

EDF Presentation in Support of the APCD's Proposed Rule



Proposed Rules Make Sense for Colorado

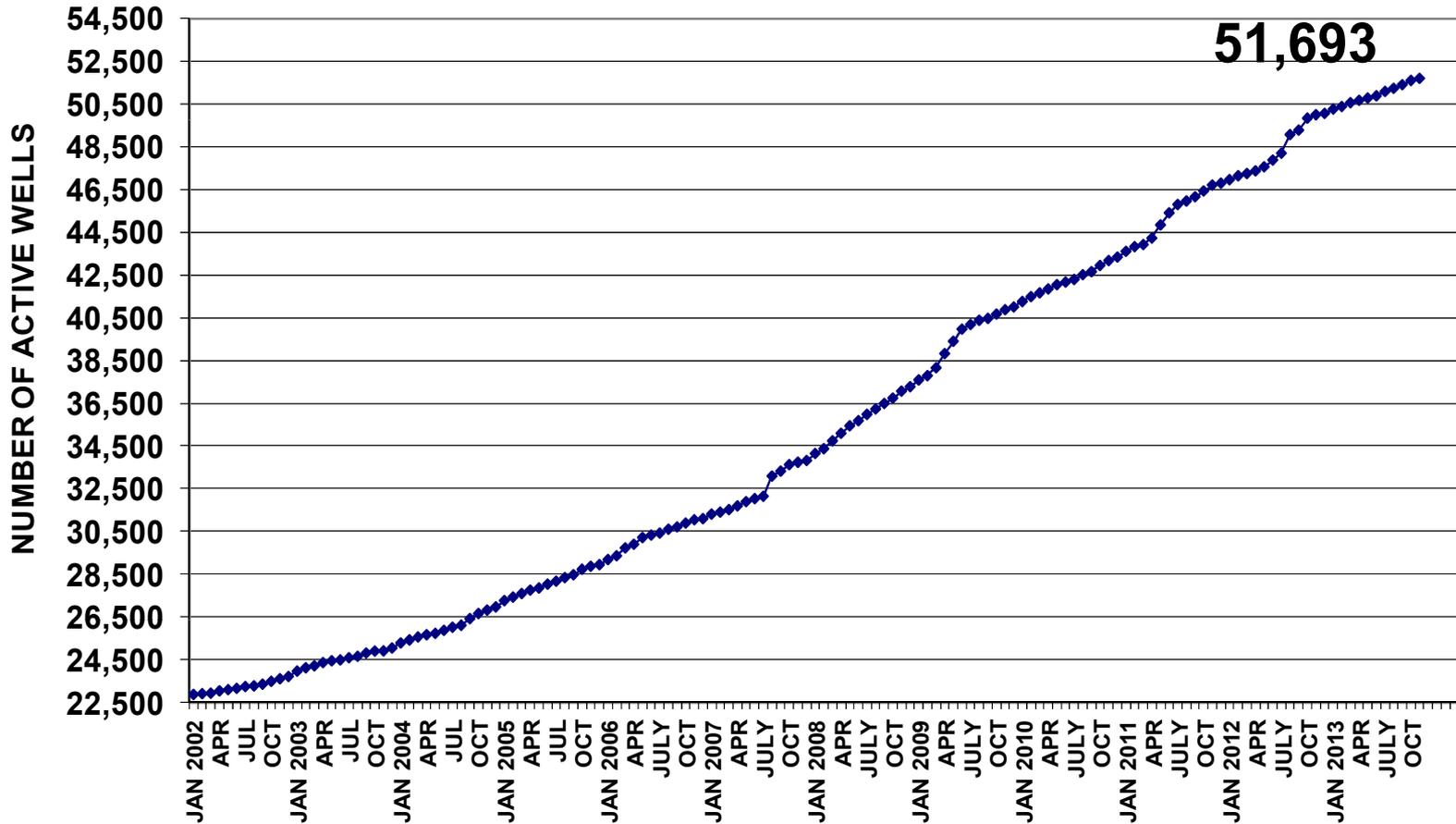
- Widespread support from:
 - Industry Leaders
 - The Environmental Community and
 - Local governments
- State-wide reductions in ozone precursors and methane emissions are necessary to protect Coloradan's health and environment
- Highly cost effective
- Common sense and practical, with appropriate flexibility 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

