Status Report to the WRAP Board

Stationary Sources Joint Forum:

Emission Inventory and Control Technology Technical Support Contract

May 17, 2005

Presented by:

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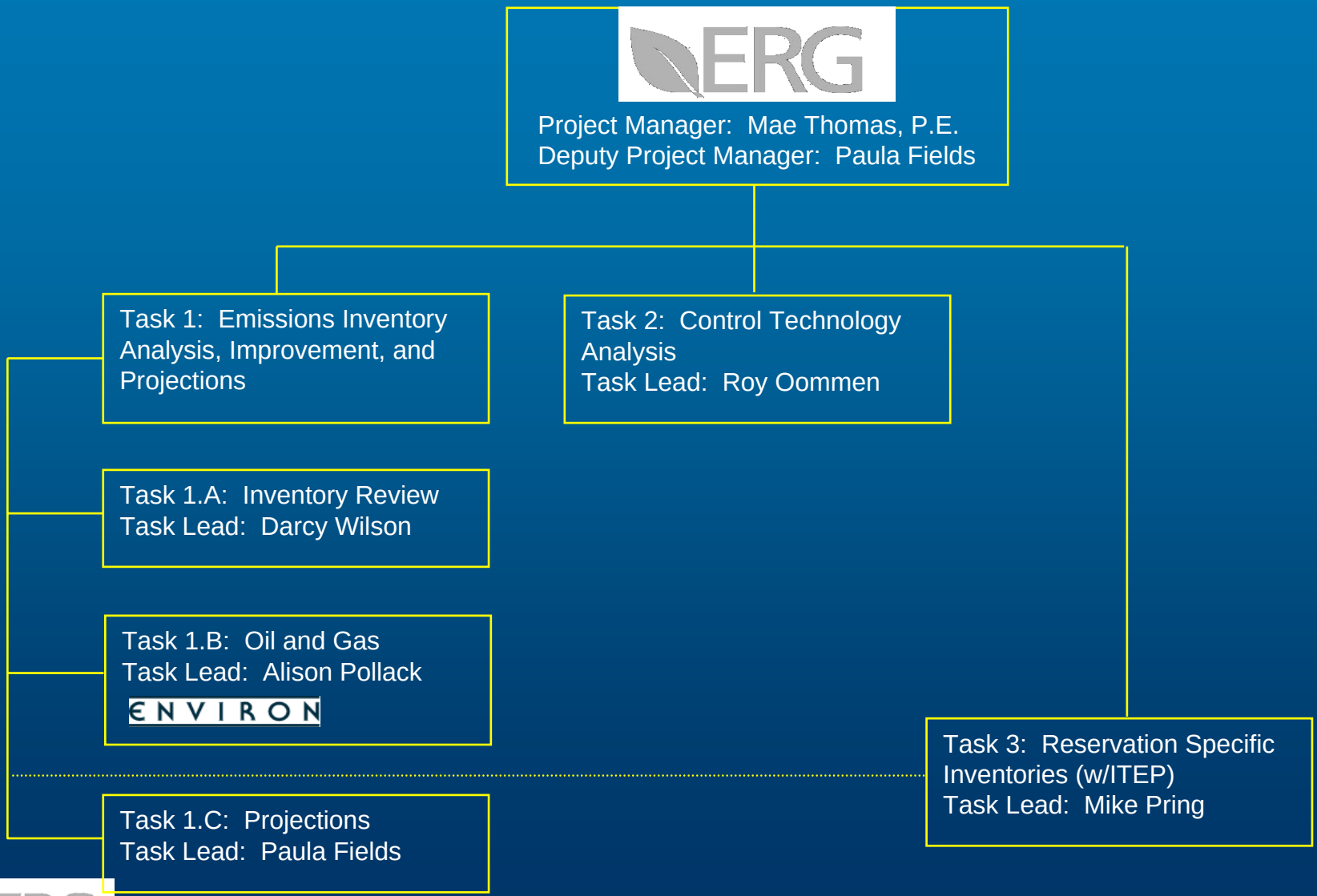
ENVIRON International Corporation

Task Organization



SSJF Support Contract Objectives

- **Provide a sound technical basis for control strategy development pertaining to sources not addressed in SO_2 annex, BART analysis**
  - Focus on NO_x sources (EGUs, oil and gas)
- **Key goals:**
  - Improve 2002 emissions inventory
  - Estimate reliable 2018 baseline inventory
  - Develop set of 3 to 5 control strategy scenarios
- **Work groups:**
  - Oil and gas
  - Projections
  - NO_x from EGUs

