Financial Assurance: Questions, Answers, & Data

COGCC Meeting

May 5, 2021

COLORADO
Oil & Gas Conservation Commission
Department of Natural Resources

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Outline

- Questions & Answers
- Data
  - Operator
  - Stripper Well
  - Orphan Well Bonding & Spending
  - Plugging & Reclamation Costs
  - Lit Review: Emissions from Inactive/Orphan Wells
- Outstanding Questions
  - Other States
  - Industry
- Suggested Next Steps

Questions & Answers

Q: What is the process for COGCC to claim a bond?

A: Bonds can only be claimed by Commission order:

1. Staff issues an NOAV because bond claims are generally associated with non-compliance and NOAV provides mechanism for a Commission hearing.
2. NOAV assigned to an Assistant Attorney General or an Enforcement Officer.
3. NOAV noticed for hearing and proceeds through prehearing process.
4. Hearing conducted.
5. If Staff successfully meets its burden of proof, the Order will resolve the NOAV, impose a penalty, and claim the bond.
6. After the order becomes effective, the Director will send a final notice to the operator, the bond will be claimed, and the Orphan Well Program will take custody of the operator's wells.

Questions & Answers

Q: What are the allowable uses for the Orphan Well Fund? Can it be used to fund additional FTE or used to create a database or system for better administering/tracking/monitoring bonding or inactive wells or low producing wells?

A: COGCC doesn't have an "Orphan Well Fund." Instead, COGCC has an Orphan Well Program and the Joint Budget Committee, through the Long Bill, allocates funding from our cash fund for the specific purpose of plugging and reclaiming orphan wells and sites. Currently, the primary funding source for the Orphan Well Program is the same revenue source (i.e., mill levy) as our FTE and operational costs.

Questions & Answers

Q: While the Commission and the stakeholders have been focused primarily on financial assurances around wells, what other types of facilities and infrastructure need to be considered with this rulemaking?

A: Currently, COGCC collects financial assurance for seismic operations, natural gas gathering, processing and storage, produced water transfer systems, centralized Exploration and Production ("E&P") management facilities, and surface facilities associated with commercial Class II Underground Injection Control ("UIC" wells. The financial assurance for these operations/facilities is separate from the operator's blanket and inactive well financial assurance.

Separately, Rule 702 allows staff to request a Commission order directing an increase in financial assurance. And, Rule 708 requires operators to maintain general liability insurance of $1M per occurrence.

Questions & Answers

Q: What are the reasons that an operator may shift well status from idle to active periodically throughout a year? How does tracking this work as a criteria for additional financial assurances?

A: Staff defers to industry on the first question regarding operations. Currently, COGCC tracks wells that become “inactive” after a year of zero production, and these “inactive” wells are subject to per-well additional financial assurance.

For comparison, “stripper wells” are defined as oil wells with an average daily production of less than 15 barrels per day and gas wells with an average daily production of less than 90 thousand cubic feet.

Questions & Answers

Q: What are the financial assurance mechanisms used for mining by DRMS? How does DRMS determine “full bonding amount”? What are the TABOR implications for DRMS full bonding, if any?

A: DRMS accepts cash (escrow) bonds, CDs, corporate sureties, and some unique property rights. DRMS determines the "full bonding amount" by calculating the cost of reclamation based on a system developed by the agency and the bond calculation is updated a maximum of once every five years or with major changes to the mining plan. Last, DRMS holds the financial assurance funds while the operator is mining and until reclamation is completed to DRMS standards. The financial assurance funds are payable to DRMS but are not available for DRMS to spend (unless the bond is claimed and the funds are used for reclamation purposes), which means the financial assurance held is not subject to TABOR.

Questions & Answers

Q: Are there currently unidentified orphan wells, how many and why?

A: In 2017, COGCC reorganized and centralized all known orphan well and site work into a single program – the Orphan Well Program. Through completing the inventory of known orphan wells, COGCC also identified that there are two historic oil and gas fields in Colorado (Rangely and Florence) in which COGCC estimates there could be as many as 400 unknown orphan wells in these fields.

