EDF Presentation in Support of the APCD’s Proposed Rule
Proposed Rules Make Sense for Colorado

• Widespread support from:
  – Industry Leaders
  – The Environmental Community and
  – Local governments

• State-wide reductions in ozone precursors and methane emissions are necessary to protect Coloradan’s health and environment

• Highly cost effective

• Common sense and practical, with appropriate flexibility and accommodation for smaller, lower emitting facilities

• Highly Effective: Will remove over 93,000 tons of VOCs and more than 110,000 tons of CH4 from the atmosphere

• Ensures Colorado continues tradition as national leader in clean air measures
O&G activities are a large and steadily increasing source of ozone precursor and methane emissions

- Oil and gas activities:
  - The largest source of anthropogenic VOCs in Colorado
  - The largest industrial source of methane in Colorado
- Other sources of VOCs are decreasing while oil and gas VOCs continue to grow
- Existing regulations have failed to keep pace with burgeoning development
- NSPS will not address
  - The hundreds of thousands of tons of pollutants currently being emitted from many existing sources
  - Fugitive emissions and vented well maintenance emissions from new sources which are the two leading sources of methane emissions in the state
  - The over 60,000 tons of VOCs leaked from tanks with inefficient capture
COLORADO MONTHLY ACTIVE WELL COUNT
12-06-13

Source: COGCC: Colorado Weekly & Monthly Oil and Gas Statistics 12/6/13)
COLORADO NATURAL GAS PRODUCTION
1995-2012
BILLION CUBIC FEET OF GAS PER DAY 12-06-13

ANNUAL GAS PROD (bcf/day)

Source: COGCC: Colorado Weekly & Monthly Oil and Gas Statistics 12/6/13
COLORADO OIL PRODUCTION 1995-2012
THOUSAND BARRELS PER DAY 12-06-13

Source: COGCC: Colorado Weekly & Monthly Oil and Gas Statistics 12/6/13)
Oil and gas production and emissions are expected to increase

- EIA predicts US production to increase by 84% between 2013 and 2040
- WPX plans to drill additional exploratory wells in the Piceance, increasing its capital expenditure in the Basin to half a billion dollars
- BLM White River Field Office EIS: contemplates 1,800 new well pads
Significant development occurs outside the NAA

- 75% of new well starts in 2012 occurred outside the nonattainment area
- Large parts of the Niobrara where much of the new development is focused, occur outside the NAA
RECENT COLORADO OIL AND GAS WELL PERMITS 12-06-13

Source: COGCC: Colorado Weekly & Monthly Oil and Gas Statistics 12/6/13)
Division modeling predicts VOCs from Oil and Gas increase while other sources decrease.

<table>
<thead>
<tr>
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<th>2011</th>
<th>2018</th>
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<tbody>
<tr>
<td>Oil and Gas</td>
<td>567.2 (54%)</td>
<td>869.8 (68%)</td>
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<tr>
<td>On-Road Vehicles</td>
<td>167.7 (16%)</td>
<td>122.9 (10%)</td>
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O&G activities contribute to ozone pollution

DGS source apportionment modeling: VOCs from oil and gas facilities contribute

• 1.19 ppb to monitor at Greeley,
• 0.50 ppb to monitor at Fort Collins West, and
• 0.53 ppb to monitor at Fort Collins.

DGS sensitivity modeling:

• Reducing VOCs from oil and gas sources leads to widespread ozone decreases throughout the Front Range
• 20% reduction in oil and gas VOC emissions decreases ozone up to 1.67 ppb.

Meteorological modeling: VOC emissions from sources on the Western Slope and Southwest part of Colorado travel east and north and contribute to the Front Range nonattainment problem.
O&G activities contribute to ozone pollution cont.

- O&G activities are responsible for majority of anthropogenic VOCs at monitors across the state
  - 92% in Weld County
  - 84% in Yuma County
  - 85% in Montezuma County
  - 97% in Rio Blanco County
  - 91% in Garfield County
  - 81% in Moffat County
Statewide reductions in VOCs and CH4 are necessary and appropriate

• Achieving “the maximum practical degree of air purity in every portion” of the state, maintaining and attaining the federal health-based ambient air quality standards, and preventing “significant deterioration” of pristine air, are fundamental tenets of Colorado clean air policy. C.R.S. § 25-7-109(1)(a).
Majority (55%) of wells and facilities are located outside the nonattainment area
87.0% of Colorado's 51,693 active wells are located in these 6 counties (12-06-13)
Ozone pollution is an increasing problem outside the nonattainment area

- Rangely monitor violates the 8-hr NAAQS this year. Neither unique nor poorly understood.

