

# Emission Reduction Strategy: Prioritizing Repairs & Replacements

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# Agenda

- Con Edison's electric system
- Emission reduction strategy
- Data collection and analysis
- Equipment maintenance
- Leak detection methods

# Con Edison Electrical System Overview

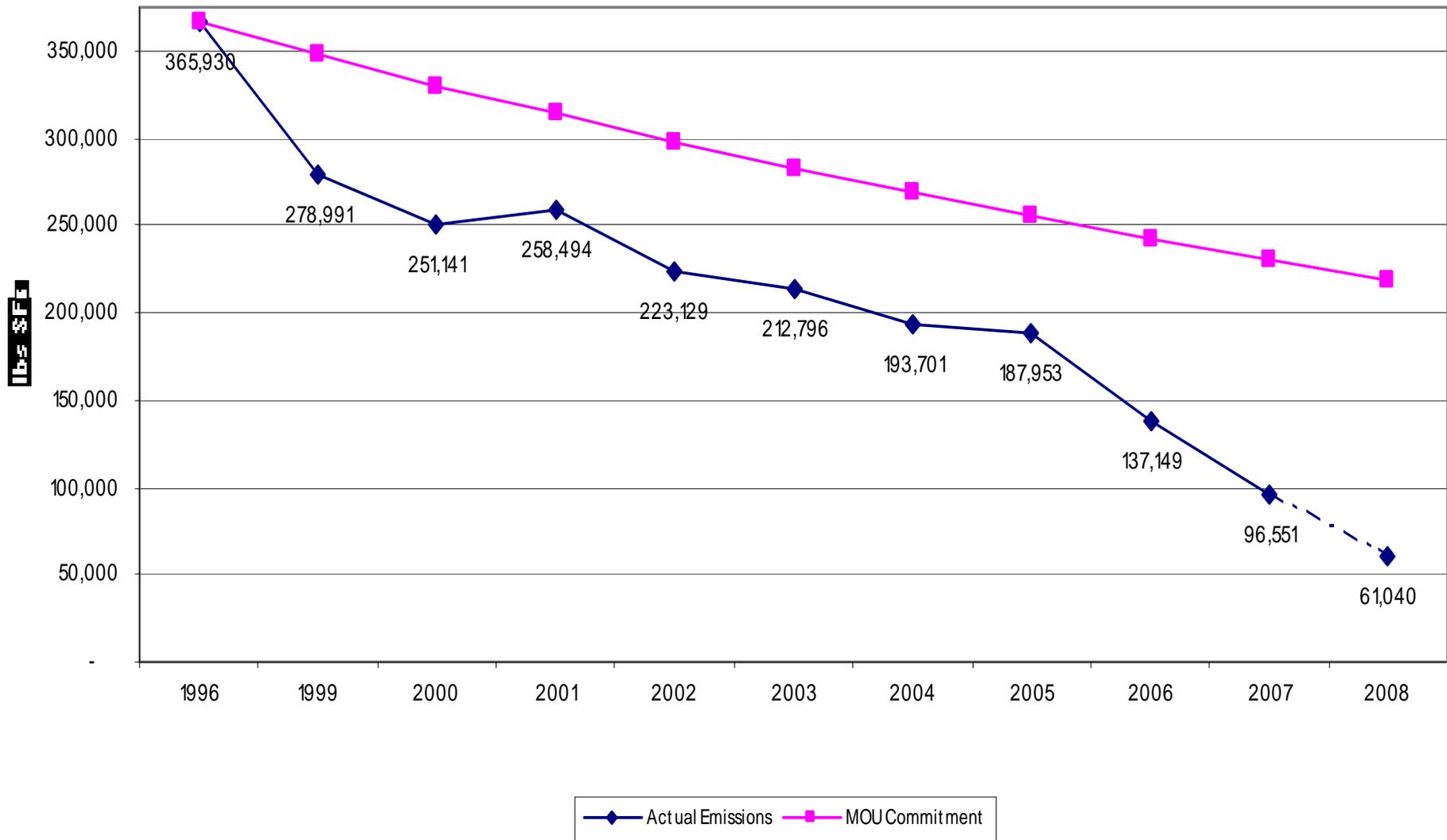


- 3.2 million electric customers
- 660 square miles
- 13,775 MW peak load
- 94,000 miles of underground cable
- 36,000 miles of overhead cable
- 98 Substations
  - 38 transmission
  - 60 distribution
- Stringent reliability requirements