Questions & Answers

Q: How is orphan well work prioritized?

A: COGCC's Orphan Well Program annually prioritizes new orphans based on identified criteria and focuses its work during a fiscal year on the highest priority orphaned wells and sites. The Orphaned Well Program identifies, prioritizes, and addresses these oil and gas wells, locations, and production facilities statewide, which without intervention may impair a surface owner's farming or ranching activity or other use of the property, harm wildlife, or present a safety hazard to the public. The September 1 annual report details the prioritization work.

More information is available here:
https://sites.google.com/state.co.us/cogcc-owp

Questions & Answers

Q: How much money has been paid for orphan wells that has been borne by taxpayers?

A: $0. Orphan well work is funded through COGCC's revenue streams, which include mill levy revenue, severance taxes, and penalties.

Questions & Answers

Q: Does COGCC hold any “self bonds” right now with any operators?

A: Very, very few – these are disfavored by Staff.

Data: Operator Data

Q: Provide in comparative form the total financial assurance, financial assurance by category, total wells, active wells, shut-in wells, temporarily abandoned wells, stripper wells, and production data.

A: Staff prepared two spreadsheets. The first includes a great deal of operator data and the second spreadsheet has stripper-well information. The data provides good guidelines for the financial assurance conversation; however, this is a snapshot of data that changes daily.

The spreadsheets are available here: https://cogcc.state.co.us/sb19181_calendar.html#/rulemaking_financial_assurance

Data: Orphan Well Bonding & Spending

Q: Is there an increase in the number of bonds being claimed? How many orphan wells are associated with bond claims? How much of each bond claim has the Orphan Well Program spent?

A: Staff prepared a spreadsheet and also makes available information about spending on its Orphan Well Program website.

The first details the different bond claims order and related information, and is available here: https://cogcc.state.co.us/sb19181_calendar.html#/rulemaking_financial_assurance

COGCC tracks its spending by bond claim and publicizes on this webpage: https://sites.google.com/state.co.us/cogcc-owp/project-list

Data: Plugging & Reclamation Costs

Q: The Commission would like additional information from industry/ staff about cost to P&A (and reclamation) wells around the state.

A: The Orphan Well Program team reviewed data through May 4, 2021 to select a total of 23 orphaned sites that would generally represent bond-claim sites

