Columbia Gulf Transmission
A NiSource Company

BUILDING

INVESTMENT-DRIVEN GROWTH

Carbon Credits for Directed Inspection & Maintenance

Partner Experience: NiSource

Jeff McCombs,
Nisource ESS Program Leader

2010 Annual Implementation Workshop
New Orleans, LA
Tuesday, November 2, 2010

NiSource

Columbia Gulf Transmission
A NiSource Company

Agenda

- Background and Methodology
- Findings
- Future work
- Takeaways
- Questions

Columbia Gulf Transmission℠
A NiSource Company

Background

- NiSource (NYSE: NI):
  - Engaged in natural gas transmission, storage, and distribution
  - Delivers energy to 3.8 million customers from the Gulf Coast through the Midwest to New England

- Columbia Gulf Transmission (CGT):
  - Subsidiary of NiSource
  - Interstate pipeline system of approx 3,400 miles of pipeline
  - 11 compressor stations with nearly 0.5 million horsepower

Columbia Gulf

Background: Natural Gas STAR Participation

Columbia Gulf Transmission
A NiSource Company

- CGT has been a Partner since 1999
- 2001 and 2004 Transmission Partner of the Year (along with Columbia Gas Transmission)

NaturalGas
EPA POLLUTION PREVENTER

Columbia Gulf Transmission
A NiSource Company

Can You Find the Leak?

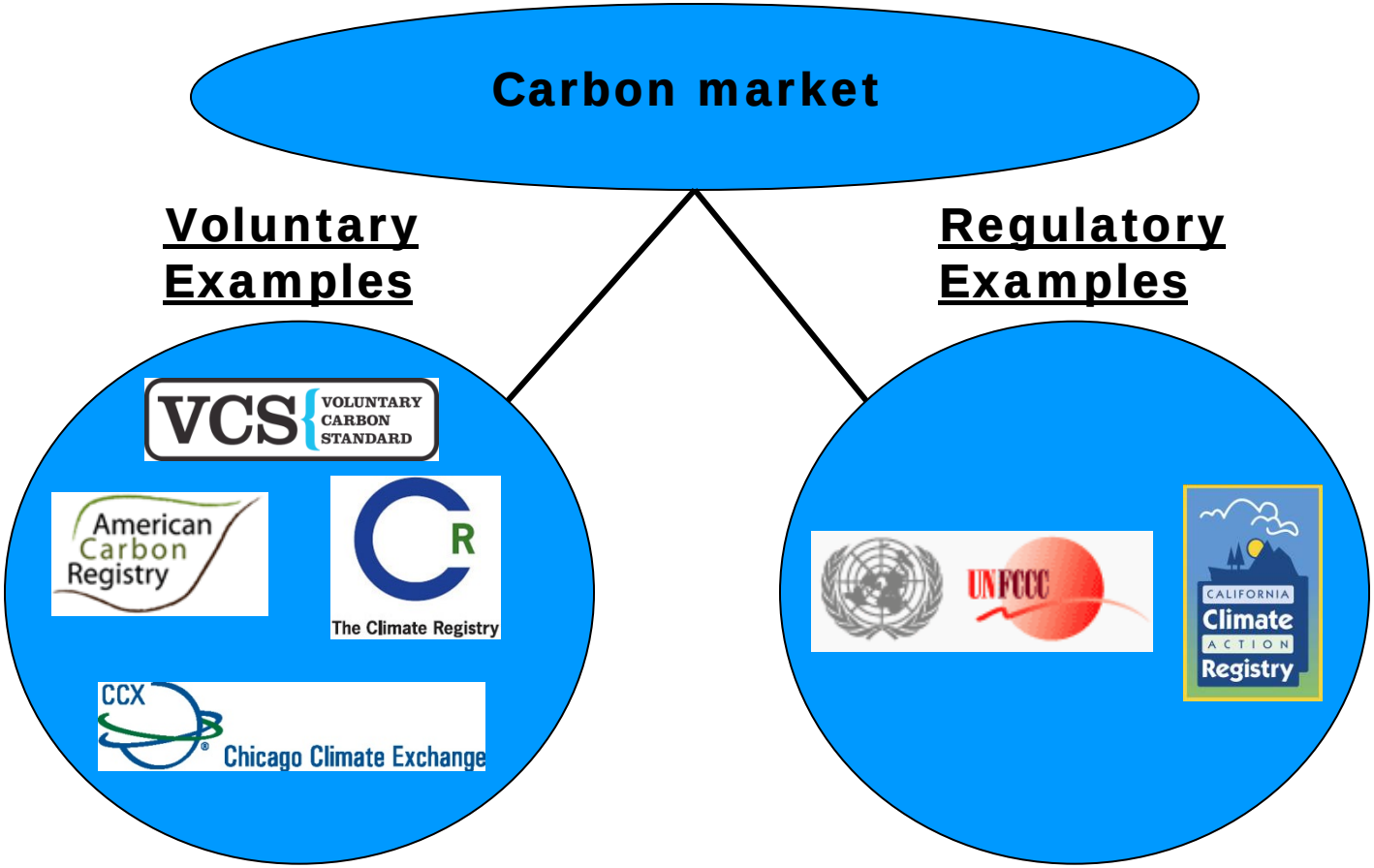
???

