intensity (long-term):
  - Advanced, energy efficient technologies as part of a long-term, economically viable strategy
  - Alternative energy technologies (hydrogen, wind, solar, geothermal)
  - Alternative motor fuels and advanced vehicle and engine technologies
  - CO2 capture, sequestration/utilization technologies
III. GHG Estimation & Reporting Challenge

- API Member companies pledge to:
  - Utilize API *Compendium of GHG Emission Estimation Methodology* for worldwide operations
  - Participate in an expanded API GHG Benchmarking Program using API *Compendium*
  - Report US GHG emissions to API for consolidation and aggregate reporting

- Members encouraged to participate in DOE/EIA 1605(b) program.
Special Study: Quantifying Emission Reductions

- Promote industry best practice
  - Understand emission reduction potential associated with specific activities
- Assess Compendium
  - Estimate emissions from specific GHG emission reduction project examples
  - Identify upgrades to address needs identified as part of this GHG emission reduction project
Reduction Case Studies

- Cogeneration
- Capturing production tank flashing losses
- Dehydration process optimization
- Fugitive leak detection and repair (LDAR)
- Pneumatic device retrofit
- Refinery heater/boiler combustion tuning
- Flaring production vent streams
- Geologic sequestration
# Summary of Pneumatic Device Case Study Reductions

Baseline emissions & 23,444 tonnes CO$_2$ Eq.

<table>
<thead>
<tr>
<th>Potential Reduction Scenarios</th>
<th>Estimated % Emission Reduction</th>
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<tbody>
<tr>
<td>Improved maintenance</td>
<td>35%</td>
</tr>
<tr>
<td>Replace high-bleed with low-bleed devices</td>
<td>93%</td>
</tr>
<tr>
<td>Retrofit high-bleed to eliminate pilot bleed rate.</td>
<td>99%</td>
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<tr>
<td>Replace natural gas with compressed air</td>
<td>99.5%</td>
</tr>
<tr>
<td>Replace high bleed devices with self-contained devices</td>
<td>100%</td>
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Next Steps (1-2 years)

- Develop suitable refinery efficiency metric
  - How does API goal contribute to President’s 18% GHG intensity improvement target?
- Develop international GHG reporting protocol (IPIECA/API/OGP)
  - Strive to harmonize emissions methodologies (e.g., CAPP, ARPEL, E&P Forum)
  - Liaison with ISO, WRI, etc.
Next Steps (cont’d)

- Expand **Compendium** activities
  - Publish revised *Compendium* & Reduction Case Studies
  - Develop GHG aggregation and reporting format
  - SANGEA™ GHG calculation tool (ChevronTexaco)
- QA/QC of member submittals to ensure data quality prior to public release
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