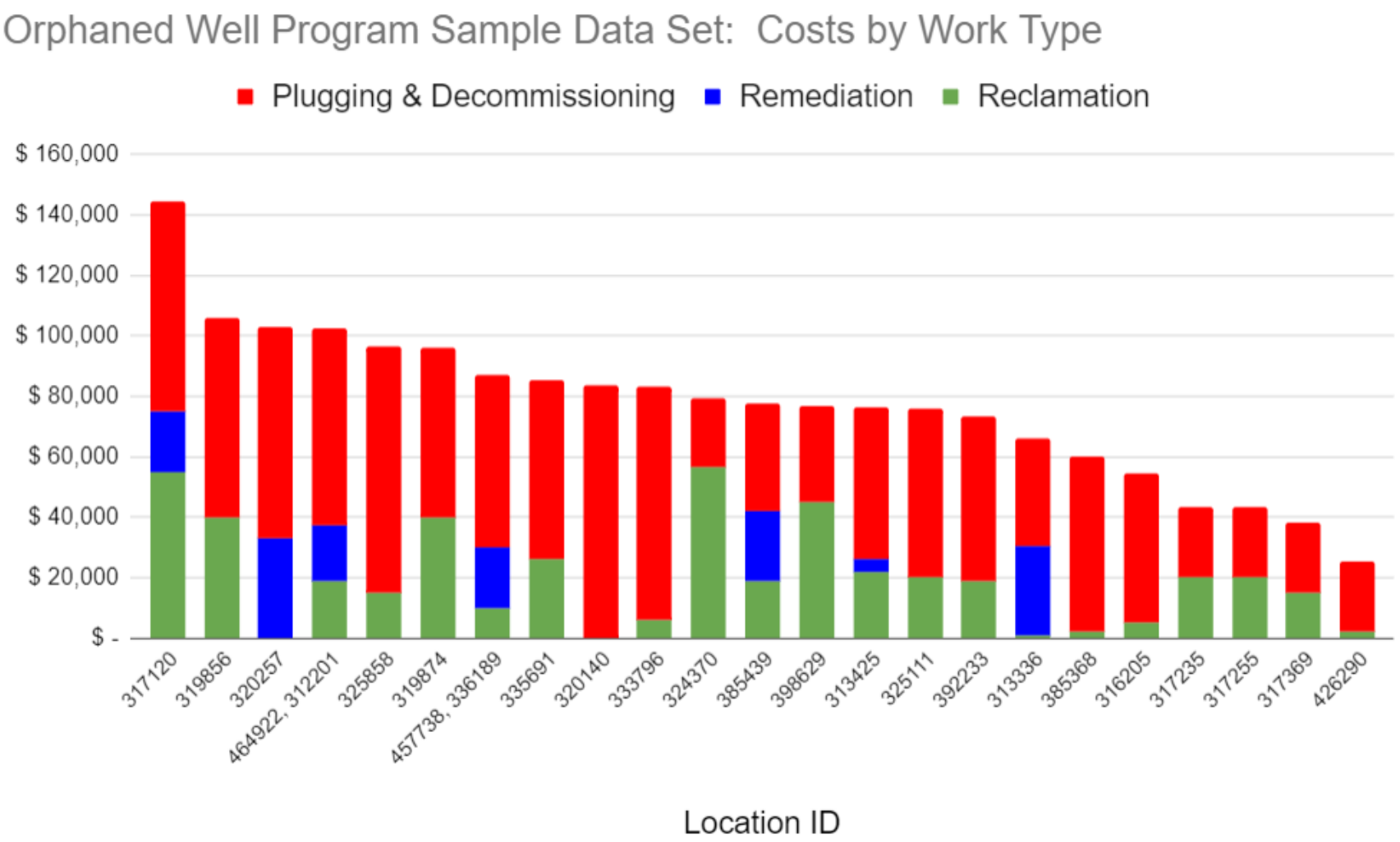
Extreme high and low cost outliers were excluded from the analysis

The analysis included only projects that were complete or near enough completion to estimate final costs

Sites selected for the analysis represent a broad look across the state (ten sites in Denver-Julesburg Basin, five sites in San Juan Basin, four sites in Piceance Basin, two sites in Sand Wash Basin, and one site each in the Cañon City Embayment and Paradox Basin).

All sites had “plugging and decommissioning” work, including well plugging, flowline abandonment, and/or production equipment decommissioning.

Data: Plugging



Data: Plugging & Reclamation Costs

Q: The Commission would like additional information from industry/ staff about cost to P&A (and reclamation) wells around the state.

A: High-level summary of revised Orphan Well Program costs:

Total site costs ranged from $25,485 to $144,290

Average cost and median cost of $77,278 and $77,759, respectively.

Plugging and Decommissioning costs ranged from $22,567 to $83,600, with an average cost of $50,925.

