

**HARDING TOWNSHIP BOARD OF ADJUSTMENT
MINUTES
Re-Organization
January 17, 2019
7:30 PM**

CALL TO ORDER AND STATEMENT OF COMPLIANCE

The Board of Adjustment Attorney, Gary Hall, called the Reorganization meeting of the Board of Adjustment to order at 7:30 and announced that adequate notice of the meeting had been made in accordance with the New Jersey State Open Public Meetings Act.

REORGANIZATION

Mr. Hall noted the following appointments were made to the Board of Adjustment:

Michael Flanagan	Regular Member	4 year term expiring December 31, 2022
Rita Chipperson	Regular Member	4 year term expiring December 31, 2022
Hugh Symonds	Regular Member	4 year unexpired term, December 31, 2019
Aric Rosenbaum	Alternate # 1	2 year unexpired term, December 31, 2019
Thomas Addonizio	Alternate # 2	2 year term expiring December 31, 2020

Mr. Hall swore in the appointees.

Ms. Taglairino called the roll. It went as follows:

Mr. Rosenbach	Present	Mr. Newlin	Present
Mr. Flanagan	Present	Mr. Maselli	Present
Mr. Rosenbaum	Present	Mr. Addonizio	Present
Mr. Symonds	Present	Mr. Kearns	Excused
Ms. Chipperson	Present		

Board Attorney, Gary Hall, Board Engineer, Paul Fox, Board Planner (late), McKinley Mertz and Board of Adjustment Secretary Lori Taglairino were also present.

Mr. Hall opened the floor to nominations. Mr. Rosenbach nominated Mr. Flanagan as Chair. It was seconded by Mr. Newlin. On a voice vote, all were in favor of election Mike Flanagan as Chairman.

Mr. Hall turned the meeting over to Mr. Flanagan.

Mr. Flanagan nominated Mr. Newlin as Vice-Chair. It was seconded by Symonds. On a voice vote, all were in favor of election Alf Newlin as Vice-Chair.

Mr. Flanagan made a motion to approve Resolution BOA #01-2019 for the Appointment of Professionals. It was seconded by Mr. Newlin. On a voice vote all were in favor.

Mr. Flanagan made a motion to approve Resolution BOA #03-2019 for the Do Not Exceed Limits for professionals. It was seconded by Mr. Newlin. On a voice vote, all were in favor.

Mr. Flanagan made a motion to approve Resolution BOA #02-2019 for the 2019 meeting dates. It was seconded by Mr. Rosenbach. On a voice vote, all were in favor.

Mr. Hall swore in Ms. Mertz as Board of Adjustment Planner.

REGULAR MEETING

MINUTES

Mr. Flanagan made a motion to approve the December 20, 2018 minutes. The motion was seconded by Mr. Newlin. On a voice vote all eligible members were in favor of approving the minutes. Mr. Newlin noted that the minutes only were being approved.

Mr. Flanagan table the January 12, 2018 Site Inspection minutes until the February 21, 2019 meeting.

ADMINISTRATIVE

Mr. Newlin noted that there will be an Affordable Housing presentation on March 21, 2019 prior to the regular meeting.

RESOLUTIONS

BOA# 04-2019 Retention of Dr. Eisenstein for BOA# 17-18 Verizon

Mr. Flanagan made a motion to approve the Resolution BOA #04-2019 to retain Dr. Eisenstein for the BOA# 17-18 Verizon application. It was seconded by Mr. Newlin. On a voice vote, all eligible members were in favor of adopting the resolution.

Application BOA# 16-16 S.Y.A.S., LLC
1 Post House Road, B33.03/L1, R-1/B-2 Zones

Mr. Flanagan made a motion to adopt Resolution BOA# 16-16 S.Y. A. S. LLC. with amendments. It was seconded by Mr. Newlin. On a voice vote, all eligible members were in favor of adopting the resolution.

OLD BUSINESS

Application BOA# 16-18 Phil Poto
52 Blue Mill Road, B16/L20, R-3/R-1 Zone
Applicant requesting variance relief for setbacks, lot coverage and non-conforming structure as per NJSA 40:55D-70(c).

Presenting:
Ms. Miseo, Architect
Mr. Poto, Owner

Mr. Newlin is recused from the application.

Ms. Miseo presented revised plans from suggestions from the Site Inspection. Ms. Miseo noted that there is an addition of a new garage in the plans that will replace the existing garage. Ms. Miseo noted a proposed reduction of the deck. Ms. Miseo noted that the lean-to and shed will be removed.

Mr. Maselli appreciated the fact that they listened to the suggestions on this application.

Mr. Newlin of 61 Blue Mill Road thanked the applicant for investing in the neighborhood.

Mr. Flanagan made a motion to approve the application with revised plans to remove the dormers from the garage and with the submission of a revised zoning table. It was seconded by Mr. Symonds. A roll call vote went as follows:

For: Mr. Flanagan, Mr. Maselli, Mr. Rosenbach, Ms. Chipperson, and Mr. Symonds.

Against: None

NEW BUSINESS

Application BOA# 19-18

Doug and Meghan Falduto

210 Lees Hill Rd. B47/L4, R-1 Zone

Applicant requesting variance relief for side and front setbacks for an existing non-conforming lot as per NJSA 40:55D-70(c).

Presenting:

Nicole Magdziak, Attorney

Candace Davis, Engineer

Doug and Meghan Falduto, Owners

Ms. Davis and Mr. and Mrs. Falduto were sworn in for testimony

- Ms. Magdziak presented proposed plans for an addition and garage with multiple variances.
- Ms. Davis gave an overview of the existing and proposed conditions for the property.
- Ms. Davis presented exhibit A-1, photographs of the conditions of the property.
- Mr. Falduto reported on the intended addition.
- The Board requested a site inspection of the property.

The Board stated that the notice would include the opportunity for formal action to be taken at the site inspection. The Site Inspection was scheduled for January 27, 2019 at 11:00 am at the property.

Application BOA# 17-18

New York SMSA Limited Partnership d/b/a Verizon Wireless

8 Millbrook Road, B17/L1, PL Zone

Applicant requesting variance relief for use, per NJSA 40:55D-70(d) for a cell tower.

Presenting:

Richard Schneider, Attorney

Ms. Boschulte, RF Specialist.

The Board Attorney, Mr. Hall is recused from this application. Mr. Ed Purcell is providing counsel.

Dr. Eisenstein is providing Testimony on Radio Frequency.

Ms. Boschulte and Dr. Eisenstein were sworn in for testimony.

A transcript of the testimony is appended to these minutes.

OTHER BUSINESS

None

ADJOURNMENT

Mr. Flanagan adjourned the meeting at 11.02.

Respectfully submitted by

Lori Taglairino, Board of Adjustment Secretary

HARDING TOWNSHIP
BOARD OF ADJUSTMENT

In the Matter of: :
: Transcript
CASE BOA 17-18 :
: of
NEW YORK SMSA LIMITED PARTNERSHIP: :
d/b/a VERIZON WIRELESS : Proceedings
8 Millbrook Road :
Block 17, Lot 1 :
-----x

Thursday, January 17, 2019
21 Blue Mill Road
Jersey City, New Jersey
Commencing at 9:05 p.m.

BOARD MEMBERS PRESENT:

MIKE FLANAGAN, Chairman
ALF NEWLIN, Vice Chairman
ARIC ROSENBAUM
RITA CHIPPERSON
DAN MASELLI
HUGH SYMONDS
THOMAS ADDONIZIO

LORI TAGLAIRINO, Board Secretary
M. MCKINLEY MERTZ, P.P., Board Planner
PAUL D. FOX, P.E., Board Engineer
DR. BRUCE EISENSTEIN, Board RF Consultant

A P P E A R A N C E S:

EDWARD PURCELL, ESQUIRE
Attorney for the Board

VOGEL, CHAIT, COLLINS & SCHNEIDER
BY: RICHARD SCHNEIDER, ESQUIRE
Attorneys for the Applicant

MICHAEL LOMBARDOZZI,
Certified Shorthand Reporter

PRECISION REPORTING SERVICE
CERTIFIED SHORTHAND REPORTERS
(908) 642-4299

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1 BRUCE EISENSTEIN,
2 having been duly sworn, testified as follows:
3 CHAIRMAN FLANAGAN: All right.
4 DR. EISENSTEIN: Should I state my
5 name?
6 CHAIRMAN FLANAGAN: Do we want to --
7 do we need to go through the expert -- do you
8 accept him?
9 DR. EISENSTEIN: Ask Mr. Schneider if
10 he'll waive me in.
11 MR. SCHNEIDER: We accept and
12 stipulate to Dr. Eisenstein's qualifications.
13 DR. EISENSTEIN: Thank you.
14 MR. SCHNEIDER: Thank you,
15 Mr. Chairman.
16 Good evening, Mr. Chairman, fellow
17 members of the board, once again, for the record,
18 Richard Schneider of the law firm of Vogel, Chait,
19 Collins & Schneider, on behalf of the applicant,
20 who I'll refer to, for ease of reference, as
21 Verizon Wireless.
22 We have before you this evening an
23 application for approval of a wireless
24 communications facility on property that I think we
25 can all commonly refer to as the hard Township DPW

1 CHAIRMAN FLANAGAN: All right. So
2 next up is, as I mentioned, 17-18, we're just going
3 to shorten this to the Verizon Wireless
4 application, if that's okay.

5 As we started -- for the new board
6 members, as we started the meeting tonight, we
7 hired Dr. Eisenstein, who is right there. He is
8 one of our professionals. So what you'll find is,
9 for some applications, we have professionals that
10 work for us. All right? Sometimes you'll see Paul
11 Fox up there.

12 So Dr. Eisenstein is from Drexel?
13 DR. EISENSTEIN: Drexel University.

14 CHAIRMAN FLANAGAN: He is an RF,
15 radiofrequency, engineer, who specializes in
16 helping boards such as ours understand what the
17 applicant is going to talk about. So keep that in
18 mind, if you have any questions at all, you're free
19 to ask anyone any questions, and you can think of
20 this as our guy.

21 MR. PURCELL: Maybe we can swear
22 Dr. Eisenstein in now.

23 CHAIRMAN FLANAGAN: Why don't we do
24 that.

1 property, for purposes of the record. The common
2 address of that property is 8 Millbrook Road, and
3 it is designated as Block 17, Lot 1, on the
4 township's tax maps.

5 Before I get into certain specifics,
6 and some background material as to the specifics of
7 the application, let me see if I can just take a
8 couple of moments, with your consent, to maybe
9 provide some additional background, so that
10 anybody, including any interested members of the
11 public, can understand how we arrived at the stage
12 that we are.

13 This being municipal property, it's
14 important to note that the matter proceeds in
15 furtherance of a public bid that was issued by the
16 township. Without the township issuing a public
17 bid for the lease rights, this matter cannot
18 proceed. Under the local lands and buildings
19 law -- and I don't need to get into the
20 legalities -- a municipality cannot make available
21 lease rights to a private entity; it has to be by
22 public bid.

23 In fact, the township went out to
24 public bid; Verizon Wireless was the responsive
25 bidder to that. The bid was accepted by the

<p style="text-align: right;">Page 6</p> <p>1 township, and ultimately resulted in a lease 2 agreement between Verizon Wireless and the Township 3 of Harding. Without all of that, we would not be 4 here.</p> <p>5 It is important to note that the 6 township made the lease contingent upon the 7 applicant -- in this case, Verizon Wireless -- 8 obtaining any and all required governmental 9 approvals, whether from this board or any other 10 governmental agency with jurisdiction.</p> <p>11 I do, however, note that not only to 12 perhaps assist you in understanding as to how we 13 got here, but I do think it is significant. I do 14 think it is significant that we understand that the 15 municipality, the township, did make a decision -- 16 in significant measure, we think -- to make the 17 site available for a wireless communications 18 facility. We do not think that is an insignificant 19 determination as you consider the application.</p> <p>20 With that background, let me see if I 21 can provide some details, and maybe provide one 22 additional relatively recent development, which we 23 think is a positive one for all parties concerned. 24 I'll get to that in a minute.</p> <p>25 The township, when it bid out the</p>	<p style="text-align: right;">Page 8</p> <p>1 Dr. Eisenstein, and I indicated to you, as if 2 you'll all recall, that I wanted to take that 3 30-day time period to get a head start on this 4 application, and to have my expert confer with 5 Dr. Eisenstein, so that they can exchange 6 information, so that we can have a meaningful first 7 public hearing.</p> <p>8 In fact, we did. And one of -- among 9 the couple of things that I think is significant -- 10 and I'll ultimately defer to Dr. Eisenstein -- but 11 one of the, I think, significant things is that 12 there's been a discussion between the Verizon 13 expert and Dr. Eisenstein.</p> <p>14 And while we, respectfully, do believe 15 that there is a somewhat increased coverage at 140 16 feet, based on input from Dr. Eisenstein, he 17 believes that the applicant could almost -- can 18 significantly meet its technical objectives at a 19 lower height; that being 120 feet.</p> <p>20 And while we think there is some 21 increased coverage, we don't think it's of a 22 significant nature, and subject to the issue of 23 collocation, which will be a separate discussion 24 from a design perspective, the applicant, if the 25 board is so inclined, would be willing to lower the</p>
<p style="text-align: right;">Page 7</p> <p>1 lease rights, mandated a couple of things: 2 The first was that the tower height 3 was 140 feet.</p> <p>4 The second was that it be disguised as 5 a stealth monopole; in this case, a tree monopole. 6 It did so, in large measure, in terms of the 7 height, for a twofold reason:</p> <p>8 One was to ensure that the height was 9 of a sufficient height in order to allow Verizon 10 Wireless to meet its technical objectives.</p> <p>11 But secondarily, it also wanted to 12 ensure that, if the tower was approved, and 13 received all other required governmental approvals, 14 that it was of sufficient height that additional 15 collocators would be able to be on this tower; the 16 obvious point being the township, very reasonably, 17 didn't want a multiple-tower situation, and if 18 there was going to be a tower within Harding 19 Township, within this geographic area, it wanted to 20 ensure that all of the required FCC carriers would 21 be able to be located on this tower.</p> <p>22 I mentioned the 140-foot height in 23 this regard. Since the December member, at which I 24 appeared for completion, you indicated, and 25 fortuitously, that you were going to hire</p>	<p style="text-align: right;">Page 9</p> <p>1 height to 120 feet. Essentially, what we're saying 2 is there's an increase in coverage, but it's not 3 worth 10 public hearings to argue over the 20 feet, 4 and we think, with some other technical matters, we 5 could live with 120 feet.</p> <p>6 The 120 feet, and how it affects 7 collocators, I think is something that we should 8 have an honest discourse about with the benefit of 9 Dr. Eisenstein and our respective experts, because 10 that invokes certain other issues, to give you a 11 preview, as it relates to design of the tower, 12 whether to build it extendable; whether to maybe 13 build it at 140 and have the other carriers lower. 14 And there's some -- as your counsel, who's well 15 versed in these matters, knows, there's a series, 16 over the last couple years, FCC regulations, which 17 raise certain issues about the ability to 18 mandatorily extend the tower, all of which -- and I 19 don't think we need to get into it, though I'll be 20 glad to answer any questions about it -- all of 21 which, I think, come into play as we, through this 22 process, discuss the height of the tower. But I 23 did want to come forward, and Dr. Eisenstein was 24 very straightforward about it, and I wanted to get 25 that out right from the get-go.</p>

