

SF6 Vendor provided Services during Equipment Commissioning, Decommissioning and SF6 Reclaiming

Charlie Boice

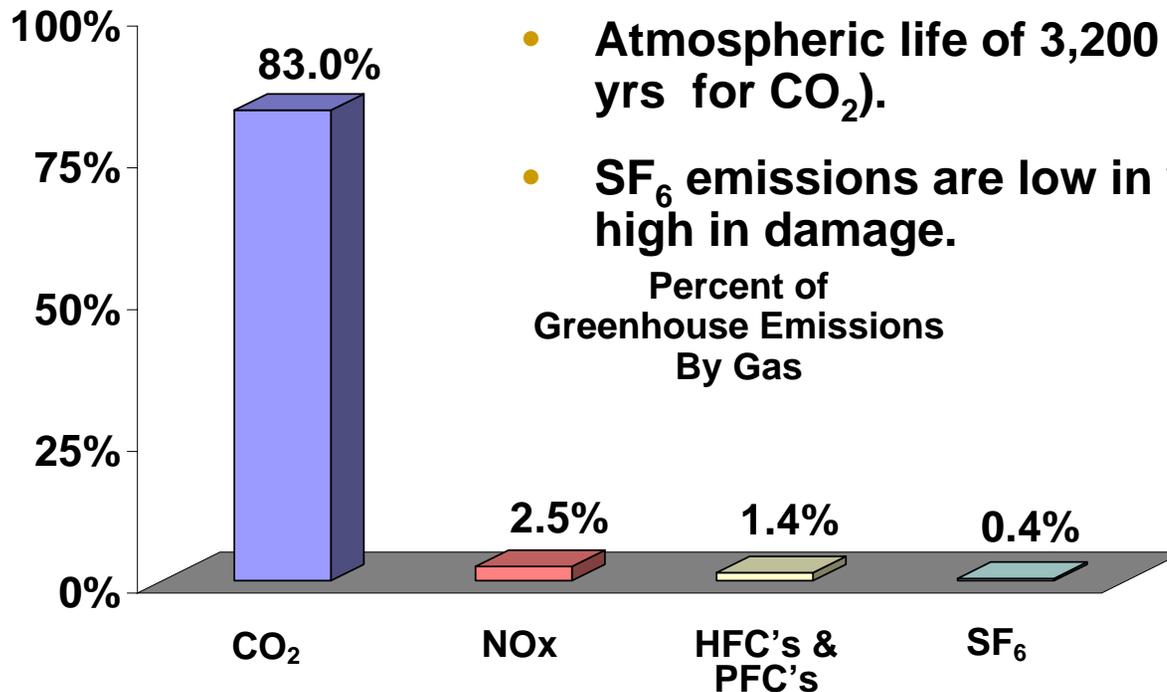
SF6 Workshop

Phoenix, AZ

February 4, 2009

SF₆ – Greenhouse Gas Impact

- GWP (Global Warming Potential) is 23,900 over 100 years (vs. CO₂ at 1).
- 1 lb SF₆ = 11 tons CO₂ (Global Warming Impact).
- Atmospheric life of 3,200 years (vs. 12 yrs for CO₂).
- SF₆ emissions are low in volume but high in damage.



USEPA SF₆ Emission Reduction Partnership for Electric Power Systems

- Voluntary Program initiated in 1999
 - 81 utilities have joined
 - Collectively have reduced emissions by 1.2 million lbs
- Benefits of participation
 - Cost savings
 - Positive environmental impact
 - Positive public relations
 - Good forum for sharing best practices



USEPA SF₆ Emission Reduction Partnership for Electric Power Systems

Common Themes of Successful Programs

- Employee Training
- SF₆ Tracking & Management
- Leak Detection & Repair
- SF₆ Reclaiming and Reuse
- Equipment Replacement Investment



