Developing a Utah Oil and Gas Emissions Inventory
8/24/2017
Timeline

2013

- Air Agencies Partnership Begins
- Various Stakeholder Calls and In-Person Meetings

Aug. 2015

- Joint EI Request Letter Sent to Operators


- Workbooks Received

QA/QC Rounds: 1, 2, 3

DB Populated and Finalized

Aug. 2017

- Modifications and Gap Filling
- Final 2014 Air Agencies EI Released
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$_2$O

- 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 ($\text{NO}_x$ & VOC)

<table>
<thead>
<tr>
<th>Description</th>
<th>NOx (tons/year)</th>
<th>VOCs (tons/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Duchesne</td>
<td>Uintah</td>
</tr>
<tr>
<td>Dehydrators</td>
<td>1.96</td>
<td>4.49</td>
</tr>
<tr>
<td>Fugitives</td>
<td>3,418.35</td>
<td>12,922.84</td>
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<tr>
<td>Pneumatic Controllers</td>
<td>215.67</td>
<td>2,766.34</td>
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<tr>
<td>Pneumatic Pumps</td>
<td>228.04</td>
<td>10,983.42</td>
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<tr>
<td>RICE &amp; Engines</td>
<td>4,178.51</td>
<td>5,043.82</td>
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<tr>
<td>Separators &amp; Heaters</td>
<td>1,067.00</td>
<td>1,863.84</td>
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<td>Tanks</td>
<td>12.30</td>
<td>11.33</td>
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<tr>
<td>Truck Loading</td>
<td>928.30</td>
<td>726.60</td>
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<tr>
<td>Well Completions (Drilling)</td>
<td>408.84</td>
<td>933.96</td>
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<tr>
<td>County Total (Duchesne &amp; Uintah)</td>
<td>5,668</td>
<td>7,857</td>
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<td>Combined Total (Duchesne + Uintah)</td>
<td>13,526</td>
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Not Shown:
- CO
- $\text{SO}_x$
- PM$_{10}$
- PM$_{2.5}$
- CH$_2$O
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 ($\text{NO}_x$ & VOC)

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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 Please Contact:
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