

OFFICE OF ZONING AND ADMINISTRATIVE HEARINGS
FOR MONTGOMERY COUNTY

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:
PETITION OF COSTCO WHOLESALE : Case No. S-2863
CORPORATION : OZAH No. 13-12
:
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A hearing in the above-entitled matter was held on
May 12, 2014, commencing at 9:38 a.m., at the Office of
Zoning and Administrative Hearings, 100 Maryland Avenue, 2nd
Floor Council Hearing Room, Rockville, Maryland 20850
before:

Martin L. Grossman
Hearing Examiner

A P P E A R A N C E S

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P R O C E E D I N G S

1
2 MR. GROSSMAN: This is the 33rd day of a public
3 hearing in the matter of Costco Wholesale Corporation, Board
4 of Appeals No. S-2863, OZAH No. 13-12, petition for a
5 special exception pursuant to Zoning Ordinance Section
6 59-G-2.06, to allow petitioner to construct and operate an
7 automobile filling station which would include 16 pumps.
8 The subject site is located at 11160 Veirs Mill Road, Silver
9 Spring, Maryland. That's Lot N, 631 Wheaton Plaza, Parcel
10 10, also known as Westfield Wheaton Mall, and is zoned C-2.
11 The hearing was begun on April 26, 2013, and the
12 next session will be on May 20, 2014, here in the second
13 floor hearing room of the COB at 9:30 a.m. This hearing is
14 conducted on behalf of the Board of Appeals. My name is
15 Martin Grossman. I'm the Hearing Examiner, which means I
16 will take evidence, as I have been doing, and write a report
17 and recommendation to the Board of Appeals, which will make
18 the decision in this case. Will the parties identify
19 themselves, please, for the record?
20 MR. BRANN: Good morning. Erich Brann with
21 Costco.
22 MR. GROSSMAN: Mr. Brann.
23 MS. HARRIS: Good morning. Pat Harris on behalf
24 of Costco.
25 MR. GOECKE: Good morning. Mike Goecke for

C O N T E N T S

Rebuttal				
Witnesses:	Direct	Cross	Redirect	Recross
David Sullivan				
By Ms. Rosenfeld		8		
By Mr. Silverman		147		
By Mr. Goecke			200	
By Ms. Cordry				224

E X H I B I T S

Exhibit No.		Marked/Received
567	Modeling compliance of the federal one-hour NO2 NAAUS by CAPCOA	34
568	EPA Introduction to MOVES for Non-Modelers	97
569	Atmospheric Turbulence, Panofsky and Dutton, 1984, pages 150-153	104
230-A	Site plan with red circle delineating 40-meter area	143
570	Fact sheet from EPA web site with air quality designations for 2010, primary NO2, NAAQS	152
571	February 17, 2012 Federal Register, EPA final rule on measuring NO2	160
572	Display of bias of federal equivalent monitors	214

1 Costco.
2 MR. GROSSMAN: Mr. Goecke, you look a little
3 better today.
4 MR. GOECKE: A little bit. Thank you.
5 MS. CORDRY: Karen Cordry for the opposition --
6 MR. GROSSMAN: Ms. Cordry.
7 MS. CORDRY: -- Kensington Heights.
8 MS. ROSENFELD: Good morning, Mr. Grossman.
9 Michele Rosenfeld with Kensington Heights.
10 MR. GROSSMAN: Ms. Rosenfeld.
11 MR. SILVERMAN: Good morning, Mr. Grossman. Larry
12 Silverman, Stop Costco Gas Coalition.
13 MR. GROSSMAN: Mr. Silverman.
14 MS. ADELMAN: Good morning, Mr. Grossman. Abigail
15 Adelman for the Stop Costco Gas Coalition.
16 MR. GROSSMAN: Ms. Adelman.
17 MS. DUCKETT: Eleanor Duckett, Kensington View.
18 MR. HLINKA: Dennis Hlinka, Sullivan
19 Environmental.
20 MR. GROSSMAN: Good morning. Okay, we have a
21 couple of preliminary matters. First of all, since our
22 session on May 8th, the parties were too exhausted to file
23 additional exhibits, thankfully, so I didn't receive any e-
24 mails.
25 MS. CORDRY: I sent one, but it was when I said

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1 we, I said on today I would provide exhibits. They asked if
2 there were any more exhibits coming in, to try to have them
3 in by today, so I filed it this morning at 7:30, so it's not
4 necessarily for today. It's going forward.
5 MR. GROSSMAN: Okay. I haven't seen that yet.
6 MS. CORDRY: And I --
7 MR. GROSSMAN: If they don't come in by the day
8 before --
9 MS. CORDRY: Right, right.
10 MR. GROSSMAN: -- obviously they don't get on --
11 MS. CORDRY: And I gave them copies of it and I
12 have printed out a copy I can give you the next time I come
13 up for, an hour or whatever.
14 MR. GROSSMAN: You couldn't let me get away with
15 my little fantasy, could you, Ms. Cordry?
16 MS. CORDRY: I'm sorry. I'm sorry, see, it's a
17 very small little snag. Very small.
18 MR. GROSSMAN: All right. Thank you. All right,
19 then we'll see if we have time today to get to the
20 applicant's objections. I've had all of the particular
21 exhibits tagged that are objected to, so hopefully we can
22 get to them easily.
23 MR. GOECKE: Mr. Grossman, did you receive my
24 electronic version of that, that I e-mailed to you?
25 MR. GROSSMAN: Gee, when did you e-mail that?

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1 MR. GOECKE: Friday.
2 MR. GROSSMAN: What time?
3 MS. CORDRY: Actually I think it was Saturday.
4 MR. GOECKE: I've lost track of the days. I'd
5 have to double check.
6 MR. GROSSMAN: I didn't see it. I didn't check --
7 MR. GOECKE: It might have been, it may have been
8 over the weekend, so --
9 MR. GROSSMAN: -- my e-mail this morning here --
10 MR. GOECKE: -- okay.
11 MR. GROSSMAN: -- and if it came after 7:00
12 o'clock on Friday, I was gone.
13 MR. GOECKE: Okay.
14 UNIDENTIFIED SPEAKER: It was Saturday morning.
15 MS. CORDRY: It was Saturday morning.
16 MR. GROSSMAN: All right. Ms. Cordry says it was
17 Saturday morning, so I haven't seen that yet.
18 MR. GOECKE: Okay.
19 MR. GROSSMAN: All right. Let's see. Any other
20 preliminary matters? Seeing none, we have Mr. Sullivan
21 resuming his cross-examination today on his rebuttal.
22 You're still under oath, Mr. Sullivan.
23 (Witness previously sworn.)
24 MR. SULLIVAN: Yes, sir.
25 MR. GROSSMAN: And then Dr. Cole, if there is

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1 time. All right, you may proceed, Ms. Rosenfeld, with your
2 cross-examination.
3 MS. ROSENFELD: Yes, thank you.
4 REBUTTAL CROSS-EXAMINATION (Resumed)
5 BY MS. ROSENFELD:
6 Q Mr. Sullivan, between your January 2013 and your
7 August 2013 reports, as I understand it you made changes to
8 your modeling for several reasons. One was because you
9 changed the, the changed standard for PM2.5, is that
10 correct?
11 A Between January --
12 Q January of 2013 and August of 2013.
13 A There's been a lot of reports. And the standard,
14 I did make changes to them all because of the PM2.5
15 standard, and I made changes to them all because of the
16 issue with the NO2 conversion. And the third reason I made
17 changes, among others, was the fact that prior in the case,
18 the focus was on the neighborhood school and so forth, and
19 during the time between January and August the focus from my
20 perspective was now on the gas queue and loading dock, and I
21 made changes to respond to those situations.
22 Q And what has changed between August and, between
23 your August report and your February report of 2014, to
24 cause you to be less conservative in your modeling?
25 A We, a couple things. One is the, not necessarily

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1 less conservative, but the background change over time, and
2 we accounted for that fact.
3 And the second major reason is, as I mentioned
4 previously, the December, I believe it was, hearing, Dr.
5 Cole mentioned OLM method. And if you're going less than
6 100 percent conversion, in his judgment we should use the
7 OLM method. We gave that some consideration and decided,
8 well, okay, we'll model NO2 OLM and the other options that
9 are provided by EPA guidance documents for doing, you know,
10 less conservative more accurate treatments of NO2 for our
11 purposes, and we did so. So that those are the main
12 reasons, the main issues that changed.
13 Q And there's been a lot of discussion back and
14 forth as to whether or not Dr. Cole actually suggested that
15 you make those changes so that you apply the OLM. Assuming
16 for the sake of argument that he didn't actually make that
17 suggestion, absent that request, would you still have relied
18 on the August report that you submitted previously?
19 A I don't know. He did make that request, and the
20 record speaks for itself. And I can't reconstruct what I
21 might have done, you know, I don't know.
22 Q If the only reason was that the background numbers
23 had changed over time, would you have changed your August
24 report?
25 A Same answer.

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1 MR. GOECKE: Objection, speculation.
2 MS. ROSENFELD: He's an expert.
3 MR. GROSSMAN: Well, I know, but usually --
4 MS. ROSENFELD: I'm asking --
5 MR. GROSSMAN: -- you can ask an expert a
6 hypothetical on facts that are --
7 MS. ROSENFELD: I can also ask him, I'm not asking
8 him to speculate as to what others might have concluded.
9 I'm asking what his --
10 MR. GROSSMAN: I understand. I'm going to let you
11 ask this question, because I don't think it's that big a
12 deal. But you can ask an expert to give, to respond to
13 hypotheticals based on evidence either in the record or that
14 you propose, but this is something a little bit different.
15 But go ahead and pose that question if you know.
16 THE WITNESS: I don't know what I would have done.
17 I mean I've responded to the circumstances. If the
18 circumstances were different, I may have reacted
19 differently. I'm not going to guess.
20 BY MS. ROSENFELD:
21 Q In your opinion, is your February report less
22 conservative than your August report?
23 A To clarify, it is still extremely conservative,
24 but less conservative than assuming 100 percent of all the
25 NO, NOX, is NO2. That's what you're asking about. For the

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1 other pollutants, some aren't that much different.
2 Q And so is it your belief that Dr. Cole was asking
3 you to take a less conservative approach in your rebuttal
4 report?
5 A I mean Dr. Cole's comments speak for themselves.
6 He, on the record we've gone through exactly what he said.
7 My interpretation of that, those statements that he made,
8 was that he didn't agree it was appropriate, in his
9 judgment, to use anything about 100 percent, unless we were
10 to use a method like OLM. In order to try to get closer to
11 the same page, I concluded let's try to meet him halfway,
12 and then let's do it, and so we did.
13 Q You also explained that part of the reason for
14 your shift in focus was that there had been a change in
15 focus from the neighborhood to the mall. In your mind does
16 the neighborhood mean the school, the pool, and the homes in
17 the immediate vicinity of the mall parcel?
18 A In my mind those are the closest locations among
19 the neighborhood type receptors to the mall, and the
20 locations that were discussed the most earlier in the case.
21 Q And earlier in the case, was the neighborhood
22 included in the applicant's definition of the neighborhood
23 for purposes of the special exception application?
24 A I don't recall.
25 Q Do you know whether the mall parcel has always

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1 been included in the definition of the neighborhood?
2 A My definition, I mean I don't, my definition, when
3 I meant to say neighborhood, was the portion beyond the ring
4 road, with the emphasis being to the south. That's how I
5 interpreted the neighborhood.
6 Q I'm sorry --
7 A I'm not sure about the official designation of
8 the, for the permit or anything else.
9 Q I'm sorry, did you say south of the ring road?
10 A What I said was the, I see the neighborhood as
11 being beyond the ring road, and the focus that we had was
12 really in the southern portion, which is closest to the most
13 gas stations.
14 Q So in your initial modeling then you really didn't
15 model for emissions levels within the mall parcel, did you?
16 A You say did not?
17 Q Did not.
18 A That is not correct.
19 Q You included modeling within the mall parcel in
20 your December, in your November 2012 report?
21 A That's correct.
22 Q And could you just remind me where?
23 A Look at any of the plots. The plots show, they
24 clearly had to model, look at the model files. It shows all
25 the receptors we modeled. We had 8,100 receptors, evenly

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1 spaced grid, that included the entire mall complex.
2 Q But in the figures that you contained in the text
3 and in any isopleths that you might have prepared, did you
4 show those levels in the mall parcel?
5 A They all showed those levels.
6 Q And you also showed them for the adjoining roadway
7 network, is that correct?
8 A We did. I mean 8,100 receptors covered the entire
9 mall plus beyond to the, you know, the different roadways.
10 Q And do you show the concentration levels on the
11 road network in your February 2014 report?
12 A We, well, the road network, we show the levels
13 along the southern mall area. The ring road is one of the
14 road networks you're referring to. We do. The focus in the
15 February report was on the mall area and the closest area to
16 the mall, where there was concern there could be potential
17 violations. And that's what we focused on.
18 Q But did you show any of the perimeter major
19 roadways, University, Veirs Mill, Georgia Avenue?
20 A We did not, because based upon my interpretation
21 of previous modeling, and move it down here, it was
22 unnecessary to do all these analyses using 8,100 receptors,
23 when we know from past modeling that the concentrations out
24 at those locations will be below the standards.
25 Q But didn't your original report show violations at

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1 those major road networks? It showed exceedances, didn't
2 it?

3 MR. GROSSMAN: I'm sorry, I missed the last part
4 of that question. Didn't your original report show
5 violations, what was the rest of that sentence?

6 BY MS. ROSENFELD:

7 Q Exceedances along the major roadway network.
8 A Exceedances of what?
9 Q Of the NO2 standards.
10 A Well, I don't recall if it's an isopleth might be
11 up to there, but recall that in the August report we're
12 doing OLM modeling, and at an intersection we know that the
13 ratio of NO2 to NOX from the moving vehicles is under five
14 to 10 percent. And that if a vehicle would idle about five
15 minutes at a light, we're talking maybe on the order of 15
16 percent. So if, you know, the modeling previously was 100
17 percent, so if you take that into account, it was clear that
18 those concentrations would be far below the standard.
19 MR. GOECKE: Mr. Sullivan, you said you did the
20 OLM in the --
21 MR. GROSSMAN: Whoa, whoa.
22 MR. GOECKE: I just want to correct for the record
23 that I think he misspoke in terms of which report he did the
24 OLM.
25 MR. GROSSMAN: You can bring that up on redirect.

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1 MR. GOECKE: Okay.
2 MR. GROSSMAN: This is cross-examination.
3 BY MS. ROSENFELD:
4 Q So that's your opinion, but you don't have that
5 information set out in your report, do you?
6 A Well, I mean if you, it's my opinion, but also if
7 you look at the references and the report I just did in
8 February, it's very clear that if you're going beyond 100
9 percent NO2, that there would be no possibility, in my
10 judgment, that the standard would be exceeded anywhere
11 beyond the mall, or on the mall, for that matter.
12 Q And under the stage one that you reflect in your
13 February report, you show the adjoining rate of growth
14 networks?
15 A We do not.
16 Q And had we asked that you include that in your
17 updated report?
18 A My recollection is I was asked to include that
19 based upon urban dispersion coefficients. And I didn't do
20 that because I don't believe that's correct. I don't
21 believe it's correct to use urban dispersion coefficients
22 throughout that larger grid that we did before.
23 Q You don't believe that urban dispersion
24 coefficients are the proper dispersion coefficients to use
25 on University, Georgia, and Veirs Mill Road?

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1 A No, this has come up previously in testimony. The
2 issue is dealing with the mall itself, one thing Dr. Cole
3 and I agreed upon was that the mall surfaces are all urban.
4 Q Correct.
5 A And we also agreed that if we're going to go out
6 to the larger domain, we're going to follow EPA's Auer
7 method, A-U-E-R, land use method, up to three kilometers.
8 And that clearly is going to be rural. So I didn't see any
9 reason to go against the EPA guidance. And you certainly
10 don't look at one road, you know, you don't look at
11 University. If you're going that far out, you're going to
12 use EPA guidance, and we did. And we showed those earlier.
13 And any, my objective interpretation of our earlier modeling
14 results out past the ring road, especially with due
15 consideration of the actual ratios of NO2 to NOX, this gas
16 station gives insignificant contributions, and there's no
17 basis to interpret, if modeling was done, to assume there's
18 going to be violations.
19 Q So it's your testimony that beyond the mall
20 parcel, and in particular that queue, you were looking at
21 the surrounding area as rural and not as urban.
22 MR. GROSSMAN: Which queue?
23 MS. ROSENFELD: The queue, the gas station queue.
24 MR. GROSSMAN: So beyond, you're saying if you go
25 beyond the queue.

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1 MS. ROSENFELD: Right.
2 THE WITNESS: That's not correct. If you go
3 beyond the queue on the mall, the mall is being treated as
4 urban, as it should. And we showed that in the August
5 report. And you're looking at the larger scale. It goes
6 much further out. We're relying upon rural, consistent with
7 the EPA guidance.
8 MR. GOERKE: Mr. Grossman, I'd like to object. I
9 think this is beyond the scope of what we crossed in
10 rebuttal. She had an opportunity before to talk about the
11 urban versus rural, and we did talk about that at great
12 length, and comparing his early reports, which we'd already
13 done before he testified on rebuttal.
14 MR. GROSSMAN: I think it is somewhat beyond the
15 scope, but I'm going to give her some leeway in cross-
16 examination. On the other hand, it is becoming somewhat
17 repetitive on the same issue --
18 MS. ROSENFELD: Well, I --
19 MR. GROSSMAN: -- so if we can, we've already,
20 he's already gone over what he --
21 MS. ROSENFELD: -- I'm trying to understand,
22 because I, what, I think what he's saying and what I'm
23 hearing may not be the same thing. Maybe this will make it
24 easier.
25 MR. GROSSMAN: Michele, be careful of the wire

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1 right there.
2 BY MS. ROSENFELD:
3 Q Okay. Taking a look at Exhibit 230, which is the
4 overall illustrative plan dated 7/31/13, if I show you
5 what's inside the special exception boundary itself, you
6 qualify that as urban, correct?
7 A I qualify everything inside the ring road as
8 urban, as did Dr. Cole.
9 Q Okay, so everything inside the ring road is urban.
10 What happens when you get beyond the ring road and into the
11 forest buffer? Is that urban or is that rural?
12 A This kind of land use would qualify as rural land
13 use.
14 Q Okay.
15 A And it would be, I mean you're asking very
16 specifically, if you're applying to the, again, to the
17 larger grid, it's what the three-kilometer circle says.
18 Q Right.
19 A Because you have many, you have mix and match of
20 land uses out to that distance.
21 Q I recall the three-kilometer circle. I'm just
22 trying to ask specifically on Exhibit 230 what you consider
23 urban and rural, so that way we don't have this discussion
24 again.
25 A Well, no, this is --

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1 Q So beyond the ring road to the south you're saying
2 is rural.
3 A Well, you do the Auer method.
4 Q Correct.
5 A The A-U-E-R method. This would be the area, I'm
6 pointing to the south and the residential zone, much of this
7 is wooded, by the way, would be designated as a rural land
8 use. That's one of the inputs for determining the overall
9 dispersion, coefficient of diffusion for a larger scale.
10 Q And for the purposes of the school, that would be
11 rural as well?
12 A I would say yes.
13 Q And the pool area?
14 A The same answer.
15 Q And then when you come up beyond the ring road and
16 you're headed northwest toward University Boulevard, do you
17 consider north of the ring road to be rural?
18 A In all these answers, it depends. I mean
19 basically when you do the Auer, I'm going to explain the
20 Auer method, because I think then we'll be on the same page.
21 Q Yep.
22 A You look at how much asphalt, how many driveways,
23 how much forested area. And each one of those categories
24 has a designation, urban or rural. And you categorize the
25 whole three kilometer circle and you add them all up. How

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1 much urban do I have? And if that goes above 50 percent,
2 you're going to call it urban. But in every case it's a
3 mixed bag. So University Boulevard would have obviously
4 asphalt. And the mall parking lot of course is asphalt.
5 And the school has parking lots. So you do your best
6 approximation of those things. So you're when asking each
7 one, what would this be, well, that's how you do it.
8 Q Well, I think my question is a little more
9 specific than that. You certainly have covered the Auer
10 method. And if you just are looking at the gross three-
11 kilometer area, I think you testified that that overall area
12 is rural. But then you looked at it on more of a micro-
13 scale, applying to this parcel.
14 My question is in your modeling, did you assume
15 that the area south of the ring road is rural?
16 A In the modeling that was done this time?
17 Q Yes.
18 A We're using urban dispersion, because our focus in
19 here is inside the ring road. This is, it's very slight
20 coverage over in here.
21 MR. GROSSMAN: Over in here being?
22 THE WITNESS: I'm sorry, to the south, where the
23 neighborhood is. But this, these runs were based on urban
24 conditions.
25 BY MS. ROSENFELD:

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1 Q So in your current February 2014 report, you
2 treated the area south of the ring road as urban, is that
3 correct?
4 A That's correct.
5 Q And did you treat the area east of the ring road
6 on --
7 MR. GROSSMAN: You mean west of --
8 BY MS. ROSENFELD:
9 Q -- west of the ring road, toward the pool, as
10 urban or rural?
11 A We treated, as the run done in August of this year
12 was an urban run, everything would be treated as urban.
13 Q And what about in your February 2014 report?
14 A August, 2014.
15 MR. GROSSMAN: You said, he said August.
16 THE WITNESS: Sorry. February 2014.
17 BY MS. ROSENFELD:
18 Q You treated as urban.
19 A Yes.
20 Q And for the area southeast, over the pool area,
21 over the school area, did you treat that as urban or rural
22 in your current February report?
23 A The same answer to all those. We have very
24 limited coverage shown, might not be ours, but beyond the
25 ring road, because our, we have not, frankly I have no

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1 concerns in there based upon the modeling we've done so far.
2 And I was trying to address the issues in the mall which was
3 where the concern was with the gas queue and the loading
4 dock. So that was the focus of those runs.
5 Q And then going toward the north, University
6 Boulevard, Veirs Mill Road, and down toward Georgia Avenue,
7 did you include those areas in your February 2014 report?
8 Did you do any modeling analysis in those locations?
9 A Yeah, we modeled the southern ring road. Again,
10 the focus was on the area near the gas station itself, the
11 loading dock, and gas queue.
12 Q So when is the last time that you modeled the
13 northern ring road perimeter of the mall parcel?
14 A I would project that would be in August 2013.
15 Q And in August 2013 did you use urban or rural
16 dispersion coefficients?
17 A I'm trying to recall. I know we did include urban
18 coefficients. We did some testing. But that was mostly in
19 the southern area. We really modeled the entire area rural
20 back in 2012, as I recall it was, all the isopleth maps were
21 done rural. But back then we showed you the results of the
22 key receptors, both urban and rural.
23 Q And then again for the areas north of the ring
24 road, do you consider them under the Auer method to be urban
25 or rural?

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1 A I don't have a map to make that judgment right
2 now. I'll say the same answer again. We treated, we had
3 two different types of runs. One was for the area focused
4 on the loading dock, the view of the area right near where
5 the gas station is going to be located, we did general run
6 that did the entire domain including all the roads you're
7 talking about. We used rural for all of the large scale and
8 urban for the close-in to the mall.
9 Q And so the close-in urban would have been in
10 February 2014 and the larger more rural would have been in
11 in December 2012?
12 A It was, and the 2012 reports clearly had urban and
13 rural, shown in the tables for the school, the pool, and the
14 homes. And the actual isopleth maps done in 2012 were based
15 on rural conditions.
16 Q Thank you.
17 MS. ROSENFELD: Thank you, Mr. Grossman.
18 MR. GROSSMAN: Certainly.
19 MS. ROSENFELD: That helps.
20 BY MS. ROSENFELD:
21 Q And Mr. Sullivan, do you have your August 2013
22 report in front of you?
23 A I do.
24 Q Okay, if you'd turn to page 24, figure 10, where
25 you ran overall dispersion in the lower quadrant, southwest

Page 24

1 quadrant of the mall.
2 MR. GROSSMAN: Just so the record's clear, which
3 exhibit number are you looking at now?
4 MS. ROSENFELD: Hold on. Two-fifty-five.
5 MR. GROSSMAN: Fifty-five?
6 MS. ROSENFELD: Two-fifty-five.
7 MR. GROSSMAN: Two-fifty-five. All right.
8 BY MS. ROSENFELD:
9 Q I'm looking at figures 9 and 10 on page 34, 24.
10 Do you have it?
11 A I have it in front of me, yes.
12 Q Okay. Is figure 10, is figure 9 the figure that
13 you carried over as your tier one analysis?
14 A Stage one?
15 Q Your stage one analysis in your February 2014
16 report?
17 A With the exception of the background I used, yes.
18 I used a background of 90, which would be the up-to-date
19 background. This one showed a 98, which was the earlier
20 background.
21 Q My page 24 shows a background of 90.
22 A Well, this is the, we've discussed this a few
23 times on the record. The 168 shown there is based upon a 98
24 background. It really should be 160.
25 Q Okay.

Page 25

1 A And version in February shows the 160 in there.
2 Q I keep getting confused, because it says urban
3 dispersion plus 90 background. So looking down at figure
4 10, which was your rural dispersion, if you carried that out
5 to the roadways, do the roadways exceed the max standard?
6 A What road?
7 Q Urban, under the rural coefficients?
8 A You're referring to the ring road?
9 Q No, the University and Veirs Mill.
10 A No, it would not.
11 Q And how do you reach that conclusion?
12 A Well, if you, again, this run is assuming that all
13 NOX is NO2. And I you look at the ring, right just south of
14 the ring road, you'll see like a 170 shown there. And by
15 the time you get to the closest house, you're down to about
16 a 150 microgram cubic meter.
17 Q That's not my question.
18 A Well, I'm answering your question. That the
19 gradient is such that if you went to any other major
20 roadway, your concentrations would be approaching
21 background.
22 Q But going back to Exhibit 230, I'm not asking as
23 you go south, as you continue to go south. I'm asking as
24 you move up toward University Boulevard, toward the
25 northwest and up northeast toward Veirs Mill Road.

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1 A I'm saying looking at the gradients, we've seen
2 this plot, and if you apply those gradings to the north, the
3 northwest and northeast, your concentrations by the time you
4 got to the locations at University or for Veirs Mill, you're
5 going to be approaching background levels, clearly not
6 anywhere near a standard.
7 Q So is it your testimony that the background levels
8 along these major roadways are the same as the ambient air
9 everywhere?
10 A No, I'm not saying that. You know, if you go near
11 one of the intersection points, of course that will affect
12 it. What I'm saying is if you look at figure 10, you can
13 see that, for example right very close to the special
14 exception area, we're showing, the last isopleth we show is
15 a 150. I can't, it's surely considered to the northwest,
16 not a very long distance from the special exception area as
17 you get down to 150. By the time you get up into the other
18 areas, it'd be, you'd be substantially lower than that.
19 My point is if you're meeting the standard right
20 near the source in question, you're going to meet the
21 standards much further away.
22 Q And the roadways themselves aren't sources?
23 A I'm not saying they're not sources. The
24 contribution from the gas station --
25 Q I'm not asking --

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1 A -- operations is very small.
2 Q I'm just asking what's the overall background
3 concentration. What is the overall concentration when you
4 get to Veirs Mill and University?
5 A Well, we showed examples in the 2012 reports based
6 on complete, assuming 100 percent NO2. You could take a
7 look at those figures and divide by a factor of four or five
8 after you subtract background, and get a pretty good idea of
9 what the levels would look like.
10 Q And why would you divide by four or five?
11 A Because it's not 100 percent NO2. The free-
12 flowing portion is in the order of five to 10 percent NO2.
13 And stopping at an intersection for only five minutes, your
14 ratio would be in the order of 15 percent NO2, such that you
15 actually should divide by a factor of five or six.
16 Q But assuming you stay with the 100 percent
17 conversion ratio, you're not reducing it by that --
18 A I'm not staying with the 100 percent conversion
19 ratio.
20 Q No, I understand that. I'm just trying to
21 understand where you started.
22 A Well, if I artificially kept the numbers high by
23 assuming 100 percent conversion right at an intersection,
24 where there's essentially no travel time to convert, you'd
25 be over, you may be technically over the standard. But

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1 you'd put a monitor there. Based on looking at, you know,
2 nationwide data, you would not expect to see an NO2
3 violation.
4 Q And if we could go to your January 2013 report on
5 page 35.
6 MR. GOERKE: Again, Mr. Grossman, this is outside
7 the scope.
8 MR. GROSSMAN: Well, let's hear the question
9 first.
10 MS. ROSENFELD: This is my last question.
11 MS. ROSENFELD: If you would look at the isopleth
12 on that page, and look at the roadway grid work and the
13 levels, the concentration levels.
14 MR. GROSSMAN: That was the January 2013 report,
15 and the exhibit number?
16 MS. CORDRY: Fifty-six A, 56-A.
17 MR. GOERKE: Okay. And what page?
18 UNIDENTIFIED SPEAKER: Thirty-five.
19 MS. ROSENFELD: Do you have --
20 UNIDENTIFIED SPEAKER: I don't have a copy of it.
21 MR. GROSSMAN: Do you have a copy that you want to
22 show the witness?
23 MS. ROSENFELD: I don't have a court copy.
24 BY MS. ROSENFELD:
25 Q Assuming for the moment that it shows numbers as

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1 high as 175 over Veirs Mill Road --
2 MR. GROSSMAN: One-seventy-five of what?
3 MS. CORDRY: Micrograms of NO2.
4 MS. ROSENFELD: Of NO2.
5 MR. GROSSMAN: All right.
6 BY MS. ROSENFELD:
7 Q Of NO2. In your January 2013 report, that was
8 before there was, we realized there was a conversion error,
9 is that correct?
10 A No. Oh, before the background error? That's
11 correct.
12 Q Okay. So if that 175 had been corrected for the
13 background error, would those numbers be above the NAAQS?
14 MR. GOECKE: Objection. Beyond the scope.
15 MR. GROSSMAN: I'm going to overrule it. This is
16 her last question, she said.
17 THE WITNESS: Mathematically you could show that
18 it's higher. But my point I just made was if your
19 background is 90, and your number was 175, you know, you
20 subtract from that 175 and you get what, 85? And you divide
21 that by a factor of five or six, and you're down to 15 or
22 so.
23 MS. ROSENFELD: But I'm not --
24 THE WITNESS: You're adding that to that 90, you
25 have 105. And you can't look at the older reports that were

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1 done with extremely conservative assumptions, and then try
2 to mathematically show there's an issue when, as shown in
3 more recent reports, you can't do that. It's extremely
4 conservative, and it would not give you a number that could
5 be reproduced by measurement.
6 MS. ROSENFELD: And all I'm asking is what the
7 number would be --
8 MR. GROSSMAN: I think you, he's already answered
9 that many times.
10 MS. ROSENFELD: Okay.
11 MR. GROSSMAN: I understand the distinction you're
12 making, and the one he's making. You don't have to do it
13 again.
14 BY MS. ROSENFELD:
15 Q All right. Mr. Sullivan, just from a global point
16 of view, looking at the, in particular the stage two and the
17 stage three analysis that you did in your February 2014
18 report, assuming for the moment that this analysis were
19 going to go through an EPA review, what would the level of
20 expertise and background and experience of the EPA reviewer
21 or regional office reviewer have in looking at that report?
22 MR. GOECKE: Objection. Calls for speculation.
23 MR. GROSSMAN: No, I think he answered that based
24 on his knowledge of reviews of models before, so I'll
25 overrule that.

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1 THE WITNESS: The regional offices, well, first of
2 all it'd go to the State to review. The EPA would then
3 oversee what the State did. And at both levels they have
4 competent meteorologists and air quality specialists who can
5 interpret the issues that end here.
6 BY MS. ROSENFELD:
7 Q So they would have education and professional
8 training specific to the types of analysis that you produced
9 in your rebuttal?
10 A Well, each one has different degrees and different
11 training. My point is they, from my experience in working
12 with regional meteorologists, for example, in the various
13 regions, including Todd Ellsworth in region three, regional
14 meteorologist, these are experienced meteorologists that
15 have done modeling for a long time, and they have the
16 ability to read technical reports, and including issues they
17 haven't dealt with specifically before, and make informed
18 judgments. So I'd say yes, EPA is technically competent to
19 review issues like this, and do all the time.
20 Q I'd like to refer you for a moment to the
21 California Air Pollution Control Officer's Association
22 guidance document that you referenced on page 29 of your
23 report. Do you have a copy of that with you?
24 A CAPCOA?
25 Q Yes.

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1 MR. GROSSMAN: Twenty-nine of which report?
2 MS. ROSENFELD: Of his February --
3 MR. GROSSMAN: 2014 report?
4 MS. ROSENFELD: February 2014 report.
5 THE WITNESS: I don't have a copy with me, but
6 again I'd like to ask Mr. Grossman, do you have a copy of
7 that report?
8 MR. GROSSMAN: This is your rebuttal report she's
9 referring to --
10 THE WITNESS: Correct.
11 MR. GROSSMAN: -- 66.
12 THE WITNESS: The CAPCOA 2011 is a reference
13 relating to modeling NO2. And I believe it's available
14 here. It's certainly a widely available document.
15 MR. GROSSMAN: What page are you on, Ms.
16 Rosenfeld?
17 MS. ROSENFELD: Oh, it's referenced on page 29 of
18 the rebuttal report.
19 MR. GROSSMAN: Okay.
20 MR. GOECKE: Are you asking if he has a copy of
21 his report, or the CAPCOA document?
22 MS. ROSENFELD: Of the CAPCOA document.
23 MR. GOECKE: You don't have copies of that?
24 MS. ROSENFELD: I brought a copy for the record.
25 I asked you last time if you would plan, if you would plan

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1 to bring copies of all of the reference materials in his
2 report.
3 THE WITNESS: I have most of them. I don't think
4 I have CAPCOA. But if you have a question, if I could have
5 a look at your copy, I'll try to, be happy to answer it.
6 MS. ROSENFELD: Mr. Grossman, I do have a copy for
7 the record, and then I have my copy that perhaps Mr.
8 Sullivan and I can share.
9 THE WITNESS: All right.
10 MR. GROSSMAN: Please watch out for the wires.
11 MS. ROSENFELD: You know what? I'm going to go
12 that way.
13 MR. GROSSMAN: Yeah, why do we need to have that
14 set up when we're not using it, is my question. When we use
15 it, you can have it set up, but I'm afraid of having those
16 wires stretched across the room.
17 MS. ROSENFELD: Oh, okay.
18 THE WITNESS: Which part does your question
19 pertain to?
20 MR. GROSSMAN: Mr. Brown, if you'd just -- hold on
21 one second. Just disconnect it, unless it's blocking, if
22 it's blocking the path. I can't see down the path from
23 here, but. And then if you need to use it, we can reconnect
24 it.
25 MS. ROSENFELD: I was going to start on page 7.