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Overall Contract Schedule

- **December 2004: Project Start Date**
- **January 2005:**
  - Work plans submitted
- **April - May 2005:**
  - Intermediate deliverables
- **June 2005:**
  - Results Reviewed
  - EDMS upload (2002)
  - EDMS upload (2018)
- **August 2005: Controls Analysis**

Presentation Overview

- **Task 1.A: Emissions Inventory Review**
  - Scope
  - Progress to date
  - Next steps

Scope: Task 1.A (Emissions Inventory Review)

- Improve 2002 WRAP EDMS point and area source inventories using all available data
- Assess completeness of geographic, facility, source category, and pollutant coverage
- Collect comprehensive control technology information
- Upload revised data to EDMS for use in other tasks: projections, control technology analyses
- Prepare a report documenting all work

Progress & Next Steps: Task 1.A (Emissions Inventory)

- **Progress:**
  - Compiled point and area source master inventory databases
  - Augmented controls information
  - Contacted states w/NEI questions, missing data
- **Next Steps:**
  - Contact state/local/tribal agencies to make sure gap filling of point sources was conducted correctly, no double counting
  - Incorporate tribal databases, oil & gas sources
  - Prepare revised NIF files and upload to EDMS

Presentation Overview

- **Task 1.B: Oil & Gas**
  - Scope
  - Progress to date
  - Next steps

Scope: Task 1.B (Oil & Gas)

- Develop a work plan and implement the approach for estimating oil & gas emissions in a consistent manner
- Review oil & gas emissions data reported in EDMS
- Interview state agencies to discuss what oil & gas emissions sources are permitted, and what and how emissions are reported as point or area sources
- Estimate oil & gas emissions for four specific tribes and reconcile these with state emissions estimates
- Upload revised state and tribal data to EDMS
- Develop and implement methods to project emissions to 2018, including anticipated controls
- Prepare a report documenting all work

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Progress: Task 1.B (Oil & Gas)

- Multiple work group calls have been held to discuss approach and draft results
- Developed work plan with recommended and alternative approaches for estimating area source oil & gas emissions
- Conducted interviews with all state agencies
- Obtained and analyzed well-specific data from all State oil & gas commissions
- Developed draft 2002 oil & gas area source emissions estimates
- Determined oil & gas point source emissions and reconciled with area source estimates
- Initial discussions held with three of four tribes

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Area Source Emissions Estimation Approach

- **Focus on NO_x sources/processes:**
  - Drill rigs
  - Compressor engines
  - Generators used in coal bed methane production
- **Also estimated wellhead VOC and NO_x emissions**
  - Gas wells: condensate tanks (VOC), dehydrators (VOC), heaters (NO_x), pneumatic devices (VOC), well completion (VOC & NO_x)
  - Oil wells: heaters (NO_x), pneumatic devices (VOC), tanks (VOC)

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2002 Draft Area Source NO_x Emissions

State	Compressors	Drill Rigs	Wellhead
	(tons)		
Alaska	-	877	91
Arizona	7	-	9
Colorado	-	5,736	17,243
Idaho	-	-	-
Montana	2,015	1,044	4,678
Nevada	0	24	4
New Mexico	40,382	6,653	13,845
North Dakota	1,393	1,536	101
Oregon	19	-	12
South Dakota	254	36	44
Utah	1,182	676	2,127
Washington	-	-	-
Wyoming	7,099	4,991	6,409