Background: Methane Emissions

- A colorless, odorless gas potent greenhouse gas (GHG) with:
  - 100-year global warming potential of 21
  - Atmospheric lifetime of ~12 years
- Difficult to detect or see using human senses
- Project barriers and lack of financial incentive:
  - Lack of gas ownership
  - No regulatory or SOP justification to address leaks
- VCS methodology provides outlet for:
  - Reducing emissions
  - Generating revenue

Background: The Carbon Market

Carbon market brings together generators and buyers of GHG emissions reductions



Background: Voluntary Carbon Standard (VCS)

Columbia Gulf Transmission
A NiSource Company

- Q: What problem does VCS solve?

VCS VOLUNTARY CARBON STANDARD

- A: The lack of a well-defined carbon market in the U.S.

- What is it?
  - Organization that provides framework for establishing standards to obtain carbon credits
  - Creates and propagates guidance documents detailing how to attain carbon credits
  - Establishes procedures and standards for carbon registries

Background: Voluntary Carbon Standard (VCS)

Columbia Gulf Transmission
A NiSource Company

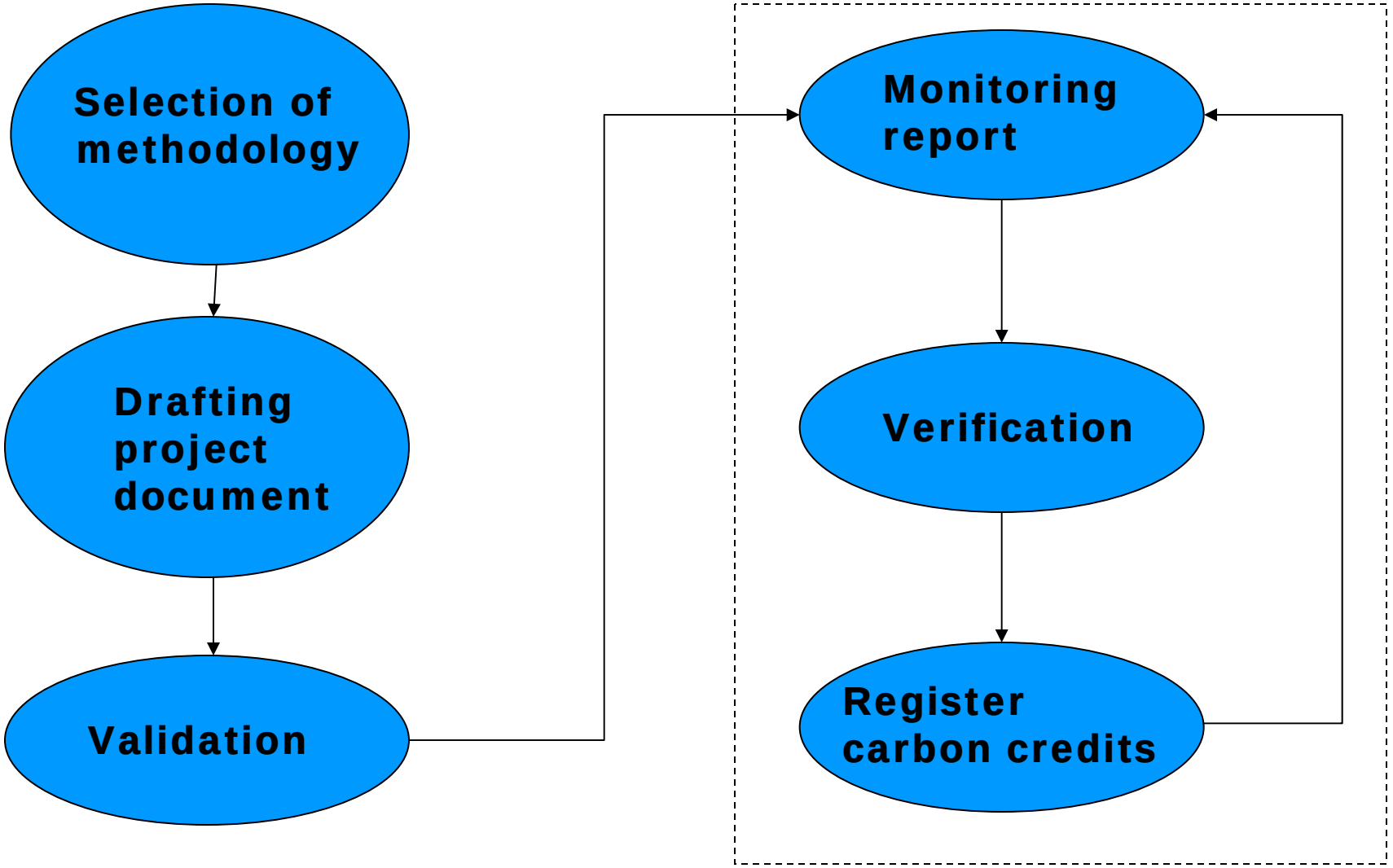
- Credits must be: 1) real, 2) additional, 3) measurable, 4) permanent, 5) independently verified, 6) unique, and 7) conservative
- Can use existing methodologies under approved programs (such as Kyoto Clean Development Mechanism) OR use new VCS methodology

