



# EPRI SF<sub>6</sub> Research – Past Highlights and Future Plans

Luke van der Zel  
**Project Manager**  
EPRI Power Delivery and Markets

# EPRI Background

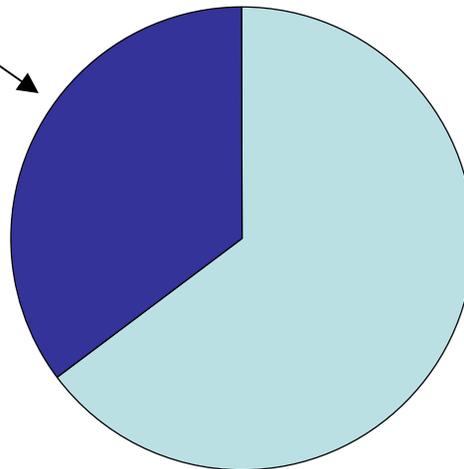
- Non-Profit Organization
- Funding from global energy customers
- Goal is providing Science and Technology-based Solutions.
- Focus is management of Research, Technology Development and Product implementation



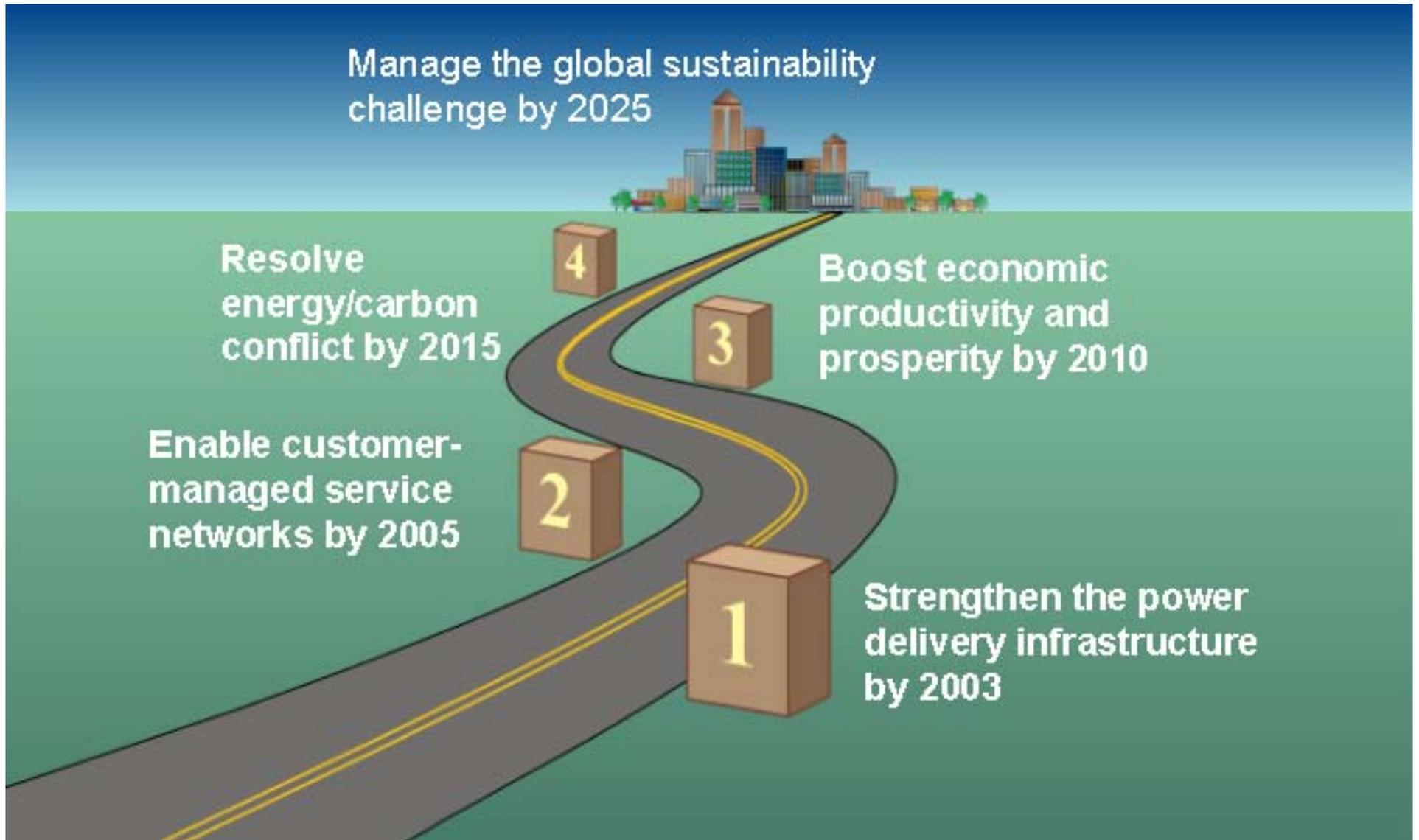
# Partnership overlap

- Of the 65 EPA Partners in the SF<sub>6</sub> Emission Reduction Partnership for Electric Power Systems, 23 are made up of EPRI members

