Regulating Drill Rigs

Guardrail modeling summary & next steps

October 30, 2015

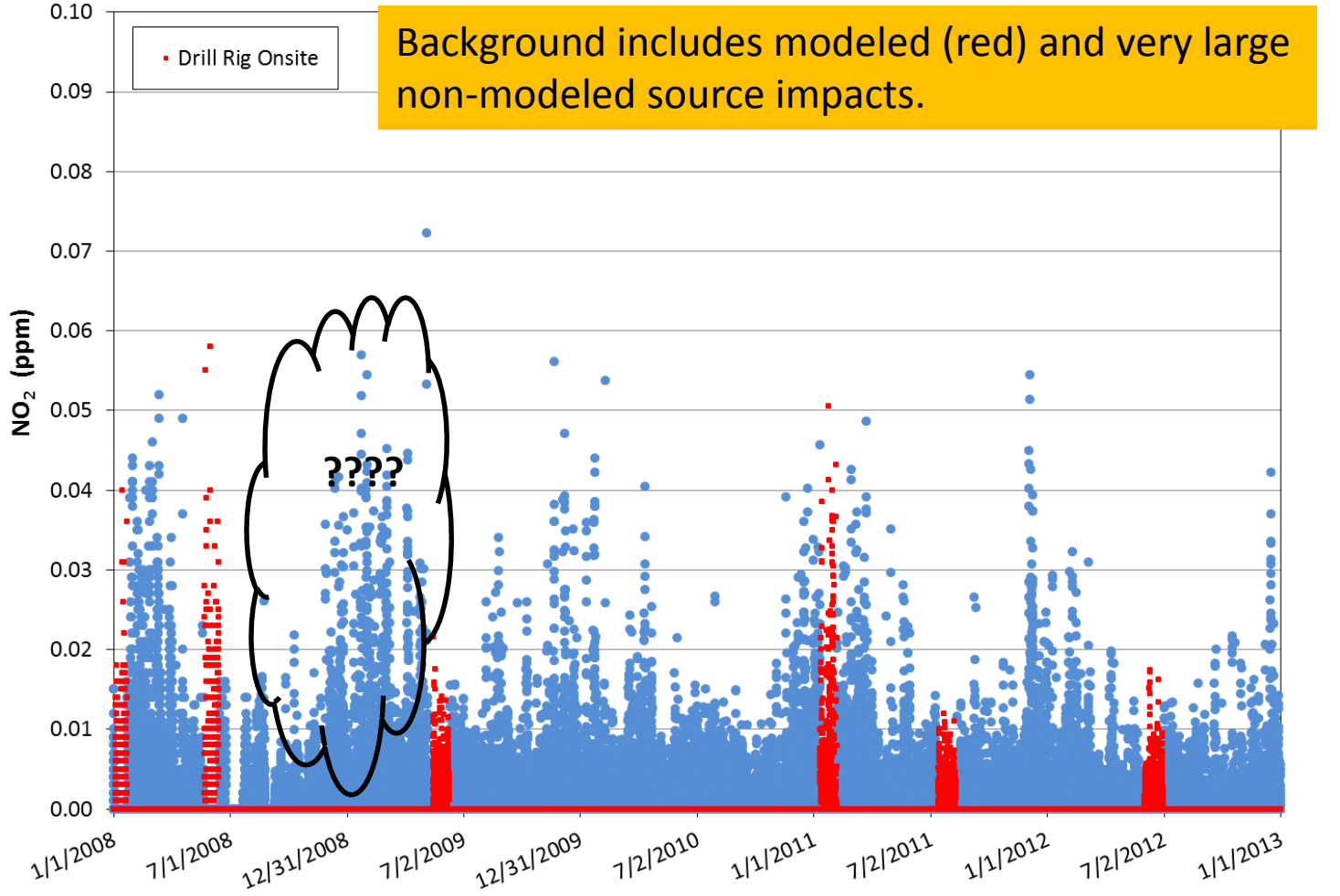
Guardrail Modeling Summary

Why it is robust & conservative and can be broadly applied

- **Modeling based on the smallest pad size**
  - **Small pad = stacks closer to ambient air**
- **Background double counts drill rig sources and includes "other" sources**
  - **APAD and CD1 includes significant modeled and non-modeled sources.**
- Non-tiered engine emission rates (i.e., used vendor data for pre-tier engines); real emissions are actually lower
- 5 modeled wells conservatively represent 15
- 5 or 6 MW modeled through two stacks
  - 3 MW is generally all that is used
  - 6 MW would require more than two stacks
- **Fuel use modeled exceeds drill rig PTE**
- **All units operating at one time when operating**