# Substation SF<sub>6</sub> Nameplate Capacity

- 345 kV circuit breakers
- 138 kV circuit breakers
- 69 kV circuit breakers
- GIS bus sections (138 kV / 345 kV)
- Circuit switchers
- Autoground switches

# SF<sub>6</sub> EPA MOU STATUS



# 2008 Leak Reduction Efforts

- 138 kV Circuit Breakers - 20 replaced, 13 repaired
- 345 kV Circuit Breakers - 5 replaced, 21 repaired
- Auto Ground Switches - 2 replaced, 5 repaired, 4 retired
- Circuit Switchers - 5 repaired
- GIS - 3 sections repaired
- SF<sub>6</sub> Yard Manifolds - 1 replaced, 1 retired

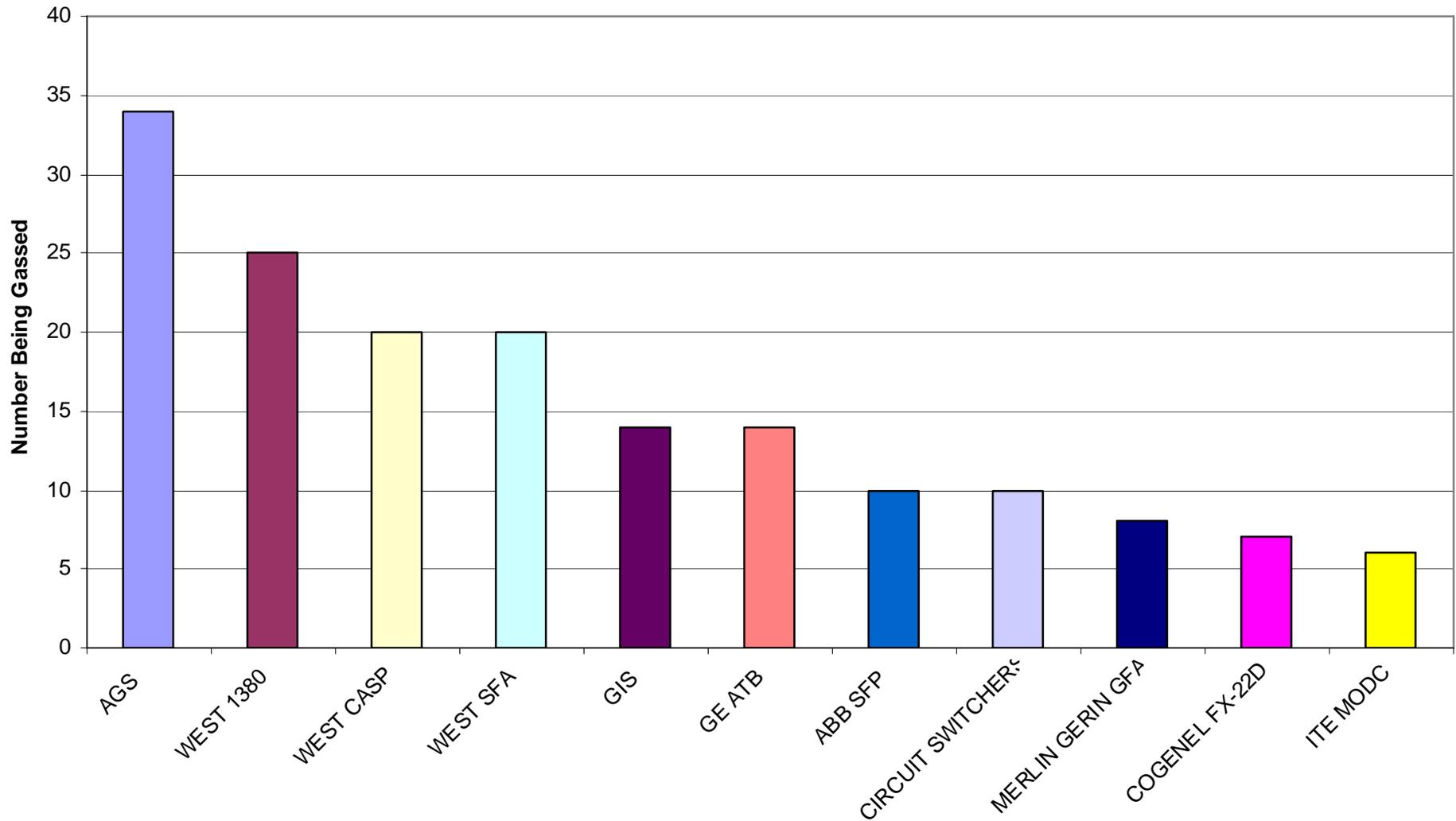
# 2007 Leak Reduction Efforts

- 138 kV Circuit Breakers - 11 replaced, 9 repaired
- 345 kV Circuit Breakers - 9 replaced, 2 repaired
- Auto Ground Switches - 4 replaced, 1 repaired, 4 retired
- Circuit Switchers - 1 repaired
- SF<sub>6</sub> Yard Manifolds - 1 repaired

