



Australian Government

Department of the Environment and Heritage



# Improving SF<sub>6</sub> management in Australia

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# Australia's approach to Climate Change

- The Australian Government recognises that climate change is a serious challenge that requires an effective global and national response
- Australia is committed to meeting its internationally agreed emissions target of 108 per cent of 1990 levels by 2008-2012, and is on track to do so





# Synthetic greenhouse gases in Australia

- Synthetic greenhouse gases (HFCs, PFCs, SF<sub>6</sub>) currently contribute around 1% to Australia's greenhouse gas emissions
- Australia has a national strategy to manage each of these gases





# Australia's approach to SGGs

*Montreal Protocol  
industries*

**HFCs**

**PFCs (consumption)**



*Ozone Protection and Synthetic  
Greenhouse Gas Management Act 1989  
and its Regulations*

*Non-Montreal Protocol  
industries*

**PFCs (aluminium)**

**SF6**



*Cooperative approach between the  
government and industry*





# SF<sub>6</sub> Programmes

**Department of the Environment and  
Heritage**

**Ozone and Synthetic  
Gas Team**

**Australian Greenhouse  
Office**

*Best Practice SF<sub>6</sub>  
Management Guidelines*

- management of SF<sub>6</sub> →
- reporting component →

*Greenhouse Challenge  
Plus*

- focuses industries on greenhouse gas abatement
- reporting of greenhouse gas emissions including SF<sub>6</sub>





# 2006 desk top audit

- Reasons for inconsistencies in reported data
- Problems and successes with SF<sub>6</sub> management
- Issues of greatest concern to the industry





# General findings

- All companies are implementing strategies to manage SF<sub>6</sub>
- Some degree of cooperation evident at the regional level





# General findings

- Not all companies address all aspects of SF<sub>6</sub> management, or strategies used are not always effective
- Formalising and reinforcing procedures was stressed as an important component of a successful SF<sub>6</sub> management strategy







# Emerging issues

- Disposal of sealed for life switchgear
- Contaminated SF<sub>6</sub> - reprocessing or disposal





# Solving emerging issues

- Two companies are trialling a cryogenic process to purify contaminated SF<sub>6</sub>
- Switchgear decommissioning service being established
- Plasma-arc disposal of heavily contaminated SF<sub>6</sub>





# SF<sub>6</sub> reporting

- Several methods in common usage
  - inventory methodology
  - assumed leakage rate
  - SF<sub>6</sub> purchases
  - top up method





<b>SF<sub>6</sub> Inventory Worksheet</b>			
<b>ALTERNATIVE REPORTING TEMPLATE FOR SF<sub>6</sub> - ELECTRICITY SUPPLY INDUSTRY</b>			
		<b>Top Up Method</b>	
<b>Company:</b>			
<b>Period of reporting:    /    /    to    /    /</b>			
<b>Emissions of SF<sub>6</sub></b>			
		Amount (kg)	Comments
<b>A</b>	<b>Total SF<sub>6</sub> in Service - end of year</b>		
<b>B</b>	<b>Top-ups of existing equipment</b>		
<b>C</b>	<b>Accidental leakage by company employees or subcontractors</b>		
<b>D</b>	<b>Accidental leakage by equipment suppliers</b>		
<b>E</b>	<b>Total Annual Emissions (B+C+D) =</b>	<b>0</b>	<b>kg</b>
<b>F</b>	<b>Total Annual Emissions in Carbon dioxide equivalent (E x 23,900) =</b>	<b>0</b>	<b>kg</b>
<b>Total Annual Emissions as a Percentage of Gas in Service (E / A) x 100 =</b>		<b>%</b>	<b>#DIV/0!</b>
<b>COMMENTS</b>			
Comments on calculations. This can include confidence in estimate, assumptions and factors such as details of increased use of SF <sub>6</sub> charged equipment			



# Barriers to accurately estimating SF<sub>6</sub> emissions

- Staff do not always follow company procedures
- Residual gas supplied with new switchgear
- Outsourcing maintenance
- Lack of information about effective systems





# Audit developed support for guidelines

- Frequent comment that a benchmarking exercise would be useful
- Industry leaders were not sure if they had done enough
- Environmental managers who are struggling to implement effective strategies wanted more information from industry leaders





# Benefits of guidelines

- Financial benefits
- Avoids duplication
- Identify simple effective strategies
- Communicate innovation and latest developments
- Raise industry's environmental profile
- Solve emerging issues





# Benefits of guidelines

- Improve emissions reporting
  - the Council of Australian Governments has agreed to establish a national streamlined system for greenhouse and energy reporting
  - mandatory reporting for companies above a certain threshold







# How to develop guidelines

- Energy Networks Association (ENA)
  - all transmission and distribution companies are members
  - develop guidelines and standards for the industry
  - formal proposal will be considered by an ENA committee in early December





# Contents of the guidelines

- All aspects of SF<sub>6</sub> management
- Responsible use principles
- Gas handling and guidance on reusing, reprocessing or disposing of SF<sub>6</sub>
- Leak monitoring and detection





# Contents of the guidelines

- Formalising procedures and training requirements
- Improvement programmes
- Disposal of switchgear
- Reporting methodology and related work practices





# Future plans

- DEH involvement in developing these guidelines
  - international perspective
  - ensure reporting component meets the Government's future requirements
- Potential to share guidelines internationally
- Promote guidelines through Greenhouse Challenge Plus





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Thank You!

Further information available in accompanying conference paper or from  
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