<p style="text-align: right;">Page 10</p> <p>1 I would also suggest that, ultimately, 2 just to give a preview, as we discuss whether the 3 tower should be designed in a matter to be 4 extendable, there may be certain benefits to not 5 having it designed as a tree, but from the 6 applicant's perspective -- and I'll be very clear 7 about this -- the applicant takes no position. The 8 tree is significantly more expensive, but if that's 9 what the township and that's what the board wants, 10 from a design perspective, the applicant will do 11 it, whether you think collectively -- if we're 12 fortunate enough, hopefully, to receive approval, 13 if you think an alternate design, in terms of a 14 strict monopole, is more appropriate, the applicant 15 has no objection --</p> <p>16 VICE CHAIR NEWLIN: Can I ask you to 17 repeat where the tree design came from? The town 18 asked for the tree?</p> <p>19 MR. SCHNEIDER: That's correct.</p> <p>20 COMMISSIONER ROSENBACH: Excuse me, 21 Mr. Schneider. Are you saying that the application 22 is essentially being amended, in that what's being 23 presented to us is a 120-foot pole, and not a 24 140-foot pole?</p> <p>25 MR. SCHNEIDER: I would maybe make one</p>	<p style="text-align: right;">Page 12</p> <p>1 either your planner or your township engineer. 2 It's also important to note that, as 3 we design these facilities, and consistent with, 4 frankly, what the township wanted, the compound, 5 the 1,620 square feet, is designed in a matter that 6 it will be able to accommodate the equipment 7 cabinetry of at least two other carriers. So what 8 we're trying to do here in terms of, both the tower 9 design and the compound, is do it in a matter to 10 essentially accommodate the possibility, if not the 11 probability, of other carriers coming.</p> <p>12 In terms of why we're here, in terms 13 of the relief, we are here for a use variance; what 14 is commonly referred to as a d(1) use variance. 15 Under Harding Township's wireless communication 16 ordinance, wireless communication towers are only 17 permitted in the OB Zone and in the B-2 zone on the 18 easterly side of Route 202, neither of which is 19 proximate to where this facility is located. 20 Because we are not located in the permitted 21 conditional use zones, we're before you for a d(1) 22 use variance, together with site plan approval.</p> <p>23 In terms of a sneak preview of who I 24 intend to present as witnesses, so both the board 25 and any interested members of the public can direct</p>
<p style="text-align: right;">Page 11</p> <p>1 variation, sir. I would say that the applicant's 2 required -- the applicant would be willing to live 3 with its antenna array at 120 feet; whether the 4 board thinks that the tower should be built higher 5 from the get-go, or built to be extendable is a 6 different situation.</p> <p>7 COMMISSIONER ROSENBACH: Okay. Thank 8 you.</p> <p>9 MR. SCHNEIDER: Okay.</p> <p>10 COMMISSIONER CHIPPERSON: I have a 11 quick question too.</p> <p>12 MR. SCHNEIDER: Sure.</p> <p>13 COMMISSIONER CHIPPERSON: You meant 14 when the height was decreased to 120, there would 15 be a decrease in coverage. Right?</p> <p>16 MR. SCHNEIDER: That's correct.</p> <p>17 So in addition to the tower, based on 18 its ultimate design and height, there is proposed 19 here, just for some informational purposes, a 20 1,620-square-foot compound surrounding the tower. 21 That compound is intended to accommodate the 22 Verizon Wireless equipment at ground level, 23 together with an emergency generator, only to be 24 operated in the event of a power failure. It's one 25 of the issues or comments raised, I believe by</p>	<p style="text-align: right;">Page 13</p> <p>1 their questions to the appropriate witnesses, we 2 intend to -- at least initially -- present three 3 witnesses:</p> <p>4 The first is Frances Boschulte. She's 5 the applicant's radiofrequency engineer. Not to be 6 overly optimistic, but I don't expect us to get 7 much past her testimony this evening, but she will 8 be my first witness.</p> <p>9 The second witness will be Mr. Jim 10 Murawski from E2PM. He will be the applicant's 11 site plan engineer.</p> <p>12 And the third witness will be 13 Mr. William Masters, the applicant's professional 14 planner.</p> <p>15 So that's, Mr. Chairman, members of 16 the board, hopefully an overview. It's probably 17 longer than you may have wanted to hear, but I 18 thought there was some important information that 19 was important to communicate from the get-go. So 20 unless there's any initial questions for me, or 21 procedural questions, I'm prepared to proceed with 22 my first witness.</p> <p>23 CHAIRMAN FLANAGAN: No, that would be 24 great.</p> <p>25 Let me just take one second for</p>

<p style="text-align: right;">Page 14</p> <p>1 members of the public, everyone's here to hear this 2 application, and just so you understand how the 3 process works, the applicant is asking for a 4 variance; they're asking to do something on the 5 property which is not permitted per the zoning 6 ordinance.</p> <p>7 They are going to present testimony. 8 He just listed three experts who are going to 9 testify. The board is then going to ask 10 questions -- well, if we like, we will ask 11 questions of this expert. We have the board's 12 expert here with us as well, who will provide 13 testimony for us as well; we'll ask questions of 14 him.</p> <p>15 There will be an opportunity for 16 everyone in the public to ask questions themselves 17 of a witness. So if someone presents testimony, 18 the public will be given an opportunity to ask 19 questions.</p> <p>20 We will see how the timing goes. I 21 expect this application will take several meetings; 22 typically, they do. Certainly, we won't finish 23 tonight; a couple more at least.</p> <p>24 We will then -- ideally, what I'll do 25 is I'll allow the public to ask questions of a</p>	<p style="text-align: right;">Page 16</p> <p>1 CHAIRMAN FLANAGAN: Yeah, so when did 2 we schedule that --</p> <p>3 THE SECRETARY: The 26th and/or the 4 2nd -- or the 27th, it was Sunday, right.</p> <p>5 CHAIRMAN FLANAGAN: So that's a week 6 from this coming Sunday, and I think, when we do 7 the site visit, what I'd like to see is the site 8 where the pad's going to be staked out. Is it 9 staked out, or is it possible to have that done by 10 then?</p> <p>11 MR. SCHNEIDER: Let me -- so we're 12 talking about the 27th or --</p> <p>13 THE SECRETARY: Yeah, Sunday the 27th.</p> <p>14 MR. SCHNEIDER: Okay. You brought up 15 a point. Let me deal with one other matter that I 16 should have mentioned. And it's a good thing.</p> <p>17 When we originally bid for the 18 property, we bid on, let me say, a location. The 19 township, through Mr. Fox, indicated that it was 20 doing some work relative to a -- and Paul can speak 21 to it -- a proposed relocation of its salt shed. 22 So we actually, somewhat, when we filed the 23 application, relocated our facility -- not 24 significantly -- to accommodate the township's 25 plans for a salt shed.</p>
<p style="text-align: right;">Page 15</p> <p>1 witness after testimony's been provided. Depending 2 on timing, we will see where we are. I'll tell 3 you, this meeting, this board, is going to adjourn 4 at 11 p.m., at the latest, every night. So keep in 5 mind, if you have questions, write them down; you 6 will get an opportunity to ask.</p> <p>7 With that said, if you want to present 8 your first witness.</p> <p>9 MR. SCHNEIDER: Sure. Mr. Chairman --</p> <p>10 VICE CHAIR NEWLIN: Can I ask a 11 process question? Are we going to have a site 12 visit for this application?</p> <p>13 CHAIRMAN FLANAGAN: Good question.</p> <p>14 VICE CHAIR NEWLIN: I would say we 15 should.</p> <p>16 CHAIRMAN FLANAGAN: Okay. There's one 17 vote for site visit. Does anyone else think we 18 need -- would anyone else like to see the site?</p> <p>19 COMMISSIONER ADDONIZIO: I have I 20 haven't seen the site.</p> <p>21 CHAIRMAN FLANAGAN: There's two. 22 So we want to schedule a site visit. 23 Is it possible --</p> <p>24 MR. SCHNEIDER: Not this Saturday, 25 hopefully.</p>	<p style="text-align: right;">Page 17</p> <p>1 I've recently become aware that -- and 2 Paul can talk to this -- that that may not come to 3 fruition. So we -- either -- we have the two 4 specified locations. Either location is 5 acceptable, and it's really not going to be, I 6 don't think, significant, from a planning 7 perspective, but I'm just throwing that out there, 8 Mr. Chairman, because I don't know -- it's really 9 going to be dependent on the township's plans, 10 which one we go to. And we're going to ultimately 11 having an exhibit showing you the two locations, I 12 don't think it's really going to be significant, 13 but we can -- Jim, we can stake out the two 14 locations?</p> <p>15 MR. MURAWSKI: Yes.</p> <p>16 MR. SCHNEIDER: So we can do both 17 alternate locations?</p> <p>18 MR. MURAWSKI: Yes.</p> <p>19 MR. SCHNEIDER: So we would -- if you 20 want, we can stake out the two subject --</p> <p>21 CHAIRMAN FLANAGAN: Are they 22 overlapping, the locations, or are they completely 23 different sites?</p> <p>24 MR. MURAWSKI: They're adjacent to 25 each other, and they're orientated 90 degrees from</p>

<p style="text-align: right;">Page 18</p> <p>1 one another.</p> <p>2 CHAIRMAN FLANAGAN: All right. So,</p> <p>3 Paul, do you have any idea when the town will know</p> <p>4 what they're doing with their salt shed, so the</p> <p>5 applicant can -- have you been involved in this</p> <p>6 discussion?</p> <p>7 MR. FOX: I've been provided options;</p> <p>8 the decision hasn't been made by those that make</p> <p>9 decisions.</p> <p>10 CHAIRMAN FLANAGAN: Would the board be</p> <p>11 okay if both possible -- okay.</p> <p>12 MR. SCHNEIDER: If we can do it, we'll</p> <p>13 be glad to do it; if it's not, we'll have someone</p> <p>14 there to be able to explain.</p> <p>15 MR. FOX: The actual tower location</p> <p>16 only changes by about 30 feet between the two.</p> <p>17 CHAIRMAN FLANAGAN: Thirty feet?</p> <p>18 COMMISSIONER MACELLI: That's a lot.</p> <p>19 CHAIRMAN FLANAGAN: That's a fairly</p> <p>20 big move.</p> <p>21 MR. FOX: When you look at the site</p> <p>22 and where this is being put, it's not a big</p> <p>23 difference.</p> <p>24 CHAIRMAN FLANAGAN: Okay. Could you</p> <p>25 have that -- can you have both of the possible pads</p>	<p style="text-align: right;">Page 20</p> <p>1 minute. I hate to do this to you guys, but can we</p> <p>2 do it at noon?</p> <p>3 VICE CHAIR NEWLIN: Fine with me.</p> <p>4 CHAIRMAN FLANAGAN: So we give an hour</p> <p>5 for the --</p> <p>6 COMMISSIONER ROSENBAUM: It's not</p> <p>7 going to take an hour.</p> <p>8 CHAIRMAN FLANAGAN: How about, if you</p> <p>9 don't mind waiting for us, we'll schedule it for</p> <p>10 11:30. We'll try to get there for 11:30.</p> <p>11 MR. SCHNEIDER: Okay.</p> <p>12 CHAIRMAN FLANAGAN: Phil thinks we'll</p> <p>13 get through the other quickly.</p> <p>14 COMMISSIONER ROSENBAUM: Forty</p> <p>15 minutes.</p> <p>16 MR. SCHNEIDER: Your experience is</p> <p>17 usually a representative of the applicant -- the</p> <p>18 engineer and a representative of the applicant be</p> <p>19 present --</p> <p>20 CHAIRMAN FLANAGAN: Yeah.</p> <p>21 MR. SCHNEIDER: Okay.</p> <p>22 CHAIRMAN FLANAGAN: Yeah, someone to</p> <p>23 point out which area is which. And yeah, it'll</p> <p>24 usually be the -- who's your -- some representative</p> <p>25 is fine.</p>
<p style="text-align: right;">Page 19</p> <p>1 staked out by the 27th? So that's 10 days from</p> <p>2 now.</p> <p>3 MR. SCHNEIDER: Yes.</p> <p>4 COMMISSIONER ROSENBAUM: Is either one</p> <p>5 of those locations the same as where the crane test</p> <p>6 was months and months ago?</p> <p>7 MR. MURAWSKI: Yes.</p> <p>8 MR. SCHNEIDER: The location was at</p> <p>9 the one that's shown before the board now, Rick, or</p> <p>10 the original one?</p> <p>11 MR. MASTERS: It's the original</p> <p>12 location.</p> <p>13 MR. SCHNEIDER: It was at the</p> <p>14 original -- the crane test was at the original</p> <p>15 location.</p> <p>16 MR. MASTERS: It's the one before the</p> <p>17 board now.</p> <p>18 MR. SCHNEIDER: Okay. The crane test</p> <p>19 is on the one that is before the board now.</p> <p>20 CHAIRMAN FLANAGAN: So why don't we</p> <p>21 schedule the 27th. We have an 11 a.m. currently</p> <p>22 scheduled. Does anyone want to get up earlier than</p> <p>23 11? Actually, you know what --</p> <p>24 COMMISSIONER ROSENBAUM: Yes.</p> <p>25 CHAIRMAN FLANAGAN: Well, wait a</p>	<p style="text-align: right;">Page 21</p> <p>1 MR. SCHNEIDER: Okay.</p> <p>2 VICE CHAIR NEWLIN: A knowledgeable</p> <p>3 representative.</p> <p>4 CHAIRMAN FLANAGAN: Yeah,</p> <p>5 knowledgeable representative is fine.</p> <p>6 MR. SCHNEIDER: We'll have a</p> <p>7 representative of the engineering firm there.</p> <p>8 COMMISSIONER CHIPPERSON: So, Mike, I</p> <p>9 know, when we were at the first crane test -- and</p> <p>10 I'm not suggesting this, I'm throwing it out for</p> <p>11 consideration, but there were some questions from</p> <p>12 people on the board, and we felt that it wasn't</p> <p>13 really proper timing, because there was no</p> <p>14 application before the board.</p> <p>15 CHAIRMAN FLANAGAN: Right.</p> <p>16 COMMISSIONER CHIPPERSON: And I know</p> <p>17 one or two people, it was suggested that, if we</p> <p>18 needed another crane test, we could ask for it at</p> <p>19 this time. I don't know what the board thinks</p> <p>20 about that, I'm just throwing that out there.</p> <p>21 CHAIRMAN FLANAGAN: I think we can ask</p> <p>22 for anything we like. Would you like to -- should</p> <p>23 we -- sorry, so you're in favor of another crane</p> <p>24 test, I guess.</p> <p>25 COMMISSIONER CHIPPERSON: Well, I</p>