# Emission Reduction Strategy

- Cultural change - emissions are unacceptable
- Training - proper handling and use of gas carts
- Simplified process – recording of gas usage
- Expedited identification of leaks
- Accurate measurement and/or estimate of gas used
- Visualization of gas usage – top leakers

# Gas Use By Equipment Type

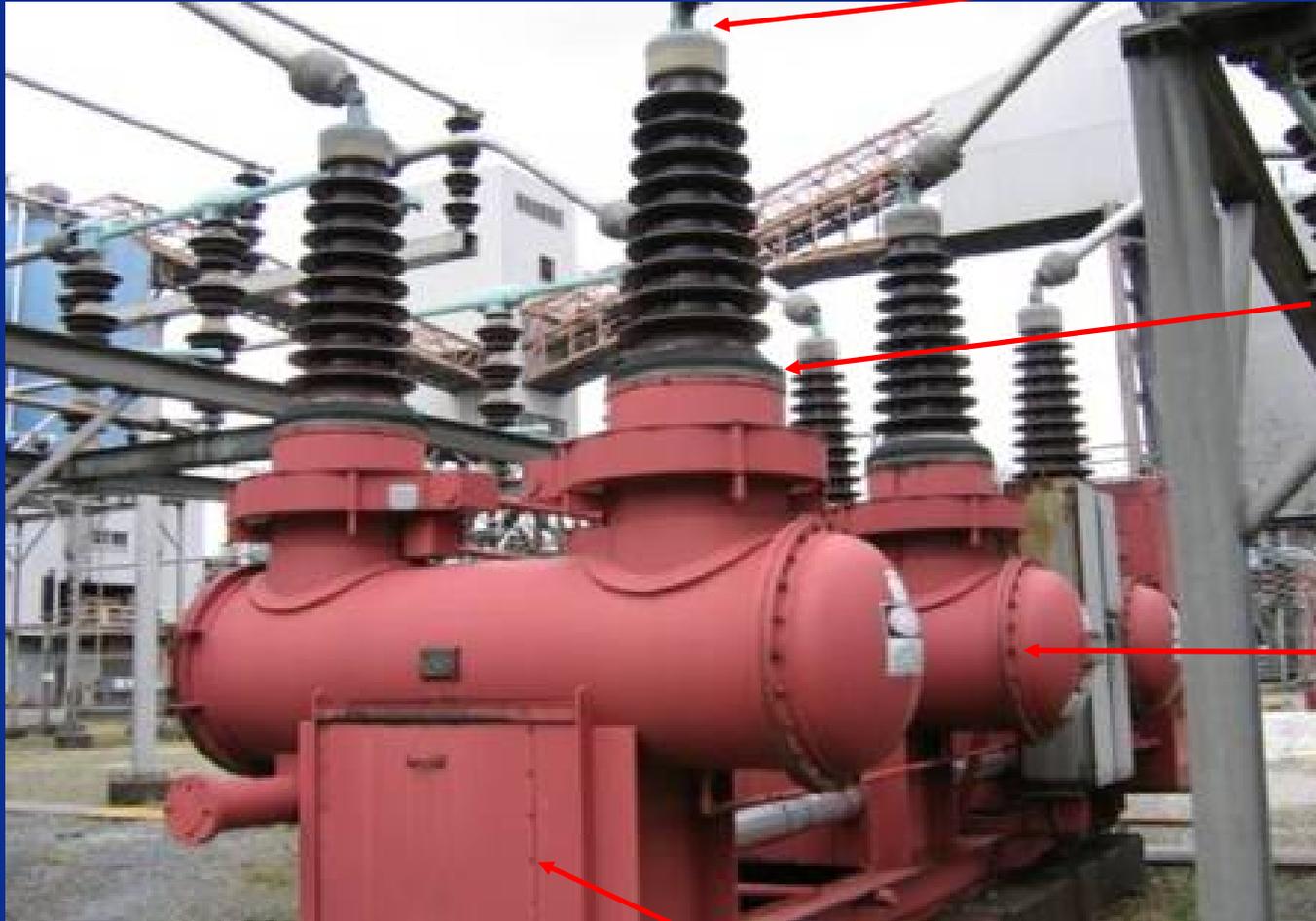


# Emission Reduction Strategy

- Use SF<sub>6</sub> cameras prior to equipment outages
- Monthly leak checks of ancillary equipment
- Expedite equipment repairs

