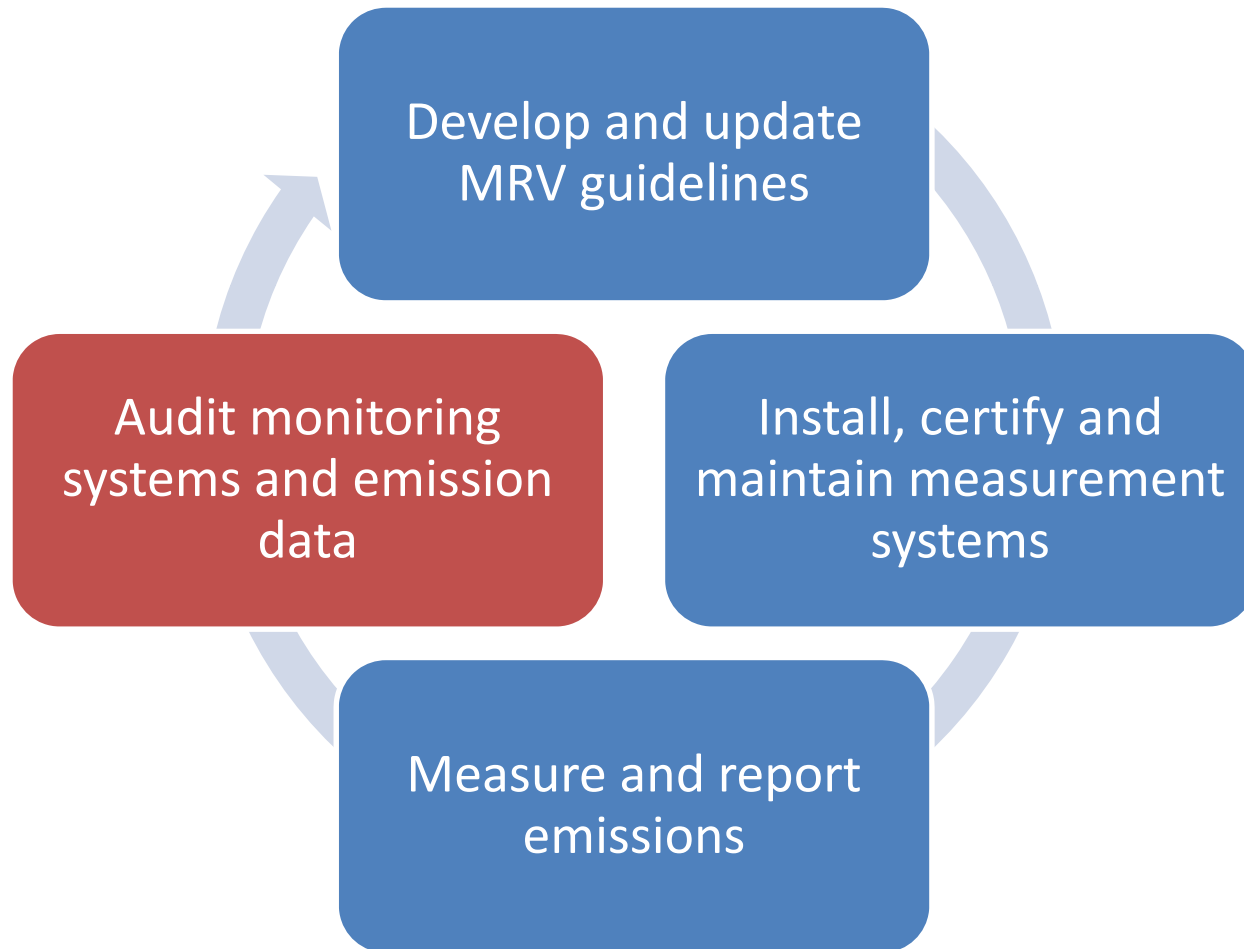


Enhancing data
quality with
electronic and
field audits

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Auditing is one part of a continuous process