<p style="text-align: right;">Page 22</p> <p>1 think we should discuss it. And if the site is 2 moving 30 feet, Paul -- 3 MR. FOX: About 28 feet. 4 COMMISSIONER CHIPPERSON: And I know 5 some of the complaints about the first crane test 6 is that people in the town were not able to view 7 it, because of the timing, I think it was a 10 8 a.m., it was down by 2, you know, people couldn't 9 see it coming home from work, there were comments 10 that it could have been left for a few days. So I 11 don't know that I personally need to see it, but, 12 yeah. 13 CHAIRMAN FLANAGAN: Well, why don't we 14 do this, then? Can the board think about whether 15 the board would like to see another crane test? We 16 will not ask that that is ready for the 27th. 17 MR. SCHNEIDER: It's a significant 18 undertaking, so I don't want to -- I'm not being 19 adversarial; it's a significant undertaking. It's 20 nothing we can leave up for a number of days, it 21 would have to be a limited generally number of 22 hours. And I don't know that your DPW people want 23 it there for -- 24 CHAIRMAN FLANAGAN: Understood. 25 MR. SCHNEIDER: So why don't we take</p>	<p style="text-align: right;">Page 24</p> <p>1 under advisement, and as the matter proceeds, we'll 2 deal with it then. 3 COMMISSIONER CHIPPERSON: All right. 4 One more question. You talked about the stealth 5 monopole and the strict monopole. I was at the 6 historic -- the historical preservation meeting 7 when they discussed this issue, and they were 8 talking about the possibility of something that 9 isn't the tree and isn't a straight pole, and I 10 think it was Dan that mentioned that there might be 11 other configurations. Do you recall this, Dan? 12 COMMISSIONER MACELLI: I do. 13 COMMISSIONER CHIPPERSON: What was it 14 called, kind of a barn type -- 15 COMMISSIONER MACELLI: It was more 16 like a -- 17 PUBLIC SPEAKER: Silo. 18 COMMISSIONER MACELLI: -- I saw one on 19 Route 78 once, it was like a wind turbine looking 20 weather vein on -- 21 MR. SCHNEIDER: There's one with a 22 windmill? It's like a windmill? 23 COMMISSIONER MACELLI: It looked like 24 a windmill. 25 COMMISSIONER CHIPPERSON: Not a</p>
<p style="text-align: right;">Page 23</p> <p>1 it under advisement? It's not as simple, we have 2 to make arrangements. There's a lot of other 3 factors associated. 4 CHAIRMAN FLANAGAN: So what I'd like 5 to do is just have the board consider it at the 6 next meeting, we can make a decision as to whether 7 we'd like to see another crane test. 8 COMMISSIONER CHIPPERSON: And one 9 more -- 10 MR. SCHNEIDER: And, frankly, the 11 issue -- I'm sorry -- the discussion about height 12 may play into that. But to be discussed. 13 CHAIRMAN FLANAGAN: So when we get 14 back the next meeting, we'll have -- we'll continue 15 this discussion. 16 COMMISSIONER CHIPPERSON: And there 17 isn't a timing for requesting that. So if we get 18 into the height discussion and then for some reason 19 feel that we need it, we can request it at that 20 time. 21 CHAIRMAN FLANAGAN: I don't know. Do 22 you have any objection to us requesting it at a 23 later date, if we -- 24 MR. SCHNEIDER: I'm not saying the 25 board's waiving anything. Why don't we take it</p>	<p style="text-align: right;">Page 25</p> <p>1 windmill. I thought it was a windsock. 2 COMMISSIONER MACELLI: It wasn't a 3 windsock, because that would be for helicopters, 4 but it looked like some -- 5 COMMISSIONER CHIPPERSON: It wasn't a 6 windmill. 7 COMMISSIONER MACELLI: It looked like 8 a weather vein of some sort. 9 COMMISSIONER CHIPPERSON: Regardless, 10 do you have other designs that you've put in? And 11 who would speak to that of your three witnesses 12 that you're planning -- is that something you plan 13 to talk about? And if so, who would discuss it? 14 Because there was feedback from the town on that. 15 MR. SCHNEIDER: It would be -- it 16 wouldn't be this witness; it would be some -- 17 either our site plan engineer and our planner. 18 VICE CHAIR NEWLIN: Can I jump in? Is 19 it possible, because this sounds cheap, just to get 20 mocks? Because you did a mock of the tree. Right? 21 It's a Photoshop, I assume, I'm thinking. So is 22 that possible, to show us what some of the -- what 23 a monopole would look like, and any other things 24 that -- I'm not sure what these guys are referring 25 to, but can we see other mocks?</p>

<p style="text-align: right;">Page 26</p> <p>1 COMMISSIONER CHIPPERSON: I think they 2 figured it out. They had a weather vein on top, 3 is what -- 4 COMMISSIONER MACELLI: I mean, I think 5 it's still considered a weather vein, because it 6 spins, and rotates. 7 VICE CHAIR NEWLIN: Just to give them 8 a heads up -- 9 CHAIRMAN FLANAGAN: Yeah. 10 MR. SCHNEIDER: It is not -- in the 11 spirit of cooperation, it is not difficult to photo 12 sim the straight monopole. That's not an issue. 13 If you, perhaps, can communicate through Lori or 14 whomever, maybe the specific location of the one 15 you're referring to, I can get some guidance -- 16 COMMISSIONER MACELLI: We can get the 17 right terminology. 18 COMMISSIONER CHIPPERSON: But you 19 don't have standard -- like, the stealth pole is a 20 standard pole you've put in a lot of locations. Is 21 there any further -- 22 MR. SCHNEIDER: Generally, the way the 23 industry has matured, we are pretty much down to 24 what I'll call the strict monopole and the tree. 25 There have been windmills; there have, in rare</p>	<p style="text-align: right;">Page 28</p> <p>1 the members of the public would like to see that. 2 MR. SCHNEIDER: Not an issue at all. 3 CHAIRMAN FLANAGAN: And if we come up 4 with any other design ideas -- 5 MR. SCHNEIDER: Well, if we can do it 6 reasonably, we're glad to accommodate that. 7 CHAIRMAN FLANAGAN: And we will 8 communicate any thoughts to you before the next 9 meeting, just so we have that for the meeting. 10 MR. SCHNEIDER: Right. But doing a 11 strict monopole is not a big undertaking. 12 CHAIRMAN FLANAGAN: Okay. 13 MR. SCHNEIDER: Mr. Chairman, just 14 before we do -- I did discuss this with counsel, I 15 think it's appropriate, for purposes of the record, 16 I have with me this evening a copy of the actual 17 bid specifications issued by the township, as well 18 as a copy of the lease. They're public records. 19 So unless anyone has an objection, I'd like to mark 20 the bid specifications as A-1 for purposes of the 21 record, and the actual fully executed lease dated 22 June 14, 2015, as A-2. 23 (Whereupon, Exhibits A-1 and A-2 are 24 marked for identification.) 25 CHAIRMAN FLANAGAN: Thank you.</p>
<p style="text-align: right;">Page 27</p> <p>1 cases -- and I'll emphasize rare -- silos. 2 COMMISSIONER CHIPPERSON: That's what 3 it was. It was a silo. 4 COMMISSIONER MACELLI: It wasn't a 5 silo. 6 COMMISSIONER CHIPPERSON: It wasn't? 7 COMMISSIONER MACELLI: It was more 8 along the lines of a windmill, weather vein. 9 MR. SCHNEIDER: The silo, actually, is 10 a physically -- 11 COMMISSIONER MACELLI: It's a physical 12 building. 13 MR. SCHNEIDER: It's a big mass 14 structure. If you want to see what the silo -- and 15 I don't think a silo works here, but beauty is in 16 the eyes of the beholder -- there's a silo located 17 at Ort Farm in Long Valley, if you know where that 18 is, off of -- but you're talking a lot of space; a 19 lot of girth. 20 VICE CHAIR NEWLIN: But you can get us 21 a monopole mock, that's easy? 22 MR. SCHNEIDER: Yes, not a problem at 23 all. 24 VICE CHAIR NEWLIN: I think it would 25 be important for the board to see that, and I think</p>	<p style="text-align: right;">Page 29</p> <p>1 MR. SCHNEIDER: And I'll hand them to 2 Lori. 3 THE SECRETARY: And you both can have 4 a seat with the microphone between you, if you'd 5 like. 6 CHAIRMAN FLANAGAN: Yeah, you don't 7 have to stand. There are chairs there. Feel free 8 to sit. 9 COMMISSIONER CHIPPERSON: We've 10 decided it's a weather vein, not a windmill. 11 MR. SCHNEIDER: If you tell me the 12 location, we can go out. Around exit 40? 13 CHAIRMAN FLANAGAN: It's between 14 Basking Ridge and Berkeley Heights, or Basking Ridge 15 and New Providence. 16 COMMISSIONER MACELLI: Something 17 around there. 18 COMMISSIONER CHIPPERSON: And I'll 19 just say, just because I listened to public comment 20 at the other meeting, and generally, we heard no 21 tree. So that's -- I'm kind of just bringing what 22 we've already seen the town express, you know, kind 23 of in advance, for advanced notice. 24 MR. SCHNEIDER: And I will -- just 25 before we get there, let me make one final comment:</p>

<p style="text-align: right;">Page 30</p> <p>1 That option is fine with the applicant, and frankly</p> <p>2 will allow much easier design from an extension</p> <p>3 perspective, unequivocally, unconditionally. It is</p> <p>4 much easier to build a strict monopole to be</p> <p>5 extendable than a tree. There is no if about that.</p> <p>6 From a design perspective, it is -- if you built</p> <p>7 the tower to be 120, and wanted to extend it to</p> <p>8 140, the strict monopole, 100 percent, is easier to</p> <p>9 extend, versus a tree. And you're all smart enough</p> <p>10 to understand why: Because you have trees that</p> <p>11 are -- you have branches that are designed to 120,</p> <p>12 and then you're extending it, so you have to</p> <p>13 re-branch the whole thing, and there's a design to</p> <p>14 how the branches are done. So I think it makes</p> <p>15 obvious sense. But another issue for another day.</p> <p>16 CHAIRMAN FLANAGAN: Good. Thank you.</p> <p>17 COMMISSIONER CHIPPERSON: Thank you.</p> <p>18 CHAIRMAN FLANAGAN: Do you want to --</p> <p>19 MR. SCHNEIDER: Did we swear</p> <p>20 Ms. Boschulte?</p> <p>21 CHAIRMAN FLANAGAN: If we could.</p> <p>22 MR. PURCELL: Please state your name.</p> <p>23 MS. BOSCHULTE: Frances Boschulte.</p> <p>24 FRANCES BOSCHULTE,</p> <p>25 having been duly sworn, testified as follows:</p>	<p style="text-align: right;">Page 32</p> <p>1 as an expert witness in the field of radiofrequency</p> <p>2 engineering?</p> <p>3 A. Yes.</p> <p>4 CHAIRMAN FLANAGAN: Dr. Eisenstein, do</p> <p>5 you have a view on this?</p> <p>6 DR. EISENSTEIN: Yes, I've -- I know</p> <p>7 her; she's fine.</p> <p>8 CHAIRMAN FLANAGAN: We accept her.</p> <p>9 MR. SCHNEIDER: Thank you.</p> <p>10 BY MR. SCHNEIDER:</p> <p>11 Q. Frances, let's take a couple of</p> <p>12 moments, if we can, just to put on the record what</p> <p>13 you've done in preparation for your testimony.</p> <p>14 You're not an employee of Verizon, but</p> <p>15 you indicated you're employed by Piercon. Am I to</p> <p>16 understand, therefore, that Piercon was retained by</p> <p>17 Verizon Wireless to serve as an independent expert</p> <p>18 witness in this matter?</p> <p>19 A. Yes, that is correct.</p> <p>20 Q. Okay. And in preparation for</p> <p>21 conducting the analysis that you did, and that</p> <p>22 you'll testify to this evening, let's understand</p> <p>23 what you did.</p> <p>24 At a certain point, did you obtain</p> <p>25 certain engineering data from Verizon Wireless?</p>
<p style="text-align: right;">Page 31</p> <p>1 CHAIRMAN FLANAGAN: Can I just -- do</p> <p>2 you have one of these things? I just want to make</p> <p>3 sure that you're going to be heard on the recorder.</p> <p>4 Can you lower it? Will that work if you lower it?</p> <p>5 MS. BOSCHULTE: Testing.</p> <p>6 CHAIRMAN FLANAGAN: Mr. Schneider, do</p> <p>7 you want to present your witness?</p> <p>8 MR. SCHNEIDER: Yes.</p> <p>9 DIRECT EXAMINATION</p> <p>10 BY MR. SCHNEIDER:</p> <p>11 Q. Ms. Boschulte, what is your</p> <p>12 profession?</p> <p>13 A. I am employed by Piercon Solutions as</p> <p>14 a radiofrequency engineer. I have a bachelor's</p> <p>15 degree in electrical engineering, and I have</p> <p>16 designed wireless facilities throughout the state</p> <p>17 of New York and New Jersey for over 10 years.</p> <p>18 Q. Okay. And in conjunction with your</p> <p>19 expertise, have you had occasion to testify before</p> <p>20 various municipal planning boards or boards of</p> <p>21 adjustment in your capacity as a radiofrequency</p> <p>22 engineer?</p> <p>23 A. Yes, I have.</p> <p>24 Q. And has your testimony been, by these</p> <p>25 various planning boards or zoning boards, accepted</p>	<p style="text-align: right;">Page 33</p> <p>1 A. Yes, I received engineering data from</p> <p>2 Verizon Wireless.</p> <p>3 Q. Okay. Have you had the opportunity to</p> <p>4 visit the site?</p> <p>5 A. Yes, I have.</p> <p>6 Q. Okay. And have you reviewed and</p> <p>7 prepared the various propagation reports that have</p> <p>8 been contained within various reports that you've</p> <p>9 submitted to the board? Is that correct?</p> <p>10 A. That is correct.</p> <p>11 Q. Okay. And at least as it relates to</p> <p>12 radiofrequency engineering, are you familiar with</p> <p>13 the relevant provisions of Harding Township's</p> <p>14 wireless communications ordinance, as it relates to</p> <p>15 radiofrequency engineering?</p> <p>16 A. Yes.</p> <p>17 Q. Okay. And you have also, very</p> <p>18 importantly, had the opportunity -- or have you had</p> <p>19 the opportunity to discuss your proposed testimony</p> <p>20 with Dr. Eisenstein in advance of tonight's</p> <p>21 hearing?</p> <p>22 A. Yes.</p> <p>23 Q. Okay. And for purposes of the record,</p> <p>24 Ms. Boschulte, you are the author of a certain</p> <p>25 report entitled Independent Radiofrequency Report</p>

<p style="text-align: right;">Page 34</p> <p>1 Regarding a Proposed Wireless Communications 2 Facility For New York SMSA, Limited Partnership, 3 and the report is prepared by Piercon Solutions, by 4 you, dated August 28, 2018. Is that correct?</p> <p>5 A. Yes.</p> <p>6 Q. Okay.</p> <p>7 MR. SCHNEIDER: Mr. Chairman, that was 8 actually a report that was submitted in conjunction 9 with the application, so unless Ed has a thought to 10 the contrary, if you'd like me to mark IT, I can.</p> <p>11 MR. PURCELL: That's fine.</p> <p>12 MR. SCHNEIDER: But for the board's 13 edification, that was part of the application 14 package.</p> <p>15 THE SECRETARY: They have that.</p> <p>16 MR. SCHNEIDER: Okay. Thank you.</p> <p>17 BY MR. SCHNEIDER:</p> <p>18 Q. Before we get into some of the 19 specifics of the application, let's take a couple 20 of moments, if we can, to discuss a little bit 21 about who Verizon Wireless is, in terms of the 22 number of different frequency bands that it 23 operates at.</p> <p>24 First of all, in terms of stating the 25 obvious, Verizon is a carrier that is licensed by</p>	<p style="text-align: right;">Page 36</p> <p>1 hopefully, interrupting you, can you just, for the 2 edification of the board -- I think the board's 3 heard a number of wireless communications cases in 4 the past, but I think for members of the public, 5 can you maybe just take us through what are the 6 general considerations associated with the 7 operation of a wireless communications facility? 8 You know, what are the factors that you look at, in 9 terms of meeting your technical objectives? What 10 are the design considerations that you look at?</p> <p>11 A. Well, how a wireless network operates 12 is that there is a series of wireless facilities, 13 and they depend on each other to provide seamless 14 reliable coverage. So as a user is moving from one 15 coverage area to the next, there needs to be a 16 certain amount of overlap, so that the 17 communication, whether it's voice or data, it goes 18 uninterrupted.</p> <p>19 Q. And when you talk about that, the 20 network has matured to the point, as I understand 21 it, where, when I started doing this work in 1990, 22 all we cared about was people driving around in 23 cars, and in terms of voice, with a bag antenna on 24 the back. But is it a fair statement to say that, 25 as the network has matured for Verizon Wireless,</p>
<p style="text-align: right;">Page 35</p> <p>1 the Federal Communications Commission to provide 2 wireless service to this market area?</p> <p>3 A. Yes.</p> <p>4 Q. Okay. And can you discuss the 5 specific frequency bands that Verizon Wireless is 6 licensed at, and perhaps equally as important, 7 indicate the different parameters or differences in 8 each of the respective frequency bands, as to how 9 they impact coverage?</p> <p>10 A. Yes. Verizon Wireless is licensed in 11 four frequency bands: There is the 800 megahertz, 12 the 700 megahertz, the 1900, and the 2100 13 megahertz.</p> <p>14 The difference in how they propagate, 15 the lower frequencies propagate further; the higher 16 frequencies are more susceptible to terrain and 17 foliage, so they propagate less, the coverage 18 radius is less at the higher frequency bands.</p> <p>19 Q. And by "higher frequency bands," so 20 the 700 and 800 megahertz band would be, so to 21 speak, greater coverage, less impacted by terrain; 22 the higher, the 1900 and 21, would have certain 23 limitations. Is that correct?</p> <p>24 A. That is correct.</p> <p>25 Q. Okay. Now, maybe without me,</p>	<p style="text-align: right;">Page 37</p> <p>1 there is a significant component of that reliable 2 coverage which relates to data now?</p> <p>3 A. Yes. The service that is provided 4 today is in the form of data. Even voice is now in 5 the form of data. So the communication is a data 6 service. Verizon Wireless currently has a 4G LTE 7 network. As everyone knows, we don't just use our 8 phones to make voice calls; there's endless amounts 9 of texting. We also work on our phones. So 10 there's endless amounts of data being transferred 11 back and forth, for personal use as well as for 12 business.</p> <p>13 People, also, the expectation is that 14 they are able to have a reliable service in -- not 15 just outside, but inside their homes, inside where 16 they work, in their cars, on the train. In all 17 these various locations, the demand to provide 18 reliable service is there.</p> <p>19 Q. Okay. And the ability to -- or the 20 obligation to provide reliable service, therefore, 21 includes not only maintaining a conversation, but 22 also, presumably, to establish a data and continue 23 a data transmission. Correct?</p> <p>24 A. Absolutely.</p> <p>25 Q. Okay. And what are, generally, the</p>

