
IN THE MATTER OF MEDICINE BOW FUEL & POWER

DEPOSITION OF RANAJIT SAHU, Ph.D.

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CONDENSED TRANSCRIPT AND CONCORDANCE
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IN THE MATTER OF MEDICINE BOW FUEL & POWER
DEPOSITION OF RANAJIT SAHU, Ph.D.

XMAX(1/1)

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(1) BEFORE THE
(2) ENVIRONMENTAL QUALITY COUNCIL
(3) STATE OF WYOMING
(4)
(5) IN THE MATTER OF:)
(6) MEDICINE BOW FUEL & POWER,) No. 09-2801
LLC AIR PERMIT CT-5873.)
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(15) DEPOSITION OF RANAJIT SAHU, Ph.D., taken on
(16) behalf of the Respondent, at 170 South Euclid Avenue,
(17) Pasadena, California, commencing at 9:12 a.m., on
(18) Friday, October 23, 2009, pursuant to Notice, before
(19) CLAUDIA REYES, CSR No. 12812, a Certified Shorthand
(20) Reporter, in and for the County of San Bernardino,
(21) State of California.
(22) ***
(23)
(24)
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(11) 1 - Three-page document entitled
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(16) QUESTIONS INSTRUCTED NOT TO ANSWER
(17) None.
(18)
(19)
(20)
(21) INFORMATION REQUESTED
(22) None.
(23)
(24)
(25)

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- (1) flares?
- (2) **A. Correct.**
- (3) Q. And do the currently available options for
- (4) controlling Medicine Bow's SO2 emissions rely on
- (5) controlling the sulfur contents in the vent streams
- (6) directed to the flares?
- (7) **A. For some vent streams, they have sulfur**
- (8) **removal equipment. So I believe that's the case.**
- (9) **But certainly not for events like cold start-ups that**
- (10) **we're talking about, or we were talking about.**
- (11) Q. Okay. Uh-huh.
- (12) And Medicine Bow would rely on controlling
- (13) those SO2 emissions during its normal operations
- (14) either by preventing the flow of sulfur to the flare
- (15) or reducing the amount of sulfur that gets directed
- (16) to the flare?
- (17) **A. You mentioned the term "normal operation,"**
- (18) **and I think we have a disagreement of what that**
- (19) **encompasses. So I would have to disagree the way you**
- (20) **posed the question.**
- (21) Q. All right. Let me rephrase the question. I
- (22) appreciate that distinction.
- (23) Medicine Bow would rely, for controlling or
- (24) the available control options or the available
- (25) options for controlling Medicine Bow's SO2 emissions,

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- (1) would rely on controlling the sulfur content in the
- (2) vent streams directed to the flares. We've already
- (3) agreed on that; correct?
- (4) **A. Well, they have the ability to do so under**
- (5) **certain types of planned-operating conditions.**
- (6) Q. Right. But we -- I think we've already
- (7) agreed to that much from your prior testimony on the
- (8) issue?
- (9) **A. Right. They have allowances for sulfur**
- (10) **removal from gas streams during certain operating**
- (11) **modes of the plant, yes.**
- (12) Q. But the way that would work is Medicine Bow
- (13) would either prevent the flow of sulfur to the flare
- (14) or reduce the amount of sulfur directed to the flare;
- (15) correct?
- (16) **A. Well, they can try to remove some sulfur**
- (17) **from the flares. So that's what I understand.**
- (18) Q. Okay. And do you know whether the currently
- (19) available options for controlling flare emissions
- (20) rely on controlling vent gases that get directed to
- (21) them?
- (22) **A. During what period of time?**
- (23) Q. During SSM events?
- (24) **A. My understanding of what is planned during**
- (25) **SSM events is the three-and-a-half-page SSEM plan,**