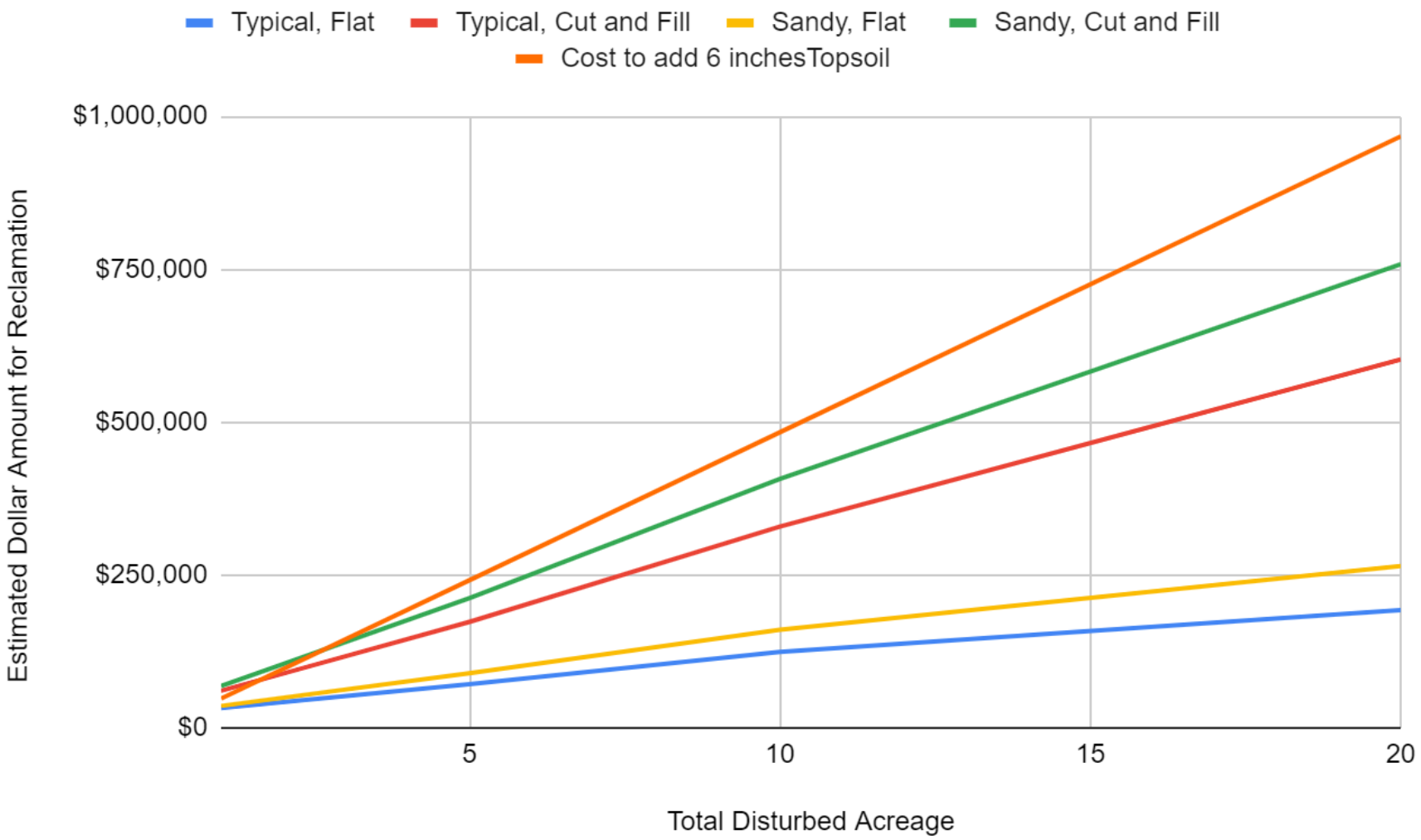
Environmental costs ranged from $0 to $33,240.

Reclamation costs ranged from $0 to $56,768.

Data: Reclamation Costs

Disturbed Acreage	**Soils and Topography**				**Topsoil absent (additive cost)**
Acres	*Typical (non-sandy) soil; Flat*	*Typical soil, Cut and Fill or elevated location*	*Sandy soils, Flat*	*Sandy soils, Cut and Fill or elevated location*	*Cost to add 6 inches of topsoil*
1	$32,589	$61,018	$36,189	$68,818	$48,360
5	$71,545	$173,540	$89,545	$212,540	$241,800
10	$124,630	$329,480	$160,630	$407,480	$483,600
20	$192,760	$602,460	$264,760	$758,460	$967,200

