Proposed Refrigerant Management Program

Regulation for Reducing Leaks of Potent Greenhouse Gases from Commercial Refrigeration Systems

December 9-10, 2009
Overview

• Summary
• High-global warming potential (GWP) sector
• Stakeholder process
• Proposed regulation
• Environmental and economic impacts
• Rule implementation
• Conclusions and recommendation
Summary

• One of the largest GHG emission reduction strategies from Scoping Plan

• Focuses on leak inspection & repair

• Repairing leaks saves businesses money

• Comprehensive implementation and outreach plan
High-Global Warming Potential (GWP) Sector
What Are High-Global Warming Potential (GWP) Gases?

• Typically thousands of times more potent than carbon dioxide ($\text{CO}_2$)

• Hydrofluorocarbons (HFCs) and ozone-depleting substances (ODS)

• Other substances not used for refrigeration (halons, $\text{SF}_6$, others)
High-GWP GHG Sector Emission Sources (BAU 2020) 47 MMTCO₂E

- All Others: 30%
- Large Commercial Refrigeration: 34%
- Mobile AC & Transport: 17%
- Small Commercial AC & Refrigeration: 17%
- Large Commercial AC: 2%
High-GWP: Fastest Growing Sector of GHG Emissions

High-GWP* Sector Growth 1990 – 2020 (MMTCO$_2$E)

* Hydrofluorocarbons (HFC); Perfluorocarbons (PFC); Sulfur hexafluoride (SF$_6$)
Stakeholder Process
Stakeholder Process

- Worked closely with facility owners and operators, refrigerant manufacturers and distributors, US EPA, CAPCOA, NGOs, trade associations, technicians, and contractors
- Five technical workgroup meetings
- Seven public workshops (So. Cal, Central, N. Cal)
- Technician and service contractor surveys
- Site visits
- Independent stakeholder meetings
Extensive Outreach

• Top-down outreach strategies
  – Trade associations (67)
  – Small business associations (120,000+ members)
  – Agricultural industry associations (21)
  – Government agencies (cities, counties, air districts) (85)

• Bottom-up outreach strategies
  – Refrigeration and AC contractor/technician surveys
  – Business surveys
  – Facility outreach pilot study direct business contacts (200)
Key Themes of Stakeholder Input

- Focus on obtaining the greatest emission reductions at the least costs
- Emphasize common-sense “Best Management Practices (BMPs)”
- Level the playing field (BMPs apply to all)
- Complement existing federal and local refrigerant management rules
Proposed Regulation
Regulation Focuses on Large Commercial Refrigeration Systems

• Systems that require more than 50 lbs of refrigerant

• 50 lbs is equivalent to:
  – 100 household refrigerators
  – 23 stand alone produce coolers
Businesses Affected

*Rule generally applies to:

- Supermarkets and grocery stores
- Food and beverage processors
- Cold storage warehouses
- Industrial process cooling

Businesses generally not affected:

- Bars and restaurants
- Gas stations
- Liquor stores
- Bakeries
- Office buildings

* These businesses are also affected by federal rules and/or SCAQMD Rule 1415 requirements, including leak inspection, repair, and fees, specific to ozone-depleting refrigerants.
Key Provisions of Proposed Regulation

- Refrigerant leak inspection & repair
- Required service practices
- Refrigerant sale, use, and disposal
- Facility registration, reporting, & fees
## Leak Detection & Monitoring

<table>
<thead>
<tr>
<th>Refrigerant Charge Size Category</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilities with large system(s)</td>
<td>Automatic leak detection system</td>
</tr>
<tr>
<td>(≥ 2,000 lbs)</td>
<td></td>
</tr>
<tr>
<td>Facilities with medium system(s)</td>
<td>Quarterly inspection</td>
</tr>
<tr>
<td>(200 -&lt;2,000 lbs)</td>
<td></td>
</tr>
<tr>
<td>Facilities with small system(s)</td>
<td>Annual inspection</td>
</tr>
<tr>
<td>(&gt;50 -&lt;200 lbs)</td>
<td></td>
</tr>
</tbody>
</table>
Refrigerant Leak Detection Methods

Portable Leak Detector (Sniffer)

Additional refrigerant needed (system leaked refrigerant)
• Refrigerant leak repairs
  – U.S. EPA certified technician
  – Up to 14 days to repair leaks
  – Verification tests
  – Extensions under certain conditions
• Retrofit or retirement plan for systems that can’t be repaired
Required Service Practices