<p style="text-align: right;">Page 38</p> <p>1 factors that you look at, as a radiofrequency 2 engineer, in designing a wireless communications 3 facility, in terms of -- what are -- let me ask you 4 that: What are the factors that you would look at 5 as you design a wireless communications facility? 6 A. The primary factor comes down to 7 signal strength, which is known within the industry 8 as a reliable signal level that will allow a 9 seamless, uninterrupted data connection within a 10 building, as I mentioned, to provide in-building 11 service within a suburban or urban area. And that 12 signal level has been determined to be a neg 95 dBm 13 receive signal strength level, and that has been 14 accepted as an industry standard. 15 Q. Okay. Let's defer that just for one 16 moment. 17 Before we get into the neg 95 dBm 18 standard, what other -- you've indicated what 19 you're designing to, but what factors are at play 20 when you design to neg 95? I mean, is it a 21 function of height? Is it a function of terrain? 22 What are the various considerations that result in 23 this neg 95 standard? 24 A. Well, in designing a network to 25 provide reliable service, the factors that come</p>	<p style="text-align: right;">Page 40</p> <p>1 A. Yes, correct. 2 Q. And throughout the years, I'm sure 3 you've had some discussions with Dr. Eisenstein, in 4 terms of this neg 95 dBm standard. Is that, in 5 your professional opinion, a reasonably -- a 6 reasonable standard, as it relates to an 7 environment such as Harding Township? 8 A. Yes, it is an acceptable level to 9 provide in-building service within a residential 10 home. 11 Q. Okay. And that -- and just in terms 12 of some comparative analysis, the neg -- that neg 13 dBm standard would be different. By way of 14 example, if you were appearing -- and no way 15 comparing the two, but if you were appearing in, 16 let's say, Hoboken, Jersey City, or some more 17 density populated area, the standard by which you 18 were designing to would not necessarily be neg 95; 19 it would be a different standard. Correct? 20 A. Yes, the signal required in those 21 particular environments, where you have structures 22 of masonry material and concrete, that requires a 23 stronger signal to deal with the penetration losses 24 coming into the structure. So, yes, the signal 25 would not be neg 95, but it would be designed to</p>
<p style="text-align: right;">Page 39</p> <p>1 into play are the actual antenna height; the 2 surrounding terrain, whether there's hills and 3 valleys, dense foliage; the type of structure of 4 the buildings that we're trying to provide 5 in-building service to. 6 Q. Okay. And is there a technical 7 requirement for these cell sites or base stations 8 to have a certain overlap, in order to, 9 essentially, communicate with each other? 10 A. Yes, without the overlap, if you enter 11 an area where there currently exists poor signal or 12 no coverage at all, you will either drop your data 13 connection, or the connection that you currently 14 have will be extremely distorted. 15 Q. Okay. Let's talk about this neg 95 16 dBm standard in, maybe, lay terms. 17 First of all, is that, in part, 18 designed not just for people in vehicles, but for 19 people to engage, whether it's voice or data, in 20 their buildings, whether residences, or work, 21 whatever the case may be? 22 A. Correct. 23 Q. And that, perhaps, in today's society, 24 is even more highlighted by the number of people 25 that may work at home. Correct?</p>	<p style="text-align: right;">Page 41</p> <p>1 something like neg 85, or neg 75, in those types of 2 urban areas. 3 Q. So neg 85 would be, essentially, in 4 lay terms, a need for a stronger signal, because of 5 those considerations. Correct? 6 A. Yes. 7 Q. Okay. And you're comfortable that neg 8 95 is a reasonable standard to design to for the 9 Harding Township geographic area. Correct? 10 A. That is correct. 11 Q. Okay. Now, while you were not 12 specifically involved in -- directly in the 13 processes relating to the public bid, you have 14 familiarized yourself, by inquiry to Verizon 15 Wireless, of how that bid process somewhat 16 unfolded. Correct? 17 A. Yes. 18 Q. Okay. And it is my understanding that 19 the bid process was the result of a culmination of 20 a series of meetings between Verizon Wireless and 21 the township administrator, committee, as the case 22 may be, leading to the preparation of this public 23 bid. Correct? 24 A. Yes. 25 Q. Okay. And what did you understand to</p>

<p style="text-align: right;">Page 42</p> <p>1 be the two primary -- or what were the primary</p> <p>2 considerations that the township was looking at</p> <p>3 when it released the bid for the 140-foot tower?</p> <p>4 A. One, sufficient height to provide a</p> <p>5 significant amount of coverage within the township,</p> <p>6 since there's currently a significant gap.</p> <p>7 Q. Okay.</p> <p>8 A. And the second was to also provide</p> <p>9 collocation.</p> <p>10 Q. Okay. So those were the -- as you</p> <p>11 understand it, those were the two primary</p> <p>12 considerations that the township considered when it</p> <p>13 released the bid for the 140-foot tower. Correct?</p> <p>14 A. Yes.</p> <p>15 Q. Okay.</p> <p>16 COMMISSIONER ROSENBACH:</p> <p>17 Mr. Schneider, can we clarify something, please?</p> <p>18 Because I'm certainly not familiar with the bid; I</p> <p>19 don't know if anybody else on the board is. And</p> <p>20 when the witness has just said "a significant gap,"</p> <p>21 does that mean that the township had decided there</p> <p>22 was a significant gap for Verizon, or a significant</p> <p>23 gap for each and every vendor of this type of</p> <p>24 service? Or neither? I mean, who had determined</p> <p>25 there was a significant gap; for which carriers?</p>	<p style="text-align: right;">Page 44</p> <p>1 Q. Okay. And you are aware of the zone</p> <p>2 districts in which these facilities are</p> <p>3 conditionally permitted. Right?</p> <p>4 A. That's correct.</p> <p>5 Q. And you've had the opportunity -- and</p> <p>6 we'll get to this in a second -- you're familiar</p> <p>7 with where those zone districts are located</p> <p>8 relative to this particular piece of property.</p> <p>9 Correct?</p> <p>10 A. Yes, I am familiar with the locations.</p> <p>11 Q. Okay. With all of that background in</p> <p>12 mind, do you have with you this evening some</p> <p>13 exhibits which could help us, from a documentary</p> <p>14 perspective, understand where the gap exists, and</p> <p>15 how we're attempting to address that gap by this</p> <p>16 installation?</p> <p>17 A. Yes.</p> <p>18 Q. Okay. You have those all mounted, I</p> <p>19 see.</p> <p>20 A. Yes.</p> <p>21 Q. Okay.</p> <p>22 MR. SCHNEIDER: Do you want me,</p> <p>23 Counsel, to mark --</p> <p>24 MR. PURCELL: Yeah.</p> <p>25 MR. SCHNEIDER: Okay.</p>
<p style="text-align: right;">Page 43</p> <p>1 MR. SCHNEIDER: What I can tell you is</p> <p>2 that the town -- Verizon presented information to</p> <p>3 the township as to Verizon; what the township may</p> <p>4 have made inquiry of other carriers, I can't tell</p> <p>5 you, nor would I be in a position to comment on</p> <p>6 other carriers' services.</p> <p>7 COMMISSIONER ROSENBACH: So the bid</p> <p>8 didn't say there was a significant gap.</p> <p>9 MR. SCHNEIDER: That's correct.</p> <p>10 COMMISSIONER ROSENBACH: Verizon</p> <p>11 determined it had a significant gap.</p> <p>12 MR. SCHNEIDER: That's correct.</p> <p>13 MS. BOSCHULTE: That's correct.</p> <p>14 COMMISSIONER ROSENBACH: I may have</p> <p>15 misheard you. That was all.</p> <p>16 BY MR. SCHNEIDER:</p> <p>17 Q. In addition to the bid, you indicated,</p> <p>18 in the beginning of your testimony, that you had</p> <p>19 some background familiarity with the ordinance, at</p> <p>20 least as it relates to the radiofrequency aspects.</p> <p>21 And even though we're not in the conditionally</p> <p>22 permitted zone, you are aware that the ordinance</p> <p>23 did have a 120-foot maximum height; albeit, not</p> <p>24 applicable in this zone. Correct?</p> <p>25 A. Yes.</p>	<p style="text-align: right;">Page 45</p> <p>1 CHAIRMAN FLANAGAN: Lori, do you have</p> <p>2 these on -- for the screen, on the computer?</p> <p>3 THE SECRETARY: I don't know.</p> <p>4 COMMISSIONER CHIPPERSON: Are these</p> <p>5 the same as the ones in your report?</p> <p>6 THE SECRETARY: This was in the</p> <p>7 packet, though, wasn't it?</p> <p>8 CHAIRMAN FLANAGAN: Just for the</p> <p>9 public, I was wondering if we had electronic</p> <p>10 copies.</p> <p>11 Is it possible, in the future -- what</p> <p>12 do you need, PDFs to put up on the projector?</p> <p>13 MR. FOX: Yep.</p> <p>14 CHAIRMAN FLANAGAN: In the future, can</p> <p>15 we get PDFs, if possible, to put up on the screens?</p> <p>16 MR. SCHNEIDER: Sure.</p> <p>17 CHAIRMAN FLANAGAN: Thank you.</p> <p>18 MR. PURCELL: So what are we marking</p> <p>19 that as?</p> <p>20 MR. SCHNEIDER: Yeah, you want me</p> <p>21 to -- this is how many overlays.</p> <p>22 MS. BOSCHULTE: Four, I believe.</p> <p>23 THE SECRETARY: Is that going to be</p> <p>24 A-3?</p> <p>25 MR. SCHNEIDER: Yeah, but there's a</p>

<p style="text-align: right;">Page 46</p> <p>1 series of overlays, so just to facilitate the</p> <p>2 presentation, I'll mark them A-3, A-4, A-5, A-6. I</p> <p>3 think there's four.</p> <p>4 VICE CHAIR NEWLIN: And these are the</p> <p>5 exact ones in the report?</p> <p>6 MS. BOSCHULTE: Yes.</p> <p>7 VICE CHAIR NEWLIN: Were there any</p> <p>8 extra copies of this report?</p> <p>9 THE SECRETARY: I can go up and make</p> <p>10 copies right now, if you want.</p> <p>11 VICE CHAIR NEWLIN: I just want to</p> <p>12 know, if members of the public want today get</p> <p>13 copies of the report, how can they do that? Is it</p> <p>14 posted on the website?</p> <p>15 THE SECRETARY: I can put this on the</p> <p>16 website.</p> <p>17 VICE CHAIR NEWLIN: Is that okay?</p> <p>18 MR. PURCELL: Well, I mean, you know,</p> <p>19 it's a public record, you know, people can OPRA --</p> <p>20 THE SECRETARY: They can OPRA request</p> <p>21 it. They can come see -- I mean, the application</p> <p>22 itself is always available to be viewed --</p> <p>23 MR. PURCELL: Right.</p> <p>24 THE SECRETARY: -- and they can always</p> <p>25 request whatever they want, but I can certainly</p>	<p style="text-align: right;">Page 48</p> <p>1 COMMISSIONER ROSENBAUM: I do not have</p> <p>2 color. I have black and white.</p> <p>3 THE SECRETARY: I don't have color</p> <p>4 copies. They're black-and-white copies.</p> <p>5 CHAIRMAN FLANAGAN: How'd you get a</p> <p>6 color copy?</p> <p>7 COMMISSIONER ROSENBAUM: I don't know.</p> <p>8 I have this very nice glossy paper.</p> <p>9 CHAIRMAN FLANAGAN: I'm just saying,</p> <p>10 it's difficult to read in black and white. I can't</p> <p>11 read mine.</p> <p>12 MS. MERTZ: Do you want mine?</p> <p>13 THE SECRETARY: You know what? Give</p> <p>14 me a minute. Because this is being transcribed, I</p> <p>15 can do something, I'm pretty sure.</p> <p>16 CHAIRMAN FLANAGAN: How long of a</p> <p>17 minute?</p> <p>18 THE SECRETARY: Just keep going.</p> <p>19 COMMISSIONER MACELLI: Put your cape</p> <p>20 on.</p> <p>21 THE SECRETARY: I'm going to see if I</p> <p>22 can accommodate you in some way. Keep going, it's</p> <p>23 being recorded.</p> <p>24 VICE CHAIR NEWLIN: How did you guys</p> <p>25 get color copies?</p>
<p style="text-align: right;">Page 47</p> <p>1 accommodate them, if somebody wants a copy, they</p> <p>2 can contact us via OPRA request, and open record</p> <p>3 request, and we can send it to them.</p> <p>4 VICE CHAIR NEWLIN: Is that a lot of</p> <p>5 work?</p> <p>6 THE SECRETARY: No.</p> <p>7 VICE CHAIR NEWLIN: For members of the</p> <p>8 public.</p> <p>9 THE SECRETARY: If they contact me,</p> <p>10 no, to send it to them, no, it is not, because it</p> <p>11 can be sent via e-mail. Okay? And, again, the</p> <p>12 application itself is on file, it is upstairs, it</p> <p>13 is readily available to go through all of this, and</p> <p>14 this is all included.</p> <p>15 BY MR. SCHNEIDER:</p> <p>16 Q. Okay. Frances, why don't -- if you</p> <p>17 wouldn't mind just marking -- you have four</p> <p>18 separate exhibits?</p> <p>19 A. Yes.</p> <p>20 Q. Why don't we mark them just, now, A-3,</p> <p>21 A-4, A-5, and A-6.</p> <p>22 (Whereupon, Exhibits A-3 through A-6</p> <p>23 are marked for identification.)</p> <p>24 CHAIRMAN FLANAGAN: Does everyone on</p> <p>25 the dais have a color copy of this?</p>	<p style="text-align: right;">Page 49</p> <p>1 CHAIRMAN FLANAGAN: I don't have one.</p> <p>2 I don't know.</p> <p>3 COMMISSIONER ROSENBAUM: I had to pay</p> <p>4 50 cents for them.</p> <p>5 CHAIRMAN FLANAGAN: Nonetheless, go</p> <p>6 ahead.</p> <p>7 BY MR. SCHNEIDER:</p> <p>8 Q. Okay. Frances, you've marked them,</p> <p>9 the four exhibits, also A-3, 4 5, and 6?</p> <p>10 A. Yes, I have.</p> <p>11 Q. Okay. Why don't you take us</p> <p>12 through -- first, what is depicted on Exhibit A-3.</p> <p>13 A. A-3 is noted as Harding 3 Existing</p> <p>14 Verizon Wireless 800/700 LTE Rural and Suburban</p> <p>15 Coverage.</p> <p>16 Q. Okay. And the purpose of this exhibit</p> <p>17 would be what?</p> <p>18 (Whereupon, there is a brief pause in</p> <p>19 the proceeding.)</p> <p>20 BY MR. SCHNEIDER:</p> <p>21 Q. Okay. So you began by indicating this</p> <p>22 would show Verizon's existing coverage at the two</p> <p>23 specific frequency bands. Correct?</p> <p>24 A. Correct, our 800 and 700 are pretty</p> <p>25 close, so the propagation is similar. On this</p>