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- (1) **which is in the record. And that's my sole**
- (2) **understanding of what is proposed during SSM events.**
- (3) **And I view that plan, as I pointed out in my**
- (4) **report, as an objectives plan with not a lot of**
- (5) **support for some of the suggestions that are in**
- (6) **there.**
- (7) **So I'm hard-pressed to see how that would**
- (8) **actually result in these reductions that are being**
- (9) **talked about.**
- (10) Q. Did you have any understanding at all as to
- (11) what the SSEM plan is for the Medicine Bow facility?
- (12) **A. My understanding is based on my review of**
- (13) **the plan, and what it states.**
- (14) Q. And what -- could you just tell us what that
- (15) understanding is?
- (16) **A. Again, I'm going by memory. And I don't**
- (17) **have it in front of me. Subject to that, it's my**
- (18) **understanding that right up front, it says that it**
- (19) **is -- is sort of a goal or a mission or an objective**
- (20) **of what should be done to minimize emissions to the**
- (21) **flare during SSM events.**
- (22) **And then it talks about certain approaches**
- (23) **that could be followed, but everything would be**
- (24) **finalized in some other operating procedures that**
- (25) **would actually govern how the plant would actually**

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- (1) **run.**
- (2) **So as such, it's a very broad document that**
- (3) **doesn't have much support or specificity.**
- (4) Q. Now, I understand in this instance you think
- (5) there was no top-down BACT analysis for SSM
- (6) emissions.
- (7) Is that one of the opinions in your case or
- (8) part of your criticism in this case?
- (9) **A. Correct. That it should have -- that it**
- (10) **should have been because of my contention that it's a**
- (11) **major source. And therefore, there should have been**
- (12) **an SO2 BACT analysis which would have been**
- (13) **required -- some sort of BACT analysis, perhaps**
- (14) **the --**
- (15) Q. And what do you think should have been done
- (16) in this case, assuming what you're saying is true?
- (17) **A. Well, I think as you saw in my rebuttal**
- (18) **report, I've suggested that you could have emission**
- (19) **limits. You cannot rule that out, per se.**
- (20) Q. Emission limits on flares?
- (21) **A. Yes.**
- (22) Q. Anything else?
- (23) **A. Well -- and if, for whatever reason,**
- (24) **emission limits were deemed to be inappropriate, then**
- (25) **you would look at enforceable work practice**

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(1) standards.

(2) Q. I'm sorry. What was that last part of your
(3) answer? I apologize.

(4) A. I said if, for some reason, emission limits
(5) were determined to be inapplicable, and I don't see
(6) way they would be, but just in the case that they
(7) would be, you would look at enforceable work practice
(8) standards.

(9) Q. Work practice standards, do you mean the
(10) SSEM plan?

(11) A. What I mean is enforceable, meaning they
(12) would appear in the permit as specific requirements
(13) with enforcement ability.

(14) Q. And if you couldn't place emission limits on
(15) the flares, then you'd rely on the work practices for
(16) controlling SO2 emissions from the flares?

(17) A. Right. But you first have to establish that
(18) you cannot have emission limits. And only then move
(19) on to work practice standards.

(20) Q. Well, let me ask it this way. And we can
(21) move on. I'll try to get over this topic here.

(22) As we sit here today, do you have any
(23) evidence, facts, or other information that the
(24) control option for controlling SO2 emissions from the
(25) flares would be in any way different had the DEQ

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(1) conducted this top-down BACT analysis for SSM
(2) emissions?

(3) A. I can't rule that out.

(4) Q. I'm just asking if you have the facts,
(5) information, or evidence; then we can discuss it. If
(6) not, we'll move on.

(7) A. Well, I'm saying if you did a top-down
(8) analysis, you would consider numerous other options
(9) that were not considered as part of the analysis.
(10) And one or more of those could have resulted in the
(11) BA- -- being BACT for this.

(12) Q. But do you have that information, facts, or
(13) evidence, as we sit here today?

(14) A. Maybe I don't follow your question. I just
(15) gave you my opinion that -- because the BACT analysis
(16) was not done, how can you prejudge that something
(17) could not have become BACT. That's hard for me to
(18) understand.