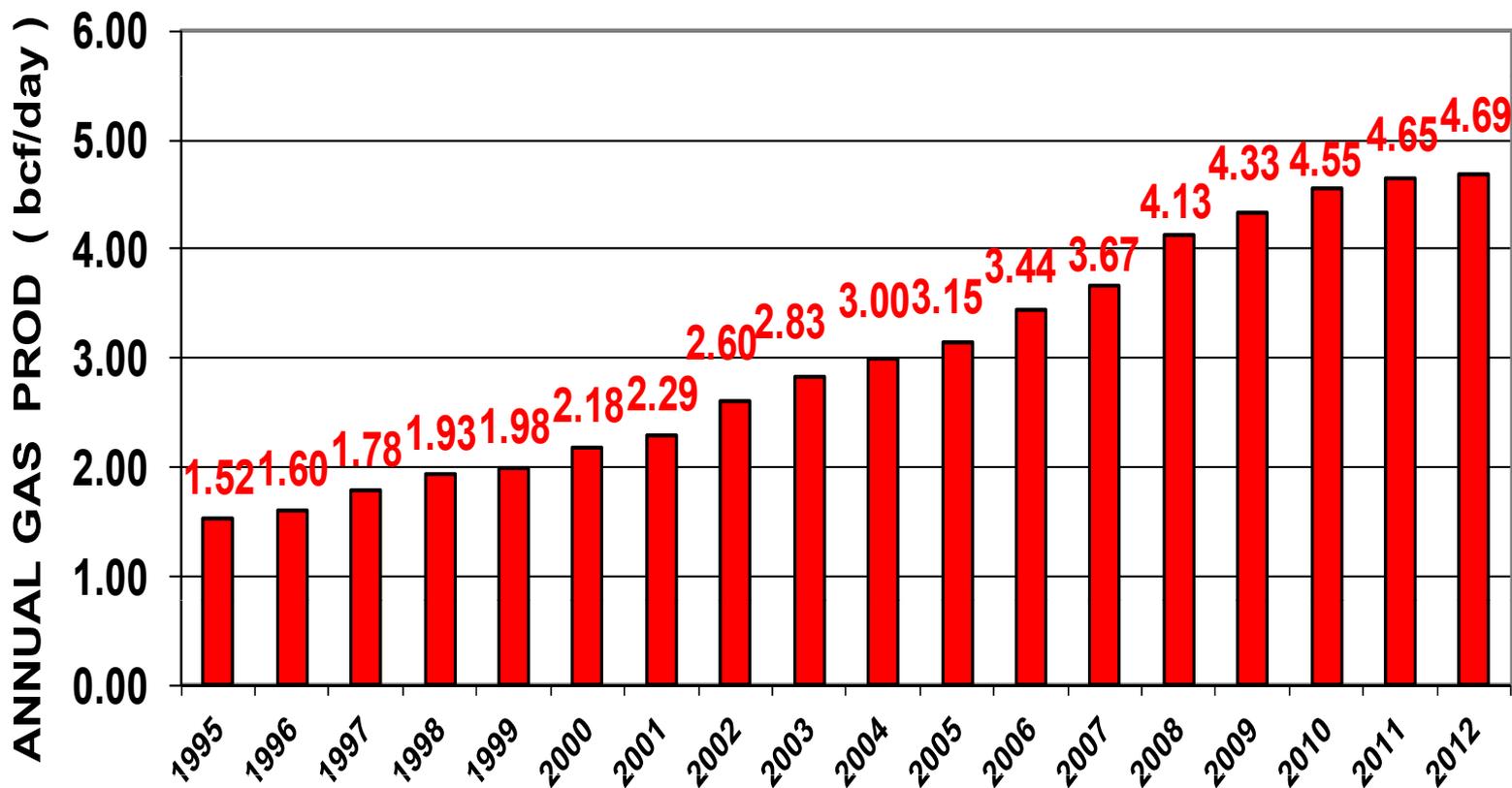
COLORADO MONTHLY ACTIVE WELL COUNT

12-06-13



Source: COGCC: Colorado Weekly & Monthly Oil and Gas Statistics 12/6/13)