- Complements existing federal rules
  - Leak repair by a U.S. EPA certified technician
  - No venting
  - Proper recovery of refrigerant
- No topping off without leak repair
- Evacuate spent cylinders
Refrigerant Sale, Use, and Disposal

• Extend existing requirements to all high-GWP refrigerants:
  – Refrigerant sales to U.S. EPA certified technicians
  – Refrigerants sold must be approved by U.S. EPA or Executive Officer

• Recordkeeping and reporting requirements for distributors, wholesalers, and reclaimers
Average Refrigerant Leaks from Facilities are Substantial

<table>
<thead>
<tr>
<th>Refrigerant Charge Size</th>
<th>Emissions - MTCO$_2$E/year (per facility)</th>
<th>Equivalent Vehicle Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilities with Large Systems ($\geq$ 2,000 lbs)</td>
<td>2,500</td>
<td>5.3 Million</td>
</tr>
<tr>
<td>Facilities with Medium System(s) (200-$&lt;$2,000 lbs)</td>
<td>670</td>
<td>1.5 Million</td>
</tr>
<tr>
<td>Facilities with Small System(s) (50-$&lt;$200 lbs)</td>
<td>80</td>
<td>180,000</td>
</tr>
</tbody>
</table>
## Facility Registration, Reporting, and Fee Requirements

<table>
<thead>
<tr>
<th>Refrigerant Charge Size</th>
<th>Number of Facilities</th>
<th>Registration and Annual Reporting Deadline*</th>
<th>Annual Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilities with Large Systems (≥ 2,000 lbs)</td>
<td>2,000</td>
<td>March 1, 2012</td>
<td>$370</td>
</tr>
<tr>
<td>Facilities with Medium System(s) (200-&lt;2,000 lbs)</td>
<td>8,500</td>
<td>March 1, 2014</td>
<td>$170</td>
</tr>
<tr>
<td>Facilities with Small System(s) (50-&lt;200 lbs)</td>
<td>15,500</td>
<td>March 1, 2016 One-time registration/ No reporting</td>
<td>$0</td>
</tr>
</tbody>
</table>

* For large and medium systems, annual reports are due March 1 of each year.
Fees Support Program Implementation

- Fee used for outreach, training, enforcement, and administration
- Facility fees primarily based on:
  - average inspection frequency
  - average number of systems/facility
  - average time per inspection
- Fee well under typical air permit
- High-GWP gases not subject to AB 32 administrative fee
Key Provisions Timeline

- Rule outreach begins immediately after approval
- Leak detection and monitoring and leak repair become effective on January 1, 2011
- Facilities follow required service practices (no venting, recover refrigerant)
- Gradual phase-in of facility registration, annual reporting, and fees from 2012 – 2016
Environmental and Economic Impacts
## 5th Largest GHG Reduction Measure

<table>
<thead>
<tr>
<th>Reduction Measure</th>
<th>Reductions in 2020 (MMTCO$_2$E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB 32 Reduction Measure</td>
<td></td>
</tr>
<tr>
<td>Vehicle GHG Standards (Pavley I and II)</td>
<td>31.7</td>
</tr>
<tr>
<td>Energy Efficiency</td>
<td>26.3</td>
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<tr>
<td>Renewable Energy Standard</td>
<td>21.3</td>
</tr>
<tr>
<td>Low Carbon Fuel Standard</td>
<td>15</td>
</tr>
<tr>
<td>Refrigerant Management Program</td>
<td>8.1*</td>
</tr>
</tbody>
</table>

* Includes 0.9 MMTCO$_2$E of ozone depleting substance reductions
Emission Reductions are Significant

18 million barrels of oil

8.1 MMTCO\textsubscript{2}E is equivalent to:

1.4 million vehicles removed from road

Energy used by 1.5 million homes/year
Economic Impacts

• Leak detection/repair requirements add cost to business
• Costs offset by savings from reducing leaks (less refrigerant purchased)
• Average savings: Cost-effectiveness = -$2 per MTCO₂E reduced (negative cost)
• Several businesses already use best management practices
Proposed Modifications (15-Day Changes)

- Exempt military tactical equipment
- Make clarifying edits
Rule Implementation

• Continue to work with stakeholders
• Implementation advisory workgroup
• Ongoing direct outreach to business
• Training program (e.g., business, districts)
• Develop outreach materials
• Develop online reporting database
Conclusions & Recommendation

• Significant emission reductions
• Developed through extensive outreach
• Relies on the use of proven best management practices to reduce leaks
• Cost-effective
• Meets all legal requirements of AB 32
• **Staff recommends Board adoption with proposed modifications**