<p style="text-align: right;">Page 50</p> <p>1 exhibit -- I'd like to note, that's the legend at 2 the bottom. The blue, slightly purple dots are 3 existing Verizon Wireless facilities. The proposed 4 dot is in pink, which is the 8 Millbrook Road 5 location. The existing reliable in-building 6 coverage is depicted in green. And the areas that 7 are currently white are the areas that lack 8 reliable signal strength levels.</p> <p>9 PUBLIC SPEAKER: For Verizon only.</p> <p>10 MS. BOSCHULTE: For Verizon only.</p> <p>11 BY MR. SCHNEIDER:</p> <p>12 Q. Okay. And are you familiar with the 13 type and nature of the surrounding sites that 14 represent existing facilities?</p> <p>15 A. Yes. On this map, there are four 16 existing Verizon Wireless facilities. Starting in 17 the lower left-hand corner, which is to the west, 18 the wireless facility known as Harding is an 19 existing monopole at an antenna height of 100 feet.</p> <p>20 DR. EISENSTEIN: 100 what?</p> <p>21 MS. BOSCHULTE: 100 feet even.</p> <p>22 A. This is located along Route 202. 23 The next facility, going in a 24 clockwise direction, is Harding 2, at the north, 25 top part of the exhibit. Harding 2 is located at</p>	<p style="text-align: right;">Page 52</p> <p>1 A. That is correct.</p> <p>2 Q. Okay. And those are the four sites 3 that essentially bear on or provide the existing 4 coverage to Harding Township, or at least this 5 section of Harding Township. Is that correct?</p> <p>6 A. That is predominantly the sites that 7 provide coverage. There are Verizon Wireless 8 facilities closer to Route 124, but they do not 9 provide any reliable service within this area.</p> <p>10 Q. So, essentially, these are the four 11 sites that impact the need for a facility at this 12 location. Correct?</p> <p>13 A. Yes.</p> <p>14 Q. Okay. Now, based on that exhibit, 15 that which has just been marked as Exhibit A-3, can 16 you narratively, and with reference to the exhibit, 17 indicate the specific areas that do not have 18 reliable coverage, based on the standard that you 19 previously articulated?</p> <p>20 A. Yes, there are, as you can see, 21 between Route 287, going to the east, to Route 124, 22 there are several roads that currently are depicted 23 in white that do not have reliable neg 95 service. 24 Some of those roads are: 25 Glen Alpin Road, approximately over</p>
<p style="text-align: right;">Page 51</p> <p>1 I-287 rest area, with an antenna centerline of 140 2 feet. This is also an existing monopole.</p> <p>3 The next, again, in a clockwise -- 4 clockwise direction, is the Morristown 3, at the 5 top of the exhibit, slightly to the northeast. 6 That's an antenna centerline of 125 feet. That's 7 located along I-287, Exit 34.</p> <p>8 And at the --</p> <p>9 VICE CHAIR NEWLIN: I'm sorry, what 10 type of pole was that?</p> <p>11 COMMISSIONER MACELLI: 125.</p> <p>12 MS. BOSCHULTE: It's a monopole.</p> <p>13 A. And the next -- the fourth existing 14 wireless facility is Chatham 2, at the southeast 15 corner of the map, and that is an antenna 16 centerline of 97 feet.</p> <p>17 CHAIRMAN FLANAGAN: Is that the Green 18 Village Fire Department, do you know?</p> <p>19 MR. SCHNEIDER: Yes. It's actually 20 located in Chatham Township.</p> <p>21 MS. BOSCHULTE: Yes.</p> <p>22 BY MR. SCHNEIDER:</p> <p>23 Q. So, essentially, the antenna heights 24 of Verizon vary between -- give or take, between 25 100 and 140 feet for those sites. Correct?</p>	<p style="text-align: right;">Page 53</p> <p>1 1.5 miles coverage gap. Glen Alpin Road, you see, 2 like, where my finger is currently pointing, going 3 east.</p> <p>4 Lees Hill Road, which is right here, 5 from the center of proposed location to the 6 intersection of Glen Alpin Road, approximately 1.8 7 miles coverage gap from Glen Alpin Road down to 8 Hunting Court.</p> <p>9 Blue Mill Road, approximately a 1-mile 10 coverage gap from Glen Alpin Road to Van Beuren 11 Road.</p> <p>12 And Village Road, approximately 13 0.57 -- Village Drive, excuse me -- from Featherbed 14 Lane to Village Road.</p> <p>15 Welsh Lane, the entire road has a 16 coverage gap.</p> <p>17 Fox Hunt Road, currently, the entire 18 road has a coverage gap.</p> <p>19 Lindsley Road, Millbrook Road -- all 20 of Millbrook Road currently has a coverage gap.</p> <p>21 And Pleasantville Road, currently all 22 has a coverage gap.</p> <p>23 Q. And just for edification purposes, 24 that is being based on the frequency band at the 25 850/700 megahertz. Is that correct?</p>

<p style="text-align: right;">Page 54</p> <p>1 A. That is correct.</p> <p>2 Q. Okay. Why don't you take us, then, to</p> <p>3 the -- and for purposes of the record, to help the</p> <p>4 board follow those geographic areas are reflected</p> <p>5 on page 5 of the report, if you have those.</p> <p>6 Let's turn our attention, if we can,</p> <p>7 to the next exhibit.</p> <p>8 A. The next exhibit is A-4. This, again,</p> <p>9 is a propagation map with existing Verizon Wireless</p> <p>10 facilities. This is a propagation map of the</p> <p>11 higher band frequencies, which is the 2100</p> <p>12 megahertz and 1900.</p> <p>13 As you can see, as I mentioned before,</p> <p>14 the difference between the two frequencies for the</p> <p>15 low band, the propagation of coverage, it covers</p> <p>16 further; the higher frequencies are more affected</p> <p>17 and attenuated by the dense foliage and rolling</p> <p>18 hills, so they cover less.</p> <p>19 MR. PURCELL: Ms. Boschulte, just for</p> <p>20 the benefit of the board, for the areas that are</p> <p>21 white, they don't meet the neg 95 standard?</p> <p>22 MS. BOSCHULTE: That is correct.</p> <p>23 MR. PURCELL: And then, just to</p> <p>24 reiterate, we talk about, when the neg 95 standard</p> <p>25 is not met, then would it be that, you know, users</p>	<p style="text-align: right;">Page 56</p> <p>1 Mr. Purcell's question, if white represents the gap</p> <p>2 area, and green represents the existing coverage,</p> <p>3 purple would be intended to show the proposed</p> <p>4 coverage based on a neg 95 dBm standard from this</p> <p>5 site at that particular frequency band. Is that</p> <p>6 correct?</p> <p>7 A. That is correct.</p> <p>8 COMMISSIONER ROSENBACH: Could the</p> <p>9 witness explain to us the different functions -- if</p> <p>10 there are different functions -- of the different</p> <p>11 frequency ranges? Or is it just -- I mean, I don't</p> <p>12 know why -- I just don't know the difference among</p> <p>13 them.</p> <p>14 MS. BOSCHULTE: Okay. Verizon</p> <p>15 Wireless is licensed in all these frequency bands,</p> <p>16 and the higher frequency bands provide a faster</p> <p>17 throughput. The 2100 megahertz is also Verizon</p> <p>18 Wireless's largest -- it has the largest bandwidth,</p> <p>19 so that's where the majority of their traffic is</p> <p>20 located, on the 2100 megahertz.</p> <p>21 They have particular bandwidth sizes</p> <p>22 that differ. So the 2100 is their largest. The</p> <p>23 700, I believe, is their lower. So it doesn't</p> <p>24 support the same number of users. So for each 5</p> <p>25 megahertz channel, you can support approximately 35</p>
<p style="text-align: right;">Page 55</p> <p>1 and wireless services are unable to maintain a</p> <p>2 connection capable of supporting reasonably</p> <p>3 uninterrupted communications? Is that --</p> <p>4 MS. BOSCHULTE: That is correct.</p> <p>5 THE SECRETARY: I don't have the map</p> <p>6 attached to my document here.</p> <p>7 CHAIRMAN FLANAGAN: Thank you for the</p> <p>8 try.</p> <p>9 A. As you can see in the higher frequency</p> <p>10 band, the gap is much more extensive, and there are</p> <p>11 several more roads than what was previously</p> <p>12 mentioned for the 700 megahertz.</p> <p>13 Q. And that, either in part or in whole,</p> <p>14 is a function of the higher frequency band.</p> <p>15 Correct?</p> <p>16 A. Yes.</p> <p>17 Q. I don't think you need to take us</p> <p>18 through the roads. Why don't we go to the next</p> <p>19 exhibit? I guess it'll be A-5.</p> <p>20 A. A-5 is similar to A-3, with the</p> <p>21 existing Verizon Wireless coverage at the 800 and</p> <p>22 700; the difference is now the proposed coverage is</p> <p>23 on this map, and that is depicted in purple,</p> <p>24 meeting the neg 95 reliable signal strength.</p> <p>25 Q. Okay. So following up on</p>	<p style="text-align: right;">Page 57</p> <p>1 simultaneous users, and so they each have --</p> <p>2 Verizon Wireless has purchased additional</p> <p>3 frequencies, in order to support the additional</p> <p>4 capacity and bandwidth needed.</p> <p>5 COMMISSIONER ROSENBACH: Okay. What I</p> <p>6 gather from what you're saying, then, is that, at</p> <p>7 any frequency range, the same data can be</p> <p>8 transmitted.</p> <p>9 MS. BOSCHULTE: The higher frequency</p> <p>10 range, you are able to fit more users and more data</p> <p>11 on, because of the higher frequency band, you are</p> <p>12 able to have more modulation, and so you are able</p> <p>13 to have more data on that particular channel.</p> <p>14 So at the lower frequencies, you have</p> <p>15 lower data rates, and less number of simultaneous</p> <p>16 users are -- will be -- as a function of capacity.</p> <p>17 COMMISSIONER ROSENBACH: All right. I</p> <p>18 mean, I understand that in a very abstract sense,</p> <p>19 without knowing the slightest detail about it, but</p> <p>20 does it mean that, in terms of Verizon's future, it</p> <p>21 is not very interested in the 800 or 700 range, but</p> <p>22 it is much more interested in the upper ranges? Or</p> <p>23 are all instrumental in terms of what Verizon's</p> <p>24 doing?</p> <p>25 MS. BOSCHULTE: They're all</p>

<p style="text-align: right;">Page 58</p> <p>1 instrumental in how your phone operates. So the 2 newer phones will access -- will try to access the 3 higher frequency bands, to provide the faster 4 throughput, and if that's not available, then it 5 will switch down to the 1900, and switch down to 6 the 700 and so forth. 7 VICE CHAIR NEWLIN: And didn't you say 8 that the lower frequencies have better -- longer 9 coverage? Right? 10 MS. BOSCHULTE: The lower -- as a 11 function -- 12 VICE CHAIR NEWLIN: Because they're 13 going through trees and things like that. 14 MS. BOSCHULTE: There's a drawback. 15 So as I mentioned, the lower frequencies may cover 16 further, but then you have less bandwidth. 17 VICE CHAIR NEWLIN: So if you use your 18 Wifi router, it's the same thing, you have the two 19 frequencies? It's the same thing. Right? 20 MS. BOSCHULTE: Similar. 21 COMMISSIONER ROSENBAUM: Okay. 22 COMMISSIONER ROSENBAUM: Can you speak 23 about the coverage that you have here? Is that 24 modeled? Is that actuals? And also what your 25 proposed is.</p>	<p style="text-align: right;">Page 60</p> <p>1 asked a really good question. If you lowered the 2 height from 140 to 120, what impact, if any, would 3 there be on the purple area -- 4 COMMISSIONER ROSENBAUM: How does it 5 change the efficacy of the model? 6 BY MR. SCHNEIDER: 7 Q. -- of the coverage? 8 A. Yes, so I did analyze the difference 9 in coverage between 140 and 120, and in discussing, 10 also, with Dr. Eisenstein, the reduction in 11 coverage was approximately between 500 and 700 feet 12 around the perimeter of the proposed radius, so 13 that is why we determined that the degradation 14 between the 140 and 120 was -- it exists, but it 15 was minimal, and so we were -- we were in agreement 16 that Verizon Wireless could still maintain a 17 majority of reliable service in this area at the 18 lower height. 19 Q. And did you model other heights? 20 A. No. 21 Q. Would you reasonably anticipate that 22 any height lower than 120, because of the terrain, 23 would impact the coverage? 24 COMMISSIONER ROSENBAUM: It's going to 25 impact it, but the question is how much. It has to</p>
<p style="text-align: right;">Page 59</p> <p>1 MS. BOSCHULTE: Verizon Wireless uses 2 a propagation modeling tool known as Atoll, which 3 is utilized throughout the industry, and it takes 4 into account the terrain, the antenna height, the 5 transmit power, the antennas, and the azimuths, and 6 provides a path loss based on those factors. 7 BY MR. SCHNEIDER: 8 Q. And just for purposes of the record, 9 that type of modeling and tooling was shared with 10 Dr. Eisenstein. Correct? 11 A. That is correct. 12 Q. Okay. 13 COMMISSIONER ROSENBAUM: And, 14 presumably, if the tower went from 140 to 120, this 15 map would be slightly different? 16 MR. SCHNEIDER: We will get to that in 17 a second, but that's a fair question. 18 BY MR. SCHNEIDER: 19 Q. Go ahead, Frances, I'm sorry. 20 A. Continue, or should I answer the 21 question? 22 Q. Okay. The question was asked, so 23 let's deal with that right now. Okay. So the 24 question is -- let's do this: With reference to 25 what is now shown as Exhibit A-5, the board member</p>	<p style="text-align: right;">Page 61</p> <p>1 impact it. 2 A. Yes, based on the surrounding terrain, 3 and the tree heights in the area, the antenna still 4 operates predominantly by line of sight. So the 5 average tree heights vary between 80 to 100 feet, 6 depending on the rolling hills that it sits on. So 7 120 would give enough clearance above the treeline, 8 and to reach the top of the hills. 9 As you can see, there are several 10 terrain challenges. I did bring with me a 11 topographical map that I can hand out to kind of 12 illustrate, and you'll see how the propagation 13 plays in line with the terrain. 14 COMMISSIONER ROSENBAUM: Okay. 15 BY MR. SCHNEIDER: 16 Q. Go ahead. 17 CHAIRMAN FLANAGAN: We'll take your 18 questions after. So we're going to have the 19 testimony, which the board will ask questions 20 during, and then we'll come to the public. 21 THE SECRETARY: So this will be A-7? 22 (Whereupon, Exhibit A-7 is marked for 23 identification.) 24 BY MR. SCHNEIDER: 25 Q. Go ahead, Frances.</p>