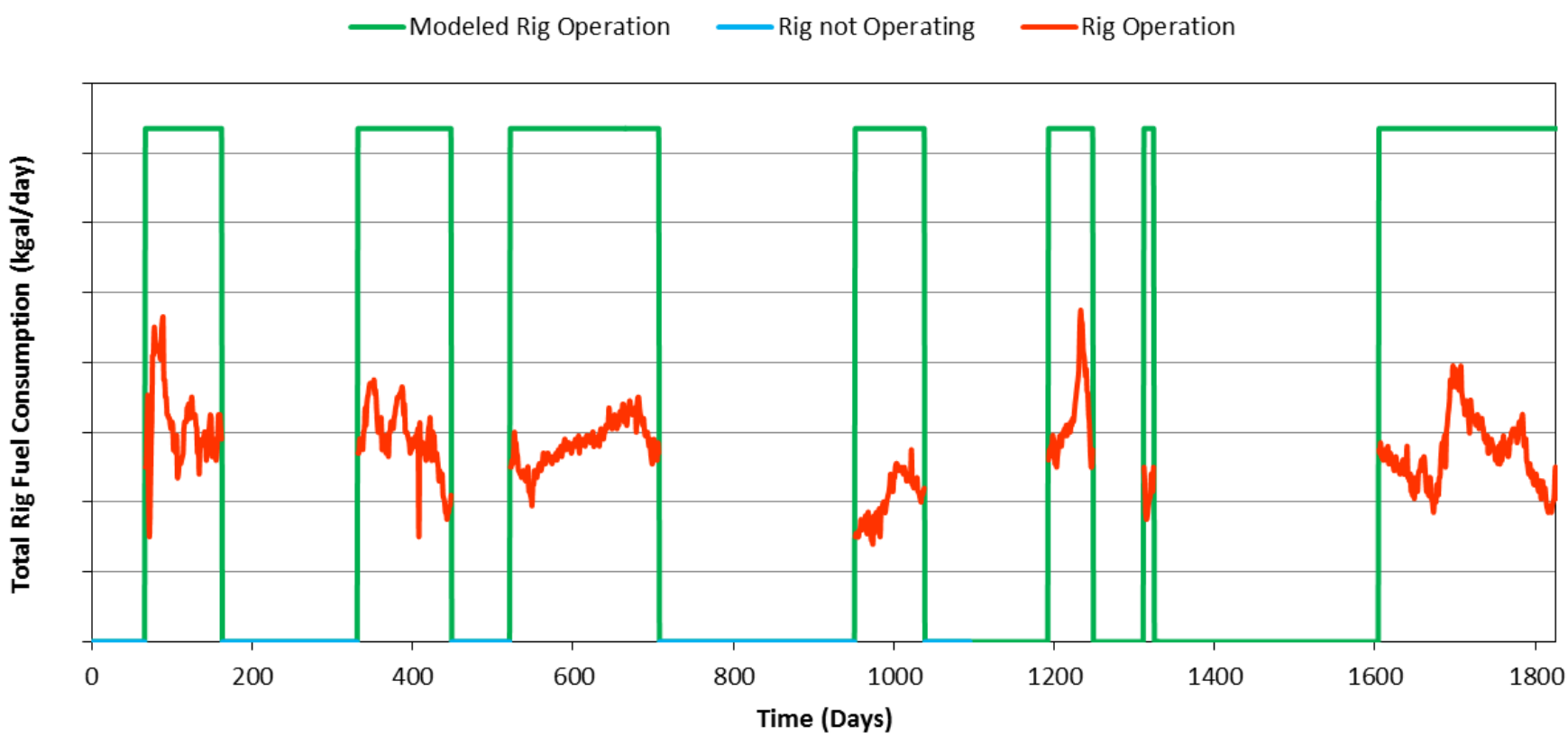
Guardrail Modeling Summary

Conservative Background



Guardrail Modeling Summary

Rig was Modeled 20% Beyond the PTE of a Rig



Modeled Rig Operation (Green) Also Far Exceeds Actual Operation = Conservative Impacts

Guardrail Modeling Summary

Small Pad Sizes

Modeled Pad (Tan) Smaller than most Pads = Conservative Impacts

Note: Each set of modeled and actual pads are approximately to scale. However, different scales are used for each set.