- CDPHE issued 9 ozone advisories last winter for Moffat and Rio Blanco counties indicating air quality was unhealthy for children and adults active outdoors as well as asthmatics and older adults

- Clean Air Scientific Advisory Committee recommends an ozone standard between 0.060 and 0.070 ppm

- Oil and gas VOCs emitted in Western and Southwest Colorado transport east and north and contribute to the Denver Front Range nonattainment area.
8-9 monitors in Western and Southwest Colorado will fall into nonattainment if EPA lowers the 8-hr ozone standard to 65 ppb.

If future NAAQS set at 0.065 ppm...

Colorado Ozone Sites
Comparison to possible 0.065 ppm
Federal Ozone Standard 2011 - 2013

- Above level of possible standard (3+ years of data available)
  (Based on 3-yr. avg. of 4th max. for 2011 - 2013)
- Above level of possible standard (<3 years of data available)
  (Based on avg. of 4th max. for years available)
- Below level of possible standard (3+ years of data available)
  (Based on 3-yr. avg. of 4th max. for 2011 - 2013)
- Below level of possible standard (<3 years of data available)
  (Based on avg. of 4th max. for years available)
Immediate near term CH4 reductions are necessary to combat climate change

- Climate change is “unequivocal” and it is “virtually certain” that human influence has warmed the climate (IPCC Report)
Immediate near term CH4 reductions are necessary to combat climate change

• Per January 16, 2014, AQCC meeting: Colorado is already experiencing adverse impacts from climate change, including:
  – increased droughts,
  – reduced snowpack,
  – wildfires, and
  – other extreme weather events.

• These impacts threaten important ski and other recreation economies, crops, and way of life.
AQCC has clear authority to regulate hydrocarbons

• Section 109 of the APPCA provides the Commission with clear authority to regulate hydrocarbons

• Indeed, AQCC already regulates hydrocarbons from large oil and gas emission sources pursuant to EPA’s Tailoring Rule

• Arguments that AQCC should delay pending further federal action are meritless
Significant benefits accompany CH4 reductions

• Will reduce CH4 emissions by over 110,000 tons per year

• Will generate at least $100-300 million a year based on central values for the cost of carbon from the US government

• Division Estimates that rule will result in $16.8 million of captured product otherwise lost to the atmosphere
Rule is Cost Effective

• Average cost per ton of VOC reduced is less than $500 a ton of VOC reduced, per estimate from the Division (not accounting for reduction in methane emissions)

• Average cost per ton of methane reduced is less than $500 a ton of methane reduced, per estimate from the Division and WZI (not accounting for reduction in VOC emissions)
Rule is narrowly tailored, provides flexibility, and accounts for operational differences

• Tiers for LDAR: only 12% of sites (the largest) are subject to monthly inspections; smallest sites need only do instrument inspection once

• Low-VOC sources, such as CBM facilities and certain “dry” gas sources, subject to minimal requirements

• Extended implementation dates for existing sources

• Well maintenance “BMP” and STEM requirement allow operator to determine how best to control emissions

• Safety and process exceptions provided in tank, fugitive, pneumatic and well maintenance requirements

• Tailoring requirements to emissions, rather than geographic location, ensures rule achieves maximum emission reductions at reasonable cost
Inspections are tiered to size of well site

Well sites with 0-6 tpy of VOCs: One-time

Well sites with 7-12 tpy of VOCs: Annual

Well sites with 13-49 tpy of VOCs: Quarterly

Well sites with 50 tpy or more of VOCs: Monthly
LDAR is reasonable and appropriate

• Fugitive emissions are second largest source of VOCs and CH4; NSPS will not address

• DGS group critique of cost is riddled with inconsistencies and flawed assumptions that renders the analysis highly unreliable and meaningless

• Weight of evidence demonstrates frequent monitoring yields greater reductions than skip or step down monitoring at reasonable costs
  – Leak discovery increases with inspections; converse is also true.
  – Skip monitoring provides incentive for operators to not find leaks; presents enforcement challenges.
  – Certain components require frequent tightening to control leaks
Colorado is a leader

• Commission has demonstrated history of leadership when it comes to protecting clean air. Landmark rules in 2004, strengthened in 2006, 2008 and again today

• In keeping with this tradition, Governor has announced “zero tolerance” policy for methane

• Industry has thrived in Colorado even as new rules were developed and implemented under this proactive approach

• Arguments to delay pending further federal, state or global action are meritless and contradict this tradition and sound policy
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