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1 Do you have page 7?
2 MR. GROSSMAN: Is this being marked as an exhibit?
3 MS. ROSENFELD: Yes.
4 MR. GROSSMAN: Okay, so this will be --
5 MS. ROSENFELD: Actually I can run a copy of this
6 one.
7 MR. GROSSMAN: This, oh, I thought --
8 MS. ROSENFELD: You have an entire copy. I have
9 an entire copy. Mr. Sullivan has --
10 MR. GROSSMAN: Well, I'll let him use my copy once
11 we mark it as an exhibit, if you want, if that'll help.
12 MS. ROSENFELD: Actually I can share mine.
13 MR. GROSSMAN: Okay, so this'll be Exhibit 567.
14 And that is modeling compliance of the federal one-hour NO2
15 NAAUS by CAPCOA, which stands for California Air Pollution
16 Control Officers Association, and that's Exhibit 567.
17 (Hearing Exhibit No. 567 was
18 marked for identification.)
19 MR. GROSSMAN: All right, so what page?
20 MS. ROSENFELD: Okay, I'm going to start, I'm now
21 on page 7.
22 MR. GROSSMAN: Okay.
23 BY MS. ROSENFELD:
24 Q And on page 7, under section 3.3, there's a
25 section that's titled selecting the appropriate tier

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1 approach. Do you see that section?
2 A I do.
3 Q And under it it notes that, quote, there are
4 several options available to demonstrate compliance with the
5 one-hour NOX standard.
6 A NO2 standard is what it says.
7 Q NO2 standard. Not all options may be allowed by
8 all agency, is that correct?
9 A You're reading exactly what it says.
10 Q Okay. And so in fact under ordinary circumstances
11 if an applicant has to obtain a permit, the regulatory
12 agency would have the expertise to know what questions to
13 ask and what additional data might be required in order to
14 authorize use of the, some of those options, is that
15 correct?
16 A Well, to clarify, if your permit was required,
17 then the State, with EPA oversight, would have reviewed the
18 modeling protocol and would approve all options, including
19 whatever decisions are made on NO2 modeling.
20 Q And they would have an idea as to what policy
21 judgments they would want to make with respect to how
22 conservative they would be in allowing use of those
23 alternative options?
24 A Well, they would make whatever judgments they
25 deemed were appropriate.

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1 Q And do they have the right to full discovery of
2 what your modeling analysis includes?
3 A They would certainly have the modeling files, the
4 protocol, the modeling results, output files, input files,
5 whatever they wanted.
6 Q And do they have the authority to make you
7 provider further information, or run the model in different
8 ways?
9 A Well, they certainly have the authority to approve
10 or disapprove the modeling. If they specify it should be
11 run a certain way, if you didn't run it that way, I would
12 presume that you would not get your permit.
13 Q Or they could ask that you use different inputs in
14 your modeling assumptions?
15 A Certainly.
16 Q And that process in fact is very different from
17 the situation here, is that correct?
18 A Yes, because this matter did not require an agency
19 such as MDE or EPA to have a permit, air quality permit, so
20 there's no review conducted.
21 Q So in this case the hearing examiner or the Board
22 of Appeals have to determine if your modeling analysis is
23 reasonable, based on what you've provided, is that correct?
24 MR. GOECKE: Objection. Calls for a legal
25 conclusion. And this also goes again beyond the scope of

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1 rebuttal, and we've been through this before.
2 MR. GROSSMAN: I agree. I sustain that. And I
3 guess I'd ask this question, since you're into this area.
4 When you, going through a permit process, do they have
5 cross-examination of you under oath?
6 THE WITNESS: They do not.
7 MR. GROSSMAN: Do they have witnesses come in to
8 testify under oath, expert witnesses?
9 THE WITNESS: No, sir.
10 MR. GROSSMAN: All right. See, yes, the process
11 is different, but each process has its own methodology of
12 achieving some approximation of truth. So you are stuck
13 with the process that is here. That is, you have a hearing
14 examiner listening to evidence, and you have cross-
15 examination of what he's presented. You have your own
16 expert witness on these points. And so that gives you that
17 level of security. And when it's done by the EPA or the
18 State, they have a different process. We have the process
19 we have here. So I think you can move on.
20 MS. ROSENFELD: I understand. I just want the
21 record to be clear as to the distinctions.
22 BY MS. ROSENFELD:
23 Q I do have one other question about the EPA
24 process. Are outside parties allowed to come in and
25 participate or make comments during the permit process?

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1 A I think it depends. I haven't seen that on
2 typical permits I've helped obtain. I won't say it never
3 happens. On a large controversial air quality project, that
4 certainly could happen. The answer is I don't, I haven't
5 seen one. I won't say they won't do that.
6 Q From an overall perspective I'd like to walk
7 through the process that you go, that you went through in
8 order to come up with your stage two and stage three
9 analysis.
10 A Ms. Rosenfeld, did you finish with the CAPCOA
11 document?
12 Q I'll have more questions about it later --
13 A All right. I'll leave it here.
14 Q -- so you can hold onto it, or I can take it back
15 for that.
16 The initial step is to pick the model that you
17 use, correct?
18 A Well, that's one of the initial steps, yes.
19 Q And in this case the choice really was between
20 MOVES and MOBILE6?
21 A You're talking about emission models now.
22 Q Yes.
23 A I thought you were going to -- those are, those
24 certainly are two choices.
25 Q Okay. And you picked MOBILE6?

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1 A Well, at the time of this project in 2012, the
2 original report, that was the recommended, that was the
3 model of choice.
4 Q And then you select your inputs into the model,
5 correct?
6 A We do.
7 Q And that includes the number of vehicles?
8 A That's correct. Among other things.
9 Q And the locations where they'll be operated?
10 A No.
11 MR. GROSSMAN: How is this within the scope of the
12 rebuttal direct?
13 MS. ROSENFELD: It's a --
14 MR. GROSSMAN: I've given you a lot of leeway, but
15 really, we can't --
16 MS. ROSENFELD: It's in order --
17 MR. GROSSMAN: -- go over the entire cross-
18 examination of this witness's original direct here.
19 MS. ROSENFELD: His report is presented as an
20 alternative methodology, and my questions --
21 MR. GROSSMAN: Which report?
22 MS. ROSENFELD: His February 2014 report.
23 MR. GROSSMAN: Right.
24 MS. ROSENFELD: And my questions are going into
25 the methodology or the analysis that he used in creating his

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1 methodology for stage two and stage three.
2 MR. GROSSMAN: But it seems to me you're going
3 back to step one, rather than anything that came up in the
4 rebuttal testimony. Can you point me to the part of the
5 rebuttal testimony that this touches on, or that this is
6 responsive to? You're already cross-examined him, and he's
7 been cross-examined at great length previously. So this
8 rebuttal cross-examination should be addressed to things
9 that were raised during rebuttal, rebuttal direct.
10 MS. ROSENFELD: And one of the questions is how
11 did he come up, how did he derive his OLM analysis in stage
12 two and in stage three, and --
13 MR. GROSSMAN: All right, so this is restricted to
14 the OLM analysis.
15 MS. ROSENFELD: This is, as I said, this is --
16 MR. GROSSMAN: That's, I don't think you said
17 that.
18 MS. ROSENFELD: -- this is for his stage two,
19 which is his ozone limiting method --
20 MR. GROSSMAN: Okay.
21 MS. ROSENFELD: -- and stage three, which he
22 identified as something other than was already levelled.
23 MR. GROSSMAN: All right. Go ahead.
24 BY MS. ROSENFELD:
25 Q You say the modeling does not include the

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1 locations where vehicles will be operated?
2 A You're asking about running MOBILE6 is what you're
3 asking for? That comes up with emission rates, and those
4 are then applied to the locations. But to clarify, the
5 MOVES and MOBILE6 treatment, the roadway counts and so
6 forth, are not changed. That was not modified.
7 MR. GROSSMAN: In other words your February 2014
8 rebuttal report didn't modify the MOBILE6 versus MOVES
9 choices.
10 THE WITNESS: Correct, but the only exception
11 being we did factor some things up, as I stated. But the
12 gas queue, we increased the PM2.5 emissions by a factor of
13 10, to address the fact that MOVES is higher. And we
14 described, you know, why we did not scale up the loading
15 dock, for various reasons. But the actual running of
16 MOBILE6 was not repeated for the February 2014 report.
17 BY MS. ROSENFELD:
18 Q Did you make any modifications to your Mobil 6
19 runs?
20 A We did not.
21 Q Did you model fast food emissions, or any other
22 localized source of emissions in stage two or stage three?
23 A Localized source of emissions. Well, we modeled
24 the ones that, we modeled the ones that we modeled back in
25 2012 and 2013. We modeled the roadway segments. We modeled

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1 the parking lots, the garage, ring road, all the gas station
2 sources and the loading dock sources.
3 Q But you didn't model all of the parking lots in
4 the mall?
5 A We modeled the southern, well, the parking lot
6 that was in close proximity to Target and Costco, and the
7 parking garage to the east.
8 Q And in your 2014 report did you update your
9 traffic congestion levels in light of evidence and testimony
10 in this case that there would be more traffic and congestion
11 on the mall parcel than originally shown?
12 A I think we addressed that at the last hearing. My
13 answer hasn't changed. I mean we modeled, we modeled, did
14 our modeling. We considered the queues, as we did before,
15 at stop signs, intersections, the various points you asked.
16 We had queues there. We didn't change it. It's the same.
17 Q And prior to the rebuttal report did you make any
18 adjustments for NOX in light of your selection of MOBILE6?
19 A Did we make any changes? This is going back to
20 the 2012 report.
21 MR. GOECKE: Again I would object.
22 MR. GROSSMAN: Would you repeat that question,
23 because I didn't --
24 BY MS. ROSENFELD:
25 Q Did you, prior to the rebuttal report, did you

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1 make any adjustments for the fact that you used MOBILE6, in
2 the context of NO2? I believe you had an adjustment factor
3 of 10 for PM2.5, correct?
4 A Well, this is going back to do with my testimony
5 last year.
6 MR. GROSSMAN: Well, hold on a second. I'm going
7 to overrule the objection. But let's not go too far in this
8 again.
9 MS. ROSENFELD: I'm just --
10 MR. GROSSMAN: Now you're talking about prior
11 to --
12 MS. ROSENFELD: It's very simple. I'm trying to
13 compare what he did before with what he's doing.
14 MR. GROSSMAN: I understand, and that's why I'm
15 allowing it.
16 THE WITNESS: But what I said last summer,
17 frankly, is that I simply modeled using MOBILE6. I
18 acknowledged that I agree with Dr. Cole that on the gas, the
19 gas queue, particulate emissions were higher with MOVES.
20 And I said well, if we were to take that into account that
21 the highest impacts for the closest home would go from .005
22 micrograms per cubic meter to about .05. And so while I
23 didn't specifically model it that way, I certainly
24 acknowledged the point and put it in mathematical terms.
25 BY MS. ROSENFELD:

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1 Q And did you make that adjustment on the mall
2 parcel for PM2.5?
3 A Did I make an adjustment? I was referring, the
4 example I gave was for the closest home. There was an
5 annual standard, and the closest home, the annual standard
6 was what I was talking about.
7 Q And do you remember if you made that adjustment
8 for PM2.5 in the mall parcel?
9 A Again, I described it for the closest home only.
10 Q And then in your prior report did you make a
11 similar adjustment for NOX or NO2, based your selection of
12 models?
13 A Same answer. I mean as I said, we did not, the
14 modeling was not changed for the MOBILE6. I discussed an
15 interpretation.
16 In terms of NO2, to clarify the record, I did
17 agree with Dr. Cole that on a fleet basis that NO2 was
18 higher with MOVES than it was with MOBILE6.
19 What didn't come out in the record last year, they
20 looked at that closer, that a lot of those, the factor of
21 two is because in fact there's a 20- or 30-fold difference
22 between MOVES and MOBILE6 that's in diesel emissions. And
23 if you look at the gas station queue, that gas station queue
24 is gasoline vehicles. And for the gasoline vehicles, MOVES
25 is in fact lower by about 20 percent, 20 to 30 percent in

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1 the literature, than MOBILE6. So there was no need to scale
2 up those sources, there was a need to scale down to match
3 MOVES.
4 Q So in your August 2014 report had you scaled
5 anything up?
6 A As I've answered --
7 Q The NO2.
8 MR. GROSSMAN: In the August 2013?
9 BY MS. ROSENFELD:
10 Q In the August 2013 report did you scale up NO2?
11 A Other than the fact that the testimony that I just
12 gave, that I did the math on the stand, the modeling was not
13 based on scale-up. The modeling was direct.
14 Q And did you correct, your testimony correctly that
15 in the rebuttal report in fact you have scaled down for NO2?
16 A I scaled down for NO2 one hour, that's correct, by
17 20 percent.
18 MR. GROSSMAN: Because of the distinction between
19 the fleet?
20 THE WITNESS: Correct. I had multiple references
21 that confirmed very clearly that MOBILE6 had higher, 20 to
22 30 percent higher emissions for gasoline vehicles than did
23 MOVES. So to be consistent, I scaled. One went up for
24 PM2.5, and NO2 went down a little bit.
25 BY MS. ROSENFELD:

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1 Q And then after you've gone through those input
2 steps, you need to select a dispersion model, correct?
3 A I didn't, I already, that selection had already
4 been made. I mean we're using AERMOD for this project.
5 Q Okay. And then beyond that though it's the urban
6 versus rural, correct?
7 A We're using the same treatment as August. It's
8 urban for that set of receptors.
9 Q In your rebuttal report you, do I understand
10 correctly that you conclude that the rural dispersion
11 characteristics to the south of the mall parcel would be
12 overtaken by the urban dispersion, and you do that based on
13 a formula from a report called Panofsky, or a Panofsky
14 article that you reference?
15 A That's one reference. There's others that show
16 very similar things.
17 Q Can you tell me what in addition to the Panofsky
18 article you referenced are other sources?
19 A There are other sources. I didn't reference them
20 all, but if you look at, I mean I have references, Raynor,
21 R-A-Y-N-O-R, 1979, would be an example, where they, where he
22 showed in there approximately a one-to-three to one-to-four
23 front ratio. It means for every four feet you go, you're
24 going to, the point where it's equilibrating would be one
25 meter, one foot above the ground. So if you, it's one-to-

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1 four slope that that's about what I showed here.
2 Q But that's not referenced in your report, correct?
3 A No, but you asked me other references.
4 Q No, no, no, no, no. I asked you if --
5 MR. GROSSMAN: No, you asked him on what other
6 things he relied on, and I think he's --
7 MS. ROSENFELD: No, I asked him if there were
8 other, I asked him if there were other references in his
9 report.
10 MR. GROSSMAN: I don't remember you saying in his
11 report, but it doesn't really matter. He can answer that
12 question. Were there other references in the report that
13 you relied on?
14 MS. CORDRY: Well, but those are ones we haven't
15 been provided then.
16 MS. ROSENFELD: Right.
17 MS. CORDRY: So he can, I mean he can bring up as
18 many references as he does, but now we're sitting here --
19 MR. GROSSMAN: Well, that's okay. I mean he can
20 say in answer to a question as to are there, he mentions one
21 source, on report he relied on. He's asked a question are
22 there other things you relied on.
23 MS. ROSENFELD: But that was --
24 MR. GROSSMAN: And yeah, he was asked a question
25 were there other things you relied on, whether or not you

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1 had the addition of in his report to me is not particularly
2 relevant. The point is that he's asked were there other
3 things he relied on, and he said yes, there's this other
4 report that I relied on. He doesn't have to list
5 everything, every basis for his knowledge in his report,
6 does he?
7 MS. CORDRY: I understand, but it does make it
8 much more difficult to cross-examine when someone comes up
9 with new references.
10 MR. GROSSMAN: Well, except that you have every
11 opportunity to look at his report, have your expert analyze
12 it, pull out every report that could possibly pertain to it,
13 and cross-examine on it. He doesn't have to know, there's
14 no requirement anywhere that everybody list every piece of
15 information that they have studied in their lifetime that
16 causes them to reach a certain conclusion.
17 MS. ROSENFELD: If I could just remind the witness
18 of my question.
19 MR. GROSSMAN: Yes.
20 BY MS. ROSENFELD:
21 Q Do you reference any other sources in your
22 rebuttal report, other than the Panofsky article, as the
23 basis for the transition between the rural dispersion
24 characteristics south of the mall parcel, and the more urban
25 on the mall parcel?

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1 A I used the Panofsky 1984 reference as an example,
2 and like I said, these levels are very consistent with the
3 literature, other things I've reviewed.
4 MR. GROSSMAN: But she's asking you are there
5 other, did you list any other references in your report?
6 THE WITNESS: I did not.
7 MR. GROSSMAN: Okay.
8 THE WITNESS: I did not.
9 BY MS. ROSENFELD:
10 Q And the Panofsky formula is not part of any
11 standard EPA guidance, is it?
12 A Panofsky, I don't recall seeing that in the EPA
13 guidance, but it's in a peer-reviewed book.
14 Q And what book is that? Do you know?
15 A I gave the reference. Panofsky and Dutton, 1984,
16 published I believe in, apparently I don't have it on the
17 list. Panofsky and Dutton, is it Atmospheric Turbulence?
18 My applications, I believe --
19 Q I'm sorry, I didn't hear that.
20 A Atmospheric Turbulence.
21 Q Okay.
22 A By Panofsky and Dutton. I believe it's been
23 referenced in previous reports I've had, I've done. It was
24 published I believe in 1984, John Wiley & Sons I believe is
25 the publisher. I believe it was published in New York City.

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1 And I believe it was mentioned earlier, in previous reports.
2 Q Is this a source that you got from the Library of
3 Congress?
4 A I've had that text for a long time.
5 Q You evaluate a number of pollutants in the
6 rebuttal report, including PM2.5 and CO, is that correct?
7 A That's correct.
8 Q And with those two pollutants you just are
9 measuring them directly. You're just looking at specific --
10 MR. GROSSMAN: I'm not understanding that
11 question.
12 MS. ROSENFELD: You're looking at direct numbers,
13 pulled from monitors.
14 MR. GROSSMAN: When you say he's looking at, do
15 you mean his rebuttal report?
16 BY MS. ROSENFELD:
17 Q Yes, in the rebuttal report. Your concentration
18 levels?
19 A I'm directly modeling without conversion --
20 Q Right.
21 A -- is that what you mean? CO and PM2.5.
22 Q And with respect to NO2, you're not measuring that
23 directly, but you need to evaluate a mix of compounds, is
24 that correct?
25 A You mean modeling it directly?

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1 Q Mm-hmm.
2 A What we're modeling, NOX is being converted to
3 NO2.
4 Q I'm sorry, I didn't hear that.
5 A The modeling emission rates are for NOX, and
6 that's been the model through OLM or OLM group. It's
7 modeling the NO2 fraction.
8 Q In this case you're deriving your ultimate
9 concentrations through a combination of NOX and ozone,
10 correct?
11 A The ozone is certainly input to the model, but
12 then uses that as an input to estimate NO2 levels.
13 Q We've discussed that the EPA has a tier one, a
14 tier two, and a tier three. And you went straight from tier
15 one to tier three, correct?
16 A That's correct.
17 Q Would it be reasonable to conclude that the tier
18 two method would show considerably higher results than what
19 you've calculated with tier three?
20 A I think tier two would show higher, but if we were
21 to run that, my expectation would be less than the standard.
22 It would be closer, but I think it would be less than the
23 standard.
24 Q But you didn't run that model, correct?
25 A No.

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1 Q When you finally do get to this, the tier three
2 analysis, it's not a one-step calculation, is it?
3 A One-step, what is a one-step calculation?
4 Q Well, first you have to come up with a ratio for
5 the initial combustion, the primary NO2, or what I'll call
6 the tailpipe NO2, is that correct?
7 A They call it in-stack ratio. It's an input to
8 AERMOD.
9 Q And you describe at page 29 the study you rely on
10 to come up with that 25 percent ratio, is that, that 25
11 percent stack number, correct?
12 A We're referring to CAPCOA as a basis for coming up
13 with a conservative in-stack ratio for all NO2 combustion
14 sources.
15 Q And that's what you talk about in the first couple
16 of sentences of the full paragraph on page 29, is that
17 correct?
18 A We mention CAPCOA, among other things, and we
19 describe more specific references that provide more specific
20 information.
21 MR. GROSSMAN: Once again, you're referring to
22 Exhibit 466 now, the rebuttal report, page 29.
23 BY MS. ROSENFELD:
24 Q And you said you were applying that 25 percent
25 ratio to cars in the queue and for 40 meters beyond the

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1 receptors in the queue, is that correct?
2 A Well, just to clarify, we're talking about the in-
3 stack ratios.
4 Q Mm-hmm.
5 A We're using 25 percent, you know, as our number.
6 And as I indicate in here, in most cases that's highly
7 conservative. But if you're asking me now what about,
8 you're going beyond the in-stack ratios. You're asking
9 about the 40-meter zone?
10 Q No, I'm trying to understand what geographical
11 area you applied the 25 percent tailpipe ratio for. Is it
12 just for the cars that are in the queues?
13 A It's called an in-stack ratio. It's cars in the
14 queue. It would also be for trucks at the loading dock. We
15 can certainly put them at 25 percent, even though CAPCOA
16 shows that heavy-duty diesels are at 11 percent.
17 Q So it doesn't apply, you're not applying that to
18 the cars in the ring road?
19 A We're applying 25 percent to the cars in the ring
20 road.
21 Q And in the parking lot?
22 A Cars driving, all NOX emissions in this case from
23 motor vehicles, we're using 25 percent conservatively.
24 MR. GROSSMAN: I didn't quite understand
25 something. I thought you said it was for the, this in-stack

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1 ratio was for the queue and for the loading dock. Does it
2 also include the cars in the southern ring road --
3 THE WITNESS: Yes, sir, it does.
4 MR. GROSSMAN: -- and the parking lot?
5 THE WITNESS: It includes the parking lot, the
6 parking garage, travel in the ring road, University.
7 MR. GROSSMAN: Okay.
8 THE WITNESS: That ratio is used for everything,
9 free-flow and queues.
10 MR. GROSSMAN: Okay.
11 THE WITNESS: It could be, you know, to simplify
12 the analysis and make it conservative.
13 BY MS. ROSENFELD:
14 Q And is it all parking lots?
15 A We didn't model the northern parking lots, because
16 they're too far away to be significant.
17 Q So basically it's whatever motor vehicle sources
18 you've been modeling throughout.
19 A To clarify, if you refer to the November 2012
20 report, it has pictures showing exactly what the model,
21 which part of the, which loading, parking lot, which garage
22 and so forth. That hasn't changed.
23 Q Okay. And so all of those sources from your
24 December 2012 report, you've applied the 25 percent in-stack
25 ratio.

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1 A For NO2, correct.
2 Q For NO2, okay. Okay, so then in addition to that
3 25 percent in-stack tailpipe ratio, you also have another
4 formula that you use to model the remaining 75 percent of
5 the NOX, is that correct?
6 A I'm not sure what you mean.
7 Q Well, let's assume that there's 100 units of NOX
8 that comes out of a tailpipe.
9 A Mm-hmm.
10 Q You're assuming that 25 percent of that is
11 immediately, comes out of the tailpipe as NO2, correct?
12 A It starts, that fraction starts as NO2. It is
13 NO2.
14 Q Starts as NO2.
15 A And stays there.
16 Q Okay. So then that leaves you 75 units of NOX.
17 A Yeah, and it's basically NO.
18 Q NO. Then you have a separate formula that you use
19 to model what happens with that remaining, those remaining
20 75 units, correct?
21 A Which, you're referring to stage two or stage
22 three?
23 Q Well, we need to go through both, so let's start
24 with stage two.
25 A Stage two is being done directly by the OLM

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1 method, so the model is internally computing how much of
2 that NO versus NO2 each hour, based on how much ozone is
3 present in the air.
4 MR. GROSSMAN: And just for clarity of the record
5 now, we're not talking about tier two, we're talking about
6 on your, in your rebuttal report you used the term stage
7 one, stage two, and stage three. We're talking about stage
8 two from the rebuttal report.
9 THE WITNESS: That's correct.
10 BY MS. ROSENFELD:
11 Q And in stage two, you've identified this area that
12 is 40 meters outside beyond the queue area, right?
13 A Correct.
14 Q And I'm just going to call that the tailpipe box,
15 unless you've got a better, just so we know what we're
16 talking about --
17 A Okay.
18 Q -- an easy way to refer to that --
19 A Tailpipe box, all right.
20 Q -- 40 meter area. Are you assuming that there is
21 any hour by hour conversion occurring within the tailpipe
22 box under stage two?
23 A Certainly. There is conversion occurring from
24 sources other than the gas queue and the loading dock. All
25 other sources are assumed, their impacts are assumed to be

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1 converting by the OLM method.
2 Q And then so that, and that OLM method is also
3 applied outside of the tailpipe box, correct?
4 A Correct.
5 Q That's just being modeled directly by the program.
6 A Correct. For all sources.
7 MR. GROSSMAN: What about the other 75 percent of
8 the emissions coming out of the tailpipe box? Are they also
9 analyzed by this method, or what do you do with that?
10 THE WITNESS: The model itself internally does it.
11 And we've done the, a very conservative way of using,
12 there's two options to do this. One's called OLM. The
13 other's called OLM group. When you use OLM it considers
14 ozone separately for all the sources. It doesn't consider
15 overlapping issues, which are significant here. So that if
16 you use the OLM method, at each source it independently sees
17 how much ozone is there this hour, and if there's 10
18 micrograms of ozone, it'll convert 10 micrograms of NO2, if
19 there are 10 micrograms of NO rather, it'll convert the NO
20 to NO2. If there's less than 10 available, then it'll
21 convert what it can. And that's a procedure that's done
22 internal to model. We don't do that. The model is doing
23 that.
24 BY MS. ROSENFELD:
25 Q If I look at page 7 of your rebuttal report, in

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1 the last, near the bottom of the first full paragraph, you
2 talk about how the ratio of NO2 to NOX is much less than 100
3 percent. Is that something that is addressed directly in
4 the model, or is that a formula that you have come up with?
5 A You're referring to the page that says even then
6 the ratio of NO2 to NOX is much less than 100 percent?
7 Q Mm-hmm.
8 A Well, that's what that particular reference, those
9 references show. Atmospheric Agency, 2007, Janssen 1986.
10 And I probably gave four or five others in this document
11 that show the same thing.
12 Q And if I were to take a look at appendix B of your
13 rebuttal report, it starts on page 27, I think on the bottom
14 of 27 you refer to that same Janssen, you also refer to a
15 Janssen report, is that correct?
16 A I do.
17 Q Summary of Janssen, and then I think there's some
18 perhaps additional references further on. Here's my
19 question. When you're looking at the conversion factor for
20 the conversion of, the hour by hour pairing, and the
21 conversion of NO to NO2, you have to use a certain formula
22 in order to figure how fast that's going to happen, is that
23 correct?
24 A The, are you talking about AERMOD?
25 Q No --

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1 A Are you talking about these references?
2 Q -- I'm talking about your discussion here on page
3 7, where you talk about, you assume a starting ratio of NO2
4 to NOX at a source, and then you have a conversion of the
5 remaining fraction of NO to NO2 on a one-to-one basis, using
6 ozone concentrations. I assume there you're talking about
7 that sort of remaining 75 units that we have left over.
8 A That's correct.
9 Q Okay. How did you come up with the conversion
10 that you used for that remaining 75 units?
11 A We don't. The conversion in stage two is based on
12 the AERMOD dispersion model, but the OLM treatment and the
13 model is doing that internally.
14 Q Then could you explain to me why there's this
15 discussion here of the Atmospheric Agency report and the
16 Janssen report? If AERMOD makes those conversions
17 automatically, why do you have these source references?
18 A Well, because of the fact that the OLM method was
19 developed for stacked sources, and much of the testing has
20 been done for stacked sources, our plant's certainly well
21 represented in the literature. I'm showing, and I can
22 certainly show with the projector, examples of this from
23 three or four reports, that the amount of time required to
24 convert NO to NO2 in a power plant pump, where they had a
25 lot more ozone than we had during our time periods of these

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1 peak modeling for this gas queue. A lot more potential for
2 conversion, and a lot more mixing going on than we had
3 mixing going on in ours. A lot more potential, probably 10,
4 20 times more potential for mixing of the ozone with the
5 plumes, that they were converting in, you know, after going
6 10, or two or three kilometers, they're converting 10 or 15
7 percent of the NO2 to, the NO to NO2. Tiny, tiny fraction.
8 My point was I used Janssen '86 as an example to
9 say what has to be more than 40, I'll conservatively set it
10 at 40, it's probably more like a couple of kilometers. But
11 to have it tractable I'll use 40 as my basis. But these
12 references show it's much, much more than that.
13 MR. GROSSMAN: Use 40 what?
14 THE WITNESS: Meters, so there was I set the zone
15 where if you have your gas queue, we know it's not, it's not
16 converting inside the source itself, and so we set the gas
17 queue up at 40 meters around that gas queue loading dock
18 zone. We say well, based upon the literature, clearly
19 there's probably zero conversion, and certainly not, no
20 significant conversion happening that fast. Six kilometers,
21 I used the formula in Janssen '86 to show that, you know, at
22 40 meters you would still be at six percent. And in the
23 range for a power plant, initial in-stack ratio is five to
24 10 percent. So it had not simply converted all at that
25 distance. I used that as a very conservative benchmark. It

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1 could have been 100, 200, 300 meters. I used 40 meters to
2 very conservatively address it.
3 BY MS. ROSENFELD:
4 Q So you used the Janssen report and this
5 Environmental Agency report, Atmospheric Agency report, and
6 maybe some others, to extrapolate that 40 meter perimeter
7 that you drew, is that correct?
8 A I used Janssen. Janssen had a formula that I
9 could extrapolate it back to 40 meters.
10 Q Okay.
11 A Plus interpretation of not just the ones listed
12 here, but I've identified others where they had studies that
13 have been done. It's on my data disk on your references. I
14 had a number of them that I can describe to you, that said
15 the same, show the same thing.
16 Let me tell you what those are. Carmichael and
17 Peters, 1981, would be an example. And I can show you these
18 on a screen if you'd like. Another example, let me get my
19 list out. But if you look on that data disk, there's quite
20 a number of them that would show you similar kind of things.
21 Janssen '86, Janssen '88, let's see what else. Shu, S-H-U,
22 1978. Peters and Carmichael, 1977. These are all showing
23 very similar things. But the common pattern is it takes
24 kilometers at a time for that conversion to take place. And
25 a power plant plume has kilometers before it touches down

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1 and creates maximum impacts at ground level. It has to mix
2 down to the ground first. It has two or three more
3 kilometers to mix, and it does.
4 Q And that brings me back to a question I asked
5 earlier, because maybe I misunderstood. In your stage two
6 analysis, did you assume that any of that mixing was
7 occurring within the tailpipe box?
8 A Is your tailpipe box, you're referring to the,
9 outside the gas queue itself, loading dock. Outside the
10 source, for the immediate zone around the source?
11 Q Right, that's --
12 A I'm assuming no conversion takes place. Remember,
13 I'm starting at 25 percent --
14 Q Right.
15 A -- level.
16 Q That's what I thought I asked.
17 A And as I described in here, actually the rate is
18 even lower than that. The in-stack rate is lower than that,
19 based upon Lenner and Lindquist's reference.
20 Q Okay, so you're assuming the 25 percent direct
21 tailpipe emission within the tailpipe box, which is the
22 queue plus the 40 meters.
23 MR. GROSSMAN: You mean by a 25, when you say 25
24 percent direct tailpipe emission, you're saying he's
25 assuming a 25 percent conversion to NO2 --

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1 MS. ROSENFELD: That's correct.
2 MR. GROSSMAN: -- in the tailpipe box.
3 MS. ROSENFELD: The in-stack ratio --
4 MR. GROSSMAN: Right.
5 MS. ROSENFELD: -- I think is what he's been
6 calling it.
7 MS. CORDRY: Well, actually not the tailpipe box.
8 Coming out of the tailpipe.
9 MR. GROSSMAN: No, well, he's, as I understood the
10 earlier testimony, he's included within that box 25 percent
11 conversion rate of everything within that box. And that box
12 is defined out to the 40 meter line. That's my
13 understanding.
14 THE WITNESS: Let me clarify.
15 MR. GROSSMAN: Is that --
16 THE WITNESS: It's a little different than that.
17 I mean basically we're saying the in-stack ratio is 25
18 percent for all the sources. That doesn't change.
19 MS. ROSENFELD: And that's what's coming out of
20 the tailpipe.
21 THE WITNESS: Correct.
22 MS. ROSENFELD: That's what's just blowing out of
23 the exhaust.
24 THE WITNESS: Exactly. We think it's less, we
25 show why it's a little bit less than that. It's about 20

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1 percent for the idling cars in the queue, but we're using 25
2 as a benchmark number. That's what it is. But inside the
3 zone from the source itself, going out 40 meters --
4 MR. GROSSMAN: Right.
5 THE WITNESS: -- the zone around that, we're
6 saying in there that for the loading dock and gas queue
7 only, we're restricting that to 25 percent because there's
8 not enough time for mixing to the molecular level for sure
9 in that zone. But for every other source, including the
10 ring road that's right next to that, those receptors, we're
11 using OLM directly.
12 MR. GROSSMAN: Okay, then I misunderstood. I
13 thought I asked you whether or not that 25 percent
14 conversion applied to the cars in the parking lot and the
15 ones on the immediate vicinity in the ring road, within that
16 40 meter thing. And you, I thought you said yes to that.
17 THE WITNESS: It does. The in-stack ratio coming
18 out of the tailpipe is always at 25 percent in this
19 modeling, for all the sources between the parking lot and
20 the parking garage. But we're referring to a zone here
21 around, it's a rectangle you could draw around the gas queue
22 going into that source.
23 MR. GROSSMAN: I understand, but so how far out
24 does that in-stack ratio go? If you're not talking about
25 the full 40 meters for that, how far out are you taking that

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1 in-stack ratio that you're applying?
2 THE WITNESS: The in-stack ratio is applied
3 throughout the modeling grid. That doesn't change. What
4 changes is how much potential is there to convert the NO,
5 the residual NO to NO2.
6 MR. GROSSMAN: Okay, but I'm not making my
7 question clear. You've talked about this box that goes out
8 40 meters. You also talked about the in-stack ratio that
9 you're applying being 25 percent. Then I thought I asked
10 you, and maybe I didn't make that question clear, whether or
11 not that 25 percent in-stack ratio conversion was applied to
12 all emissions within that 40 meter box. And I thought you
13 said yes to that, but now I'm hearing you say something
14 different.
15 THE WITNESS: I'm sorry. Within the box, within
16 inside the box we have the gas queue and the loading dock.
17 MR. GROSSMAN: Yes.
18 THE WITNESS: Those are the only sources that we
19 don't modify beyond the 25 percent. They stay at 25 percent
20 in that box.
21 MR. GROSSMAN: Okay.
22 THE WITNESS: But all the sources that contribute,
23 including the ring road and the parking lots, what have you,
24 those are straight OLM.
25 MR. GROSSMAN: Okay.