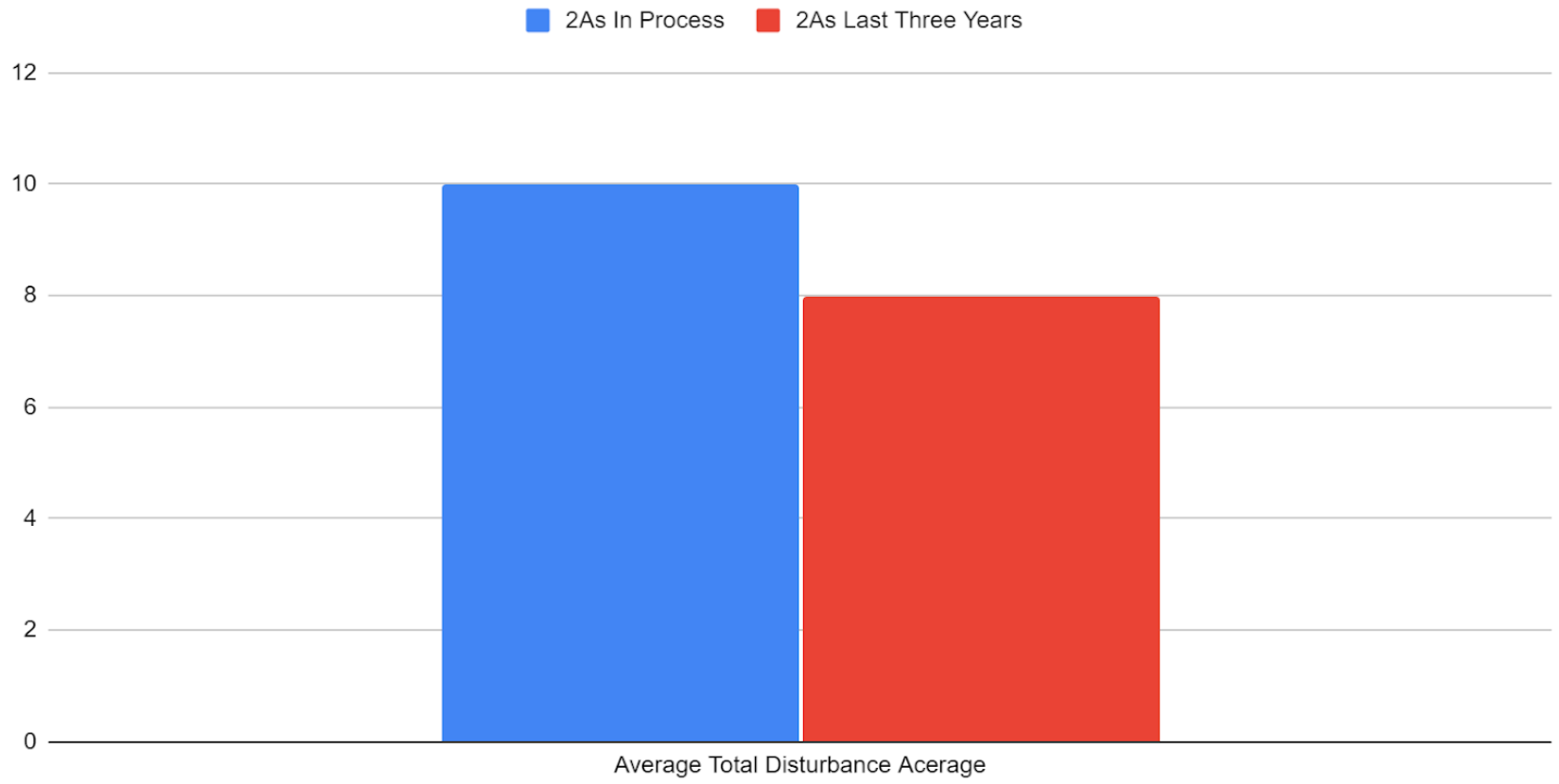
Data: Reclamation Costs



Data: Reclamation Costs Location Size

Acres	*Locations with 2As*	*Estimated Locations without 2As*	Total	Percent
0.1 to 5	1,901	39,466	41,367	97.49%
5 to 10	744	-	744	1.75%
10 to 20	281	-	281	0.66%
>20	42	-	42	0.10%

Data: Reclamation Costs Location Size



Data: Emissions Literature Review

Q: Does COGCC have data about emissions from inactive wells? Emissions from sites that have been plugged and abandoned?