(19) Q. That must mean that you didn't do an
(20) independent analysis to answer that question?

(21) A. I did not do a BACT analysis for the SSM
(22) events.

(23) Q. And hence, you don't know the answer to my
(24) question?

(25) A. Correct. But I do know I cannot say -- I

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(1) thought that's what your question asked, is whether
(2) it would be any different from the SSEM plan
(3) currently proposed.

(4) Q. Okay. Now, are you aware -- you mentioned
(5) the state of Iowa as imposing emission limits on
(6) flares.

(7) Do you recall that? I think it was in your
(8) rebuttal report?

(9) A. Correct.

(10) Q. Are you aware of any other states that have
(11) imposed emission limits on flares other than the
(12) state of Iowa?

(13) A. I didn't -- again, have not done a full
(14) survey of what every state is doing for different
(15) types of industrial flares.

(16) Q. Right. So at this point in time, the only
(17) state you're aware of is the state of Iowa?

(18) A. I had that example before me, and I gave
(19) that example in my rebuttal report.

(20) Q. And how was it you became aware of the
(21) permit in that case that imposed emission standards
(22) on the flares for this facility in Iowa?

(23) A. I think I was familiar with the permit. I
(24) was looking at permits from different states.

(25) Q. Were you surprised when you saw that?

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(1) A. No. It's an emission source. And they
(2) deemed it to have certain limits. So it's not
(3) surprising.

(4) Q. Do you know approximately when that
(5) particular BACT determination was made in that case?
(6) And again, I'm referring to the state of Iowa. And I
(7) believe you mentioned it was the homeland energy?

(8) A. That's what I recall is the name. I don't
(9) remember the time.

(10) Q. Do you remember when the BACT determination
(11) was made in that case?

(12) A. I do not recall.

(13) Q. Do you know whether that was a BACT
(14) determination made in connection with the issuance of
(15) an air quality construction permit?

(16) A. I don't remember that as to whether it was
(17) or not.

(18) Q. Have you ever seen the air quality permit
(19) that the state of Iowa issued in that case?

(20) A. I thought I had.

(21) Q. Did you have any involvement in the issuance
(22) of that permit?

(23) A. No, I did not.

(24) Q. Do you know what kind of facility the
(25) homeland energy -- or what kind of facility that was

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- (1) that was issued this permit that had emission limits
(2) on its flares?
(3) **A. I used to, but I don't know if I can recall**
(4) **that right now.**
(5) Q. Is it generally considered difficult to
(6) measure emissions from flares?
(7) **A. Certainly compared to other sources, yes.**
(8) Q. Are you aware of any techniques that measure
(9) flare emissions that are used -- that are used in --
(10) I'll just leave it at that.
(11) Are you aware of any techniques used to
(12) measure flare emissions?
(13) **A. I am.**
(14) Q. And those were mentioned in your report, I
(15) believe?
(16) **A. I've given examples of some of those**
(17) **techniques, yes.**
(18) Q. I think -- and your report, you mentioned
(19) something about it being possible to measure flare
(20) emissions by using techniques like long-path infrared
(21) techniques?
(22) **A. They're one class of technologies that are**
(23) **being used, correct.**
(24) Q. Are you aware of any other technologies that
(25) are being used?

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- (1) **A. Yeah. The brute-force approach works. It**
(2) **is just very difficult to actually grab a sample from**
(3) **the exhaust of a flare and analyze it.**
(4) Q. Do you know where they're being used?
(5) **A. Which one?**
(6) Q. This -- well, let's -- let's start with the
(7) long-path infrared. Any technique used to measure
(8) flare emissions. Let's start with that.
(9) Let me start my question over. Sorry about
(10) that.
(11) Do you know where these techniques are being
(12) used to measure flare emissions?
(13) **A. Well, the long-path type of techniques have**
(14) **been used in several places around the world,**
(15) **including in the U.S., typically in refineries or**
(16) **petroleum terminals. They've been used in Canada.**
(17) **They've been used in Europe. They've been used in**
(18) **Texas. So those are examples of that type of**
(19) **technique.**
(20) Q. Okay. Do you know whether those techniques
(21) are used to continuously monitor flare emissions?
(22) **A. I don't know how long they've been used to**
(23) **monitor, but I don't know that they're even used to**
(24) **continuously monitor at this time.**
(25) Q. Okay. Do you understand that typically