<p style="text-align: right;">Page 62</p> <p>1 A. So from the proposed location, if you 2 look on the terrain map, to the northwest along the 3 lane you see that there's a rise in terrain 4 elevation. So that actually reaches approximately 5 570 feet. The proposed location is approximately 6 at a ground elevation of 330.</p> <p>7 Again, going along Lees Hill Road, you 8 have another terrain challenge, where there is an 9 increase in ground elevation of approximately 450 10 feet. And so by having an antenna centerline of 11 120, it allows to at least get up to the very top 12 of that hill with looking and passing through 13 trees, to provide coverage up to that point. Now, 14 it's not tall enough, at 120, to see over the hill 15 and down into the valley, but it is tall enough to 16 see up to the top of the hill.</p> <p>17 COMMISSIONER ROSENBAUM: Does it go 18 through trees? Because you just said it goes 19 through trees, but before, you said it was blocked 20 by trees.</p> <p>21 MS. BOSCHULTE: The lower frequency 22 band does a better job at dealing with foliage. So 23 it's not as adversely affected. So it's not -- 24 there is a loss in signal strength as it passes 25 through trees, but at the higher frequency band,</p>	<p style="text-align: right;">Page 64</p> <p>1 bands, based on A-6, at -- and this is based on 140 2 feet. Correct?</p> <p>3 A. Yes, these propagations for the 4 proposed are based on 140 feet.</p> <p>5 Q. And without pinning you down 6 specifically, in concept, are the same factors at 7 play -- if the Verizon antenna height was reduced 8 to 120, would we still be looking at degradations 9 along the perimeter of the purple area?</p> <p>10 A. Yes.</p> <p>11 Q. Okay. So, essentially, your position 12 is that, while there is some increased coverage 13 between 120 and 140, based on your -- well, is it 14 your professional opinion that there's a 15 degradation between 140 and 120, but that, 16 substantially, the gap area is addressed at the 17 lower height? Is that a fair statement?</p> <p>18 A. That's a fair statement.</p> <p>19 Q. Okay. Let me reconfirm a couple of 20 other things.</p> <p>21 For purposes of the record, this 22 analysis, using the propagation tool that you just 23 did, is strictly based on the neg 95 dBm standard. 24 Is that correct?</p> <p>25 A. Yes.</p>
<p style="text-align: right;">Page 63</p> <p>1 it's more like a blockage, it's more like a 2 structure, because of the higher frequency, smaller 3 wavelengths, it is adversely affected by foliage 4 much more significantly. So you'll see a smaller 5 coverage footprint.</p> <p>6 BY MR. SCHNEIDER:</p> <p>7 Q. You're now referring to A-6?</p> <p>8 A. Correct. So the higher frequency 9 bands are not going to do -- not going to cover 10 very far, it's not going to propagate very well 11 through dense foliage, but the lower frequency 12 bands do a better job, but there's -- it still 13 attenuates the signal.</p> <p>14 COMMISSIONER ROSENBAUM: Okay.</p> <p>15 BY MR. SCHNEIDER:</p> <p>16 Q. So now that you're on A-6, just to 17 keep our exhibits straight, A-6 would represent the 18 proposed coverage at the higher frequency bands. 19 Correct?</p> <p>20 A. That is correct.</p> <p>21 Q. And that is reflected in purple. 22 Correct?</p> <p>23 A. That is correct.</p> <p>24 Q. So there's a more limited geographic 25 area that would be covered at the higher frequency</p>	<p style="text-align: right;">Page 65</p> <p>1 Q. Okay. And let me jump ahead and ask 2 you this: In the course of your communications 3 with Dr. Eisenstein, did you have occasion to 4 review the issue of height? And what was the 5 consensus of your understanding of your discussions 6 with Dr. Eisenstein? He'll ultimately speak for 7 himself, but, essentially, what was your conclusion 8 as to what you understood his recommendations to 9 be?</p> <p>10 A. Based on my discussion, and based on 11 the analysis between the 140 and the 120, the loss 12 in coverage was approximately, as I mentioned 13 previously, about 500 to 700 feet around the 14 perimeter, and the number of residential homes in 15 that area was minimal. So Verizon was willing to 16 compromise at the lower height.</p> <p>17 Q. Okay. Let me switch gears for a 18 couple of moments. One of the requirements of the 19 ordinance -- whether it was included in the 20 ordinance or not is not material -- but any 21 applicant for a wireless communications facility 22 would generally be legally required to do an 23 investigation as to whether there existed any 24 existing structures which would allow you to meet 25 your technical objectives, whether those existing</p>

<p style="text-align: right;">Page 66</p> <p>1 structures included an existing tower, an existing 2 structure, an electric transmission tower, or the 3 like.</p> <p>4 Did you have occasion to investigate 5 whether there existed any existing structures which 6 would allow you to meet your technical objectives, 7 understanding that your essential minimum required 8 height here is 120 above ground level, at that AMSL 9 level?</p> <p>10 A. My investigation concluded that there 11 were no existing structures at that height.</p> <p>12 Q. Okay. There was at least one 13 suggestion, I believe, made, concerning the 14 possible use of a steeple in one of the surrounding 15 churches, if I recall.</p> <p>16 A. Yes.</p> <p>17 Q. And did you have occasion to 18 investigate that, as to whether that would allow 19 you to meet your technical objectives?</p> <p>20 A. Yes, I did evaluate that particular 21 location, and the steeple height, as you can see 22 from various locations, was below the tree height, 23 and we determined that it would not be a viable 24 candidate.</p> <p>25 Q. Okay. So was it your, therefore,</p>	<p style="text-align: right;">Page 68</p> <p>1 the surrounding terrain, that's a significant 2 distance away from the proposed site referenced as 3 Harding 3. Correct?</p> <p>4 A. That is correct.</p> <p>5 Q. Okay. So do you have a professional 6 opinion as to whether you can site your facility in 7 any of the conditionally permitted zones in order 8 to meet your technical objectives?</p> <p>9 A. Yes, in my professional opinion, 10 anything that is located here will not provide 11 service to the proposed location.</p> <p>12 Q. Okay. Before I conclude your expert 13 testimony on the issue of the gap, let me raise to 14 you one other question that was raised in the 15 review report; I believe it was in Mr. Fox's review 16 report. In that, Mr. Fox raises the question 17 objectively as to the need for what is referred to 18 as RRHs on the plan, and whether that is necessary 19 in order for the site – and I'm paraphrasing – to 20 technically function.</p> <p>21 Can you explain for the board and 22 members of the public when an RRH is, both in terms 23 of physically, and what purpose it serves, and why 24 it's necessary to be located at this and other 25 facilities?</p>
<p style="text-align: right;">Page 67</p> <p>1 professional opinion that there does exist no 2 existing structures which would allow you to meet 3 your technical objectives to eliminate the gap in 4 the area that you described in the various 5 exhibits?</p> <p>6 A. Yes.</p> <p>7 Q. Okay. Now, the ordinance in Harding 8 Township provides that wireless communications 9 towers are conditionally permitted in the B-2 zone, 10 and on the east side of Route 202 in the OB-2 zone. 11 You're familiar with the location of those 12 respective zones as they relate to the proposed 13 site. Is that correct?</p> <p>14 A. That is correct.</p> <p>15 Q. And for the record, you're pointing 16 to –</p> <p>17 A. I am pointing to the -- to the zone 18 that you're referencing, near to Route 202, the B-2 19 zone.</p> <p>20 Q. And that's – I'm sorry, I 21 interrupted. Go ahead.</p> <p>22 A. Yes, so on the map, just northwest of 23 Interstate 287, along of Route 202, is the zone 24 that you're referring to.</p> <p>25 Q. And from an RF perspective, and given</p>	<p style="text-align: right;">Page 69</p> <p>1 A. Yes, RRHs, it stands for a remote 2 radio head. It's typically placed close to the 3 antennas. And, basically, it improves performance, 4 because it -- previously, there were what was known 5 as tower amplifiers that would boost the signal. 6 Because of the long coaxial cables, you would have 7 a loss in power, and so that amplifier would boost 8 the signal.</p> <p>9 And so the remote -- the RRHs kind of 10 eliminate the line loss that's associated with the 11 co-ax, and so it enhances and improves the coverage 12 of a facility.</p> <p>13 Q. And those RRHs are not unique to the 14 design of this particular tree; RRHs are routinely 15 deployed at all, if not many of Verizon Wireless's 16 sites. Is that a fair statement?</p> <p>17 A. Yes, the RRHs are typical to most of 18 the wireless carriers; you see them on most 19 wireless facilities. In addition, it also allows 20 for increased system performance, meaning that they 21 can access, using the remote radio heads, to 22 provide electrical tilts of the antennas, and 23 support optimization of the facility.</p> <p>24 Q. So they're an important critical 25 function -- they're important critical aspects of</p>

<p style="text-align: right;">Page 70</p> <p>1 the functioning of a cell site. Is that a fair 2 statement?</p> <p>3 A. Yes.</p> <p>4 Q. Okay. Let me turn your attention to 5 the other aspect of one of the other reports that 6 you presented as part of this application, and that 7 relates to the inquiry of whether the levels of 8 radiofrequency emissions are in strict compliance 9 with applicable FCC regulatory provisions. 10 Correct?</p> <p>11 DR. EISENSTEIN: Mr. Chairman, I 12 think, before we go into that, I have some -- a few 13 questions about the propagation plot. Why don't we 14 do that before the emissions plot. Is that okay?</p> <p>15 MR. SCHNEIDER: Absolutely.</p> <p>16 DR. EISENSTEIN: Could you put up A-6, 17 please? It's the 2100 composite plot.</p> <p>18 I noticed that there's no propagation 19 to the northwest from the site, and looking at the 20 topological map, I don't see any topological 21 barriers. It seems to indicate to me that you have 22 a three sector site there, and you have nothing 23 pointing to the northwest. Is that correct?</p> <p>24 MS. BOSCHULTE: That is correct, the 25 azimuth chosen was northeast, southwest, and south.</p>	<p style="text-align: right;">Page 72</p> <p>1 MS. BOSCHULTE: That is correct.</p> <p>2 Currently, there is a search ring along Tempe Wick 3 Road, and this is also close to the permitted zone, 4 which we previously mentioned, although a candidate 5 hasn't been chosen. But it is being discussed and 6 looked at to maybe provide coverage into this area 7 to fill in south of 287.</p> <p>8 DR. EISENSTEIN: And would it be fair 9 to say that, for in-vehicle coverage, the 2100 10 doesn't really help you that much? Is that a fair 11 statement?</p> <p>12 MS. BOSCHULTE: Yes.</p> <p>13 DR. EISENSTEIN: So for in-vehicle 14 coverage, you're relying on the 700 or 800?</p> <p>15 MS. BOSCHULTE: That is correct.</p> <p>16 DR. EISENSTEIN: Because the cars are 17 moving so quickly.</p> <p>18 MS. BOSCHULTE: The cars are movement, 19 so there's not a significant amount of data usage 20 while you're driving.</p> <p>21 DR. EISENSTEIN: Yeah, but, also, you 22 don't want to have the rapid handoffs that you 23 would get. Right?</p> <p>24 MS. BOSCHULTE: Correct.</p> <p>25 DR. EISENSTEIN: What impact would the</p>
<p style="text-align: right;">Page 71</p> <p>1 DR. EISENSTEIN: Why?</p> <p>2 MS. BOSCHULTE: The feeling was that 3 the benefit, looking at changing the particular 4 azimuths, that that would provide the most coverage 5 in the area.</p> <p>6 DR. EISENSTEIN: Why wouldn't you do a 7 four sector site?</p> <p>8 MS. BOSCHULTE: I think, currently, 9 right now, the way -- depending on the structure, 10 whether or not it would be four sectors or three 11 sectors, right now, currently, the design is for 12 three sectors with four panel antennas.</p> <p>13 DR. EISENSTEIN: So the thing that I 14 noticed -- go to A-5 for a minute. So that's the 15 800 megahertz band, which is your best propagation. 16 And when I look at that, you have a fairly large 17 stretch of 202 which is uncovered. That's a fairly 18 major -- or 287, I don't know which one it is.</p> <p>19 MS. BOSCHULTE: Yes, 202 and 287 are 20 parallel.</p> <p>21 DR. EISENSTEIN: So 202 and 287, both 22 major routes, are in spotty coverage area. What 23 are the plans to fill that in? Because that would 24 also, I would assume, create some coverage in the 25 western part -- the area to the west of Harding 3.</p>	<p style="text-align: right;">Page 73</p> <p>1 new site over there have on the Harding 3 site? 2 Would you be able to get enough overlap -- I'm 3 looking at Glen Alpin Road, along there, yeah, 4 which is also presently uncovered.</p> <p>5 MS. BOSCHULTE: Correct. So it's 6 difficult to say at this time, because we don't 7 have anything proposed, other than a search area. 8 So depending on height, and depending on the 9 terrain in the area, which is very challenging --</p> <p>10 VICE CHAIR NEWLIN: The search area 11 means -- just so we understand, the search area 12 means you're looking to put a tower in that lack of 13 coverage area. Is that what --</p> <p>14 MS. BOSCHULTE: A search area means 15 that, right, we're evaluating what can be proposed, 16 a property --</p> <p>17 VICE CHAIR NEWLIN: Looking for 18 properties.</p> <p>19 DR. EISENSTEIN: Usually a 20 quarter-mile to a half-mile circle, wherein they 21 want to put a site. So it's usually the place 22 centered in the gap area, typically, if they can 23 get it there.</p> <p>24 MR. SCHNEIDER: Not in all cases a 25 tower, though.</p>

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1 DR. EISENSTEIN: A facility.
2 VICE CHAIR NEWLIN: Sorry?
3 MR. SCHNEIDER: Not, in all cases, a
4 tower.
5 DR. EISENSTEIN: Right, a facility of
6 some sort.
7 VICE CHAIR NEWLIN: Something.
8 DR. EISENSTEIN: Okay. I have no more
9 questions on this.
10 COMMISSIONER CHIPPERSON: I have a
11 question along the same lines, it's somewhat the
12 same question, but just more generally, is that I'm
13 surprised at how much lack of coverage is going to
14 exist if we take this step to put this cell tower
15 in. And what's the long-term plan to make sure
16 that the entire town has coverage? Is that a
17 long-term plan? Are there other designs that are
18 maybe taller, that you're going to get better
19 coverage? I mean, I think that's important to know
20 now. I'd hate to put this one in, and then find
21 out we need four more. You know, it just seems
22 like there's a lot of gap existing, and how is that
23 going to be addressed, because it's a safety issue,
24 you know, for the town.
25 MS. BOSCHULTE: This facility is being

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1 proposed in a location that could maximize the
2 coverage based on the terrain. As I had mentioned,
3 on the topo map, you'll see that there are many
4 hills and valleys, and some of these hills are
5 pretty significant.
6 So just looking at Lees Hill Road, one
7 facility on one side of the hill will only cover up
8 to the hill, but will not see over. So something
9 will have to eventually be proposed on the other
10 side of Lees Hill Road, so that there's a
11 connection.
12 So this is just a step in trying to
13 provide a comprehensive plan for the township of
14 Harding, to provide reliable service, but this one
15 facility is not going to fill all gaps, because of
16 the terrain. The terrain is severely challenging.
17 DR. EISENSTEIN: But you said you're
18 starting to look over towards Route 287.
19 MS. BOSCHULTE: Yes, we are looking
20 for ways to provide the most coverage, so that we
21 are limiting the number of wireless facilities that
22 we have to --
23 DR. EISENSTEIN: Yeah, if I could just
24 comment on this, if we were looking at a tower of
25 this height, let's say, the in South Jersey, which