A: COGCC conducted a literature review and identified 12 published, peer-reviewed studies that measured or otherwise calculated methane emissions from plugged wells and idle wells.

Summary of literature review available here: https://cogcc.state.co.us/sb19181_calendar.html#/rulemaking_financial_assurance

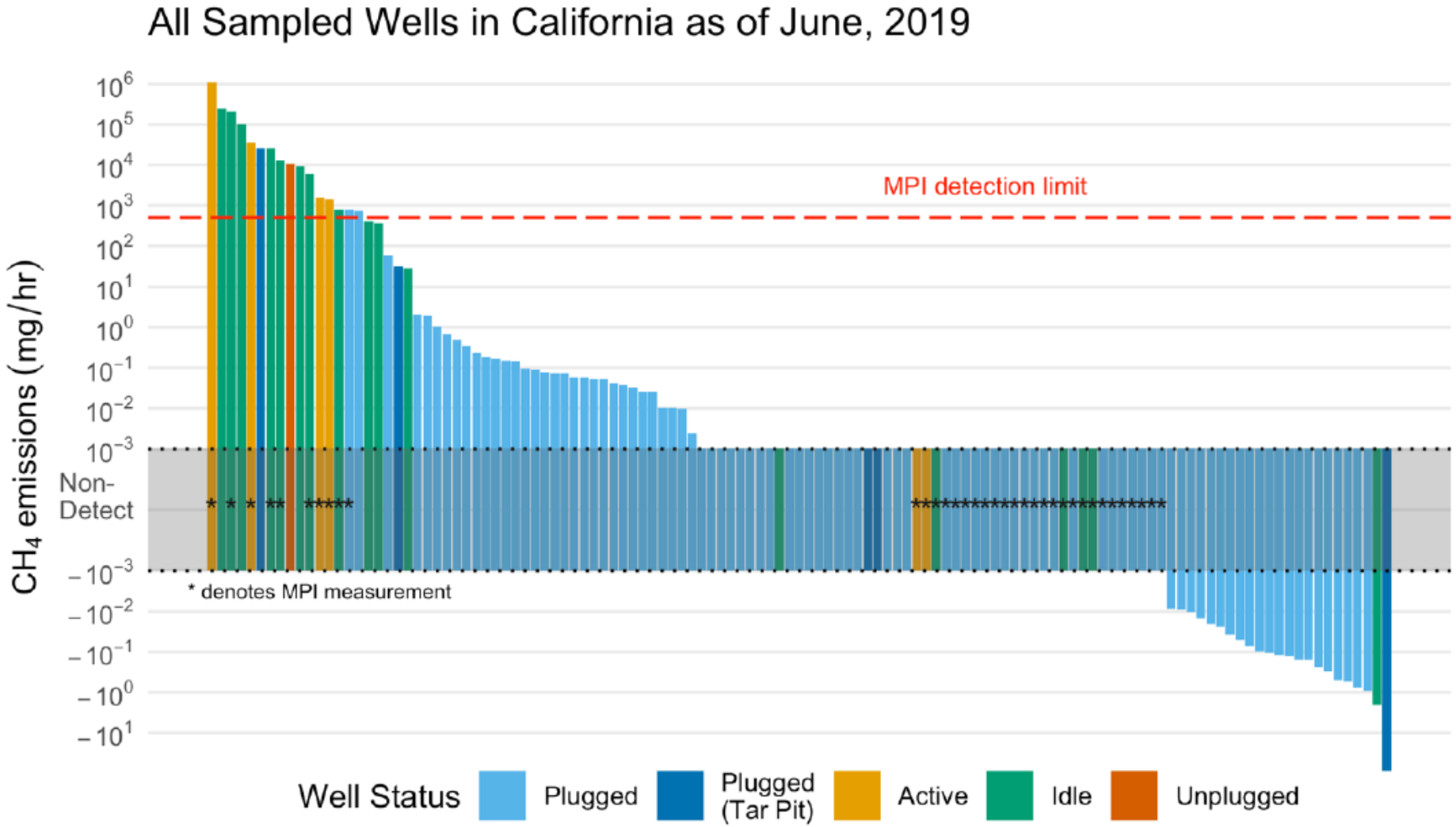
Summary: Emissions Literature Review

- Idle wells emit methane, but at rates at least an order of magnitude below active wells
- Plugged wells have negligible (near zero) emissions
- Emissions varied substantially among states & basins
- Emissions are generally driven by supermitters
- Most studies used similar methods which makes their results more readily comparable
- Only one study measured emissions from wells in Colorado and it used a fairly limited sample size
