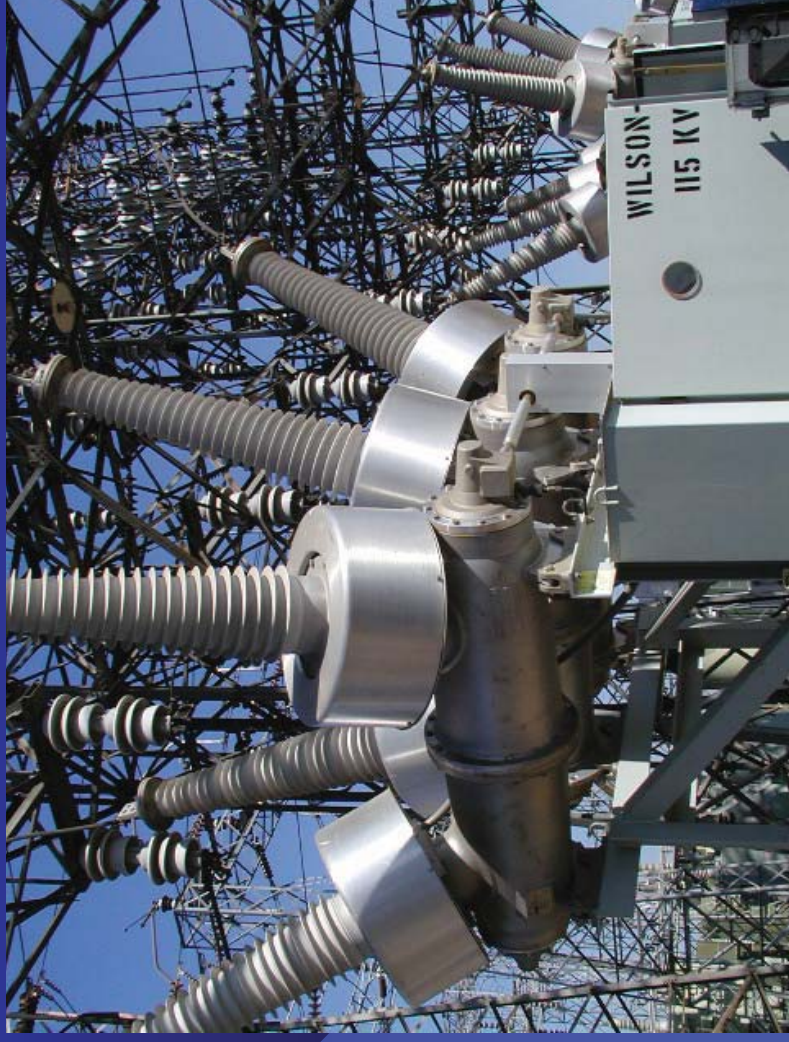


CA Climate Registry Certification of SF6 Emissions from High Voltage Electrical Equipment

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Conference on SF6
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Agenda:

1. PG&E & the Environment.
2. Advanced Specialty Gases.
3. California Climate Registry.
4. EPA's Annual Emission Estimate Procedure under the MOU.
5. Certification Process under the California Climate Registry.

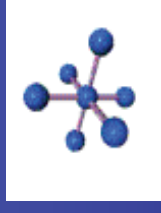
PG&E & the Environment:

PG&E Corporation is committed to being an environmental leader by providing safe, economical, and reliable products and services in a responsible and environmentally sensitive manner.

PG&E has a history of participating in Win-Win voluntary programs:

- Energy Star Program
- 1605b Program
- CA Climate Action Registry

Advanced Specialty Gases:



- Industry leader in the packaging and distribution of Specialty Gases including Pure Gases, SF6, Halocarbons, and Custom Specialty Gas Mixtures.
- Full service company providing Domestic and Worldwide shipping via Ground, Air or Sea. ASG has extensive knowledge in overseas hazardous materials logistics.

What is California Climate Registry

- Voluntary Registry.
- Registered data will be recognized and accepted by AB 32 or any future reporting program.
- Emission reductions submitted and registered may become credits once GHG emission limits are implemented.
- Gold Standard for GHG Reporting, (Specific protocols, 3rd party auditing)

Background California Climate Registry

- Use any year since 1990 as baseline
- Requires reporting of only CO₂ for the first 3 years, then all 6 Kyoto gases
- Secure online reporting tool
- Annual cycle
 - Initial electronic report by August 31st
 - Third-party certification reported by December 31st
- Join before 12/31/06 & report under known procedures.

