

In The Matter Of:
WOODFORD COUNTY
ZONING BOARD OF APPEALS

PUBLIC HEARING
December 1, 2020

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WOODFORD COUNTY
ZONING BOARD OF APPEALS

TRANSCRIPT OF PUBLIC HEARING
REPORTED REMOTELY
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Kim Holmes, Chairwoman
Teresa Gauger
Jerry Lay
Dean Backer
Marty Clinch
Ansel Burditt Alternate

1 ALSO PRESENT:

COUNSEL PRESENT FOR
2 WOODFORD COUNTY:

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4
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INDEX

SWORN SPEAKERS:

AARON ANDERSON.....page 361
 CHRIS HOWELL.....page 382
 GARY DeCLARK.....page 402
 JEFF KOPP.....page 431
 BRIAN KURZ.....page 455
 BRENT HODEL.....page 459
 GLEN BARTH.....page 460
 JAMES BAUMANN.....page 468
 DOUGLAS KAUFMAN DICKSON.....page 472
 KEITH KELSEY.....page 474

EXHIBITS CONTINUED

Panther Grove Exhibit 12.....page 361
 (Anderson presentation)
 Panther Grove Exhibit 13.....page 382
 (Howell presentation)
 Panther Grove Exhibit 14, 14A,
 14B.....page 402
 (DeClark presentation)
 Panther Grove Exhibit 15.....page 431
 (Kopp presentation)
 Panther Grove Exhibit 16.....page 455
 (Kurz letter)

PUBLIC HEARING

1 (The time is 4:14 p.m.)

2 KIM HOLMES: All right. We're going to
3 go ahead and get started tonight, call this
4 meeting back to order. This is the Woodford
5 County Zoning Board of Appeals, Kim Holmes,
6 chairman. We're here with the petitioner, Panther
7 Grove Wind, LLC. It is December 1st, and the time
8 is 4:15. Just a reminder that we will be taking a
9 break around six, and ending about 8 PM. We don't
10 have these harsh rules, but if you could, Lisa,
11 can you do a roll call, please.

12 LISA JORDING: Kim Holmes.

13 A. Here.

14 LISA JORDING: Teresa Gauger.

15 A. Here.

16 LISA JORDING: Jerry Lay.

17 A. Here.

18 LISA JORDING: Marty Clinch.

19 A. Here.

20 LISA JORDING: Ansel Burditt.

21 A. Here.

22 LISA JORDING: Dean Backer.

23 A. Here.

24 KIM HOLMES: Okay. Mr. Keyt, do you

PUBLIC HEARING

352

1 have your first witness?

2 MR. KEYT: Before we get there, we do
3 have a couple of just minor procedural things.
4 There are a couple of just very minor procedural
5 things to bring to the board, and we just kind of
6 want to run through those. I'm going to kind of
7 run through them just, what they all are in total.
8 Chris has a couple of things that he wants to show
9 you in regard to turbine 21, which we're going to
10 ask to be moved to a different location. So, let
11 me just start there.

12 So, turbine 21, we're intending to move
13 slightly to the north. Chris will explain that in
14 a little bit more detail. We have talked to the
15 zoning office. No new notices would need to go
16 out. It's still -- would be a parcel that would
17 be participating. No new notices to landowners in
18 the surrounding area would need to be notified.
19 So, it would be a simple amendment, which is
20 fairly common to move one turbine to a different
21 spot.

22 In regards to turbines 62, 63, 64, 45
23 and 46, we're going to remove those from
24 consideration. So, a special use application is

PUBLIC HEARING

353

1 essentially 86 different special use applications.
2 Those applications for those specific turbines we
3 would be removing from consideration. So, there
4 isn't necessarily an amendment that would need to
5 take place. Simply we're stating we will remove
6 them off of the table of ones we're putting forth.

7 Turbine 61, we're checking with Lisa's
8 office to see whether it was going to be able to
9 be moved. If not, we're going to remove it from
10 consideration, but we're first checking with her
11 office to see if it's able to be relocated without
12 issuing new notices. That's sort of a key issue
13 when you're talking about a special use amendment.
14 With that, I'm going to turn it over to Chris,
15 who's going to kind of explain that turbine 21 and
16 where it's going to just so you visualize it. He
17 did make copies of maps that are before you so
18 that you can see them, and he can explain where
19 it's going and why.

20 KIM HOLMES: Mr. Green, you've already
21 been sworn in, correct?

22 CHRIS GREEN: Yes, ma'am. So, the map
23 you have in front of you has the location of
24 the -- well, the new location for turbine 21. It

PUBLIC HEARING

354

1 effectively moved northeast about a thousand feet.
2 It was on the parcel that's immediately south of
3 its current location, which would be pin
4 1107300004. We're asking that it be allowed to be
5 moved to pin 1107300002. This is at the request
6 of a nearby landowner.

7 MR. KEYT: And one thing to note on that
8 turbine location, is it will not have any effect
9 on the shadow or noise studies that have already
10 been done. Those people are going to testify
11 tonight. But it doesn't have any impact on that.
12 So, with that, I would ask for an allowance for
13 the amendment for the movement of turbine 21 as we
14 requested.

15 CHRIS GREEN: I think to add to that,
16 all of the moves, what you're going to hear
17 tonight for shadow flicker noise are based on the
18 complete layout without these moves. What you
19 will get before the proceeding is over, we will
20 submit a final noise and shadow flicker study
21 based on the final locations, including these
22 moves. And you will see that the final study will
23 have less impacts than what is being presented to
24 you tonight.

PUBLIC HEARING

355

1 So what you're seeing tonight will be --
2 will have a little bit more shadow, a little bit
3 more noise because there's more turbines than what
4 the final study will show with these moves.

5 I think one other thing to add as well
6 is we have decided to remove the Nordex machines
7 from the application. The reason being, we just,
8 we want to keep this application as concise as we
9 can. So we want to limit the application to just
10 the V-150, and the GE 158 unit. You know, those
11 are the number one and number two turbine
12 manufacturers in the country. We want to just
13 stick with those two. We want to remove the
14 Nordex machine just to keep the application as
15 concise as possible. Everything that you will see
16 tonight as far as noise and shadow, it's
17 everything was based on just the Vestas unit and
18 the GE unit. There's no data on the Nordex
19 machine.

20 KIM HOLMES: Does the board have any
21 questions?

22 MR. CLINCH: Yes, I do.

23 KIM HOLMES: All right. Marty, go
24 ahead.

PUBLIC HEARING

356

1 MR. CLINCH: Yes. What were the
2 turbines that were being removed?

3 CHRIS GREEN: I didn't hear the
4 question.

5 LISA JORDING: What turbines are being
6 removed?

7 MR. KEYT: Got you. The numbers of the
8 turbines being removed are 62, 63, 64, 45 and 46.
9 And then 61 we're still working out to figure out
10 if it can be moved without having to renotice
11 different people. And then I suspect on Thursday
12 we will probably address 61, would be the
13 likelihood.

14 MR. CLINCH: Again, why were they being
15 removed?

16 TERESA GAUGER: Teresa Gauger, ZBA.
17 Andy, just for clarification then, when we make
18 the amendment, those five to be removed, but not
19 anything with 61 for right now?

20 MR. KEYT: For right now, correct.
21 Because we need to make sure that if it is moved,
22 if it can be moved, we need to make sure that it
23 can be in terms of the notice provisions, 'cuz
24 there's certain notice provisions that have to go

PUBLIC HEARING

357

1 out in terms of neighboring areas. If we're going
2 to move it to a different spot, we need to make
3 sure those other people are aware.

4 MR. LAY: Jerry Lay with the ZBA. On
5 turbine 21, the picture here is the new location?

6 CHRIS GREEN: Yes, sir.

7 MR. LAY: Is the old location shown on
8 this?

9 CHRIS GREEN: It's not shown on that
10 map, but it's -- it would be in the south --

11 MR. LAY: This is the original location?
12 Jerry Lay, ZBA, without me having to look it up,
13 how far are you allowed to move one of these
14 without having to resubmit to the OEAAA?

15 CHRIS GREEN: One arc second, so that's
16 about 100 feet.

17 MR. LAY: That's what I thought, but I
18 couldn't remember.

19 CHRIS GREEN: Yeah, we will have to
20 refile for that one.

21 LISA JORDING: Mr. Clinch has a question
22 on zoom.

23 MR. CLINCH: Again, why are these five
24 being removed?

PUBLIC HEARING

358

1 CHRIS GREEN: It's at the request of
2 nearby landowners.

3 MR. CLINCH: Thank you.

4 CHRIS GREEN: Yes, sir.

5 MR. KEYT: Just as one minor point of
6 clarification, when I say removed; really what's
7 happening is we would be withdrawing those special
8 use applications. You've got essentially 86
9 special use applications in front of you, so we
10 would be withdrawing those five. So, it isn't
11 probably necessary to do a motion on those
12 particular, those five that are being withdrawn.
13 It's probably just necessary on the number 21,
14 just as a legal procedure aspect I think.

15 MR. LAY: Madam chairman, Jerry Lay from
16 the ZBA. At the request of counsel, I move that
17 turbines number 62, number 63, number 64, number
18 45 and number 46 be removed from consideration for
19 the special use.

20 TERESA GAUGER: I'll second that.

21 KIM HOLMES: Motion has been made and
22 it's been seconded. Roll call, please.

23 LISA JORDING: Kim Holmes.

24 A. Yes.

PUBLIC HEARING

359

1 LISA JORDING: Teresa Gauger.

2 A. Yes.

3 LISA JORDING: Jerry Lay.

4 A. Yes.

5 LISA JORDING: Marty Clinch.

6 A. Yes.

7 LISA JORDING: Ansel Burditt.

8 A. I abstain.

9 LISA JORDING: Dean Backer?

10 A. Yes.

11 KIM HOLMES: Motion passes.

12 TERESA GAUGER: Madam chairman, Teresa
13 Gauger, ZBA. I move that we amend the site
14 location of turbine number 21 to 1,000 feet
15 approximately northeast of its original location
16 with the new placement on the map provided.

17 MR. LAY: And madam chairman, I would
18 like a stipulation on that, that we approved that,
19 with the stipulation of approval from the OEAAA
20 after it's been refiled.

21 KIM HOLMES: Motion has been made and
22 amended. Roll call vote, please.

23 LISA JORDING: Teresa Gauger.

24 A. Yes.

PUBLIC HEARING

360

1 LISA JORDING: Jerry Lay.

2 A. Yes.

3 LISA JORDING: Marty Clinch.

4 A. Yes.

5 LISA JORDING: Dean Backer.

6 A. Yes.

7 LISA JORDING: Kim Holmes.

8 A. Yes.

9 KIM HOLMES: Motion carries. Mr. Keyt,
10 whenever you're ready.

11 MR. KEYT: Okay. And just as a
12 procedural matter, Mr. Jording has some issues
13 that we've talked about to put on to the record so
14 that we have it on the record.

15 KIM HOLMES: All right. Mr. Jording.

16 MR. JORDING: Jason Jording,
17 J-O-R-D-I-N-G. I represent David Burroughs, Paul
18 Quiram and Troy Janssen. With the movement of
19 turbine 21 to the new location, with the
20 elimination of turbines 45, 46, 62, 63 and 64, and
21 the stipulation by the petitioner that turbine 61
22 is either going to re-site north of 1500 North,
23 and west of 2900, or if it can not be re-sited, 61
24 will be withdrawn from your consideration as part

PUBLIC HEARING

361

1 of the special use. On those terms, my clients
2 are going to withdraw their interested party
3 status.

4 MR. KEYT: And then you're withdrawing
5 your appearance too?

6 MR. JORDING: Well, I only represent
7 those three, so to the extent you guys construe me
8 as an interested party, yeah, I'm not going to be
9 an interested party either.

10 KIM HOLMES: Thank you, Mr. Jording.

11 MR. KEYT: With that, we will call our
12 witness. I apologize for the delay. It's just
13 sometimes procedural issues we have to address.
14 So our first witness is Aaron Anderson, he's going
15 to talk about shadow flicker. That is Exhibit No.
16 12. There is a power point in front of you we've
17 handed out ahead of time, and it has the noise
18 study that was performed. So, with that we'll
19 turn it over to Mr. Anderson.

20 KIM HOLMES: All right. I'm going to go
21 ahead and swear you in at this time.

22 (Witness sworn.)

23 MR. ANDERSON: All right. Okay to get
24 started? Very good. Good afternoon. My name is

PUBLIC HEARING

362

1 Aaron Anderson. For the court reporter,
2 A-A-R-O-N. A-N-D-E-R-S-O-N. And I'm going to
3 talk to you about shadow flicker.

4 Let me give you a brief introduction of
5 myself before we get too far here. So, Aaron
6 Anderson, I am a licensed professional engineer in
7 four different states, including in the State of
8 Illinois. I've been working in the wind industry
9 since 2007, so coming up on 14 years of experience
10 doing things exactly like this. Worked on more
11 than 100 projects across the United States and
12 other parts of the world during that time,
13 including a number of different shadow flicker
14 studies, including about a dozen in the State of
15 Illinois just like this one.

16 In terms of educational background, I
17 have a bachelor's degree in physics, a bachelor's
18 degree in mechanical engineering, and a Master's
19 degree in engineering management.

20 The firm I work for is called Burns and
21 McDonnell Engineering Company. Burns and
22 McDonnell, if you're not familiar, is an
23 engineering construction and environmental firm
24 headquartered in Kansas City. That firm was

PUBLIC HEARING

363

1 founded in 1898. It has been doing work like this
2 ever since. We currently have about 7,500
3 employees scattered across the world and we're the
4 top ranked power and transmission company in the
5 United States.

6 My current role within Burns and
7 McDonnell, I should mention this, I'm the director
8 of renewable energy within the firm, so my role is
9 to oversee technical studies and everything else
10 within the renewable industry, specifically within
11 the wind industry just like this. So if you're
12 not familiar with shadow flicker, it's a simple
13 phenomenon to understand.

14 So, shadow flicker occurs when the sun
15 passes through wind turbine blades as they rotate.
16 And what's important to understand is that there
17 are a number of requirements for shadow flicker to
18 occur. And those are in no particular order; it
19 has to be sunny. So, without the sun you can not
20 have a shadow, and without shadow you can not have
21 shadow flicker. So of course it has to be a sunny
22 day and bright enough to cause a shadow to occur
23 on the turbine like you see in the picture, no
24 different than you would see your own shadow

PUBLIC HEARING

364

1 walking down the sidewalk.

2 The turbine has to be in operation, and
3 by operation we mean that turbine has to be
4 rotating. If it's not rotating, then it's just a
5 shadow, and not a shadow flicker. There can not
6 be any obstructions in between the turbine and
7 what we're measuring the flicker at. So, for
8 example, that could be if where we're measuring
9 the shadow flicker is at an occupied home, if
10 there is a barn, a silo, a building, a hedge row,
11 tree line, some other obstacle in between our
12 turbine and the receptor, that would block the
13 shadow. We haven't considered any of those in
14 this study, but those are things that again would
15 have to happen for the shadow flicker to take
16 place. And that receptor has to be in the line of
17 sight. So what you can see in that picture is
18 shadow is very directional. It depends on where
19 the sun is shining from. So what's on the other
20 side of that shadow has to be the receptor that
21 we're considering.

22 The good thing about shadow flicker is
23 it's very predictable. It happens during certain
24 times of day and certain times of the year. And

PUBLIC HEARING

365

1 the reason for that, and the reason it's so
2 predictable, is we know of course the sun always
3 rises in the east and sets in the west. In the
4 fall and winter months, the sun is more to the
5 south. So as it rises in the east and it's more
6 to the south, those shadows are cast to the
7 northwest. And likewise, during those seasons as
8 the sun sets in the west, it's more southerly. So
9 the shadows would be cast to the northeast.
10 Again, very predictable. You will see that within
11 the results and the way the shadow looks when you
12 actually put it on a map.

13 Looking at the ordinance for Woodford
14 County. Let's start first at the Federal level.
15 So, there are no Federal limitations or ordinance
16 restrictions on shadow flicker throughout the
17 entire country. And within the State of Illinois
18 there are no regulations in place around shadow,
19 which is very common in most states within the
20 US. Within Woodford County, however, there is an
21 ordinance, so within Section 28 it reads that no
22 turbine shall be located in an area that will
23 result in shadow flicker more than 30 hours per
24 year, per calendar year, at any inhabited dwelling

PUBLIC HEARING

366

1 on a nonparticipating landowner's property.

2 Simply put, we accumulate all of the
3 shadow flicker that could happen with how we model
4 it. We model that in each individual home within
5 the project boundary. And what we say is if that
6 landowner is nonparticipating this ordinance
7 limits the amount of shadow flicker that can occur
8 to a total of 30 hours per year, which is a very,
9 very common industry bench mark. We see 30 hours
10 per year used throughout the entire country.

11 What the developer in this case is
12 committed to is there will not be a contribution
13 of more than 30 hours per year at any
14 nonparticipating landowners. So, if someone has
15 chosen to participate in the project, it is
16 possible that their total flicker accumulation
17 could exceed 30. If they are nonparticipating,
18 which is what the ordinance language just above
19 this regulates, the developer has said that they
20 will not allow shadow flicker to go above that
21 level. So that's the commitment that they're
22 making here.

23 What you'll see throughout the study,
24 and we will go through the results here in detail,

PUBLIC HEARING

367

1 is that those requirements of the ordinance as it
2 reads are met through the current layout.

3 So, let's get into the weeds a little
4 bit. When we model shadow flicker, we use a
5 software program called WindPro. WindPro is very
6 much the industry standard for these types of
7 studies. There is a screen shot here on the
8 screen of the model just to give you a sense of
9 the complexity of what's happening here.

10 So, simply put, what happens is that
11 WindPro takes all of the turbine locations, all of
12 the receptor locations and a number of other
13 inputs that I will go through here in a moment,
14 and it aggregates the amount of shadow that
15 happens every minute of every month of every year
16 at each one of those receptors. So, it adds all
17 those up and that's what give us our total hours
18 per year at each individual receptor or occupied
19 residence that we will talk about, and there are
20 673 of them that we evaluated in this study.

21 So, within that WindPro model, there are
22 a whole host of assumptions and inputs that we get
23 into. I'd like to walk you through some of those
24 here. The important thing that I'm going to

1 reemphasize is that a number of these are highly
2 conservative, so we essentially compound
3 conservatism upon conservatism, and what I hope
4 you take away from all this is even though we're
5 showing compliance with the ordinance through this
6 study, the actual results here are highly
7 conservative, meaning what's actually seen when
8 this project is in operation should be less than
9 what we're seeing here because of all of the
10 conservatism that is built in.

11 So the first thing we built in, in terms
12 of inputs and modeling parameters, are the turbine
13 coordinates. So in this case we looked at two
14 different wind turbine layouts. One of them was
15 with the Vestas V-150 and there are 86 of them.
16 The other layout that we evaluated was with a GE
17 turbine, the five and a half megawatt series with
18 the 158 meter rotor diameter. We modeled 76 of
19 those. This does not consider any of the turbine
20 removals that you just heard about.

21 And by definition, the results here at
22 worse, I suppose, would stay exactly the same as
23 we presented them. At best, and what's most
24 likely, and we can show you here on the maps, is

PUBLIC HEARING

369

1 that the results would actually decrease from what
2 we're showing here. So the total number of hours
3 per year would go down by removing turbines. They
4 can not possibly go up. It's not physically
5 possible.

6 The next thing we looked at were
7 receptors. And I use that term all the time.
8 What I mean by receptor is a home, is a residence,
9 is somewhere that someone is living or a structure
10 that we've evaluated. There were 673 of them that
11 we considered. And the most important takeaway,
12 when you think about receptors or residences in
13 this case, is we modeled every one of them in what
14 we called greenhouse mode. Greenhouse mode means
15 each one of those houses is treated as a glass
16 box.

17 So, in reality, every home of course has
18 windows on some sides, some of them on all sides,
19 but they all have a roof. They all have walls in
20 between. Within the model every one of these
21 receptors is modeled as it is glass all the way
22 around. The reason that's important is that the
23 total number of flicker that accumulates within
24 the model goes up because of that. Again, it's

PUBLIC HEARING

370

1 very conservative. In reality you will have
2 walls, roofs, awnings, tree lines, other things
3 blocking those shadows. We haven't considered any
4 of those here in order to get as conservative as
5 we can with the total amount that's built up.

6 The next thing we look at are the
7 turbine dimension. So again, we looked at two
8 different turbine models. The Vestas machine has
9 a hub height of 120 meters. So the hub is of
10 course where the nacelle is at. The box that sits
11 on top of the tubular tower. That machine has a
12 rotor diameter, so that's blade tip to blade tip
13 of 150 meters.