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- (1) those techniques are used for a discrete period of
(2) time to assess flare efficiency?
(3) **A. It might -- well, not just for flare**
(4) **efficiency. It could also actually get chemical**
(5) **asphyxiation of the mass composition of the exhaust**
(6) **products.**
(7) Q. But do you understand that those techniques
(8) are being used for a discreet period of time to
(9) measure flare emissions for the purpose of assessing
(10) flare emissions or efficiency, excuse me?
(11) **A. Well, again, the same answer. I'm confused**
(12) **by your question. There's a discreet period of time**
(13) **aspect to it, and then there's a purpose aspect to**
(14) **it. I disagree about the purpose.**
(15) **The discreet period of time, yes, but that's**
(16) **no different than source testing or stack testing**
(17) **that is done routinely.**
(18) Q. So you do agree -- okay. Let's move on to
(19) the second part of that question.
(20) Are these techniques typically used
(21) to assess flare efficiency? In other words, are
(22) these techniques used to measure flare emissions for
(23) the purpose of assessing the flare's efficiency?
(24) **A. They can be, but there's a derived number,**
(25) **yes.**

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- (1) Q. Pardon me?
(2) **A. There's a derived number. You need to know**
(3) **the emissions so you can compare the emissions and**
(4) **calculate efficiency.**
(5) Q. Are you aware of any facilities where these
(6) techniques are used for purposes other than assessing
(7) for efficiency?
(8) **A. I've seen reports where they have tried to**
(9) **measure emissions. I don't recall if efficiency was**
(10) **also calculated in those instances.**
(11) Q. Do you have copies of those reports?
(12) **A. Somewhere in my reference materials, but I**
(13) **have seen them.**
(14) Q. Can you give us the names of those reports?
(15) **A. Not sitting here as memory test, no.**
(16) Q. Would you do us a favor. Sometime today
(17) when you get back to your office, would you look up
(18) those reports?
(19) **A. I can certainly try to do that.**
(20) Q. And if you find them, would you provide them
(21) to us through counsel?
(22) **A. I can do that.**
(23) Q. Thank you.
(24) **A. But these techniques are well known.**
(25) **They're available to everybody.**

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- (1) Q. Are you familiar with the term reference
(2) measure? Let me ask that again.
(3) Are you familiar with the term "reference
(4) method"?
- (5) **A. Yes.**
- (6) Q. What do you understand that term to mean?
- (7) **A. Technique that EPAs approve to measure
(8) certain emissions for particular sources using
(9) certain techniques.**
- (10) Q. And do you know whether these particular
(11) techniques are being used as a reference method?
- (12) **A. I don't know if they have or have not been
(13) certified to be reference methods yet.**
- (14) Q. Okay. Is Homeland Energy Solutions, the
(15) name of the facility you reference in your rebuttal
(16) report, using any kind of method to determine
(17) compliance with its flare emission limits?
- (18) **A. I'll have to look, but I don't recall.**
- (19) Q. Well, do you know what method homeland
(20) energy solutions is using to determine compliance
(21) with its flare emission limits?
- (22) **A. I'd have to look at the permit. I don't
(23) remember.**
- (24) *MR. COPPEDE: Let's take a short break.*
(25) *THE WITNESS: Okay.*