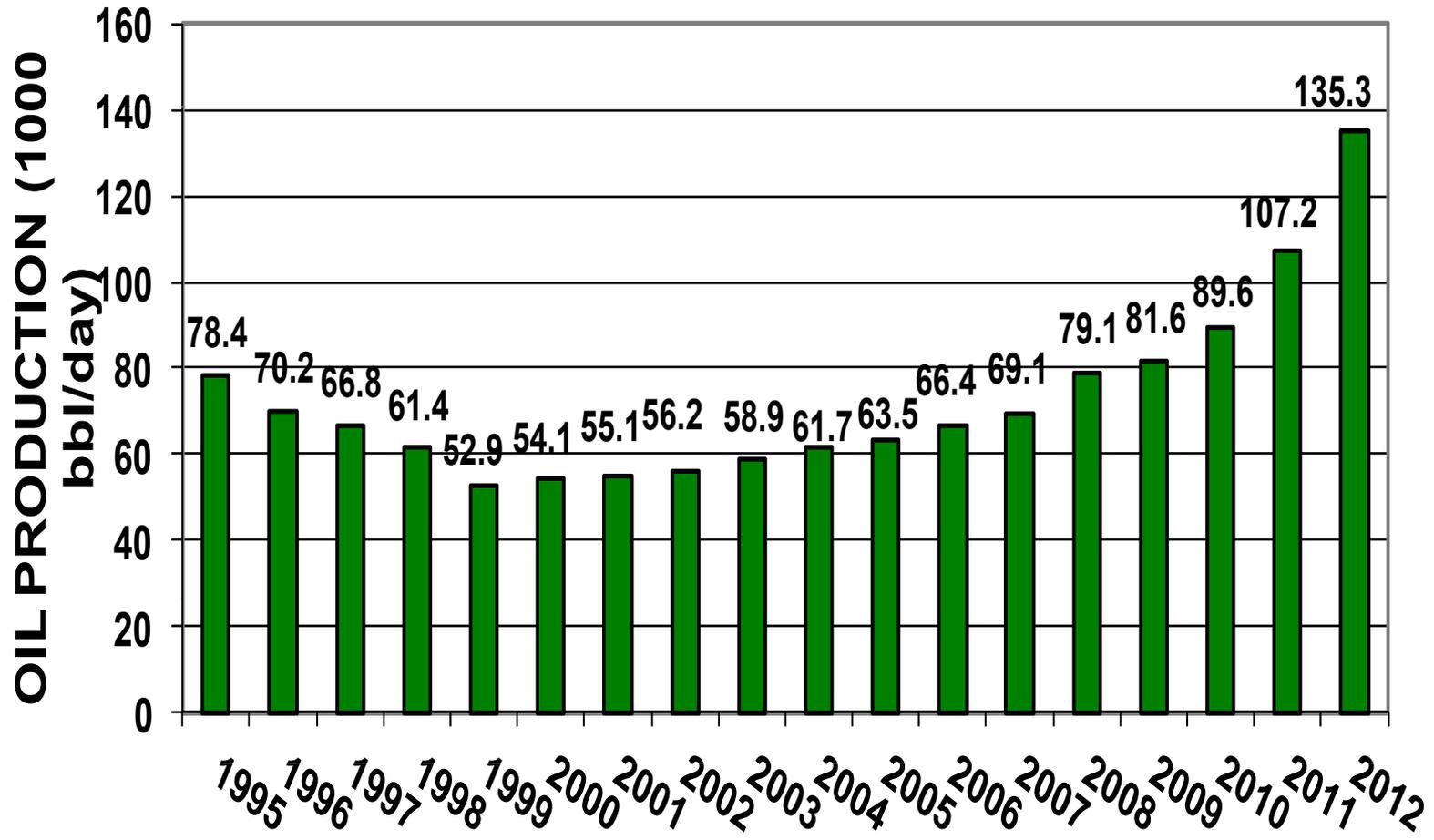
COLORADO NATURAL GAS PRODUCTION 1995-2012 BILLION CUBIC FEET OF GAS PER DAY 12-06-13