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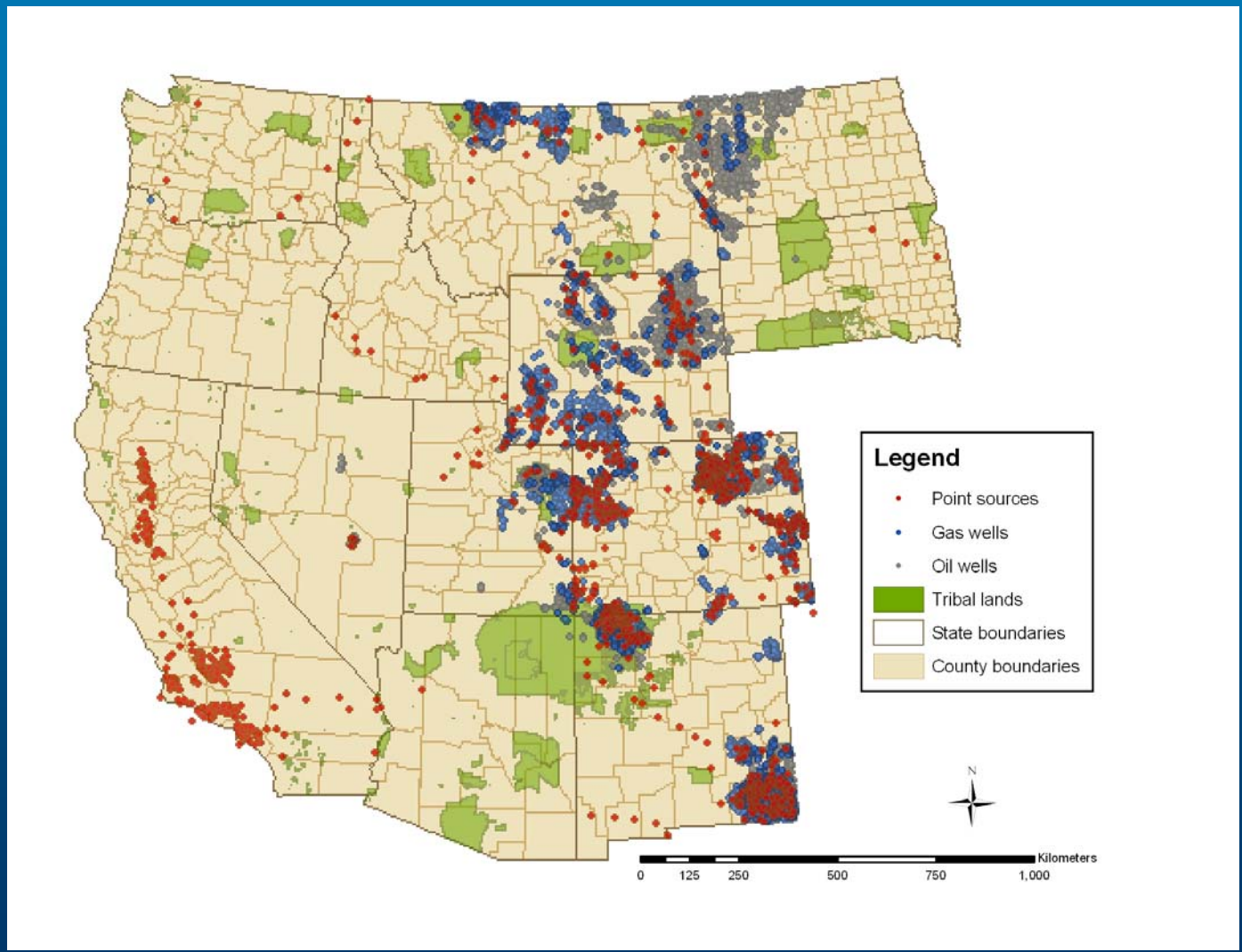
2002 Oil & Gas Wells and Point Sources



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Next Steps: Task 1.B (O&G)

- **2002 Emissions**
  - Complete 2002 coal bed methane generator emissions
  - Complete discussions with tribal contacts and estimate tribal O&G emissions; reconcile with state estimates
  - Upload 2002 State and tribal emissions to EDMS
- **2018 Emissions**
  - Develop and apply 2018 projection methods
  - Upload 2018 State and tribal emissions to EDMS
  - Document potential O&G controls
- **Prepare draft and final reports**

Task 3: Tribal Point Source Inventories

Sarah Kelly, ITEP

Presentation Overview

- **Task 1.C: Emissions Projections**
  - Scope
  - Progress to date
  - Next steps

Scope: Task 1.C (Projections)