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- (1) (Recess.)
(2) *BY MR. COPPEDE:*
- (3) Q. In looking at your report, Dr. Sahu, I'm not
(4) sure if it was in the rebuttal or the initial report,
(5) but you had expressed some criticisms that the DEQ
(6) failed to accurately estimate -- estimate all of the
(7) fugitive volatile organic compounds in HAP emissions
(8) of HAPs hazardous -- emissions of hazardous air
(9) pollutants.
- (10) Do you recall that?
- (11) **A. Right. There's a discussion of HAP
(12) emissions in both reports.**
- (13) Q. What do you base that statement on?
- (14) **A. Well, I spoke in the context of making --
(15) I'm sorry -- I spoke in the context of what I
(16) understand Medicine Bow was saying that it's a minor
(17) source of emissions.**
- (18) Q. Do you have any, as we sit here today,
(19) facts, evidence, or other information that the
(20) Medicine Bow facility is something other than a minor
(21) source of HAPs to the BAC -- let me stick with HAPs.
- (22) As we sit here today, do you have any facts,
(23) evidence, or other information that the Medicine Bow
(24) facility is a major source of hazardous air
(25) pollutants?

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- (1) **A. Right. That's my opinion. It's more likely
(2) to be a major source.**
- (3) Q. But my question was a little different. I
(4) understand that's your opinion, but as we sit here
(5) today, do you have any facts, evidence, or other
(6) information -- okay. Let me ask it this way: What
(7) is that based on, that opinion based on?
- (8) **A. It's based on how the emissions were
(9) calculated and the support for the various
(10) assumptions that went into the potential to emit
(11) calculations for the HAP emissions that are presented
(12) in the records.**
- (13) Q. Do you have an opinion as to how those
(14) calculations should have been done and what the
(15) assumption should have been?
- (16) **A. Well, not just how the calculations were
(17) done, per se, but the support for the assumptions
(18) that are at the heart of the calculations.**
- (19) Q. What -- what specifically are you referring
(20) to for -- what would you want to have seen, in other
(21) words, to support the assumptions that you refer to?
- (22) **A. Well, it depends on the assumption. I mean,
(23) for example, those calculations rely on the number
(24) and type of the various components, fugitive emission
(25) components, that would be part of the Medicine Bow**

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- (1) **facility. But there really was no support for how
(2) those component counts were developed that anybody
(3) could verify.**
- (4) Q. Are you then just critical of the way the
(5) component counts were done?
- (6) **A. I didn't see how they were done because
(7) there was there's no support where those numbers came
(8) from. That's one example.**
- (9) Q. So are you critical of anything other than
(10) how the -- than the component count?
- (11) **A. Yeah. There were other assumptions made,
(12) and I provided some criticism on those as well.**
- (13) Q. Are those related to the components?
- (14) **A. Well, component count was one. And the type
(15) and description of the components is another.**
- (16) Q. Anything else?
- (17) **A. The choice of the emission factors.**
- (18) Q. For those various components?
- (19) **A. Correct. That are used to represent
(20) potential to emit emissions from those components.**
- (21) Q. So you've given me a list here: the
(22) components, the description of those components, and
(23) the choice of emission numbers for those components?
- (24) **A. Right. And then the efficiency with which
(25) they would be controlled, those emissions would be**

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- (1) this particular instance, you didn't -- you
(2) personally, in connection with formulating your
(3) opinions, you personally did not do a BACT analysis
(4) for equipment leaks for this facility?
(5) **A. I did not do a BACT analysis for this**
(6) **facility.**
(7) **Q.** Are you familiar with the RACT/BACT/LAER
(8) Clearinghouse?
(9) **A. Yes.**
(10) **Q.** What's your understanding as to what that
(11) is?
(12) **A. Well, it's a database that is maintained by**
(13) **EPA in which states and other permitting authorities**
(14) **submit information relating to technology assessment**
(15) **pursuant to RACT, to BACT, to LAER, as to make those**
(16) **determinations, generally on volunteer basis,**
(17) **although not always.**
(18) **Q.** Have you ever used that resource?
(19) **A. Sure.**
(20) **Q.** Did you review that resource that is the
(21) RPLC, clearinghouse to research BACT equipment leaks?
(22) **A. Not recently, and not for Medicine Bow.**
(23) **Q.** Okay. I think I'm getting close to done on
(24) that topic.
(25) (Recess.)