14 We also looked at a GE machine, as you
15 know, which had a hub height of 107 meters and a
16 rotor diameter, so blade tip to blade tip, of 158
17 meters.

18 So we modeled those based on the exact
19 specifications from the supplier and how they will
20 be manufactured.

21 We then looked at how the turbines will
22 operate. And to do that, we took wind data that
23 was measured at the site, and we put it into the
24 model and we say okay, mimic how these machines

PUBLIC HEARING

371

1 will actually spin, how they'll turn and follow
2 the wind as it changes directions. How fast
3 they'll actually rotate. And all of those other
4 characteristics of the turbine. And how they will
5 be operated once they're actually built. And
6 model those for shadow flicker purposes.

7 So when the wind is blowing, these
8 turbines are spinning within the model and there
9 is a possibility of flicker being created. Again,
10 if it's sunny, if that receptor is in the line of
11 sight and some of those other things that I have
12 mentioned. But the takeaway there is this is
13 based on actual data from the site, so this should
14 mimic the actual operation of the plant.

15 The last set of modeling parameters we
16 look at are these three. So first is obstacles.
17 So as I mentioned, things like tree lines,
18 buildings, etc. As you can appreciate, it will
19 block a shadow if it's in between the turbine and
20 where you're standing. We haven't considered any
21 of those in order to give us the worse case view
22 of what obstacles could do.

23 So, if there is a tree line, if there is
24 a barn, if there is a building, that can and will

PUBLIC HEARING

372

1 stop a shadow from occurring. So again, the total
2 amount of flicker will be less than what is being
3 modeled here.

4 Next we look at terrain. So, this is
5 important. Because even though there are certain
6 areas of the site that are very flat, we do look
7 for high spots. We build a wind turbine because
8 we want the higher wind speed. So we model the
9 actual terrain, so we're modeling the turbine
10 sitting high, which is important from a
11 conservatism standpoint because we want it up as
12 high as it can be so those shadows go as far as
13 they can within the model. That allows us to,
14 again, get the most conservative view that we can
15 of the total amount of accumulation.

16 And then last but not least, you heard
17 me mention that in order for shadow flicker to
18 occur it has to be a sunny day. So, when it's
19 dusk or even dark like it is right now, obviously
20 there's not enough sunlight for a shadow to
21 happen. So we look at the actual probability.
22 So, this data is taken from El Paso, just up the
23 road from here, and this is based on decades of
24 historical probabilities of sunshine and how often

PUBLIC HEARING

373

1 each month the sun actually shines.

2 So we take these numbers, we round them
3 up slightly so that it's slightly more sunny than
4 it actually has been in the past, again to be
5 conservative. And we build that into the model
6 and mimic when there's actually an opportunity for
7 flicker to happen.

8 Okay. So, we take all of that stuff and
9 we mash it up into the model and this is the type
10 of input that starts or outputs that start to come
11 from that. So all of those are aggregated within
12 WindPro, that software I told you that we were
13 using, and we get results both numerically and in
14 tabular format.

15 So on the screen here you can see an
16 example of the graphical view of what shadow
17 flicker looks like. And you can see that it sort
18 of takes on this butterfly shape where from the
19 turbine, which are those yellow triangle looking
20 things there on the map, you can see that the
21 lines get a little longer to the northeast, to the
22 northwest, to the southeast and to the southwest.
23 And that's for exactly the reason I mentioned,
24 that as the sun rises in the east, more to the

PUBLIC HEARING

374

1 south, those shadows get cast further. And
2 vice-versa. When it sets in the west, they get
3 cast further to the northeast, and the exact
4 opposite is true in the summer months, for
5 example, when the sun is more north. And each one
6 of these individual lines represents the amount of
7 flicker that's happening.

8 So, zero hours, 10 hours per year, 20
9 hours per year, etc., all the way up to right next
10 to the turbine, which could be a very high number,
11 but of course we have setbacks and nobody's house
12 is immediately right under a turbine where that
13 red line would be.

14 We take all of that information, we
15 aggregate it for each individual receptor, and we
16 present that in a tabular format and graphically
17 within the exhibit that you have; Exhibit 12, I
18 believe. So you will see those in the back and I
19 will call your attention to those in just a
20 moment.

21 Here is an example of what it looks like
22 and what we call the calendar format. So, again,
23 see my previous comment about shadow flicker being
24 very predictable. And what's important here is,

PUBLIC HEARING

375

1 this is an actual result for receptor number 22.
2 And what you'll see here is that this receptor,
3 along the bottom axis are months of the year. So,
4 January at the left through December at the right.
5 And along the Y axis up and down is time of day.
6 So, 6 AM to 8 PM, roughly when the sun shines most
7 parts of the year.

8 What you will see there is a little blue
9 blob on the left in the month of April-ish from
10 roughly let's call it 6:30 to 7:15 PM, and the
11 same happens in August. What that tells us is at
12 this particular receptor all of the flicker that
13 happens throughout the entire year happens during
14 these very specific periods. So, they would only
15 see shadow flicker based on their geometry of this
16 house in the month of April for a few weeks,
17 between let's call it 6:30 and 7 PM. Then they
18 wouldn't see any more until the very end of
19 August; so late summer between, again, let's call
20 it 6:30 and 7 PM roughly.

21 So it doesn't happen, even if there are
22 30 hours per year, which there are not in this
23 case, even if there are, it doesn't happen every
24 day and it doesn't happen every minute of the day.

PUBLIC HEARING

376

1 It's a maximum of 30, and in this case it's almost
2 always in very early morning or late evening
3 hours, and usually during these sort of border
4 months when the seasons start to change and
5 shadows start to get long.

6 Finally, here's a summary of the overall
7 results of the study. And what you will see here
8 is we modeled the two different machines, the
9 Vestas turbine and the GE turbine. You will see
10 the 86 and 76 turbines respectively at all 673
11 receptors that were evaluated. And in
12 consideration of all of those and all of the
13 inputs we looked at, there were zero
14 nonparticipating landowners who had more than 30
15 hours per year, which again complies with what the
16 ordinance requires. And again, that can only
17 improve once we start removing turbines like was
18 talked about at the beginning of this proceeding.

19 Super difficult to see, I understand,
20 but I wanted to give you an appreciation of the
21 graphical nature of this. So, for example,
22 turbines 62, 63 and 64 are down here in the sort
23 of lower or southeastern corner of the project.
24 What would happen effectively if those turbines

1 are removed, is any of these contour lines around
2 it disappear, meaning all flicker from those
3 turbines is eliminated. So, that will be
4 remodeled and you will get updated results for
5 this. But if you take my word for it that these
6 southeastern most three turbines for example are
7 three that would be eliminated. Any of the red,
8 yellow, blue lines, etc., around those completely
9 disappear. That's the effect of removing turbines
10 in this case.

11 This is the exact same graph for the GE
12 turbine; again, difficult to see in this
13 presentation, I understand. But you do have a
14 larger version of the map in Exhibit 12. So,
15 Appendix D, Delta, of Exhibit 12 would have the
16 full version of this map if you are interested in
17 looking at a slightly larger version.

18 Finally, I wanted to talk about
19 mitigation. So because shadow flicker is
20 predictable, there are certain things that we can
21 do to mitigate or reduce the amount of flicker
22 that's occurring. Some of the more common
23 techniques are installing blinds and curtains.
24 Installing awnings on a home. Installing or

PUBLIC HEARING

378

1 planting vegetation or just relying on existing
2 vegetation that may already be in place. Relying
3 on existing obstructions like barns and out
4 buildings and other things that may be nearby. Or
5 regulating turbine operation is another option for
6 mitigation.

7 So what we put here at the very bottom
8 of this is another commitment from the developer,
9 from Panther Grove, and what it says is that they
10 will maintain compliance with the 30 hour per year
11 ordinance regulation. If there is a reasonable
12 complaint that arises, what they have committed to
13 do is respond to that complainant within 24 hours
14 and perform an analysis. And if they reasonably
15 determine that there is something happening to
16 cause it to exceed the requirements of the
17 ordinance, Panther Grove will curtail the turbine.
18 They will do what we call here regulated turbine
19 operation. They will curtail the machine, stop it
20 from operating or spinning during some period of
21 time to bring that total threshold back below 30,
22 which is the amount in the ordinance.

23 Thank you very much for your time and
24 attention. I am happy to take any questions you

PUBLIC HEARING

379

1 might have.

2 KIM HOLMES: Mr. Keyt, did you have any
3 questions first?

4 MR. KEYT: No, I don't have any.

5 KIM HOLMES: Does the board have any
6 questions?

7 MR. LAY: Jerry Lay from the ZBA. Just
8 a clarification, on the definition of receptors,
9 is that strictly human? Do you ever -- is there
10 any effect of shadow flicker like on where we have
11 a lot of hog farms or open range cattle, turkeys,
12 range raised or even in an open-sided building, or
13 even poultry chickens and stuff like that, is
14 there effect on them?

15 MR. ANDERSON: So let me answer that in
16 two case. Effect, no. Were they considered in
17 some cases? Yes. So there would be some
18 receptors as you look through the 673 that may not
19 have been occupied. It could have been an
20 abandoned building or something like that, that
21 was already built into the model. We kept those
22 results in order to reflect those here, but
23 frankly from the Petitioner's standpoint that
24 would only make results look worse.

PUBLIC HEARING

380

1 So, all of the receptors that are in
2 here are either some sort of building, structure,
3 primary structure I think is the defined term, or
4 occupied residence.

5 MR. LAY: One more question. Jerry Lay
6 again. It was by definition that the shadow
7 flicker is on a sunny day. Does a full moon night
8 with shadow flicker affect the same way or not?

9 MR. ANDERSON: That's a good question.
10 So that is a phenomenon that's been studied called
11 moon shadow, where we have done, "we", I use we in
12 the context of the wind community, has done
13 studies to verify, are there -- is there shadow
14 flicker accumulation that can happen in the
15 evening? And the answer is no. So, there's
16 simply just not enough reflection of the sun off
17 the moon to the earth to cause enough accumulated
18 shadow to be measurable in those cases. So,
19 that's why we only consider it during the daytime.

20 MR. LAY: And that was, the study was
21 done by whom again? Maybe I missed that?

22 MR. ANDERSON: It's been industry
23 reviewed, or industry prepared. So those have
24 been done by others. We haven't personally gone

PUBLIC HEARING

381

1 out and stood in the moonlight and measured it.
2 But, it's been evaluated by others and the
3 consensus by the industry is that moon shadow in
4 that case does not need to be considered.

5 MR. LAY: Final question; when it comes
6 to the mitigation here I noticed the different
7 areas, and you mentioned there was a cessation of
8 the turbine possibly if there was a problem. You
9 also showed there was vegetation, awnings; who
10 pays for those if that is the case for mitigation?

11 MR. ANDERSON: That would have to be
12 worked out between Panther Grove and the
13 individual landowner if those mitigations were to
14 happen. Of course the landowner could do it
15 themselves. But in terms of individual instances,
16 that's something that the developer would handle
17 in that case.

18 MR. LAY: I have no further questions.

19 KIM HOLMES: Mr. Green?

20 CHRIS GREEN: I was going to address
21 Jerry's question. We would pay for that.

22 KIM HOLMES: Okay. Does the board, are
23 you done at this point with this witness? That's
24 all your questions. Okay. And do we have any

PUBLIC HEARING

382

1 interested parties that would like to ask this
2 witness any questions? Seeing no one come
3 forward, thank you, Mr. Anderson.

4 (Witness excused.)

5 KIM HOLMES: Mr. Keyt, do you have your
6 next witness?

7 MR. KEYT: Yes, Andy Keyt. Our next
8 witness is a noise study witness, his name is
9 Chris Howell. He has a presentation, that
10 presentation has previously been marked and handed
11 out to you all. It is Exhibit No. 13. It's the
12 noise study that they performed. And he will
13 speak to that.

14 KIM HOLMES: Would you prefer to be
15 sworn in or to be affirmed.

16 (Witness sworn.)

17 KIM HOLMES: If you would please state
18 your name and address for the record.

19 MR. HOWELL: Yes, it's Chris Howell,
20 H-O-W-E-L-L. Thank you for having me tonight.
21 We'll cover the noise study very quickly. And
22 take any questions you may have.

23 My name is Chris Howell. I'm an elected
24 member of the Institute of Noise Control

PUBLIC HEARING

383

1 Engineering. I have a bachelor's in mechanical
2 engineering and I have taken
3 post-graduate courses in acoustics throughout my
4 career. I have over 18 years of noise experience
5 and 20 plus years as an environmental consultant.
6 I have done acoustical studies all across the
7 world, all 50 states, covering many different
8 types of industries; hundreds of noise studies all
9 across the world. Specifically for wind turbines,
10 well over six gigawatts worth of wind turbine
11 noise studies, multiple states and roughly 15
12 specifically in Illinois.

13 As mentioned by Aaron, I work at Burns
14 McDonnell. It's a large firm. All right. Give a
15 quick acoustics overview so the things I mention
16 are defined.

17 There's sound power level and then
18 there's sound pressure level. These are two
19 different things. Sound power is what a vendor
20 will provide to us and it's the physical energy of
21 a source. The sound pressure is the measurable
22 pressure wave at a distance from a source that
23 that energy creates. Sound pressure is typically
24 what is measured.

PUBLIC HEARING

384

1 Frequency is going to be the speed of
2 sound essentially. And a source will have,
3 usually will have many different frequencies.
4 Wind turbines specifically have a very known
5 frequency distribution, and specifically in
6 Illinois that is good to know that those are
7 documented values because Illinois does regulate
8 individual octave and frequencies. Decibels are
9 logarithmic ratio of the sound, of the energy.
10 And is how sound levels are expressed. There are
11 different weighting frequencies for decibels.
12 Illinois does not use them specifically for their
13 regulations so I won't be talking about a
14 weighting or something like that, which are pretty
15 common.

16 Equivalent sound level is pretty much
17 the average sound level over a time period. It's
18 the most common noise metric out there. There are
19 a lot of different ones that can be used. But
20 this is the most common and the one that Illinois
21 uses as well.

22 One thing that is important to note,
23 when two specific sound levels are added together,
24 it's not linear addition. It's logarithmic

PUBLIC HEARING

385

1 addition, where you're talking about orders of
2 magnitude, as opposed to a linear scale. So, 35
3 plus 35 does not equal 70. It equals 38. And
4 then for every doubling of the sources you would
5 add 3 dB. So if there's two and then four, you
6 would add three more and then eight would add
7 three more essentially. Then the last line there
8 is just kind of a rule of thumb. Three decibel
9 change is barely perceptible. A five decibel
10 change is a clearly noticeable difference. And
11 then a ten decibel change is a realized doubling
12 of the sound. It isn't a doubling of the sound
13 power, but a doubling of how you feel the sound.

14 And those become pretty important when
15 we start talking about one decibel change, things
16 like that. Those are inaudible and generally
17 imperceptible.

18 So for any study, and like we did for
19 this one, we start by looking up what the criteria
20 is. And we start at the Federal level. And for
21 sources such as this, there are no Federal levels
22 or no Federal limits requiring compliance. The
23 EPA mandated that the states, counties and cities
24 take control of how they regulate their own

PUBLIC HEARING

386

1 citizens. And what they deem is appropriate and
2 or will safeguard the neighbors of a community.

3 So then we go to the state level. And
4 Illinois EPA and the IPCB, the Illinois Pollution
5 Control Board, have very well established sound
6 criteria under Title 35, Chapter H, I'm sorry, sub
7 title H, chapter I, and in there, there are very
8 specific criteria on how to comply for a specific
9 source, which is actually a fairly nice way for
10 rules to be written because it allows you to
11 analyze only the source, and not what else is
12 around you causing extraneous noises that you have
13 no control over. So, that the state regulates
14 your specific noise only.

15 And then looking at the local, Woodford
16 County does have a zoning ordinance, Section 28
17 has the wind energy conversion systems criteria.
18 And they specifically state to follow the IPCB
19 regulations.

20 So then diving into those IPCB
21 regulations a little bit. They are based on land
22 use classifications. The pad that a wind turbine
23 would be on is considered class C land. And
24 agricultural land is also considered class C land.

PUBLIC HEARING

387

1 However, the Illinois Pollution Control Board
2 regulates the individual residence as well. So,
3 the sound coming from that wind turbine to an
4 agricultural land would have no sound limits. But
5 they apply the residential limit at the physical
6 residence as well.

7 So, even though it technically wouldn't
8 be an applicable limit, they go ahead to be
9 conservative and say you apply the residential
10 limit there.

11 They have well defined daytime and
12 nighttime limits. And what I've thrown up here
13 are the applicable nighttime levels for each of
14 the individual octave band frequencies. So then
15 each one of those would be analyzed for the
16 turbines. All right.

17 So, to do that analysis, we use a model
18 called CADNA-A. It's a scale three dimensional
19 program. It's pretty high powered, we can put in
20 CAD files and different things like that and come
21 up with fully three dimensional predictions of
22 model and space. It follows sound propagation
23 models based on ISO 9613, it's the industry
24 standard across the world. And it assesses sound

PUBLIC HEARING

388

1 pressure levels based on the individual octave
2 band frequencies, which is important because of
3 the way the IPCB regs are written.

4 So then for the model, we have the
5 various inputs that we would take. There are 86,
6 V-150 turbines and 76 GE turbines. As mentioned,
7 some of those will likely be going away. So,
8 similarly to the shadow flicker, the sound results
9 you see here are worse than they will be when the
10 study is updated for those changes. It can only
11 get better if you remove turbines.

12 673 occupied residences were analyzed.
13 The same ones as the shadow flicker study. We
14 used terrain in the model to account for
15 shielding, geometrical spreading, different things
16 like that, that can occur. And then the ground
17 attenuation, we've assumed that all ground is
18 semi-reflective. It's a super conservative
19 approach to determining reflections off of the
20 ground instead of assuming that it's all fully
21 absorbed. For an area like this where a lot of
22 the ground is agricultural, which would be very
23 soft, we have assumed that it's semi-frozen
24 essentially.

PUBLIC HEARING

389

1 All right. So then the noise modeling
2 was performed on each turbine. There were hub
3 heights of 105 meters for the V-150 and 107 meters
4 for the GE units. The maximum sound levels as
5 indicated by the specific vendors are shown there,
6 almost 106 and almost 107 decibels. They also
7 provided individual octave band data. And we took
8 the worse case octave band data from their sheets,
9 so if there was a higher 1,000 hertz at seven
10 meters per second and a higher 2,000 hertz at
11 eight meters per second, we took the highest of
12 the two and used those.

13 And then they apply what's called Sigma
14 P, it's an uncertainty value that they have
15 determined is the relative manufacturer
16 uncertainty. So, the variance between two
17 different turbines as they are manufactured.
18 That's what that helps. So then that value gets
19 added in. That's pretty common. No two things in
20 the world ever get built exactly the same. So,
21 even though there is that uncertainty there, it's
22 pretty small.

23 We have also assumed that all turbines
24 operate simultaneously at their maximum level.

PUBLIC HEARING

390

1 That's a pretty conservative assumption as well.

2 But the model does consider that.

3 So then there's a whole slew of other
4 conservative assumptions here on the next page
5 that are taken into account into the model. We
6 have basically assumed all atmospheric conditions
7 are favorable for sound propagation. Essentially
8 a laminar environment wherein the wind itself is
9 not scattering the sound waves. During high wind
10 events, the sound actually gets scattered by the
11 wind itself. And the wind will mask the sound as
12 well. So that the atmospheric conditions that are
13 assumed in the model here are favorable for
14 propagation away from the units.

15 We fully excluded all vegetation. No
16 trees, no crops. We have assumed no houses. No
17 structures whatsoever in the model. So sound can
18 travel unabated through the predictions. Which is
19 essentially the maximum sound propagation. We
20 have assumed a ground based moderate temperature
21 inversion, wherein there's a low ceiling
22 essentially. On a specific morning when you have
23 fog coming up and sound and things like that
24 travel, seemingly travel further, it's because

PUBLIC HEARING

391

1 they can't escape the atmosphere and dissipate.
2 And the model considers something like that all
3 the time, even though that's not necessarily a
4 good situation for creating maximum power output
5 from the turbines.

6 What happens is, the model assumes we're
7 getting maximum power output during a maximum
8 propagation situation. So they don't necessarily
9 occur, but the models assumes they do so it gives
10 us a maximum prediction.

