



UTAH DEPARTMENT of
ENVIRONMENTAL QUALITY

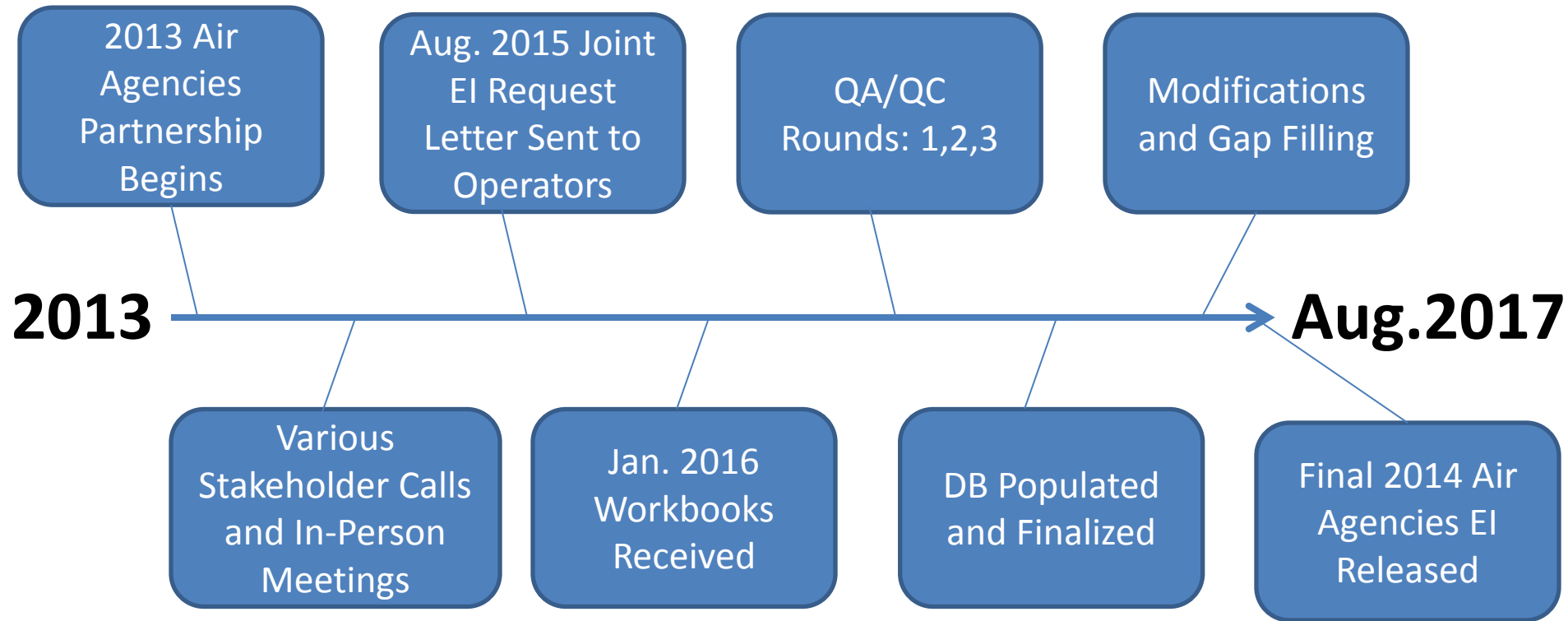
AIR
QUALITY

Developing a Utah Oil and Gas Emissions Inventory

8/24/2017



Timeline



Stakeholder Process

- Conference Calls
- 4 in-person meetings
- Included: UDAQ, EPA, Ute Tribe, WRAP, BLM, Western Energy Alliance (WEA), major oil and gas operators



Inventory Workbook

- Microsoft Excel based workbook
 - Facility Based
 - Sheet for each equipment type
- Emissions Factors
 - AP-42, API, Subpart W, Operators provided or manufacturer spec. based
- $PM_{2.5}$, PM_{10} , SO_x , NO_x ,
VOC, CO, CH_2O

- Well completions
- Rice & turbines
- Separators & heaters
- Dehydrators
- Tanks
- Truck loading
- Pneumatic controllers
- Pneumatic pumps
- Fugitives
- Composition Data:
 - Raw Gas, Flash gas, S/W/B Gas

Inventory Collection and DB

- 31 workbooks received (represent 96% of 2014 Wells)
- > 8,500 facilities included
- Initial QA/QC → Formal QA/QC → DB Populated → Final QA/QC → DB Adjusted



Results (NO_x & VOC)

2014 Utah Air Agencies Oil and Gas Emissions Inventory				
Description	NO _x (tons/year)		VOCs (tons/year)	
	Duchesne	Uintah	Duchesne	Uintah
Totals				
County Total (Duchesne & Uintah)	5,668	7,857	10,353	41,286
Combined Total (Duchesne + Uintah)	13,526		51,640	

Not Shown:

- CO
- SO_x
- PM₁₀
- PM_{2.5}
- CH₂O

Modifications

- Updated Intermittent Pneu. Controller Emission Factor
 - Newer EF available, Thoma et al. study, UB specific but has issues
 - Allen et al. study under scrutiny, issues with high/low bleed controller EF, reasonable intermittent bleed controller EF
 - Decided to replace Subpart W Intermittent PC EF with Allen et al. Intermittent PC EF

Modifications

- Supplemented with WRAP Inventory Projections
 - Venting and Flaring
- Added Waste Water Facilities (Ponds, Landfarms, Landfills)
 - UDAQ developed method – mass balance approach
- O&G Tool – Mud Degassing

Final 2014 Inventory (NO_x & VOC)

Description	NOx (tons/year)		VOCs (tons/year)	
	Duchesne	Uintah	Duchesne	Uintah
All Sources				
County Total (Duchesne & Uintah)	5,668.99	7,858.00	36,645.70	96,151.88
Combined Total (Duchesne + Uintah)	13,527.00		132,797.57	

Thank You!

UDAQ:

- Brock LeBaron
- Patrick Barickman
- Colleen Delaney
- Sheila Vance
- Greg Mortensen
- Todd Wetzel

EPA (R8):

- Chris Dresser
- Cindy Beeler
- Aaron Zull

Ute Tribe:

- Minnie Grant

Additionally:

- WRAP (Tom Moore)
- WEA
- BLM
- Participating Companies

For Further Information about the Utah 2014 Air Agencies Oil and Gas Emissions Inventory
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