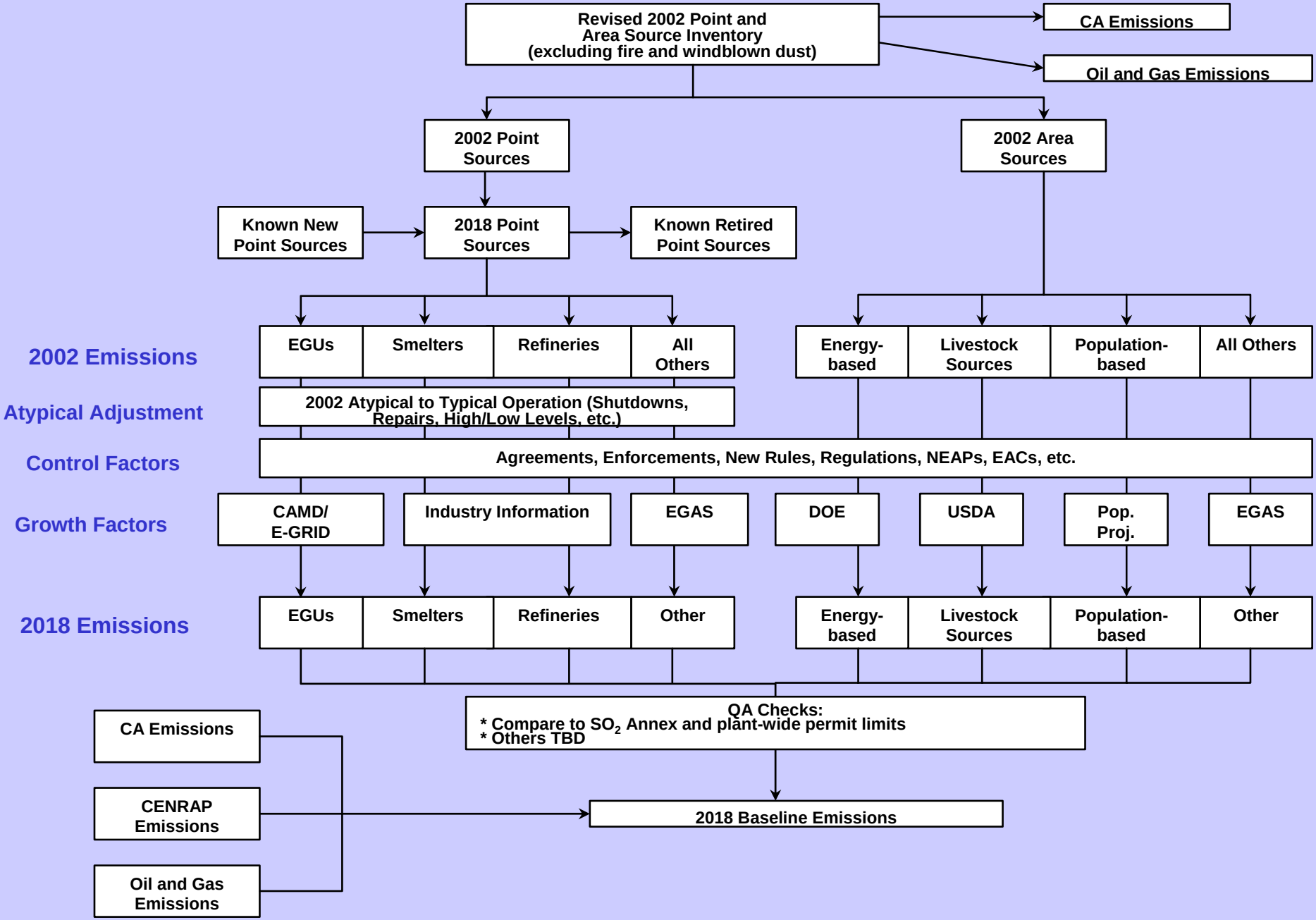
- **Review previous projections, models**
- **Update retirement rates for existing sources**
- **Identify new (expected) sources, location, fuel**
- **Develop projection variables**
- **Write memo with findings from A-D**
- **Identify/quantify impacts from laws/regulations not in full effect by 2002**
  - EACs, agreements/enforcement actions, NEAPs, MACTs
  - Write memo
- **Other issues**
  - Handling CA projections
- **Develop baseline projections**
  - Critical path = complete 2002 EI revision (Task 1.A)

- Input to EDMS
- Draft report
- Final report

Progress: Task 1.C (Projections)