11 Another thing that is pretty significant
12 is it assumes every single wind turbine is upwind
13 of a receptor. So, if a receptor or a residence
14 is between two wind turbines, the model is
15 assuming that the wind is blowing from both
16 directions at the same time all the time.
17 Physically impossible unless you're possibly in a
18 tornado or something like that, and I don't think
19 noise would be your biggest concern from the wind
20 turbine at that point.

21 But, the model does assume that. And
22 it's an extreme conservatism in there. As
23 mentioned, we use worse case octave bands. We
24 apply the uncertainty values. All turbines are

PUBLIC HEARING

392

1 operating at their maximum level simultaneously,
2 and then the semi-reflective ground.

3 All right. So after all of that, we
4 push run and the black box spits out some numbers
5 at us. And we get predicted values for every
6 single residence. And those residences have an
7 aggregated value from every single turbine on the
8 entire model.

9 So, if one turbine has zero impact it
10 still gets included. If one turbine has one
11 decibel of impact, it gets included in the
12 calculation. So then all of the values are
13 logarithmically added to come up with individual
14 octave band data at each of the residences. We
15 will then take that and run a grid in the model to
16 get sound contours to graphically display the
17 results. This allows us to look at it a little
18 quicker without having to dive through pages and
19 pages of numbers.

20 And then all of those values are
21 compared to the IPCB nighttime limits, and that's
22 just kind of a snapshot of one of the result
23 tables in the actual Exhibit 13; in I believe it's
24 Appendix B. So then we get these sound contours

PUBLIC HEARING

393

1 on the next couple pages here. And specifically
2 the 1,000 hertz and 2,000 hertz are the
3 frequencies of concern. They're not really
4 frequencies of concern as much as frequencies that
5 are the hardest to comply with for the IPCB
6 regulations because of how they're written.

7 It's kind of hard to see, but you can
8 see the circles, little blobs around the
9 individual yellow turbines there. Where two
10 turbines are close enough to each other you can
11 see the sound levels are aggregated. And it turns
12 into less of a permanent circle. And as
13 mentioned, those couple of turbines would be
14 removed, specifically as called out in the
15 southeast there, those three turbines. If they go
16 away, all of those contours go away down there.

17 Same thing for the GE. It's a slightly
18 louder machine, so the contours go slightly
19 further out.

20 So then as mentioned, the controlling
21 frequencies were the 1,000 and 2,000 hertz. All
22 frequencies were still analyzed. I just
23 specifically showed those here.

24 There were no exceedances expected of

PUBLIC HEARING

394

1 any of the IPCB regulations after going through
2 and analyzing all of the data at the various
3 residences. So the Panther Grove wind predictive
4 model demonstrated compliance with the IPCB
5 Woodford County regulations.

6 Okay. So, then mitigation. Panther
7 Grove has said they will maintain noise levels to
8 be in compliance with IPCB, and specifically they
9 have committed to adding serrated blades to the
10 Vestas turbines or low noise trailing edge blades
11 to the GE turbines. Those are effective means of
12 slightly reducing the sound levels off of the
13 turbines. It's one of the quickest and easiest
14 ways to reduce sounds levels to start with. It's
15 not a cheap option either.

16 And then although none are expected,
17 they have also committed to respond to any
18 reasonable noise complaints within 24 hours taking
19 measurements as needed. And if they verify any
20 exceedances of the regulations, they would
21 mitigate by either curtailing or some other method
22 to meet the criteria for IPCB.

23 KIM HOLMES: Do you have any questions?

24 MR. KEYT: Andy Keyt, I don't have any

PUBLIC HEARING

395

1 questions.

2 KIM HOLMES: All right. Does the board
3 have any questions for this witness at this time?

4 MR. LAY: I do. Just give me one
5 second, Jerry Lay from the ZBA.

6 QUESTIONS BY MR. LAY:

7 Q. You have given us the decibels and the
8 allowable amount of noise they are allowed to
9 produce. How far away can you really hear a wind
10 turbine? Do you have any idea?

11 A. Well, it's going to really depend on a
12 lot of different factors. If it's a windy day,
13 the wind itself will mitigate that sound as I
14 mentioned earlier. So, it's a very specific
15 situation. If it's a super calm night, and at the
16 ground level, but it's real windy up at the hub
17 height, they can make noise. And you'll hear
18 that, depending on how quiet the ambient is. Are
19 there crickets going? Are there things like that?
20 Cars, etc., you know, that it will travel outside
21 of 1,000 feet, 1,500 feet. It really depends on
22 the situation.

23 Q. Mile, mile and a half even?

24 A. Potentially, if the sound levels in the

PUBLIC HEARING

396

1 area drop low enough from everything else that's
2 out there, it's possible you could hear it at 20
3 decibels, yeah.

4 Q. And you said that --

5 A. To back up from that, I wouldn't expect
6 it a mile and a half necessarily.

7 Q. You don't think so?

8 A. I wouldn't expect it, but it's possible
9 I guess under the right conditions.

10 Q. I agree with you, it is possible. You
11 had mentioned that the classification of a
12 residence is Class A land, correct?

13 A. Uh-huh.

14 Q. And that the sound levels that you did
15 here were measured to the residence, is that
16 correct?

17 A. Correct.

18 Q. One of our -- in section 901.102, the
19 Illinois code mentions that there's a -- prohibits
20 any excessive sound within the property of the
21 Class A land. Would you agree with that?

22 A. So, that land is actually agricultural,
23 which is Class C land. And the way Illinois
24 applies their regulation for, especially for wind

PUBLIC HEARING

397

1 farms, where you may have a turbine out in the
2 middle of a 100 acre farm or something like that,
3 the agricultural land is actually Class B land,
4 and there are no Class B to Class B sound limits.
5 So they apply the residential limit at the
6 residence.

7 Q. Okay. They apply to the residential
8 land, is what you're saying?

9 A. They apply the residential limit at the
10 physical house on an agricultural property, yes.

11 Q. Okay. So, I'm going to call it a house,
12 so people living in a house, a residential house,
13 and they're in the middle of a five acre property
14 that's not to the edge of their property limits,
15 it's to the house where this gets measured, is
16 that correct?

17 A. Correct. If the land use is
18 agricultural.

19 Q. What if it's residential?

20 A. If it's zoned residential, potentially
21 it would be at the property.

22 Q. Property line?

23 A. Correct.

24 Q. Okay.

PUBLIC HEARING

398

1 A. Potentially.

2 Q. That's what I read too. I wanted to
3 make sure I understood, that's why I asked you the
4 question. Thank you.

5 A. Yes.

6 KIM HOLMES: Any other questions from
7 the board? All right. Do we have any interested
8 parties that would like to come up and ask
9 questions of the witness? All right. We have one
10 lady. I don't need to swear you in. You are just
11 asking questions. If you could state your name
12 and address.

13 MS. JOHNSON: Susan Johnson, 3158 County
14 Road, 1500 North, El Paso, 61738. Can I go ahead?
15 I was wondering, we talked about sound you can
16 hear. What about infrasounds that you can't hear?
17 What are the effects on the human body or unborn
18 children, what studies have you done, and is it
19 the taller the turbine the more infrasound?

20 MR. HOWELL: Sorry, could you repeat
21 that?

22 MS. JOHNSON: If the turbines are taller,
23 does it make another infrasound happen or --

24 MR. HOWELL: So, infrasound would be

PUBLIC HEARING

399

1 sound --

2 MR. KEYT: I just need to lodge an
3 objection to the question because we do have
4 someone who's going to talk on Thursday about
5 health effects, health issues. So, while I
6 appreciate the question --

7 MS. JOHNSON: Okay. That was my
8 question.

9 MR. HOWELL: I'll answer with, I'm not a
10 doctor and I don't know the physiological effects
11 specifically. Infrasound is very low frequency
12 sound. Larger turbines create a lower frequency
13 sound, not necessarily the higher amplitude of
14 sound. Does that make sense?

15 MS. JOHNSON: The taller they are?

16 MR. HOWELL: Correct. So, the taller and
17 the bigger the blades, the frequencies change, but
18 the actual amplitude of those frequencies doesn't
19 necessarily change.

20 MS. JOHNSON: Okay. Thank you.

21 KIM HOLMES: Jerry, do you have another
22 question?

23 MR. LAY: Another question.

24 QUESTIONS BY MR. LAY:

PUBLIC HEARING

400

1 Q. I saw the frequencies you had here for
2 the turbines, I'm assuming that is of the blades
3 where we're getting those frequencies, is that
4 correct?

5 A. Correct. The aerodynamic whoosh of the
6 turbine actually.

7 Q. Are you familiar at all with the real
8 low frequency rumble that can come from the
9 turbines?

10 A. I wouldn't expect a rumble typically.

11 Q. What would you call it?

12 A. You would have to tell me what you
13 specifically are describing. I don't know where
14 the rumble would come from.

15 Q. Is it possible that the turbine could be
16 turning at a very slow speed and you could hear a
17 constant, whoo, whoo, whoo, real low rumble, not
18 from the blades?

19 A. So, essentially like a whirring noise.

20 Q. Correct; I like that word.

21 A. So there's a nacelle on the unit, a hub,
22 essentially where all the mechanical parts are
23 housed and there can be mechanical noise from
24 those pieces there, yes.

PUBLIC HEARING

401

1 Q. And can they exceed the limits that we
2 showed for the blades, by any chance?

3 A. If just the turbine-- if the turbine is
4 spinning very slowly and all you are hearing is
5 mechanical noise, I wouldn't expect those to come
6 close.

7 Q. Have you ever measured it?

8 A. I haven't measured a low speed turbine
9 like that, no.

10 Q. So it's possible that low roaring could
11 be annoying to someone living within earshot of
12 that thing, right?

13 A. Annoyance is very subjective.

14 KIM HOLMES: Do we have any other
15 questions from interested parties? It does not
16 appear so. Thank you.

17 (Witness excused.)

18 KIM HOLMES: Mr. Keyt?

19 MR. KEYT: Our next witness is
20 discussing property impacts, that is Gary DeClark.
21 And his exhibit I believe we're on Exhibit 14, and
22 there's also, which is the property value impact;
23 and then there's two studies that he has also
24 included, which are Exhibits 14A and 14B.

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1 (Witness sworn.)

2 KIM HOLMES: State your name and your
3 address, please.

4 MR. DeCLARK: Yes. My name is Gary
5 DeClark. And I live at 6033 North Sheridan Road
6 in Chicago.

7 Good afternoon everyone. My name is
8 Gary DeClark, spelled D-E-C-L-A-R-K for recording
9 purposes. And I am here today to talk to you
10 about property value impact issues as they may
11 relate to wind energy facilities.

12 And I've got a power point presentation
13 prepared, as you can see up on the screen. But
14 before I begin, a little background on me. I've
15 been in the real estate valuation business for 39
16 years. And I hold a bachelor's of science in
17 finance from the University of Illinois and a
18 Master's of arts in real estate in urban
19 development from the University of Georgia.

20 I'm a licensed Illinois broker. And I
21 have a general certification for appraisal work in
22 the State of Illinois and four other Midwest
23 states.

24 I am managing director and principal of

PUBLIC HEARING

403

1 the Chicago office of Valbridge Property Advisers
2 located on Lake Street in Chicago. And I'm a
3 member of the Appraisal Institute, hold a CP MAI
4 designation, member of the Council of Real Estate,
5 I am a member of the Royal Institution of
6 Chartered Surveyors as a fellow. And I am a
7 member of the International Right of Way
8 Association.

9 Over the course of my career, I've done
10 many valuations and consulting assignments,
11 including impact studies. And as my CV indicates
12 in my package, many of the impact studies have
13 been involved with landfills, waste transfer
14 stations, wind farms, quarries, big box retail,
15 churches, cell towers, high power tension lines to
16 name a few of them.

17 I also have had occasion to instruct on
18 real estate appraisal at Northwestern University
19 and have been a guest lecturer of the graduate
20 school of business at DePaul University in
21 Chicago. I'll be going back and forth with some
22 hand notes here, as well as what you can see on
23 the overhead screen.

24 But to start off here, we're really

PUBLIC HEARING

404

1 talking about the Panther Grove wind energy
2 facility. And the goal of this analysis and
3 impact study is really such that our assignment is
4 to estimate the effect, if any, on single family
5 residential and farmette real estate housing
6 values with and without the influence of the wind
7 energy facility.

8 Well, how to appraisers do such an
9 impact study? Well, typically, an impact study is
10 one that involves in some facet or another a
11 paired sales analysis. And paired sales analysis
12 as defined by the Appraisal Institute Dictionary
13 of Real Estate is a quantitative technique used to
14 identify and measure adjustments to the sales
15 prices or rents of comparable properties. To
16 apply this technique, sales or rental data on
17 nearby or nearly identical properties, or adjusted
18 data, as compared to and isolated from an estimate
19 of a single characteristic effect on rent and/or
20 value. This is often referred to as a paired
21 sales analysis.

22 Now, why is a paired sales analysis
23 done? The paired sales analysis is most effective
24 when you can have the opportunity to take a look

PUBLIC HEARING

405

1 at a property in a sale and resale basis. In
2 other words, take a look at a property that sold
3 yesterday, and that same property sold seven, ten,
4 15 years ago.

5 You take a look at the price
6 differential. In a situation like that, most of
7 the issues that surround that property generally
8 speaking are the same. So essentially you are
9 measuring the property against itself, and in so
10 doing looking at the property value escalation or
11 change and attempting to analyze that, and
12 annualize that.

13 Residential housing is most times used
14 because of the availability of data.

15 So how was this impact study conducted?
16 And we took a look at, as I said, single family
17 residential properties and farmettes and compared
18 a target group to a controlled group. That's
19 typically the methodology.

20 As I stated here, we studied the
21 influence of wind turbines in Woodford County,
22 single family residential housing sales and
23 farmettes. To expand our study outside of
24 Woodford County, we analyzed single family housing

PUBLIC HEARING

406

1 and farmettes sales in the Illinois counties of
2 Henry, LaSalle, Marshall, Mercer, Moultrie,
3 Putnam.

4 Okay. So I said a second ago we compare
5 a target and a control group. What is a target
6 group? A target group is a statistically
7 significant portion of the participants in an
8 experiment that are reasonably proximate and may
9 be affected by exposure to wind turbines in this
10 particular study.

11 Comparing that to a control group, a
12 control group is a statistically significant
13 portion of participants in an experiment that are
14 shielded and removed from wind exposure issues.
15 For our control group, we have defined the area of
16 influence as beyond 11 miles of a wind turbine
17 located with a wind energy facility. And again,
18 we compared the target and the control groups.

19 In establishing what is important, we
20 have to lay down some criteria for both the target
21 and the control groups. Data needed to be located
22 in an area conducive for wind energy facilities.
23 We had to see whether or not similar demographics
24 to the subject footprint area existed. We wanted

PUBLIC HEARING

407

1 to know the distance from the nearest wind energy
2 facility and tabulate it. We wanted to look at
3 single family residences as well as farmettes. We
4 wanted to make sure everything was in Illinois.

5 And then in this study, particularly, a
6 farmette we defined as a parcel improved with a
7 single family house in a country setting abutting
8 large tracts of undeveloped land that also has
9 included a portion of land of several acres. Also
10 included in this definition are farmettes created
11 by the sale of farms where the farm house and the
12 crop land were partitioned and sold off
13 separately.

14 Next, the single family residential
15 properties are simply that; single family
16 residences within a municipality, with municipal
17 boundaries. And farmettes typically are found
18 outside of those boundaries.

19 The next slide, we delve into the issue
20 of what defines the area of influence in the wind
21 turbine world?

22 For our target groups, we have
23 identified the area of influence within a range of
24 7 miles of a wind turbine located within a wind

PUBLIC HEARING

408

1 energy facility. For the control group we have
2 defined the area as influenced as beyond 11 miles
3 and roughly averaging 18 miles from a wind turbine
4 located within a wind energy facility.

5 For our analysis, and the sources of our
6 data, which we made our conclusions, we will see
7 on the next slide a summary of those sources.
8 Information from the United States Census Bureau.
9 From a cite, To Do Business, which is a
10 demographic data source that we subscribe to
11 through the commercial industrial membership
12 group, CTIM group. Claritas, a renowned
13 demographic data source. Midwest Real Estate
14 Data, which is really the Multiple Listing Service
15 that many of us are familiar with. Realtors
16 Property Resource. Zillow, sure we've all heard
17 of Zillow. County recorder of deeds office. The
18 county assessor's office. The county's
19 treasurer's office. And the National Renewable
20 Energy Laboratory. And of course the Appraisal
21 Institute.

22 Next in the analysis is looking at the
23 demographics. Why are we looking at the
24 demographics? Well, demographics is a series of

PUBLIC HEARING

409

1 statistical characteristics of human populations
2 such as age, income, used to identify different
3 markets. We're trying to understand what the
4 dynamics are in the particular area of study.
5 Look at the demographics. The common variables
6 that are gathered in demographics research
7 included population, age, income level,
8 employment, location, home ownership and level of
9 education.

10 Our study of demographics concentrated
11 on population, median household income, median
12 home value and per capita income.

13 We compared the demographics of the
14 various control and target groups within those
15 subject areas which we defined as found lying
16 within a 7 mile radius of the approximate center
17 of the Panther Grove wind energy facility. And we
18 then used as one of our sources for demographics
19 data the cite, To Do Business and Claritas.

20 So, this slide shows a summary of the
21 Woodford County demographics. Woodford County as
22 a whole within the two, five and seven mile radius
23 as statistically noted in the right hand chart.
24 These are distances from the approximate center of

PUBLIC HEARING

410

1 the Panther Grove wind energy facility. For our
2 analysis of the subject, the primary focus was the
3 data within a 7 mile radius from the Panther Grove
4 center.

5 The 7 mile radius represents the Panther
6 Grove wind energy facility area of footprint
7 coverage. That's why we used the 7.

8 The next slide is a summary of what we
9 found. We're talking about the demographics
10 within a 7 mile subject radius when compared to
11 the country, the state, the MSA and the county for
12 population, median household income, median home
13 value, and per capita income.

14 The next slide is noting the results of
15 the comparisons. The 2020 total median household
16 income for the subject area is less than the
17 county by 13 percent, is higher than the Peoria
18 MSA, and similar to the state and county figures;
19 the state and country figures, excuse me.

20 The total 2020 median home value for the
21 subject area is less than the county by 33
22 percent, less than the state, less than Peoria,
23 and the country.

24 The 2020 total per capita income for the

PUBLIC HEARING

411

1 subject area is less than the county by 5 percent,
2 less than the state, greater than Peoria MSA, and
3 less than the country. And how we calculated
4 those is the formula noted at the bottom of the
5 page.

6 So, given our establishment and
7 understanding about what the demographics are, we
8 then took to looking at Woodford County single
9 family residential housing located in
10 municipalities. And this study set out to
11 determine the property value impacts from the
12 existing Minonk wind project located in Woodford
13 County.

14 For the control group, we chose and
15 surveyed the municipalities of Metamora, Eureka,
16 and Roanoke located outside the influence of the
17 wind turbine. For the target group, we chose and
18 surveyed the municipality of Benson, El Paso and
19 Minonk located inside the influence of the wind
20 turbine. There were 125 sales that we uncovered.
21 67 of these had at least one prior sale dating
22 back to the 1990s. This then established the
23 beginning point and the end point for calculation
24 of expected, or historic, I should say,

PUBLIC HEARING

412

1 appreciation.

2 We used these 67 sales to measure the
3 growth rate by comparing the last sale to the
4 earliest sale. We then analyzed those figures.
5 We excluded in this particular instance eight
6 sales because of they having been renovated or
7 there was a sheriff's sale or bank sale and that
8 would tend to skew the market dynamics. We used
9 Midwest Real Estate Data, Realtors Property
10 Resource, and Zillow for our analysis.

11 And then we confirmed this information
12 using public records that were available from the
13 county recorder's office, the assessor's office
14 and the treasurer's offices.

15 For our control and target areas at the
16 bottom of this slide, we used data sets for the
17 following, with the following determinants.
18 Again, trying to note the distance from the
19 nearest wind energy facility, wanted to make sure
20 located in an area conducive to wind energy
21 facility, as in Woodford County, and similar
22 graphics, similar demographics to the Panther
23 Grove wind energy facility, again using a 7 mile
24 radius from its approximate center.

PUBLIC HEARING

413

1 And the next slide is a summary of our
2 results. We compared the control group and a
3 target group. As I said before, in the control
4 group we looked again, control being outside the
5 influence. We looked at the communities of
6 Metamora, Eureka, Roanoke. And the target group
7 within the area of analysis would be the right
8 column, we looked at Benson, El Paso and Minonk.