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1 is relatively flat, what you'd see is a very smooth
2 propagation plot, you wouldn't see all these little
3 pixels and dots all around. What that indicates to
4 me is that indicates that you're terrain limited.
5 The topological map would indicate
6 that: You have ridges, you have hills that go up
7 100 feet, 200 feet in some cases. You have high
8 points, which is why you get the dots out in the
9 distance. Those are -- those are there; they're
10 not really reliable coverage, because they're
11 occupying such a small area. Someone that happens
12 to be there would be okay, they'd be able to get a
13 signal, but if you move a short distance away,
14 you'd lose the signal.
15 So when I look at something like this,
16 I see terrain limitations, and that's why
17 additional height doesn't really help the site; it
18 doesn't give you better propagation, because you're
19 never going to go high enough to go over the hills,
20 you'd have to be up at 400 feet, 500 feet, on a
21 tower. No one does that anymore, it would just be
22 counter indicated.
23 COMMISSIONER CHIPPERSON: I'm not
24 necessarily just suggesting a taller tower, but
25 like you mentioned the three sector versus the four

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1 sector, and I'm wondering just what's the long-term
2 plan to --
3 DR. EISENSTEIN: I think that the
4 answer to my question is that they didn't want to
5 put something on the northwest direction, because I
6 think it would cause co-channel interference with
7 Harding 2, which is up in the northwest direction.
8 There's something that I should also
9 explain to the board, and I didn't get a chance to
10 do this. When we talk about these power levels,
11 like neg 95, for example, dBm, what we're really
12 discussing is distance. I know it doesn't sound
13 that way, but that's really what it is, it's really
14 a distance, because you have the maximum power
15 right at the transmitting source, and then the
16 power continues to diminish.
17 And what we're saying is, when it
18 diminishes down to the point when we have negative
19 95 dBm, that power, we're going to say that that's
20 the green area, and anything which is an-inch
21 beyond that is not green area.
22 Well, of course, from the viewpoint of
23 the operation of your equipment, that's not the way
24 it works. You know, you could be on the edge of
25 that green area, and maybe even some distance into

<p style="text-align: right;">Page 78</p> <p>1 the white area, and still have perfectly good 2 coverage. You know, it's because signal would be 3 diminished a little more, might be neg 96, neg 97; 4 you'd still be able to make and use your cell 5 phone. 6 But that's not the way you design the 7 systems. You design the systems -- and I think the 8 design level that they've picked, the neg 95 is 9 appropriate as a design level. So you design it 10 for a certain level, but you have to understand 11 that that -- there's coverage that goes beyond what 12 you just see in the green area. It's not a sudden 13 drop-off, it doesn't suddenly hand like you're 14 going off a cliff or something, there's gray areas. 15 The second thing -- and that goes back 16 to the question that you asked earlier, about 17 whether it was a computer representation or the 18 actual coverage. I think that was your question. 19 COMMISSIONER ROSENBACH: Correct. 20 DR. EISENSTEIN: There is no such 21 thing as actual coverage in a wireless system. It 22 changes from second to second, the amount of 23 coverage you're getting, from millisecond to 24 millisecond. It's constantly fluctuating. It's 25 highly random.</p>	<p style="text-align: right;">Page 80</p> <p>1 That's why they picked neg 95 as a 2 design level, because, that way, if it's 10 dB 3 worse, neg 105, the system will still work. It's 4 not going to work as well, but it'll still work. 5 And if it gets better, neg 85, so much the better, 6 then it's a better system. But you couldn't design 7 at the threshold for where the phones would work, 8 because then, if 50 percent of the time it's worse, 9 you're going to get no reception. 10 Remember, on a rainy day, a snowy day, 11 the signal is attenuated enormously. Really, 12 humidity in the air, pollen in the air, can affect 13 the signal. So these computer models average over 14 all those conditions, and that's where they come up 15 with these propagation plots. 16 So there's never an actual, like, real 17 number, if you go out there, there's just a range 18 of numbers, and you want to look at that range from 19 the viewpoint of design. 20 COMMISSIONER ROSENBACH: Well, as our 21 expert, do you have a professional opinion as to 22 whether we should accept the findings of what -- I 23 think it was called the Atoll system. 24 DR. EISENSTEIN: Of what? 25 COMMISSIONER ROSENBACH: Is it the</p>
<p style="text-align: right;">Page 79</p> <p>1 So what happens is, if you went out 2 and you set up an antenna and you did a 3 measurement, and you came back a minute later, 4 you're going to get a different measurement. And 5 I've been out there with power meters, and what you 6 see is the needle fluctuating up and down, up and 7 down, constantly. 8 There's no one power level, because so 9 many factors influence the signal that you're 10 getting at any given spot: a truck on the road; an 11 airplane in the sky; someone that has aluminum 12 Venetian blinds, and closes the blinds, you get a 13 different reflection off the blinds. 14 There's so many things that go into 15 that, that what happens is I put more reliability 16 in the computer models, because what the computer 17 models do is average over all these conditions: 18 humidity, rain, snow, dry, leaves on the trees, no 19 leaves on the trees. It averages over all that. 20 And what you're seeing here is the 21 median propagation coverage. So at any given time, 22 you can expect that you'll get 50 percent better 23 than what's shown here or 50 percent worse than 24 what's shown here. So that's accounted for with 25 the design level.</p>	<p style="text-align: right;">Page 81</p> <p>1 Atoll system that you use? 2 DR. EISENSTEIN: Yes, that's a 3 standard tool. That's one of the -- that's one of 4 the standard tools. And like, just, again, to 5 maybe put your minds at ease, and not -- the 6 propagation of electromagnetic signals goes back to 7 James Clerk Maxwell in the 1850s. I mean, this is 8 not something new. The physics of this is well 9 known, it's been known for hundreds of years, 10 there's no ambiguity about it. 11 What these tools do that's very 12 sophisticated is they take the propagation model 13 that Maxwell developed, you know, 150 years ago, 14 and they overlay the United States Geological 15 Survey information on that, that has the hills, the 16 rivers, the valleys, and all that. And then, what 17 it does is, literally on a pixel-by-pixel basis, 18 calculates how much the signal would be changed as 19 a result of the geological features. 20 And then there's a couple tunable 21 parameters, like whether or not there are tall 22 buildings: Whether or not there's trees; you know, 23 it's suburban, residential, or rural. You know, 24 there's a couple tuning factors. But yes, I have a 25 lot of confidence in the tools.</p>

<p style="text-align: right;">Page 82</p> <p>1 COMMISSIONER SYMONDS: I have a 2 question, actually, going back to, sort of, Rita's 3 question, about future coverage, how to get better 4 coverage in the white space, so to speak. I 5 believe it was Verizon approached the town a year 6 or so ago to add pole-mounted nodes, I believe they 7 were called. They're lower level, but still 8 they're cellular devices. 9 Are those in any way a part of this 10 application, or would they be supplemental 11 technology? How are they tied together? You know, 12 is it -- you know, how do those devices fit in to 13 this application? As it is, are they part of it? 14 Will they be needed to help it? Are they just 15 completely unrelated. 16 MR. SCHNEIDER: I'll answer the first 17 part, and I'll let Frances answer the second. 18 To answer your first question, they 19 are not part of this application. What's 20 commonly -- what I'll call ODAS nodes, just to keep 21 the technology, are not part of this application. 22 I'll let Frances answer the second 23 part, but the short version is that those ODAS 24 nodes are to work together with the development of 25 this site to, in part, fill in the gaps that you</p>	<p style="text-align: right;">Page 84</p> <p>1 tower at this location? 2 A. Yes, the -- the design and outcome of 3 that, yes. 4 Q. Okay. And is it a -- the final 5 question I'll ask on that: Will the deployment of 6 ODAS nodes be a completely acceptable alternative 7 to the construction of a new tower; in other words, 8 does that serve as a complete technological 9 alternative to this tower? 10 A. No, it does not. 11 Q. Okay. So in summary your answer is 12 that it would not serve as a feasible alternative 13 to construction of a new tower, but may be used in 14 part as a complement to construction of this tower, 15 to fill in some of the gap area. Is that a fair 16 statement? 17 A. Yes. 18 DR. EISENSTEIN: If I could just add, 19 would an ODAS node work along 287 or 202? 20 MS. BOSCHULTE: Yes, it's possible 21 that nodes can be placed along the corridor of 287 22 or Route 202, but it would not provide coverage 23 down Glen Alpin Road, there'd have to be another -- 24 DR. EISENSTEIN: Okay. How fast do 25 the cars go on 287?</p>
<p style="text-align: right;">Page 83</p> <p>1 and your fellow board member articulated. But the 2 township has asked, to the extent they can, that 3 those -- that that process be deferred until such 4 time as they know that this site reaches a final 5 adjudication -- which makes sense, you know, 6 that -- get the big site out, so that you can work 7 off the big site before the other ones. 8 BY MR. SCHNEIDER: 9 Q. Frances, why don't you just -- let me 10 ask you this: Based on the two board members' 11 questions, some of the gaps, if not all that are in 12 white, would, in part, be potentially filled by the 13 deployment of those ODAS nodes, including poles 14 within public right-of-way. Is that part of the 15 plan? 16 A. That -- Verizon Wireless is looking 17 to -- yes, the supplemental -- to the supplemental 18 coverage, to work with the macro; however, these 19 ODAS nodes are much lower, below the tree line, and 20 primarily will provide coverage along the roads, 21 and not reach far in to the residential areas. 22 Q. And responding to Board Member 23 Symonds's questions, in part, the deployment of 24 those ODAS nodes, from a technological perspective, 25 are they, in fact, dependent on the approval of a</p>	<p style="text-align: right;">Page 85</p> <p>1 MS. BOSCHULTE: Pretty fast. So the 2 handoff the would definitely be a -- 3 DR. EISENSTEIN: Sixty miles an hour 4 is 80 feet per second. What's the typical radius 5 of an ODAS node? 6 MS. BOSCHULTE: 800 to 1,000 feet. 7 DR. EISENSTEIN: So every 10 seconds, 8 they'd be doing a handoff. 9 Let me repeat my question: Would ODAS 10 work on 287? 11 MS. BOSCHULTE: No. 12 DR. EISENSTEIN: Correct answer. Cars 13 are going too fast. So you can only do these small 14 nodes in a static environment, where you're really 15 trying to reach houses, or a particular office 16 building, or something like that. It doesn't work 17 where you have even cars doing 30 miles an hour, 18 because the -- if you're relying on that, it would 19 require too many handoffs, one after another. 20 COMMISSIONER SYMONDS: Actually, the 21 reason I was asking the question was because I 22 don't think the ODAS nodes are an attractive 23 addition to the township, and I was trying to 24 figure out whether this -- you know, because that 25 application was quite some time ago, before we</p>

<p style="text-align: right;">Page 86</p> <p>1 heard about this application. So my question was, 2 you know, would this make those not necessary? 3 DR. EISENSTEIN: No, I -- I don't 4 think that's correct, and I think that it is 5 correct, however -- I agree with Mr. Schneider -- I 6 think what you have to do is you have to have a 7 macro site to cover area, and then what you do is, 8 if necessary, you do some fill in, primarily 9 residential areas -- by the way, ODAS stands for 10 outdoor distributed antenna systems, as opposed to 11 DAS systems, distributed antenna systems that are 12 indoors, or inside stadiums, or places like that, 13 confined areas. 14 So they usually put them along the 15 right-of-way, along roads, and they will service 16 slow-moving traffic on the roads; they will service 17 residential buildings. But I think of them 18 primarily as for static use: pedestrians, people 19 that are sitting in their house, and so forth. 20 COMMISSIONER SYMONDS: Thank you. 21 CHAIRMAN FLANAGAN: So talking about 22 coverage, you mentioned at one point that a steeple 23 was looked at. Was that Christ the King, the 24 steeple right across the street here? 25 MS. BOSCHULTE: Yes -- oh, no, it's</p>	<p style="text-align: right;">Page 88</p> <p>1 In my evaluation of the steeple, for one, there is 2 very little room, and it is below the treeline. 3 It's not going to reach, pretty much, past the 4 intersection of Glen Alpin Road onto Blue Mill 5 Road. So you're going to get less than what you're 6 getting now, it's going to be very choppy, and it's 7 going to be even more difficult to try to fill in 8 the gaps that they're going to leave. 9 CHAIRMAN FLANAGAN: So, in your 10 opinion, if there were an antenna in the 11 Presbyterian Church signal, that signal would not 12 reach beyond the intersection of Glen Alpin and 13 Blue Mill? Which is that traffic light that's 14 right by the Presbyterian Church. 15 MS. BOSCHULTE: Correct, as you 16 approach the intersection, that steeple gets 17 pretty -- the line of sight is gone, and as you go 18 around the bend, that line of sight and coverage 19 will -- will be out of -- will be out of sight. So 20 pretty much anyone that is currently serving on 21 that, once they pass the intersection, will drop 22 their call. 23 CHAIRMAN FLANAGAN: The signal 24 would -- so if the tower or the antenna is above 25 the terrain, that's generally good for the antenna.</p>
<p style="text-align: right;">Page 87</p> <p>1 the one that's across the intersection. 2 MR. SCHNEIDER: The New Vernon 3 Presbyterian Church, I think. 4 MS. BOSCHULTE: It has a small steeple 5 on top. 6 CHAIRMAN FLANAGAN: All right. So 7 that alone wouldn't provide all the coverage that 8 this one tall tower would -- 9 MS. BOSCHULTE: That's correct. 10 CHAIRMAN FLANAGAN: -- but was there 11 any consideration to putting multiple antennas, so 12 if you think, around this area, you have Christ the 13 King, you have the Presbyterian Church, you have 14 the firehouse, you have the school, which would 15 seem to cover a large portion of the area that 16 you're trying to cover now. Has that been looked 17 into? 18 MS. BOSCHULTE: I want to make sure 19 that I understand your question: Whether or not, 20 instead of the one macro facility, there would be 21 several small macro facilities at each of those 22 proposed locations to provide the same coverage 23 footprint? 24 CHAIRMAN FLANAGAN: Or similar, yes. 25 MS. BOSCHULTE: I don't believe so.</p>	<p style="text-align: right;">Page 89</p> <p>1 Right? Meaning it's good for the signal, that the 2 signal can get up over the hill, but if it's at the 3 top of a hill, it travels into a valley well, does 4 it not? 5 MS. BOSCHULTE: Actually, no. At the 6 top of a hill, the way the signal propagates is 7 really out toward the horizon, and it does 8 eventually reach the ground; however, the valley 9 is -- the drop in elevation is significant; it 10 drops so rapidly in the valley, that it actually 11 creates what we call a null or a shadowing. So the 12 best way to cover a valley is actually to be in the 13 valley. 14 CHAIRMAN FLANAGAN: So if I gave you 15 one in the valley, at Christ the King, and one at 16 the top of the hill, and then one at the 17 firehouse -- I don't know if you know where the 18 firehouse is, but it's basically just up the hill 19 from Christ the King, and it's right across from 20 the site you're talking about. Right? So 8 21 Millbrook Road is across the street from the 22 firehouse. That, you don't think, is going to give 23 you coverage that's sufficient? 24 MS. BOSCHULTE: These are relatively 25 in close proximity of each other, and so, to</p>

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1 provide three macros at almost the same geographic
 2 location, it's going to create a co-channel
 3 interference problem, and trying to -- you need a
 4 certain amount of overlap, but too much overlap
 5 actually creates noise and interference, and so you
 6 have several macro facilities of equal power
 7 strengths competing, and that actually raises your
 8 noise floor. So, actually, your signal quality
 9 will actually decline.

10 CHAIRMAN FLANAGAN: So, then, yeah, I
 11 have to ask the question: What if you made three
 12 micro sites?

13 MS. BOSCHULTE: Then, again, it goes
 14 back to the other situation: The three micro sites
 15 is lower power, and provides a smaller coverage
 16 footprint, but then you're back to a similar DAS
 17 network type solution, where you are primarily
 18 covering the road, and not reaching into the
 19 residential homes. Some of the homes are not right
 20 along the road, and are set back a certain amount
 21 of distance, and so smaller microcells are not
 22 going to reach and penetrate and provide reliable
 23 service inside the homes at those distances.