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1 THE WITNESS: Inside the box, outside the box.
2 MR. GROSSMAN: Okay.
3 MR. GOECKE: Mr. Grossman, may we step outside the
4 box and take a brief break now?
5 MR. GROSSMAN: Yes. Yeah, okay, we'll come back
6 in five minutes.
7 (Whereupon, at 10:59 a.m., a brief recess was
8 taken.)
9 MR. GROSSMAN: Okay, back on the record.
10 MS. ROSENFELD: Thank you. Mr. Grossman, I do
11 appreciate your patience. It's complicated, and I'm still
12 trying to understand some of the nuance here.
13 BY MS. ROSENFELD:
14 Q Going back to the, Mr. Sullivan, going back to the
15 tailpipe box, I think I understood you to say that for the
16 emissions coming from the queue and the loading dock, it's
17 the flat 25 percent tailpipe in-stack emissions.
18 A That's correct. For all the receptors that are
19 inside that location, that's either inside the source or 40
20 meters happens to be one area source width away from the
21 source, the gas queue source, for all those receptors, for
22 all those receptors and just for the loading dock and the
23 gas queue, we strictly use 25 percent. We do not modify OLM
24 at all, because there's nowhere near enough time to convert.
25 So that's the assumption. All other sources affecting that

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1 box, the ring road, all the rest, they're straight OLM.
2 There's no difference.
3 BY MS. ROSENFELD:
4 Q Okay. So if there's a car in the parking lot that
5 emits some NO2, some NO and it drifts into the box, you
6 apply the OLM --
7 A Correct.
8 Q -- conversion factor to that.
9 A Yes, we do.
10 Q Okay. And that's the case for both your stage two
11 and your stage three --
12 A No.
13 Q -- analysis? This is only stage two?
14 A Stage, we're talking about stage, for stage two
15 that is the way it is done. Stage three is done
16 differently.
17 Q Okay. Could you explain to me how it's handled in
18 stage three?
19 A Stage three is the gas queue and loading dock
20 effects on the box. The tailpipe box, as you're referring
21 to it, is the same.
22 Q Yes, I thought the treatment inside the box.
23 A Is the same. Stage two, stage three.
24 Q Okay. That was my question.
25 A The treatment of those two sources is the same.

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1 Q Of the queue and the loading dock.
2 A Correct.
3 Q And what about for emissions outside of the
4 tailpipe box that drift into the box? Is the treatment of
5 that the same?
6 A It is not.
7 Q How is that treated?
8 A We assume very conservatively, based on all these
9 references I provide here, that they have 50 percent
10 conversion of their emissions for, affecting the box and for
11 locations outside the box, it's 50 percent.
12 Q So emissions from, for example, the parking lot,
13 that disperse into the box, you assume a 50 percent
14 conversion ratio, correct?
15 A Correct.
16 Q And for emissions that are generated by the queue
17 and the loading dock that disperse beyond the tailpipe box,
18 you're assuming a 50 percent conversion ratio for those as
19 well?
20 A That's correct. Which like I say, we have tested
21 that. That's a very conservative approach, relative to the
22 approach using OLM outside the box. I mean using OLM
23 outside the source. That has been tested.
24 MR. GROSSMAN: So your stage three results should
25 show higher concentrations of NO2 than your stage two

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1 results, because it's more conservative?
2 THE WITNESS: Generally stage three is taking your
3 lower maximums. It is somewhat lower.
4 MS. ROSENFELD: Stage three is less conservative,
5 correct?
6 THE WITNESS: Correct.
7 MR. GROSSMAN: Well, then I misunderstood. I
8 don't, I thought you just said that stage three, where
9 you're using that 50 percent assumption --
10 THE WITNESS: There's another factor --
11 MR. GROSSMAN: -- was more conservative than the
12 OLM method, but stage two used the OLM method. So where
13 you're more conservative, you would show a higher conversion
14 to NO2, would you not?
15 THE WITNESS: Your logic is correct.
16 MR. GROSSMAN: But my answer is wrong.
17 THE WITNESS: No, no, your answer is correct for
18 the information at hand, but there's another difference
19 between stage two and stage three. Stage two is all based
20 on old NO2 data, old, very old background data, 2006 to
21 2010, to match the meteorological data set we use throughout
22 this project before. So you're having very high background
23 that's kind of balancing that, to some extent. So that's
24 what you were seeing. The fact that the background is so
25 much lower does result in stage three having lower overall

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1 impacts.

2 So we couldn't run every gradation here, Mr.

3 Grossman, because we would have had so many runs it would

4 have been unwieldy. But we did show a stage two and stage

5 three, as I just explained this, to show a range. And we

6 also did a test, as I'd be happy to talk about, where we

7 applied OLM to all receptors outside the source region. You

8 know, if the tailpipe box is done by OLM, we have tested

9 that.

10 MR. GROSSMAN: Well, okay, but so if I understand

11 you correctly, what you're saying is that in stage three you

12 used a conversion ratio that was more conservative than the

13 OLM method would have shown, but you had a different

14 variable. You used a corrected background. Well, you

15 didn't say corrected --

16 THE WITNESS: More recent.

17 MR. GROSSMAN: A more recent background level of

18 NO2?

19 THE WITNESS: Correct.

20 MR. GROSSMAN: So and therefore the bottom line

21 result was a lower level of NO2 in stage three. Do I

22 understand you correctly now?

23 THE WITNESS: You're correct.

24 MR. GROSSMAN: Okay.

25 BY MS. ROSENFELD:

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1 Q Now I'm confused. In stage two when you have the

2 100 percent conversion under the OLM, you assume that all

3 available ozone is used to convert to NO2, is that correct?

4 A You said 100 percent conversion. There's no 100

5 percent conversion on here.

6 Q Not 100, but that 100 percent of the ozone that's

7 available actually is used to convert to NO2, correct?

8 A That's what AERMOD will do, yes.

9 Q And in stage three you're assuming that only 50

10 percent of the available ozone actually is used to convert.

11 A No, we're assuming that there's always enough

12 ozone, and we're assuming there's enough time, which there

13 isn't, to convert from 25 percent to 50 percent in a very

14 short distance. Based on the references I've shown, that

15 really is way too short.

16 But to come up with a conservative bounding

17 approach, we said let's do 50. We know it's an

18 overstatement. It's probably more like 25 percent. But

19 we'll show it conservatively that way, and we did, so we'd

20 have two different ways we showed it, stage two and stage

21 three.

22 MR. GROSSMAN: In other words the 50 percent does

23 not refer to the amount of ozone available. It refers to

24 the assumed conversion percentage of NO to NO2, is that

25 correct?

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1 THE WITNESS: That is correct.

2 MR. GROSSMAN: Okay.

3 MS. ROSENFELD: So it assumes that 50 percent of

4 the NO gets converted.

5 THE WITNESS: It assumes 50 percent of the NO will

6 convert.

7 MS. ROSENFELD: Got it. And is that, that's 50

8 percent of the 75 percent that was remaining, right?

9 THE WITNESS: I want to clarify. It's 50 percent

10 of NOX.

11 MS. CORDRY: Original?

12 THE WITNESS: Original, correct. Fifty percent,

13 if the NOX was 100, if you had assumed it all NO2, it would

14 be 50.

15 BY MS. ROSENFELD:

16 Q Okay, so of those original 100 units that I talked

17 about, you're assuming that 50 percent of those original 100

18 units get converted.

19 A Correct.

20 Q So in that case you would have, so does that leave

21 you with a 75 percent conversion ratio, the 25 percent plus

22 the 50?

23 A No, for stage three we're assuming for every

24 situation except the gas queue and loading dock inside the

25 box, we're assuming that half of the NOX is NO2, throughout

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1 the grid, no matter how close it to the source. It's always

2 at 50 percent NO2.

3 Q Got it. So ozone doesn't factor into it at all.

4 A No. This is beyond available, most ozone levels

5 when we have peaks, which happen in the winter at nighttime,

6 the average is around 10 ppb of ozone, like 20 micrograms.

7 You've not going to convert very much with 20 micrograms, up

8 to 20.

9 Q And so that's why you said earlier that stage

10 three is not the ozone limiting method.

11 A Correct.

12 MR. GROSSMAN: But you said ozone doesn't factor

13 into it at all. I think what was testified is ozone does

14 factor into it, but you've made assumptions that there's

15 enough available ozone to make that conversion of 50 percent

16 of the NOX to NO2, correct?

17 THE WITNESS: Correct.

18 BY MS. ROSENFELD:

19 Q And under stage two, what is the highest

20 percentage of conversion that you found?

21 A I don't recall. The model doesn't print that out.

22 It may be possible to write statements in it to do that, but

23 the model output shows your concentration of NO2, not

24 conversion ratios. That's all internal calculations.

25 Q So it could be higher than 50 percent. You just

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1 don't know.

2 A During the, based upon our analysis and review of

3 when the maximum conditions occurred for creating NO₂, they

4 occurred during time periods that had low ozone. Again,

5 that was typically in the early evening hours when the rush

6 hour peak occurred, and mostly during, almost all during the

7 hours of November, December, and January, when ozone is at

8 its minimums.

9 Q In terms of the time and distance that you

10 discussed for the conversion, assuming that there is NO and

11 ozone, that there are those two molecules in proximity, the

12 actual conversion process itself doesn't take very long,

13 right? The time is a factor of making sure they're in

14 proximity to each other.

15 A More than in proximity to each other. They have

16 to be, I'm going to read the quote that's, helpful to read

17 the quote that's in appendix B, how much molecular, we're

18 talking about molecular contacts, which is more than just

19 getting close proximity. This is the inherent assumption

20 that is the basis for the ozone main method.

21 MR. GROSSMAN: What page are you on, sir?

22 THE WITNESS: On page 27, the PDF that I attached

23 in the middle of the page.

24 MR. GROSSMAN: I see it.

25 THE WITNESS: It assumes that complete mixing of

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1 plume NO and ambient ozone down to the level of molecular

2 contact has occurred by the time the plume reaches a ground

3 level receptor of maximum NO_x concentration. Or for a

4 typical power plant, again that's probably two or three or

5 more kilometers of travel prior to that occurring, much more

6 travel time than we're talking about here, especially

7 distance-wise.

8 BY MS. ROSENFELD:

9 Q What paragraph are you in?

10 A I'm at the third paragraph, which is an obviously

11 font.

12 Q With the big text, okay.

13 A The dark bolded one.

14 MS. CORDRY: It was too hard to see because it's

15 too big.

16 THE WITNESS: It's clear on my copy.

17 MS. ROSENFELD: It's clear on mine as well.

18 MS. CORDRY: It's big, so you know, your eyes go

19 right over it.

20 THE WITNESS: It's big. It stands out.

21 MS. CORDRY: Yes.

22 THE WITNESS: It stands out. If you don't have

23 molecular, the fusion of molecular contact, you don't have

24 ozone converting. If there is contact at the molecular

25 level, if you go in a smog chamber and you introduce NO and

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1 NO₂ and you have a fan that stirs it up, then you, it's tens

2 of seconds, I agree with Dr. Cole on that point, inside the

3 chamber, but not inside the atmosphere.

4 MS. ROSENFELD: No.

5 MR. GROSSMAN: It's tens of seconds, or tenths of

6 seconds?

7 THE WITNESS: I looked at some reports on that,

8 and if you had a 10 part per billion level, the study I

9 reviewed showed it would take about 40 seconds to convert --

10 MR. GROSSMAN: Forty, four-zero?

11 THE WITNESS: -- which is 10, 40 seconds.

12 MR. GROSSMAN: Okay.

13 THE WITNESS: But one meter per second, by

14 coincidence, is about 40 meters, is 40 meters. If you had

15 complete contact. But it takes a long time for molecular

16 diffusion in the atmosphere to create intimate contact at

17 the molecular level. It's a long process.

18 MR. GROSSMAN: Because if I recall Dr. Cole's

19 testimony on that point, he said that the conversion upon

20 contact was almost instantaneous. That's my recollection.

21 So you're saying it's actually not instantaneous.

22 THE WITNESS: There's a subtle difference. In a

23 smog chamber it is, it's quick, but not instantaneous. But

24 in the atmosphere, and the literature really is clear on

25 this point, it takes a long time.

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1 MR. GROSSMAN: I understand. Okay.

2 BY MS. ROSENFELD:

3 Q All right. First going to stage two, and I'm

4 still working my way through the process of how you came up

5 with your analysis. You have to make a selection as to

6 which monitor or monitors you will use for the

7 concentrations of the pollutants you're looking at, correct?

8 A Well, which pollutants are you referring to?

9 MR. GROSSMAN: You mean monitors or receptors?

10 MS. ROSENFELD: The EPA monitors.

11 MR. GROSSMAN: Okay, so for background.

12 MS. ROSENFELD: Right now I'm moving on from

13 receptors.

14 MR. GROSSMAN: Okay, so you're asking --

15 MS. ROSENFELD: Just for the moment. The

16 background monitors.

17 MR. GROSSMAN: Okay.

18 MS. ROSENFELD: Right.

19 THE WITNESS: You need to select a background

20 monitor for ozone and NO₂.

21 BY MS. ROSENFELD:

22 Q And then you also have to choose which time period

23 you evaluate, correct?

24 A Well, you pick the set of years you're going to

25 evaluate. We did 2006 to 2010, and 2010 to 2012.

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1 Q Stage two was 2010 to 2012?
2 A Stage three was based upon 2010 to 2012.
3 Q And did you also have to select which hour or day
4 or season data you're using?
5 A During the whole year? All the, every day for
6 the, within those time periods. Every hour, every day.
7 Q And you did that in stage two and stage three
8 both, correct?
9 A We do that, and for stage two it involves ozone
10 and NO2. For stage three it's ozone. I mean it's NO2.
11 That's hour by hour.
12 Q And particularly with respect to the stage two
13 with the ozone limiting method, the level of either
14 chemical, whether it's ozone or NO2, on any given day and
15 any given hour would depend on factors such as the wind
16 direction and the wind speed with respect to that particular
17 monitor, correct?
18 A Yes, it would.
19 Q And in this case you obtained your ozone levels
20 from a monitor in Rockville for part of the year and from
21 Beltsville for part of the year, is that correct?
22 A You're referring to ozone?
23 Q Yes.
24 MR. GROSSMAN: When you say in this case, you're
25 talking about which stage?

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1 MS. ROSENFELD: It would be stage two --
2 MR. GROSSMAN: Okay.
3 MS. ROSENFELD: -- because they only evaluated
4 that in stage two.
5 THE WITNESS: We used Rockville and, Rockville and
6 Beltsville is correct.
7 BY MS. ROSENFELD:
8 Q And did you have to use Beltsville because
9 Rockville doesn't measure ozone for the full year?
10 A When it was missing, my recollection is when it
11 was missing records we filled it with Beltsville.
12 Q Does Rockville monitor for the entire year?
13 A Well, the objective, my recollection is they do.
14 The objective is to monitor for the entire year, but
15 sometimes monitors don't work right. Sometimes they
16 malfunction or are missing data for whatever reason.
17 Q And you monitored for ozone from 2006 to 2010.
18 Was the monitor in Rockville missing data in all five of
19 those years?
20 A I don't have the full data set in front of me. I
21 wouldn't be surprised if it was missing some hours in each
22 year.
23 Q So did you only need to fill in for occasional
24 hours or occasional days, or was it for long periods of
25 time?

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1 A My recollection is occasional, but I haven't, I
2 would have to look at the data sets to tell you exactly how
3 much fill there was. I don't remember.
4 Q And you're matching the ozone levels that you
5 derived from the monitors in Rockville and Beltsville with
6 NO2 levels from a monitor in Arlington, is that correct?
7 A You said derived.
8 Q You're matching?
9 A Well, I inputted the data from, for ozone, as we
10 just described. And I inputted the NO2 data from Arlington.
11 I didn't modify it.
12 Q But you're, so the data that you got for ozone you
13 obtained from a monitor in Arlington, correct?
14 A No, it was NO2 --
15 Q I'm sorry, NO2.
16 A -- that was from Arlington. That's correct.
17 Q And do you agree that the Arlington monitor is
18 about 15 miles or so south of the mall?
19 A I don't have the distance exactly, but that's,
20 it's, you know, that much or more. I don't disagree.
21 Q And the Rockville monitor is several miles to the
22 northwest of the mall?
23 A That's correct.
24 Q And Beltsville is primarily east and a little
25 south of the mall.

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1 A That's, well, it's, there, Rockville and
2 Beltsville are probably equal distance from Wheaton Mall.
3 Beltsville to the east, I don't know the exact distance, but
4 your number seems reasonable.
5 Q I just said several miles. Do you have a better
6 estimate than that?
7 A No, I don't.
8 Q If you could turn back to the CAPCOA guidance
9 document, if you could look at appendix A on page 33.
10 MR. GROSSMAN: I'm sorry, what page?
11 MS. ROSENFELD: Thirty-three, appendix A. I'm
12 sorry, did we mark this as an exhibit?
13 MR. GROSSMAN: We did. It's Exhibit 567.
14 MS. ROSENFELD: Right. The first new one.
15 MR. GROSSMAN: Correct.
16 BY MS. ROSENFELD:
17 Q In section 4.2 there's a description of the
18 modeling options available within each tier, tier one, two,
19 and three, is that correct?
20 A Correct. Table one modeling options is correct.
21 Q Right. And it says within each of the three tiers
22 described above, there are 11 options that may be applied to
23 assess a project's compliance with the NAAQS. Each
24 progressive option will require more information and/or
25 resources. That's right under the section 4.2 heading,

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1 correct?
2 A Correct.
3 Q And table one under that section 4.2 lays out 11
4 different modeling options, correct?
5 A Yes. Well, significant impact level analysis,
6 yeah, one through, there are 11 sets.
7 Q And number 11 is described as the paired sum five-
8 year average of the 98th percentile, correct?
9 A That's what it says.
10 Q And is that the approach that you took in your
11 stage two analysis?
12 A Our approach is consistent with the Fox 2011 e-
13 mail. We did have five years of analysis, and we did a
14 paired sum in stage two. So I'd say it's certainly somewhat
15 of, maybe exactly the same thing.
16 Q And it's clear, option 11 has the double asterisk,
17 if you look down below it says option 11 may be used with
18 the approval of the reviewing agency, is that correct?
19 A Correct.
20 Q And is that required for any of the other 11
21 options? Any of the remaining 10 options?
22 A CAPCOA only shows that for the 11.
23 Q Is your tier, is your stage one analysis, does
24 your stage one analysis fall within any of those 11 options?
25 A We used the maximum background, 98th percentile

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1 background value for all receptors, in conjunction with the
2 directly modeled data.
3 Q And that correlates with what number?
4 A I have it best correlated with number six.
5 Q Okay. And where does stage three fall on that
6 table?
7 A Stage three? Where does stage three fall on that
8 table? Well, it's paired some 98th percentile. It's a
9 three-year average, not a five-year average. We used the
10 most recent three years.
11 Q And generally speaking, is a three-year average
12 less conservative than a five-year average?
13 A Well, if you're going back in time five years with
14 a trend like we had for NO2, yes. And if you went back five
15 years, if you for example used 2006 to 2010, the
16 concentrations back in 2006 for NO2 were much higher than
17 they are today. So you would have a more conservative, a
18 less representative background level.
19 Q You could have, could you have used a five-year
20 analysis, 2008 to 2013 five-year analysis?
21 A 2013, the full, when we did this modeling the full
22 year hour by hour data were not available. That's why we
23 capped it at 2012. So the answer to your question is no, we
24 couldn't have done that.
25 Q Oh, so but you could have used 2008 to 2012.

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1 A We could have mathematically put that into the
2 model, but my point is in my judgment, looking at the trend
3 line we have here, it would be inappropriate to go back
4 beyond the most recent three years, because it was a very
5 strong trend line dropping NO2 levels, background levels
6 substantially.
7 Q And if you had used the 2008 to 2012, would that
8 have been a more conservative analysis than using the three
9 years?
10 A You'd probably get higher and less representative
11 estimates.
12 Q And the 50 percent cap that you placed in the
13 stage three, is that reflected in any of those 11 options?
14 A This particular set of 11 options is generic
15 guidance. As I mentioned previously, we're modeling inside
16 a gas queue, inside a loading dock, and it's a very atypical
17 application which would not be contained in this or any EPA
18 guidance document. Usually the guidance is general
19 guidance, and things like this are done on a site specific
20 basis.
21 Q Is the analysis in your rebuttal report under tier
22 two and, stage two and stage three, less conservative than
23 the analysis contained in your November 2012 report?
24 A Is it less conservative than November 2012? Well
25 that, if we were to correct for the background issue --

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1 Q Yes.
2 A Yes, it's more, it is more realistic.
3 Q And is the analysis in your rebuttal report less
4 conservative than the analysis contained in your August 16,
5 2013 report?
6 A Yes, it is. That report was based on 100 percent
7 conversion.
8 MS. ROSENFELD: Mr. Grossman, for the record I
9 just want to reiterate that we continue to oppose
10 consideration of the stage two and stage three analysis of
11 Mr. Sullivan's rebuttal report. And these methodologies can
12 only be, in addition to the fact that they should only be
13 reviewed on a case by case basis by the appropriate
14 governmental authority, if the applicant can't rely on the
15 standard methods and defaults prescribed by EPA guidance,
16 which Mr. Sullivan has conceded he has not done, those
17 standard methods and defaults reflect generally accepted
18 scientific methodologies. And as a result the rebuttal
19 report does not satisfy the fundamental requirements for
20 admissibility under Maryland law.
21 And it's clear under Maryland law that courts and
22 non-expert administrative agencies are not supposed to be
23 the arbiters of developing or novel scientific approaches,
24 whether or not that science is good, bad, or unfounded. And
25 that the administrative agencies are supposed to make

1 decisions based on judgments that are well within the
2 mainstream of accepted scientific analysis. And the
3 discretion that's been conferred upon the EPA to allow for
4 these non-preferred and non-default methodologies rests
5 within their expertise.

6 And again I just would like to reiterate that we
7 ask that those two methodologies be stricken from the
8 record, and we ask that evidence and testimony be excluded,
9 and that we concluded with our cross-examination on his
10 report at this point, should you see fit to rule in our
11 favor.

12 MR. GROSSMAN: All right. Well, first of all, as
13 I think I said earlier, I want to hear also from Dr. Cole on
14 these points before I rule on that area. That is, the
15 scientific acceptability of the methodology used by Mr.
16 Sullivan in order to respond to your evidentiary point. So
17 I'm not going to ask for a response now from the applicant,
18 I mean until I hear from Dr. Cole in surrebuttal.

19 MS. ROSENFELD: Sure. I was just making the
20 record.

21 MR. GROSSMAN: No, I understand, but I think it's
22 a little premature because I said I would, if you renewed
23 that objection I would act on it.

24 MS. ROSENFELD: Mm-hmm.

25 MR. GROSSMAN: But I do want to hear from Dr. Cole

1 on the point, because we might as well consider all the
2 expert evidence on the point before we make a ruling.

3 MS. ROSENFELD: Thank you.

4 BY MS. ROSENFELD:

5 Q Mr. Sullivan, in light of the findings set out in
6 your rebuttal report, in your opinion will there be adverse
7 health effects on the residents, workers, and visitors
8 within the mall parcel as a result of the pollution
9 concentrations that you show under your stage one analysis?

10 MR. GOECKE: Objection. Beyond the scope of his
11 testimony. If I heard her correctly, she's asking for
12 health effects.

13 MR. GROSSMAN: I think so. I think that, aren't
14 you in fact asking something beyond, certainly beyond what
15 was covered in the rebuttal direct. He did touch on health
16 effects in his original direct. And so and I think it might
17 have been objected to at that point, but he was using
18 statistical, as I recall, it's been a long time, but
19 projections regarding some health effects in his original
20 testimony. But I don't recall it coming up in the rebuttal
21 testimony, so.

22 MS. ROSENFELD: As I recall under his, under Mr.
23 Sullivan's stage one analysis, there was some discussion
24 about whether or not exposures would be limited to 20
25 minutes, and if that's --

1 MR. GROSSMAN: Well, that was, but I don't think
2 that was directed, the question didn't come to health
3 effects per se, it came to analysis of how many minutes the
4 person was exposed, and whether you should apply the one-
5 hour standards, or a third of the one-hour standards if
6 there was 20 minutes in the queue. So it didn't directly,
7 he didn't directly opine on health effects.

8 BY MS. ROSENFELD:

9 Q Okay. Let me ask the question a little bit
10 differently. Mr. Sullivan, you have no opinion, you've
11 expressed no opinion in your rebuttal report as to potential
12 adverse health effects on the residents, workers, and
13 visitors within the mall parcel, as a result of the
14 pollution concentrations that you show in your stage one
15 analysis?

16 A I'm just going to, I'm preparing the modeling, I
17 mean I show the modeling, in each one I show what the
18 national standard is. I'm not qualified to go beyond the
19 national standard. But point of comparison can be made.

20 But I do want to clarify that the stage one figure
21 shown here assumes 100 percent time in queue. It's in the
22 whole hour. We're not doing that factoring. The factoring
23 is respective, I mentioned that point, that they cannot be
24 there for the full hour. But that figure doesn't take that
25 into account.

1 Q Okay. And in your rebuttal report you expressed
2 no opinion as to whether there will be adverse health
3 effects on the residents, workers, and visitors within the
4 mall parcel as a result of the pollution concentration
5 levels that you show on your stage two analysis, is that
6 correct?

7 A Well, not directly, but again, I show what the
8 standard, and I show the stage one, two, and three, what the
9 model maximums are. And in each case the model maximum,
10 based upon conservative modeling, is less than the standard.
11 So based upon what I can opine about, if it's less than the
12 standard, according to EPA, there should not be health
13 effects to the worker, people visiting, or anyone else.

14 Q Well, I certainly don't think that the opposition
15 concedes that point, so I guess my question is are you
16 opining on health or are you not? Because there's been
17 testimony in this case that not only do EPA standards
18 presume protective measures lower than the maximum that's
19 for nearby areas, but there's also been testimony that in
20 fact there are potential adverse health effects at those
21 lower levels. So I guess I'm trying to establish whether or
22 not you're expressing an opinion on health in your rebuttal
23 report with respect to your stage one analysis, your stage
24 two analysis, and your stage three analysis. What is the
25 scope of your report with respect to --

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1 MR. GOECKE: I would object to that. He's already
2 answered the question.
3 MS. ROSENFELD: I don't think he has.
4 MR. GROSSMAN: Yeah, I'm going to, but see I'm
5 going to overrule that objection, because if he wants to
6 clarify it, I'm going to give him the opportunity to clarify
7 that. So go ahead, answer.
8 THE WITNESS: I made a statement, based on my
9 professional judgment, considering the substantial duties of
10 conservatism in the modeling, and also considering measured
11 data that's available throughout the country, that I, my
12 opinion is that the maximum 98th percentile value on this,
13 in this parcel, will be in the range of 75 to 100 micrograms
14 per cubic meter, less than half of EPA's standard.
15 MR. GROSSMAN: For?
16 THE WITNESS: For one-hour NO2. Thank you. So on
17 that basis, and following EPA's lead that sets the standards
18 for the country, my conclusion is that there will not be
19 adverse health effects. I'm speaking as a meteorologist
20 interpreting EPA's standards. I'm not a toxicologist. I'm
21 not a medical doctor.
22 BY MS. ROSENFELD:
23 Q And did I hear you say that it was your conclusion
24 that the results are less than half of the EPA max?
25 A That's correct. For NO2.

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1 Q For NO2. At stage one again, your maximum was
2 what number?
3 A The statement I just made to clarify --
4 Q Figure one.
5 A -- was based upon stages, looking at stage three,
6 which in my judgment is the most accurate circumstance
7 conservatism. If you're looking at stage one, you're
8 showing a maximum of one, approximately 160. And --
9 Q And is that more or less than half?
10 A Well, I --
11 MR. GROSSMAN: Well, we don't have to go over
12 that.
13 MS. ROSENFELD: All right.
14 MR. GROSSMAN: I mean it says what it says, and I
15 think he's made very clear what his position is.
16 BY MS. ROSENFELD:
17 Q If we could look at figure three, please, on page
18 13 of your rebuttal report. And what is the maximum number
19 that you derived?
20 A The maximum model here is 121.
21 Q And is that more or less than half of the max?
22 A Well, clearly that's a little bit more than half,
23 but my point, I'm making the point, as I mentioned before,
24 based upon consideration of the degree of conservatism, and
25 based upon the fact that monitors throughout the country are

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1 showing concentration in high impact areas that are, you
2 know, on the order of, for example in California in 2013,
3 there's 103 monitors. The highest one in the entire state
4 of California of those 103 was 77 parts per billion, which
5 is 145 micrograms. And we think --
6 Q And where are you reading that from?
7 A -- that at this location it's going to be 145
8 micrograms, even close to that? No.
9 Q And where are you reading that number? What was
10 that number again?
11 A This, you can obtain this by going to EPA's air
12 data and put in NO2 one hour. The year is 2013. And look
13 at all sites listed for 2013 at this point in time. There's
14 103 of them, and 145 micrograms per cubic meter is the
15 highest of those sites, maybe the highest in the country.
16 Q And was, is this information contained in your
17 report?
18 A It is not. But it's publicly available
19 information that can be confirmed very easily.
20 Q And was this number derived, the 145 micrograms,
21 was that drawn from a near road monitor, an EPA near road
22 monitor?
23 A I looked at it this morning, 103 sites. Some of
24 them could very well be. I don't know the answer to that
25 question. But this site is not a near road monitor site.

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1 We're talking about the Wheaton Mall ring road. They're
2 monitoring sites for major highways like I-710 in Port of
3 Long Beach.
4 Q And the EPA recently required near road monitors
5 in fact, is that correct?
6 A EPA is requiring the states to have some near road
7 monitors starting in 2013. 2014, I'm sorry. January 2014.
8 They're running a little bit late in some cases, but they're
9 coming on line now.
10 Q And in fact that's because the EPA thinks that
11 perhaps emission levels have been underreported, isn't that
12 correct?
13 A From what I've seen so far, that doesn't look like
14 that's the case.
15 Q Is that why --
16 A I don't know why EPA, I assume EPA wants to know
17 what the near road concentrations are. I'm not going to
18 presume that there's going to be a problem, because the
19 initial data doesn't suggest that at all.
20 Q Well, you just said you don't know why they're
21 doing it, so --
22 A I said I'm not going to presume that they're doing
23 it because they're concerned there's a problem. The initial
24 data to date suggests there's not a problem. Not relative
25 to the standard of 190 micrograms per cubic meter, not from

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1 the data I have seen.

2 Q And to your knowledge has the EPA required that

3 monitors be located in remote rural non road locations?

4 A Well, they've had them in those locations for

5 years. That's not a new requirement.

6 Q They're not at, supplementing those current

7 monitors, are they?

8 A They're adding some additional monitors near major

9 highways to assess near road exposures, usually within, you

10 know, 10 meters to 40 meters of a busy road such as I-710,

11 that has probably 100 times more emissions in one kilometer

12 than this gas station operation would ever have.

13 Q In your rebuttal report you used MOBILE6 as the

14 modeling framework for the rebuttal report, correct?

15 A Yes.

16 Q And I think you testified that you used a software

17 code called FORTRAN to, quote, add the hour by hour data,

18 end quote, for the receptors within the 40 meter radius of

19 the gas queue?

20 A We did use FORTRAN programming to combine runs,

21 but that is not really related to MOBILE6.

22 Q You use that to add the specific data for your

23 analysis, correct? In, on your report, page 32 and 33, you

24 said you used FORTRAN to, quote, add the hour by hour data,

25 end quote.

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1 MR. GROSSMAN: Why does that matter?

2 MS. ROSENFELD: Well, I'll get there in just a

3 moment.

4 THE WITNESS: We used FORTRAN programming in stage

5 two inside the tailpipe box because it was summing two runs.

6 That required us to have model output on an hour by hour

7 basis for all the receptors, store those matrices, and then

8 use FORTRAN programming to process the data and to come up

9 with the 98th percentile values.

10 BY MS. ROSENFELD:

11 Q And did you also use that in your stage three

12 analysis, FORTRAN?

13 A FORTRAN programming was not required for stage

14 three.

15 Q In your --

16 MR. GROSSMAN: Has FORTRAN been modified in the 50

17 years since I studied it in college?