9 Total population for those control and
10 target areas was 16,288 people. Sale of 125
11 single family residences occurred within August
12 12th, 2019 and August 11th, 2020. This time frame
13 signaled the second sale. This occurred, these
14 sales occurred, during this time frame. And then
15 that gave us the reason to look back to see what
16 had occurred, if anything, in the previous years
17 that had gone by about those properties.

18 And of those 125 sales, 67 had prior
19 sales dating back to the late 1990s. So we used
20 those 67 sales to measure the growth rate by
21 comparing the last sale of the earliest -- the
22 last sale to the earliest sale, then annualized
23 that growth rate on a straight line linear basis.

24 What did we find? We found the control

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414

1 group had an average growth rate of 1.4 percent in
2 annual growth rate. The target group had an
3 average growth rate of 1.3 percent. Very, very,
4 very similar to one another.

5 Thus we had concluded that there was no
6 negative impact on the value of single family
7 residential real estate in the area because of the
8 rate of appreciation was reasonably similar in the
9 target area; in other words, proximate to the wind
10 energy facility as compared to the appreciation
11 rate of the control area away from the wind energy
12 facility.

13 Based upon the analysis and data
14 presented, and held in our file, we got back up
15 for all of this, we have concluded that there is
16 no detrimental effect to the price of single
17 family residential real estate when comparing the
18 sale of single family residences outside and
19 inside the influence of a wind energy facility.

20 Next, we used farmettes as an analysis
21 base. For the control group and target groups, we
22 chose and surveyed farmettes outside municipal
23 boundaries located in the Illinois counties of
24 Woodford, Marshall, Putnam and Moultrie. Due to

PUBLIC HEARING

415

1 the lack of recent sale data for the previous 12
2 month period, we went back a bit further and
3 looked at sales that occurred between August 2017
4 and September 2020.

5 There were 102 sales of farmettes
6 occurring within that time frame. Of these 102
7 sales, 44 had prior sales dating back to the late
8 1990s. We used these 44 sales to measure the
9 growth rate by comparing the last sale to the
10 earliest sale. The growth rate was annualized.
11 And again, we excluded those sales that were
12 unusual; bank sales, REOs, sheriff sales, some
13 were renovated. And again, we used Midwest Real
14 Estate data, Realtors Property Resource and Zillow
15 for the beginnings of our analysis. Then
16 confirmed this information the same way as before;
17 through county records of deeds, the assessor and
18 the treasurer's office.

19 For our control and target area data
20 sets, we used the following determinants similar
21 to what we used before. Little different dates.
22 Again, want to know the distance from the nearest
23 wind energy facility. We wanted the area to be
24 located conducive to wind energy facilities. The

PUBLIC HEARING

416

1 sales again occurred from August 2017 to 2020,
2 those being the second of the two sales. Gave us
3 the green light to look at the previous sale if
4 any. And similar demographics to the Panther
5 Grove wind energy facility exists using a 7 mile
6 radius from its approximate center.

7 Our total sample size consisted of the
8 following, which were again populations of 16,288
9 people. There were the sale of 102 farmettes
10 occurring between August, 2017, and September,
11 2020. Of those 102 sales, ten had been either
12 extensively renovated, they were bank sales, or it
13 was a sheriff sale included. And thus we excluded
14 those sales from our analysis. And of those 102
15 sales, 44 had sales dating back to the late 1990s,
16 so we used those 44 sales to measure the growth
17 rate by comparing the last sale to the earliest
18 sale date. And again, we annualized that
19 appreciation rate.

20 And the next chart here is a
21 summarization, again, of the control versus the
22 target area, where we looked at Marshall County,
23 Moultrie County, Putnam County as being in the
24 control outside the wind turbine influence. And

PUBLIC HEARING

417

1 compared them to the targets which were in
2 Woodford County and those Woodford County
3 farmettes.

4 On the next page is a summary of what
5 was on the previous page. The control group had
6 an average growth rate of 1.5 percent, .07 percent
7 and 1.2 percent. The target group had an average
8 growth rate of 2.2 percent.

9 We then concluded that there is no
10 negative impact on the value of farmette real
11 estate in this area because the rate of
12 appreciation was reasonably similar in the target
13 areas proximate to the nearest wind energy
14 facility than the growth rate of the control area
15 away from the wind energy facility.

16 So based on the analysis and data
17 presented, and also held in our file, we have
18 concluded there is no detriment to the price of
19 farmette real estate when compared to the sale of
20 farmettes outside and inside the influence of a
21 wind energy facility.

22 The average annualized growth rate of
23 these properties is similar enough, and in this
24 particular case, the target area is slightly

PUBLIC HEARING

418

1 greater.

2 The third thing we looked at was an
3 analysis done outside the Woodford County single
4 family residential housing arena.

5 The control and target areas were noted
6 in two groups. For the control groups, we chose
7 and surveyed the municipalities of Peru and Aledo
8 located outside the influence of a wind turbine.
9 For the target group we chose and surveyed the
10 municipalities of Cambridge, Woodhull and Ohio
11 located inside the influence of a wind turbine.
12 For group one we compared Peru to Cambridge. For
13 group two we compared Aledo to Woodhull and Ohio.

14 In the two groups there were a total of
15 171 sales that occurred during the 12 month period
16 from May 2019 to May of 2020. Of the 171 sales,
17 62 had prior sales dating back to the late 1990s.
18 We used these 62 sales to measure the growth rate
19 by comparing the last sale to the earliest sale.
20 The growth rate again was annualized. In this
21 instance we excluded 21 sales because they being
22 REOs or sheriff's sales or renovated properties.
23 Again, we used the same or similar data, Midwest
24 Real Estate Data, Realtors Property Resource and

PUBLIC HEARING

419

1 Zillow for our initial data. And then confirmed
2 all of that through the use of county records, by
3 the deeds at the recorder's office, the assessor
4 and the treasurer's office.

5 So to summarize, our control and target
6 area data sets had the following determinants.
7 Again, sales occurring from May 2019 to May 2020,
8 that being the second sale to trigger to review if
9 there was a first sale. We wanted to know the
10 distance to the nearest wind energy facility. We
11 wanted to know that the area was conducive for a
12 wind energy facility. And of course all this was
13 to be in Illinois. And then we wanted the
14 demographics to the Panther Grove wind energy
15 facility to be similar using a 7 mile radius from
16 its approximate center.

17 And then the next slide is a summary of
18 our analysis. The total sample size included a
19 population of 16,831 people. Again, the sale of
20 161 single family residences occurring within the
21 time frame of May 2019 to May 2020.

22 Of those 171 sales, 21 had been
23 extensively renovated, either was a bank sale or
24 sheriff's sale and they were excluded. And of

PUBLIC HEARING

420

1 those 171 sales, 62 had prior sales dating back to
2 the late 1990s. We used those 62 sales to measure
3 the growth rate by comparing the last sale to the
4 earliest sale. And then annualized the growth
5 rate.

6 And the next slide summarizes our
7 findings. Into group one, the control had an
8 average growth rate of 2.1 percent annualized.
9 And the target group had an average of 2.2
10 percent. Again, very, very similar. In group
11 two, the control had an average growth rate of .8
12 percent. The target group had an average growth
13 rate of 1.7 percent and 2.5 percent; larger.

14 Therefore, we have concluded that there
15 is no negative impact on the value of single
16 family residential real estate in this area
17 because of the rate of appreciation was greater,
18 but reasonably similar in the target areas
19 proximate to a wind energy facility than the
20 growth rate of the control area away from the wind
21 energy facility.

22 So based on the analysis and the data
23 presented or held in our file, we have concluded
24 there is no detriment to the price of single

PUBLIC HEARING

421

1 family residential real estate when comparing the
2 sale of single family residences outside and
3 inside the influence of a wind energy facility.

4 An additional thought or two is noted on
5 the following slide. This information comes from
6 the Illinois Society of Professional Farm Managers
7 and Rural Appraisers. Farmland with wind turbines
8 increases the annual cash flow of the farming
9 operations and therefore increases the value of
10 the property, all things being the same; all other
11 things being the same.

12 The Illinois Society of Professional
13 Farm Managers and Rural Appraisers, 2020 Illinois
14 farmland values and lease trends report stated
15 Illinois farmland properties with wind turbines
16 experienced less sale transactions while also
17 experiencing an appreciation versus similar farm
18 property without wind turbines; less sales,
19 greater appreciation.

20 And then the next slide is an overview
21 slide. There have been many, many studies that
22 have been conducted over the course of time,
23 relative to value impacts emanating from wind
24 turbines and their construction. This is just a

PUBLIC HEARING

422

1 sampling of some of these articles. The first one
2 done by Berkeley National Labs says 58,000
3 residences located within ten miles of 67 wind
4 facilities across 27 different counties in nine
5 different states revealed no evidence of a
6 negative impact of value while being located near
7 a wind energy facility.

8 In the other studies that we have noted
9 here in this slide effectively say the same thing.
10 On a macro level, it appears as though people who
11 have studied this for academic purposes or for
12 other purposes on a much, much wider scale than a
13 few hundred sales, suggest that there's no
14 negative impact emanating from wind turbines to
15 property values. There's no negative impact. And
16 that is consistent with what we have found on a
17 more local and smaller level.

18 So then in conclusion, we state the
19 following on the last slide here. Based upon our
20 analysis of actual transactions in Woodford
21 County, and other similar areas in Illinois, and
22 the legitimate literature presented by other
23 contributors who have evaluated whether wind
24 turbines cause negative impacts to property within

PUBLIC HEARING

423

1 the proximity of a wind energy facility, we have
2 concluded the following.

3 One, there is no evidence that suggests
4 a wind energy facility will cause a negative
5 impact to the value or reduce time of sale for a
6 residence located within proximity to a wind
7 energy facility.

8 And then two, there is no evidence to
9 suggest that the Panther Grove wind energy
10 facility will cause nearby residential or farmland
11 to devalue or cause the time of sale to increase.

12 That wraps up my presentation. Happy to
13 entertain questions.

14 MR. KEYT: I don't have any questions.

15 KIM HOLMES: Does the board have any
16 questions at this time?

17 TERESA GAUGER: I just have one
18 question. Teresa Gauger, ZBA. You referred to
19 the farmettes; how many acres are typically, what
20 makes a farmette?

21 MR. DeCLARK: Farmettes, what
22 distinguishes -- let's go the other way. What
23 distinguishes a single family residence from a
24 farmette, from a farm, let's start at the outside

PUBLIC HEARING

424

1 and go to the center.

2 We all know that single family
3 residences typically are found on smaller tracts
4 of ground within a municipality; a house on a
5 smaller tract maybe with an access road, street
6 frontage, curb, gutter, sidewalks, whatever. It's
7 in a municipality.

8 The flip side is a farm. The farm is a
9 large operation. Many, many acres in size. Can
10 be substantial. But, the difference there, the
11 underlying issue with a farm, is that it's there
12 for the growth and production of food. These are
13 working definitions. You can't go to Webster and
14 pull it out because it's not going to be there.
15 But then what's left over? It's the farmette.

16 The farmette is typically a property
17 where it's a single family residence, maybe with a
18 barn, maybe with an ancillary shed, whatever,
19 situated on a larger tract of ground, maybe five
20 acres, ten acres, somewhere along in there, where
21 this is the real issue, where the property owner
22 derives the majority of his income from another
23 spot; from a job, where he doesn't live off the
24 land. He has another job. And likes to live in

PUBLIC HEARING

425

1 the country and likes space around him. That's
2 the working definition that I've always used for a
3 farmette.

4 MR. LAY: Jerry Lay from the ZBA.
5 Couple questions.

6 QUESTIONS BY MR. LAY:

7 Q. How many studies have you done for wind
8 developers? Do you have any idea over the years?

9 A. Over the years, been three that I've
10 personally done, and my company, Valbridge, across
11 the country, has done somewhere in the
12 neighborhood of 45 over the course of years.

13 Q. In your history of doing this, have you
14 ever found a negative impact?

15 A. I have. Not from a wind turbine, but
16 I've found a negative impact from two issues. One
17 was a blasting quarry. Where the quarry, we all
18 know what quarries do, they mine materials for
19 construction. And they get that material from
20 dynamiting the material.

21 Well, there's shock waves that are put
22 out as a result of the blasting. And it happens
23 once a day, once every other day, whatever the
24 case may be.

PUBLIC HEARING

426

1 Well, what I found was that the
2 industrial buildings in an industrial park
3 adjacent to this quarry had their foundations over
4 the course of time bit by bit by bit, little by
5 little by little, destroyed. And what it ended up
6 doing was, it changed the requirements of use of
7 those industrial buildings in many instances;
8 there were four incidents that I can recall. They
9 were high tech precision manufacturing facilities.
10 And as a result of this quarry problem, and
11 blasting problem, the highest and best use of
12 those industrial properties had changed. It was
13 no longer a top echelon industrial property. Now
14 it was relegated to, I will call it a
15 manufacturing or simply a warehouse facility.

16 The other thing I found goes back, this
17 is probably 25 years ago now, that when it was
18 very, very popular that single family residential
19 properties were being expanded everywhere through
20 urban sprawl, that properties that immediately
21 adjoined high powered tension lines, be they
22 single family residential, had a short term blip
23 in property values that over the course of time,
24 dissipated. When I say course of time, three or

PUBLIC HEARING

427

1 four years. They ended up being, in the overall
2 big picture, nothing, but initially it was an
3 impact.

4 Q. Interesting. But, overall, for all your
5 wind studies you've never found a negative impact
6 on the property values due to the wind turbines,
7 is that correct?

8 A. Correct.

9 Q. Have you ever done any studies for any
10 agencies that were opposed to wind turbines?

11 A. Have I done them? For agencies
12 proposed?

13 Q. For agencies or groups that were opposed
14 to wind turbines?

15 A. Oh, opposed; excuse me. No, I haven't.
16 No. I think at the end of the day is that, I
17 don't believe, and every time I see one of these
18 and I read it, it underscores my thoughts. That
19 there is no major impediment. Is there a little
20 variation? Sure, there could be. But markets are
21 imperfect. But as far as being an impediment to
22 value, or reduction in value, I have not seen it.

23 Q. I guess the next question I have here
24 is, you're a broker, is that correct? Did I see

PUBLIC HEARING

1 that here?

2 A. I am.

3 Q. Are you still active in sales?

4 A. Yes.

5 Q. How many people have you had come up to
6 you and request to buy a residence in a wind farm?

7 A. My brokerage activity has not been in
8 the middle of the state. It's been up in Chicago
9 area. So, no.

10 Q. And I guess my last question is here, I
11 was looking at your references on the second to
12 the last page you have in your presentation where
13 you have the effects of the wind farms on
14 residential property values by Illinois State
15 University. Were you aware that they offer a
16 degree in wind studies, a bachelor's degree?

17 A. I was aware of that study, is that what
18 you're asking? Sometime ago. Yes.

19 Q. I have no further questions at this
20 time.

21 TERESA GAUGER: I have another question.
22 Teresa Gauger, ZBA. When you chose the
23 demographics, did you take into account the actual
24 quality of the farm ground of where the wind

PUBLIC HEARING

429

1 towers go, versus like Cambridge, just the lay of
2 the land and everything? We just -- I don't know
3 why it wasn't -- why did you choose that area?

4 MR. DeCLARK: Well, it's important to
5 take a look at, again, try to establish a control
6 and a target area. One away, one close. Or wind
7 influence. So we tried to separate that out, for
8 one. For two, the operational issues regarding a
9 farm or a farmette are really irrelevant because
10 they have nothing to do with the property value in
11 a pure sense, 'cuz really we're talking about
12 single family residential properties. But single
13 family residential properties, because you have a
14 purchaser wanting to enjoy his property, will have
15 emotion that goes into it. We all understand
16 that. That is very typical.

17 What I'm saying is that, a market will
18 take care of itself. The market will establish
19 its attributes; its good points, its bad points.
20 So as to -- I'll call it eventually get to
21 equilibrium. But there are going to be give and
22 take in some of those things, and the housing
23 stock could be different, so the pricing could be
24 different. So we try to, and again it's not

PUBLIC HEARING

430

1 perfect, we try to get as homogeneity will allow
2 us, as close to homogeneity will allow us, so we
3 talked about similar facilities.

4 KIM HOLMES: Does any of the other board
5 members have any questions? No. All right. Do
6 we have any interested parties that would like to
7 question the witness? No. It does not appear so.
8 Mr. Keyt has nothing, and thank you very much, Mr.
9 DeClark.

10 (Witness excused.)

11 KIM HOLMES: I think at this time we are
12 going to take a break. It is 6:10. Be back at
13 6:25.

14 (A break was taken at 6:09 p.m.)

15 (The time is 6:25 p.m.)

16 KIM HOLMES: All right. Let's come back
17 into session.

18 MR. KEYT: Our next witness is Jeff Kopp
19 who is going to be talking about decommissioning.
20 And his exhibit I believe is Exhibit No. 15. It's
21 a power point.

22 KIM HOLMES: Would you prefer to be
23 sworn in or affirmed.

24 (Witness sworn.)

PUBLIC HEARING

431

1 KIM HOLMES: State your name and your
2 address, please.

3 MR. KOPP: Yes. My name is Jeff Kopp.
4 K-O-P-P. My business address is 9400 Ward Parkway
5 Kansas City, Missouri, 64114.

6 Good evening. Thanks for allowing me
7 the time to talk a little bit about the
8 decommissioning study that we put together here.
9 So after I introduce myself I'm going to just kind
10 of talk about the methodology, how we did the
11 study, an overview of the plan that formed the
12 basis of the cost estimates that we prepared. And
13 then present those results of those cost
14 estimates.

15 So, again, my name is Jeff Kopp, I am a
16 registered professional engineer. Registered in
17 the states of Illinois, Indiana, Missouri and
18 Florida. I am the managing director of the
19 utility consulting department at Burns McDonnell
20 Engineering. I've been at Burns McDonnell
21 consulting to the electric utilities for over 19
22 years now. In my current role, and in my history
23 at Burns McDonnell and with consulting to electric
24 industry, I have been involved with over 300

PUBLIC HEARING

432

1 decommissioning studies in multiple states
2 throughout the country. Over 50 of those have
3 been for wind farms. And they have been
4 specifically prepared to allocate the funds for
5 end-of-life costs for decommissioning those wind
6 farms. And of those 50, ten of those were within
7 the State of Illinois.

8 So, I know we've already introduced
9 Burns McDonnell a little bit here. But, a couple
10 things I wanted to point out specifically as it
11 relates to decommissioning. So number one, Burns
12 McDonnell is the top ranked firm for both power
13 and transmission and distribution by Engineering
14 News Records, which gives us a lot of access to
15 information about power generation and
16 transmission and distribution asset. A lot of
17 in-house data on the different equipment and
18 facilities at each of those types of facilities.
19 And we also provide owners engineer services for
20 decommissioning.

21 So, in addition to the study work that
22 I'm going to talk about here, we actually serve as
23 the owner's representative when a facility is
24 being torn down. And what that gives us access to

PUBLIC HEARING

433

1 is then competitive demolition contractor bids, so
2 we see a lot of demolition information on actual
3 prices incurred in the demolition process.

4 And then lastly, as a large engineering
5 and construction firm we perform over a billion
6 dollars in construction annually. And so that
7 means we have got to be able to prepare cost
8 estimates routinely and accurately to continue
9 winning those jobs and then executing them
10 profitably.

11 So, when we prepared the decommissioning
12 study, we started with the ordinance requirements.
13 And I guess, first of all, Panther Grove is going
14 to comply with all of the conditions of that
15 zoning ordinance, and in particular we're talking
16 about Section 28 of the ordinance, which requires
17 the wind energy conversion system to have a
18 decommissioning plan to insure that it's properly
19 decommissioned at the end of the project life or
20 facility abandonment.

21 It's also our understanding that the
22 county would approve or select a contractor for
23 the ultimate decommissioning study and plan. So
24 the current study is being presented for

PUBLIC HEARING

434

1 informational purposes.

2 But, I will say that having done, like I
3 said, 50 of these, or more than 50 of these, the
4 methodology and the approach here is how they are
5 typically prepared for, you know, in various
6 zoning boards vote these types of studies. So,
7 the results are appropriate for that type of use
8 as well.

9 So kind of walk through some of the
10 tools that we use to prepare these decommissioning
11 studies. We have a proprietary spreadsheet model,
12 it's just a cost estimate that we have built over
13 many years. We have been doing this for 15 plus
14 years, specifically with decommissioning. We've
15 done for all types of technologies in the power
16 generation space. So, fossil, renewables, wind,
17 solar, all kind of different facilities. And that
18 model has been built up over the years to, in
19 general, account for things like labor, equipment
20 rental, hauling, disposal, scrap materials, things
21 like that.