Background: Key Issues for Carbon Credits

Columbia Gulf Transmission
A NiSource Company

- Additional:
  - Does this project go beyond the "business-as-usual" scenario?
  - Barrier analysis, including proof of exceeding common practice in industry
- Real: have happened
- Measureable: can be quantified with proper equipment
- Transparent: clear, easily traceable path of work performed (especially with measurement and record-keeping)
- Conservative: so as not to overestimate amount of reductions

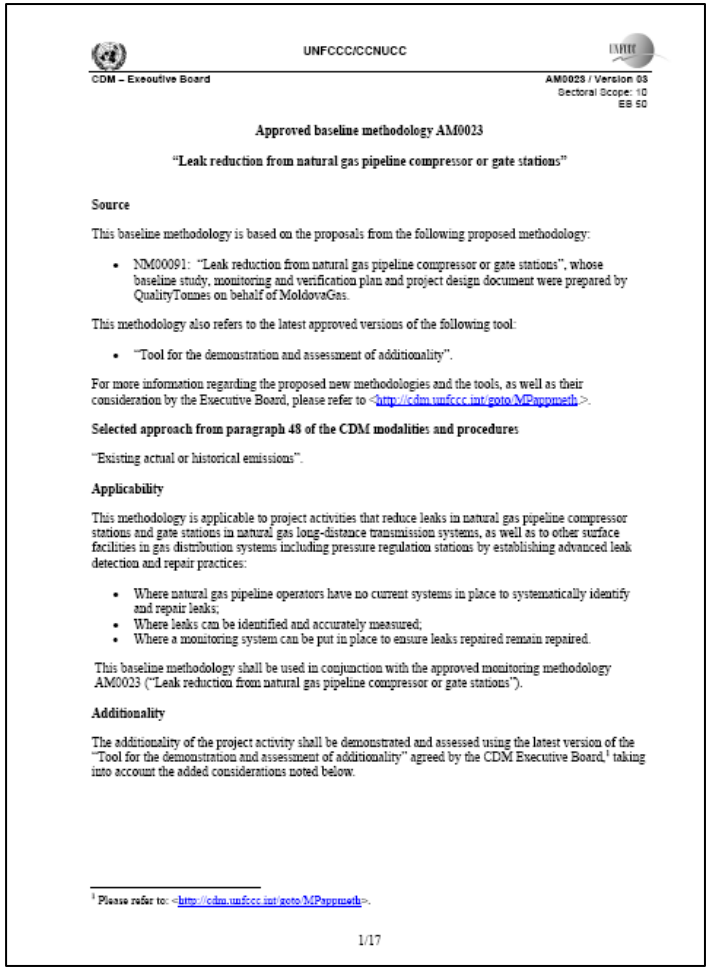
Background: Process



Methodology: Clean Development Mechanism AM0023

Columbia Gulf Transmission
A NiSource Company

- "Leak reduction from natural gas pipeline compressor or gate stations"
  - Methane-specific
  - Very specific detection, measurement, monitoring, and record-keeping requirements
  - More stringent than Leak Detection and Repair (LDAR)



UNFCCC/CCNUCC

CDM – Executive Board

AM0023 / Version 03
Sectoral Scope: 10
EB 50

Approved baseline methodology AM0023

"Leak reduction from natural gas pipeline compressor or gate stations"

Source

This baseline methodology is based on the proposals from the following proposed methodology:

- NM00091: "Leak reduction from natural gas pipeline compressor or gate stations", whose baseline study, monitoring and verification plan and project design document were prepared by QualityTonnes on behalf of MoldovaGas.