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)

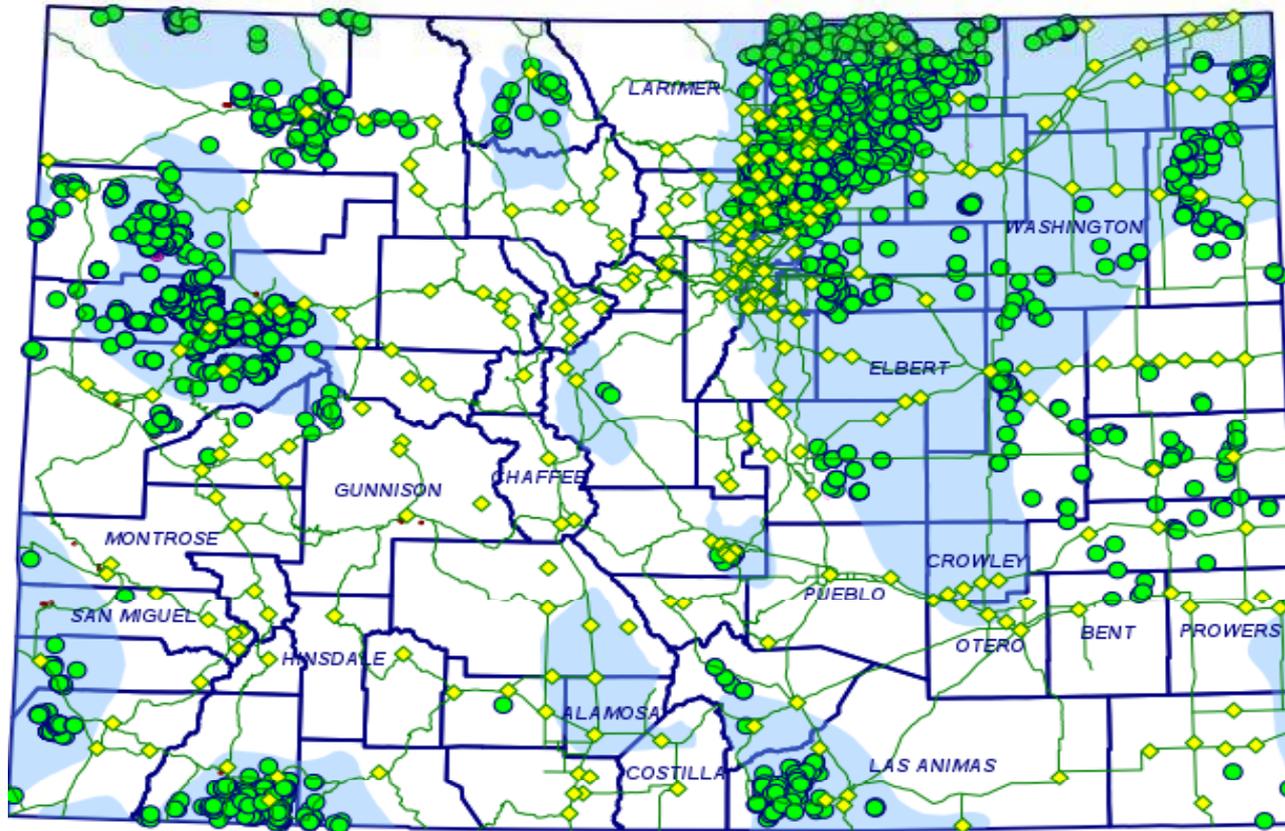
Oil and gas production and emissions are expected to increase