23 EPRI Members in EPA SF<sub>6</sub> Program



# EPRI Roadmap Destinations



# SF<sub>6</sub> Research Objectives

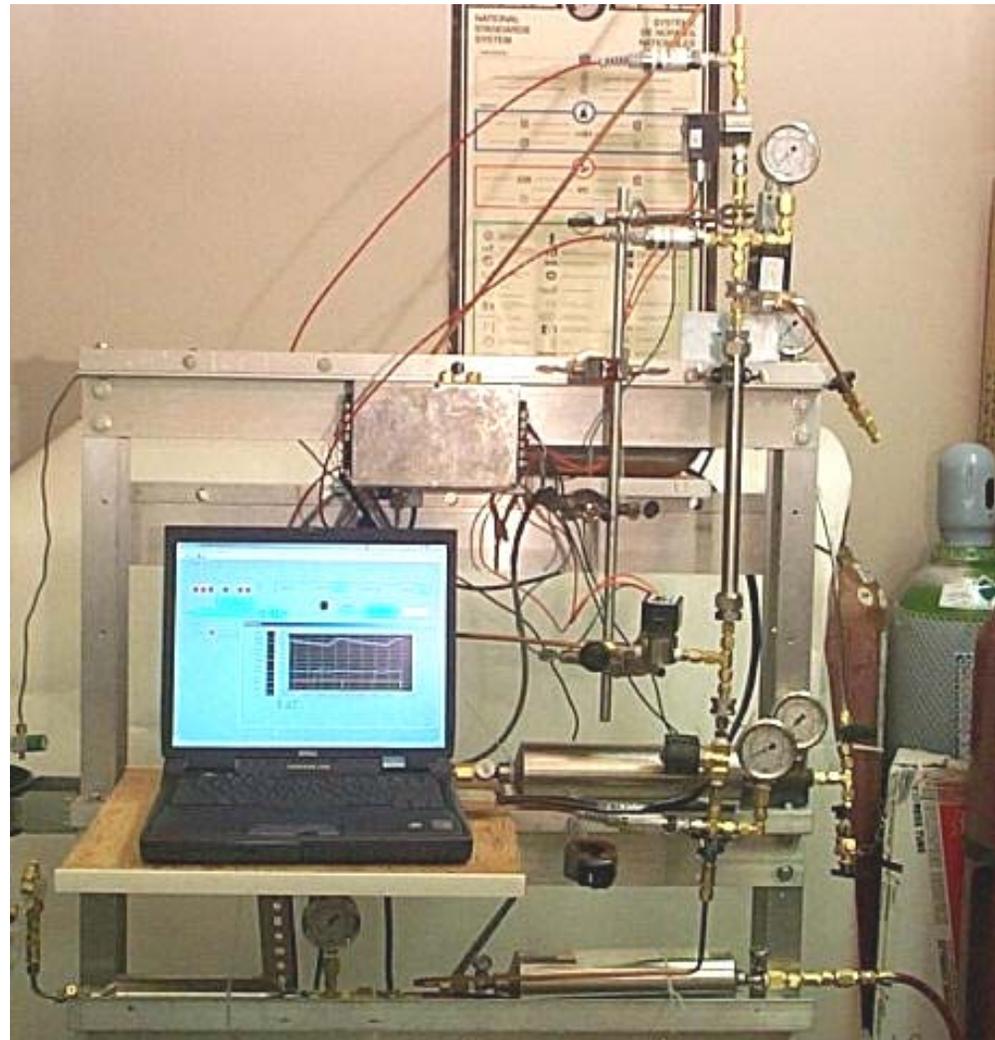
- **Reduce Operating Costs**
  - Through lower SF<sub>6</sub> loss and fewer call-outs
- **Improve Reliability**
  - Through reduced risk with fewer live top-ups
- **Extend equipment life**
  - Through improved gas quality and diagnostics
- **Protect the environment**
  - Through reduced emissions
- **Improve Safety**
  - Through on-site analysis and improved SF<sub>6</sub> Management