18 THE WITNESS: It's been a long time since it's

19 been modified. It was modified a few times, but no, I don't

20 believe that, it's been quite a while. The models were all

21 written in FORTRAN.

22 BY MS. ROSENFELD:

23 Q In your report you reference a document called

24 Introduction to MOVES for Non-Modelers, an EPA publication

25 dated August 12th, 2012. Do you recall that document?

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1 A I don't recall the document.

2 Q It's on page 17. Actually it's listed --

3 A Did you say page 17?

4 Q It's in your list of references, actually, and

5 it's called, let me see if I -- oh, it's the second to last

6 reference.

7 MS. ROSENFELD: And Mr. Grossman, what I'll do is

8 I'm going to hand out an excerpt. This doesn't have to be

9 marked as an exhibit. This is simply an excerpt from

10 Exhibit No. 466. It's the --

11 THE WITNESS: The reference.

12 MS. ROSENFELD: -- references from Mr. Sullivan's

13 report. And for simplicity I've numbered them. That's the

14 only change to this document.

15 BY MS. ROSENFELD:

16 Q If you look at number 15, it says United States

17 EPA, MOVES Training for Non-Modelers, northeastern

18 transportation, released on August 2012. It says

19 PowerPoint, refer to page 17. Do you have that document

20 with you?

21 A I don't recall actually relying upon this

22 document.

23 Q No?

24 A I just don't recall it.

25 Q It is cited as a reference.

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1 A True. I just don't recall relying upon it.

2 Q Do you have a copy with you?

3 A I don't.

4 MS. ROSENFELD: Mr. Grossman, I apologize. I

5 don't have an extra copy. What I'd like to do is show this

6 to the witness, and then we can have it introduced as an

7 exhibit, or should I have it marked first?

8 MR. GROSSMAN: What are we talking about? What is

9 the --

10 MS. ROSENFELD: It's exhibit, it's reference

11 number 15.

12 MR. GROSSMAN: Okay, so you're talking about this

13 United States EPA MOVES Training for Non-Modelers?

14 MS. ROSENFELD: Yes.

15 MR. GROSSMAN: Page 17 or --

16 MS. ROSENFELD: Page 17.

17 MR. GROSSMAN: Okay. Well, let me take a quick

18 look at it and see what you're talking about. So you only

19 want page 17 in, is that the idea?

20 MS. ROSENFELD: No, I've got other questions.

21 MR. GROSSMAN: Okay. Well, I can mark it, mark

22 the whole document, since we don't have enough paper in the

23 file already. All right, this will be Exhibit 568, 568.

24 And that's EPA Introduction to MOVES for Non-Modelers.

25 (Hearing Exhibit No. 568 was

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1 marked for identification.)
2 BY MS. ROSENFELD:
3 Q Mr. Sullivan, if I show you page 17 of what's been
4 marked as Exhibit No. 568, if you'd take a look at that, do
5 you remember seeing that?
6 A I don't specifically recall seeing this, no.
7 Again, I don't believe I relied upon this reference.
8 Q Okay.
9 A I don't remember using it.
10 Q So you don't have any reason why --
11 A I don't remember why it's on my list.
12 Q -- it's in your list.
13 A I don't.
14 Q Okay. All right. If I go to page 5 of that same
15 document, Exhibit 586, page 5 has a caption that says why
16 did EPA develop MOVES, and there's three bullets. Would you
17 read the second bullet into the record, please?
18 A FORTRAN code used in MOBILE6.2 is obsolete and
19 difficult to maintain. More modern data base design needed.
20 Q Okay. And is there a reason why you didn't use
21 more modern as in MOVES?
22 A Just an aside, EPA uses FORTRAN for AERMOD
23 modeling, and all the predecessor modelings that I've ever
24 seen. FORTRAN is a tool. It allows you to program
25 different things. They're not saying that FORTRAN gives you

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1 the wrong answer. They're saying there's new data bases
2 that can be relied upon, but for modeling EPA continues to
3 rely upon FORTRAN. And we've been using it for 40 years,
4 mostly dentists. I used to use it. And so we continue to
5 do so. There's nothing wrong with FORTRAN.
6 MR. GROSSMAN: Okay.
7 MS. CORDRY: Marking off questions.
8 MR. GROSSMAN: I'm sorry?
9 MS. CORDRY: Marking off questions.
10 MR. GROSSMAN: Hopefully we're near the end. If
11 you're finished with that exhibit, return it to me, because
12 it's now an exhibit.
13 MS. ROSENFELD: Actually I am through with it for
14 now. I will have other questions on it for our rebuttal
15 witnesses, surrebuttal.
16 MR. GROSSMAN: Okay.
17 MS. ROSENFELD: Mr. Grossman, I don't have a clip.
18 Is it okay if it's loose?
19 MR. GROSSMAN: All right. Well, we'll supply a
20 clip. Your other thing's loose, too.
21 MS. ROSENFELD: I'll turn it in when we take a
22 break.
23 MR. GROSSMAN: Okay.
24 MS. ROSENFELD: Okay.
25 BY MS. ROSENFELD:

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1 Q If you would turn to page 3 of your rebuttal
2 report, on page 3, in the middle section, as I read it you
3 conclude that all of the mall areas are urban, which I
4 think is consistent with your earlier testimony, is that
5 correct?
6 A You're referring to the statement that says Dr.
7 Cole conceded that all areas within the mall parcel can be
8 characterized as urban?
9 Q I'm reading lower down, where it says this
10 rebuttal report shows that the air parcel traveling from the
11 south toward the ring road would be 100 percent urban,
12 adjusted to mall land use by the time it reaches the queue.
13 A That's what it says.
14 Q Okay. And then finishing that sentence, you say
15 which would also apply to all trajectories. Can you explain
16 what that means?
17 A Well, a trajectory from the north, for example,
18 the air would have to travel throughout the entire mall
19 area, or from the east or west. The closest trajectory for
20 the neighborhood is from the south.
21 Q So here you're referencing the air that's
22 traveling across the mall parcel, and regardless of which
23 direction, once it gets to the queue area it's all urban.
24 A Correct.
25 Q Okay. In your rebuttal report you say that Dr.

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1 Cole was in error when he stated that the gas queue would be
2 located in a transition zone between rural and urban
3 conditions. And when Dr. Cole concluded that the most
4 appropriate dispersion rate would be intermediary between
5 urban and rural, correct?
6 A Yes.
7 Q You disagree with his conclusion?
8 A I didn't agree with, I believe he's in error. I
9 stated he's in error.
10 Q On page 26 of your November 2012 report though,
11 did you not say that the most accurate characterization of
12 nearby sources would be expected to be between the urban and
13 rural results?
14 A Well, if you look at it in context, I was
15 referring to the fact that we modeled urban and rural, like
16 the closest homes and school and pool and so forth. And my
17 statement didn't apply to the mall. It pertained to the
18 area off the mall, where those properties were. And I never
19 assigned 50-50, first of all. And I just said that at those
20 locations it would be midway between. I didn't assign a
21 number.
22 Q If you could turn to appendix C of your report.
23 MR. GROSSMAN: What page is that on?
24 THE WITNESS: Page 35.
25 MR. GROSSMAN: Okay.

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1 BY MS. ROSENFELD:
2 Q Distance for adjusted to new surface conditions at
3 the mall area, on that page 35 you cite to a formula from a
4 study reference by Panofsky and Dutton. It's part of your
5 conclusion that wind will achieve equilibrium with the new
6 surface, correct?
7 A That's a textbook authorized by Hans Panofsky and
8 John Dutton, 1984.
9 Q And you state that you use the Panofsky and Dutton
10 formula to determine the distance required for wind to
11 achieve equilibrium? Is that -- go ahead.
12 A That's correct. As I testified earlier, I used
13 that reference as an example. There are many others that
14 could be used as well with similar conclusions.
15 Q And did you include the Panofsky and Dutton
16 reference in your list of references?
17 A I think it was inadvertently left out, but I
18 believe it was in an earlier reference list, but I certainly
19 relied upon it before.
20 MR. GROSSMAN: Well, he does list it in appendix
21 C.
22 MS. ROSENFELD: Excuse me?
23 MR. GROSSMAN: You said did he list it. It is --
24 THE WITNESS: Oh, it is correct.
25 MR. GROSSMAN: -- referenced in --

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1 MS. ROSENFELD: In his reference list.
2 MR. GROSSMAN: No, it's not in the reference list,
3 but it's actually on page 35 of his report.
4 THE WITNESS: Yeah, I mentioned the name, but I
5 haven't provided the full reference. I mean it certainly is
6 a, it's an available textbook basically is what it is.
7 BY MS. ROSENFELD:
8 Q Did I understand correctly from Ms. Harris that
9 you got pages 150 to 153 of the Panofsky and Dutton article
10 from the Library of Congress?
11 A I have the whole text.
12 Q You have the whole text?
13 A Yes.
14 Q Can you explain why the whole text was not
15 provided after I requested it?
16 A I think we provided the pages that you asked for,
17 the methodology. It's a several hundred page book. It's
18 available through the library. I mean I didn't copy the
19 whole book.
20 MS. ROSENFELD: Well, not having the whole text, I
21 do have what was provided. Mr. Grossman, if we could have
22 this marked as an exhibit, please.
23 MR. GROSSMAN: All right.
24 MS. ROSENFELD: These are the four pages from the
25 Panofsky and Dutton analysis that were provided.

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1 MR. GROSSMAN: Okay, this will be Exhibit 569.
2 And it's pages 150 through 153 of Panofsky and Dutton, 1984
3 text, textbook. And what's it entitled, Mr. Sullivan, the
4 textbook?
5 (Hearing Exhibit No. 569 was
6 marked for identification.)
7 THE WITNESS: Atmospheric Turbulence. The sub-
8 heading under there, I don't recall the exact wording of it,
9 but Atmospheric Turbulence.
10 MR. GROSSMAN: All right, Atmospheric. I take it
11 it never made it to the best seller list.
12 THE WITNESS: It's hard to get now, but it's at
13 the Library of Congress.
14 MR. GROSSMAN: All right.
15 THE WITNESS: That was my advisor at Penn State.
16 Hans Panofsky wrote the book.
17 MR. GROSSMAN: Okay.
18 BY MS. ROSENFELD:
19 Q All right, so on page 35 of your rebuttal report
20 you say that you derived the formula shown on page 35 from
21 this Panofsky and Dutton paper. And you say it came from
22 page 50, 150. When I look at page 150 I actually see two
23 formulas on that page. Can you tell me which one you're
24 referencing on page 35 of your report?
25 A Referencing a formula that I believe is formula

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1 two.
2 Q Under number two?
3 A Correct.
4 Q And does number two include within it the formula
5 under, in parentheses one?
6 A Does formula two include within it reference one?
7 It was derived from equation one.
8 Q It was derived from. And equation one, if I read
9 just above that it says Miaki (phonetic sp.), quote,
10 Unpublished M.S. thesis, University of Washington, Seattle,
11 end quote, argued that the vertical signal velocity in
12 neutral air should be proportional to the friction velocity,
13 thus, and then you go into, and then they cite the formula
14 under subparagraph one. Are you aware as to whether or not
15 this formula from this unpublished thesis has been
16 recognized by the EPA?
17 A Well, this formula, formula number one, was
18 evaluated by Dr. Panofsky and Dr. Dutton. That's how they
19 arrived at equation number two. This had nothing to do with
20 EPA. I don't know if EPA has a position on the slope of an
21 adjustment, that interface, or not. But this was not an
22 EPA, this is a textbook, not an EPA-related document.
23 Q And looking at page 151, just under the number
24 four on the right-hand side, there's a sentence that,
25 there's a paragraph that starts that says most theories

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1 avoid the simple assumption one.

2 A Where are you finding that?

3 MR. GROSSMAN: That's in the middle of page 151.

4 It's like the third paragraph down, right under in general

5 however, it says most theories avoid.

6 THE WITNESS: Okay, I'm with you.

7 BY MS. ROSENFELD:

8 Q In your formula on the bottom of page 35 of your

9 report, did you incorporate or did you avoid the assumption

10 under paragraph one on page 150?

11 A We certainly didn't go into applying the equation

12 of motion and the equation of continuity to derive our own

13 equation. We used equation two with reordering of the, you

14 know, combining terms, which we're showing in our equation

15 here, to estimate the front, the height, how many feet per,

16 of height rise per feet of distance crossed.

17 MR. GROSSMAN: Just so you can, I don't do

18 suspense well, so is Dr. Cole going to dispute the

19 application of this theorem?

20 MR. COLE: Oh, yeah.

21 MR. GROSSMAN: Okay.

22 MS. ROSENFELD: For the record, yes.

23 BY MS. ROSENFELD:

24 Q The Panofsky and Dutton article was published I

25 think you said in 1984. Have there been any advances in the

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1 methodology shown on page 150 since then?

2 A I looked at other formulas on line and I did,

3 there are others that I found were consistent with the slope

4 factors that Panofsky showed. So yes, there are others. I

5 don't have the full references with me, but there clearly

6 were.

7 Q Do you know if the methodology used in the

8 Panofsky and Dutton article has been extensively used or

9 cited by others?

10 A I don't know how often it's been cited by others,

11 but I can say that it was consistent with the other reports

12 that I reviewed.

13 Q When I look at page 35 of the report, is this the

14 same formula that is shown on page 150 of the Panofsky

15 report?

16 A My recollection is it's terms that have been

17 combined, but it's a consistent formula. Terms of been

18 rearranged.

19 Q Would you walk me through, please, the changes?

20 A I'm not going to derive the calculation on the

21 stand. We took the terms and combined terms and solved for

22 X. I'd prefer not to do calculations on the stand. We re-

23 evaluate how we come up with that formulation from equation

24 number two. It was a matter of combining terms and solving

25 for the X term.

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1 Q Well, I'm not asking you to do a calculation, but

2 I am asking you to explain to me how the factors and the

3 ratios that are shown in two correlate with the ones that

4 are shown on page 35 of your report.

5 A Well, for example there's terms that are in this

6 equation, too. KA is approximately a value of .4 or .39 is

7 what that constant would be. And the B as a factor is 1.3.

8 Surface roughness is an input, a Z zero, which we solve for.

9 And those terms have been rearranged solving for X. That's

10 what we did. H being the height of the interface above

11 ground level.

12 Q All right. Could we start at the left on the

13 Panofsky report, and could you explain to me what those

14 terms mean?

15 A H, you're referring to equation two?

16 Q Yes, I am.

17 A H is the height of the interface. Z zero is

18 surface roughness, length. KA is a constant, usually held

19 between .39 or .4 as a simplification. B is a constant

20 which is set to 1.3, an empirical constant. And X is the

21 downwind distance of the --

22 Q X is distance?

23 A -- from the interface.

24 MR. GROSSMAN: What does L sub N refer to, or LN?

25 Within the bracket.

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1 THE WITNESS: Log, natural logarithm.

2 MR. GROSSMAN: Okay.

3 BY MS. ROSENFELD:

4 Q So going back to my question, is the formula that

5 you show on 35 the same formula that's shown on the Panofsky

6 article?

7 A My answer was it's the same formula but rearranged

8 terms.

9 Q And what do you mean, rearranged terms?

10 A We're solving for X, we're solving for X.

11 Q Right.

12 A You have a KA multiplied times a B. Those are

13 both constants, so they've been combined. That's what I

14 recall we did in rearranging the terms and solving for the X

15 distance. X basically is telling you how far you have to go

16 across the new surface to have the conditions adjusted at a

17 particular height.

18 UNIDENTIFIED SPEAKER: H varies with distance.

19 BY MS. ROSENFELD:

20 Q Does H vary with distance, or is it a constant?

21 A H varies with distance.

22 Q H is the height of the interface. So if H is the

23 height of the interface, tell me how that relates to what

24 you're modeling here.

25 A The sources of the gas queue, for example, which

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1 is a dominant source of interest, and the breathing height,
2 is five feet, approximately five feet, 1.5 meters. And
3 actually for the gas queue, that source model, that's .75
4 meters, which is about two and a half to three feet above
5 ground level.

6 For our sources the height of interest is very
7 low, because the growth of the front of adjusted air is a
8 function of distance, to get to a height of two to three
9 feet or take it up to five feet, the upper bound, it doesn't
10 take very long. It adjusts very quickly, as shown by this
11 formula and others you can review in the literature.

12 Q So in your formula on page 35, there's an H in the
13 middle of the formula. Is that, what height does that
14 represent?

15 A Well, if you put your height in, the H and X are
16 the two variables, so and you set the surface roughness
17 term. If you put in H of 1.5 meters, you solve for how many
18 meters for X would match that value, or vice versa.

19 Q And does this take into account the fact that
20 there's a slope from the area of the homes up to the queue?

21 A That's not the issue here. We're talking about
22 air that has moved up the hill and is going across the
23 parking lot. Sure, there's a slight slope there as well.
24 But it's not getting into that level of detail. It's an
25 approximate formula that's showing how fast it'll adjust to

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1 a new surface. But clearly the slope of the parking lot is
2 not an input.

3 Q And does it take into account the fact that
4 there's going to be an eight-foot wall at the top of that
5 slope?

6 A All that would do is make it transfer sooner, in
7 my judgment.

8 MR. SILVERMAN: Transfer what sooner?

9 THE WITNESS: It's going to adjust, the turbulence
10 is going to flow across, to have more mixing than we're
11 accounting for. It would dilute the pollutants more so than
12 we're modelling it.

13 BY MS. ROSENFELD:

14 Q And looking at the last sentence on page 150 of
15 the Panofsky paper, it says Miaki's treatment gives only the
16 geometry of the interface, but not the change of wind
17 speeds, stress, and turbulent intensity after the air comes
18 under the influence of terrain change. Are those factors
19 that need to be calculated independently of this formula
20 that's shown on page 150?

21 A For this analysis we did not have to do that. You
22 certainly can do that, and there's references that show what
23 the speed change would be and what the turbulent intensity
24 change would be. This formula is to define the height of
25 the adjusted surface.

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1 Q But isn't dispersion directly affected by wind
2 speed and turbulence?

3 A It's affected by both.

4 Q So why didn't you have to factor that into this
5 equation?

6 A Well, I mentioned, I looked at, there's a
7 reference that I mentioned earlier, Raynor 1979, that
8 evaluated from a turbulent intensity point of view what the
9 speed of transfer was. And what he concluded, in the first
10 kilometer it's quite fast, a slope of one-to-three to one-
11 to-four. We have a one-to-four in this formula, and that's
12 considering turbulent intensity. So yes, I mean this scale
13 of analysis, this close to an interface, that slope change
14 is very quick, and even quicker than I'm showing on page 35,
15 because a lot of times that surface is unstable.

16 In other words it's a, there's going to be a
17 faster upward signal than showing what this formula is based
18 on neutral conditions. So you put it all together for, as I
19 mentioned here, for any conceivable surface roughness value.
20 That transition occurs prior to the wind reaching the start
21 of the gas queue, and is way past by the time it gets to the
22 midpoint or end of the gas queue. It's going to be urban-
23 related dispersion conditions at that location.

24 Q And the article also says --

25 UNIDENTIFIED SPEAKER: You mean the textbook?

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1 MS. ROSENFELD: The textbook. It may say it, but
2 I can't find it, so --

3 MR. GROSSMAN: I'll think we've spent enough time
4 on the textbook, don't you think, Ms. Rosenfeld?

5 MS. ROSENFELD: Well, I think what Mr. Sullivan
6 has testified is that his formula does not directly
7 correlate with the formula that he, that is shown on page
8 150 of the Panofsky article.

9 MR. GROSSMAN: That's certainly not what he
10 testified. He didn't say that. He said he derived from
11 that by rearranging, substituted the values and then he
12 rearranged it and solved for X. That's what he testified.

13 MS. ROSENFELD: And I think I asked him to walk us
14 through that and he declined to do so.

15 MR. GROSSMAN: Well, he said he's not going to go,
16 he actually did walk you through and told you what each of
17 the elements was in that formula. He didn't say, he didn't
18 go through the calculation of how he did it. But you can
19 have your expert testify if he disagrees with the
20 reformulation of it.

21 BY MS. ROSENFELD:

22 Q On page 36 of your report you reference a paper by
23 Lettau (phonetic sp.), and you cite to a formula to estimate
24 surface roughness in a parking area. Z-O equals .5 H* S/S,
25 right?

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1 A That's correct.

2 Q And did you plug in the value for this equation

3 for Z-O or surface roughness into the equation in the

4 Panofsky text?

5 A In the Panofsky text I ran, I mean I showed the

6 results for Z, a surface roughness ranging from .01 meters

7 up to one meter for, basically for 10 centimeter increments.

8 I show it for a wide range of surface roughness values. I

9 highlighted 12 centimeters, which came out of the example

10 that I showed here.

11 Q And where did you show those numbers?

12 A On page 38.

13 Q And so what's highlighted on page 38 is the result

14 that you got from the combination of the formula on 35 and

15 the formula on 36?

16 A On page, using the formula for surface roughness

17 estimation at the top of page 36, in conjunction with the

18 formula on page 35, I computed the range of heights to

19 achieve adjustment as a function of surface roughness

20 ranging from .01 to 1 meter.

21 Q And so in the first column on the left, the Z-O,

22 what does that reflect on the ground?

23 A Surface roughness length, one centimeter.

24 Q And the middle column?

25 A Actually be the distance in meters to, for

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1 adjustment to 1.5 meters. And the third column is showing

2 it in feet.

3 Q And the distance to 1.5 meters is the height of

4 the vehicles or the height of the receptors?

5 A 1.5 meter, .75 meters is the height, midpoint

6 height of the gas queue. 1.5 meters is the breathing

7 height. I used 1.5 as the example, but actually the gas

8 queue at .75 adjusts twice as fast as I have here. So at 12

9 centimeters, at .75, it would adjust within about eight

10 feet. By the time it got to the middle of the ring road,

11 it'd be urban.

12 Q And did you find any precedent in EPA guidance for

13 the combination of these two equations?

14 A I don't recall if EPA has the need to address

15 interface. I don't remember them addressing this topic in

16 guidance. They may have somewhere. I've certainly seen

17 these, the formula, these formulas used many times before.

18 Q In combination?

19 A Well, I don't know about in combination, but the

20 Lettau method is very well established and tested against

21 various methods. And the Panofsky equation is just one of

22 many that leads to about the same answer, again the slope of

23 one-to-three, one-to-four, when you're that close to an

24 interface is what I've seen in multiple references.

25 Q Can you specify which other methods give you the

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1 same result as the Panofsky formula?

2 A I mentioned Raynor, R-A-Y-N-O-R, in 1979 would be

3 one.

4 Q And is that an article or a book?

5 A That's an article. I'll give you the reference.

6 It's an article by Gilbert S. Raynor. The title is

7 Formation and Characteristics of Coastal Internal Boundary

8 Layers During On-Shore Flows. And published by, in Boundary

9 Layer Meteorology, Volume 16, 1979, page 47 to 514.

10 Q Do you have a copy available?

11 A I do.

12 Q Electronic?

13 A I do.

14 Q Okay. Would you mind sending that to us?

15 A I can put it, I can transfer it through maybe Mr.

16 Goecke. I have it on my flash drive.

17 Q Okay.

18 A I would have to do it, with the transfer.

19 Q We can coordinate that during the break. And did

20 you conduct any kind of a sensitivity test to determine how

21 variation of the inputs under these formulas would determine

22 the outcome of the analysis?

23 A Yes.

24 Q And where did you do that?

25 A Page 38.

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1 Q And the sensitivity test that you ran on 38, is

2 that for the Panofsky or is that for Lettau?

3 A That's for Panofsky. I'm very, I'm showing

4 Lettau's method for the parking lot example that I gave. It

5 could be different on a different day with different cars

6 parked there, but the given example was 12, .12 meters. I

7 showed the sensitivity from .01 to 1 meters, run through the

8 Panofsky equation. And showed a range of .7 feet to 38 feet

9 for transition, which is well before the queue, for all of

10 them.

11 I could add to that that I also considered .5

12 centimeters, which is five millimeter roughness, which is,

13 we measure this in the field studies that we do, this sort

14 of thing. And if I have a study where I have a plastic tarp

15 for several acres of farmland, totally smooth surface, will

16 measure about a five millimeter or .5 centimeter roughness

17 length. And I put that in and I got 50 feet, and 50 feet

18 was about the distance from the edge, where the southern

19 part of the parking lot, parking space is in the ring road,

20 up to the start of the ring road.

21 So my point is under any conceivable surface

22 roughness value, the transition is faster than needed. It's

23 going to be urban by the time it starts the queue. By the

24 time it ends the queue it's going to be, that height of

25 interface would be well, way above 1.5 meters.

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1 MS. ROSENFELD: Mr. Grossman, I think this would
 2 be a good time for a lunch break, if it's not too early.
 3 MR. GROSSMAN: I'm not so sure. Maybe you can
 4 finish before a lunch break.
 5 MS. ROSENFELD: Oh, no, no.
 6 MR. GROSSMAN: I would be hopeful that you could.
 7 MS. ROSENFELD: Oh, not a chance.
 8 MR. GROSSMAN: How much more do you think you
 9 have?
 10 MS. ROSENFELD: Probably a couple hours.
 11 MR. GROSSMAN: That's what you had, that's what
 12 you told me I think before we broke for the --
 13 MS. ROSENFELD: That may be.
 14 MR. GROSSMAN: -- on the 8th.
 15 MS. ROSENFELD: That may be.
 16 MS. CORDRY: I think you said four or five hours.
 17 MR. GROSSMAN: It's now been --
 18 UNIDENTIFIED SPEAKER: You said about three.
 19 UNIDENTIFIED SPEAKER: You said four.
 20 UNIDENTIFIED SPEAKER: Two and a half.
 21 UNIDENTIFIED SPEAKER: Three.
 22 MS. ROSENFELD: This is complicated stuff, Mr.
 23 Grossman. And I don't think the time this morning in cross-
 24 examination was wasted time.
 25 MR. GROSSMAN: I would never assume it's --

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1 MS. ROSENFELD: There was a lot of information
 2 that --
 3 MR. GROSSMAN: -- wasted.
 4 MS. ROSENFELD: -- came forward that certainly
 5 hadn't been clear to me, and to Mr., to Dr. Cole earlier.
 6 There's a lot more to wade through.
 7 MS. CORDRY: So this is a 55-page report, all of
 8 which was new, so --
 9 MR. SILVERMAN: Also, Mr. Grossman, Ms. Rosenfeld
 10 sacrificed Mother's Day in order to prepare for this. I
 11 think we should give her a little leeway.
 12 MR. GROSSMAN: All right. The Mother's Day
 13 argument always wins. I don't want to be taking that thing
 14 against Mother's Day, for heaven's sakes. All right. Well,
 15 if everybody wants to do that now, and Mr. Silverman is
 16 voting to break for lunch, all right, I have no opposition
 17 from the other side. All right, we'll break. It's about,
 18 it's going to be about 20 to, so we'll break until 1:30
 19 then.
 20 MS. ROSENFELD: Thank you.
 21 (Whereupon, at 12:35 p.m, a luncheon recess was
 22 taken.)
 23 MR. GROSSMAN: Back on the record. Resume the
 24 cross-examination. Or end the cross-examination, whichever
 25 is your preference.

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1 MS. ROSENFELD: Well, we were able to --
 2 MR. GROSSMAN: Shorten things?
 3 MS. ROSENFELD: -- delete a number of --
 4 UNIDENTIFIED SPEAKER: Another way.
 5 MS. ROSENFELD: -- a number of questions that we
 6 covered pretty thoroughly this morning, so.
 7 CROSS-EXAMINATION (Continued)
 8 BY MS. ROSENFELD:
 9 Q Mr. Sullivan, you've testified that you're
 10 assuming that there's going to be a 25 percent initial ratio
 11 of NO2 to NOX, correct? The in-stack ratio?
 12 A We've conservatively used .25 as our in-stack
 13 ratio for each source for NO2 modeling.
 14 Q And if you would please turn to page 5 of Exhibit
 15 407, which is the March 1, 2011 Tyler Fox memo.
 16 MS. ADELMAN: What page was that?
 17 MS. ROSENFELD: Five.
 18 THE WITNESS: Page 5, you said?
 19 MS. ROSENFELD: Yes.
 20 THE WITNESS: All right.
 21 BY MS. ROSENFELD:
 22 Q Under the second bullet on page 5, there's a
 23 sentence that says general acceptance of .5 is the default
 24 in-stack ratio of NO2/NOX for input to the PV, MLM, and OLM
 25 options within AERMOD, in the absence of more appropriate

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1 source-specific information on in-stack ratios. That .5
 2 default number is recommended by this EPA guidance, is that
 3 correct?
 4 A No. That's not what it says. What it says is if
 5 you don't have source-specific information, which we do,
 6 that .5 is the default.
 7 UNIDENTIFIED SPEAKER: We do? What source?
 8 BY MS. ROSENFELD:
 9 Q And where is your source-specific information for
 10 using something other than the .5?
 11 A We showed CAPCOA 2011. We discussed that earlier.
 12 Appendix D, page number, appendix C, I'm sorry, page 58,
 13 shows that for gasoline and diesel light and medium duty
 14 vehicles, the recommended ratio is .25, 25 percent. And for
 15 heavy duty diesels that it's 11 percent. We used 25 for
 16 both categories, and we used that not only for idling but
 17 also for running sources, running vehicles.
 18 Q If you did use the EPA's .5 default ratio, what
 19 would your overall maximum NO2 concentration be under stage
 20 two?
 21 A Well, we didn't run the numbers. I don't have a
 22 basis to answer that. But it wouldn't be appropriate to use
 23 .5 when, for example, I've already stated that the .25 we're
 24 using is high relative to the literature. I used CAPCOA as
 25 a conservative default.

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1 Q And your reliance on that .25 figure in the CAPCOA
2 report, Exhibit 567, it's appendix C, page 58, is that what
3 you're referencing?
4 A Yes.
5 MS. ROSENFELD: Mr. Grossman, I believe I have
6 your copy.
7 MR. GROSSMAN: Ah, that's what happened to it.
8 Thank you. So what page am I on now, Ms. Rosenfeld?
9 MS. ROSENFELD: I believe Mr. Sullivan testified
10 that he got the .25 conversion factor from appendix C on
11 page 58. And if you look at number six, the reference
12 number on the left-hand column, if you read across the page
13 for the gas/diesel --
14 MR. GROSSMAN: I see.
15 MS. ROSENFELD: -- it's .25.
16 BY MS. ROSENFELD:
17 Q Is that correct? Is that the number you
18 referenced?
19 A It's .25 for light and medium duty gas and diesel
20 vehicles, and it's .11 for heavy duty diesel vehicles.
21 Q And do you know where that number came from in the
22 CAPCOA guidance document?
23 A You mean how they derived that point? I don't
24 have that information available as I sit here. I can tell
25 you that I researched the .25, for example, for gasoline

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1 vehicles, and have confirmed that that 25 percent is very
2 high for moving vehicles, and it's a bit high. Twenty
3 percent would be, based on the literature, more site-
4 specific or source-specific information. These are
5 basically just defaults that they're offering.
6 But I do provide references, other things like
7 Lenner and Lindquist, for example, that show references as a
8 function of runtime for idling. That's in my reference
9 list.
10 Q If you were to turn to page 59 in the CAPCOA
11 report --
12 A Okay.
13 Q -- reference number six, there's a reference to a
14 study called Primary NO2 Emissions from Road Vehicles in the
15 Hatfield and Bell Commons Tunnels --
16 A Right.
17 Q -- dated July 2007. Do you see that?
18 A I do.
19 Q Are you familiar with the Bell and Commons study?
20 A I've seen, I think I referenced in my reference
21 list probably three or four tunnel studies. I don't recall
22 this specific tunnel study, but I have certainly seen tunnel
23 studies used as a basis to isolate the direct emissions from
24 vehicles.
25 Q And do emissions in moving vehicles depend in part

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1 on the speed of the vehicles?
2 A You're referring to this particular reference?
3 Q Just generically speaking.
4 A It's a function of speed.
5 Q We heard testimony that there are higher emissions
6 at idling levels than there are at faster speeds, correct?
7 A That's what's shown in Lenner and Lindquist's
8 reference in my reference set. It provides hard data on
9 that.
10 Q And does the NO2 to NOX ratio change as vehicle
11 speed changes?
12 A Yes, it does.
13 Q And in what fashion?
14 A Well, the literature shows, and in Lenner and
15 Lindquist there's a good example of it, it shows, as I
16 recall initially if you have a car running, and say for 30
17 minutes, that's moving 20 or 30 minutes, and then you put it
18 into idle mode, it initially goes go about 15 percent ratio.
19 And then by about 10 minutes into this, into the idle mode,
20 it'll go to about 20 percent. It'll max out around 25
21 percent by 20 minutes or so. So it does increase, but the
22 moving vehicle component, based upon several tunnel studies,
23 shows that moving vehicles typically in the range of five to
24 10, sometimes three percent NO2.
25 MR. GROSSMAN: Excuse me a second. Mr. Brann, can

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1 you take a look at the thermostat and see what that's set
2 for? It seems rather warm in here.
3 MR. BRANN: It's 74.
4 MR. GROSSMAN: Okay, can you lower that a couple
5 of degrees? Thank you.
6 MS. HARRIS: He asked if I could --
7 MR. GROSSMAN: You look guilty.
8 UNIDENTIFIED SPEAKER: She did, didn't she?
9 MS. HARRIS: Now I look content and comfortable.
10 MR. GROSSMAN: Well, you don't want me to look
11 asleep.
12 MS. HARRIS: Well, that is true. You're more
13 important.
14 BY MS. ROSENFELD:
15 Q In the Boulter, McCrae & Green study that's
16 referenced in the CAPCOA guidelines, guidance document, do
17 you happen to remember the speed of the vehicles that were
18 studied in that report?
19 A I've already stated I have, I don't recall that
20 report. But the, to interpret a tunnel study, it's more
21 than just a function of speed. It depends upon the design
22 of the tunnel. Some of these studies, this being one of
23 them, were in single bore tunnels. And a single bore
24 tunnel, single bore tunnels have very different ratios,
25 because you get build-up inside, where a dual bore, the cars

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1 have like a piston effect and it clears the air much, much
2 more efficiently.
3 And so I've seen a big difference between single
4 and dual bore tunnels. And I don't know if this is single
5 bore or not, but levels like 25 percent I've seen in single
6 bore tunnel studies.
7 Q But let me clarify, what we're talking about right
8 now is the in-stack ratio, correct?
9 A But you're talking about a particular reference
10 for a tunnel study, and I'm just pointing out that the ratio
11 is strongly dependent upon whether it's single or dual bore.
12 And we don't, without having this reference here, I don't
13 recall which it is, but it's much more similar to single
14 bore research I have reviewed.
15 Q The title of the document though is called Primary
16 Emissions from Road Vehicles.
17 A Well, I'm referring to whether it has one hole
18 through the mountain or two, or under the water. It makes,
19 the literature shows it makes a very large difference. In
20 fact they've done studies of single bore where they describe
21 the piston effect in great detail, and say it does create
22 build-up inside, and the residence time it increases, you
23 get more conversion.
24 Q I'm sorry, Mr. Sullivan, I didn't hear your answer
25 there.