Part 75 emphasizes continuous, complete, accurate emission measurements

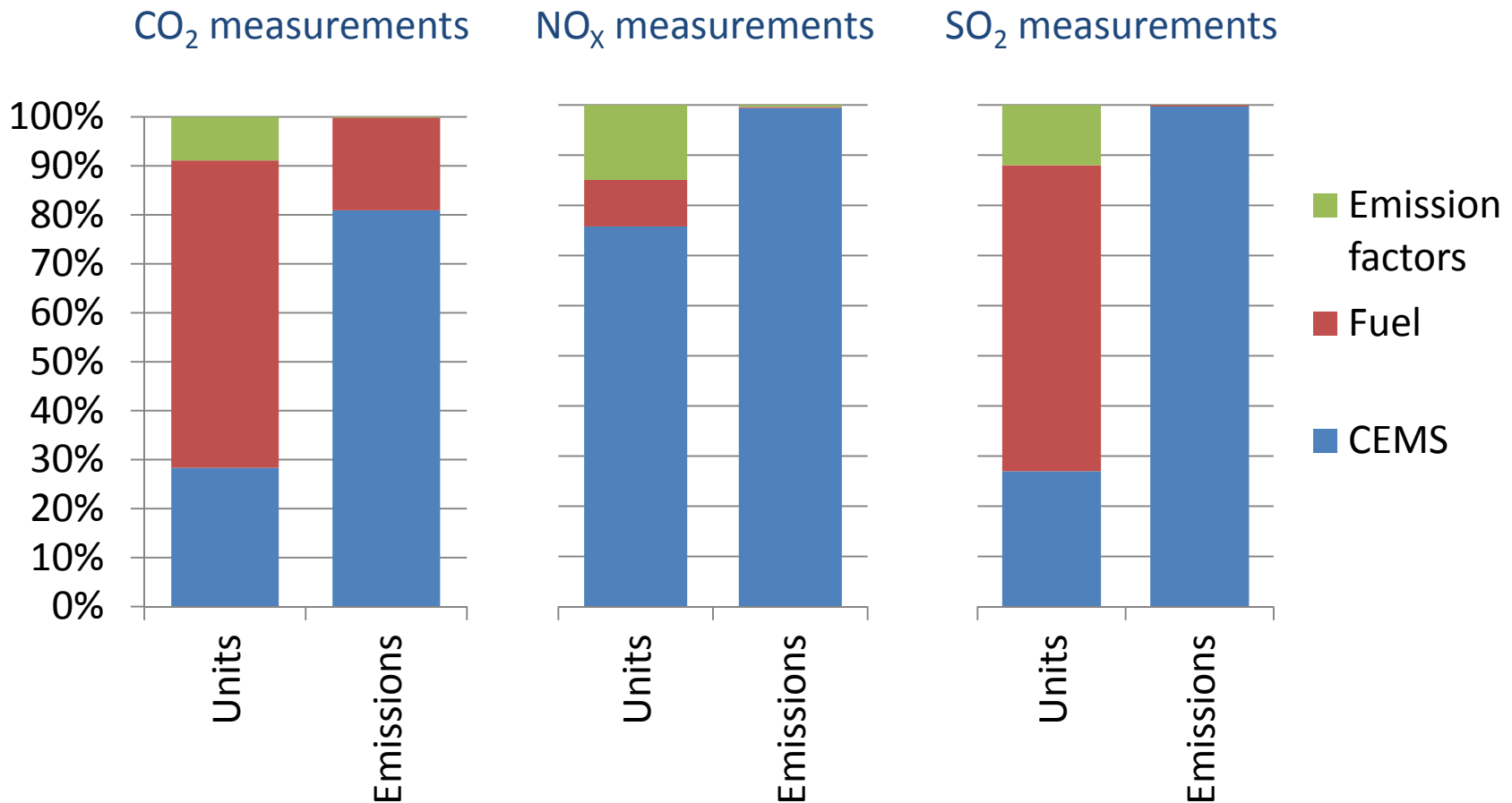
“The owner and operator of any source subject to this title shall be required to install and operate CEMS on each affected unit at the source, and to quality assure the data for [SO₂, NO_x], opacity and volumetric flow at each such unit. The Administrator shall... specify the requirements for CEMS, for any alternative monitoring system that is demonstrated as providing information with the same precision, reliability, accessibility, and timeliness as that provided by CEMS, and for recordkeeping and reporting of information from such systems.” – *Clean Air Act §412*

Several approved measurement methodologies

- Continuous emission monitoring systems (CEMS)
 - Direct measurement of SO₂, NO_x, and CO₂ emissions
 - Measurement of heat input from stack flow
- Fuel flow monitoring
 - Fuel flow meter
 - Fuel sampling
- Correlation curves for NO_x
- Low Mass Emission Units (LME)
 - Default emission factors
 - Operating conditions

Methods with less accuracy or greater uncertainty use conservative methods that do not underestimate emissions

CEMS measure the majority of emissions



Reporting requirements

- Facility and unit information (e.g., industry codes, boiler types, fuel types, control equipment)
- Monitoring plans
- Hourly data
 - SO₂, NO_x, CO₂ emissions
 - Heat input
 - Operating load (MWh and/or steam)
 - Oil and gas fuel flow
 - Moisture data
 - Opacity
- Quality assurance and certification test data