Airgas SF₆ Utility Program Scope

Airgas

Package SF₆

Deliver/
Pick Up

Program Features

1. **Training**
 - a. SF₆ Emissions & Environmental Impact
 - b. Safety Training: SF₆ & Cylinders
 - b. Operation of SF₆ Gas Handling Carts
2. **SF₆ Management**
 - a. Assist in conducting Jan 1/Dec 31 cylinder inventory
 - b. Provide monthly reports of net product used by cylinder by location (elimination of heels as emissions)
 - c. Provide gas analysis service
 - d. Provide SF₆ recycling service
 - e. Provide gas carts (rental or purchase) & gas cart maintenance
 - f. Multiple cylinder packages (sizes to meet needs)
 - g. Customize delivery programs
 - h. SF₆ Process & Procedure Development
 - l. Use of residual pressure valves in Airgas cylinders

Utility

Generate
Power

Distribute
Power

Replace
Older
Equipment



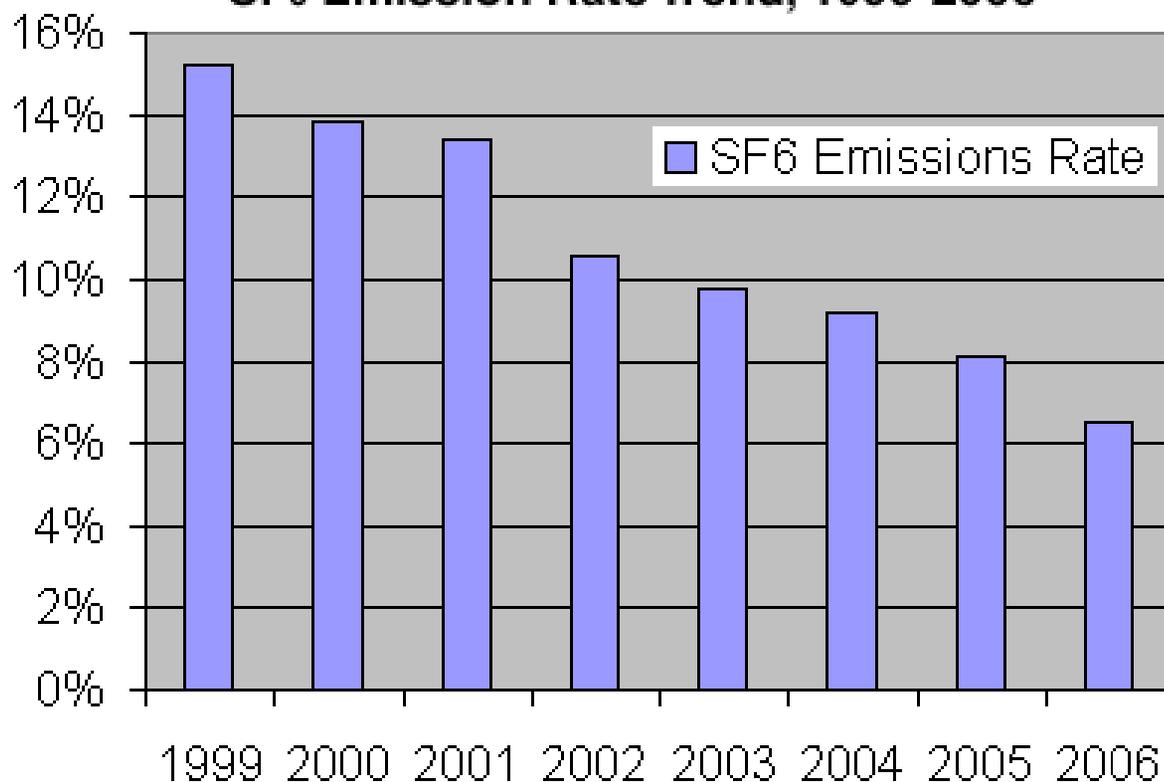
Airgas
Expertise Zone



Utility
Expertise Zone

Success of EPA Program

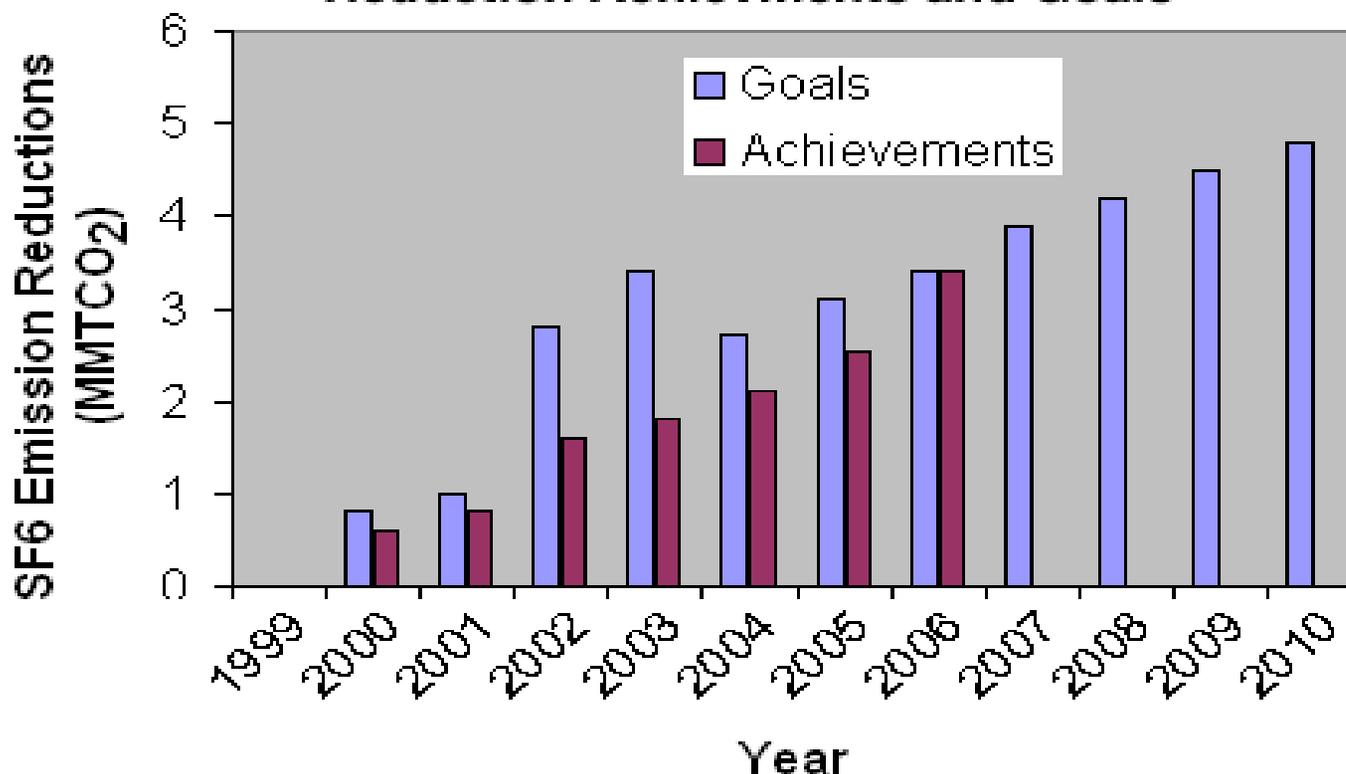
**Figure 1. SF₆ Emission Reduction Partnership
SF₆ Emission Rate Trend, 1999-2006**



