Collaborative Drill Rig 1-Hour NO_2 Impacts and Model Evaluation Study

WESTERN REGIONAL AIR PARTNERSHIP

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

INDUSTRY

energy API

Other state and local agencies

EPA Regional/State/Local Modelers' Workshop
May 20, 2014 – Salt Lake City, UT

STUDY CONCEPTS

- Collaborative effort among BLM, EPA, States, other FLMs and the Oil and Gas Industry to better predict 1-hour NO_2 impacts from drill rigs through a field study.
- The Western Regional Air Partnership (WRAP) will coordinate the project.

Monitoring

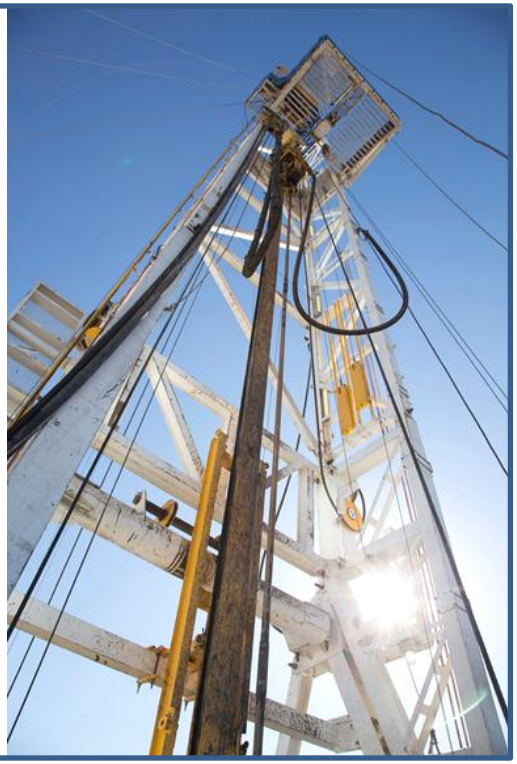
- NO_2 concentrations at multiple locations near operating drill rigs
- Meteorological conditions (i.e. – met stations)

Measuring

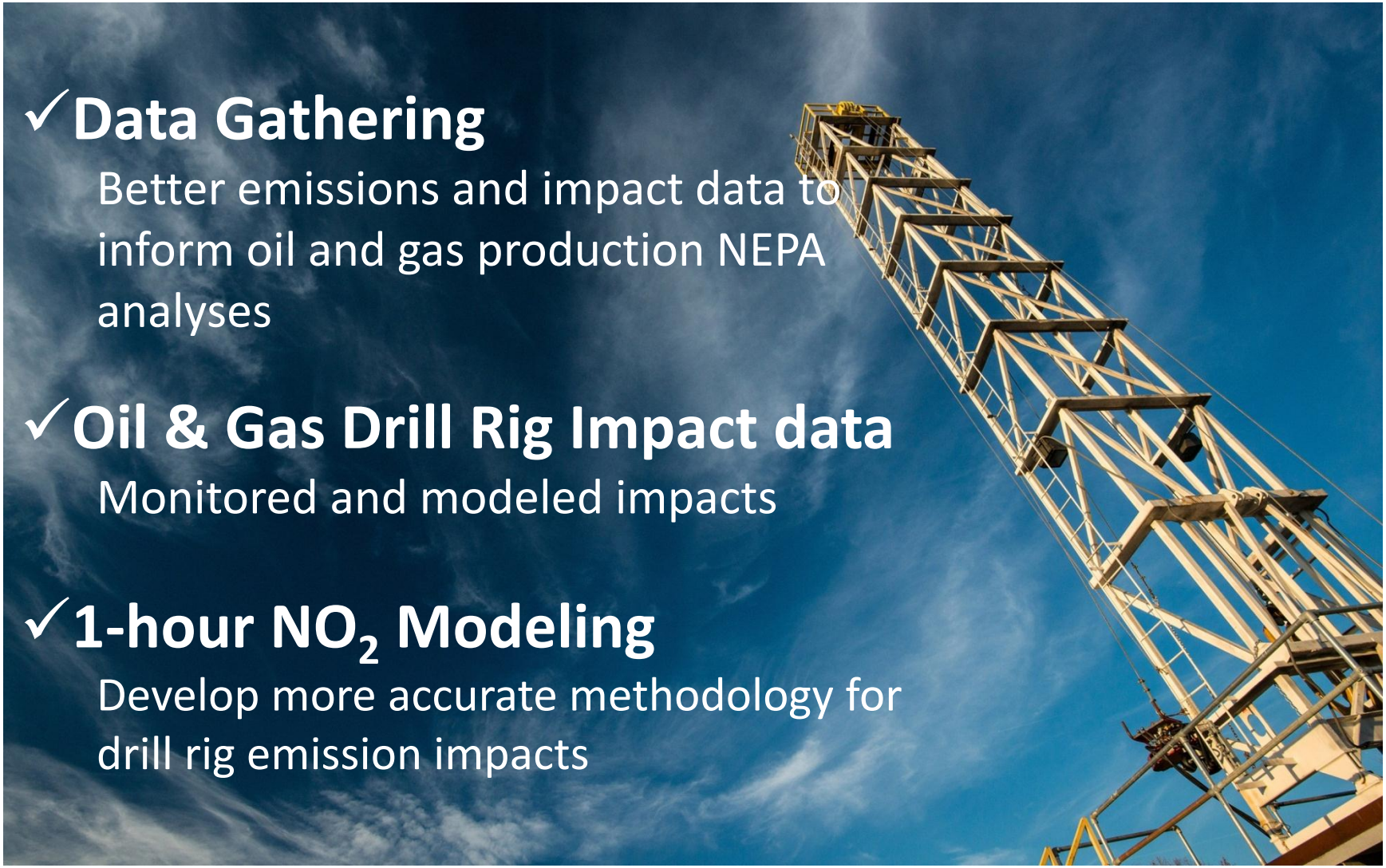
- Drill rig emissions (i.e. – stack testing or CEMS)