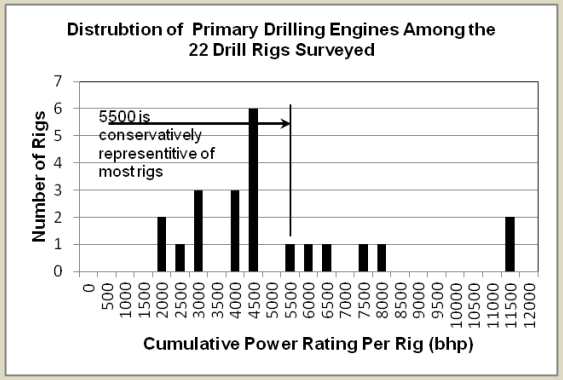
Guardrail Modeling Summary

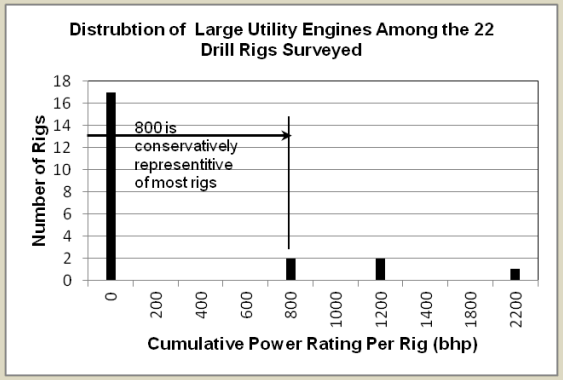
Fuel Use Modeled Exceeds PTE

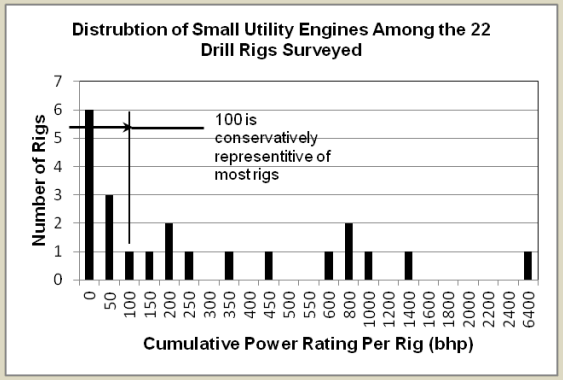
Unit Description	Cumulative Rating
Primary Drilling Engines	5,500 bhp
Large Utility Engine	800 bhp
Small Utility Engine	100 bhp
Heater/Boilers	20 MMBtu/hr

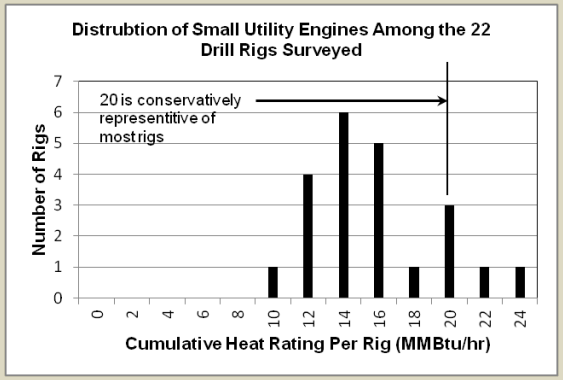
$$\times\left(\frac{\text{Modeled (14.7 kgal/day)}}{\text{PTE (12.0 kgal/day)}}\right)=$$

Cumulative Rating
6,738 bhp
980 bhp
123 bhp
24.5 MMBtu/hr









Strawman Regulation

- See handout

Next Steps

- Complete modeling analysis for Cook Inlet and obtain consensus
- Evaluate & obtain consensus around inclusion of gas-fired rigs in this regulatory program
- Define how the regulatory program will look
- SIP development and submittal