22 We have built that model with also,
23 we've had discussions with demolition contractors.
24 So they have helped us review our models. They

PUBLIC HEARING

435

1 have helped give us input on some of the portions
2 of our model. They have reviewed some of the
3 output from our model to confirm reasonableness
4 and appropriateness of those results.

5 As I mentioned before, we have actually
6 seen a lot of demolition bids as well, and seen
7 those projects, whether they come in within
8 budget. And so whether that be for wind farms
9 specifically or any other kind of demolition,
10 there's a lot of those activities that would occur
11 on, regardless of what type of facility it is.
12 Whether it be jackhammering out concrete, grading
13 and seeding and restoring the site at the end of
14 life.

15 So, we have a good in-house data base of
16 numbers we've seen from demolition contractors
17 when they're competitively bidding.

18 And then the last key piece of data here
19 is we have a really robust in-house data base on
20 the turbine component weights and material
21 breakdowns. So that's important for productivity
22 rates on how these things will be torn down, but
23 also things like scrap and disposal, what those
24 weights would be.

PUBLIC HEARING

436

1 So some of the key resources that we
2 use, RS Means Heavy Construction Cost Index is a
3 very widely used tool throughout the industry for
4 estimating costs. And those costs start with
5 national averages, but they are also indexed to
6 local markets so that they make the cost site
7 specific.

8 We use the American Metal Market Report
9 when we're looking at any scrap materials. And
10 then it's got different hubs where the scrap is
11 traded. And then last, contacts with local
12 companies. If there is site specific things like
13 landfill tipping fees or things like that that we
14 need to incorporate, we would do that during the
15 process of preparing the estimates.

16 Describe the overview of the plan that
17 formed the basis of our estimates. We based it on
18 the more stringent of the requirements of either
19 the ordinance or the AIMA, so whatever was the
20 more stringent requirement, we went with that to
21 be conservative.

22 And in general, all above grade
23 equipment will be removed. Anything less than
24 five feet below grade, we go down to a depth of

PUBLIC HEARING

437

1 five feet below grade to look for any foundation.
2 We take those down five feet below grade. And
3 then any roads, crushed rock surfacing, any other
4 improvements, whether that be substations, things
5 like that, that will all come out as well.

6 And then all equipment, the basis is
7 that it would be recycled and scrapped out at the
8 end of life.

9 So then the approach for how the
10 decommissioning would be implemented at the end of
11 life. These are kind of the book-ends. The first
12 thing we would do would be remove any oils,
13 chemicals, things like that, from the turbines.
14 And dispose of those appropriately. And then on
15 the back end, we would regrade and seed the site
16 to match surrounding land, replace original top
17 soil, basically take it back to preexisting
18 conditions, if you will. So it's kind of the
19 book-ends.

20 Now, in between we're going to bring in
21 a crane and crew to remove the turbine blades and
22 take this thing down carefully. So we are not
23 using explosives, we're not felling equipment. We
24 are taking it down, cutting things up on site,

PUBLIC HEARING

438

1 things like the blades would be cut up into
2 manageable size pieces so they could be loaded on
3 to a truck for offsite disposal. Equipment in the
4 nacelle would be processed on site and loaded in
5 the trucks. When I say processed, we're just
6 talking about cutting it up to make it manageably
7 sized. Separate out different types of material
8 that are going to different -- whether it's being
9 scrapped, separating steel and copper, things like
10 that.

11 And then similarly, towers, we will take
12 those things down and process them on site. Cut
13 them up so they can be loaded into trucks to be
14 taken to a scrap yard.

15 Similarly, for the met towers we're
16 going to take them down carefully with a crane and
17 crew and cut them up on the ground. We're not
18 going to fell them, not going to use explosives.

19 That same crew would then go and remove
20 all collector substation equipment. So,
21 everything above grade, transformers, breaker,
22 switch gears, things like that, would all be
23 processed, cut up on site, separated, and then
24 loaded on to trucks for sale as scrap.

PUBLIC HEARING

439

1 Foundations within that substation and then
2 foundations for all of the wind turbines, jack
3 hammered down to the five feet below grade, take
4 all that concrete rubble and load it on to trucks
5 for offsite disposal.

6 One point I want to clarify on here,
7 we're talking about offsite disposal in a
8 landfill; Panther Grove is committed to recycling
9 as much material as possible. However, for
10 purposes of this study we have conservatively
11 assumed tipping fees at a landfill are required to
12 be paid. So, that just increases the cost
13 estimates to make it a little bit more higher and
14 more conservative cost estimates.

15 But, Panther Grove is committed to
16 recycling as much material as possible.

17 Crushed rock surfacing for roads. We're
18 going to load all that up, scrape it up, put it in
19 the back of a truck and then haul it away. And we
20 did do two scenarios within the estimates here, we
21 looked at hauling it to a nearby location for
22 recycling or reuse. And then we also looked at a
23 worse case scenario of it's all got to go to a
24 landfill. So again, conservative from a cost

PUBLIC HEARING

440

1 perspective of looking at tipping fees being
2 included.

3 Another conservative assumption within
4 the study is that all crushed rock surfacing would
5 be removed. If a landowner would want any of that
6 to be left in place for any reason, certainly the
7 project would be willing to do that. But, for
8 conservatism we assumed 100 percent of it was
9 going away.

10 So some of the key assumptions that
11 drive these costs. As I mentioned, all
12 construction and demolition debris disposed of
13 offsite. Again, it will be recycled to the extent
14 possible. But anything that couldn't be recycled
15 would be disposed of in the landfill. The Peoria
16 landfill was the basis of those costs or tipping
17 fees. And again, we assumed all of the concrete,
18 and then one of the scenarios; crushed rock, any
19 debris, would go to the landfill for basis of
20 cost.

21 Scrap values, and I'll present the
22 results later here, we looked at both with and
23 without scrap. But for the case where we looked
24 at scrap, we looked at a trailing 12 month average

PUBLIC HEARING

441

1 from the American Metal Market for the Chicago
2 market, and so the reason we look at a 12 month
3 average is to kind of take out some of the peaks
4 and valleys and get a little bit more of kind of
5 average cost over the past year.

6 Power collector system cables would be
7 buried five feet below grade. So those are being
8 abandoned consistent with AIMA. So we would not
9 be pulling those out within these scenarios. They
10 are being abandoned in place.

11 So those are all direct costs, costs
12 that could be paid to a demolition contractor. On
13 top of that, we add in indirect costs. So we have
14 five percent for owner indirects, that's for
15 hiring engineers, for any demolition oversight
16 that's needed during the demolition project. So
17 those are owner costs for basically managing the
18 demolition project.

19 We also include ten percent contingency;
20 that contingency is really just there for any
21 unknowns. So any surprises that come up on a
22 project. Anything, whether it be delays,
23 environmental remediation that wasn't anticipated,
24 we adjust ten percent to the cost to cover those

PUBLIC HEARING

442

1 types of unknowns. And as I mentioned before, we
2 have scenarios with and without scrap values.

3 So then after all the demolition is
4 completed, Panther Grove would refurbish the
5 disturbed property within two months of the
6 decommissioning, according to the ordinance and
7 the AIMA standard. So, basically grading the site
8 to match preexisting conditions, replacing top
9 soil in all of those areas, again to preexisting
10 conditions to the depth per the landowner
11 standards.

12 So we've got two decommissioning
13 scenarios that we looked at. We looked at the GE
14 5.5-158 model with 73 turbines. We also looked at
15 the Vestas V-150 4.3 with 86 turbines.

16 So looking at those two models and those
17 two arrays, putting everything into our model, our
18 cost estimates, we came out with the following
19 results. So for the 73 GE 5.5 units, total cost
20 with scrap credit included was 3.1 million dollars
21 or \$43,300 per turbine. If we did not include
22 scrap, we were at 17 million dollars, or a cost of
23 \$240,000 per turbine.

24 The 86 V-150 machines, we were at about

PUBLIC HEARING

443

1 5.3 million with scrap included, or a cost of
2 \$61,500 per turbine. Without scrap, we're at 20
3 million dollars and \$238,000 per turbine.

4 So another thing I want to point out
5 here is we've done a lot of these estimates.
6 We've worked demolition contractors in the past.
7 We've seen their competitive bids. It is typical
8 for a demolition contractor to just work scrap
9 into their bids. They don't typically, it can be
10 accounted for separately, but typically they will
11 net it out within their bids and they will take
12 ownership of that scrap material at the site. And
13 then they will take that to market and use it
14 basically to make more money.

15 And the cost per turbine with the scrap
16 presented here are consistent with some actual
17 demolition contractor bids that we've seen for
18 other wind farms. So, that's in the range that
19 we've seen for an actual competitive bid and
20 actual project bid that did occur for a wind farm
21 within the State of Illinois.

22 So, I guess last point on this one is,
23 well, we understand the ordinance does not allow
24 for the inclusion of scrap. This is just being

PUBLIC HEARING

444

1 presented for informational purposes. Again, kind
2 of where we would really expect the demolition
3 contractor to bid it with that scrap included. We
4 have also shown it without the scrap and taking
5 everything to the landfill, including the crushed
6 rock, which would again typically have some sort
7 of value for recycling and would not typically go
8 to a landfill. So you can see if we're taking all
9 of that offsite and taking it to a landfill, it
10 drives the cost up significantly. But that is a
11 very conservative approach. And I would say not
12 even a realistic approach, that the scrap would
13 have no value at all. So really that's all I've
14 got. I know I went pretty quick, but I'm open for
15 questions.

16 KIM HOLMES: I just have one quick
17 question. Part of your -- under scrap values are
18 based on trailing 12 month average American Metal
19 Market Report values for Chicago, and then you
20 have a bullet point that the deduction applied for
21 hauling scrap to Chicago. What does that mean
22 exactly?

23 MR. KOPP: I couldn't hear the last part.
24 You said the bullet says?

PUBLIC HEARING

445

1 KIM HOLMES: The bullet point said
2 deduction applied for hauling scrap to Chicago.

3 MR. KOPP: Oh, correct. So, typically
4 what we see the demolition contractors do is they
5 basically quote the scrap price at the site and
6 they take ownership of the scrap as they tear it
7 down. And so they credit the project for the net
8 cost of the scrap, which is going to be what it
9 costs them to haul it to, well, the price at
10 Chicago, less the cost for them to haul it there.

11 So, if, for example, scrap of steel was
12 \$200 and it cost them -- \$200 per ton, and it cost
13 them \$30 per ton to haul it there, the scrap
14 credit would be \$170 per ton at the site.

15 KIM HOLMES: Okay. Thank you.

16 MR. LAY: Jerry Lay with the ZBA. Where
17 was -- you bid several of these. You said you've
18 been involved with 50 studies, ten wind farms
19 studies in Illinois I believe you stated. Where
20 was the actual most recent wind farm demolition
21 you were involved in?

22 MR. KOPP: So, just to clarify, the 50
23 that we're talking about and the ten in Illinois
24 are studies for purposes like this; planning

PUBLIC HEARING

446

1 purposes. The one that I referred to within the
2 State of Illinois that was actually torn down that
3 we had some information on was about an hour north
4 of here.

5 MR. LAY: Is there a town there?

6 MR. KOPP: It's a project that I know
7 some of the Panther Grove folks were involved in
8 at a previous company. So, it's the Mendota Hills
9 project.

10 MR. LAY: And next question; can you tell
11 me from what you know in the history of that, did
12 the decommissioning affect the property values
13 after the decommissioning was complete? Or can
14 you answer that at all?

15 MR. KOPP: I can't answer that question.

16 TERESA GAUGER: Teresa Gauger, ZBA. You
17 spoke about the fluids being removed from the
18 nacelle and the tower; will they be removed on
19 site or will they be hauled away like the nacelle
20 with the fluid still in them?

21 MR. KOPP: We would expect them to be
22 removed prior to the nacelles being taken down.
23 So, they would be drained and then disposed of
24 offsite and then the demolition would occur, so we

PUBLIC HEARING

447

1 don't have fluid in there when we're taking it
2 down.

3 TERESA GAUGER: And what is the common
4 practice of the actual disposal of those fluids?

5 MR. KOPP: There are facilities that
6 would take that and dispose of it. I mean,
7 they're essentially specialty firms that would
8 take and either recycle it or dispose of it.

9 TERESA GAUGER: It states in our binder
10 that was prepared by your company, and provided by
11 Tri-Global and CIP, that the nacelle and towers
12 typically are taken to scrap yard. What is a
13 nontypical situation?

14 MR. KOPP: I don't know of a situation
15 where it's not gone to a scrap yard. So, steel
16 and copper have had value for a long time. And so
17 my knowledge of them going anywhere other than a
18 scrap yard, I don't know of them going anywhere
19 other than a scrap yard, I guess is my point as
20 far as the steel and copper components. Any
21 metal.

22 TERESA GAUGER: Do you know what
23 percentage of each complete turbine is recyclable?

24 MR. KOPP: It's a pretty high number.

PUBLIC HEARING

448

1 We have got that within our study. I don't know
2 the number right off the top of my head, but I'm
3 going to say it's north of 90 percent. Probably
4 more like 95 typically.

5 TERESA GAUGER: Is that including the
6 blade then?

7 MR. KOPP: No, that's not including the
8 blades. That's the nacelle, the tower and the
9 hub.

10 MR. LAY: Jerry Lay again with the ZBA.
11 You said it's not including the blades. Can you
12 expound on that? What's with the blades?

13 MR. KOPP: Yeah, there's not a lot of
14 good opportunities for recycling blades today.
15 So, that's why we typically assume they're going
16 to the landfill. We don't see really any
17 opportunities to recycle them today. And we're
18 talking about 20, 30 years from now. There are
19 people looking at it. But right now, there's not
20 recycling for blades really. It's not very
21 common. I'm not aware of any, to be honest with
22 you.

23 MR. LAY: Well, there are some blades are
24 being replaced due to regular routine maintenance,

PUBLIC HEARING

449

1 I've seen they are taken to landfills now, is that
2 correct?

3 MR. KOPP: That's my understanding, yeah.

4 MR. LAY: So, just about all landfills
5 will take them?

6 MR. KOPP: Yes.

7 TERESA GAUGER: Teresa Gauger. In your
8 decommissioning plan, you've included salvage
9 value in the estimate. Are you aware that our
10 ordinance states that estimated salvage value is
11 not to be included?

12 MR. KOPP: Yes, I am aware of that. So
13 that's why we provided both scenarios. We
14 provided with and without scrap value. Like I
15 said, the with scrap value is really our
16 expectation of what a demolition contractor would
17 bid. But we did include both scenarios to comply
18 with the ordinance.

19 KIM HOLMES: Mr. Clinch has a question.

20 LISA JORDING: Marty?

21 MR. CLINCH: I believe Jerry asked the
22 question. It was about the blades, how they were
23 disposed of. I got my answer. Thank you.

24 KIM HOLMES: Go ahead, Ansel.

PUBLIC HEARING

450

1 MR. BURDITT: Ansel Burditt, ZBA
2 alternate. I have a question. Can you hear me
3 okay? Also in our ordinance they talk about a
4 five-year decommission update, as far as every
5 five years it will be reevaluated and updated. Is
6 that something you do, or is that someone else, or
7 how does that work?

8 MR. KOPP: Yeah, we have done a lot of
9 these, again, for new builds and then we have done
10 the reevaluation five years in, basically to
11 adjust it for market price and for labor,
12 equipment, scrap values, things like that.

13 MR. BURDITT: So that's something we
14 would expect you to do every five years?

15 MR. KOPP: Yeah, we could be retained to
16 do that for sure, yep.

17 MR. BURDITT: Okay. Thank you.

18 KIM HOLMES: Do you have any more,
19 Ansel, right now?

20 MR. BURDITT: That's it. Thank you very
21 much.

22 KIM HOLMES: Thank you. Dean Backer, do
23 you have a question?

24 DEAN BACKER: Yes, I do. The power

PUBLIC HEARING

451

1 lines that are going to be left, are they buried
2 five feet below grade or just refresh my memory
3 there? You're going to leave them? Are they all
4 buried at five feet or lower?

5 MR. KOPP: Yes, that would be the plan is
6 to bury them five feet, at least five feet below
7 grade so they could be abandoned in place.

8 DEAN BACKER: Thank you.

9 TERESA GAUGER: Teresa Gauger. I'm not
10 sure if this was one you can answer or if it's for
11 someone else, but in the decommissioning plan what
12 condition will the roads, the actual public road
13 be left in? Does that fall under your plan?

14 MR. KOPP: So, we didn't touch the public
15 roads in our plan. So we're removing any new
16 roads that were built on the landowner's property.
17 But, for decommissioning, we are not taking out or
18 adjusting any of the county roads, or the public
19 roads. I guess to clarify that, if there were any
20 improvements made to any of those roads, those
21 improvements would remain after decommissioning.

22 TERESA GAUGER: I was just curious,
23 there will be heavy equipment brought back in
24 again for the decommissioning, will there be?

PUBLIC HEARING

452

1 MR. KOPP: Yeah, there will be cranes
2 brought in, yes, heavy equipment.

3 TERESA GAUGER: Okay. I was wondering
4 about that.

5 KIM HOLMES: This is Kim Holmes. Is it
6 your understanding that that would be covered in
7 the road agreement, do you know?

8 MR. KOPP: I'm sorry?

9 KIM HOLMES: You said that heavy
10 equipment will come in, you will bring cranes in
11 to do decommissioning. And then is it your
12 understanding that that would then be covered in
13 the road agreement?

14 MR. KOPP: Yeah, that would be my
15 understanding is that the roads would be restored
16 to, you know, any damage would be fixed under that
17 road agreement, yes.

18 KIM HOLMES: Okay. Thank you. Are
19 there any other questions from the board? No? Do
20 we have any interested parties that have questions
21 for this witness? I see none.

22 MR. KEYT: I just want to clarify one
23 thing, I think it probably makes sense to have
24 Chris clarify a couple of those things, but while

PUBLIC HEARING

453

1 you're still standing here. My understanding is
2 that Panther Grove is committed to not including
3 the scrap salvage value within the decommissioning
4 plan.

5 MR. KOPP: Correct. That's my
6 understanding. Yes.

7 MR. KEYT: Okay. I think with that, I
8 think it might make sense to have Chris clarify a
9 couple of those things just because they were more
10 within his scope of what his information would be.

11 KIM HOLMES: All right. Thank you very
12 much.

13 (Witness excused.)

14 CHRIS GREEN: Yes, I just want to
15 clarify a few things with the decommissioning.
16 When Jeff was hired to do --

17 KIM HOLMES: All right. Chris Green, go
18 ahead.

19 CHRIS GREEN: Chris Green. I just want
20 to clarify a few things with the decommissioning,
21 just Jeff was hired to do the cost estimate
22 component of it. But just to be clear, we are
23 committed to abiding by the conditions in the
24 ordinance, which is to exclude scrap from the

PUBLIC HEARING

454

1 calculation. The study is actually to be
2 commissioned by the county. Would love to use
3 Burns and McDonnell for the study. That study was
4 more just for informational purposes and more
5 really to illustrate what we were committed to
6 doing for the actual practices of decommissioning,
7 and what that looks like to get you an
8 understanding of it.

9 But, at the end of the day the
10 decommissioning study is to be commissioned by the
11 county. We will update it every five years. We
12 will abide by the conditions that are in the
13 ordinance.

14 As far as the roads are concerned, the
15 roads are covered in the current road use
16 agreement. So the road use agreement covers
17 construction, operations, decommissioning, and it
18 actually covers a repowering, if there was a
19 repowering incident.

20 So, basically any incident associated
21 with the project, whereby heavy equipment is
22 coming across the road, it is covered in this road
23 use agreement. So it's a pretty concise
24 agreement; that's why it's taken quite some time

PUBLIC HEARING

455

1 to negotiate. But, it's all within that
2 agreement.

3 KIM HOLMES: Thank you, Chris.

4 MR. KEYT: Our next witness will be
5 Brian Kurz. He's the superintendent of El Paso
6 Gridley. I have premarked his exhibit, he has a
7 letter, Panther Grove 16, and I will distribute it
8 to you folks as well.

9 KIM HOLMES: Please state your name and
10 your address.

11 MR. KURZ: Brian Kurz, 109 North Yew
12 Drive, Gridley, Illinois.

13 KIM HOLMES: Would you rather be sworn
14 in or affirmed.

15 (Witness sworn.)

16 MR. KURZ: Good evening and thank you
17 all for your time. I will be brief. I am the
18 superintendent at El Paso Gridley. I am here as
19 just -- I already submitted the letter just to
20 share a little bit of information about the
21 financial impact of this wind farm project on our
22 local school district.