- 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
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Significant development occurs outside the NAA

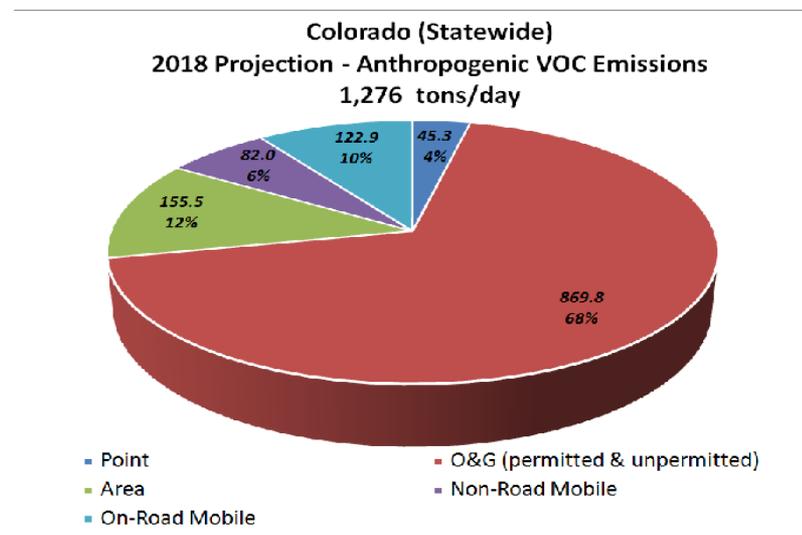
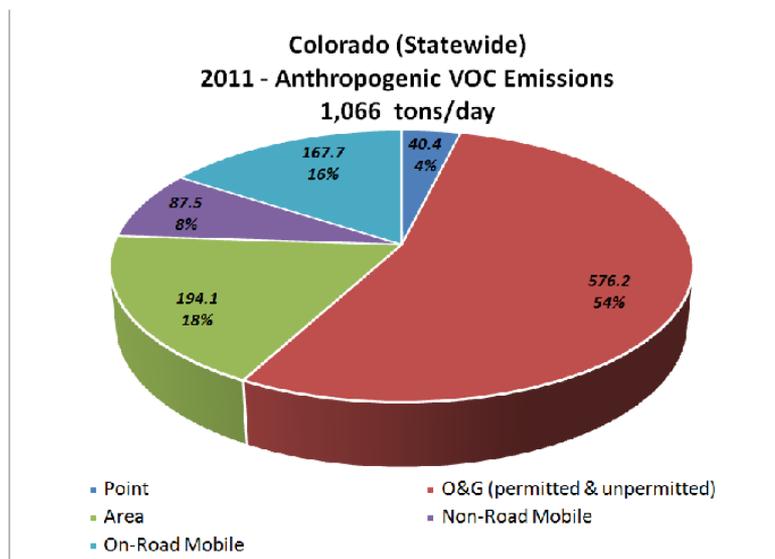
- 75% of new well starts in 2012 occurred outside the nonattainment area
- Large parts of the Niobrara where much of the new development is focused, occur outside the NAA

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



	2011	2018
Oil and Gas	567.2 (54%)	869.8 (68%)
On-Road Vehicles	167.7 (16%)	122.9 (10%)

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.