- **Projections "roadmap" (2 drafts) developed**
- **Regulatory research complete (potential post-2002 impacts from regulations, EACs, agreements/ enforcements, NEAPs obtained on-line, MACTs)**
  - Follow-up questions and data requests being made to state/local agencies
  - Results compiled in spreadsheet
- **State demographic/population forecasts obtained**
- **Initial review of CAMD data as a basis to identify facilities with 2002 "atypical" operations**
- **Capacity factor investigated**
- **Projections database format (draft) developed**

Road Map for WRAP 2018 Projections (Task 1.C)



Initial Results of Interviews with S/L Agencies (example)

Contact	Facility Name	State Facility	SIC	Emissions (tpy)	Type of Update	Status/Comments	Next ERG Action
NORTH DAKOTA							
Tom Bachman	Red Tail Energy (Richardton Plant)	None assigned	2869	spreadsheet gives permit limits	New facility	New ethanol plant expected to operate in 2006.	
	MDU/Westmoreland Energy	None assigned	4911	ss gives permit limits	New facility	New power plant expected to operate in 2009	
					Retired facility	None	
	Tesoro (Mandan Refinery)	226	2911	Reductions: 3,500-4,000 tpy (SO2); 500 tpy (PM10)	Consent decree	2002 emission reductions effective 12/1/04	Est. control factor
	ArcherDanielsMidland (Walhalla)	251	2869	Reductions: VOC 100 tpy	Consent decree	2002 emission reductions effective 3/31/03	Est. control factor
	Alchem, Ltd.	261	2869	Reductions: VOC 75 tpy	Consent decree	2002 emission reductions effective 2/23/04	Est. control factor
					Consent decree	Unnamed power plant: consent decree being negotiated; 2 units affected are both BART-eligible	
				None	Rule/reg		

Next Steps: Task 1.C (Projections)

- **Complete interviews with agencies**
- **Calculate emissions impacts based on priority SCCs (memo)**
  - Atypical adjustments
  - Control factors
- **Develop projection variables (memo)**
  - Growth factors
- **Calculate baseline projections for 2018**
- **Upload baseline projections to EDMS**
- **Prepare reports documenting all work**

Presentation Overview

- **Task 2: Controls Analysis**
  - Scope
  - Progress to date
  - Next steps

Scope: Task 2 (Controls Analysis)

- **Provide costs and impacts for options used to control emissions of NO_x, SO_2, PM, VOC, NH_3**
- **NO_x from EGUs (Workgroup)**
  - Coal-fired
  - Oil- and gas-fired
- **SO_2, PM, VOC, and NH_3 from all sources**
- **Reports documenting all work**

Progress: Task 2 (Controls Analysis)

- **Assembled database of all coal-fired EGUs in WRAP states**
  - Sources included EPA/CAMD, EIA, WRAP BART, phone interviews with utilities
  - Focused on cost and performance of existing combustion controls
  - Grouped EGUs into 7 bins based on similarities (combustor type, coal fired, nitrogen content of coal, etc.)

EGU Bins

Bin Designation	Bin Description	Number of EGU's Assigned to Bin[a]
1a	Tangentially-fired burners, high nitrogen	27
1b	Tangentially-fired burners, low nitrogen	17
2	Wall-fired burners, high nitrogen coal	33
3	Wall-fired burners, low nitrogen coal	12
4	Cyclone burners	5
5	Cell burners	3
6	CFB units	2
7	Dry bottom vertically fired	4

[a] Seven of the 110 units in WRAP are not included in bin assignments or options analysis due to insufficient information.

Progress: Task 2 (Controls Analysis)

- **NO_x from coal-fired EGUs**
  - Profiled state-of-the-art NO_x combustion controls
  - Identified 5-7 control options for each bin (1-3 existing; 4-7 state-of-the-art)
  - Calculated costs and impacts of all options
  - Draft report on WRAP Website (4/26/05):

    "Analysis of Combustion Controls for Reducing NO_x Emissions From Coal-fired EGUs in the WRAP Region"

Next Steps: Task 2 (Controls Analysis)

- **For coal-fired EGUs: Respond to comments**
- **For non-EGUs:**
  - Identify highest emitting sources/SCCs using Task 1.A revised 2002 emissions inventory
  - Identify potential controls
    - Reaction Engineering Study
    - Other RPO Studies
- **Obtain input on control scenarios:**
  - NO_x from non-coal EGUs and non-EGUs
  - SO_2 for non-Annex States
  - PM, VOC, and ammonia from all sources

Thank You!

Any Questions?