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- (1) **BY MR. COPPEDE:**
(2) **Q.** Dr. Sahu, did you do anything at all to
(3) calculate the potential to emit for methanol in
(4) connection with the Medicine Bow facility?
(5) **A. You mean, did I try to estimate it myself?**
(6) **Q.** Yes.
(7) **A. No. I didn't have enough information to do**
(8) **that.**
(9) **Q.** Did you do anything to estimate the
(10) potential to emit for benzene in connection with the
(11) Medicine Bow facility?
(12) **A. Same answer.**
(13) **Q.** No?
(14) **A. I didn't have enough information to do that.**
(15) **Q.** So the answer is no?
(16) **A. Correct.**
(17) **Q.** Did you do anything to calculate the
(18) potential to emit formaldehyde in connection with
(19) this facility?
(20) **A. I don't believe so.**
(21) **Q.** And if you had, it would be in your report;
(22) is that fair to say?
(23) **A. Right.**
(24) **Q.** Or your rebuttal report?
(25) **A. Correct.**

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- (1) **Q.** Did you do anything to calculate the
(2) potential to emit for hexane in connection with this
(3) case?
(4) **A. No, I did not.**
(5) **Q.** Did you do anything to estimate the
(6) potential to emit for toluene in connection with this
(7) case?
(8) **A. No.**
(9) **Q.** Did you do anything to estimate the
(10) potential emit for other hazardous air pollutants in
(11) connection with the Medicine Bow facility?
(12) **A. No, I don't recall doing that.**
(13) **Q.** Are you familiar the EPA's PM10 surrogate
(14) policy?
(15) **A. Yes.**
(16) **Q.** And would you just tell us briefly what you
(17) understand the EPA's PM10 surrogate policy to be?
(18) **A. I think it refers to two memos that EPA**
(19) **staff wrote. I believe the first in 1997 and the**
(20) **second in 2005 that allowed for the use of PM10 in**
(21) **lieu of PM2.5 to do the technical analyses that are**
(22) **need to satisfy PM2.5, national air quality standard**
(23) **compliance, and other aspects of new source review**
(24) **for PM2.5, until such time as appropriate tools and**
(25) **techniques to do that analysis for PM2.5 were**

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- (1) **developed.**
(2) **Q.** Is it your understanding that some states
(3) are permitted to use EPAs PM10 surrogate policy?
(4) **A. Well --**
(5) **MS. ISSOD: Objection. Calls for legal**
(6) **conclusion.**
(7) **THE WITNESS: Well, my understanding is that**
(8) **EPA's surrogate policy is not binding on the states.**
(9) **States are free to not use the surrogate policy, if**
(10) **they don't need to.**
(11) **BY MR. COPPEDE:**
(12) **Q.** With regard to Wyoming, though, did you
(13) understand that the Wyoming division of air quality
(14) analyzed PM2.5 in this case by using EPA's PM10
(15) surrogate policy?
(16) **A. I believe that's what Medicine Bow did, and**
(17) **DEQ may have as well.**
(18) **Q.** Do you know whether the EPA, in May of 2008,
(19) restated its position that states could continue to
(20) use if -- to use the PM10 surrogate policy?
(21) **MS. ISSOD: Objection. If you are referring**
(22) **to a document, the document is not in front of the**
(23) **witness.**
(24) **THE WITNESS: I believe EPA continues to not**
(25) **bar the states from using PM2.5 directly and not rely**