Modeling

- Model using data from monitoring and measurements



STUDY OBJECTIVES



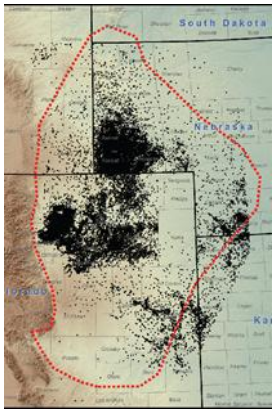
- ✓ **Data Gathering**
  Better emissions and impact data to inform oil and gas production NEPA analyses
- ✓ **Oil & Gas Drill Rig Impact data**
  Monitored and modeled impacts
- ✓ **1-hour NO_2 Modeling**
  Develop more accurate methodology for drill rig emission impacts

STUDY BENEFITS

- Improves NEPA analysis by providing scientific basis and accurate public disclosure of drill rig impacts
- Collection of ambient and emissions rate data to inform model performance evaluation for AERMOD OLM, PVMRM and other models used to determine 1-hour NO_2 impacts
- Collaborative approach allows for input and funding from federal agencies, states and industry, all who need better information about NO_2 impacts

STUDY AREAS

- **Two to four western US basins**



Denver-Julesburg (D-J) Basin of near-term interest

If possible, would like to find a volunteer drilling site and conduct field testing in mid-July to mid-August 2014, to coincide with the DISCOVER-AQ and FRAPPE air quality studies.

- **Alaska North Slope**

Kuparuk Oil Field

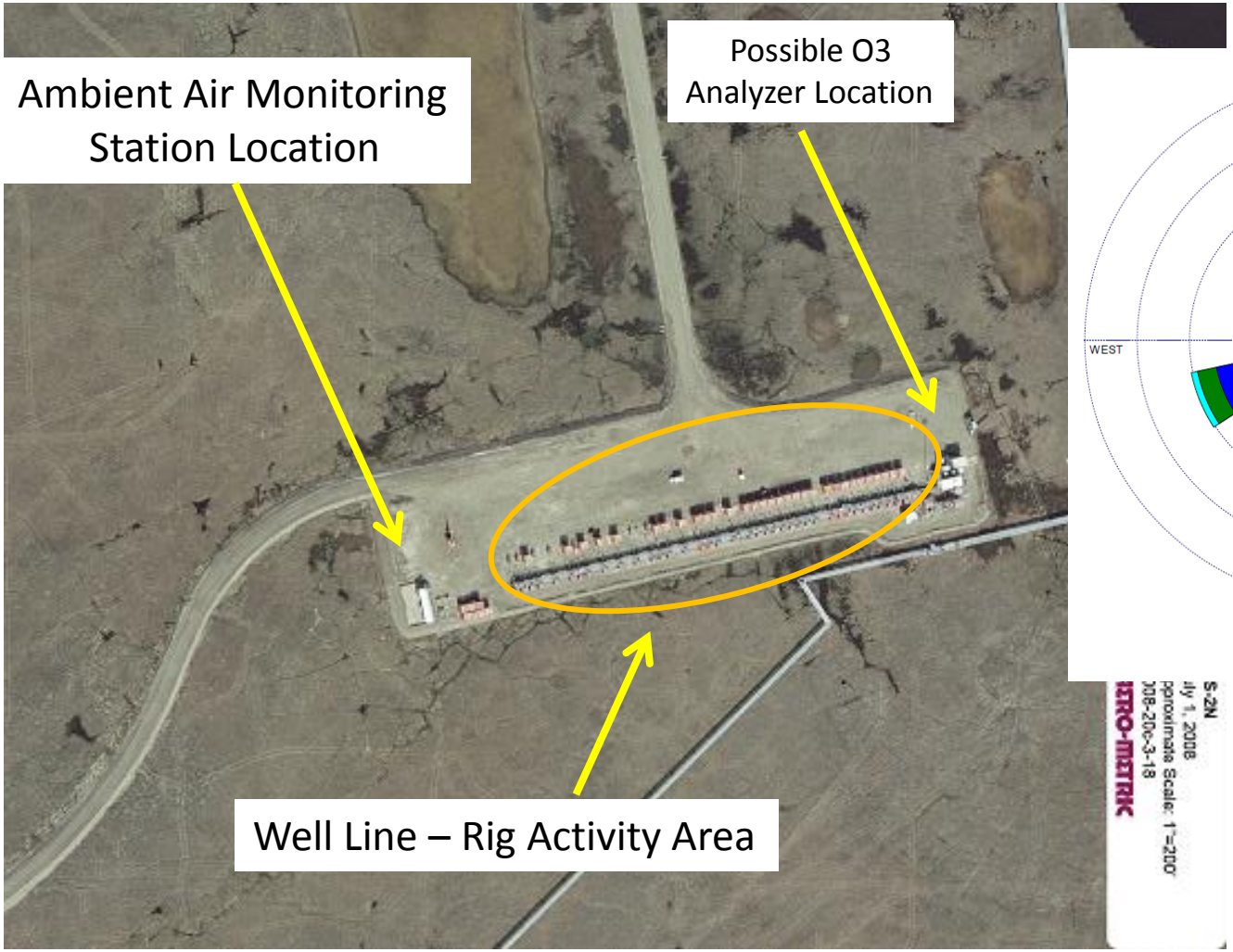
Work being funded separately by operator