<http://www.epa.gov/electricpower-sf6/accomplishments.html>

Goals of EPA Program

Figure 2. Partnership Emissions Reduction Achievements and Goals



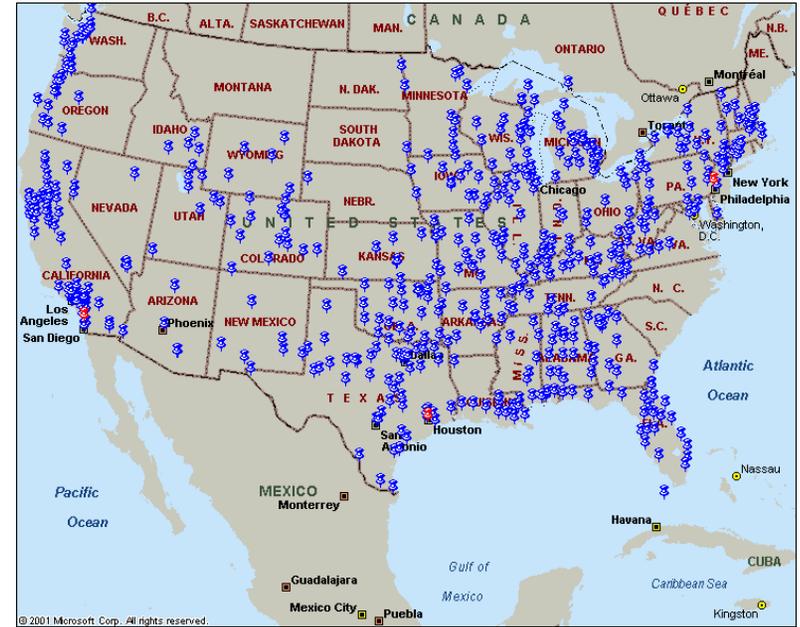
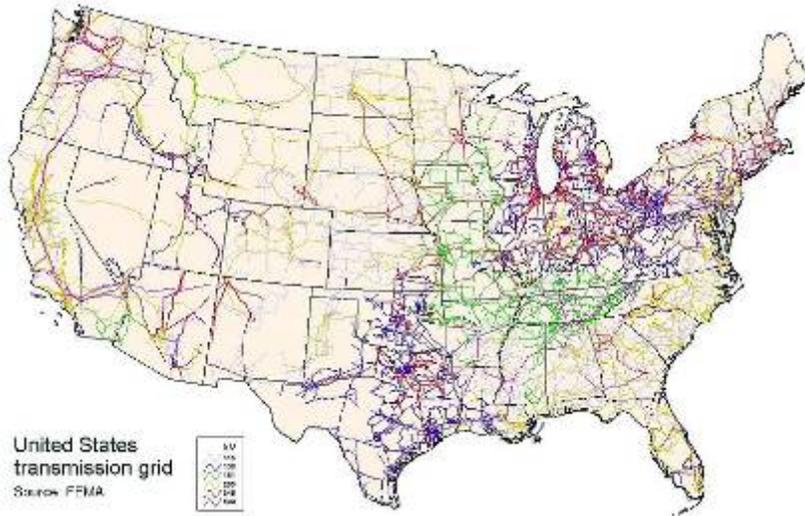
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We have lots in common!!

- We are both distribution companies
- Our customers depend on our products & services
 - You keep the lights on!
 - We keep our customers working!
- We are both environmentally responsible
- We both handle SF6!

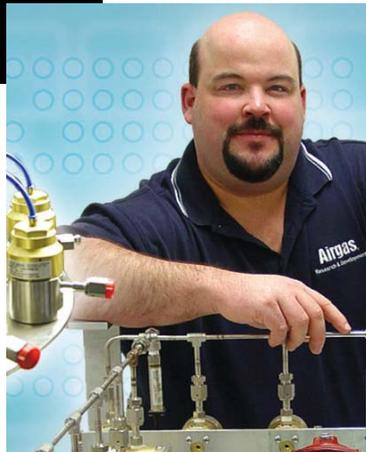
We are both everywhere!

- The Grid
- Airgas



Trained Personnel!

We have!



*Rob Shock, R&D
Manager*

You have!



*Steve Evans, power
lineman apprentice*



Trucks!

We have!



Over 5000 Trucks

You have!



PECO Diesel Hybrid Bucket Truck

We both respond to emergencies!



We both have lots of assets!



FLP St Lucie and Turkey Point nuclear power plants



ASU and Tanker



Over 10 Million Cylinders

We both have “Choppers!”



Two Airgas Chopper motorcycles, designed and built by Orange County Choppers (OCC)



Sorry!!

Utility companies don't have fancy choppers??