24 CHAIRMAN FLANAGAN: Dr. Eisenstein,
 25 what do you think?

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1 DR. EISENSTEIN: When you -- well, you
 2 can put as many sites as you want, you can put the
 3 sites every 100 feet, if you want to, and you can
 4 tailor them to give you coverage. The thing you
 5 have to remember is there's a simple rule of
 6 geometry, and that is area goes like the square of
 7 the radius. So if you cut down the coverage radius
 8 by a half, you have 1/4th the area of coverage.
 9 That means you would need four times as many sites.

10 So if you look at the proposed site,
 11 the macro site, you have maybe a little less than a
 12 mile, about 3,000, 3,500 feet of coverage. If you
 13 cut that down to 500 feet, which is what you get
 14 from a small site, that's a seven to one ratio,
 15 that means you'd need 49 times as many sites to
 16 fill the same area. And those sites won't be
 17 available, because you can put small sites along
 18 roads, or maybe in a church, but you can't put them
 19 on someone's lawn, and if you've got a house that's
 20 300 feet from the road, they're not going to get
 21 any coverage at all, because the site just won't go
 22 that far.

23 So, first of all, you're talking about
 24 a massive deployment of nodes to cover an area, and
 25 secondly, you're talking about an inability to get

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1 penetration in large plots of land, so it just
 2 blanks things out.

3 CHAIRMAN FLANAGAN: Okay.

4 COMMISSIONER ROSENBAUM: I've got a
 5 question: How does it change as carriers roll out
 6 5G, the height of the tower, the size of the
 7 footprint you need?

8 DR. EISENSTEIN: Do you want me to
 9 answer that?

10 MR. SCHNEIDER: Sure, since we had
 11 that discussion earlier.

12 DR. EISENSTEIN: Yeah, this is
 13 something I'm very interested in. As a matter of
 14 fact, for those of you in the audience and those on
 15 the board that don't know me, I teach this at
 16 Drexel University, this is my area. I'm very
 17 interested in 5G.

18 What's happening is, you saw the
 19 decrease in coverage when you went from 700 to
 20 2100. They're talking about now 3500 and 6000.
 21 I've even heard, believe it or not, 35000 as the
 22 frequencies for the new 5G system. They're going
 23 way, way, way up in the frequency band, and the
 24 coverage you're going to get from them is going to
 25 be on the order of 50 to 100 feet, maybe 200 feet,

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1 maybe 250 feet, from each of these sites that will
 2 be on usually utility poles.

3 So how do you make it up? Well, you
 4 put something on every utility pole as you're going
 5 along down the string. You can't put them up high,
 6 because if you put it up at 140 feet, you're losing
 7 almost all your coverage on the way down, at these
 8 higher frequency bands. So they're going to be
 9 relatively low, they're going to be on
 10 streetlights; traffic lights; telephone poles.
 11 They're going to be on sides of houses; sides of
 12 buildings. They're going to be all over.

13 And right now, you don't have to worry
 14 about it to any extent, because as we're speaking
 15 today, the 5G standards have not been agreed upon
 16 yet. There's active discussion, there are many
 17 technical groups within the societies that are
 18 looking at this, and they're trying to figure out
 19 the standard. Some of the carriers have deployed
 20 experimental 5G setups in some selected cities
 21 around the United States, but they're using
 22 different technologies, and they haven't converged
 23 yet.

24 There's also no 5G instrument -- I'm
 25 talking about a handheld device -- that's on the

<p style="text-align: right;">Page 94</p> <p>1 market yet. There are some experimental ones that 2 I've seen. But we've got a way to go before the 5G 3 comes out.</p> <p>4 But the 5G systems would be compatible 5 with an ODAS network, more compatible with an ODAS 6 network than with the macro site, but for the 7 reasons I just said, you're still going to have to 8 have the macro site, because, otherwise, you won't 9 get any in-vehicle coverage, your cars won't work 10 unless you have a system that has enough 11 propagation range to handle a moving vehicle. And, 12 you know, these high frequencies won't work there. 13 It's got to be a strictly static environment, 14 probably lamppost to your house, you know, that 15 kind of thing, rather than replacing the umbrella 16 systems.</p> <p>17 COMMISSIONER ROSENBAUM: Okay. Thanks 18 for the detail, but just to simplify it, it's not 19 the case where they're going to come back and say, 20 okay, we're at 120 feet now, for 5G, we need 200 21 feet.</p> <p>22 DR. EISENSTEIN: No, the other way 23 around.</p> <p>24 COMMISSIONER ROSENBAUM: I just want 25 to confirm that.</p>	<p style="text-align: right;">Page 96</p> <p>1 DR. EISENSTEIN: Based on existing 2 equipment, yes.</p> <p>3 CHAIRMAN FLANAGAN: Wow.</p> <p>4 DR. EISENSTEIN: Now, they can up 5 fiberoptic, they can go a lot higher than you're 6 going right now with FiOS. There's really very 7 little limitation on fiber as to how fast you can 8 go. The wireless limitations are, as I said, as 9 you start going up in frequency, where you have 10 available bandwidth, then what happens is your 11 coverage just diminishes enormously. So it has to 12 be almost short distance, line of sight.</p> <p>13 CHAIRMAN FLANAGAN: Mr. Schneider, 14 just a programming note: we have four minutes left. 15 We will stop promptly at 11.</p> <p>16 MR. SCHNEIDER: Okay.</p> <p>17 CHAIRMAN FLANAGAN: So I don't think 18 your testimony is done here.</p> <p>19 MR. SCHNEIDER: Correct, and the next 20 area of testimony is kind of a different area, so I 21 don't want to start it with four minutes left.</p> <p>22 VICE CHAIR NEWLIN: Well, we also -- I 23 still have coverage questions.</p> <p>24 MR. SCHNEIDER: Right, that's what I'm 25 saying.</p>
<p style="text-align: right;">Page 95</p> <p>1 DR. EISENSTEIN: Let's just be 2 absolutely clear on this: 120 feet now and 120 feet 3 in the future, because they're going to need that 4 for the in-vehicle coverage and for getting the 5 coverage around. Something on the lamppost in 6 front of your house, yes, and that may go to your 7 house, and maybe a couple of your neighbors, and no 8 further. It's not going to -- not going to be able 9 to handle a lot of traffic or vehicles or anything 10 like that. And that'll be very high speed.</p> <p>11 I guess the way to think about it, as 12 best as I can envision the 5G system, to a very 13 large extent, it's going to replace cable; not your 14 cell phone system, although your cell phone will 15 operate on those frequencies.</p> <p>16 CHAIRMAN FLANAGAN: Is it faster than 17 fiberoptic?</p> <p>18 DR. EISENSTEIN: Well, it's two 19 different things. It will be as fast as the 20 present hardware. Fiberoptic has no real 21 limitation on bandwidth; it has to do with the 22 equipment that drives it. So would it be faster -- 23 it would be a wireless equivalent.</p> <p>24 CHAIRMAN FLANAGAN: Equivalent to 25 FiOS?</p>	<p style="text-align: right;">Page 97</p> <p>1 CHAIRMAN FLANAGAN: Yeah, so we can -- 2 we can take the next three minutes now, and we can 3 talk -- you're not done with your testimony -- 4 well, let me ask you: Is she done?</p> <p>5 MR. SCHNEIDER: She's done in terms of 6 her direct on the issue of coverage, but obviously 7 we have board questions on coverage, and --</p> <p>8 MR. PURCELL: Actually, I had a 9 question, Rich, I don't know if you were planning 10 on this, maybe your next presentation, maybe tying 11 in this coverage, and now also as it regards the 12 d(1) variance tests for positive criteria, I don't 13 know if that was going to be your --</p> <p>14 MR. SCHNEIDER: I think that would be 15 primarily through the planner; I don't know that 16 there would be anything specific from the 17 radiofrequency --</p> <p>18 MR. PURCELL: But that's going to be 19 the next -- your next --</p> <p>20 MR. SCHNEIDER: The third witness, 21 probably.</p> <p>22 CHAIRMAN FLANAGAN: All right. So I 23 will ask you, if you can join us again next month, 24 because we're going to have questions from the 25 board, and they're going --</p>

<p style="text-align: right;">Page 98</p> <p>1 DR. EISENSTEIN: When is the hearing 2 next month? 3 CHAIRMAN FLANAGAN: Third Thursday. 4 VICE CHAIR NEWLIN: 21st. 5 DR. EISENSTEIN: So 02/21. 6 CHAIRMAN FLANAGAN: Dr. Eisenstein, 7 does that work for you? 8 DR. EISENSTEIN: Let me see, I don't 9 know. I'm a slave to my device. 10 CHAIRMAN FLANAGAN: If only you had 11 5G, it'd be quicker. 12 DR. EISENSTEIN: If only I had 5G, and 13 if only I had a system to transport me up here 14 without going on 202. 15 CHAIRMAN FLANAGAN: You don't have to 16 take 202. 17 DR. EISENSTEIN: Turnpike? It's way 18 out of the way. 19 The 21st is okay. 20 CHAIRMAN FLANAGAN: All right. So 21 21st, this will be on the agenda. I would 22 imagine -- well, we'll do -- we have to see what 23 applications we get in. This can't take the whole 24 night, obviously. So if we have other business, we 25 will hear the other business, and then take this,</p>	<p style="text-align: right;">Page 100</p> <p>1 CHAIRMAN FLANAGAN: Yes. 2 MR. SCHNEIDER: Okay. So we'll see 3 you all on the -- we'll see you -- maybe some of us 4 may see you on January 27th at 11:30 at the DPW 5 site, and we'll stake out, to the best we can, the 6 two locations. 7 VICE CHAIR NEWLIN: Lori, can we get, 8 please, copies of these maps in color? 9 MR. SCHNEIDER: If it's easier, I can 10 e-mail a copy in color to Lori. 11 Thank you. 12 PUBLIC SPEAKER: I had a question. Is 13 the public allowed to come and see the site? 14 CHAIRMAN FLANAGAN: Yes, it's open to 15 the public. 16 PUBLIC SPEAKER: Okay. So what is the 17 time, again, decided on? 18 CHAIRMAN FLANAGAN: 11:30 a.m. 19 PUBLIC SPEAKER: 27th? 20 CHAIRMAN FLANAGAN: 11:30 on the 27th. 21 VICE CHAIR NEWLIN: Sunday, the 27th. 22 CHAIRMAN FLANAGAN: I think it's a 23 week from Sunday. It's a week from this coming 24 Sunday. 25 PUBLIC SPEAKER: Thank you.</p>
<p style="text-align: right;">Page 99</p> <p>1 unless I could offer you the first -- the beginning 2 part of the evening -- we're going to have to play 3 it by ear. I tell you what: Why don't you and 4 Lori speak, and we'll figure out the timing of the 5 applications. 6 MR. SCHNEIDER: We can work that out 7 cooperatively. 8 So for purposes of the record -- 9 DR. EISENSTEIN: And just from my 10 point of view, because of my time constraints 11 leaving from Philadelphia, it's better for me to 12 have it later in the meeting, I have trouble 13 getting here by 7:30. 14 CHAIRMAN FLANAGAN: Are you okay going 15 until 11 p.m.? 16 DR. EISENSTEIN: I can go until 1 in 17 the morning, I don't care. 18 MR. SCHNEIDER: I got my answer. 19 DR. EISENSTEIN: My car drives itself, 20 I don't even keep my eyes open. 21 MR. SCHNEIDER: Okay. So for purposes 22 of the record, we're carrying the matter to 23 February 21st at 7:30 p.m. without further notice 24 to the public. 25 MR. PURCELL: Correct.</p>	<p style="text-align: right;">Page 101</p> <p>1 PUBLIC SPEAKER: As we go forward, how 2 is the public going to, sort of, participate here? 3 We're listening -- you make this two and a half 4 hours. I mean, you realize what a third rail you 5 are hitting right now? 6 CHAIRMAN FLANAGAN: Yeah, I 7 understand. 8 PUBLIC SPEAKER: Maybe we've got to 9 have a separate, just a public -- 10 CHAIRMAN FLANAGAN: Right. So the 11 way -- so after each witness gives testimony, the 12 board will have an opportunity to ask questions, or 13 during the course, and then the public will have an 14 opportunity to ask questions. So, next month, I 15 suspect we're going to finish the testimony of the 16 engineer, and then public can ask all the questions 17 they like. 18 PUBLIC SPEAKER: Some of them are more 19 general. Like we're not going to get into, you 20 know, the coverage and all, but getting into what 21 it means for the town, things like that. 22 CHAIRMAN FLANAGAN: Right. 23 PUBLIC SPEAKER: And Dan beat this 24 poor woman for two doors, for 2,000 square foot, 25 and now you're putting up this thing in the middle</p>

<p style="text-align: right;">Page 102</p> <p>1 of the town. Can anyone step back and think about 2 that? 3 And second thing -- hold on, wait a 4 second, let me finish. 5 CHAIRMAN FLANAGAN: Hold on, due 6 respect here, it's now past 11 o'clock, and my 7 bedtime's passed by at least 30 seconds here. 8 One minute. 9 PUBLIC SPEAKER: One minute. 10 How did this thing get started? Who 11 in the town put the bid out? 12 CHAIRMAN FLANAGAN: I imagine that was 13 the township committee, I guess. 14 PUBLIC SPEAKER: You imagine? 15 COMMISSIONER CHIPPERSON: It was the 16 township committee. 17 CHAIRMAN FLANAGAN: Hold on a second. 18 PUBLIC SPEAKER: Come on. 19 CHAIRMAN FLANAGAN: Come on nothing. 20 Everybody's getting tired. It's time to go home. 21 The township committee is the one who 22 put the bid out; this board is here the hear 23 appeals. So we're hearing an appeal. We did not 24 put a bid out for the cell tower. 25 PUBLIC SPEAKER: The township did.</p>	<p style="text-align: right;">Page 104</p> <p>1 11:03 p.m.) 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25</p>
<p style="text-align: right;">Page 103</p> <p>1 CHAIRMAN FLANAGAN: It must be the 2 township committee. 3 COMMISSIONER CHIPPERSON: It was. 4 PUBLIC SPEAKER: What was the -- 5 CHAIRMAN FLANAGAN: All right. That 6 make sense? 7 PUBLIC SPEAKER: Can we get the 8 minutes of that meeting that they put the bid out? 9 THE SECRETARY: You would have to call 10 the clerk and you would have to put in a records 11 request for those minutes, that's out of my 12 purview. But yes, you may. 13 PUBLIC SPEAKER: All right. And can 14 we see the bids that these guys submitted too? 15 CHAIRMAN FLANAGAN: Yeah, whatever is 16 public record. 17 THE SECRETARY: Is that all -- 18 MR. PURCELL: Yeah. 19 CHAIRMAN FLANAGAN: That's something 20 you do through public record. 21 PUBLIC SPEAKER: See, we get to go 22 harass the township committee, instead of you guys. 23 CHAIRMAN FLANAGAN: I hope you harass 24 no one; definitely not us. 25 (Whereupon, the hearing concluded at</p>	<p style="text-align: right;">Page 105</p> <p>1 CERTIFICATE 2 3 4 5 I, Michael Lombardozzi, a Notary 6 Public and Certified Court Reporter of the State of 7 New Jersey, do hereby certify that the foregoing is 8 a true and accurate transcript of the testimony as 9 taken stenographically by and before me at the 10 time, place, and on the date hereinbefore set 11 forth. 12 I do further certify that I am neither 13 a relative nor employee nor attorney nor counsel of 14 any of the parties to this action, and that I am 15 neither a relative nor employee of such attorney or 16 counsel and that I am not financially interested in 17 this action. 18 19 20 Michael Lombardozzi, 21 Certified Court Reporter, State of New Jersey 22 CERT #: 30X100239700 23 Date: 2019-01-31 24 25</p>

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