23 Right now, we are at a pinch in that
24 between two-thirds and 70 percent of the funding

PUBLIC HEARING

456

1 of EPG comes from local tax dollars. A majority
2 of that is from property tax dollars. As we look
3 at the situation with state finances, that
4 percentage will likely grow in the years ahead.
5 Every megawatt of a tower is really the equivalent
6 in terms of tax dollars to a \$375,000 house being
7 built. When you consider the homestead exception,
8 plus the 360 assessment to that, so that's really
9 kind of functionally how we think about it.

10 As we look at some financial challenges
11 moving forward, as we look at the state talking
12 about putting more costs down on the districts,
13 and increasing that property tax burden in the
14 years ahead, I just wanted to share that it would
15 serve a substantial benefit to the local school
16 districts. And as you're commissioned to look at
17 how this impacts just the overall health, welfare
18 of our communities, I think understanding the
19 value of local schools, especially in the rural
20 small towns, I think in this pandemic I think the
21 value of that has been shown to be greater and
22 more obvious maybe to those who haven't valued it
23 in the past.

24 So I just present that to you, sharing

PUBLIC HEARING

457

1 it, it would have a significant positive impact on
2 EPG schools as we continue to serve kids in our
3 community.

4 KIM HOLMES: Mr. Kurz, would you spell
5 your last name, please.

6 MR. KURZ: Yes. K-U-R-Z.

7 KIM HOLMES: Thank you. Does anybody on
8 the board have questions of Mr. Kurz?

9 MR. LAY: Jerry Lay, ZBA. Madam
10 chairman, the letter and the testimony just given
11 does not fall anywhere within the realm of the
12 findings of fact. I recommend that the testimony
13 be stricken.

14 MR. KEYT: I can respond to that if you
15 like. There's specific case law that actually
16 talks about how tax impacts of developments are
17 relevant in land use decisions. If you want, I
18 could provide those citations if you want.

19 KIM HOLMES: I'm going to allow the
20 testimony, and the board will consider it based
21 upon its merits in this setting. Does the board
22 have any other questions?

23 MR. LAY: I do not.

24 KIM HOLMES: Do we have any interested

PUBLIC HEARING

458

1 parties that would like to have questions for Mr.
2 Kurz? Okay. I see no one. Thank you very much.

3 (Witness excused.)

4 MR. KEYT: Mr. Keyt, do you have another
5 witness?

6 MR. KEYT: For this evening we don't
7 have any other witnesses. Obviously we have some
8 more witnesses Thursday. We have several lined
9 up. It's obviously a little bit difficult to get
10 certain people here at certain times. I think
11 what I would suggest, up to the board of course,
12 if you want to adjourn for the evening. But, we
13 could have interested parties, there's some
14 landowners here that I think would like to speak.
15 They can probably, I know they want to speak,
16 whether it's now or later on.

17 So I think it might make sense to have
18 them come up just in the expediency of time.

19 KIM HOLMES: If there's interested
20 parties that would want to be sworn in and come up
21 and testify, that would be fine. I need to swear
22 you in.

23 (Witness affirmed.)

24 KIM HOLMES: Please state your name and

PUBLIC HEARING

459

1 your address.

2 MR. HODEL: My name is Brent Hodel, and
3 my address is 1362 County Road 2250 E, Roanoke.
4 Thank you for the opportunity to speak. I have
5 lived in Greene Township all my life. And as a
6 farmer, I'm in the business of production
7 agriculture. I earn a living by producing grain
8 and livestock on the land that we own and rent.

9 Since I started farming, fertilizer and
10 other inputs are astronomically higher priced.
11 Machinery costs have skyrocketed. Property taxes
12 have more than doubled in just the last ten years,
13 while corn prices have remained relatively flat.

14 It's become increasingly difficult to
15 show a profit, and we need to look for alternative
16 ways to generate income. Harnessing the wind on
17 our land to produce clean electricity makes a lot
18 of sense for us. And not only for us, but for our
19 school districts, libraries, townships,
20 municipalities and the whole county. I support
21 this project. Thank you.

22 KIM HOLMES: Does the board have any
23 questions for Mr. Hodel? Are there any interested
24 parties that have a question for Mr. Hodel at this

PUBLIC HEARING

460

1 time? I see no one. If that's it, thank you, Mr.
2 Hodel.

3 (Witness excused.)

4 KIM HOLMES: Mr. Barth, would you like
5 to be sworn in.

6 (Witness sworn.)

7 KIM HOLMES: Please state your name and
8 your address.

9 MR. BARTH: Glen Barth, 2620 County Road
10 1500 North, El Paso.

11 As a resident landowner and a
12 participant in the footprint of the Panther Grove
13 wind energy facility, I'm part of the 85 percent
14 of the residents in the footprint, and landowners
15 that support -- in support of the project.

16 Wind energy is a clean energy. It takes
17 only a small amount of land out of agriculture
18 production. Property tax revenue generated from
19 this project will provide additional financial
20 support to our community, townships, schools, fire
21 and road districts. And other government entities
22 within the project footprint, such as ICC
23 Community College, Prairie District Library.

24 Neighboring counties that have similar

PUBLIC HEARING

461

1 operating wind projects are budgeting how they
2 spend their income, while many of those who are
3 without the wind projects are trying to budget how
4 to manage their debt. Local businesses are seeing
5 additional income during and after construction.
6 New jobs are being brought to the area by the way
7 of construction and permanent maintenance workers.

8 I personally know residents within other
9 wind projects that have not had any significant
10 issues and not seen a decrease in property values.

11 Actually I have a family member who
12 lives within a project, sold their home, bought
13 another home within the same project, further into
14 the footprint. There were no issues with the
15 sale, though the wind turbines were never even
16 brought up in any of the discussions of the sale
17 of the property. And it was actually my daughter;
18 her home was sold for actually more than they paid
19 for it three years previous. The turbines were
20 never part of the discussion.

21 As a family owned and operated farm, the
22 decision to pursue wind energy on our land was
23 made as a family. It was made taking into account
24 the next generation and future generations. We

PUBLIC HEARING

462

1 want and need to see economic growth in our
2 community. We have a project that promises to
3 bring us both. Tri-Global and CIP have done their
4 due diligence in all aspects of this project.

5 Therefore I ask you, members of the
6 zoning board, to vote based on the merit of the
7 project and the law, if they admit all the
8 ordinance requirements, everything required of
9 this project, to vote in favor of this ordinance.

10 KIM HOLMES: Thank you, Mr. Barth. Does
11 the board have any questions for Mr. Barth at this
12 time?

13 MR. LAY: Jerry Lay, just one. It's
14 kind of a question, but it's more of a statement,
15 that Mr. Barth you said we had -- you want us to
16 make our decision on the merits.

17 MR. BARTH: Yes, sir.

18 MR. LAY: Are you aware of the merits
19 that we have to go by to make our decision?

20 MR. BARTH: Yes, sir.

21 MR. LAY: You are?

22 MR. BARTH: Not totally, but --

23 MR. LAY: Okay. And this is educational
24 only, this is not any particular -- the

PUBLIC HEARING

463

1 information that we have to consider is that it
2 will not be detrimental to public health, safety
3 or welfare.

4 MR. BARTH: Yes, sir.

5 MR. LAY: I didn't hear that. Again,
6 this is educational. We have to judge whether it
7 will be injurious to the use and enjoyment of
8 other property in the immediate vicinity for the
9 purpose already permitted. And I guess I didn't
10 understand that, if that was part of your
11 testimony. It will not be injurious to the
12 district for which it shall be located. It will
13 not impede the normal and orderly development and
14 improvement of the surrounding property for uses
15 permitted in the district. It will have adequate
16 roads and drainage. And that adequate measures
17 will be taken to provide ingress and egress to
18 this. These are the areas that we have to have
19 our merit for us.

20 So, were these the areas you were trying
21 to get us to understand from your testimony?
22 That's my question.

23 MR. BARTH: Yes, sir.

24 MR. LAY: That's all I needed to hear.

PUBLIC HEARING

464

1 Thank you.

2 MR. BARTH: I have a question. I have a
3 neighbor that is part of this project that has a
4 health issue that has asked me to read his
5 statement, if that would be allowed. I think it's
6 already been submitted to you. Douglas Kaufman
7 Dickson; if that's allowed, I would like to read
8 it. If not, I understand.

9 MR. GIBSON: For the board's
10 edification, Mr. Kaufman Dickson is an interested
11 party that has registered. So I don't see any
12 issue with it if you guys are okay taking the
13 testimony that way.

14 KIM HOLMES: I will allow it.

15 MR. BARTH: Okay. Thank you. I'm
16 presenting this for Douglas Kaufman Dickson as he
17 is unable to attend due to health restraints. And
18 his statement reads as follows:

19 I am writing this in support of the
20 proposed Panther Grove wind energy facility. My
21 interest has multiple sources. As an Illinois
22 master naturalist and active member of multiple
23 environmental and conservation organizations, I'm
24 interested in this project both for its positive

PUBLIC HEARING

465

1 benefits in producing renewable energy and for its
2 potential negative impacts on our local ecosystem.

3 As a trustee of the El Paso district
4 library, I'm interested in the potential benefits
5 the project has for local taxing bodies. And as a
6 landowner, I am interested as a potential site for
7 one or more wind turbines.

8 To be clear, I write only as an
9 individual, and not representing any organization.
10 My perspective is shaped by my participation with
11 these organizations, but I do not represent them
12 in any way.

13 This project is likely to have a minimal
14 if any negative impact on our local environment.
15 To begin with, the project is not located near the
16 sensitive environmental areas found primarily
17 along the Mackinaw River. Also, the project has
18 indicated that it will follow the recommendations
19 of the Illinois Department of Natural Resources,
20 which will insure the protection of wildlife
21 within the project footprint.

22 I have personally reviewed the project's
23 environmental plans with local biologists and I am
24 confident that the project would not have any

PUBLIC HEARING

466

1 significant adverse impact in our area.

2 My own personal experience with
3 Tri-Global gives me confidence that they will
4 follow through on their commitments regarding
5 environmental restrictions recommended by the
6 IDNR. Because of the possibility of changing
7 ownership over the life of the project, I believe
8 it is essential for the county to include
9 adherence to these recommendations as a
10 requirement of the county permit.

11 Tri-Global has provided estimates of the
12 tax revenue to be generated by the project. This
13 county has expended many dollars of tax payer
14 money trying to bring new business into the
15 county, both for general economic growth and to
16 boost our tax base. Here's a business seeking us
17 out, wanting to provide both a substantial
18 increase to our tax base and significant payment
19 to landowners.

20 Both of these revenue streams will
21 benefit our county. Our local farmers are caught
22 in the vice of rising input cost with lower market
23 prices. While direct payments will benefit only
24 some of our farmers, the potential impact on

PUBLIC HEARING

467

1 property taxes will be of benefit to every farmer
2 and every property tax payer in the county.

3 It would be a dereliction of your
4 responsibility to our agricultural community to
5 reject the project on any but the most serious and
6 well founded concerns. I see none of these
7 concerns.

8 Finally, as a landowner with the
9 potential financial gain from the project, I am
10 clearly biased in its favor. However, I would be
11 supporting this project even if there were no
12 possibility of a wind turbine on my property. For
13 our environment, for our farmers, for our county
14 government, the Panther Grove wind energy facility
15 is a step toward a better future. I urge you to
16 approve their application. Douglas Kaufman
17 Dickson.

18 KIM HOLMES: Thank you. Do we have
19 another interested -- did you have a question,
20 Jerry?

21 MR. LAY: Chairman, since the author of
22 the letter was not present and not sworn in, then
23 I do have some questions of the author. And I
24 move that that letter be stricken from the record.

PUBLIC HEARING

468

1 KIM HOLMES: Well, because we understand
2 that he's not here, so then again I'll allow it.
3 But, give the letter the consideration that it
4 deserves based on its merits, I guess. All right.
5 Do we have another interested party? Would you
6 prefer to be sworn in or affirmed.

7 (Witness sworn.)

8 KIM HOLMES: Please let us know what
9 your name and address is.

10 MR. BAUMANN: My name is James Baumann.
11 I live at 1866 County Road, 2900 East, Minonk.

12 KIM HOLMES: Mr. Baumann, can you spell
13 your last name.

14 MR. BAUMANN: B-A-U-M-A-N-N. I thank you
15 for the allowing me the time to speak tonight. My
16 name is Jim Baumann. I live in Minonk, Illinois,
17 on the farm all my life. My wife and I have been
18 successful in paying for the farm that we own. We
19 have three sons who would wish to keep the farm in
20 the family for as long as they can, but that may
21 not be easy because of certain things I see in the
22 future.

23 Prices that we receive for our corn
24 could be in jeopardy because of the electric cars

PUBLIC HEARING

469

1 and trucks that are going to be on the scene quite
2 soon. A lot of the price that we get for our corn
3 now is helped by the ethanol demand. And if
4 electric cars come into the scene, which they
5 will, that ethanol will be lessened in demand.

6 Our soybeans are used a lot from China,
7 but China likes to go to South America first for
8 their needs. And we seem to be second on the list
9 all the time.

10 On the expense part of the farming, of
11 course the seed, fertilizer, that type of thing
12 goes up gradually every year. But one of the
13 biggest costs are the land taxes. My taxes for
14 this year went up 13 percent more than they did
15 the previous year.

16 And over the last four years, they have
17 an annual increase of 7 and 3 quarter percent.
18 Our schools, as we know, have a definite need for
19 more tax revenue. And I might add that I was a
20 road commissioner from 1993 to 2009, and my first
21 year on the job I resealed the roads with the tar
22 and chip. One mile at that first year of 1993, it
23 cost approximately \$7,000 to do the job of the
24 reseal. When I retired from that job in 2009, it

PUBLIC HEARING

470

1 was \$14,000. And the present road commissioner
2 tells me that the cost this year was \$21,000.

3 So, on the Federal part of the cost of
4 the taxes we pay, I see an increase in the Federal
5 taxes of the income tax that we will be paying,
6 and I also see a big increase from the state 'cuz
7 the State of Illinois is in dire need for more tax
8 dollars every year.

9 My landlord that I farm for has had a
10 wind farm, has had those four towers on his farm,
11 and during that time we see that the company has
12 always compensated us for any kind of damage that
13 they have done, and they have always corrected any
14 other problems that have occurred.

15 In 2018, I believe it was, there was an
16 article in the Peoria paper that stated that fire
17 by coal, that they were going to be
18 decommissioned. And I think that has already
19 occurred on two or three of them already. So our
20 country is going to need a lot more sources for
21 energy if we're going to be able to keep my lights
22 on at night.

23 So, we think that the income from this
24 wind farm could go a long way to insure that our

PUBLIC HEARING

471

1 farm would be able to stay in our family for many
2 years to come. Our schools and other taxing
3 bodies would also benefit greatly from the Panther
4 Grove wind farm. We just think that this is a
5 chance of a lifetime. Thank you.

6 KIM HOLMES: Does the board have any
7 questions for Mr. Baumann? Are there any
8 interested parties that have a question for --

9 MR. GIBSON: Mr. Kaufman Dickson is
10 available on zoom for any questions. So Mr. Lay,
11 if you'd like to ask Mr. Kaufman Dickson
12 questions, I would just ask, Ms. Holmes, if you
13 would swear Mr. Kaufman Dickson in, being as he's
14 giving testimony. Mr. Kaufman Dickson, are you
15 there?

16 MR. KAUFMAN DICKSON: I'm here.

17 KIM HOLMES: Would you prefer to be
18 sworn in or affirmed?

19 MR. KAUFMAN DICKSON: Affirmed.

20 (Witness affirmed.)

21 KIM HOLMES: Okay. Mr. Lay? If you
22 just hold on for a moment, Mr. Kaufman Dickson.
23 Okay.

24 Mr. Baumann, is there any other

PUBLIC HEARING

472

1 interested parties that have questions for Mr.
2 Baumann at this time? No? All right. Thank you,
3 Mr. Baumann.

4 (Witness excused.)

5 KIM HOLMES: Mr. Kaufman Dickson, Jerry
6 Lay is currently reviewing the letter that you
7 submitted and that was read by Mr. Barth.

8 MR. LAY: Jerry Lay, zoning board of
9 appeals. Can you hear me okay, Mr. Kaufman
10 Dickson?

11 MR. KAUFMAN DICKSON: Yes, I can.

12 MR. LAY: Real fine. Appreciate your
13 letter here. I noticed in the letter that, is it
14 by submitting this letter that you are expecting
15 the Zoning Board of Appeals to be instrumental in
16 increasing the tax revenue for the county of
17 Woodford, is that correct?

18 MR. KAUFMAN DICKSON: No, I expect the
19 Panther Grove wind energy facility to increase our
20 tax revenue.

21 MR. LAY: Well, you address the tax
22 revenue here, and again that you're a farmer and
23 you pay property taxes. This is, the property tax
24 issue and tax issue is not one of our issues that

PUBLIC HEARING

473

1 we are allowed to make a determination on. Are
2 you aware of that?

3 MR. KAUFMAN DICKSON: I understand. And
4 as you said, you have to look out for whether the
5 project would have any negative effects, I believe
6 I addressed that possibility in the letter.

7 But, one of the reasons I'm interested
8 is because there is a definite potential benefit
9 to the entire county.

10 MR. LAY: Okay. And that is one of the
11 determinations that we will make, that it won't be
12 detrimental to public health, safety and welfare;
13 and am I getting, am I reading your letter
14 correctly, is thinking that you believe this will
15 not be detrimental to the health, safety and
16 welfare?

17 MR. KAUFMAN DICKSON: From what I
18 reviewed in their package and from the testimony
19 that I've been listening to, I don't see any.

20 MR. LAY: Okay. I have no further
21 questions at this time.

22 KIM HOLMES: Are there any other
23 interested parties that have a question for Mr.
24 Kaufman Dickson? No? All right. Thank you, Mr.

PUBLIC HEARING

474

1 Kaufman Dickson, for coming on zoom.

2 (Witness excused.)

3 KIM HOLMES: Mr. Keyt, do we have any
4 other, any further witnesses? We have one more
5 interested party, I apologize. And then another
6 after that. Just as a reminder, please try not to
7 repeat previous testimony. If you have something
8 new to add, go ahead. Right now I need to swear
9 you in.

10 (Witness sworn.)

11 KIM HOLMES: Can you please state your
12 name and address.

13 MR. KELSEY: Keith Kelsey, 1645 County
14 Road, 2800 East, Minonk, Illinois.

15 KIM HOLMES: Can you spell your last
16 name, please.

17 MR. KELSEY: K-E-L-S-E-Y. My name is
18 Keith Kelsey, I'm speaking on behalf of my brother
19 and his family, my son, who's in the back, and his
20 family. We all three farm together in
21 northeastern Woodford County.

22 I will put a little different twist on
23 this, if it's okay. When we were first approached
24 about two years ago about wind farms, and a cold

PUBLIC HEARING

475

1 call, I showed the man the driveway, I told him to
2 keep driving. I didn't want any part of it. We
3 live within two miles of the Minonk wind farm.
4 There was quite a few things that just weren't
5 quite right in that time period. A lot of little
6 things. So I didn't want anything to do with it.

7 Then as the developers kept coming back
8 and explaining more details, I gained a lot better
9 feeling about being a landowner with a turbine.
10 In fact, toward the end we signed a lease. I am
11 sure the revenue of the wind farm will be an asset
12 to our community.

13 Currently, on our better soils we're
14 paying \$50.00 an acre real estate tax on bare
15 land. We can't continue those raises. If the
16 wind farm can be a help, I think it would be
17 great.

18 To sum up, I think turbines are a good
19 thing for the community. And I know they will
20 help us maintain our family farms. Thank you.

21 KIM HOLMES: Does the board have any
22 questions? Go ahead, Jerry.

23 MR. LAY: Jerry Lay. ZBA. Mr. Kelsey,
24 you said that Tri-Global came to you and they

PUBLIC HEARING

476

1 explained things. Can you give me an idea of what
2 you mean by, explained things, please?

3 MR. KELSEY: Drainage tile, we run a farm
4 drainage business on the side. I've been back up
5 on the wind farm a lot fixing. These companies
6 don't want that any more. They want it done right
7 to start with. There's language in the leases
8 about that. Simple things like the lanes from the
9 turbines in my community right now aren't square
10 with the world, or aren't square with the field.
11 Just the little things. I didn't want any part of
12 it until, well, there's been significant laws on
13 the state level in the last eight, ten years,
14 which they need to abide by. Counties have
15 different things that they need to abide by. It's
16 just a better setup right now.