Airgas SF6 Reclamation Support

- Airgas SF6 Reclaim Cylinders available for purchase or rental



- SF6 Recovery/Reclamation and Gas Cart sales & rental through Airgas partner, DILO Corporation



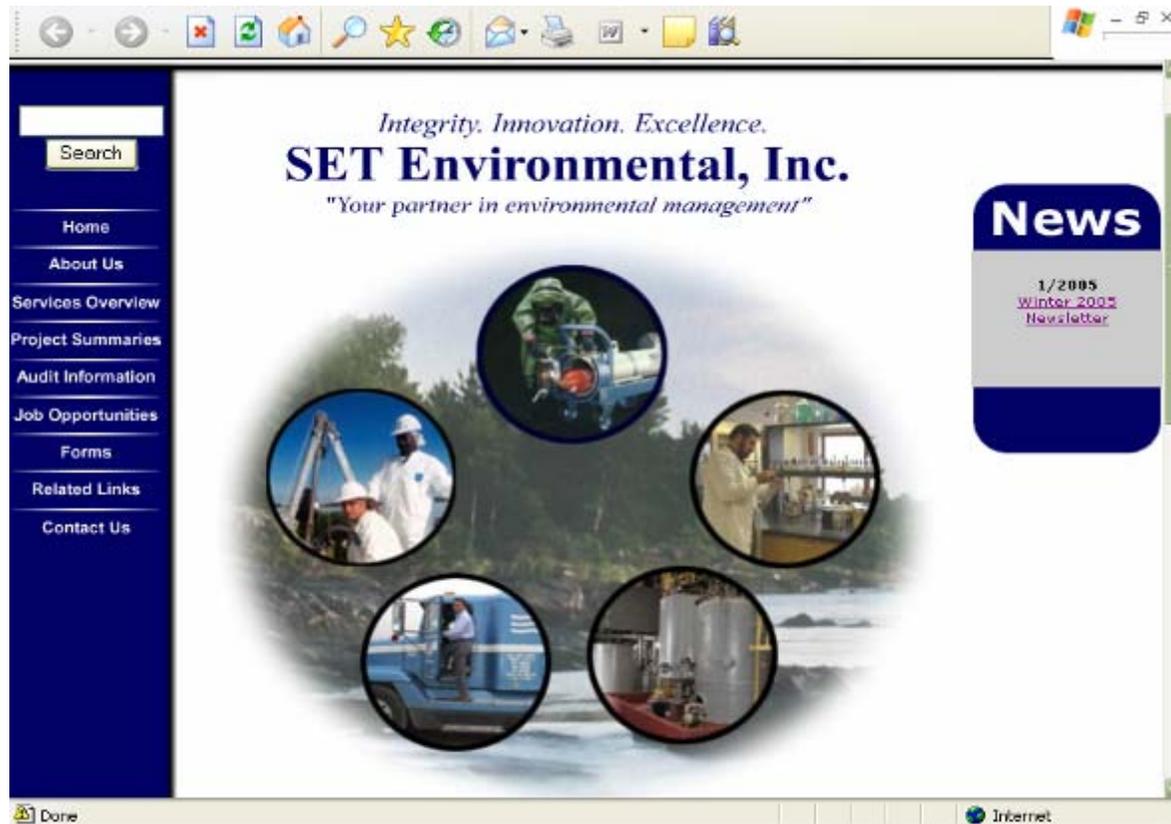
- Distribution - Reclaimed SF6 Cylinders can be picked up at job sites and shipped to SF6 processing facilities for reuse or destruction

Value added services from vendor

- Reclaim Cylinders Sale or Rental
- SF6 Gas Carts Sale or Rental
- Consolidation of recovered & partial full SF6 cylinders from work sites
- Shipping cylinders to certified reclaim facility with proper labeling and DOT documentation
 - Utility no longer shipper of record
 - Empty or full cylinders returned to utility ready for next project
 - EPA acceptable documentation of shipper SF6
- SF6 Analysis and sample cylinders coordinated

Our partner, SET Environmental, Inc.

Mercury & Breaker Fluid Remediation



Program Benefits for Utility

- Savings on SF₆ purchases
- Reduced cylinder handling & shipping
- No in transit liability
- Protect Environment ~ successfully participate in EPA program
- Improved Grid Reliability
- Improved site safety
- More efficient cylinder utilization



Questions?

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- Thank you for your courtesy & attention!