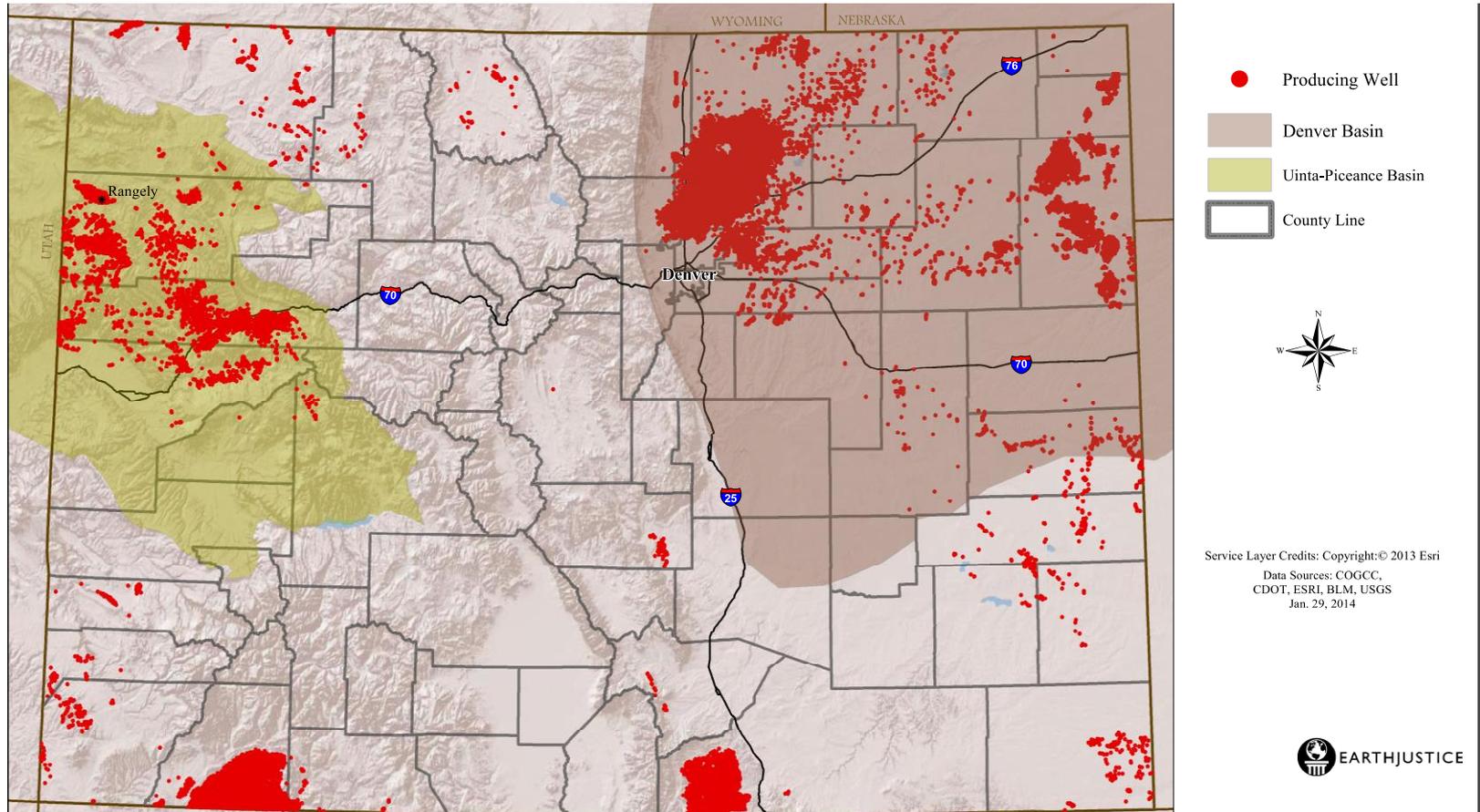
O&G activities contribute to ozone pollution cont.