17 MR. LAY: One more question. This is in
18 general, not just of you here this evening. But
19 I've been hearing testimony of, and I do feel for
20 you for the difficulty in farming and what it
21 costs to farm. Is it your testimony that you
22 believe that this Zoning Board of Appeals should
23 be instrumental in helping individuals maintain
24 their jobs and their businesses in the county?

PUBLIC HEARING

477

1 MR. KELSEY: Well, I didn't think I
2 worded it that way, Jerry.

3 MR. LAY: You weren't the only one, Mr.
4 Kelsey, to make that statement. I was just
5 wondering if this is the way that you were
6 meaning?

7 MR. KELSEY: No, that's just a feeling I
8 have that the wind farm will help. Okay?

9 KIM HOLMES: Are there any other
10 questions from the board for Mr. Kelsey? Are
11 there any interested parties that have questions
12 for Mr. Kelsey? Okay. Go ahead, Dean.

13 DEAN BACKER: Hey, don't leave, Keith.
14 Can you hear me? You gave an example for bare
15 ground taxes. Keith, step back up to the
16 microphone and tell us what it cost if you got a
17 building sitting on anything. Any improvements?
18 And I'm not talking revenue, I'm just talking --

19 MR. KELSEY: Depends on the extent of the
20 buildings. Where I live, I'm at 400 bucks an
21 acre. But, because of a lot of buildings on a 40.
22 That's why I made reference to bare soil. That's
23 what we earn a living on. That fifty dollars is
24 sometimes the only black ink we have to work with.

PUBLIC HEARING

478

1 DEAN BACKER: Got you. I was not
2 talking about residences, I was just talking about
3 a barn or crib or something that was an
4 improvement on an acre, how they rip you.

5 MR. KELSEY: Well, yeah. A confinement
6 building, I don't even know. But, anything you do
7 to improve your business ability is taxed. It
8 just is. But we're kind of used to that on the
9 building side. That's why I once again made
10 reference to bare land. Okay?

11 DEAN BACKER: Ten/four. Thank you.

12 KIM HOLMES: Are there any further
13 questions from the board? Any interested parties
14 that wish to ask Mr. Kelsey a question? No?
15 Thank you, Mr. Kelsey.

16 (Witness excused.)

17 KIM HOLMES: Are there any other
18 interested parties that wish to come forward and
19 speak? I don't see anything. So, Mr. Keyt?

20 MR. KEYT: I think we have concluded
21 with our witnesses for this evening. We've got
22 some for Thursday night. So, it's up to the
23 board.

24 KIM HOLMES: All right. So I will be

PUBLIC HEARING

1 looking for a motion to adjourn this evening and
2 to continue December 3rd, which is Thursday, at
3 four PM.

4 MR. LAY: Madam chairman, I so move.

5 KIM HOLMES: Do I have a second?

6 TERESA GAUGER: Second.

7 KIM HOLMES: All approve?

8 (All said aye.)

9 KIM HOLMES: Okay. We are ended for the
10 night.

11 (The time is 7:36 PM.)

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1 STATE OF ILLINOIS)
) SS
2 COUNTY OF CHAMPAIGN)

3 I, DEANN K. PARKINSON, a Notary Public
4 in and for the County of Champaign State of
5 Illinois, do hereby certify that the foregoing was
6 taken on December 1, 2020.

7 That said hearing was taken down in
8 stenographic notes and afterwards reduced to
9 typewriting under my instruction and said
10 transcription is a true record of the testimony
11 given. I do hereby certify that I am a
12 disinterested person in this cause of action; that
13 I am not a relative of any party or any attorney
14 of record in this cause, or an attorney for any
15 party herein, or otherwise interested in the event
16 of this action, and am not in the employ of the
17 attorneys for either party.

18 In witness whereof, I have hereunto set
19 my hand and affixed my notarial seal December 5,
20 2020.

21
22
23
24
DEANN K. PARKINSON, CSR
NOTARY PUBLIC

	442:6	384:24;385:1;	429:5,24;431:15;	almost (3)
	account (5)	432:21	439:24;440:13,17;	376:1;389:6,6
	388:14;390:5;	additional (3)	442:9;444:1,6;	along (4)
	428:23;434:19;	421:4;460:19;461:5	448:10;450:9;451:24;	375:3,5;424:20;
	461:23	address (15)	463:5;468:2;472:22;	465:17
	accounted (1)	356:12;361:13;	478:9	alternate (1)
	443:10	381:20;382:18;	against (1)	450:2
	accumulate (1)	398:12;402:3;431:2,	405:9	alternative (1)
	366:2	4;455:10;459:1,3;	age (2)	459:15
	accumulated (1)	460:8;468:9;472:21;	409:2,7	although (1)
	380:17	474:12	agencies (3)	394:16
	accumulates (1)	addressed (1)	427:10,11,13	always (5)
	369:23	473:6	aggregate (1)	365:2;376:2;425:2;
	accumulation (3)	adds (1)	374:15	470:12,13
	366:16;372:15;	367:16	aggregated (3)	ambient (1)
	380:14	adequate (2)	373:11;392:7;	395:18
	accurately (1)	463:15,16	393:11	amend (1)
	433:8	adherence (1)	aggregates (1)	359:13
	acoustical (1)	466:9	367:14	amended (1)
	383:6	adjacent (1)	ago (5)	359:22
	acoustics (2)	426:3	405:4;406:4;	amendment (5)
	383:3,15	adjoined (1)	426:17;428:18;	352:19;353:4,13;
	acre (5)	426:21	474:24	354:13;356:18
	397:2,13;475:14;	adjourn (2)	agree (2)	America (1)
	477:21;478:4	458:12;479:1	396:10,21	469:7
	acres (5)	adjust (2)	agreement (8)	American (3)
	407:9;423:19;	441:24;450:11	452:7,13,17;	436:8;441:1;444:18
	424:9,20,20	adjusted (1)	454:16,16,23,24;	amount (10)
	across (8)	404:17	455:2	366:7;367:14;
	362:11;363:3;	adjusting (1)	agricultural (8)	370:5;372:2,15;
	383:6,9;387:24;	451:18	386:24;387:4;	374:6;377:21;378:22;
	422:4;425:10;454:22	adjustments (1)	388:22;396:22;397:3,	395:8;460:17
	active (2)	404:14	10,18;467:4	amplitude (2)
	428:3;464:22	admit (1)	agriculture (2)	399:13,18
	activities (1)	462:7	459:7;460:17	analysis (22)
	435:10	adverse (1)	ahead (13)	378:14;387:17;
	activity (1)	466:1	351:3;355:24;	404:2,11,11,21,22,23;
	428:7	Advisers (1)	361:17,21;387:8;	408:5,22;410:2;
	actual (18)	403:1	398:14;449:24;	412:10;413:7;414:13,
	368:6;371:13,14;	aerodynamic (1)	453:18;456:4,14;	20;415:15;416:14;
	372:9,21;375:1;	400:5	474:8;475:22;477:12	417:16;418:3;419:18;
	392:23;399:18;	affect (2)	AIMA (3)	420:22;422:20
	422:20;428:23;433:2;	380:8;446:12	436:19;441:8;442:7	analyze (2)
	443:16,19,20;445:20;	affected (1)	Aledo (2)	386:11;405:11
	447:4;451:12;454:6	406:9	418:7,13	analyzed (5)
	actually (23)	affirmed (8)	allocate (1)	387:15;388:12;
	365:12;368:7;	382:15;430:23;	432:4	393:22;405:24;412:4
	369:1;371:1,3,5;	455:14;458:23;468:6;	allow (7)	analyzing (1)
	373:1,4,6;386:9;	471:18,19,20	366:20;430:1,2;	394:2
	390:10;396:22;397:3;	afternoon (2)	443:23;457:19;	ancillary (1)
	400:6;432:22;435:5;	361:24;402:7	464:14;468:2	424:18
	446:2;454:1,18;	Again (29)	allowable (1)	and/or (1)
	457:15;461:11,17,18	356:14;357:23;	395:8	404:19
	add (8)	364:14;365:10;	allowance (1)	Anderson (10)
	354:15;355:5;	369:24;370:7;371:9;	354:12	361:14,19,23;
	385:5,6,6;441:13;	372:1,14;373:4;	allowed (6)	362:1,6;379:15;
	469:19;474:8	374:22;375:19;	354:4;357:13;	380:9,22;381:11;
	added (3)	376:15,16;377:12;	395:8;464:5,7;473:1	382:3
	384:23;389:19;	380:6,21;406:17;	allowing (2)	A-N-D-E-R-S-O-N (1)
	392:13	412:18,23;413:4;	431:6;468:15	362:2
	adding (1)	415:11,13,22;416:1,8,	allows (3)	Andy (3)
	394:9	18,21;418:20,23;	372:13;386:10;	356:17;382:7;
	addition (3)	419:7,19;420:10;	392:17	394:24

<p>Annoyance (1) 401:13</p> <p>annoying (1) 401:11</p> <p>annual (3) 414:2;421:8;469:17</p> <p>annualize (1) 405:12</p> <p>annualized (7) 413:22;415:10; 416:18;417:22; 418:20;420:4,8</p> <p>annually (1) 433:6</p> <p>Ansel (5) 351:20;359:7; 449:24;450:1,19</p> <p>anticipated (1) 441:23</p> <p>apologize (2) 361:12;474:5</p> <p>Appeals (4) 351:5;472:9,15; 476:22</p> <p>appear (2) 401:16;430:7</p> <p>appearance (1) 361:5</p> <p>appears (1) 422:10</p> <p>Appendix (2) 377:15;392:24</p> <p>applicable (2) 387:8,13</p> <p>application (6) 352:24;355:7,8,9, 14;467:16</p> <p>applications (4) 353:1,2;358:8,9</p> <p>applied (2) 444:20;445:2</p> <p>applies (1) 396:24</p> <p>apply (8) 387:5,9;389:13; 391:24;397:5,7,9; 404:16</p> <p>appraisal (5) 402:21;403:3,18; 404:12;408:20</p> <p>appraisers (3) 404:8;421:7,13</p> <p>appreciate (3) 371:18;399:6; 472:12</p> <p>appreciation (9) 376:20;412:1; 414:8,10;416:19; 417:12;420:17; 421:17,19</p> <p>approach (5) 388:19;434:4; 437:9;444:11,12</p>	<p>approached (1) 474:23</p> <p>appropriate (2) 386:1;434:7</p> <p>appropriately (1) 437:14</p> <p>appropriateness (1) 435:4</p> <p>approval (1) 359:19</p> <p>approve (3) 433:22;467:16; 479:7</p> <p>approved (1) 359:18</p> <p>approximate (5) 409:16,24;412:24; 416:6;419:16</p> <p>approximately (2) 359:15;469:23</p> <p>April (1) 375:16</p> <p>April-ish (1) 375:9</p> <p>arc (1) 357:15</p> <p>area (35) 352:18;365:22; 388:21;396:1;406:15, 22,24;407:20,23; 408:2;409:4;410:6, 16,21;411:1;412:20; 413:7;414:7,9,11; 415:19,23;416:22; 417:11,14,24;419:6, 11;420:16,20;428:9; 429:3,6;461:6;466:1</p> <p>areas (14) 357:1;372:6;381:7; 409:15;412:15; 413:10;417:13;418:5; 420:18;422:21;442:9; 463:18,20;465:16</p> <p>arena (1) 418:4</p> <p>arises (1) 378:12</p> <p>around (8) 351:9;365:18; 369:22;377:1,8; 386:12;393:8;425:1</p> <p>arrays (1) 442:17</p> <p>article (1) 470:16</p> <p>articles (1) 422:1</p> <p>arts (1) 402:18</p> <p>aspect (1) 358:14</p> <p>aspects (1) 462:4</p>	<p>assesses (1) 387:24</p> <p>assessment (1) 456:8</p> <p>assessor (2) 415:17;419:3</p> <p>assessor's (2) 408:18;412:13</p> <p>asset (2) 432:16;475:11</p> <p>approve (1) 404:3</p> <p>assignments (1) 403:10</p> <p>associated (1) 454:20</p> <p>Association (1) 403:8</p> <p>assume (2) 391:21;448:15</p> <p>assumed (10) 388:17,23;389:23; 390:6,13,16,20; 439:11;440:8,17</p> <p>assumes (3) 391:6,9,12</p> <p>assuming (3) 388:20;391:15; 400:2</p> <p>assumption (2) 390:1;440:3</p> <p>assumptions (3) 367:22;390:4; 440:10</p> <p>astronomically (1) 459:10</p> <p>atmosphere (1) 391:1</p> <p>atmospheric (2) 390:6,12</p> <p>attempting (1) 405:11</p> <p>attend (1) 464:17</p> <p>attention (2) 374:19;378:24</p> <p>attenuation (1) 388:17</p> <p>attributes (1) 429:19</p> <p>August (7) 375:11,19;413:11, 12;415:3;416:1,10</p> <p>author (2) 467:21,23</p> <p>availability (1) 405:14</p> <p>available (2) 412:12;471:10</p> <p>average (14) 384:17;414:1,3; 417:6,7,22;420:8,9, 11,12;440:24;441:3,</p>	<p>5;444:18</p> <p>averages (1) 436:5</p> <p>averaging (1) 408:3</p> <p>aware (8) 357:3;428:15,17; 448:21;449:9,12; 462:18;473:2</p> <p>away (13) 368:4;388:7; 390:14;393:16,16; 395:9;414:11;417:15; 420:20;429:6;439:19; 440:9;446:19</p> <p>awnings (3) 370:2;377:24;381:9</p> <p>axis (2) 375:3,5</p> <p>aye (1) 479:8</p>	<p>378:3</p> <p>Barth (14) 460:4,9,9;462:10, 11,15,17,20,22;463:4, 23;464:2,15;472:7</p> <p>base (5) 414:21;435:15,19; 466:16,18</p> <p>based (20) 354:17,21;355:17; 370:18;371:13; 372:23;375:15; 386:21;387:23;388:1; 390:20;414:13; 417:16;420:22; 422:19;436:17; 444:18;457:20;462:6; 468:4</p> <p>basically (8) 390:6;437:17; 441:17;442:7;443:14; 445:5;450:10;454:20</p> <p>basis (7) 405:1;413:23; 431:12;436:17;437:6; 440:16,19</p> <p>Baumann (9) 468:10,10,12,14,16; 471:7,24;472:2,3</p> <p>B-A-U-M-A-N-N (1) 468:14</p> <p>become (2) 385:14;459:14</p> <p>begin (2) 402:14;465:15</p> <p>beginning (2) 376:18;411:23</p> <p>beginnings (1) 415:15</p> <p>behalf (1) 474:18</p> <p>below (8) 378:21;436:24; 437:1,2;439:3;441:7; 451:2,6</p> <p>bench (1) 366:9</p> <p>benefit (6) 456:15;466:21,23; 467:1;471:3;473:8</p> <p>benefits (2) 465:1,4</p> <p>Benson (2) 411:18;413:8</p> <p>Berkeley (1) 422:2</p> <p>best (2) 368:23;426:11</p> <p>better (5) 388:11;467:15; 475:8,13;476:16</p> <p>beyond (2) 406:16;408:2</p>
B				
			<p>bachelor's (5) 362:17,17;383:1; 402:16;428:16</p> <p>back (25) 351:4;374:18; 378:21;396:5;403:21; 411:22;413:15,19; 414:14;415:2,7; 416:15;418:17;420:1; 426:16;430:12,16; 437:15,17;439:19; 451:23;474:19;475:7; 476:4;477:15</p> <p>Backer (9) 351:22;359:9; 360:5;450:22,24; 451:8;477:13;478:1, 11</p> <p>background (2) 362:16;402:14</p> <p>bad (1) 429:19</p> <p>band (5) 387:14;388:2; 389:7,8;392:14</p> <p>bands (1) 391:23</p> <p>bank (4) 412:7;415:12; 416:12;419:23</p> <p>bare (4) 475:14;477:14,22; 478:10</p> <p>barely (1) 385:9</p> <p>barn (4) 364:10;371:24; 424:18;478:3</p> <p>barns (1)</p>	

biased (1) 467:10	458:11;459:22;462:6, 11;471:6;472:8,15;	bucks (1) 477:20	calculation (3) 392:12;411:23;	389:8;391:23;417:24;
bid (5) 443:19,20;444:3; 445:17;449:17	475:21;476:22; 477:10;478:13,23	budget (2) 435:8;461:3	454:1	425:24;439:23; 440:23;457:15
bidding (1) 435:17	boards (1) 434:6	budgeting (1) 461:1	calendar (2) 365:24;374:22	cases (2) 379:17;380:18
bids (6) 433:1;435:6;443:7, 9,11,17	board's (1) 464:9	build (2) 372:7;373:5	call (16) 351:3,11;358:22; 359:22;361:11; 374:19,22;375:10,17, 19;378:18;397:11; 400:11;426:14; 429:20;475:1	cash (1) 421:8
big (3) 403:14;427:2;470:6	bodies (2) 465:5;471:3	building (8) 364:10;371:24; 379:12,20;380:2; 477:17;478:6,9	called (7) 362:20;367:5; 369:14;380:10; 387:18;389:13; 393:14	cast (4) 365:6,9;374:1,3
bigger (1) 399:17	body (1) 398:17	buildings (6) 371:18;378:4; 426:2,7;477:20,21	calm (1) 395:15	cattle (1) 379:11
biggest (2) 391:19;469:13	book-ends (2) 437:11,19	builds (1) 450:9	Cambridge (3) 418:10,12;429:1	caught (1) 466:21
billion (1) 433:5	boost (1) 466:16	built (11) 368:10,11;370:5; 371:5;379:21;389:20; 434:12,18,22;451:16; 456:7	came (2) 442:18;475:24	cause (7) 363:22;378:16; 380:17;422:24;423:4, 10,11
binder (1) 447:9	border (1) 376:3	burden (1) 456:13	can (65) 351:11;353:18,18; 355:9;356:10,22,23; 360:23;363:19,20; 364:5,17;366:7; 368:24;369:4;370:5; 371:18,24;372:12,13, 14;373:15,17,20; 376:16;377:20; 380:14;384:19; 387:19;388:10,16; 390:17;393:7,10; 395:9,17;398:14,15; 400:8,23;401:1; 402:13;403:22; 404:24;424:9;426:8; 438:13;443:9;444:8; 446:10,13;448:11; 450:2;451:10;457:14; 458:15;468:12,20; 472:9,11;474:11,15; 475:16;476:1;477:14	causing (1) 386:12
biologists (1) 465:23	both (12) 373:13;391:15; 406:20;432:12; 440:22;449:13,17; 462:3;464:24;466:15, 17,20	Burditt (7) 351:20;359:7; 450:1,1,13,17,20	causa (2) 442:18;475:24	ceiling (1) 390:21
bit (15) 352:14;355:2,2; 367:4;386:21;415:2; 426:4,4,4;431:7; 432:9;439:13;441:4; 455:20;458:9	bottom (4) 375:3;378:7;411:4; 412:16	Bureau (1) 408:8	cell (1) 403:15	Census (1) 408:8
black (2) 392:4;477:24	bought (1) 461:12	buried (3) 441:7;451:1,4	certification (1) 402:21	center (7) 409:16,24;410:4; 412:24;416:6;419:16; 424:1
blade (5) 370:12,12,16,16; 448:6	boundaries (3) 407:17,18;414:23	Burns (10) 362:20,21;363:6; 383:13;431:19,20,23; 432:9,11;454:3	cellar (1) 442:18;475:24	certain (8) 356:24;364:23,24; 372:5;377:20;458:10, 10;468:21
blades (16) 363:15;394:9,10; 399:17;400:2,18; 401:2;437:21;438:1; 448:8,11,12,14,20,23; 449:22	boundary (1) 366:5	Burroughs (1) 360:17	cellar (1) 442:18;475:24	certainly (1) 440:6
blasting (3) 425:17,22;426:11	box (4) 369:16;370:10; 392:4;403:14	bury (1) 451:6	cellar (1) 442:18;475:24	certification (1) 402:21
blinds (1) 377:23	break (3) 351:9;430:12,14	business (10) 402:15;403:20; 408:9;409:19;431:4; 459:6;466:14,16; 476:4;478:7	cellar (1) 442:18;475:24	cessation (1) 381:7
blip (1) 426:22	breakdowns (1) 435:21	businesses (2) 461:4;476:24	cellar (1) 442:18;475:24	chairman (7) 351:6;358:15; 359:12,17;457:10; 467:21;479:4
blob (1) 375:9	breaker (1) 438:21	butterfly (1) 373:18	cellar (1) 442:18;475:24	challenges (1) 456:10
blobs (1) 393:8	Brent (1) 459:2	buy (1) 428:6	cellar (1) 442:18;475:24	chance (2) 401:2;471:5
block (2) 364:12;371:19	Brian (2) 455:5,11	C	cellar (1) 442:18;475:24	change (8) 376:4;385:9,10,11, 15;399:17,19;405:11
blocking (1) 370:3	brief (2) 362:4;455:17	cables (1) 441:6	cellar (1) 442:18;475:24	changed (2) 426:6,12
blowing (2) 371:7;391:15	bright (1) 363:22	CAD (1) 387:20	cellar (1) 442:18;475:24	changes (2) 371:2;388:10
blue (2) 375:8;377:8	bring (6) 352:5;378:21; 437:20;452:10;462:3; 466:14	CADNA-A (1) 387:18	cellar (1) 442:18;475:24	changing (1) 466:6
Board (27) 351:5;352:5; 355:20;379:5;381:22; 386:5;387:1;395:2; 398:7;423:15;430:4; 452:19;457:8,20,21;	broker (2) 402:20;427:24	calculated (1) 411:3	cellar (1) 442:18;475:24	Chapter (2) 386:6,7
	brokerage (1) 428:7		cellar (1) 442:18;475:24	characteristic (1) 404:19
	brother (1) 474:18		cellar (1) 442:18;475:24	characteristics (2) 371:4;409:1
	brought (4) 451:23;452:2; 461:6,16		cellar (1) 442:18;475:24	chart (2)