# Achieving the Objectives SF<sub>6</sub> Recycling Research

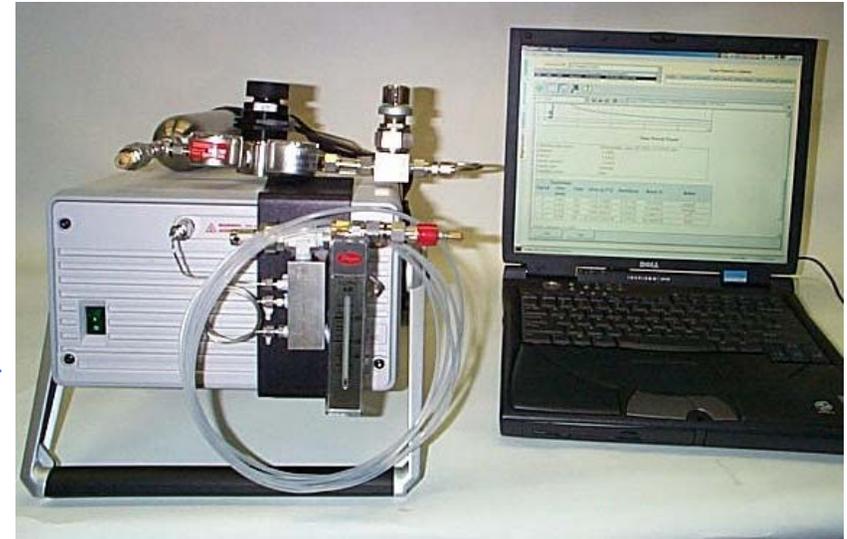
EPRI's role to its members:

To research emerging technologies and best-practices –

Empowering EPRI members to make the best decisions in their business.