- It is therefore not possible to provide a single, definitive estimate of average methane emissions from idle & plugged wells in Colorado at this time

Table 1: Average Methane Emissions from Active, Idle, and Plugged Wells in Studies Reviewed by COGCC

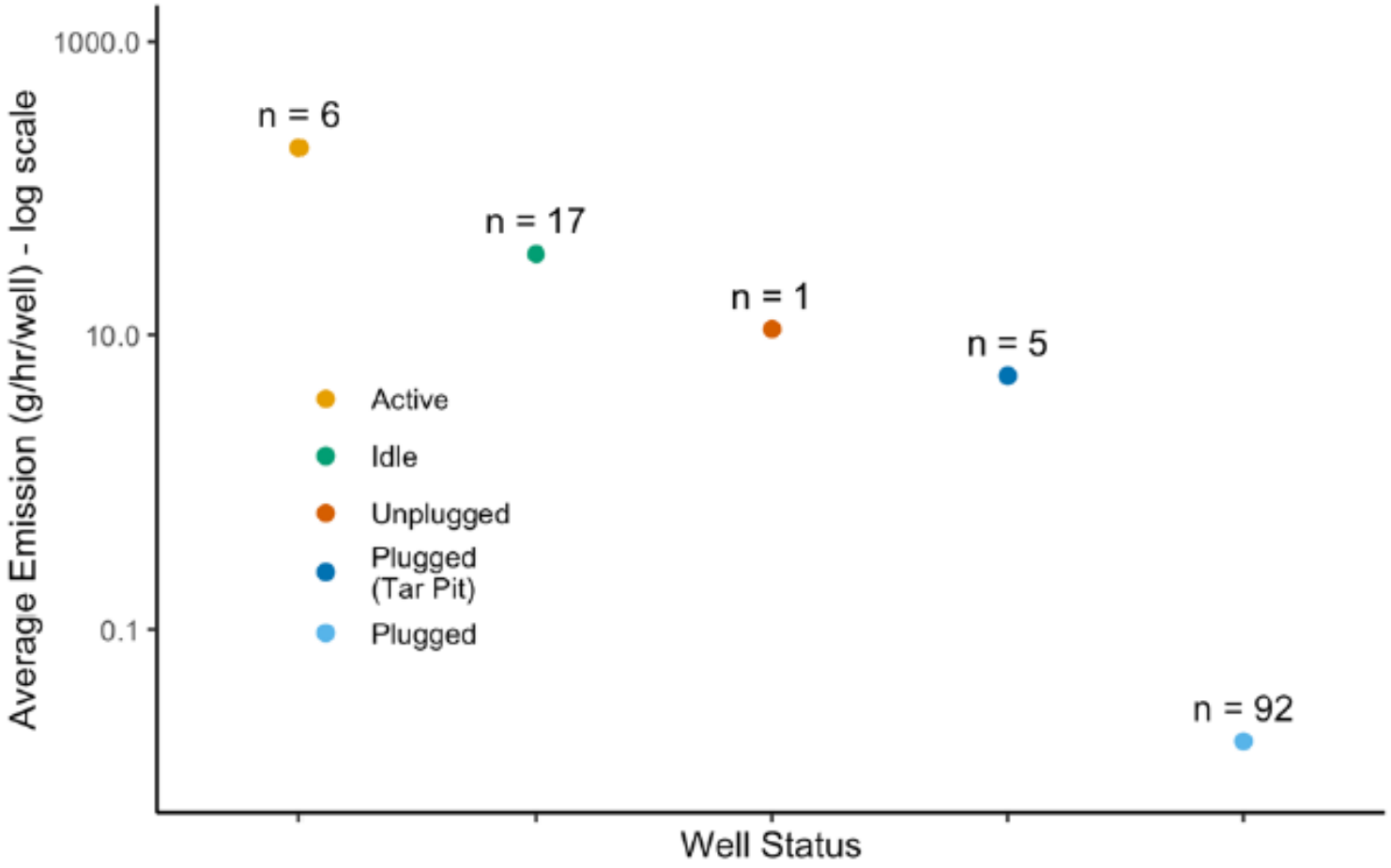
Study + State	Mean Active Well Emissions (g CH4/hr/well)	Mean Idle Well Emissions (g CH4/hr/well)	Mean Plugged Well Emissions (g CH4/hr/well)
Townsend-Small (2016): Western United States (includes Colorado's Denver-Julesburg Basin, Utah's Uinta Basin, & Wyoming's Powder River Basin)	n/a	1.71	0.0002
Townsend-Small (2016): Eastern United States (Ohio's Appalachian Basin)	n/a	28.01	0
Kang (2016): Pennsylvania	n/a	22	11.5
Pekney (2018): Pennsylvania	n/a	24	n/a
Riddick (2019): West Virginia	139	3.1	0.13
California Energy Commission (2020): California	189.7	5.6	0.0173
Saint-Vincent (2020): Oklahoma	n/a	2.71	4