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- (1) *on the surrogate policy.*
(2) *BY MR. COPPEDE:*
(3) Q. Do you have any information in this case
(4) that the Wyoming division of air quality was
(5) prohibited from analyzing PM2.5 by using EPA's PM10
(6) surrogate policy?
(7) *MS. ISSOD: Objection. Calls for a legal*
(8) *conclusion.*
(9) *THE WITNESS: Would you mind restating the*
(10) *question. I didn't get the last part of it.*
(11) *BY MR. COPPEDE:*
(12) Q. You bet.
(13) Do you have any information that the Wyoming
(14) division of air quality was prohibited from analyzing
(15) PM2.5 by using EPA's PM10 surrogate policy?
(16) **A. I don't.**
(17) Q. Do you know whether the EPA has promulgated
(18) any rules on significant impact levels on PM2.5?
(19) **A. Not final rules. I'm aware of proposed**
(20) **rules.**
(21) Q. Do you know whether the EPA has promulgated
(22) any rules for significant monitoring concentrations?
(23) **A. Not final rules.**
(24) Q. Now, I noticed in your report you referred
(25) to the Highwood Generating Station and Sunflower

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- (1) Electric Power Holcomb Station?
(2) **A. Yes.**
(3) Q. Did those cases involve coal-fired boilers?
(4) **A. The Highwood certainly did. Both of them**
(5) **did, yes.**
(6) Q. You looked at those two cases in connection
(7) with emission sources for PM2.5 in this case?
(8) **A. Well, I gave Highwood as an example where it**
(9) **was not only emissions, but BACT analysis for PM2.5.**
(10) Q. Were the emission sources for the PM2.5 and
(11) the Highwood Generating Station and Sunflower
(12) Electric & Power, Holcomb station cases involve
(13) coal-fired boilers?
(14) **A. Among others, boilers certainly were part of**
(15) **the emission sources.**
(16) Q. But were the emission sources for that
(17) particular matter PM2.5 from coal-fired boilers?
(18) **A. I don't recall that the boilers were the**
(19) **only source of PM2.5 in those plants.**
(20) Q. Do you recall what the other sources were
(21) for that particular matter?
(22) **A. No, I do not recall, but there are PM**
(23) **sources like fugitives, dust services, as well as**
(24) **auxiliary boilers and engines, typically coal-fired**
(25) **power plants.**

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- (1) Q. But were those the principal services for
(2) those emissions?
(3) **A. No. The coal-fired boilers by virtue of**
(4) **their size would be the main source.**
(5) Q. Correct. That's fine.
(6) The boilers would be the principal source
(7) from the PM2.5 emissions, is what you're saying to
(8) us?
(9) **A. They would be the dominant services, but not**
(10) **the only services.**
(11) Q. Gotcha.
(12) Do you know whether the Medicine Bow
(13) facility will have any coal-fired boilers?
(14) **A. If I can clarify the answer, if you would**
(15) **indulge me, what I meant was, it's not clear that**
(16) **even the boilers would be the dominant services, per**
(17) **se, because their emissions tend to be controlled.**
(18) **Fugitive emission services can often be pretty**
(19) **significant as well.**
(20) Q. Correct. Okay. I understand.
(21) But getting to my other question, do you
(22) have any facts, information, or evidence that the
(23) Medicine Bow facility will have any coal-fired
(24) boilers?
(25) **A. I don't believe they have coal-fired**

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- (1) **boilers.**
(2) *MR. COPPEDE: I may be close to done here.*
(3) (Recess.)
(4) *BY MR. COPPEDE:*
(5) Q. We need to go back a little bit to make sure
(6) I've exhausted the topic.
(7) **A. That's okay.**
(8) Q. Earlier you were testifying or you mentioned
(9) in your testimony that you've done dispersion
(10) modeling?
(11) **A. Yes, I have.**
(12) Q. What pollutants did you model for in those
(13) incidents where you did that?
(14) **A. All the usual suspects, criteria pollutants,**
(15) **HAP.**
(16) Q. And remind us again, and I apologize if I've
(17) asked you this already, but remind us again the last
(18) time you did any dispersion modeling?
(19) **A. Well, I don't do any dispersion modeling**
(20) **right now because I don't specialize in that. But I**
(21) **think the last dispersion modeling I think was**
(22) **probably five or more years ago.**
(23) But I teach at quality classes. So I do
(24) dispersion modeling as part of my teaching work as
(25) well.