This methodology also refers to the latest approved versions of the following tool:

- "Tool for the demonstration and assessment of additionality".

For more information regarding the proposed new methodologies and the tools, as well as their consideration by the Executive Board, please refer to <http://cdm.unfccc.int/goto/MPappmeth>.

Selected approach from paragraph 48 of the CDM modalities and procedures

"Existing actual or historical emissions".

Applicability

This methodology is applicable to project activities that reduce leaks in natural gas pipeline compressor stations and gate stations in natural gas long-distance transmission systems, as well as to other surface facilities in gas distribution systems including pressure regulation stations by establishing advanced leak detection and repair practices:

- Where natural gas pipeline operators have no current systems in place to systematically identify and repair leaks;
- Where leaks can be identified and accurately measured;
- Where a monitoring system can be put in place to ensure leaks repaired remain repaired.

This baseline methodology shall be used in conjunction with the approved monitoring methodology AM0023 ("Leak reduction from natural gas pipeline compressor or gate stations").

Additionality

The additionality of the project activity shall be demonstrated and assessed using the latest version of the "Tool for the demonstration and assessment of additionality" agreed by the CDM Executive Board,[1] taking into account the added considerations noted below.

[1] Please refer to: <http://cdm.unfccc.int/goto/MPappmeth>.

1/17

Leak Detection Instruments

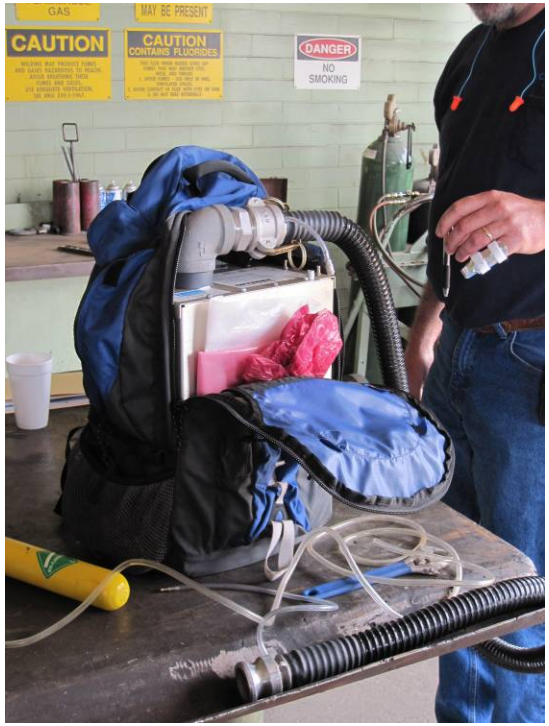
Heath Consultants Gasurveyor

Leak detection

Leak Tagging

Leak Measurement

- Hi Flow® Sampler
- Calibrated bagging techniques



CGT personnel calibrating a Hi Flow Sampler™

Columbia Gulf Transmission
A NiSource Company

Leak Measurement

Quantifing packing vent with Hi Flow Sampler

Using calibrated vent bag for rod packing emissions

Findings

- Baseline studies conducted at 11 compressor stations
- Over 430 leaks found
  - 39 leaks per station on average
- Common leak types detected and quantified:
  - Suction and discharge valves
  - Open-ended line (OEL)/vent line
  - Blowdown valve
  - Compressor seal and rod packing
  - Doghouse vent

Findings

Rayne, LA: compressor unit valves (suction and discharge)

- Stanton, KY
  - Largest emissions from valve leaks (compressor suction and discharge)
    - As high as 637 m^3/hour
  - Other sources:
    - Thread fittings, gaskets, tube connections
  - Total station emissions: 1,333 m^3 methane/hour