- 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

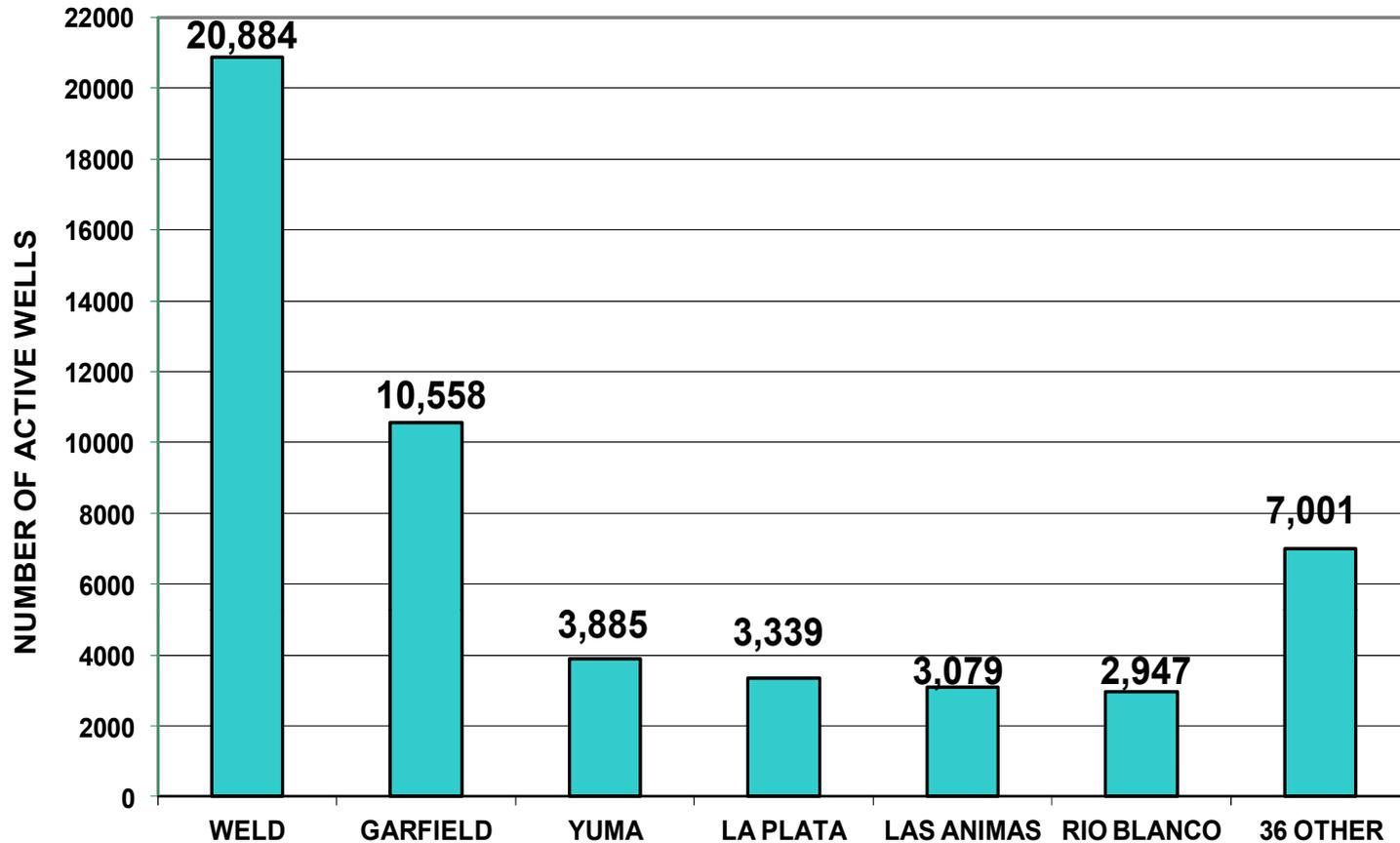
- Achieving “the maximum practical degree of air purity in every portion” of the state, maintaining and attaining the federal health-based ambient air quality standards, and preventing “significant deterioration” of pristine air, are fundamental tenets of Colorado clean air policy. C.R.S. § 25-7-109(1)(a).