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1 MR. GROSSMAN: It's the same as he's given before,
2 a couple of seconds ago. There's a big difference between
3 single bore and double bore --
4 MS. ROSENFELD: Right.
5 MR. GROSSMAN: -- tunnel results, because of the
6 piston effect.
7 BY MS. ROSENFELD:
8 Q But my question is does that have an effect on the
9 in-stack ratio?
10 A Yes, it would. I mean if you used a single bore
11 tunnel, which is, as number six may be, it would inflate the
12 estimate of direct emissions, because there'd be enough time
13 inside there to create extra conversion. And I'm looking
14 for the reference. I may not find it right now, but it's
15 clearly described, and I believe it's actually, let me see
16 this that the rest of you have, it's an article by Oddny, I-
17 N-D-R-E-H-U-S, CO and NO2 Pollution in a Long Two-Way
18 Tunnel, road tunnel, investigation of NO2 to NOX ratios, and
19 modelling of NO2 concentrations, in the Journal of the Royal
20 Society of Chemistry, 2001. And actually the title of the
21 journal is Journal of Environmental Monitoring, excuse me,
22 2001, volume three, pages 220 to 225.
23 Q What were those pages again?
24 A 220 to 225. I don't believe that report is in my
25 data disk, that report clearly is available in the

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1 literature. That does describe and comment on the fact that
2 this tunnel produced high NO2 to NOX ratios because of the
3 design.
4 Q And would you provide that along with the other,
5 the report that you're going to provide, in the drop box?
6 A Yeah, is somebody keeping track of these things?
7 I'm not.
8 Q I am, yes.
9 A Okay.
10 Q On page 34 of your report --
11 MR. GROSSMAN: Do you mean his rebuttal report?
12 MS. ROSENFELD: The rebuttal report.
13 MR. GROSSMAN: Okay.
14 BY MS. ROSENFELD:
15 Q And actually I'm going to start at the bottom of
16 page 35, the last sentence. The modeling in stage three was
17 updated based on updated meteorological data and updated NO2
18 background and ozone concentrations for the years 2010
19 through 2012, to reduce the positive bias of using older
20 concurrent NO2 background data. Correct?
21 A It's page 34, I believe you're reading from.
22 Q The last, the sentence actually begins at the
23 bottom of page 33 and carries over to page 34.
24 A Okay. I'm with you now. I'm sorry, what was your
25 question?

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1 Q Did you reduce the, you used three years of data
2 for the updated NO2 background and ozone concentrations,
3 correct?
4 A That's correct.
5 Q And did you also use three years of the
6 meteorological data?
7 A It's all concurrent data, 2010 to 2012, three
8 years.
9 Q And did you use EPA, did you follow EPA guidance
10 in using this approach?
11 A It's the exact, we went through that earlier.
12 It's the same approach as used previously. It was stage
13 three, of using three years' worth of data. Three years is
14 a typical data set used for compliance purposes. We used a
15 three year data set for that purpose here. I always use
16 three years of the model values to estimate model of NO2
17 concentrations.
18 Q Would you look at Exhibit 391-A, which is the June
19 29th, 2010 memo?
20 A What memo?
21 Q June 28th, 2010 memo from Tyler Fox?
22 A I don't have that handy. Mine was marked for
23 2011.
24 MR. GROSSMAN: Exhibit 391?
25 MS. ROSENFELD: 391-A.

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1 MR. GROSSMAN: Yeah, that's --
2 MS. ROSENFELD: And actually, Mr. Grossman, I
3 think I handed out --
4 MR. GROSSMAN: You handed one to me.
5 MS. ROSENFELD: -- a convenience copy. Right, it
6 says excepted pages?
7 MR. GROSSMAN: Yes.
8 MS. ROSENFELD: Yes. Okay.
9 BY MS. ROSENFELD:
10 Q The second memo on that, which is dated June 28th,
11 2010, I'm looking at page 17 of that document. Mr.
12 Sullivan, I'm going to hand you what is an extra of what has
13 been marked as Exhibit 391-A.
14 A Okay.
15 Q And I'm going to need that back.
16 A All right.
17 UNIDENTIFIED SPEAKER: What page is that?
18 MS. ROSENFELD: Seventeen.
19 THE WITNESS: What was your question?
20 BY MS. ROSENFELD:
21 Q I'm looking in the middle of that paragraph, about
22 halfway down on the far right there's a sentence that
23 begins, although the monitor design value for the one-hour
24 NO2 standard is defined in terms of the three-year average,
25 this definition does not pre-empt or alter the appendix W

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1 requirement for use of five years of national NWS, National
2 Weather Service, meteorological data, or at least one year
3 of site-specific data. Do you see that?
4 A I do.
5 Q Did you use one year of site-specific data in lieu
6 of the five years of NWS?
7 A No, we used of five years of meteorological data
8 in stage two. Stage three, we did an example showing the
9 most recent three years. So yes, we have run five years.
10 Just like I said, working through it in three-year
11 increments, we followed that procedure.
12 Q But you did not follow it in stage three, did you?
13 A In stage three I showed the most recent three
14 years, the last part of that block. If you want to see the
15 five years rolled through each step, that's in stage two.
16 Q And the following sentence says the five-year
17 average, based on use of NWS data or an average across one
18 or more years of available site-specific data, serves as an
19 unbiased estimate of the three-year average for purposes of
20 modeling demonstrations and compliance with the NAAQS,
21 correct?
22 A I guess I lost track of where you are. I'm sorry.
23 Q The following sentence.
24 A Modeling of rolling three-year averages?
25 Q Starting with the five-year average, based on use

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1 of NWS data.
2 A I don't see this.
3 MR. GROSSMAN: It's right after the sentence that
4 she read before. The sentence she read before says, it
5 begins with although. The next sentence begins the five-
6 year average.
7 THE WITNESS: I'll find it. The five-year
8 average, based on use of National Weather Service data?
9 BY MS. ROSENFELD:
10 Q Yes.
11 A Or an average across one or more years of
12 available site-specific data. Like I said, we have done
13 that procedure in stage two. Stage three was showing what
14 it would be for updated conditions.
15 Q And you could have carried forward the more recent
16 five years of data, correct?
17 A We could have run --
18 Q But chose not to do that?
19 A We could have run many different variations of
20 this. I ran basically two, and we could have run five years
21 or more. I showed in stage three an example, based on the
22 most recent three years, that would give Mr. Grossman the
23 best idea of what kind of concentrations conservatively
24 would expect to see when the station's built sometime in
25 hopefully 2014 or whenever it's going to be.

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1 Going back five years there, we could have done
2 it, but it would show what the average would be going back
3 to 2010. That's already available through stage two.
4 Q And just for a reference point, if you would turn
5 to Exhibit 285, which is appendix W.
6 A I don't have appendix W handy.
7 Q In your references --
8 MR. GROSSMAN: Which page in index W?
9 MS. ROSENFELD: -- oh, actually you didn't
10 reference appendix W, did you? I'm sorry, what?
11 MR. GROSSMAN: Which page were you referring to?
12 MS. ROSENFELD: I'm looking at page 68244.
13 THE WITNESS: Okay.
14 MS. ROSENFELD: Section 8.3.1.2.
15 THE WITNESS: What page again, please?
16 MS. ROSENFELD: 68244.
17 THE WITNESS: And I don't have it numbered that
18 way. What is the section again?
19 MS. ROSENFELD: In the first, do you have page
20 68244?
21 THE WITNESS: No. Mine aren't paginated that way.
22 I have 71 pages.
23 MS. CORDRY: His isn't the Federal Register. It's
24 a CFR.
25 MS. ROSENFELD: All right, if you could look at

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1 section 8.3.1.2, recommendations.
2 THE WITNESS: Okay.
3 MR. GROSSMAN: Unfortunately the new zoning
4 ordinance is numbered the same kind of way. A lot of
5 numbers, a couple letters thrown in. It's not that easy to
6 follow.
7 THE WITNESS: Is there a pending question? I'm
8 sorry.
9 BY MS. ROSENFELD:
10 Q I was waiting for you to find the section.
11 A I have it.
12 Q Okay. And recommendations under A, the very first
13 sentence does say five years of representative
14 meteorological data should be used when estimating
15 concentrations with an air quality model, is that correct?
16 A Correct.
17 Q In lieu of EPA guidance, what did you rely upon in
18 reducing this five-year meteorological data requirement?
19 MR. GROSSMAN: Well, I'm going to stop you,
20 because he's already answered at least three times that he
21 used five years in stage two, and then he used three years
22 in stage three, the more current years.
23 MS. ROSENFELD: Right, and --
24 MR. GROSSMAN: So when you say in lieu of EPA
25 guidance, he has testified that it is consistent with EPA

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1 guidance. So why go over the same thing over and over and
2 over again?
3 MS. ROSENFELD: No, I don't think he's testified
4 that's it's consistent with EPA guidance. I think he's
5 testified that he chose to use a different methodology.
6 MR. GROSSMAN: I heard him say that the five-year,
7 that he did consistent with EPA guidance, because he used
8 five years in stage two, and then he, in addition, ran a
9 three-year one. I don't, he said it over and over again.
10 MS. ROSENFELD: Then let me --
11 MR. GROSSMAN: I just don't want to go over the
12 same territory over and over and over again.
13 BY MS. ROSENFELD:
14 Q Are you asking that the Board of Appeals rely on
15 stage three in making a determination as to compliance with
16 the NAAQS?
17 A I'm hoping that the Board of Appeals will rely
18 upon all the evidence that's presented here to make their
19 decision. And we have done a lot of analysis for this
20 project. I tried to shed light on the most recent period
21 versus the five-year period. We showed the modeling I don't
22 know how many different ways during the course of this
23 activity. Why would not the whole evidence be considered?
24 Q Under your stage two approach --
25 MR. GROSSMAN: Your pocket's about to explode in

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1 the back. Oh, it stopped.
2 MR. GROSSMAN: No, there's a bright white light
3 that flashes in your pocket.
4 UNIDENTIFIED SPEAKER: Oh, this.
5 MR. GROSSMAN: And I wouldn't care, except it's
6 distracting when I'm seeing it from here.
7 UNIDENTIFIED SPEAKER: I'm sorry. Okay. Sorry.
8 BY MS. ROSENFELD:
9 Q You applied an upper bound of .5 for the ratio in
10 your stage two approach, is that correct?
11 A You heard the stage three approach?
12 Q Stage two.
13 A No.
14 Q For the area outside? That's actually stage
15 three, correct?
16 A That's correct.
17 Q Okay. And you say you drew that from an
18 Environmental Agency report that you reference in your
19 rebuttal report, is that correct?
20 A I testified there was three or four studies that I
21 listed for, on that topic, that all showed that it would
22 take a long, long time to get to 50 percent, much longer
23 than the grid we had in this modeling.
24 Q And in the environmental agency report, which was
25 number one in your reference list, this actually, this is

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1 not the United States Environmental Protection Agency, is
2 it?
3 A No, we've talked about, in the reference number
4 one on my list, no, we've mentioned it's the Australian,
5 it's an Australian regulatory agency.
6 Q Actually I believe it's Bristol, the United
7 Kingdom and Wales, I think.
8 MS. CORDRY: Yeah, yes.
9 MR. GROSSMAN: They all have the same accents.
10 UNIDENTIFIED SPEAKER: True.
11 BY MS. ROSENFELD:
12 Q This is on page 3. The Environment Agency is a
13 leading public body protecting and improving the environment
14 in England and Wales, correct?
15 A I had the wrong part of the British Empire. It is
16 England and Wales.
17 Q And on page 10 of that report, doesn't it include
18 that it can be as high as .59 at urban background sites?
19 And even as high as .85 in urban areas, rural areas?
20 A Well, sure, but that's not what we're talking
21 about. That's not an in-stack ratio. That's how you could
22 measure in a city. That city has transport from tens of
23 miles, from various roads and power plants and what have
24 you. It's like apples and oranges.
25 Q But that is how you're getting the .5 maximum that

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1 you composed on your stage three analysis, correct?
2 A But it's apples and oranges. You can't compare
3 the two types.
4 Q In what sense?
5 A Well, the .5 is referring to conversion, total
6 conversion of NO2 to NOX from the sources we're talking
7 about here. The .5 they're talking about here, the average
8 of .47, that's across, if you've got a monitor in the city
9 and you let it run, you know, over and over again, it's
10 getting air from roadway segments 10 miles away and a power
11 plant over in this direction. It has a lot of baking time
12 in the atmosphere, and you're going to get conversion.
13 We're talking about in-stack ratios right next to a
14 source. There is insufficient time to get the mixing to
15 have that happen.
16 Q No, but maybe we're confused. We're talking about
17 your stage three where you cap ozone conversion ratios
18 outside of the tailpipe box at .5, correct?
19 A Well, yeah, but you say a capping. We're setting
20 it at .5 in a mono-domain that just goes about 100 meters or
21 maybe 200 at the most. We're talking about the .5 you're
22 referring to here is where there's miles and miles of air
23 coming in that's converted from the general mix of air in
24 the atmosphere, from much farther away than the grid domain
25 we have here.

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1 Again, it's apples and oranges comparison. I
2 could show a .5 right away from my modeling if I were to say
3 look, I have stage three. I have 70, what 73 micrograms are
4 coming from background. Background's about .6. We're using
5 Baltimore as the example. If I work back to that end and
6 factor in most of the roadways, I'm doing, I'm using .5 for
7 most everything else. I only have .25 for a very small
8 fraction. If I do a weighted average of all those numbers,
9 it comes in about .5. I get the same kind of answer.
10 So my point is it really does depend. Background
11 dominates, and background has about a .6.
12 MS. CORDRY: Is that a .6 conversion rate here?
13 MR. GROSSMAN: No, no, no, no, no.
14 MS. CORDRY: I'm just --
15 MR. GROSSMAN: You're not questioning. You
16 already had your turn --
17 MS. CORDRY: Okay, I'm just trying to --
18 MR. GROSSMAN: -- and you already, you can talk to
19 Ms. Rosenfeld --
20 MS. CORDRY: I'm just trying to understand what he
21 was saying.
22 MR. GROSSMAN: -- but I want to make this as fair
23 as possible. Usually only one witness questions from the
24 side, okay?
25 BY MS. ROSENFELD:

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1 Q That was a .6 conversion ratio?
2 A That comes from one of your reports, one of the
3 ones you issued last Tuesday. It's called the pilot
4 program, and done by Sonoma Research. It looked into Boise,
5 Baltimore, a couple other cities. If you look at the ratios
6 for Baltimore, for the more, the highest one, which would be
7 the most rural one, it's a .6.
8 Q And in that Sonoma study, weren't the monitors
9 there located between 7 and .5 meters of the roadway?
10 A They were near a roadway, but even in that
11 context, I mean I don't have a blackboard, but you have to
12 consider the geometry of the, what you're asking me. That
13 roadway is the RAN and RAS sites --
14 Q I believe there were several roadways.
15 A I wasn't done, though. The RAN and RAS sites that
16 were used in that Baltimore, for Baltimore in that Sonoma
17 study, that stretch of roadway goes on for kilometers. So
18 when you have, flow parallel to there you have kilometers
19 for conversion. But much of the time the flow is coming
20 from the perpendicular. When you have perpendicular flow
21 towards a roadway, you don't get a lot of build-up, because
22 it's going across a little stretch of the road. It's not
23 building up over kilometers. So you're getting a lot
24 ambient background contribution. You add all that up, you'd
25 expect to get a .5, and you do.

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1 But this situation here, I can get the same number
2 if I just take my number that I'm working with, and we could
3 take the time to do that, but it's going to come out around
4 .5.
5 I mean if you go to, you go to the page you're
6 talking about, stage three, and look at the culpability
7 analysis on that page, it should be shown on page 13. You
8 see the total is 121 micrograms, 76 of which are background,
9 at about .6 ratio.
10 The road segments and the parking and ring roads,
11 those all been modeled at .5. The only thing less than that
12 is the gasoline station at 35 micrograms there is at 25
13 percent ratio. If you put all those numbers together and do
14 a weighted average, it's going to be approximately .5, just
15 like the number you just showed me in this report.
16 Q And is there background over the queue as well?
17 A There's background over the entire grid.
18 Q And where, how is that factored in here?
19 A I'm showing an example culpability table at the
20 maximum location.
21 Q And you're --
22 MR. GROSSMAN: Ms. Rosenfeld, really, you are
23 going over the same thing over and over again. He's already
24 answered that question.
25 MS. ROSENFELD: Mr. Grossman, if we could have a

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1 10-minute break, I think we'll be in a position to wrap up
2 very shortly thereafter.
3 MR. GROSSMAN: All right. No more than 10,
4 please.
5 MS. ROSENFELD: Yes, no more than 10.
6 MR. GROSSMAN: Because I do want to finish this
7 witness --
8 MS. ROSENFELD: Yes.
9 MR. GROSSMAN: -- and move on.
10 MS. ROSENFELD: I understand.
11 MR. GROSSMAN: We also have Mr. Silverman's 10
12 minutes of examination.
13 MS. ROSENFELD: I understand.
14 MR. GROSSMAN: Thank you.
15 (Whereupon, at 2:14 p.m., a brief recess was
16 taken.)
17 MR. GROSSMAN: Ms. Rosenfeld.
18 CROSS-EXAMINATION (Continued)
19 BY MS. ROSENFELD:
20 Q Mr. Sullivan, I'm going to show you the exhibit
21 that has previously been marked as Exhibit No. 230, which is
22 the illustrious site plan. I will proffer to you that there
23 is a red circle, basically a red circle drawn around the
24 queue area. And I proffer that was drawn by Ms. Adelman,
25 and I'll have her testify later to authenticate that if

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1 necessary.
2 MR. GROSSMAN: I can see a red mark around it, so
3 I don't think you have to authenticate that.
4 MS. ROSENFELD: Okay, and --
5 MR. GROSSMAN: But you can move it a little bit
6 closer to you so I can actually see it better. Thank you.
7 UNIDENTIFIED SPEAKER: I'm not going to be looking
8 at it.
9 MR. GROSSMAN: We have a, an easel, if you want
10 it.
11 UNIDENTIFIED SPEAKER: It's questionable
12 equipment.
13 MS. ROSENFELD: Mr. Grossman, perhaps we could
14 just mark this Exhibit No. 230-A.
15 MR. GROSSMAN: Okay.
16 (Hearing Exhibit No. 230-A was
17 marked for identification.)
18 BY MS. ROSENFELD:
19 Q And Mr. Sullivan, that red line reflects generally
20 40 meters outside of the queue area. In looking at that, do
21 you have any reason to think, would you agree that that
22 generally shows that 40-meter distance?
23 A I can't confirm it is drawn exactly right, but
24 that's, you know, generally reasonable. The scale is
25 correct. There'd be a location around there that's so

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1 close, it's about, this is the, this width is 40 meters.
2 The queue actually, the queue isn't the whole exception
3 area. The queue area, which is approximately in the
4 southern, southern to central portion of this. I don't have
5 the exact location here, but it's a 40-meter by 20, 40-meter
6 east-west, 27 meters north-south --
7 MR. GROSSMAN: Okay.
8 THE WITNESS: -- rectangle. So we're talking
9 about 40 meters outside of that, not the special exception.
10 I'm not sure it's exactly right --
11 MR. GROSSMAN: But it's in the general ballpark.
12 UNIDENTIFIED SPEAKER: Oh, yes.
13 THE WITNESS: -- the generally, let's say it's
14 approximately the right ballpark.
15 MS. CORDRY: Ms. Adelman says it's exactly right.
16 THE WITNESS: To the gas queue, or to the --
17 MS. CORDRY: To the gas queue.
18 THE WITNESS: Okay.
19 MS. CORDRY: She did, I watched her. She was very
20 careful.
21 THE WITNESS: The loading dock is here. It'll
22 extend somewhat further out this direction. But let's say
23 it's approximately right, 40 meters or so, approximately one
24 area source width.
25 BY MS. ROSENFELD:

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1 Q And is there a similar boundary around the loading
2 dock area, or you've just treated everything as that 40-
3 meter boundary outside of the queue?
4 A We have a, the loading dock and the queue on, that
5 I've shown on this map, it's, they're all the receptors
6 within 40 meters of the, those sources are treated as being
7 far too close to have any significant conversion. It's --
8 Q But you don't have a similar perimeter around the
9 loading dock, do you? You just have the one tailpipe box.
10 A Any receptor that's within 40 meters of the
11 loading dock source or the queue are considered part of
12 your, what is it called, tailpipe box.
13 Q So --
14 A This receptor is not just necessarily a box, but
15 it's the receptors that are in that zone.
16 Q So for purposes of looking at the conversion
17 ratios, should Ms. Adelman have drawn a similar 40-meter
18 circle around the loading dock?
19 A Basically if you look at our modeling files, and
20 look at where the receptors are located, and exclude
21 receptors that are within 40 meters of the source, that'd be
22 the best way to look at it.
23 MR. GROSSMAN: But I mean to understand, and I
24 think what Ms. Rosenfeld is getting at, you say 40 meters
25 from the source. The loading dock is one of the sources.

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1 THE WITNESS: Right.
2 MR. GROSSMAN: But we've only talked about one 40-
3 meter area here. But then there would actually be two 40-
4 meter perimeters, one around the queue and the other around
5 the loading dock. Or is that not correct, is there just
6 one?
7 THE WITNESS: There's one. They overlap. Those
8 two zones would overlap. It's the zone that would include
9 all the receptors out in the vicinity of the loading dock,
10 as well as the gas queue itself. That's all one big basic
11 zone.
12 MS. ROSENFELD: So what we need is a --
13 MR. GROSSMAN: Well, I understand they would
14 overlap, but I'm asking you would it also extend 40 meters
15 to the east of the loading dock?
16 THE WITNESS: Yes, it would.
17 MR. GROSSMAN: Okay. So there is a separate
18 circle that we could be, we should be talking about, in
19 effect.
20 THE WITNESS: Yeah, the scale of this map, this is
21 100.
22 UNIDENTIFIED SPEAKER: That's 100.
23 MS. ADELMAN: An inch to 100.
24 THE WITNESS: A hundred feet. It would go further
25 out past, to the east, the loading dock area, than you

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1 probably have drawn here.
2 MS. ROSENFELD: So it would almost be like a Venn
3 diagram if you did the entire.
4 THE WITNESS: It's sort of a rectangle, more or
5 less, but it depends how the receptors fall, but that's the
6 best way to explain that.
7 MR. GROSSMAN: Okay.
8 MS. ROSENFELD: Okay. I have no further
9 questions.
10 MR. GROSSMAN: Okay. Mr. Silverman, you're up.
11 MR. SILVERMAN: Good afternoon.
12 MR. GROSSMAN: Good afternoon.
13 CROSS-EXAMINATION (Continued)
14 BY MR. SILVERMAN:
15 Q Mr. Sullivan, I want to ask you about, as I let
16 your counsel know, I want to ask you about Exhibit 342,
17 which is the CRC report, number A-79.
18 A All right.
19 Q Are you familiar with this report?
20 A I've read that report, yes.
21 Q When did you first learn about it?
22 A I don't recall.
23 Q Did you, as I recall Mr. Goecke questioned you
24 about this report, and he thought we had put it in, but we
25 hadn't. Were you the one who recommended this report to Mr.

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1 Goecke?
2 A I believe I independently found this report. You
3 may have found it as well. I don't know. But I found this
4 report through my search.
5 Q Okay, good. Now during your testimony you talked
6 about nationwide data. Was this report an element of the
7 nationwide data you were referring to?
8 A I was referring to, for example, nationwide data.
9 If you go to air data, EPA web site, and you say I want to
10 know, I want to see all the NO2 monitoring sites in the
11 United States for 2013, and identify what's the highest
12 reading, 98th percentile, in the entire country last year.
13 It was 83 parts per billion, which is 156 micrograms per
14 cubic meter. Highest anywhere in the country.
15 So I just think it's an important perspective. We
16 talk about the 40 meters and the ratios and all these
17 things, that the odds of the NO2 at this level being
18 anywhere near 156 are remote. And that's why I'm saying 75
19 to 100 micrograms to me would be the top upper bound I'd
20 expect to see here for 98th percentile.
21 Q Well, I think we have discussed how different
22 regions of the country have designations relating to how
23 close they come to meeting or exceeding EPA standards for
24 the pollutants for which there are standards. And one of
25 those pollutants for which there are standards, for which

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1 there are designations, is NO2, is it not?
2 A That's what I was referring to. We have just made
3 that statement.
4 Q And what is the designated standard for NO2 here
5 in Montgomery County?
6 A Montgomery County has the same standard as the
7 rest of the country. We're talking about 100 parts per
8 billion, 190 micrograms per cubic meter.
9 Q No, not the standard but the designation how well
10 we're doing in meeting or not meeting the standard.
11 A It's meeting the standard.
12 Q So it's your testimony that Montgomery County is
13 at attainment?
14 A For NO2?
15 Q Yes.
16 A That's my understanding.
17 Q Well, in addition to a designation of attainment
18 or non-attainment, are there any other designations that EPA
19 sometimes makes?
20 A I think areas are threatened.
21 Q Did you ever hear about the designation of
22 attainment, unclassifiable?
23 A I've heard it.
24 Q Are you aware that for NO2 the whole country has
25 been declared in attainment?

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1 MR. GROSSMAN: Well, do you have that in evidence,
2 what you're about to assert? Or are you putting it in
3 evidence?
4 MR. SILVERMAN: I could. I just, I thought he
5 would know it.
6 MR. GROSSMAN: Well, no, the question, you're
7 assuming a fact, and I just want to make sure that the fact
8 you're assuming is either in evidence or about to be put in
9 evidence in the surrebuttal.
10 MR. SILVERMAN: It is about to be put in evidence
11 as soon as I can find the document.
12 BY MR. SILVERMAN:
13 Q Are you aware of a final rule that EPA put on
14 February 17th, 2012? It says this rule establishes air
15 quality designations for all areas of the United States for
16 2010 primary nitrogen dioxide, NEX. Have you ever seen that
17 or heard about that?
18 A I don't recall if I've seen that or not.
19 Q Now I think I gave Mr. Goecke my copy of that last
20 time -- one second. I'm actually surprised that Mr.
21 Sullivan did not --
22 MR. GROSSMAN: Well, I --
23 MR. SILVERMAN: So I need a moment, if you would.
24 MR. GROSSMAN: Sure.
25 MS. CORDRY: I have the document on the computer

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1 if you want to just read from here, or --
2 MR. GOECKE: May I give a copy to Mr. Sullivan?
3 MR. GROSSMAN: Certainly. And you have a copy to
4 be marked for the exhibits?
5 MR. SILVERMAN: Actually, I do. So Mr. Goecke, in
6 the interests of saving trees, I did not copy the whole
7 document that I gave to you. But I did copy a fact sheet
8 from the EPA web site, which is in substance the Federal
9 Register report that I referenced, and I'll give you that.
10 MR. GROSSMAN: Is the fact sheet what you want to
11 put in the record?
12 MR. SILVERMAN: I want to put the fact sheet in.
13 If there's an objection --
14 MR. GROSSMAN: Okay, as long as Mr. Goecke has an
15 opportunity to look it over and make sure that the fact
16 sheet represents the report that you're referencing.
17 MR. GOECKE: I'm sorry, this is a fact sheet that
18 you prepared, Mr. Silverman?
19 MR. SILVERMAN: No, no, EPA prepared this.
20 MR. GOECKE: Is this an excerpt from a --
21 MR. SILVERMAN: This is a summary of the February
22 2012 rule about the designation.
23 MR. GOECKE: But where does this come from?
24 MR. SILVERMAN: From the EPA's web site. And I
25 have the rule. I only have one copy, but it's many, many

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1 pages, and I thought --
2 MR. GROSSMAN: All right, well, I don't have a
3 problem with having a smaller exhibit.
4 MR. SILVERMAN: Good.
5 MR. GROSSMAN: As long as it reflects the report
6 that you're referencing.
7 MR. SILVERMAN: Yes.
8 MR. GROSSMAN: So let's mark this as Exhibit 570.
9 And this is fact sheet from EPA web site with air quality
10 designations for 2010, primary NO2, NAAQS. All right.
11 (Hearing Exhibit No. 570 was
12 marked for identification.)
13 MR. SILVERMAN: All right. And this is a
14 reflection of a 2012 February 17th Federal Register final
15 rule, which I've given to Mr. Goecke.
16 MR. GROSSMAN: All right.
17 BY MR. SILVERMAN:
18 Q So are you aware now that all areas of the country
19 have indeed been classified as in attainment? But then
20 these areas have also been designated as unclassifiable
21 attainment?
22 MR. GROSSMAN: Well, which areas? I can't tell
23 from, what, just show me the particular line you're talking
24 about that says that all areas of the country --
25 MR. SILVERMAN: It says action, February 20th,

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1 2012, based on the most recent --
2 MR. GROSSMAN: Mine doesn't say February 20. Mine
3 says January.
4 MR. SILVERMAN: January, sorry, January 20th, U.S.
5 Environmental Protection Agency determined that no area in
6 the country violated the 2010 national air quality standards
7 for nitrogen dioxide.
8 MR. GROSSMAN: Right.
9 MR. SILVERMAN: Which is what Mr. Sullivan just
10 testified to. Then it says these areas have been designated
11 as unclassifiable attainment.
12 MR. GROSSMAN: Sure.
13 BY MR. SILVERMAN:
14 Q Have you heard of unclassifiable attainment
15 before?
16 A Well, actually I don't recall hearing that term
17 before, but they just passed a new standard in 2010.
18 Q They did.
19 A And they felt they didn't have sufficient network
20 coverage to make a determination, and then they expanded the
21 network. And I just read what the maximum was in the United
22 States in 2013 they referred to, and nothing was above 156
23 micrograms.
24 Q Didn't you testify before that the expansion of
25 the network was going to take some time, and that they

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1 planned to start in 2013, but they started in 2014, and --
2 A This is talking about expanding the network in
3 cities and so forth.
4 Q Yes.
5 A We were talking about the near road. That's
6 another aspect of it. Near road's coming along on line now.
7 But I mean there are some near road monitors been around a
8 while, like I-710 I read to you, and some other ones, and
9 even those are not anywhere near the standard.
10 Q Okay, well, before we just leave this, why, do I
11 understand you to say the reason that EPA uses the word
12 unclassifiable is because there's a new monitoring system
13 going in that's not in yet, and they don't quite know what
14 the actual air quality is?
15 A You know, I don't interpret it that way. I
16 interpret it being that they are going to expand their
17 networks to get more complete coverage of other areas
18 around, in large urban areas, to increase the monitors. In
19 the highest locations they expect to get effects across
20 broad communities to make sure that the standards are being
21 achieved. It doesn't say anything about the monitors being
22 defective. It says they need more data, which they, by 2013
23 I presume they have expanded those networks. And the second
24 stage would be, as I understand it, to expand the near road
25 networks which are happening right about now.

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1 Q So has EPA rescinded its rule, making the whole
2 country unclassifiable for NO2?
3 A I don't know if they have or haven't, but what I'm
4 saying from the data I've reviewed, which I just read to you
5 for 2013, it sounds like they will be, if they haven't done
6 it yet. The standards --
7 Q They will.
8 A The standards aren't been approached, Mr.
9 Silverman.
10 Q That's a little speculative, isn't it?
11 A No, it's not.
12 Q You don't know they, you were on from, you have
13 never seen the unclassifiable designation before.
14 MR. GROSSMAN: I'm not sure, what are you asking
15 me to understand from the term unclassifiable slash
16 attainment? What does that mean?
17 MR. SILVERMAN: It means that there's a lot of
18 doubt as to what, how much nitrogen dioxide is in the
19 atmosphere.
20 MR. GROSSMAN: I don't know that, but do you have
21 something that defines the term?
22 MR. SILVERMAN: Okay. My efforts to save my
23 printing costs failed. I do have a document which Mr.
24 Goecke also has, and maybe we could jump over this and I'll
25 try to get some copies made.

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1 MR. GROSSMAN: Well, does it have a definition in
2 there of --
3 MR. SILVERMAN: It does.
4 MR. GROSSMAN: -- unclassifiable, the term
5 unclassifiable slash attainment? You could just read it to
6 me.
7 MR. SILVERMAN: Okay, that'd be good, if there's
8 no objection to that.
9 MR. GOECKE: Which document are you referring to?
10 MR. SILVERMAN: This is the Federal Register final
11 rule on nitrogen dioxide standards.
12 MR. GROSSMAN: And the date of that?
13 MR. SILVERMAN: The date is February 17th, 2012.
14 MR. GROSSMAN: Okay.
15 MR. SILVERMAN: Okay.
16 MS. HARRIS: Mr. Grossman, while he's looking for
17 that, what exhibit number did this get?
18 MR. GROSSMAN: That is, 570 is the two-page fact
19 sheet --
20 MS. HARRIS: Thank you.
21 MR. GROSSMAN: -- that purportedly described the
22 final rule, February 17, 2012, that the EPA put out
23 regarding NO2 standards.
24 MR. SILVERMAN: Yes, I think the critical line is
25 the EPA and state agencies are currently --

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1 MR. GROSSMAN: Where are you reading from, sir?
2 MR. SILVERMAN: I'm reading from the Federal
3 Register notice.
4 MR. GROSSMAN: And what page?
5 MR. SILVERMAN: Section --
6 MR. GROSSMAN: It's usually in the top left-hand
7 corner, if you're reading from the Federal Register.
8 MR. SILVERMAN: I'm reading from some, it's call
9 the, it's the Federal Register. It says Federal
10 Register.gov articles. The section number is, it's section
11 number two. The purpose of this action --
12 MR. GROSSMAN: What's the section number?
13 MR. SILVERMAN: Section number, Roman numeral two.
14 The purpose of this action.
15 MR. GROSSMAN: Okay.
16 MR. SILVERMAN: It says, the last paragraph of
17 that, it's a four paragraph -- the EPA and state agencies
18 are currently working to establish and expand the network of
19 NO2 monitors expected to be deployed in 2013. Once three
20 years of air quality data have been collected from the
21 expanded network, the EPA will be able to evaluate NO2 air
22 quality in additional locations.
23 MR. GROSSMAN: So that still doesn't answer my
24 question.
25 MR. SILVERMAN: Okay.

