

**Four Corners Air Quality Task Force Meeting
Oil & Gas Work Group - P.M. Session
Tuesday, May 9, 2006**

Coordinator: Cindy Allen (CDPHE); Note taker: Bill Papich (BLM); Rebecca Reynolds, Facilitator

Participants:

Cindy Allen, CDPHE; Cody Barritt, EMIT; Brittany Benko, BP; Bruce Beynon, Chevron; Robin Blanchard, SJCA; Mike Brand, Cummins; Dave Brown, BP; Fran King Brown, Aka Energy/CO Southern Ute; Walt Brown, BLM/FS; Jim Cue, Caterpillar; Mark Dalton, Samson; Carl Daly, USEPA; Ryan Dupnick, Compliance Controls; Virgil Frazier, SUIT GF; Bruce Gantner, Conoco Phillips; Bob Gonzales, Caterpillar; Bill Hochheiser, US DOE; Bart Myers, Caterpillar; Casey Osborn, EMIT; Bill Papich, BLM; Liana Reilly, NPS/ARD; Mike Silverstein, CDPHE; Lisa Sumi, OGAP; Lisa Winn, XTO Energy; Dale Wirth, BLM/Farmington

Welcome & Introductions

Introductions were made

Review Background Docs/Presentation

No Comments

Work Plan Development

Possible additions to Mitigation Options Development Outline:

Tradeoffs

Proven/Commercially available; Non Commercial; R&D – this can be addressed In the uncertainty section

Incentive or Market mitigation options

Brainstorming on Mitigation Options by Sub-category of Engines

Sub-categories are defined on the Oil & Gas Matrix as posted on the 4C website.

Rig Engines

- Analysis of all drill rigs – replace the dirtiest 20%
- Natural gas powered engines
- Electric powered drill rig
- Selective Catalytic Reduction (SCR)
- Dual fuel (or Bi-fuel) diesel and natural gas
- NSCR
- Requirements for ultra low sulfur diesel fuel
- Bio diesel
- Tier 2-4 engine standards
- PM Traps
- Free gas recirculation
- Fuel Additives

Small Engines

Some discussion was had as to the cutoff between small and large engines. Some thought the cutoff should parallel that of EPA's new source performance standards (NSPS) and others thought it should match that of the interim recommendations. The group decided to table this discussion for now and simply use the small and large designation for the time being.

- Install electric engines
- NSCR/3-way catalysts
- Lean Burn
- Air to fuel ratio (AFR)
- Utilize exhaust gas analyzers to adjust AFR
- Preventative maintenance
- Optimization: optimize what is used to match hp needs
- Centralization – replace a lot of small engines with one big one
- Permitting based on actual emissions
- Emission limit on existing engines (1g/hp hr and 2g/hp hr)
- Replacing ignition systems to decrease false starts
- Replace piston rod packing (pumps)
- Oxidation catalysts on lean burns

Large Engines

All of the above plus...

- SCR
- Install 4 cycle lean burn engines with oxidation catalysts
- Install rich burn with NSCR
- Minimize (control?) engine blow downs
- Smart AFRC (air-fuel-ratio-controller)
- Industry collaboration (“Change Champions”) to drive market innovation (e.g. engine manufacturers)
- Replace gas engine starters with electric air compressors
- Provide training for field personnel on engine maintenance with regard to AQ considerations

Turbines (there may be more options here)

- High efficiency
- Micro turbines to replace RICE (Reciprocating Internal Combustion engines)
- SCR
- NSCR

Truck Traffic – Mobile & non-road

- Fugitive dust control plans for dirt/gavel roads and land clearing
- Use produced H₂O for dust reduction
- Decrease truck traffic by optimizing produced H₂O handling
- Automation for wells (monitoring, remote controls)
- Require truck fleets to meet fuel efficiency standards
- Remote screen
- Routing management
- Centralize facilities
- Enforce speed limits (by industry)
- Recycle drilling fluids
- Pave roads

Over Arching

- Incentives
 - State government tax credits
 - Emissions trading programs

- Etc.
- Develop “programs for 4C and all pollutants (e.g.: “Natural Gas Star,” VISTAs”)

Drafting Teams

The group broke into smaller drafting teams that will review the list of brainstormed mitigation options and determine which ones the group will write. The drafting teams are:

Rig Engines

Brittany Benko, Lead
Bart Meyers
Carl Daly

Stationary RICE

Dave Brown, Lead
Mike Brand
Bob Gonzales
Ryan Dupnick
Jim Cue

Turbines

Bruce Beynon, Lead
Reid Smith
Caterpillar Guy/Solar (?)

Truck Traffic

Bruce Gantner, Lead
Mark Dalton
Dale Wirth

Overarching

Bill Hochheiser, Lead
Fran King Brown
Mike Lazaro

Next Steps

- Friday, May 12, 2006: Post or email directly to the group all of the options and revised outline
- Each drafting team will have a conference call to review the brainstorm option list and decide which ones will be written and by whom; drafting team leads will set up the conference calls and email call-in info to their drafting team members (cc: Cindy Allen on all). Each group needs to record which options were chosen and which were not; please give some indication of the rationale for the choice. This material will be posted for the entire Oil & Gas workgroup to see (email to Cindy Allen).
 - RICE: Mon, 5/15, 1pm or Tues, 5/16 1pm
 - Rig Engines: Wed, 5/17,9am
 - Turbines: TBD
 - Truck: Week of 5/22
 - Overarching: Tues, 5/16, 1pm MT
- Friday, June 9, 2006: Engine Mitigation Option Drafts due (email to Cindy Allen)
- Wed, June 21, 2006 - 2:00pm: Oil & Gas full group conference call

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