EPA's SF6 MOU

- Voluntary Memorandum of Understanding between EPA & Individual Utilities to reduce SF6 emissions from transmission equipment, started 1997;
- Why? SF6 has a GHG potency ~22,000 times that of CO2.

EPA's MOU SF6 - What's Required by the Utility?

- Develop & implement SF6 handling policies & procedures.
- Establish Emission Reduction Goals.
- Complete the Annual Inventory & Calculate the Emission Estimate.

EPA's Annual Emission Estimate Procedure (AEEP) under the MOU

- Complete on EPA Provided Form/ Spreadsheet.
- Based on a mass-balance approach.
- Can be confusing....

Certification is all about the paperwork...

AEEP: Cylinder Inventory

A. Cylinder Inventory Change:

SF6 in Inventory Jan 06, pounds
-SF6 in Inventory Jan 07, pounds

(Inventory pertains to Gas in Cylinders, On-Site Tanks, etc.)

AEEP: Inputs

A. Cylinder Inventory Change:

SF6 in Inventory Jan 06
- SF6 in Inventory Jan 07

B. Purchases & Acquisitions, pounds (Inputs):

- +Purchases from producers or distributors
- +SF6 provided with new equipment
- +SF6 returned after off-site recycling

AEEP: Outputs

B. Purchases & Acquisitions (Inputs):

- +Purchases from Producers or distributors
- +SF6 provided with/in new equipment
- +SF6 returned after off-site recycling

A. Cylinder Inventory Change:

- SF6 in Inventory Jan 06
- SF6 in Inventory Jan 07



C. Sales/ Disbursements, pounds (Outputs):

- +Sales, including gas remaining in sold equipment
- +SF6 returned to supplier
- +SF6 sent for destruction
- +SF6 sent for off-site recycling

Leak Rate: Equipment Changes

B. Purchases & Acquisitions (Inputs):

- +Purchases from Producers or distributors
- +SF6 provided with/in new equipment
- +SF6 returned after off-site recycling

A. Cylinder Inventory Change:

- SF6 in Inventory Jan 06
- SF6 in Inventory Jan 07

C. Sales/ Disbursements (Outputs):

- +Sales, including gas remaining in sold equipment
- +SF6 returned to supplier
- +SF6 sent for destruction
- +SF6 sent for off-site recycling

D. Nameplate Capacity Changes (Outputs):

- Operational Capacity of New Equipment
- Operational Capacity of Retired/Sold Equipment

AEEP Final Calculation:

$$\begin{aligned} &+ \text{A. Cylinder Inventory Change} \\ &+ \text{B. Purchases \& Acquisitions (Inputs)} \\ &- \text{C. Sales/ Disbursements (Outputs)} \\ &- \text{D. Nameplate Capacity Changes (Outputs)} \\ &= \text{MOU Annual SF6 Emission Rate} \end{aligned}$$

Annual Leak Rate Calculation:

Annual SF6 Emission Rate*100/
Year End Nameplate Capacity

(It's a percent)

Certification Under the California Climate Registry

- Develop a procedure detailing where the “numbers” come from.
- Ensure that base/raw SF6 data exists and that is retrievable.
- Finally, prepare for the outside audit on Procedures, Data Collection, and Backup Data.

Emission Calculation Procedure

- Annual Inventory, SF6 Purchases, Recycle Returns, and Heel Credits.
- SF6 Equipment Changes, Breaker Retirement and Nameplate Capacity Changes.

Base/Raw SF6 Data

Procedures for Data... Binder Must Include:

- All forms, spreadsheets & purchase records containing the “raw” SF6 data.
- Where these original records are kept.
- Who is responsible for keeping them.
- Example of each form, spreadsheet & purchase record containing the “raw” SF6 data.

Certification by Outside Audit

- The procedure & example data is kept in annual binder for ease of review.
- RY 2004 was submitted to 3rd Party Auditor in early 2005.
- Expected – to Modify/Improve based on the auditor’s comments.
- PG&E was certified in mid 2005, as submitted.

Lessons Learned:

- Keep Records! (SAP helped)
- Clearly label forms, spreadsheets, tables and even columns within tables.
- Inform the SF6 Reduction Team early.
- Certification was easier than expected.

Questions?

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