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1 MR. GROSSMAN: Why do I believe that the term
2 unclassifiable slash attainment means that there are
3 problems with air quality, as opposed to saying that they
4 don't have the monitoring results yet to evaluate it?
5 MR. SILVERMAN: Okay. Yes, the section Roman
6 numeral five, second paragraph, and maybe if Mr. Goecke
7 doesn't have an objection I could put this into evidence,
8 too.
9 MR. GROSSMAN: Well, what does it say? Does it
10 define that term?
11 MR. SILVERMAN: Yes. It says the rule will also
12 set new requirements for the placement of NO2 monitors. The
13 rule being referenced was the change of standard, the NO2,
14 lowering of the one-hour standard. The EPA and state
15 agencies are currently working to establish an expanded
16 network of NO2 monitors expected to be deployed in 2013.
17 NO2 concentrations near major roads are appreciably higher
18 than those measured at monitors in the current network.
19 Monitoring studies indicate that near roads, within about 50
20 meters, concentrations of NO2 can be 30 to 100 percent than
21 concentrations away from major roads.
22 The Clean Air Act requires the EPA to complete the
23 additional area designation process within three years of
24 promulgating a new or revised max. However, if the
25 Administrator has insufficient information to make these

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1 designations within that time frame, the EPA has the
2 authority to extend the designated process by up to one
3 additional year. And so --
4 MR. GROSSMAN: That doesn't answer my question
5 either. I mean just on its face, I would take the term
6 unclassifiable slash attainment, unquote, to mean that they
7 cannot classify it with regard to whether it's in
8 attainment, not that it's low or high --
9 MR. SILVERMAN: Right.
10 MR. GROSSMAN: -- they just can't classify it.
11 MR. SILVERMAN: Right.
12 MR. GROSSMAN: So I don't reach any pejorative
13 interpretation of that, which is what you were implying.
14 MR. SILVERMAN: No, no, I didn't mean to suggest
15 one thing or another. There is comment about near road
16 being higher than other places. But I'm just suggesting
17 that there's some uncertainty as to what the actual
18 concentrations in the air are. That's the only purpose --
19 MR. GROSSMAN: Okay.
20 MR. SILVERMAN: -- of putting this in.
21 MR. GROSSMAN: All right.
22 MR. SILVERMAN: Okay. So good. Now let's, let
23 me, Mr. Goecke, do you have an objection if I introduce this
24 document, which I think I gave you?
25 MR. GOECKE: Go ahead.

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1 MR. SILVERMAN: I'll produce the whole Federal
2 Register notice for our next meeting, just so it'll be
3 complete.
4 MR. GOECKE: Yeah, this is what you provided last
5 time.
6 MR. SILVERMAN: Yes.
7 MR. GOECKE: You gave us one copy. Mr. Sullivan
8 has it. I have no objection to you relying on it to ask him
9 questions about this document.
10 MR. SILVERMAN: Okay, great.
11 MR. GROSSMAN: Would you mark this, Mr. Goecke?
12 MR. GOECKE: Sure.
13 MR. GROSSMAN: So this will be Exhibit 571, and
14 although I'm running out of room on the page here --
15 (Hearing Exhibit No. 571 was
16 marked for identification.)
17 MR. SILVERMAN: I see.
18 MR. GROSSMAN: -- so I hope you don't have any
19 more. So what is this exactly? This is the Federal
20 Register.
21 MR. SILVERMAN: It's a final rule from the Federal
22 Register.
23 MR. GROSSMAN: This is the one you just were
24 reading from, or --
25 MR. SILVERMAN: Yes.

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1 MR. GROSSMAN: Okay.
2 MR. SILVERMAN: Explaining why the NO2 was
3 unclassifiable.
4 MR. GROSSMAN: This is the February 17, 2012
5 Federal Register, a final rule from EPA on, I guess it's on
6 measuring NO2, is that what you'd say?
7 MR. SILVERMAN: It's designating the attainment or
8 non-attainment. It's just designating areas of the
9 country --
10 MR. GROSSMAN: Okay.
11 MR. SILVERMAN: -- for attainment or non-
12 attainment --
13 MR. GROSSMAN: Designating --
14 MR. SILVERMAN: -- attainment, non-classifiable.
15 MR. GROSSMAN: There it is. An attainment re:
16 NO2. Okay.
17 MR. SILVERMAN: Take a quick look at that. And
18 just to, not to put too fine a point on it, but at the end
19 of the rule there's a list of all the counties in America.
20 And it states whether they're in attainment, not attainment
21 or attainment unclassifiable.
22 MR. GROSSMAN: Okay.
23 MR. SILVERMAN: And I want to just show that to
24 you in case, at the bottom left, Maryland, and then at the
25 bottom of the list it says Montgomery County.

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1 MR. GROSSMAN: So we're unclassifiable attainment.
2 MR. SILVERMAN: We are unclassifiable for sure.
3 MR. GROSSMAN: Has that changed?
4 MR. SILVERMAN: No.
5 MR. GROSSMAN: Okay.
6 MR. SILVERMAN: Unless it, I'm not aware that it's
7 changed.
8 BY MR. SILVERMAN:
9 Q Okay, let's go back to the CRC report. I think I
10 was asking whether you relied on this report, assessment of
11 near roadway NO2 concentrations, in saying that the national
12 data suggests that we don't have NO2 problems.
13 A Well, I said two things. One, I said that this
14 particular report showed a, perhaps one of the highways in
15 the United States that has the highest potential for NO2
16 problem, and that would be I-710, which services the Port of
17 Long Beach. And the reason I said that is it has 190,000
18 vehicles a day, about 30 to 32,000 of which are heavy duty
19 diesel trucks servicing the port primarily. And if they
20 didn't have an issue there, I'd be surprised if they have an
21 addition, a problem at other highways. And as I said, this
22 report does show concentrations that are well below the
23 standard.
24 Q Okay, good. So does this report, was this, how
25 many cities did this report look at?

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1 A I looked at three or four, as I recall. I could
2 look at it and give you a better answer.
3 Q Just take a look at that and make sure.
4 A They were clearly examples. It was Las Vegas, Los
5 Angeles, actually just those two.
6 Q Just those two. And how many roadways in those
7 cities did it look at?
8 A I didn't, how many roadways are in Los Angeles?
9 Q No, no, how many roadways did the report examine?
10 A When you say roadways, you mean how many sites did
11 it examine?
12 Q How many sites, yes, how many sites?
13 A It had, as I recall, two sites at each location.
14 Q It had two sites at each location?
15 A Correct. I know there were two sites in I-710.
16 We can look at the other one if you'd like. There's one
17 designated as the west site, which is 15 meters from the
18 highway.
19 Q Right.
20 A And the east site is 80 meters from the highway,
21 both of which are downwind of the airflow.
22 Q Right.
23 A If you go to Las Vegas. They appear to have the
24 Fife (phonetic sp.) Elementary School and a background
25 station. I see it.

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1 Q And the background station is some distance away,
2 right?
3 A Correct.
4 Q So we're talking about three monitors near the
5 road, is that right?
6 A We're talking about three near roadway monitors.
7 Q Okay. So was this a peer-reviewed report?
8 A It's unclear to me if it's peer-reviewed. It was
9 produced by the Coordinating Research Council. Whether or
10 not they peer-reviewed it or not, I don't know.
11 Q And what is the Coordinating Research Council?
12 A I don't know their history. They're a non-profit
13 corporation supported by the petroleum and automotive
14 industries.
15 Q Now with regard to Interstate 710, near the Ports
16 of Long Beach and Los Angeles, are you aware of any activity
17 in the last five years with the Ports of Long Beach and Los
18 Angeles, to curb emissions from vehicles going back and
19 forth to the ports?
20 A I've read a little bit about that roadway. I
21 don't remember any specific special measures that they're
22 taking. But the data that are in here would be within the
23 last five years. It was 2010 and 2011 is what they're
24 reporting.
25 Q And you're not aware of the fact that those ports

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1 have taken extraordinary measures to curb air pollution in
2 their area.
3 A Well, I don't, I haven't tracked different steps
4 they've taken. But you're saying, suggesting it could have
5 been higher earlier? I'm not sure what you mean.
6 Q Yeah, just, now you said that the --
7 MR. GOECKE: I'd like to object, to the extent I
8 don't know if that's in the record or if he's going to, if
9 he's proffering it, he's going to put it in the record.
10 MR. GROSSMAN: Are you proffering that there's
11 going to be some evidence in the record that they've taken
12 extraordinary means to reduce pollution in that area?
13 MR. SILVERMAN: That seems real peripheral. I
14 thought he would know that. I know it is true, and I'm sure
15 it is true. And I could --
16 MR. GROSSMAN: That's not --
17 MR. SILVERMAN: Right.
18 MR. GROSSMAN: -- quite the same --
19 MR. SILVERMAN: Right.
20 MR. GROSSMAN: -- you realize.
21 MR. SILVERMAN: I understand. Understood.
22 MR. GROSSMAN: And so usually, I mean you're
23 allowed to ask leading questions --
24 MR. SILVERMAN: Right.
25 MR. GROSSMAN: -- and should ask leading questions

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1 on cross-examination --
2 MR. SILVERMAN: Yeah.
3 MR. GROSSMAN: -- but you can't assume a fact
4 that's not either in evidence or you are, or is not capable
5 of being proved.
6 MR. SILVERMAN: Right, it's certainly capable of
7 being proved, and we'll try to put, I was just surprised
8 that Mr. Sullivan was not aware of those activities.
9 They're huge, but --
10 THE WITNESS: I'm not aware of --
11 MR. SILVERMAN: Right.
12 MR. GROSSMAN: It may not exist, so he may not be
13 aware of it.
14 MR. SILVERMAN: That could be, too. That could
15 be, too. All right. I'll, I will, let me think about
16 whether to build the record some more, but there's plenty to
17 go.
18 BY MR. SILVERMAN:
19 Q Okay, so now one of the things discussed in this
20 report is the debate within EPA as to whether to make the
21 NO2 standard 80 or 100? Do you recall that?
22 A I do.
23 Q And with regard to the I-710, Port of Long Beach,
24 if, what does the report say would happen there if the
25 standard were lowered to 80?

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1 A The, certainly that monitor 15 meters from I-710
2 would be over 80, as I recall.
3 Q It would be over 80. It would exceed 80.
4 A I would think it would.
5 Q It would exceed the standard, if the standard went
6 down to 80. Okay.
7 MR. GROSSMAN: Eighty what?
8 THE WITNESS: PPB. I'm sorry.
9 MR. GROSSMAN: Okay. Parts per billion.
10 MR. SILVERMAN: Parts per billion, yes.
11 BY MR. SILVERMAN:
12 Q So and the authors expressed some concern about
13 that, right? Where they alert EPA to the problem here.
14 A I don't remember it saying they alerted EPA to a
15 problem.
16 MR. GROSSMAN: Do we have a leaky pitcher?
17 UNIDENTIFIED SPEAKER: Sorry about that.
18 BY MR. SILVERMAN:
19 Q Well, let me just read you a paragraph from the
20 ES-2, the last paragraph. This study demonstrates that
21 while both sites were below the one-hour NO2 max, a
22 reduction of the max to 80 parts per billion would likely
23 cause the Los Angeles location to be above the standard.
24 MR. GROSSMAN: I missed the last part of that
25 sentence.

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1 BY MR. SILVERMAN:
2 Q A reduction of the max to 80 parts per billion
3 would likely cause the Los Angeles location to be above the
4 standard. Now I want to go just briefly to your, I wish I
5 had Ms. Rosenfeld's facility in organizing papers. I want
6 to go to your --
7 MR. GROSSMAN: You didn't work all Mother's Day.
8 MR. SILVERMAN: Right, yes. I did not.
9 BY MR. SILVERMAN:
10 Q All right, so yes, I want to go to your, in your
11 rebuttal report, figure two. And the heading on the, and
12 this is on page 12. And you show the heading on the top,
13 the last phrase, it says, there's a bracket. It says max
14 equals 156 micrograms per cubic meter at certain points, is
15 that right?
16 A It shows that below at the loading dock area.
17 That's correct.
18 Q Right. So how do we convert that again to parts
19 per billion? I've forgotten how to do that.
20 A You want to divide by 1.88.
21 Q So if we divide 188 by, into 156, what do we get?
22 A You want to do it?
23 MS. CORDRY: Anybody want me to divide?
24 MR. GROSSMAN: One-fifty-six by 1.88.
25 MR. SILVERMAN: One-fifty-six divided by 1.88.

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1 MS. CORDRY: That would be 82.97 percent.
2 BY MR. SILVERMAN:
3 Q Well, actually at those two points the air quality
4 in the, at the, in the area we're talking about, is worse
5 than I-710.
6 A It'd be the highest in the United States, if that
7 was correct.
8 Q If that was correct.
9 A I've already pointed out that the modeling here is
10 extremely conservative, and the range would be 75 to 100. I
11 feel very comfortable with that, Mr. Silverman. One-fifty-
12 six occurred, I could find out where, but that's the highest
13 in the U.S. last year.
14 Q The highest monitor. But this is not a monitored
15 concentration. Yours is a model concentration, right?
16 A Mine is a very conservative modeled concentration.
17 Q Right.
18 A And it's surely not, wouldn't be measured at that
19 spot.
20 Q Well, we have a, no, the CRC report at these two
21 locations with the three monitors, was this a modeling
22 report or was it a monitor, a monitored report?
23 A It was a monitoring study.
24 Q A monitoring study. Is a monitoring study, are
25 they more accurate than modeling studies?

1 A Not necessarily. But it's directly measured, Mr.
2 Silverman. It's a directly measured value over a period of
3 two years, 15 meters from a very busy and congested road. I
4 mean I-710 isn't just busy, it's congested. You read that,
5 too. I mean it has a lot of issues.

6 Q Well, also there's quite a large difference
7 between the Las Vegas site and the Los Angeles site,
8 although the traffic seems to be comparable. Would you
9 agree with that?

10 A Very different. Very different situation.

11 Q What are some of the differences?

12 A Well, one big difference is they have like one and
13 a half percent diesel trucks in Las Vegas, and they have 15
14 to 18 percent diesel trucks servicing the Port of Long
15 Beach. Diesel trucks, especially not clean diesels, you
16 know, are putting out a lot of NO2.

17 Q Well, is it your impression that not clean diesels
18 are allowed at the Port of Long Beach?

19 A I don't know for a fact. I assume there's a
20 mixture servicing the port. But I don't know for a fact.

21 Q Well, I think I will proffer some evidence here.
22 I can't do it today, but I'll put in evidence that they are
23 verboten, they're forbidden --

24 A Well, except --

25 Q -- at the Port of Los Angeles.

1 A -- I'll accept that, Mr. Silverman. The issue is
2 you have 30,000 heavy duty diesel trucks servicing that road
3 every day. Whether it be clean diesel or whether it be,
4 they be regular diesel, the issue is that is the primary
5 difference between Los Angeles monitoring at I-710, and Las
6 Vegas near Frye (phonetic sp.) school. They have many,
7 their total counts are similar, but the actual amount of
8 heavy diesels is very different.

9 Q So what you see as the difference. How about the
10 presence of ozone, background ozone? You think that makes a
11 difference?

12 A Well, it certainly can.

13 Q And what do the study's authors say?

14 MR. GROSSMAN: Mr. Silverman, let me stop you a
15 second.

16 MR. SILVERMAN: Yes.

17 MR. GROSSMAN: Where is this really going to get
18 us? In terms of the location, the subject site, as opposed
19 to California.

20 MR. SILVERMAN: Well, that's exactly the point,
21 Mr. Grossman, that I think one of the things Costco relies
22 on, and I believe they rely on it in many ways, not just for
23 evidence, but even perhaps psychologically. They rely on it
24 that some of these very busy highways have, are you know, in
25 the 80s or the 60s in terms of parts per billion, and

1 therefore we couldn't possibly be in exceedance of that.

2 MR. GROSSMAN: Right.

3 MR. SILVERMAN: And what I'm suggesting is that
4 every situation is sui generis. If we had a 50-city study
5 or a three-year study or a five-year study over a whole
6 area, you can then use that kind of information, well, in
7 Los Angeles, the Port of Los Angeles is not even exceeding
8 100 at this point. But to just pick a site somewhere, you
9 know, find a report which is a very interesting report,
10 certainly worth reading, and say oh, this tells us that we
11 don't have anything to worry about in Wheaton I think is
12 totally, it's --

13 MR. GROSSMAN: Right, and I'm not going to base
14 any findings on what California measurements are. I'm going
15 to base it on the evidence that pertains to this site, the
16 subject site, so --

17 MR. SILVERMAN: is that your --

18 MR. GROSSMAN: -- I'm not sure where this gets
19 you. I understand the points you're making.

20 MR. SILVERMAN: Yeah.

21 MR. GROSSMAN: That to the extent that the
22 applicant draws comfort from the idea that even very busy
23 sites have only a certain level, that's not to say that this
24 site couldn't have more if your evidence shows that it has
25 more. That's the question, what the evidence shows.

1 BY MR. SILVERMAN:

2 Q Yes, and do you agree with, do you rely on the, I
3 mean in your report you reference the California I-710.
4 You've referenced it several times here, so is this
5 important in you reaching your conclusions, or is it
6 important in validating your conclusions?

7 A Mr. Silverman, I think what's important, we're
8 talking about a lot of complicated complex issues here.
9 Ozone conversion of NO to NO2, various modeling issues. I
10 was trying to provide perspective for the record, cut to the
11 chase. Not just Los Angeles I-710, but the entire country,
12 as I testified today.

13 If there's 822 reporting monitors in the U.S, and
14 the highest one is 156, we're questioning will the loading
15 dock at Costco produce higher values than that. I think
16 it's an important perspective to cut through all the
17 modeling issues and say what's the reality check. And the
18 reality check is you're not going to get high values of NO2
19 at this ring road. We've modeled it. The measurements
20 around the country show for much busier places than this,
21 affected by power plants, highways, what have you, you're
22 not seeing that kind of conversion. You're not seeing those
23 kind of levels. That's all I'm trying to show.

24 Q Well, that's, I take it you're not going to --

25 MR. GROSSMAN: I understand.

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1 MR. SILVERMAN: Right.
2 MR. GROSSMAN: I think that that's, I understand
3 his basis for saying that. He's saying if you look all over
4 the country, the highest you'll see is 156 parts, not parts
5 per billion but micrograms per cubic meter of NO2. And
6 hourly. And therefore he says it's very unlikely that this
7 site would have that.
8 But if the evidence shows that this site has more,
9 that's what I would go on. I understand his rationale. I'm
10 not saying it doesn't exist. And I'm not, I didn't stop you
11 from trying to undermine it. But the real direct evidence
12 is what's going to control here.
13 MR. SILVERMAN: Well, I hope so. I mean really
14 EPA is, why doesn't EPA change the rule about unclassifiable
15 if this is all the evidence they need to reach a conclusion?
16 MR. GROSSMAN: Well, I don't think, he can't
17 answer why the EPA does or doesn't do something.
18 THE WITNESS: Well, I did find the --
19 MR. GROSSMAN: Well, no, you don't have to,
20 there's no question pending.
21 THE WITNESS: Sorry.
22 MR. GROSSMAN: I sustained my own objection.
23 BY MR. SILVERMAN:
24 Q At the Las Vegas site there was a wall, wasn't
25 there?

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1 A There was.
2 Q And isn't it a fact that that wall caused the
3 authors of the study to scratch their heads and they were
4 unclear as to how the wall would affect the accuracy of
5 their readings?
6 A I wouldn't have put the monitor near a wall, on a
7 wall myself, but yeah, I think that was a factor to some
8 extent, yes.
9 Q So walls, what are some of the things that walls
10 could do? Could they cause more turbulence and more mixing
11 between NOX and ozone? Could they have that effect?
12 A They could do that. They could block. I think
13 that a better site, and why I emphasize it, was I-710, which
14 is an open area. It's right next to the road, nothing
15 blocking it. The wall, yeah, I'd agree the wall will create
16 more dispersion. It could create some zones that it will
17 flow differently around the monitor.
18 Q Yes.
19 A Under certain wind directions that could happen.
20 Q Yes. Now we've had a lot of sort of tangential
21 conversations about walls, but did you, in your latest
22 rebuttal report did you model the wall?
23 A We can't model the wall. Nobody can really model
24 that wall with AERMOD. However, the mall, the wall is
25 simply going to add extra dilution, extra mixing. And as I

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1 discussed before, we had these discussions in the past about
2 any strange diurnal flows. Well, rather than flowing down
3 the hillside, which we show won't happen anyway because of
4 the fact that it's so hot on the mall, the wall would act as
5 a blocking mechanism at night, much more at night than the
6 daytime. Daytime it's going to go over the wall much more.
7 At night it could flow around the wall.
8 MR. GROSSMAN: That testimony was probably a year
9 ago now.
10 THE WITNESS: It was, at least.
11 BY MR. SILVERMAN:
12 Q Yeah. Okay. All right. But so you have
13 confidence about the wall, even though the authors of this
14 study we're discussing did not have confidence as to --
15 A They were talking about --
16 Q -- what its impact would be.
17 A -- the representativeness of a monitor. I'm
18 talking about practical modeling. If you looked at a,
19 people do not model walls in doing dispersion modeling in
20 this context.
21 Q On page 4-1, the first, I'm sorry, yeah, the third
22 paragraph --
23 A Of which document?
24 Q Of the Exhibit 342.
25 A Okay.

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1 Q So it says, they have, they say a consideration to
2 make here is that as gasoline and diesel engines become
3 increasingly advanced, NOX emissions are decreasing, so
4 future decreases in max may come after a significant
5 reduction of fleet emissions of NO2 have already been
6 achieved. A caveat to this is that recent studies have
7 found that although NOX from newer diesel vehicles is
8 decreasing, the relative fraction of direct NO2 emissions
9 from these newer vehicles can be considerably higher than
10 for traditional fuels and engine configurations. Given
11 these considerations, care should be exercised when making
12 future predictions of near road NO2 concentrations for
13 individual road segments using current fleet models. Did
14 you take such care and consideration of the, some of the
15 vagaries of so-called fleet models?
16 A Yeah, there's a reference I reviewed in my set
17 about that, where they noticed that the ratio of NO2 to NOX
18 went up, and the conclusion was there was more diesel
19 vehicles, light duty diesel vehicles added to the fleet mix.
20 But for Costco, they don't service diesels, so it really
21 wasn't an issue.
22 Q But there are diesels in the area, are there not?
23 A Right, but we're talking really about a gas
24 station that sells gasoline only. So the gas queue is not
25 an issue, and the loading dock is primarily clean diesel.

1 Q And the, but exactly, the loading dock primarily
2 clean diesel. There's a suggestion here, if I understood
3 it, maybe you understood it differently, is that the clean
4 diesel would, although it has many benefits, may have a
5 drawback, which is that more of the NOX was converted to
6 NO2. Do you agree with that, or did you consider that?

7 A No, that's not, I think it's, that's not really
8 what I think it's saying. It's saying that is you change
9 your fleet mix and have more diesel vehicles, and there's
10 someplace in Europe that that's happening more than here,
11 that as you add more diesel vehicles to the mix, especially
12 passenger vehicles, that your ratios can change. I recall
13 reading that.

14 Q Well, this, they tested a repeat upward or
15 deciding words, the caveat is that recent studies have found
16 that although NOX from newer diesel vehicles is decreasing,
17 the relative fraction of direct NO2 emissions from these
18 newer vehicles can be considerably higher than for
19 traditional fuels and engine configurations.

20 A So the idea is that they produce much less
21 particulate matter, but maybe a higher fraction of NO2 from
22 NOX.

23 Q Yes. So you agree with that, disagree with it?
24 Are you aware of it?

25 A I was aware of that. The ratios can change. The

1 literature right now is showing ratios that are quite a bit
2 less than the 25 percent that I used here. Most of the
3 ratios are in the range of five to 10 percent from tunnel
4 studies and near roadway studies. If you can isolate away
5 from the ambient, the background component, which is
6 difficult to do if it's in a tunnel.

7 Q Page 3-9, the last paragraph, do you agree with
8 this? Models of NOX emissions from vehicles reach a minimum
9 at approximately 40 miles per hour, and increase as the
10 vehicle speeds either decreases or increases, forming a U
11 shape. Do you agree with that?

12 A I don't have any reason to disagree with it. I
13 did not realize that above 40 miles an hour you get a drop,
14 but we're not modeling anything above 30 miles an hour in
15 this particular study.

16 Q And again, not to beat a dead horse here, the
17 highway that they were measuring, monitoring in Las Vegas,
18 they found, this is unbelievable, I'm going to move there,
19 during the study period the speeds at Las Vegas were never
20 less than 45 miles per hour. So that Las Vegas might be
21 very relevant to a queued line, would it?

22 A Well, we could flip that, though. I mean you've
23 been to L.A., right? L.A., all their, pretty much all their
24 highways are jammed a lot of the time, especially I-710. So
25 the numbers they were measuring would have had a fair amount

1 of congestion, probably much less than 10 miles an hour.

2 Q But we're just, so we're going to ignore the Las
3 Vegas section. That's really not relevant. Which has the
4 lower measurements.

5 A I don't agree it's not relevant at all. What I'm
6 saying is I agree it's only a few locations. I think that
7 I-710 is an important one. But we can look across the whole
8 country, or we can look across the entire state of
9 California. And you know, California reported 100, 103
10 stations reported there for 2013. And the highest one there
11 was 145 micrograms across the entire state. So I think that
12 you know, for broader context, again the odds of a violation
13 occurring at this ring road are extremely remote.

14 Q So but all the measurements you're citing, or I
15 won't say all, because it's maybe not all, but the majority
16 of the references you're citing, the sites you're citing,
17 were developed before the standard was changed and before
18 the EPA started changing the rules about where to put
19 monitors, right?

20 A Well, they are going to put them near major
21 highways, but there's no major highway at the ring, where
22 the ring road is.

23 Q So you have a hypothesis that the air pollution,
24 the NO2 and other air pollution from the, let's say the
25 beltway, are always going to be worse than from a congested

1 parking lot or gas station. That's your hypothesis.

2 A I made a statement relative to the Costco Wheaton
3 facility, that it'd be hard pressed for an analyst to look
4 at I-710 or the rest of the country, and draw the conclusion
5 that for some reason the ring road and this gas station is
6 going to be the greatest source in the United States by
7 about 40 micrograms per cubic meter to hit the standard.

8 Q Well, it will exceed what questionable monitors
9 have shown in other parts of the United States. That's not
10 necessarily saying it's the worst source in the United
11 States. Maybe the worst source in the United States has not
12 been measured. Is that possible?

13 A Well, Mr. Silverman, there's in 2013 there's 822
14 sites the EPA is reporting as of today.

15 Q Right.

16 A And the highest is 156. And they may have some
17 clunkers in there, but not 822.

18 Q Well, the majority. I mean why would EPA be
19 unable to classify the air quality if they have confidence
20 in those 822 monitors?

21 A I'm not going to read it, but the document you
22 have, it tells you why. It's shown, I'll just cite the page
23 number, 12056 --

24 Q Right.

25 A -- explains why it's classified the way it is.

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1 MR. GROSSMAN: What's the exhibit number on that?
2 THE WITNESS: I don't know. Air quality
3 designations for the 2010 primary NO2 standard. The rule,
4 it's the February 17th, 2012 Federal Register.
5 MR. GROSSMAN: Oh, the one he just referenced?
6 THE WITNESS: Right.
7 MR. GROSSMAN: Is that the same?
8 MR. SILVERMAN: Yeah, February 17th.
9 MR. GROSSMAN: Well, that's Exhibit 571.
10 MR. SILVERMAN: Yeah.
11 MR. GROSSMAN: And what were you reading from
12 there?
13 THE WITNESS: You want me to read it?
14 MR. GROSSMAN: Yeah, but I wanted to get what
15 section it was.
16 THE WITNESS: Oh, it's in section number six. The
17 end of section six --
18 MR. GROSSMAN: All right.
19 THE WITNESS: -- the last full sentence.
20 MR. GROSSMAN: Hold on. That's not what the, the
21 last sentence in what I have for section six says --
22 THE WITNESS: Do you have a page 12056? Either
23 yours aren't numbered the same --
24 MR. GROSSMAN: No, what's --
25 THE WITNESS: The last section, yeah, it's the

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1 last part of section six. Should I read it, the sentence?
2 MR. GROSSMAN: Well, I just want to make sure, I
3 want to find the sentence in here. So if it's the last
4 sentence in section six, it doesn't say what you're saying.
5 THE WITNESS: Okay. It talks about designations
6 and boundaries. Section six, what guidance did the EPA
7 issue and how did the EPA apply the statutory requirements,
8 applicable guidance for determining area, designations and
9 boundaries.
10 MR. GROSSMAN: Right. I have that heading.
11 THE WITNESS: And then the last sentence of it
12 gets into the issue about unclassifiable attainment.
13 MR. GROSSMAN: Yes, the last, yes, okay, so go
14 ahead and read that.
15 THE WITNESS: The EPA uses this designation
16 practice, which is referring to unclassifiable slash
17 attainment, for initial designations to mean that available
18 information does not indicate that the air quality in these
19 areas exceeds the 2010 NO2 national ambient air quality
20 standards.
21 MR. GROSSMAN: No, I was actually, yeah, you read
22 that. I understand that. But I, you had mentioned the
23 site, that there were, there were 882 sites in the U.S., and
24 highest is 156.
25 THE WITNESS: That comes from the EPA AIRDATA, all

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1 one word, A-I-R-D-A-T-A, data base.
2 MR. GROSSMAN: And is that in the record? No?
3 MS. CORDRY: No, that's something that's on-line
4 and you can query it for, which we've both been querying a
5 different kind. Some of those print-outs that I did, and
6 that Mr. Sullivan has put in, come from querying that on-
7 line data base.
8 MR. GROSSMAN: Well, I guess we should have that,
9 since you've referenced it a number of times.
10 MR. GOECKE: We can provide that.
11 THE WITNESS: We can provide it.
12 MR. GROSSMAN: All right.
13 UNIDENTIFIED SPEAKER: Are we allowed to have on-
14 line data bases?
15 MR. GROSSMAN: Yes, I've allowed on-line, that are
16 verifiable, and exchanged, and the information is exchanged.
17 I've questioned whether you can put in on-line things that
18 are subject to being changed, like somebody's writing in
19 their opinion on something and that kind of thing. So it
20 depends on its verifiability and so on.
21 BY MR. SILVERMAN:
22 Q Let me ask you a question about the urban and
23 rural. Suppose Mr. Agliata and Westfield suddenly see the
24 light and decide to plant trees all around the parking lot.
25 Would that change the calculation of urban and rural?

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1 A It would not.
2 Q And the area that was the original area for the
3 first gas station proposal, that's grassy now. If that was,
4 if that remained grassy, would that change the urban/rural?
5 A For the whole model, no. But I was mentioning was
6 that was going to be not grassy in the future.
7 MR. GROSSMAN: I think that's the evidence here,
8 is that that's not going to be grassy, that's going to be --
9 MR. SILVERMAN: But I mean are we frozen here in
10 time as to how much greenery gets into the mall?
11 MR. GROSSMAN: No, I mean we evaluate the site as
12 it is proposed to be, and then my understanding that the
13 site and that surrounding parking lot would be a parking lot
14 once, you know, if this is approved.
15 BY MR. SILVERMAN:
16 Q And there were some, also some stormwater elements
17 to handle the stormwater from the gas station, which are
18 green. And would these affect the urban/rural?
19 A No, Mr. Silverman, the parking lot is a hot source
20 relative to the rest of the environment. We measured that
21 on several nights. I've put that on the record. It's
22 urban. It has heat. It's going to not get the stable
23 nighttime conditions that a rural area would get. I think
24 we have agreement that it's an urban source, between the two
25 meteorologists involved. So you could add a storm drain

1 here or a tree there. It's not going to change the fact
2 it's a big mall with a parking lot and a ring road and a gas
3 station queue. That's what it is. It's an urban kind of a
4 warm surface that's going to produce mixing, unlike a rural
5 designation would.

6 Q All right, well, don't people plant trees and
7 vegetation to mitigate urban hot spots? Isn't that
8 something that people do sometimes?

9 A Well, sometimes they have a park in the middle of
10 a city, which will create a cool spot. And so that, it
11 will, at night it will flow from the cool spot to the rest
12 of the area and cool it down. But here it's the opposite.
13 We have a hot spot and the air's going to flow into the
14 mall, and when it does it's going to cross a hot, well-
15 mixing, urban-type dispersion condition.

16 Q Okay. So you're, no matter how much Westfield
17 decides to green up this mall, it's not going to change your
18 calculation at all in the future.

19 A Well, that's an extreme. If they were to tear out
20 the parking lot and put in trees, make a little forest in
21 there, that'd be a different situation. But putting a tree
22 here and there is not going to change the overall dynamics.

23 Q You said, you described, today you described your
24 analysis in your rebuttal report as extremely conservative,
25 so what about your prior reports? Were they, would you use

1 the same adverb, that they are extremely conservative? Or
2 would use another adverb?