# Typical Leak Locations

Solder Seal

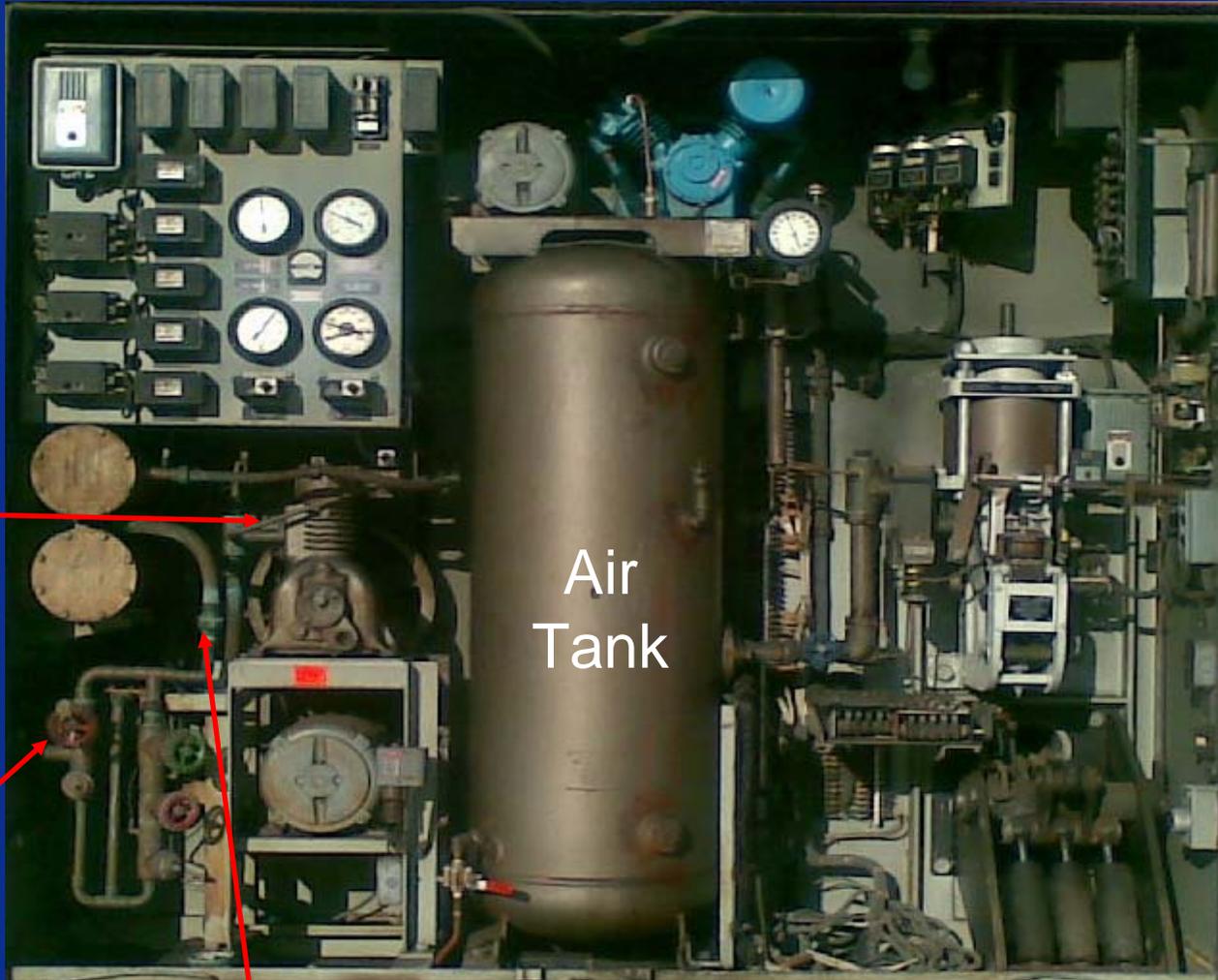


Bushing Base

Tank Flange

High Pressure Tank

# Control Cabinet Leaks



Gas  
Compressor

Air  
Tank

Valve

Piping Connection

# Leak Detection Cameras

GasVue



GasFind



# Leak Detection Cameras

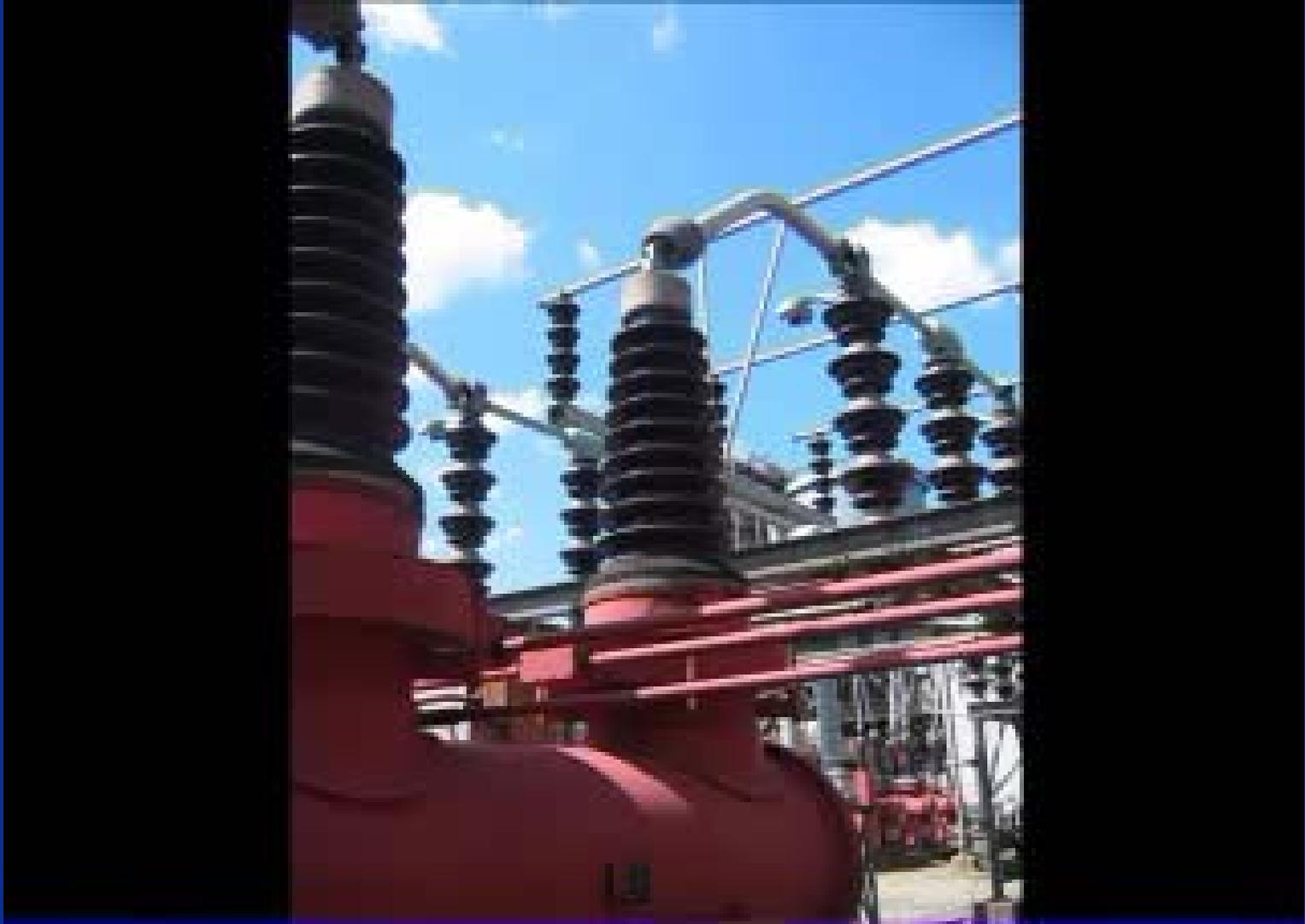
KEMA Acoustic Detector



Sherlock Imaging Spectrometer



# Solder Seal Leak



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# High Pressure Tank Leak



# Inventory Management

Weighed cylinder inventory



Measured gas usage



# Emissions Reduction Program

- Cultural change - emissions are unacceptable
- Collect leak data and quantify
- Document video files of leaks and corrective actions
- Prioritize outages – repair or replacement
- Aggressive equipment replacements
- Inventory management
- Research & Development

# Con Edison - Committed to Environmental Excellence



*Perito Moreno Glacier, Lake Argentina, Patagonia, Nov. 2001* 19