Majority (55%) of wells and facilities are located outside the nonattainment area



NUMBER OF ACTIVE COLORADO OIL & GAS WELLS BY COUNTY

87.0% of Colorado's 51,693 active wells are located in these 6 counties
(12-06-13)

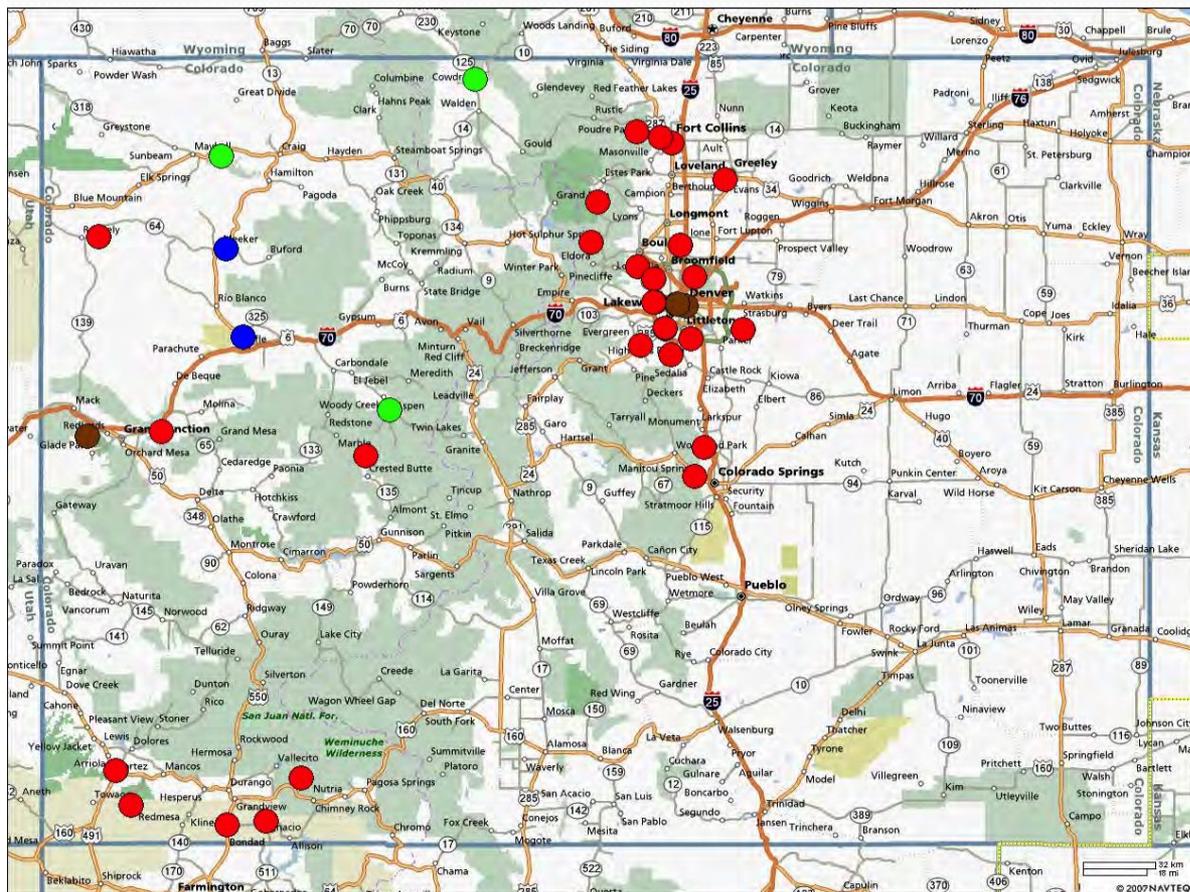


Ozone pollution is an increasing problem outside the nonattainment area

- 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
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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
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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)
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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
tpys of VOCs:
Annual



Well sites with 13-
49 tpy of VOCs:
Quarterly



Well sites with 50
tpys 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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