Figure 6: Ranked Emissions from Wells



Source: Marc Laurenz Fischer, *et al.*, Final Project Report for California Energy Commission: *Quantifying Methane from California's Plugged and Abandoned Oil and Gas Wells* (2020), *available at* https://ww2.energy.ca.gov/2020publications/CEC-500-2020-052/CEC-500-2020-052.pdf.

Figure 7: Average Emissions by Well Type



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Outstanding Questions: Other States

- Staff will work with other states to gather answers to the following questions:
  - With Alaska, North Dakota and Wyoming, did they see more orphaned wells (or an increase in inactive wells) after updating their rules/regs with increased bond amounts?
  - In Texas, what are the requirements for plans submitted by operators to demonstrate intended future action? What happens if they do not take action in the timeframes they specify?

Outstanding Questions: Industry

1. What are the reasons that an operator may shift well status from idle to active periodically throughout a year?
2. How does an operator budget for P&A when a well is reaching end of life? What factors are considered when determining end of life?
3. Are there examples of operators occupying/operating at low production vertical well locations that they (or another operator) wants to use for a new horizontal well, but when approached to sell, the current operator will not sell?
4. Are there other incentives for plugging wells?
5. Is it possible to project/estimate production for a year (of an active, producing well)? What might be reasons that the projected amount would differ from actual in a “look back”? How frequently does this occur?

Outstanding Questions: Industry

6. Looking back say, 3-5 years (or more), what status was a well before becoming orphaned? How many were “stripper wells”? What other production data about how much the well was producing is informative?
7. The Commission would like additional information from industry about cost to P&A (and reclaim) wells around the state. Including cost of vertical vs horizontal, cost by basin or other geographic area that makes sense, CBM or CO2 vs oil/gas, other. What are typical factors that change the cost of plugging and to what extent do they cause the cost to vary...depth, casing type, number of formations to isolate, etc?
8. What factors or criteria go into determining whether to operate, P&A, TA, or sell a particular well?

Suggested Next Steps

- Follow up meeting to address outstanding questions: May 19 or 26?
- Staff notices draft rules and hosts stakeholder meeting in early June
- Prehearing process from mid-June through early September
- Staff presents revised draft rules to Commissioners on September 22
- Party presentations & rebuttals, public comment, and Commissioner direction to Staff September 29-30 to October 1
- Staff issues revised rules October 8
- Final staff and party presentations and Commissioner deliberations & decision October 20-22

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