3 A I'd say they were very conservative.

4 Q They're very conservative.

5 A Extreme is, I don't know where you draw the line
6 between very and extreme, but I have no doubt in my mind
7 that the modeling of each of these reports is overstating
8 the actual impact.

9 Q I'm sure you have no doubt in your mind. But I'm
10 trying to get the words. We started out the year 2012
11 reports as being, well, they were extremely conservative
12 too, right?

13 A I don't recall the --

14 MR. GROSSMAN: Well, what difference does it make
15 how we characterize them? He's called them conservative.
16 He says this current one is conservative. Whether you call
17 that first one ultra-conservative or whatever, certain
18 products are described only as large, enormous and gigantic
19 enormous, you know?

20 MR. SILVERMAN: Well, I mean I guess the point is
21 that each of your iterations is a little bit less
22 conservative than the one before, so I don't know what the
23 first one would be called. I guess it would be called
24 ridiculously conservative.

25 MS. ADELMAN: Tea Party conservative.

1 MR. GROSSMAN: I'll make the jokes.

2 MR. SILVERMAN: Okay. Thank you.

3 BY MR. SILVERMAN:

4 Q Okay, the, oh yeah, background. We were talking
5 about margins of error in your modeling. You distinguish
6 between taking a 50 percent margin of error for the
7 modeling, and you said well, the background is different
8 because that's a fixed number. And so we don't take the 50
9 percent for the margin of error, if that's the right term,
10 for the background. We just do it for the modeling. I
11 think you and Mr. Grossman had that conversation.

12 A We did. I mean actually when I said it was plus
13 or minus 50 percent, I was close. But the EPA actually says
14 plus or minus 10 to 40 percent in the appendix W.

15 Q But that's for the modeling. Now is there any
16 margin of error in the background?

17 A I think the margin of error refers to the modeling
18 analysis, which is of the part you're modeling. First of
19 all EPA, I have quotes from appendix W, that clarifies this
20 issue. EPA recommends that you do not modify the modeling
21 beyond a bright line. And they make it clear that, and I
22 could put it into evidence if you'd like, that they don't
23 recommend doing that. They provide it for perspective for
24 decision-makers, but they don't recommend scaling things up
25 to make decisions.

1 MR. GROSSMAN: Right, but I mean that may be one
2 of those differences here that, not mentioned by the
3 opposition, but where there's an advantage to the process
4 here in that we can consider those potential errors or they
5 potential for uncertainty, whereas apparently the EPA does
6 not. So all these methods have their different benefits or
7 deficits.

8 THE WITNESS: Mm-hmm.

9 BY MR. SILVERMAN:

10 Q So the question I have is how confident are you
11 that the measured background at the particular site in
12 Arlington or wherever it is, you pick it, actually reflects
13 what you breathe when you walk down the Wheaton mall?

14 A Well, if you ask me does it hit it every day at
15 every location, I'd say no, it can't do that. But over the
16 course of a year or multiple years, is it providing
17 representative data on the distribution? I'll say yes, and
18 probably conservatively so.

19 MR. GROSSMAN: But I think that Mr. Silverman's
20 question is a good one. That is, when we discussed it the
21 other day, you corrected my assumption that the 50 percent
22 would apply to the whole amount, and said no, it would only,
23 the 50 percent error potential only applied to modeled
24 amount and not to the background. Is there an uncertainty
25 factor for the monitored locations that you can apply in the

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1 same ways you could apply a 50 percent plus or minus for the
2 modeled?

3 THE WITNESS: Are you referring to the monitor,
4 plus or minus a tolerance range --

5 MR. GROSSMAN: Yes.

6 THE WITNESS: -- for accuracy? They, each one
7 does have its own reported value, plus or minus a certain
8 tolerance value. It's usually contained in the existing
9 protocol of what the target data quality objectives are.
10 And they'll define it, and these instruments do have defined
11 uncertainty ranges.

12 MR. GROSSMAN: But I'm actually talking about once
13 you have the statistical information, that is, you've got
14 the read-outs over a longer period of time, is there an
15 uncertainty level to that average read-out level that you
16 are relying on in your, to plug into your model?

17 THE WITNESS: Are you referring to how it was
18 represented at a specific location?

19 MR. GROSSMAN: Right. I mean you have a, you get
20 some results from the, let's say the two monitors in
21 Beltsville and you average them together, and they cover a
22 certain period of time. And let's say the level is 50. Is
23 there a plus or minus two or five or 10 to that 50, that you
24 could attach in evaluating the potential uncertainty to the
25 monitored amount?

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1 THE WITNESS: It's easier to do it for the actual
2 instrument accuracy --

3 MR. GROSSMAN: Right.

4 THE WITNESS: -- which is why I was, tended to try
5 to be conservative. So for example for PM2.5, you know,
6 we'd hit the higher of Rockville versus Beltsville. Does
7 that, could you argue could it be possibly higher? Well, I
8 suppose you could argue that, but the issue is we are, we
9 continue to show a downward trend. The question is by the
10 time they actually build this gas station will the trend be,
11 will the numbers be lower, and the odds are they will be.
12 And so in that context the values we use now are probably
13 going to overstate to some degree, but I don't usually see
14 people with error values on those. I've never actually ever
15 seen that.

16 MR. GROSSMAN: Okay. But see my, that doesn't
17 exactly answer my question. I'm not saying what you're
18 saying is illogical. I'm just saying in trying to analyze
19 this, and analyze what is the margin for error in your
20 predictions, you supplied me with a figure of 50 percent for
21 the modeled amount, but you didn't supply me with a figure
22 in terms of margin of error for the monitored amount. And
23 I'm asking you is there some accepted figure when you have
24 two years or three years of monitor results for a margin of
25 error for that.

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1 THE WITNESS: Like I said, I've never seen that
2 shown or used. And that's certainly a logical question to
3 ask, but I've never seen that quantified.

4 MR. GROSSMAN: Okay. Do you have an expert
5 opinion on that?

6 THE WITNESS: I think that, you know, what we're
7 doing here is we're modeling all the major roadways that are
8 going to have a significance effect on this location. So in
9 that sense we're covering the nearby, you know, most
10 significance sources anyway.

11 If you take a location like the Arlington monitor,
12 which you know, is in a pretty congested area too, and you
13 would add that, and there's roads going near that too that
14 we, that have not been, that are contributing to that --

15 MR. GROSSMAN: Right.

16 THE WITNESS: -- location. I think in that kind
17 of context it is conservative. If we didn't model the
18 nearby roadways, it may be a different story, but we did.
19 And so my expectation is that factor, coupled with the fact
20 the trend is dropping, for the gas stations built in 2014
21 and '15 that trend should likely be less than it is now,
22 which would give you some buffer. How much and how to
23 quantify that, you know, the trend line could be used to
24 give some indication of a drop in that sense. But you're
25 asking about the other way, too.

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1 MR. GROSSMAN: The other end, too, yes.

2 THE WITNESS: The other way, too, is a little bit
3 difficult to quantify.

4 MR. GROSSMAN: All right.

5 BY MR. SILVERMAN:

6 Q And you don't, do you agree with the CRC report
7 that's saying that near roadway measurements could be 30 to
8 100 percent higher than on the more distant monitors? Would
9 you agree with that?

10 A I would say based upon looking at the data they
11 collected there, versus the data I've seen for other parts
12 of the country and more typical sites, it seems right. Near
13 a highly traveled busy roadway, concentrations should be
14 substantially higher than places removed.

15 Q And you do acknowledge that the monitoring network
16 that gives us the backgrounds is undergoing a thoroughgoing
17 change.

18 A Free zone NO2?

19 Q Yes.

20 A Well, they said in 2013, and we've already talked
21 about the near roadway, again my position on that is that
22 there are no highways here, that that's not the issue. So I
23 don't see that impacting this site in any way.

24 Q So your hypothesis is that, again I think I'd
25 asked you this before, just I'm not sure I got an answer, is

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1 that a congested parking lot will never be as bad as a busy
2 highway.
3 A I don't like to use the word never.
4 Q Uh-huh.
5 A But if you're asking like 98th percentile kind of
6 a distributional sense, I can't imagine a mall parking lot
7 having the same degree of congestion as I-95, I-395 at rush
8 hour when you have an accident, which happens unfortunately
9 too often, that blocks traffic for long periods of time.
10 It's in the data sets. That's not going to, I can't
11 envision that happening in a mall.
12 Q You can't envision queues and lines and idling
13 cars in the mall?
14 A Well, I didn't say I couldn't envision idling cars
15 in the mall, but I can't, I have never been to a mall when
16 there's long lines of cars like I-395 would have, you know,
17 stalled there for long periods of time. I mean I haven't
18 seen that at a mall.
19 Q Okay. So in your report, you have a conclusion in
20 your latest report that --
21 MR. GROSSMAN: The rebuttal report.
22 MR. SILVERMAN: The rebuttal report.
23 MR. GROSSMAN: Okay.
24 BY MR. SILVERMAN:
25 Q Yes, here it is, on page 10, it looks like. Oh,

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1 yeah, it's on page 20. Conclusion, it is Mr. Sullivan's
2 expert opinion, with a reasonable degree of scientific
3 certainty, that the proposed Costco gas station will not
4 violate any applicable federal or state UV air qualities.
5 So a reasonable degree of scientific certainty. What do you
6 mean by that?
7 A More likely than not.
8 Q More likely than not. And did you have that same
9 reasonable degree of scientific certainty when you did your
10 August report?
11 A I did.
12 Q You did. It's the same.
13 A I have, I mean I've looked at this gas station for
14 four years I've been doing these reports. I have not had
15 concerns that, based on any analysis I've done, that the
16 station will violate any standards.
17 Q So your level of certainty hasn't changed.
18 A I won't say that I, I may be more confident now
19 than I was, from doing all this additional analysis. I
20 don't know how to answer that question, but I stand by the
21 statement you just read.
22 Q And do you have, there's been a lot of talk about
23 error bars. I notice the CRC report has a lot of error
24 bars. You don't seem to use those. Is there a reason you
25 don't estimate the amount of error?

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1 A I don't recall error bars this year and I should
2 have mentioned to you in the --
3 Q I just draw your attention to it, maybe I don't
4 understand what an error bar is, but I thought I did. Here,
5 for example, on page 310 --
6 A They're showing a distribution there, as I read
7 that, with each of the ends they're showing the max and the
8 mins, and it's showing, I'd have to read this in more
9 detail, but the percentile, probably 25th percentile, 50th,
10 and 75th percentile. It's showing ranges of measured
11 values.
12 Q Those rectangles are not error bars, that's not a
13 proper phrase?
14 A I said I'd have to read the report in greater
15 detail, but those kind of plots generally what we use to
16 present quartiles of measured data.
17 Q Yeah, how about page C-11?
18 MR. GROSSMAN: C-11?
19 MR. SILVERMAN: Yes.
20 THE WITNESS: I don't have a C-11.
21 MR. SILVERMAN: I'm sorry, it's 311. I'm sorry.
22 THE WITNESS: To me, though, I mean again we could
23 look at the, maybe there's some greater detail, but I don't
24 read that as suggesting error bars but rather presenting the
25 data showing the extremes going from, in this case it looks

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1 like zero up to, for example on 311, figure 3-8, they're
2 showing some stars and outliers maybe at 82 ppb and 75 ppb.
3 We'd have to read closer to what each of these boxes
4 implies. But again, usually it's described as showing
5 quartiles in extremes of data.
6 BY MR. SILVERMAN:
7 Q Extremes of data. That could be a high and there
8 could be a low.
9 A Well, there are high, we measured data sets for
10 two years. You're going to get highs and you're going to
11 have lows.
12 Q So you don't regard this as a discussion of error.
13 A Well, I've answered the question, Mr. Silverman.
14 I'd have to read this in greater detail. As I said, it
15 didn't seem to be that. It seems to be showing, it's
16 labeled as trends, 3-3 temporal trends. I could see, but it
17 looks to me like it's measured data.
18 MR. GOECKE: And Mr. Grossman, I object. I mean
19 his premise is flawed. This is actual data. This isn't a
20 modeling report.
21 MR. GROSSMAN: I understand. And I think the
22 witness answered that.
23 BY MR. SILVERMAN:
24 Q In the CRC report, and in many reports, it's not
25 unusual to see scientists say well, some caveats are, some

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1 things you have to worry about, some things we're not sure
2 of. We get areas of doubt, areas of further investigation.
3 Have you ever seen that kind of language in scientific
4 reports?
5 A In research?
6 Q Yeah.
7 A I've certainly seen and done that. And in certain
8 modeling that's based upon a different criteria than here,
9 yes, I've seen that done. Have I seen it done for air
10 quality modeling of this nature? No, I have not.
11 Appendix W says for the present, continued use of
12 the best estimate is acceptable and is consistent with the
13 generic Clean Air Act requirements. That's what the State
14 and the EPA wants to see. That's what they're provided
15 with.
16 Q Why would the State and EPA make one method a
17 default method, and another method requiring lots of
18 supervision? I mean what were their concerns?
19 A Well, that's a different issue. I mean the issue,
20 what I'm referring to, yes, you meet with the agency, you
21 agree upon a protocol. You implement the protocol. They
22 see if you did it right. If you did, if you're a tenth over
23 you failed. If you're a tenth under, you passed. That's
24 how the system is workable. Otherwise it'd be very
25 difficult to have any kind of national or state program that

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1 was, every application was done differently.
2 Q And during those discussions do they not question
3 you about the areas of uncertainty and the viability of
4 your, the reliability of your sources of information?
5 A I've never been questioned about uncertainty
6 ranges in emissions, or things of that nature. They
7 certainly do question in those discussions about
8 methodology, and yes, sometimes discussion about how various
9 treatments would be done. But once you finish that protocol
10 stage, you do the model and they check it. That's done.
11 Then you see if you passed or failed.
12 MR. GROSSMAN: Do you think there's been a certain
13 amount of questioning here?
14 MR. SILVERMAN: A certain amount. There has
15 certainly been, yes. I just want, just to highlight the
16 point, I think in --
17 MR. GROSSMAN: You've highlighted the point over
18 and over.
19 MR. SILVERMAN: No, I just, there's a quotation
20 from the, Mr. Fox's memos, the fact that the more you strike
21 from the default values, the less confidence one should have
22 in the result.
23 THE WITNESS: Can you read that quote to me, Mr.
24 Silverman? I don't know if that's in there or not.
25 DR. COLE: No, I'll do it.

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1 MR. SILVERMAN: We'll let Dr. Cole speak to that.
2 I think, I think I am done.
3 MR. GROSSMAN: All right.
4 MR. SILVERMAN: Did I do what I said?
5 MR. GROSSMAN: You did. Well, not exactly 10
6 minutes, but you were pretty good.
7 MR. SILVERMAN: Eleven.
8 UNIDENTIFIED SPEAKER: More than 10 minutes.
9 UNIDENTIFIED SPEAKER: It was an uncertainty
10 thing.
11 MR. GROSSMAN: Right. Mr. Goecke, is there any
12 redirect?
13 MR. GOECKE: There is some limited redirect.
14 MR. GROSSMAN: There's no requirement for
15 redirect.
16 MR. GOECKE: I understand. I understand. We'll
17 be quick.
18 REDIRECT EXAMINATION
19 BY MR. GOECKE:
20 Q Mr. Sullivan, leaving, picking up where Mr.
21 Silverman left off, the uncertainty that he's been focusing
22 on, talk about this process in terms of how it addresses any
23 uncertainty or potential uncertainty.
24 A Well, inherently the way the Clean Air Act has
25 been developed, it's developed with the intent and stated

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1 expressed requirement to have a margin of safety
2 incorporated into the standards themselves. That's how they
3 developed. And so that's one safety margin, and as I've
4 mentioned for many, many hours, there are, there's many
5 number of steps in this model that are conservative. And
6 I'll use NO2 as an example. The modeling 120 to 150, 160, I
7 expect they will come in around, so if you were, we were to
8 monitor it, I'm not suggesting we do, 75 to 100 would be the
9 max I'd ever expect to see. That's conservatism. I'm
10 suggesting, that example, probably a factor of approximately
11 two.
12 So the issue is there is safety margin. There is
13 consideration of uncertainty with those two steps alone,
14 such that there really isn't a need to apply another margin
15 of safety in terms of a plus or minus 10 to 40 percent
16 uncertainty range. That's more than compensated by the
17 other uncertainty that's already in the analysis.
18 MR. GROSSMAN: Excuse me a second. Mr. Brann, you
19 didn't let Ms. Harris near the thermostat, did you?
20 MR. BRANN: I did not.
21 MR. GROSSMAN: Can you check it to see whether --
22 MR. BRANN: I've been watching.
23 UNIDENTIFIED SPEAKER: It says 73.
24 MR. GROSSMAN: See that? It's snuck up again.
25 THE WITNESS: For folks following the one-hour NO2

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1 saga nationally, there's a lot of angst about that topic
2 because, you know, power plants --
3 MR. GROSSMAN: It's about to go on, by the way.
4 UNIDENTIFIED SPEAKER: Okay.
5 THE WITNESS: -- power plants in various sources
6 are doing the modeling, and they're getting numbers that are
7 way above what's going to be measured, and that's why Mr.
8 Fox has issued two memos, the one you're referred to, plus
9 in the following year trying to provide guidance. The
10 industry is not happy with that, because it's still over-
11 predicting.
12 So there's, it's too high to start with, by a lot.
13 If you applied a 40 percent safety factor onto, say, a 150
14 value, you'd get 210. You could get over the standard
15 mathematically if you wanted to, but that wouldn't be real.
16 If you compare it to what's going on, as I've mentioned too
17 many times, the highest in the country, last year it was 156
18 micrograms per cubic meter. So you take yourself out of the
19 range of realism into hypothetical that you, really is not
20 going to, would not occur. There's no reason to expect that
21 it would occur.
22 MR. GROSSMAN: Okay.
23 THE WITNESS: We have put a lot of, the remaining
24 conservatism I've already stated. I can summarize it.
25 MR. GROSSMAN: No, I think you've testified at

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1 length. I don't think you have to go over it again.
2 THE WITNESS: All right.
3 BY MR. GOECKE:
4 Q The 10 to 40 percent range that you mentioned
5 today, do you have a citation for that, or where can we find
6 that?
7 A That's in the appendix W, and section, it's the
8 uncertainty section in appendix W, which let me see what
9 I've got here. The actual quote that appears in the --
10 UNIDENTIFIED SPEAKER: Let's get this blown up so
11 we can read it.
12 MR. GROSSMAN: Page reference?
13 THE WITNESS: It's, I don't, unfortunately.
14 MR. GROSSMAN: All right, then a section
15 reference.
16 THE WITNESS: It depends which version you're
17 looking at, but it's either 9.1 or 10.1, I believe it is,
18 the uncertainty description.
19 MR. GROSSMAN: Okay.
20 THE WITNESS: And I can provide the quote, which
21 would allow anyone to find it electronically.
22 MR. GROSSMAN: Let me look up 9.1 first.
23 MS. ROSENFELD: If I could just ask for
24 clarification, you said either 9.1 or 10.1?
25 THE WITNESS: It changed. There's different

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1 multiple versions of this out there. My notes here say
2 10.1, but it's 9.1. The most recent one is 9.1. So section
3 9.1, uncertainty I believe is the title to it.
4 MR. GROSSMAN: Okay.
5 THE WITNESS: And what it says is that models are
6 more reliable for estimating longer time-averaged
7 concentrations than for estimating short-terms
8 concentrations at specific locations, and two, the models
9 are reasonably reliable in estimating the magnitude of the
10 highest concentrations occurring sometime, somewhere within
11 an area.
12 For example, areas in highest estimated
13 concentrations of plus or minus 10 to 40 percent are found
14 to be typical. That is certainly well within the often
15 quoted factor of two accuracy that has long, let me find
16 this here, has long been recognized for these models.
17 However, estimates of concentration that occur at a specific
18 time and site are poorly correlated with actual observed
19 concentrations and are much less reliable.
20 For this analysis we aren't doing any estimates of
21 modeling in space and time, and showing that as the end
22 point of the modeling. We're showing in a distributional
23 sense, for example, for the highest 98th percentile, that
24 you'd expect to see a certain concentration at some place
25 near the gas queue, and on some day. We're not saying which

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1 day and which spot. That from EPA perspective, you hit the
2 distribution and general location within 10 to 40 percent.
3 So I mean that's how EPA views this. But in my
4 experience where I've done model performance testing for
5 EPA, I've found numbers similar to this. So I believe this
6 is a reasonable estimate of what you'd expect to see in a
7 real world situation. But if you wanted, if the requirement
8 was I have to model NO2 and the northwest corner of the gas
9 queue on July 3rd, you know, 2014, or in the past, 2013, it
10 would be off. But that's not how the standard is written.
11 The standard is for any location in that general area, and
12 for a distributional sense for pollutants such as NO2 one
13 hour.
14 BY MR. GOECKE:
15 Q Are there things that a modeler might do that
16 would result in models predicting concentrations that are 10
17 to 40 percent lower than what actually would result?
18 A My experience is usually there's conservatism
19 remaining in modeling. That is generally the goal. Could
20 you pick a location that's further, in a more rural area
21 that would give you a lower number? That could happen. I'm
22 not recommending that.
23 But there, you know, if you follow the guidance
24 and it usually allows some residual conservatism, I would
25 expect you'd be, have a greater likelihood of being higher,

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1 over-predicting rather than under-predicting.
2 Q And in your opinion is that true for the modeling
3 you've done for the proposed Costco gas station?
4 A Oh, it is true, in my opinion.
5 Q And I believe you testified earlier that EPA's
6 recommended application is the best estimate approach. Do
7 you have a citation for that?
8 A It's in the same section, and I read that off a
9 little bit earlier. There's more information on that in the
10 same, section 9.1 document. I could read it into the record
11 if you want. It's about a paragraph long.
12 Q If you have that handy, that'd be great.
13 A Looking at, I believe it's section 9.2,
14 recommendations. No specific guidance on the consideration
15 of model uncertainty and decision-making is being given at
16 this time. There is incomplete technical information on
17 measures of a model uncertainty that are most relevant to
18 the decision-maker. It is not clear how a decision-maker
19 could use such information, particularly given the
20 limitations of the Clean Air Act.
21 As procedures for considering uncertainty develop
22 and become implementable, this guidance will be changed and
23 expanded. For the present, continued use of the best
24 estimate, which I've called the bright line, is acceptable
25 and is consistent with the Clean Air Act requirements.

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1 Q Thanks. Going back to Mr. Grossman's question a
2 moment ago about the variability or the uncertainty with
3 background levels, actual measured levels, does the 98th
4 percentile application modeling, is that intended to address
5 any uncertainty or variability with those measured levels?
6 A Well, it's intended to of course come up with a
7 very high-end near-tail distribution to be conservative. It
8 doesn't use the highest, because I think we all can agree
9 that model bias will occur from time to time, and outliers
10 will occur. That's why they go to the 98th percentile.
11 But by going to the 98th percentile you tend to
12 overstate, plus you know, I suppose one way I could answer
13 Mr. Grossman's question, if we wanted to go more
14 conservative on background for NO2 one hour, for example, we
15 used a paired background in this analysis, stage two and
16 stage three, hour by hour match with Arlington. If we were
17 to say no, we'll be more conservative --
18 Q You know, the term has been used a number of
19 times, paired background. Perhaps you should state for the
20 record exactly what that is.
21 A Concurrent background, where it's using an hour,
22 matched hour by hour basis, it'll pull the corresponding NO2
23 concentration from Arlington to match up with the
24 meteorological data set you're modeling.
25 Q Okay.

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1 A So if we use stage two as an example, if we went
2 to the very conservative approach of using the 98th
3 percentile from Arlington, and we assume that that happens
4 all the time, every hour for three years or five years, for
5 stage three for three years, that would be conservative,
6 because many, most of the time it's going to be a lot less
7 than that. We'll get a third of that or less.
8 If we did that in stage three, we would be, the
9 background as I showed in the culpability was 73 micrograms.
10 The 98th percentile Arlington background value for 2013 as
11 an example was 83, 10 micrograms higher.
12 So to address your question, maybe this would
13 cover it. If we added 10 micrograms to the 121, that would
14 show a more, a very conservative way to address background
15 using that site. And perhaps the range would be 121 to 131.
16 If we went to stage two with a similar argument, it would be
17 something on the order of 10 micrograms higher instead of
18 150 whatever it was, 156 to 166. So there are ways of doing
19 that in a more conservative way. But from what EPA is
20 suggesting here, and you aren't bound by that, there really,
21 it's hard to know what to do with that data.
22 Q Okay. Thank you. I'd like to turn now to Ms.
23 Cordry's questioning about her conversation with David Krask
24 at MDE. She made some statements about things he had told
25 her. Have you had a chance to speak with Mr. Krask since

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1 you testified last week?
2 A I spoke to Mr. Krask this morning.
3 Q And can you tell us whether or not Ms. Cordry's
4 description of what he told her, did he give you the same
5 responses?
6 A Similar. He had additional context that I think
7 would be helpful.
8 Q And just to put it in context, we were talking
9 about the different monitors used at the Beltsville
10 location, correct?
11 A Correct. There's three monitors. We discussed
12 the three of them.
13 Q And tell us again what the difference is with one
14 of them.
15 A Site number one at Beltsville is the primary.
16 It's the federal reference method, the gold standard
17 monitor. Site number two is the duplicate for that site,
18 for fed reference method, that he confirmed every 12th day
19 it's used for duplication purposes. Site three is the BAM
20 that we talked about before. He and I both agreed that the
21 BAM has positive bias relative to the federal reference
22 method.
23 I confirmed with him that many states will, if
24 they have co-located monitors, a federal reference monitor
25 and a BAM or a TM, that they'll only rely upon the federal

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1 reference method. He said in Maryland his director prefers
2 to be conservative, and at this point they're in attainment.
3 And what they do is very much like Ms. Cordry said is they
4 will take, on days when they have a reading in the federal
5 reference method, it'll use it. On days they don't, which
6 is two thirds of the time, they'll fill with the BAM. They
7 recognize it's high. It's about 30 percent higher than the
8 others. But it's a conservative way to address the issue.
9 Now the proper way that they use it is they will
10 take and they will, from their point of view they will
11 weight the BAM two thirds weighting, and they'll weight the
12 federal reference method one third weighting. And for
13 example if you did that with that data set, I'm using 2011
14 as an example, the site one, the federal reference method,
15 had an average of 8.7 micrograms per cubic meter for PM2.5.
16 Site number three had an average of 11.6, quite a bit
17 higher. If you assume two thirds 11.6, one third 8.7, you'd
18 have it 10.6. So it would go up to 10.6. We used a 9.8 in
19 our analysis. You could use a 10.6 if you chose to. We're
20 only contributing .9 micrograms. Again, the standard.
21 But he clarified a very important point, and the
22 point that he clarified, which I had heard before, is that
23 the standard itself is based upon the federal reference
24 method. So the actual 12 micrograms is tied to that method.
25 The health studies that they relied upon were based upon

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1 those readings. So that you know, if the BAM is reading
2 higher, it's inconsistent with the health records that were
3 the basis for the standard. It's conservative treatment.
4 And what some areas will do if they're going to
5 bump up against the standard, then a decision will be made
6 are you going to continue using that BAM or not. The EPA
7 gives the states discretion. They can use it or not use it.
8 Most states don't. In the case of Maryland they're being
9 conservative. When they hit the standard, if they do, they
10 will have to reassess it at that point in time. He didn't
11 say what they would do, and I'm not going to put, you know,
12 put out any suggestions that I know what they would do. But
13 that was kind of the description he gave to me.
14 For these purposes here, we know, for my purposes,
15 we know it's biased. It's high. It's much higher than the,
16 the BAM is much higher than the gold standard. And from my
17 point of view, I chose not to use it. I still stand by that
18 decision. I'm not criticizing the State. They have a
19 different objective. But my goal was to be accurate. And
20 if I'm using a standard that I know is 30 percent biased
21 high relative to the gold standard, I prefer not to use it.
22 But if I did, it's academic. It's not going to
23 change the attainment status at all. That was pretty much
24 my notes from the discussion.
25 Q Thank you. And I'm going to hand you a document

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1 called display of bias of federal equipment monitors such as
2 BAMs in comparison to federal reference methods, and summary
3 of EPA position on the use of FEMs. Do you recognize this
4 document?
5 A I do.
6 Q And tell us what this document is.
7 A This is a document from EPA, EPA's web page, and
8 we could use the projector now, if you think that'd be
9 helpful.
10 Q I've passed out copies of it, so --
11 A Okay, so everybody has a copy.
12 Q Yeah.
13 A The earlier part of this is based upon the web
14 page reference provided near the top of the page in blue.
15 And basically it allows you the opportunity to compare the
16 bias for different sites around the country. We're
17 highlighting Beltsville, the site that's in the discussion
18 here.
19 And the easiest way to refer to this, if you see
20 there's six boxes on this chart on page one. If you go to
21 the first row and go to the right side, you see a box that
22 shows colored dots that are green, orange, blue, various
23 colors. What that's showing you, it's showing you, well,
24 what the BAM is doing relative to the reference method
25 monitor. And you can see it says, there's a zero line.

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1 Then it shows what's, when the BAM is higher and when it's
2 lower. And maybe out of all these points, out of the 121
3 points a year shown here, there's a couple of times when the
4 BAM was actually lower. But in nearly every case, the BAM
5 is higher, and by quite a lot. And it's across all four
6 seasons.
7 If you now go down two rows and go to the far
8 left, you can then see how things compare there. The FRM is
9 again the gold standard. The continuous is the BAM, so
10 that's in the third and fourth column on the table that's in
11 the bottom left portion of page one.
12 As you can see consistently through each season,
13 for all data for this example here was 8.8 versus 11.6. But
14 you see that bias occurring each time. As a monitoring
15 person, which I do a lot of, I don't like to use data that
16 has bias built into it. I can see why the State does, for
17 their purposes, but for modeling analysis like this, I see
18 no reason to use a monitor that I realize has substantial
19 bias.
20 MR. GROSSMAN: Let's call this two-page print-out
21 Exhibit 572, and that is display of bias of federal
22 equivalent monitors, fondly known as FEMs, in comparison to
23 reference methods.
24 (Hearing Exhibit No. 572 was
25 marked for identification.)

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1 MR. GROSSMAN: What does BAM stand for again?
2 MR. GOECKE: You know, I don't recall what the
3 initials stand for. There's -- BAMs, and I don't remember
4 the designation of either one, but Beta, I mean I just --
5 MS. CORDRY: Beta Attenuation Mass Monitor.
6 UNIDENTIFIED SPEAKER: That sounds correct.
7 MR. GROSSMAN: BAM is Beta --
8 MS. CORDRY: Attenuation Mass Monitor.
9 MR. GROSSMAN: -- Attenuation Mass Monitor you
10 said?
11 MS. CORDRY: Yes.
12 MR. GROSSMAN: So it's two M's in BAM?
13 MS. CORDRY: Yes, BAM monitor.
14 THE WITNESS: It's usually listed as one M, BAM.
15 MR. GROSSMAN: Okay. And now they have to say
16 it's a bias, because it's compared to the reference point.
17 Why is the reference point more accurate than the BAM?
18 THE WITNESS: Well, it may not be, but the issue
19 is the standards. All the health scientists were involved.
20 They were using federal reference method data to form their
21 conclusions. So as a matched data set, you'd need to rely
22 upon the same thing.
23 MR. GROSSMAN: I see. Okay.
24 UNIDENTIFIED SPEAKER: So that's the logic there.
25 THE WITNESS: And this first page was the

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1 comparison of 2010 to 2012.
2 MR. SILVERMAN: I'd object to that. I don't think
3 Mr. Sullivan knows what the health experts, you know, the
4 science, air quality science committee, CASAC, what medical
5 measurement they're looking at when they're looking at the
6 FRM and other things. In fact Dr. Bryce (phonetic sp.)
7 testified about a few measurements. I think he's gone beyond
8 his expertise.
9 MR. GROSSMAN: Well, I'll let you ask a cross-
10 examination question. I'm not going to prohibit him from
11 saying why he thinks the reference method is used rather
12 than the BAM. All right.
13 THE WITNESS: The second part is based upon a
14 reference shown at the top of page 2. It shows a figure
15 here, which I'm not going to focus on right now, and then it
16 goes to the conclusions, which I don't know if I need to
17 read into the record --
18 MR. GROSSMAN: No.
19 THE WITNESS: -- but it's pretty clear that EPA is
20 saying sometimes these BAMs work, and sometimes they don't
21 work so well, and recognizing there is some bias relative to
22 the federal reference method.
23 MR. GROSSMAN: All right.
24 BY MR. GOECKE:
25 Q Okay. Thank you. And I want to turn your

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1 attention now to Exhibit 565-A. This is one of the monitor
2 values report that Ms. Cordry had asked you about in her
3 cross-examination. If I may approach.
4 MR. GROSSMAN: Sure.
5 BY MR. GOECKE:
6 Q One of the issues that came out during your cross-
7 examination testimony was the frequency with which results
8 were, are published for each of the locations. And can you
9 tell us again what's your understanding of why that might
10 be?
11 A Yes. In talking to Mr. Krask, I asked him the
12 frequency, the standard frequency. He said it was once
13 every 12 days. So they monitor every three days for the
14 federal reference method primary number one monitor. And
15 then every four times they'll have a duplicate sample.
16 Thirty duplicates a year is sufficient. That's why they
17 have 32 shown here. A duplicate and 121 for the main
18 monitoring site.
19 Q And Ms. Cordry has pressed the point that we
20 should be using or you should be using locations showing the
21 highest levels that had been measured. Do you recall that?
22 A Yes, I do.
23 Q And if you read the highlighted portion --
24 MR. GROSSMAN: Well, I think she said that that
25 was part of the agreed protocol.