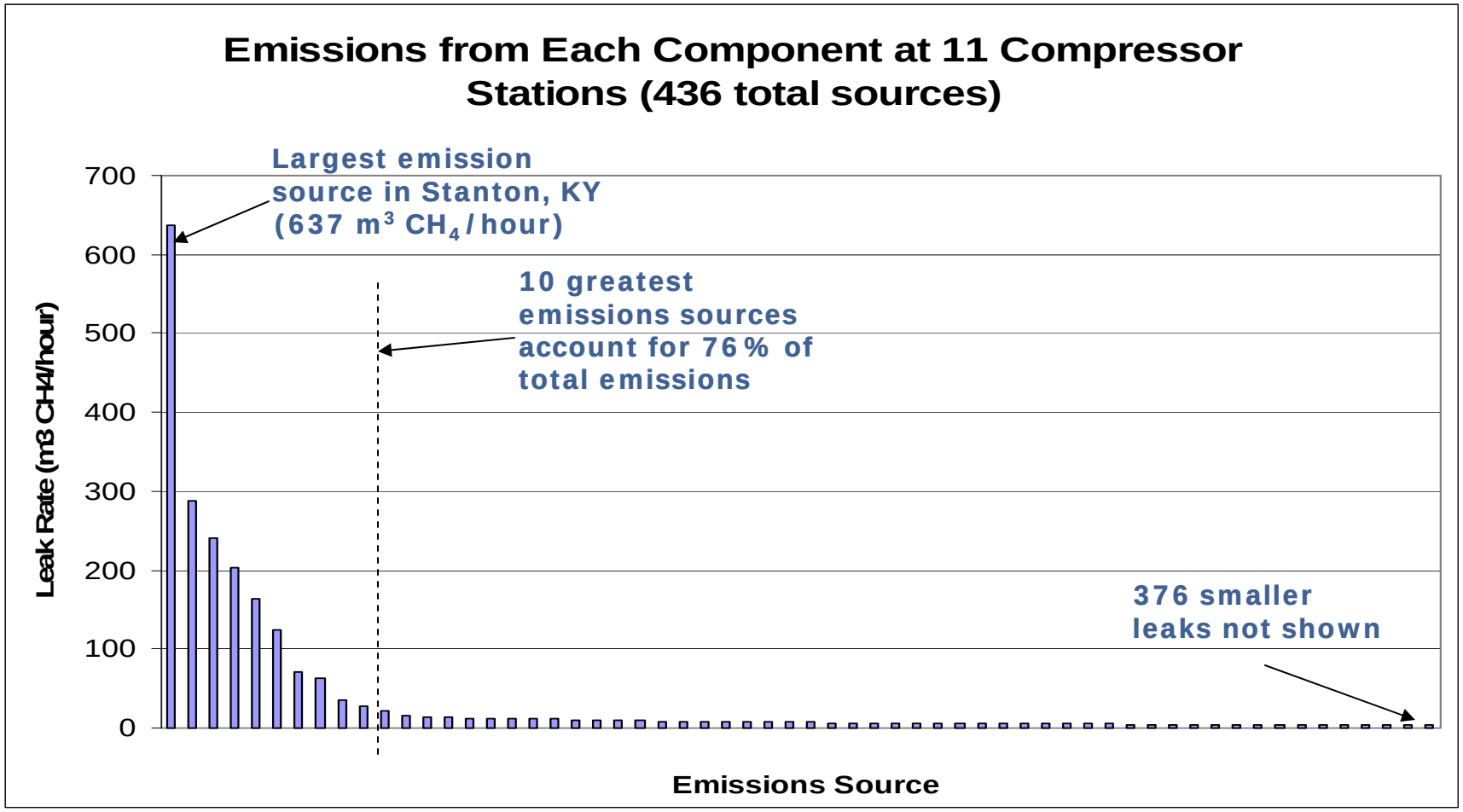
Findings

All Site Emissions	
Site	**Total Emissions (m^3 CH_4 / hour)**
Stanton, KY	1,333
Hampshire, TN	543
Corinth, MS	128
Delhi, LA	111
Houma, LA	92
Rayne, LA	88
Inverness, MS	58
Clementsville, KY	28
Banner, MS	27
Alexandria, LA	23
Hartsville, TN	12
Total	**2,443**

Rayne, LA: common blowdown vent

Findings

A majority of the total methane emissions can be reduced by repairing a minority of the leaking sources



Future Work

- Repairs performed on major leaking sources
  - Reduces majority of emissions
  - NOT cost-effective unless carbon credits involves
- Numerical values of credits determined from reduced leak rate
  - Baseline emissions – monitoring emissions = reductions
  - Reductions quantified as voluntary carbon units (VCUs)

Takeaways

- Carbon credits in the voluntary market are difficult to obtain
  - Large burden of proof (additionally: e.g., financial barrier, common practice)
  - Monitoring, data collection, and reporting must be conducted according to VCS standards and procedures
- Methodology provides unique opportunity for transmission companies to positively affect climate change
  - Reduce emissions
  - Earn revenue

Questions?

- Contact Info:

Jeff McCombs jmccombs@nisource.com

Program Leader—Nisource Environmental,Safety & Sustainability