# Achieving the Objectives SF<sub>6</sub> Analysis

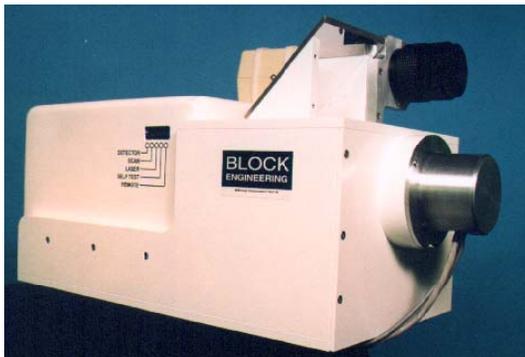


Tailored Micro-GC



SF<sub>6</sub> Decomposition  
Products Detector

# Achieving the Objectives SF<sub>6</sub> Leaks



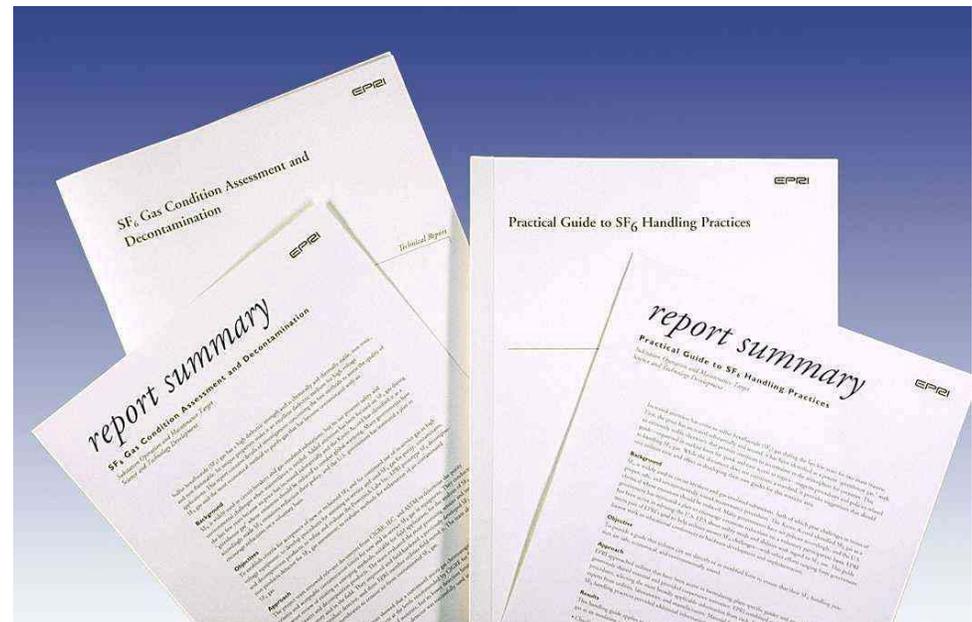
Detection



Sealing

# Recent Reports

- Complete Field Assessment of SF<sub>6</sub> and On-site Reclamation of Contaminated Gas. 2002.
- Practical Guide to SF<sub>6</sub> Handling Practices. February 2002.
- The Management of SF<sub>6</sub> Leakage by Electric Utility Companies - Guidance for the Reduction of Emissions. 2001.
- SF<sub>6</sub> Gas Condition Assessment and Decontamination. Dec 2000.



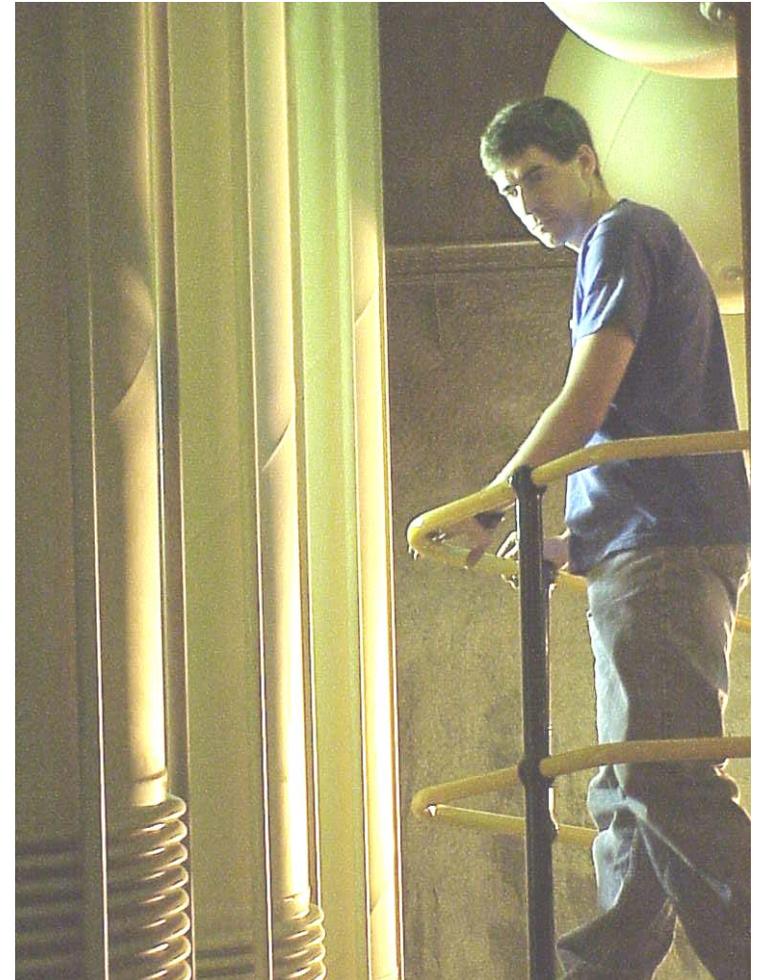
# Practical Guide to SF<sub>6</sub> Handling Practices

- Safety while working with SF<sub>6</sub>,
- Suggested SF<sub>6</sub> Handling Procedures for efficiency,
- Environmental Protection,
- Recycling,
- SF<sub>6</sub> Analysis
- Transportation and Storage.



# GIS Survey

- 146 GIS (US), 47 (Canada)
- Performance of GIS in the US has improved significantly over the past 10 years
- Three largest remaining problems are:
  - Flashovers
  - SF<sub>6</sub> Leaks
  - What to do with poorly performing GIS



## Expansion of Research into 2003

- GIS Leak Location
- GIS Condition Monitoring
  - UHF Detection
  - Acoustic Emission
  - SF<sub>6</sub> Analysis for diagnosis
- Field trials on the use of SF<sub>6</sub> Analysis as a diagnostic tool
- Tracking of SF<sub>6</sub> reduction efforts (SF<sub>6</sub> replacements, alternative technologies)