Kuparuk Site

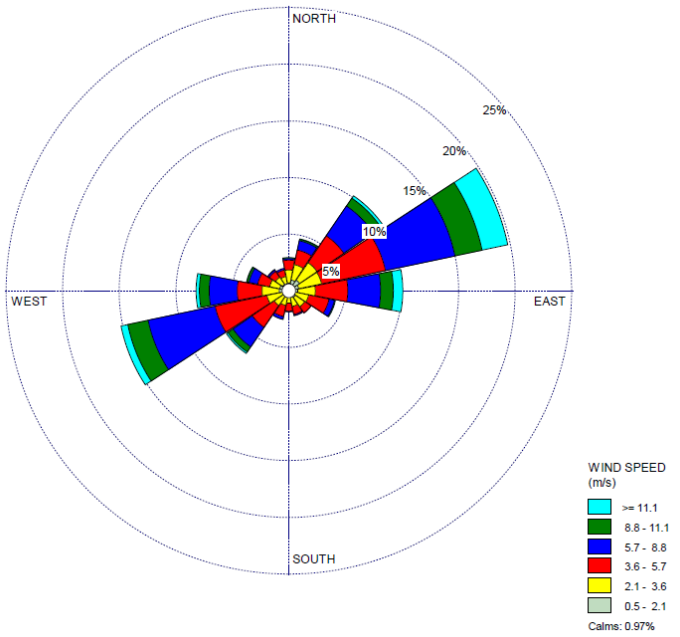
Proposed monitoring plan (currently being finalized):

- NOx CEMS on 2 engines, 2 boilers and a heater
- Full ambient air quality monitoring station downwind from well line (NO, NO_2, NO_x, SO_2, CO, O_3, PM_{10}, & $PM_{2.5}$)
- Portable O_3 monitor being evaluated for use upwind
- Wind speed and direction monitored on site with PSD quality meteorological data collected ~15 miles upwind & downwind
- Monitoring expected to begin in July 2014 and continue through December 2014

Kuparuk Study Location



Wind Rose



Needs / Assistance from Volunteer Drill Sites in Western US Basin(s)

- ⇨ Provide site access to conduct the ambient measurements and source emissions testing.
- ⇨ Provide safety training to air quality measurement contractors.
- ⇨ Explore the possibility to use rig power to run the air quality analyzers.
- ⇨ Allow the study to continuously collect data from the rig with respect to: a) load on each engine; b) individual fuel use for each NOx source; c) rig activity data so that emissions can be correlated to rig activity.
- ⇨ Work with project manager to evaluate the most cost effective means of determining continuous individual source NOx emissions from the rig. Potential options include: a) stack testing followed by individual fuel use for each source b) individual fuel use for each source with a NOx analyzer installed on key engines; c) other forms of parametric monitoring to determine emissions
- ⇨ Ensure that the collected rig data can be electronically delivered to the air quality contractor.

STUDY SCHEDULE

Western Basins

TIME PERIOD	ACTIVITY
Nov. 2013 to April 2014	Workgroup formation, schedule and overall study workplan development
March to May 2014	Development of a field study design for 2 to 4 western U.S. Basins, including specifications for the sampling protocol and quality assurance/control plans – leading to a Request for Proposal for field data collection and subsequent data analysis effort for all Study sites.
July to Sept. 2014	Field data collection
Sept. 2014 to early 2015	Data analysis, model evaluation, and reporting

Want to:

- Volunteer a drilling site?
- Contribute to the study in other ways (expertise, funding)?
- Be considered for RFP list?

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