Quality assurance of measurement systems

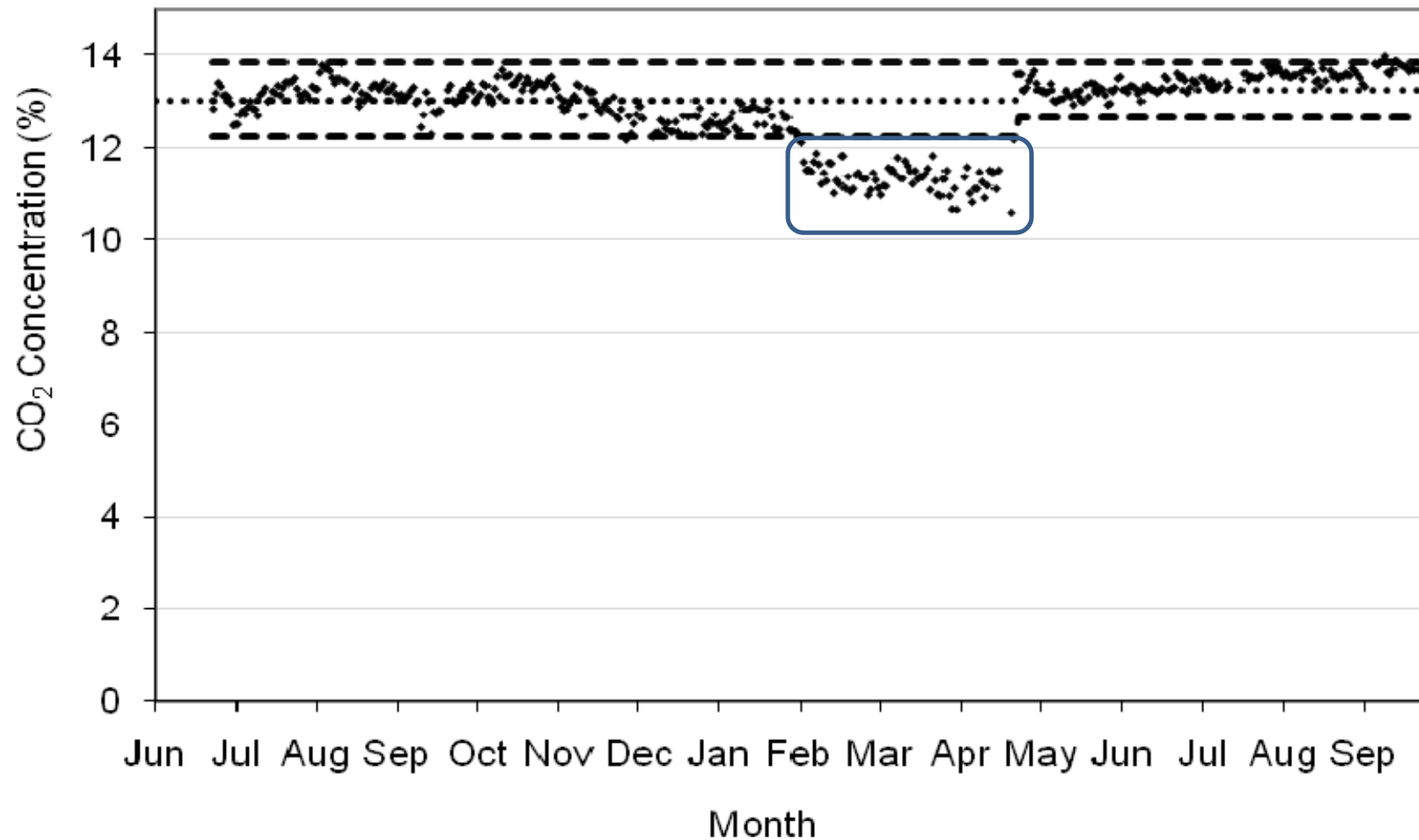
- Monitoring certification and recertification
- Regular quality assurance checks and tests
 - Daily calibration error test
 - Quarterly linearity check
 - Bi-annual relative accuracy test audit (RATA)
 - Bias test (using RATA data)



Electronic evaluation and auditing

- A systematic, comprehensive, and uniformly applied approach to ensure high-quality, accurate, timely, transparent, and complete data
- Electronic evaluation – EPA ECMPS software
 - Data validation checks (precision, calculations)
 - Regulatory and monitoring plan consistency checks
 - Expected value range checks
- Statistical audits – EPA analysis software
 - Identify unusual or unexpected data (e.g., non-random relative error)
 - Control chart analysis

Control chart analysis identifies unusual data



Field audits assess the operation and QA of emission measurement systems

- Target facilities that have significant emissions or reported unusual or unexpected data
- Pre-audit review of monitoring plan, QA test details, and emission data
- On-site inspection
 - Recordkeeping
 - Calibration gases
 - Monitoring system(s)
 - QA testing (e.g., daily calibration, relative accuracy test audit)
- Post-audit follow up to ensure issues are resolved

Key lessons learned

- Collect data in a standardized electronic formats
- Collect detailed emission and supplemental data to enhance auditing
- Automate data evaluation to the extent possible
- Collect and audit data throughout the year to identify errors before they affect compliance
- Continuously update and improve the auditing and verification program
- Target larger sources and reporters with unexpected or unusual data for auditing
- Provide technical assistance to reporters to resolve issues before they affect compliance