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1 MS. CORDRY: Yes.
2 MR. GROSSMAN: I think that's what her point was.
3 I don't know if it was or wasn't. I'm just saying I think
4 that was what she was asserting.
5 MS. CORDRY: Yes, I think I stated that he
6 testified numerous times that he was saying he was using the
7 highest value, and that the protocol in fact specifically
8 agreed to use that particular monitor at Dr. Cole's request,
9 so that's what I said.
10 MR. GOECKE: So it's not your position that he
11 should have used the highest level.
12 MS. CORDRY: Well, I am saying I'm going to leave
13 that to Dr. Cole. What I am saying is that when I, the part
14 he was disagreeing with me on background monitor, when
15 you're saying I should have done this or I should have done
16 that, my memo basically said what Dr., I'm sorry, what Mr.
17 Sullivan said he was doing when I was pointing out what he
18 said he was doing versus what he actually did at times.
19 MR. GROSSMAN: I understand her distinction. It
20 may not be what you recollect. But all right, go ahead, so
21 what's your question?
22 BY MR. GOECKE:
23 Q So I'd like to draw everyone's attention to, and
24 I'm sorry I don't have extra copies of this right now, to
25 the bottom of page 565. This language, this caveat language

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1 is in all the monitor reports that you passed out. The
2 third paragraph reads readers are cautioned not to rank
3 order, to rank order geographic areas based on air data
4 reports. Air pollution levels measured at a particular
5 monitoring site are not necessarily representative of air
6 quality for an entire county or urban area. Did I read that
7 correctly?
8 A You did.
9 Q And in your expert opinion, what does that mean in
10 terms of taking these numbers and ranking the various
11 monitoring locations in terms of which one has more
12 significance pollution levels?
13 A Well, I read it to say, as we discussed earlier,
14 you don't take a monitor from the middle of Washington, D.C.
15 or from a monitor in Colburn Road (phonetic sp.) in
16 Alexandria that is a commercial type location, and apply
17 that to a location that is very different. You should be
18 picking representative locations. That's how I read it.
19 Q And in the paragraph above that, if you would just
20 read that to yourself, or you could read it out loud,
21 actually.
22 A Air data reports are produced from a direct query
23 of the AQS data marks. The data represent the best and most
24 recent information available to EPA from state agencies.
25 However, some states may be absent, some values may be

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1 absent due to incomplete reporting, and some values may
2 change due to quality assurance activities. The AQS data
3 base is updated daily by state, local, and tribal
4 organizations, who own and submit the data. Please contact
5 the appropriate air quality monitoring agency to report any
6 data problems.
7 Q So in your opinion, does that provide an
8 explanation for why there might be less frequent monitor
9 reports from each location?
10 A Well, no, I think that the logic was you don't
11 need to have coverage, one to one coverage for defining
12 method precision. I mean the duplicates define precision,
13 how well, how precise are the measurements. If you have 30
14 measurements per year for precision, that's plenty. And
15 that's why it's, they don't need a complete data set for
16 that, and that's why they don't have it.
17 Q Okay.
18 A But the point I was, I think you mentioned before,
19 if I remember correctly, we were not using the highest
20 monitoring site, and we never indicated we would use the
21 highest among the three Beltsville sites. We did average
22 them in 2012, and we stopped doing that because of the bias
23 after that point in time. But Mr. Krask did clearly
24 indicate that it would not be appropriate to use the BAM
25 site exclusively as a basis for a background location.

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1 Q Thank you. Turning now to your rebuttal report,
2 Exhibit 466, do you have a copy of that in front of you?
3 And if you would flip to figure two on page 12, there's been
4 a lot of focus from the opposition about the traffic levels
5 at the site, and one of their contentions is that the
6 traffic that Mr. Guckert projects is actually 15 percent
7 lower than what they think it will be.
8 MR. GROSSMAN: Well, 15 percent --
9 MR. GOECKE: Fifteen percent.
10 MR. GROSSMAN: -- lower than their observations --
11 MR. GOECKE: Than Mr. Guckert's, their
12 observations --
13 MR. GROSSMAN: -- from Dr. Adelman and Mrs.
14 Adelman.
15 MR. GOECKE: Thank you. Right. And it's my
16 understanding that they've, they're extrapolating that to be
17 representative of more --
18 MR. GROSSMAN: As everybody is extrapolating their
19 observations, yes.
20 MR. GOECKE: No, no, that's fine.
21 BY MR. GOECKE:
22 Q So my first question to you, Mr. Sullivan, is
23 would a 15 percent increase in traffic correlate with a 15
24 percent increase with model concentrations of pollutants?
25 A No, it would not.

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1 Q Okay. And why not?
2 A Well, you have to look at the contributions, and
3 what is actually shown in these culpability plots. The
4 actual ring road and other roadways is only a fraction of
5 the contribution, so for example the maximum location near
6 the gas queue is 147. The ring road is 43. The other roads
7 is 17. So it's about 57, it's about 60, it's less than half
8 of the total impact. So if you had a 15 percent change, it
9 would not be a large change in the actual bottom line
10 concentration.
11 If it was, we could do the math here, let me get
12 my calculator out. If we have, take the ring road and put
13 it at 43 micrograms, and then bring in the roadways at 18,
14 and the parking lot let's say at one, you get 62 micrograms.
15 And you multiply that times .15, it would be 9 micrograms.
16 So you go from 147 to 156.
17 MS. CORDRY: Actually wouldn't it be 165 if you
18 multiply the 1.5 times, or the 1.88 times --
19 THE WITNESS: These are micrograms.
20 MS. CORDRY: -- 15 percent?
21 THE WITNESS: No.
22 MS. CORDRY: That's right, 47 plus 18.
23 UNIDENTIFIED SPEAKER: Save your questions for --
24 UNIDENTIFIED SPEAKER: Yes.
25 MS. ROSENFELD: He's spoken --

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1 MR. GROSSMAN: You can cross-examine.
2 THE WITNESS: So my point is, two points. One
3 point, if I did it mathematically, it's nine micrograms
4 more. But let's keep in mind what we're doing. Mr.
5 Guckert's most recent analysis said the peak weekly value
6 traffic numbers are 15 percent higher, and that's occurring
7 on Saturday or Sunday, 11:00 to 12:00 a.m., 11:00 a.m. to
8 12:00 noon.
9 Well, the assumption I just made was well, if that
10 peak hour happened all the time, every hour the mall was
11 open, Monday through Sunday, it would go up nine micrograms.
12 But that's not real. I mean it's actually if you put in, if
13 you had accurate numbers for every hour of the week, it
14 would be less than what we have right now, because right now
15 I'm modeling the peak weekday hour all the time.
16 So you put that together, it's a very small
17 factor. And if it was accurately stated rather than
18 conservative, it would be less than the 147.
19 MR. GROSSMAN: Okay.
20 BY MR. GOECKE:
21 Q And turning now to the OLM analysis that you
22 performed, you stated to testify earlier today that you had
23 actually conducted some OLM analysis inside the area that
24 Ms. Rosenfeld is referring to as the tailpipe box. What
25 were the results of those calculations?

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1 A We did. We did testing of the model, assuming,
2 it's like a discussion. I'm not saying this is real. But
3 assuming for the sake of discussion that any location
4 outside the source, that source area, you would use the OLM
5 method, and we did. And we found if you use straight OLM,
6 doing each source separately, we showed a maximum of 172.
7 If we used the OLM group approach, which for multi sources
8 is more accurate and less conservative, we had a 149.
9 So the point there is we can talk a lot about
10 conversion and we can talk a lot about the box, but the
11 reality is if we cut to the chase and just take the files we
12 have and just make some very minor changes and we look at it
13 that way, we're way under the standard, either of one of
14 those options, right up to the source itself.
15 Q Thank you. I have no further questions.
16 MR. GROSSMAN: All right. Recross?
17 MS. CORDRY: Can we take about four minutes or so,
18 just to talk and coordinate that with everybody?
19 MR. GROSSMAN: All right.
20 (Whereupon, at 4:12 p.m., a brief recess was
21 taken.)
22 MR. GROSSMAN: The final lap. All right, any
23 recross questions?
24 MS. CORDRY: Yeah, yes, please. And since these
25 have to do with some of the background pieces that I have

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1 done, we had decided it would be simplest if I just used
2 them rather than try to tell it to Ms. Rosenfeld. All
3 right.
4 RECROSS EXAMINATION
5 BY MS. CORDRY:
6 Q Looking at the same figure 2 in your rebuttal
7 report that you were just talking about --
8 A Okay.
9 Q -- and actually we've used this term culpability
10 analysis a lot. I'm not quite sure we've ever really
11 defined it. By that do you mean that, is this a culpability
12 analysis, and can you define for sure what that means, so we
13 have that as I'm going forward?
14 A Yes, it is a culpability analysis, and it's
15 different than a legal term. Nobody's done anything wrong
16 here.
17 Q Right.
18 A It's talking about what sources contribute to the
19 total.
20 Q Okay. And when you did it before in your
21 November, December, January reports, and I thought I'd found
22 a mistake then, but you explained it before I got the point
23 out that it was a mistake, at that point you had a number of
24 these lines like this, 10 or 12 or 15 lines of different
25 factors that could contribute. And when you did those

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1 charts for the home and the school and the pool, as I
2 understand it in that variation of it you gave the highest
3 one for each one of the different factors. So the total of
4 that didn't necessarily add up to your total modeled at the
5 bottom.
6 A It was done differently. That did not add up to
7 the bottom.
8 Q Right.
9 A That's correct. These totals were done in a
10 common run. They should add. They should add.
11 Q So this is for this, this is the particular
12 highest spot, for instance the 156.18, that's the highest
13 that you found in this run for stage two?
14 A Correct. That's the highest near the loading
15 dock, and the 147.4 is the highest associated with the gas
16 queue, gas station operations.
17 Q Okay. Is this the second highest one, or is this,
18 there may be some more loading dock ones between these two
19 numbers?
20 A Well, you can see the two, if you look at the iso
21 lines --
22 Q Mm-hmm.
23 A -- you can see there's two maximum locations --
24 Q Right.
25 A -- with 140, so we're showing the highs in each

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1 one of those two locations.
2 Q Okay. Okay. And so yeah, and so these do, each
3 one of these add up. These are the, so and the loading dock
4 is the highest of any of these for this stage two.
5 A For this, and also for these assumptions, that's
6 correct.
7 Q If you went back and were doing it the way you had
8 done before, it's possible that there might be a ring road
9 number that was higher than 46.95 but never associated with
10 a total that was higher than 156.18, is that --
11 A That's correct.
12 Q Okay.
13 A There'd be some shifting in the culpability.
14 Q Okay. And the same thing for the roads, all of
15 these. You might have, if you did the same for each one of
16 those, the highest number, it might be different.
17 A The ratios of each source, the total could change.
18 Q Okay. And just, you did the example of a 15
19 percent increase in the road with the gas station queue. If
20 we did the same thing on the other one there with the
21 loading dock, where you have roughly 47 plus 18 plus the
22 parking, that gets you to roughly 65, is that correct?
23 A I'd have to check. So we have, let's see, we're
24 talking about the ring road, 47; parking .2; other roads,
25 17.7; equals, yeah, 65.

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1 Q Okay. And if we take 15 percent of that we come
2 out with 10, is that correct?
3 A Yeah, about 10.
4 Q Okay. And that, you would say you could add that
5 on to the 156.18?
6 A Correct.
7 Q Okay. And if we were still using the 98th
8 percentile number, which was 83 you said for 2012 --
9 A Mm-hmm.
10 Q -- as opposed to 68, that's another 14 higher
11 there?
12 A No, it's actually the, well, since I did it, the
13 most recent NO2 value is 83.
14 Q Okay.
15 A Because this trend is going down. It depends how
16 you did the slice on that. But again, when you're, I want
17 to emphasize --
18 Q Well, just, please, Mr. Sullivan --
19 A -- when you're adding, when you're talking --
20 MR. GROSSMAN: Hold on one second. You can't
21 speak both at the same time.
22 MS. CORDRY: I asked him a mathematical question.
23 MR. GROSSMAN: Yes. I think that's fair.
24 MS. CORDRY: And the number --
25 MR. GROSSMAN: Well, let's limit the answer to the

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1 answer here.
2 MS. CORDRY: Okay.
3 MR. GROSSMAN: So but I didn't quite understand --
4 MS. CORDRY: We agreed it's 83, okay.
5 MR. GROSSMAN: -- the 86 you referred to for 2012.
6 MS. CORDRY: I think we said 83.
7 THE WITNESS: It was 83 for 2013.
8 BY MS. CORDRY:
9 Q Okay, so 2012 would be even higher?
10 A Correct.
11 Q Okay. But we can even stick with 83, so that's 14
12 to 15, another 14 to 15 points that you would add on to that
13 166 that we just mentioned?
14 A Right.
15 Q So that's getting you up to 180.
16 A Well, again, I do want to give a clear answer
17 here. We're adding things together, although there are a
18 bunch of what ifs here. But again, the road emissions that
19 you're adding, we're assuming that that peak Saturday hour
20 from 11:00 to 12:00 happens all the time, and it's not even
21 close to doing that.
22 Q I understand that.
23 A So it's a mathematical --
24 MR. GROSSMAN: We understand that. She's getting
25 to some hypothetical number. We realize the

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1 qualifications --
2 MS. CORDRY: Right.
3 MR. GROSSMAN: -- that you placed on it before.
4 BY MS. CORDRY:
5 Q And I'm getting the point that yes, even with your
6 revised assumptions in stage two, if you raise the traffic
7 and you put the background level back to what you've been
8 doing before you got to be less conservative, with a 15
9 percent increase you're already up at 180. And I think
10 we've had discussions before about whether 190 is the
11 immaculate number there or not, but we'll certainly start
12 with that. Is there a culpability analysis on your data
13 disk for figure one?
14 A No, I don't believe so.
15 Q And was there one done, is there one like that
16 back in August? Would he be able to find anything there?
17 A I don't recall.
18 Q Okay. Is there any way then to tell from this
19 what would be, in stage one what would be the effect of
20 increasing the road traffic?
21 A Not from this plot, no.
22 Q Okay, so we'll just, I mean you have not done any,
23 as we say, sensitivity, uncertainty, any kind of analyses
24 with higher road numbers above what Mr. Guckert gave you.
25 A Have I done any uncertainty consideration? Again,

1 we talked about 156 was the highest in the United States
2 last year, so uncertainty analysis, how uncertain I am that
3 it would be 180 at the ring road, I'm pretty certain it
4 wouldn't be 180 at the ring road.

5 Q I'm not asking what you think about that. I'm
6 asking what the analyses and the charts you've done here,
7 and the numbers you've laid out here, have you done, you
8 have not done anything in terms of adjusting Mr. Guckert's
9 traffic numbers for the possibilities they could be higher.

10 A There is not a need to.

11 Q So you didn't do it.

12 A I did not, as I've testified to this, that I did
13 not modify Mr. Guckert's traffic counts, that it was a small
14 factor and I did not modify it. And again, if we're going
15 to hypotheticals, you know, stage three is far more accurate
16 when you can do the same assessment there, it'd be a much
17 smaller number. So you could show a range of hypothetical
18 mathematical calculations if you choose to. They're going
19 to be way over what would be plausible to measure at this
20 location.

21 MR. GROSSMAN: I know you went over this before,
22 but for some reason I'm having a little mental block.
23 What's the culpability study on the left-hand side of page
24 12?

25 THE WITNESS: That's the relative maxima occurring

1 near the gas queue. That's caused by the gas queue, mostly.
2 The biggest contributor on that side, compared to the right
3 side is showing the loading dock where the gas station is
4 contributing 1.65 micrograms, where it's a more, it's
5 higher, it's 15 micrograms on the left side.

6 MR. GROSSMAN: Okay. Oh yeah, the arrow tells the
7 answer.

8 THE WITNESS: Right.

9 MR. GROSSMAN: I don't know why I forgot that.

10 Okay.

11 BY MS. CORDRY:

12 Q One last question, before I forget it. So I know,
13 just you said several times, I just want to make sure I've
14 got it down clearly in my record. What do you think the
15 true number is here? I'm going to give you the chance to
16 say it.

17 A For what?

18 Q For NO2.

19 A One hour?

20 Q Yeah, one hour NO2.

21 A I've testified that in my professional opinion,
22 and I'm saying this is my view with a great deal of
23 confidence, that it would be extremely unlikely that the
24 peak, the 98th percentile one-hour value would be beyond the
25 range of 75 to 100 micrograms.

1 Q Okay.

2 A And I would say with the best estimate, I would
3 say somewhere less than half of that range, so something
4 less than 77. I'm saying that based upon the consideration,
5 the uncertain, the conservatism in the modeling, and
6 considering the measured data available at various locations
7 around the country. I wouldn't expect it to exceed the 70,
8 much above 75, but I give myself some range.

9 Q So your, just to be clear then, your position is
10 that this station, with the cars lined up and idling in the
11 middle of a busy mall next to major roadways, the actual
12 number is going to be less than the number, the background
13 number being measured at Arlington.

14 A In the future, well it's going to be not very
15 different --

16 Q No, no, no, you're talking about right now, aren't
17 you, Mr. Sullivan? Or are you talking about years down the
18 road?

19 A The gas station doesn't exist right now.

20 Q Well, you're trying to model what it will be, so
21 you're saying in a couple of years from now when the gas
22 station gets built it would be 75?

23 A All my discussions, when the gas station is built,
24 I don't know when it gets built. Let's say a year or two
25 from now, whenever it's going to be, I would say it's 75 to

1 100, and I think it's going to be something on the order of
2 75 micrograms.

3 Q And that's because the background is continually
4 coming down and down and down.

5 A Correct. And again, in fairness, I gave a range.

6 Q Okay. And that's because the government is doing
7 all kinds of efforts to bring down those numbers, correct?

8 A Well, the government is requiring tailpipe
9 emissions on truck --

10 Q I'm sorry, requiring what?

11 A Tailpipe emissions on cars and trucks. And that
12 is having the expected effect. It's coming down. And I
13 think that what I did say is somewhere in the middle of that
14 range, which would actually be 87 would be the midpoint
15 between 75 and 100.

16 MR. GROSSMAN: And where would you expect that to
17 be located?

18 THE WITNESS: Right in the middle of the gas
19 queue.

20 MR. GROSSMAN: In the queue, okay.

21 THE WITNESS: If you're going to measure, which
22 I'm not advocating be done, you could measure in the middle
23 of a gas queue.

24 MR. GROSSMAN: Right.

25 BY MS. CORDRY:

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1 Q You keep saying if you wanted to do something, but
2 you're not advocating it should be done. Doesn't that sound
3 a whole lot like what Dr. Cole has said? And you're
4 certainly not advocating that we do these things, are you?
5 A It's the opposite of what Dr. Cole said.
6 Q He said, well, and I'm --
7 A Do you want me to answer the question?
8 Q I withdraw the question.
9 MR. GROSSMAN: Okay. All right. Beyond the scope
10 of the redirect anyway, so.
11 MS. CORDRY: Well, in any case, I think, okay, I
12 think we're done.
13 MR. GROSSMAN: Ms. Adelman, is there any recross
14 for the coalition?
15 MR. SILVERMAN: Really just a couple of things.
16 So since --
17 MS. ADELMAN: Yes.
18 MR. SILVERMAN: Thank you.
19 BY MR. SILVERMAN:
20 Q Since Costco opened its doors, has the air quality
21 in the Wheaton Mall gotten better or worse?
22 MR. GOECKE: Objection. Beyond the scope.
23 MR. GROSSMAN: It is. That's beyond the scope of
24 the --
25 MR. SILVERMAN: He is saying the trends are all in

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1 the right direction and everything's getting better.
2 MR. GROSSMAN: Okay, I'll let it go.
3 THE WITNESS: I don't have an opinion on that.
4 BY MR. SILVERMAN:
5 Q You don't have an opinion on that?
6 A No.
7 Q And how would you go about forming an opinion
8 about that?
9 A I could do an analysis, and do modeling with
10 monitors.
11 Q Okay.
12 MR. GROSSMAN: No more reports.
13 BY MR. SILVERMAN:
14 Q Now Dr. Bryce, with regard to, let's see how to
15 say this, with regard to reference monitors, do you agree
16 that having the same monitor over a period of years is
17 generally a good thing in detecting trends?
18 A I agree with that.
19 Q And if EPA should decide to stick with one type of
20 monitor, it may be that they want to do that in order to
21 keep consistency in their data so they could look at the
22 direction of things.
23 MR. GOECKE: Objection. Speculative and beyond
24 the scope.
25 MR. GROSSMAN: Well, I think he's an expert in

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1 this area.
2 MR. SILVERMAN: Yeah.
3 MR. GROSSMAN: I think that's a fair question.
4 THE WITNESS: Well, I mean it's certainly
5 desirable to maintain stations, core stations, to show
6 trends over a long period of time, and I agree with that,
7 Larry. And to maintain consistency in monitoring is a good
8 idea. I mean obviously in some pollutants like PM2.5,
9 there's some different things being tried and used. Will
10 they eventually settle on one? Maybe they will.
11 BY MR. SILVERMAN:
12 Q So that the fact that there's a federal reference
13 monitor doesn't necessarily mean that that is the most
14 accurate, and EPA is not necessarily saying that is the most
15 accurate in the sense of giving the truest number, does it?
16 A Well, as I mentioned before, I mean my
17 understanding is that it gives the truest number relative to
18 the health studies reviewed in forming the current standard.
19 If in the future they have more BAMs and PMs, and a judgment
20 is made between the two, which one is more accurate, maybe
21 if they set a standard based upon the BAM, then that would
22 become the standard. But right now the standards are based
23 upon the federal reference method, and so that's the
24 defining gold standard.
25 Q Well, isn't it true that the actual health studies

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1 use all sorts of equipment to measure the levels of
2 pollutants and their health effects?
3 A Of course whether the standard is written, it's
4 tied to the FRM. So in EPA's judgment they consider the FRM
5 to be the most definitive and most applicable standard that
6 they set.
7 MR. GROSSMAN: FRM meaning?
8 THE WITNESS: Federal reference method.
9 BY MR. SILVERMAN:
10 Q Well, for example, Dr. Bryce, his, let me find one
11 here, his, I think it's Exhibit 13, it's called a
12 Longitudinal Study of Indoor Nitrogen Dioxide and
13 Respiratory symptoms in Inner-city Children with Asthma.
14 And he says that every 20 part per billion increase in NO2
15 exposure was associated significantly with an increase in
16 the number of days with limited speech, and so forth. So
17 that measurement, we don't really know what kind of
18 equipment was used for that measurement, correct?
19 A You know, I'm not a health expert. I'm relying
20 upon EPA standards. I can't answer your question.
21 Q Right. And the, his Exhibit 17, chronic exposure,
22 fine particles and mortality, extended follow-up of the
23 Harvard six-city studies from 1974, 2009, which, you don't
24 know, you wouldn't know what sort of monitors were used,
25 particularly if they had six cities, whether they used the

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1 same kind of monitor in every city?
2 MR. GOECKE: Objection. Beyond the scope.
3 MR. GROSSMAN: Well, it's not really beyond the
4 scope, because we talk about the monitors being used. But
5 it is, he's already answered the question.
6 MR. SILVERMAN: Okay.
7 MR. GROSSMAN: He doesn't, he's not a health
8 expert.
9 MR. SILVERMAN: Okay.
10 MR. GROSSMAN: He doesn't know what monitors were
11 used in those health studies. He said that the use of this,
12 the reference, is based on the fact that EPA uses that tool
13 and sets its standards by that tool. All right. Well, then
14 we are finished with you, Mr. Sullivan. I thank you very
15 much. I've learned a lot from you, and from your direct and
16 cross-examinations. Thank you very much.
17 THE WITNESS: You're welcome.
18 MR. GROSSMAN: All right. What's the pleasure of
19 the group here? Do we turn to Dr. Cole now, or do we
20 discuss objections, or do we just go home?
21 MR. GOECKE: Well, we've got an environmental free
22 day on the 20th --
23 MR. GROSSMAN: Right.
24 MR. GOECKE: -- so it seems useful to begin Dr.
25 Cole now, to take advantage of the time we have with him.

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1 MS. ROSENFELD: Please --
2 MS. CORDRY: Twenty minutes?
3 MS. ROSENFELD: -- 20 minutes left?
4 MR. GROSSMAN: We don't have a lot of time for
5 him.
6 MR. SILVERMAN: Can we discuss some objections in
7 the last 20 minutes?
8 MR. GROSSMAN: We could do that. Do you want to
9 do that instead, or --
10 MS. CORDRY: Well, there's a few. Maybe we
11 could --
12 MS. HARRIS: Well, there's also the question of do
13 we need a new hearing date. And also we would like to know
14 if the opponents and their surrebuttal are providing other
15 witnesses besides Ms. Cordry and Dr. Cole.
16 MS. ROSENFELD: Well, for the 20th I think the
17 witnesses will be Ms. Cordry and two other individuals.
18 MS. CORDRY: Two other people talking about,
19 essentially about traffic issues. If they are, they're very
20 short. And I would expect we can also wrap up anything
21 about the objections on that day as well.
22 MR. GROSSMAN: Well, I remind you, you said that
23 you're not calling those other two witnesses. They're just
24 members of the community, is that correct?
25 MS. CORDRY: One is, and the other might be Jim

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1 Core (phonetic sp.) might come back, so I forget if we
2 called him before or not.
3 MR. GROSSMAN: Well, once again, it's got to be
4 rebuttal --
5 MS. CORDRY: Right, I understand.
6 MR. GROSSMAN: -- surrebuttal, I should say.
7 MS. ROSENFELD: Right, surrebuttal.
8 MR. GROSSMAN: So all right, and they will
9 represent that they have either heard the testimony or they
10 have read the transcript? How are they going to --
11 MS. CORDRY: They can have them read if there's a
12 particular piece that they are needing to rebut, yes.
13 MR. GROSSMAN: All right. Because I don't want to
14 have, I don't want just to have repetitive testimony of what
15 Mr. Core testified before.
16 MS. CORDRY: No.
17 MR. GROSSMAN: I remember his testimony quite
18 well. Okay.
19 MS. CORDRY: It would not be what either one of
20 that that appeared at all, and would not have anything to do
21 with what Mr. Core testified about.
22 MR. GROSSMAN: All right. How long do you
23 anticipate the direct of Dr. Cole?
24 MS. ROSENFELD: I would expect it would probably
25 take the better part of a day. I think we would probably

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1 finish in a day. But I would expect it to go probably
2 through early mid-afternoon.
3 MS. ADELMAN: So he'll start on the 22nd --
4 MR. GROSSMAN: Right.
5 MS. ADELMAN: -- which happens --
6 MR. GROSSMAN: That's the last day we have
7 testimony scheduled.
8 MS. ADELMAN: That's right, and it happens to be
9 his birthday, so we'll have a cake and ice cream.
10 MR. GROSSMAN: No ice cream unless his answers are
11 very short and quick.
12 MS. ROSENFELD: And Mr. Grossman, I do expect that
13 we will also call Dr. Jison back.
14 MS. HARRIS: On what basis? We presented no
15 health, testimony regarding health except for the very few
16 questions that they asked Mr. Sullivan, which was in terms
17 of the standards.
18 MS. ROSENFELD: Well, I do think that Mr. Sullivan
19 has provided different analysis with respect to the levels
20 of emissions, and we're entitled to have a health expert
21 respond to whether or not that affects conclusions directly
22 related to the impact of the levels of emissions on health.
23 MR. GROSSMAN: Actually I think they have a fair
24 point. Assuming that the rebuttal report is accepted after
25 we hear from Dr. Cole, it does present additional evidence

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1 regarding the levels of pollutants. And so I guess one
2 could argue that they're entitled to have a health expert
3 come in and say that even those levels of pollutants are
4 problematic, I suppose.
5 MR. GOECKE: I think she's already testified to
6 that.
7 MR. GROSSMAN: She has to some extent, at least
8 with regard to PM2.5, saying 2.5, I'm not sure, like I
9 said, I'd have to look back at the NO2 testimony. But in
10 any event, so but I would expect it to be directed to that
11 narrow a point, that is something --
12 MS. ROSENFELD: I agree. I agree.
13 MR. GROSSMAN: -- is truly surrebuttal.
14 MS. ROSENFELD: So based on the rebuttal report.
15 Of course if you rule to strike it, we're happy to withdraw
16 Dr. Jison as a witness.
17 MR. GROSSMAN: Okay. I don't want to, as I said,
18 I don't want to make up my mind on that --
19 MS. ROSENFELD: Sure.
20 MR. GROSSMAN: -- until I hear from Dr. Cole.
21 Okay, so let's think of some other dates. A lot of people
22 were expecting us to be done in May, including me.
23 MS. CORDRY: I think we might get by with one more
24 day.
25 DR. COLE: I don't see how.

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1 MS. CORDRY: And I can't recall, the discussion of
2 the conditions, was there going to be a discussion of the
3 conditions?
4 MR. GROSSMAN: Yes, I don't see any reason not to
5 have it. I mean there are some that are agreed to, and we
6 can talk about the others. I don't know that anybody's
7 mind's going to change. I usually have a set of conditions
8 I generally use in any event, which would be kind of
9 superimposed on those. And I may or may not accept
10 everything that was said in the proposed conditions, so
11 we'll have to go back over that. I did go over the ones
12 that were submitted, but it's been a number of weeks, and I
13 don't remember exactly what my, all of my conclusions were.
14 I have to look at my notes.
15 All right. So let's talk about dates.
16 MS. ADELMAN: No Wednesdays, right?
17 MR. GROSSMAN: No Wednesdays, because the Board of
18 Appeals is on Wednesdays.
19 MS. ADELMAN: I'm not available on the 5th of
20 June.
21 MS. CORDRY: So the 26th is Memorial Day, correct?
22 And the 28th I am in hearing.
23 MR. GROSSMAN: The 28th is a Wednesday anyway.
24 MS. CORDRY: It's Wednesday anyway, okay.
25 MR. GROSSMAN: Do I hear any suggestions? I have

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1 to tell you, I am going to be out of town from June 13
2 through June 21.
3 MS. HARRIS: How about the 29th of May?
4 MR. GROSSMAN: The 29th of May. Do I hear any
5 bidders for the 29th of May?
6 MR. GOECKE: That works for me.
7 MS. ADELMAN: I have to double check. I mean this
8 will all be double checked.
9 MS. CORDRY: We have to check with Dr. Jison,
10 because she's the most likely going to be on that day.
11 MS. ADELMAN: And Dr. Cole needs to check his
12 calendar, and I'm --
13 MR. GROSSMAN: All right. Can you all e-mail me
14 tomorrow?
15 MS. ADELMAN: Mm-hmm.
16 MS. HARRIS: Are we just identifying one day?
17 MR. GROSSMAN: Well, we've got three more days, if
18 we count that, so --
19 MS. HARRIS: Okay.
20 MR. GROSSMAN: And I have to look back at my
21 calendar also, but I think I'm okay on the 29th of May. So
22 we'll check it out.
23 MR. COLE: Mr. Grossman, I have a commitment on
24 June 3rd.
25 MR. GROSSMAN: Okay.

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1 MS. HARRIS: Not being committed.
2 MR. COLE: I don't know. You never can tell.
3 MS. HARRIS: Well, it may be happening. I'm
4 reasonably open that first week in general.
5 MR. GROSSMAN: All right. So we're looking at May
6 29. Is there an alternative day that, how about May 30?
7 MR. GOECKE: That does not work for me.
8 UNIDENTIFIED SPEAKER: No, me either.
9 MR. GROSSMAN: All right, how about June 2?
10 MS. ROSENFELD: I have a brief due that day.
11 COURT REPORTER: Mr. Grossman, do you want to go
12 off the record at this point?
13 MR. GROSSMAN: No, let's just do a little bit --
14 COURT REPORTER: Okay.
15 MR. GROSSMAN: How about June 5?
16 UNIDENTIFIED SPEAKER: I think that works.
17 MR. GOECKE: That works.
18 MS. ADELMAN: I won't be available.
19 MR. GROSSMAN: June 6th?
20 UNIDENTIFIED SPEAKER: How about the 3rd?
21 MR. GROSSMAN: The 3rd is no good --
22 UNIDENTIFIED SPEAKER: Oh.
23 MR. GROSSMAN: -- for Dr. Cole.
24 UNIDENTIFIED SPEAKER: June 6th works.
25 MR. GROSSMAN: June 6?

1 MR. GOECKE: June 6 works for me.
 2 MS. ADELMAN: Not for me.
 3 MR. GROSSMAN: Hmm?
 4 MS. ADELMAN: Not for me, sorry.
 5 MS. HARRIS: Can we, I mean we have, these
 6 hearings have expended an awful long time, and I feel like
 7 we've been very patient and accommodating to everyone's
 8 schedules, but I hope people can be as flexible as possible
 9 at this stage.
 10 MR. GROSSMAN: Yeah, I would hope so. Well, we're
 11 trying to figure out another day here. June 9, what does
 12 that sound like?
 13 UNIDENTIFIED SPEAKER: June 9, going once, going
 14 twice. We probably do need --
 15 MS. ADELMAN: What date are we on now?
 16 MR. GROSSMAN: June 9.
 17 MR. GOECKE: I'm available then.
 18 MR. GROSSMAN: All right, so now we have two days
 19 that are, that seem like they're going to be okay, May 29
 20 and June 9. So everybody get back to me tomorrow by e-mail.
 21 Tell me if those are okay.
 22 Let me see, I may just announce them at the public
 23 hearing if we select it, rather than sending out the formal
 24 notice, given that we're in our surrebuttal case at this
 25 point, and just announce it, as were the last two under the

1 Board of Appeals rules, at the public hearing on May 20,
 2 assuming you would all agree. But I do want to know as soon
 3 as possible. Okay, so e-mail me tomorrow. And I don't
 4 think we have much time for going over the objections now.
 5 Let's just pick them up at the next session.
 6 All right, if there's any other business? Hearing
 7 no other business, we are adjourned. Thank you.
 8 (Whereupon, at 4:50 p.m., the hearing was
 9 adjourned.)
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1 C E R T I F I C A T E
 2 DEPOSITION SERVICES, INC., hereby certifies that
 3 the attached pages represent an accurate transcript of the
 4 electronic sound recording of the proceedings before the
 5 Office of Zoning and Administrative Hearings for Montgomery
 6 County in the matter of:
 7 Petition of Costco Wholesale Corporation
 8 Special Exception No. S-2863
 9 OZAH No. 13-12
 10
 11 By:
 12
 13
 14
 15
 16 Margaret L. vanEkeren, Transcriber
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