<p>409:23;416:20 Chartered (1) 403:6 cheap (1) 394:15 checking (2) 353:7,10 chemicals (1) 437:13 Chicago (10) 402:6;403:1,2,21; 428:8;441:1;444:19, 21;445:2,10 chickens (1) 379:13 children (1) 398:18 China (2) 469:6,7 chip (1) 469:22 choose (1) 429:3 chose (6) 411:14,17;414:22; 418:6,9;428:22 chosen (1) 366:15 Chris (23) 352:8,13;353:14, 22;354:15;356:3; 357:6,9,15,19;358:1, 4;381:20;382:9,19, 23;452:24;453:8,14, 17,19,19;455:3 churches (1) 403:15 CIP (2) 447:11;462:3 circle (1) 393:12 circles (1) 393:8 citations (1) 457:18 cite (2) 408:9;409:19 cities (1) 385:23 citizens (1) 386:1 City (2) 362:24;431:5 clarification (3) 356:17;358:6;379:8 clarify (8) 439:6;445:22; 451:19;452:22,24; 453:8,15,20 Claritas (2) 408:12;409:19 class (8) 386:23,24;396:12,</p>	<p>21,23;397:3,4,4 classification (1) 396:11 classifications (1) 386:22 clean (2) 459:17;460:16 clear (2) 453:22;465:8 clearly (2) 385:10;467:10 clients (1) 361:1 Clinch (11) 351:18;355:22; 356:1,14;357:21,23; 358:3;359:5;360:3; 449:19,21 close (4) 393:10;401:6; 429:6;430:2 coal (1) 470:17 code (1) 396:19 cold (1) 474:24 collector (2) 438:20;441:6 College (1) 460:23 column (1) 413:8 coming (6) 362:9;387:3; 390:23;454:22;474:1; 475:7 comment (1) 374:23 commercial (1) 408:11 commissioned (3) 454:2,10;456:16 commissioner (2) 469:20;470:1 commitment (2) 366:21;378:8 commitments (1) 466:4 committed (9) 366:12;378:12; 394:9,17;439:8,15; 453:2,23;454:5 common (11) 352:20;365:19; 366:9;377:22;384:15, 18,20;389:19;409:5; 447:3;448:21 communities (2) 413:5;456:18 community (10) 380:12;386:2; 457:3;460:20,23;</p>	<p>462:2;467:4;475:12, 19;476:9 companies (2) 436:12;476:5 Company (6) 362:21;363:4; 425:10;446:8;447:10; 470:11 comparable (1) 404:15 compare (1) 406:4 compared (12) 392:21;404:18; 405:17;406:18; 409:13;410:10;413:2; 414:10;417:1,19; 418:12,13 Comparing (9) 406:11;412:3; 413:21;414:17;415:9; 416:17;418:19;420:3; 421:1 comparisons (1) 410:15 compensated (1) 470:12 competitive (3) 433:1;443:7,19 competitively (1) 435:17 complainant (1) 378:13 complaint (1) 378:12 complaints (1) 394:18 complete (3) 354:18;446:13; 447:23 completed (1) 442:4 completely (1) 377:8 complexity (1) 367:9 compliance (5) 368:5;378:10; 385:22;394:4,8 complies (1) 376:15 comply (4) 386:8;393:5; 433:14;449:17 component (2) 435:20;453:22 components (1) 447:20 compound (1) 368:2 concentrated (1) 409:10 concern (3)</p>	<p>391:19;393:3,4 concerned (1) 454:14 concerns (2) 467:6,7 concise (3) 355:8,15;454:23 concluded (8) 414:5,15;417:9,18; 420:14,23;423:2; 478:20 conclusion (1) 422:18 conclusions (1) 408:6 concrete (3) 435:12;439:4; 440:17 condition (1) 451:12 conditions (9) 390:6,12;396:9; 433:14;437:18;442:8, 10;453:23;454:12 conducive (4) 406:22;412:20; 415:24;419:11 conducted (2) 405:15;421:22 confidence (1) 466:3 confident (1) 465:24 confinement (1) 478:5 confirm (1) 435:3 confirmed (3) 412:11;415:16; 419:1 consensus (1) 381:3 conservation (1) 464:23 conservatism (6) 368:3,3,10;372:11; 391:22;440:8 conservative (15) 368:2,7;370:1,4; 372:14;373:5;387:9; 388:18;390:1,4; 436:21;439:14,24; 440:3;444:11 conservatively (1) 439:10 consider (6) 368:19;380:19; 390:2;456:7;457:20; 463:1 consideration (7) 352:24;353:3,10; 358:18;360:24; 376:12;468:3</p>	<p>considered (8) 364:13;369:11; 370:3;371:20;379:16; 381:4;386:23,24 considering (1) 364:21 considers (1) 391:2 consisted (1) 416:7 consistent (3) 422:16;441:8; 443:16 constant (1) 400:17 construction (10) 362:23;421:24; 425:19;433:5,6; 436:2;440:12;454:17; 461:5,7 construe (1) 361:7 consultant (1) 383:5 consulting (4) 403:10;431:19,21, 23 contacts (1) 436:11 context (1) 380:12 contingency (2) 441:19,20 continue (4) 433:8;457:2; 475:15;479:2 contour (1) 377:1 contours (4) 392:16,24;393:16, 18 contractor (7) 433:1,22;441:12; 443:8,17;444:3; 449:16 contractors (4) 434:23;435:16; 443:6;445:4 contribution (1) 366:12 contributors (1) 422:23 Control (34) 382:24;385:24; 386:5,13;387:1; 406:5,11,12,15,18,21; 408:1;409:14;411:14; 412:15;413:2,3,4,9, 24;414:11,21;415:19; 416:21,24;417:5,14; 418:5,6;419:5;420:7, 11,20;429:5 controlled (1)</p>
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405:18 controlling (1) 393:20 conversion (2) 386:17;433:17 coordinates (1) 368:13 copies (1) 353:17 copper (3) 438:9;447:16,20 corn (3) 459:13;468:23; 469:2 corner (1) 376:23 corrected (1) 470:13 correctly (1) 473:14 cost (28) 431:12,13;433:7; 434:12;436:2,6; 439:12,14,24;440:20; 441:5,24;442:18,19, 22;443:1,15;444:10; 445:8,10,12,12; 453:21;466:22; 469:23;470:2,3; 477:16 costs (14) 432:5;436:4,4; 440:11,16;441:11,11, 13,17;445:9;456:12; 459:11;469:13; 476:21 Council (1) 403:4 counsel (1) 358:16 counties (6) 385:23;406:1; 414:23;422:4;460:24; 476:14 country (12) 355:12;365:17; 366:10;407:7;410:11, 19,23;411:3;425:1, 11;432:2;470:20 County (50) 351:5;365:14,20; 386:16;394:5;398:13; 405:21,24;408:17,18; 409:21,21;410:11,17, 18,21;411:1,8,13; 412:13,21;415:17; 416:22,23,23;417:2,2; 418:3;419:2;422:21; 433:22;451:18;454:2, 11;459:3,20;460:9; 466:8,10,13,15,21; 467:2,13;468:11; 472:16;473:9;474:13,	21;476:24 county's (1) 408:18 couple (9) 352:3,4,8;393:1,13; 425:5;432:9;452:24; 453:9 course (16) 363:21;365:2; 369:17;370:10; 374:11;381:14;403:9; 408:20;419:12; 421:22;425:12;426:4, 23,24;458:11;469:11 courses (1) 383:3 court (1) 362:1 cover (2) 382:21;441:24 coverage (1) 410:7 covered (4) 452:6,12;454:15,22 covering (1) 383:7 covers (2) 454:16,18 CP (1) 403:3 crane (2) 437:21;438:16 cranes (2) 452:1,10 create (1) 399:12 created (2) 371:9;407:10 creates (1) 383:23 creating (1) 391:4 credit (3) 442:20;445:7,14 crew (3) 437:21;438:17,19 crib (1) 478:3 crickets (1) 395:19 criteria (6) 385:19;386:6,8,17; 394:22;406:20 crop (1) 407:12 crops (1) 390:16 crushed (5) 437:3;439:17; 440:4,18;444:5 CTIM (1) 408:12 curb (1)	424:6 curious (1) 451:22 current (6) 354:3;363:6;367:2; 431:22;433:24; 454:15 currently (3) 363:2;472:6;475:13 curtail (2) 378:17,19 curtailing (1) 394:21 curtains (1) 377:23 cut (4) 438:1,12,17,23 cutting (2) 437:24;438:6 cuz (3) 356:23;429:11; 470:6 CV (1) 403:11	385:5 Dean (10) 351:22;359:9; 360:5;450:22,24; 451:8;477:12,13; 478:1,11 debris (2) 440:12,19 debt (1) 461:4 decades (1) 372:23 December (3) 351:7;375:4;479:2 decibel (5) 385:8,9,11,15; 392:11 Decibels (5) 384:8,11;389:6; 395:7;396:3 decided (1) 355:6 decision (3) 461:22;462:16,19 decisions (1) 457:17 DeClark (7) 401:20;402:4,5,8; 423:21;429:4;430:9 D-E-C-L-A-R-K (1) 402:8 decommission (1) 450:4 decommissioned (2) 433:19;470:18 decommissioning (28) 430:19;431:8; 432:1,5,11,20;433:11, 18,23;434:10,14; 437:10;442:6,12; 446:12,13;449:8; 451:11,17,21,24; 452:11;453:3,15,20; 454:6,10,17 decrease (2) 369:1;461:10 deduction (2) 444:20;445:2 deeds (3) 408:17;415:17; 419:3 deem (1) 386:1 defined (8) 380:3;383:16; 387:11;404:12; 406:15;407:6;408:2; 409:15 defines (1) 407:20 definite (2) 469:18;473:8 definition (5)	368:21;379:8; 380:6;407:10;425:2 definitions (1) 424:13 degree (5) 362:17,18,19; 428:16,16 delay (1) 361:12 delays (1) 441:22 Delta (1) 377:15 delve (1) 407:19 demand (2) 469:3,5 demographic (2) 408:10,13 demographics (16) 406:23;408:23,24, 24;409:5,6,10,13,18, 21;410:9;411:7; 412:22;416:4;419:14; 428:23 demolition (21) 433:1,2,3;434:23; 435:6,9,16;440:12; 441:12,15,16,18; 442:3;443:6,8,17; 444:2;445:4,20; 446:24;449:16 demonstrated (1) 394:4 department (2) 431:19;465:19 DePaul (1) 403:20 depend (1) 395:11 depending (1) 395:18 depends (3) 364:18;395:21; 477:19 depth (2) 436:24;442:10 dereliction (1) 467:3 derives (1) 424:22 Describe (1) 436:16 describing (1) 400:13 deserves (1) 468:4 designation (1) 403:4 destroyed (1) 426:5 detail (2) 352:14;366:24
D				
		damage (2) 452:16;470:12 dark (1) 372:19 data (34) 355:18;370:22; 371:13;372:22;389:7, 8;392:14;394:2; 404:16,18;405:14; 406:21;408:6,10,13, 14;409:19;410:3; 412:9,16;414:13; 415:1,14,19;417:16; 418:23,24;419:1,6; 420:22;432:17; 435:15,18,19 date (1) 416:18 dates (1) 415:21 dating (6) 411:21;413:19; 415:7;416:15;418:17; 420:1 daughter (1) 461:17 David (1) 360:17 day (12) 363:22;364:24; 372:18;375:5,24,24; 380:7;395:12;425:23, 23;427:16;454:9 daytime (2) 380:19;387:11 dB (1)		

<p>details (1) 475:8</p> <p>determinants (3) 412:17;415:20; 419:6</p> <p>determination (1) 473:1</p> <p>determinations (1) 473:11</p> <p>determine (2) 378:15;411:11</p> <p>determined (1) 389:15</p> <p>determining (1) 388:19</p> <p>detriment (2) 417:18;420:24</p> <p>detrimental (4) 414:16;463:2; 473:12,15</p> <p>devalue (1) 423:11</p> <p>developer (4) 366:11,19;378:8; 381:16</p> <p>developers (2) 425:8;475:7</p> <p>development (2) 402:19;463:13</p> <p>developments (1) 457:16</p> <p>diameter (3) 368:18;370:12,16</p> <p>Dickson (19) 464:7,10,16; 467:17;471:9,11,13, 14,16,19,22;472:5,10, 11,18;473:3,17,24; 474:1</p> <p>Dictionary (1) 404:12</p> <p>difference (2) 385:10;424:10</p> <p>different (34) 352:10,20;353:1; 356:11;357:2;362:7, 13;363:24;368:14; 370:8;376:8;381:6; 383:7,19;384:3,11,19; 387:20;388:15; 389:17;395:12;409:2; 415:21;422:4,5; 429:23,24;432:17; 434:17;436:10;438:7, 8;474:22;476:15</p> <p>differential (1) 405:6</p> <p>difficult (4) 376:19;377:12; 458:9;459:14</p> <p>difficulty (1) 476:20</p> <p>diligence (1)</p>	<p>462:4</p> <p>dimension (1) 370:7</p> <p>dimensional (2) 387:18,21</p> <p>dire (1) 470:7</p> <p>direct (2) 441:11;466:23</p> <p>directional (1) 364:18</p> <p>directions (2) 371:2;391:16</p> <p>director (3) 363:7;402:24; 431:18</p> <p>disappear (2) 377:2,9</p> <p>discussing (1) 401:20</p> <p>discussion (1) 461:20</p> <p>discussions (2) 434:23;461:16</p> <p>display (1) 392:16</p> <p>disposal (6) 434:20;435:23; 438:3;439:5,7;447:4</p> <p>dispose (3) 437:14;447:6,8</p> <p>disposed (4) 440:12,15;446:23; 449:23</p> <p>dissipate (1) 391:1</p> <p>dissipated (1) 426:24</p> <p>distance (5) 383:22;407:1; 412:18;415:22; 419:10</p> <p>distances (1) 409:24</p> <p>distinguishes (2) 423:22,23</p> <p>distribute (1) 455:7</p> <p>distribution (3) 384:5;432:13,16</p> <p>district (5) 455:22;460:23; 463:12,15;465:3</p> <p>districts (4) 456:12,16;459:19; 460:21</p> <p>disturbed (1) 442:5</p> <p>dive (1) 392:18</p> <p>diving (1) 386:20</p> <p>doctor (1)</p>	<p>399:10</p> <p>documented (1) 384:7</p> <p>dollars (10) 433:6;442:20,22; 443:3;456:1,2,6; 466:13;470:8;477:23</p> <p>done (25) 354:10;380:11,12, 21,24;381:23;383:6; 398:18;403:9;404:23; 418:3;422:2;425:7, 10,11;427:9,11;434:2, 15;443:5;450:8,9; 462:3;470:13;476:6</p> <p>doubled (1) 459:12</p> <p>doubling (4) 385:4,11,12,13</p> <p>Douglas (3) 464:6,16;467:16</p> <p>down (20) 364:1;369:3;375:5; 376:22;393:16; 406:20;432:24; 435:22;436:24;437:2, 22,24;438:12,16; 439:3;445:7;446:2, 22;447:2;456:12</p> <p>dozen (1) 362:14</p> <p>drainage (3) 463:16;476:3,4</p> <p>drained (1) 446:23</p> <p>drive (2) 440:11;455:12</p> <p>drives (1) 444:10</p> <p>driveway (1) 475:1</p> <p>driving (1) 475:2</p> <p>drop (1) 396:1</p> <p>Due (5) 414:24;427:6; 448:24;462:4;464:17</p> <p>during (15) 362:12;364:23; 365:7;375:13;376:3; 378:20;380:19;390:9; 391:7;413:14;418:15; 436:14;441:16;461:5; 470:11</p> <p>dusk (1) 372:19</p> <p>dwelling (1) 365:24</p> <p>dynamics (2) 409:4;412:8</p> <p>dynamiting (1) 425:20</p>	<p>E</p> <p>earlier (1) 395:14</p> <p>earliest (7) 412:4;413:21,22; 415:10;416:17; 418:19;420:4</p> <p>early (1) 376:2</p> <p>earn (2) 459:7;477:23</p> <p>earshot (1) 401:11</p> <p>earth (1) 380:17</p> <p>easiest (1) 394:13</p> <p>east (5) 365:3,5;373:24; 468:11;474:14</p> <p>easy (1) 468:21</p> <p>echelon (1) 426:13</p> <p>economic (2) 462:1;466:15</p> <p>ecosystem (1) 465:2</p> <p>edge (2) 394:10;397:14</p> <p>edification (1) 464:10</p> <p>education (1) 409:9</p> <p>educational (3) 362:16;462:23; 463:6</p> <p>effect (8) 354:8;377:9; 379:10,14,16;404:4, 19;414:16</p> <p>effective (2) 394:11;404:23</p> <p>effectively (3) 354:1;376:24;422:9</p> <p>effects (5) 398:17;399:5,10; 428:13;473:5</p> <p>egress (1) 463:17</p> <p>eight (4) 385:6;389:11; 412:5;476:13</p> <p>either (9) 360:22;361:9; 380:2;394:15,21; 416:11;419:23; 436:18;447:8</p> <p>El (8) 372:22;398:14; 411:18;413:8;455:5,</p>	<p>18;460:10;465:3</p> <p>elected (1) 382:23</p> <p>electric (4) 431:21,23;468:24; 469:4</p> <p>electricity (1) 459:17</p> <p>eliminated (2) 377:3,7</p> <p>elimination (1) 360:20</p> <p>else (5) 363:9;386:11; 396:1;450:6;451:11</p> <p>emanating (2) 421:23;422:14</p> <p>emotion (1) 429:15</p> <p>employees (1) 363:3</p> <p>employment (1) 409:8</p> <p>end (10) 375:18;411:23; 427:16;433:19; 435:13;437:8,10,15; 454:9;475:10</p> <p>ended (3) 426:5;427:1;479:9</p> <p>ending (1) 351:9</p> <p>end-of-life (1) 432:5</p> <p>energy (50) 363:8;383:20,23; 384:9;386:17;402:11; 404:1,7;406:17,22; 407:1;408:1,4,20; 409:17;410:1,6; 412:19,20,23;414:10, 11,19;415:23,24; 416:5;417:13,15,21; 419:10,12,14;420:19, 21;421:3;422:7; 423:1,4,7,9;433:17; 460:13,16,16;461:22; 464:20;465:1;467:14; 470:21;472:19</p> <p>engineer (3) 362:6;431:16; 432:19</p> <p>engineering (9) 362:18,19,21,23; 383:1,2;431:20; 432:13;433:4</p> <p>engineers (1) 441:15</p> <p>enjoy (1) 429:14</p> <p>enjoyment (1) 463:7</p> <p>enough (7)</p>
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<p>363:22;372:20; 380:16,17;393:10; 396:1;417:23 entertain (1) 423:13 entire (5) 365:17;366:10; 375:13;392:8;473:9 entities (1) 460:21 environment (3) 390:8;465:14; 467:13 environmental (7) 362:23;383:5; 441:23;464:23; 465:16,23;466:5 EPA (2) 385:23;386:4 EPG (2) 456:1;457:2 equal (1) 385:3 equals (1) 385:3 equilibrium (1) 429:21 equipment (12) 432:17;434:19; 436:23;437:6,23; 438:3,20;450:12; 451:23;452:2,10; 454:21 Equivalent (2) 384:16;456:5 escalation (1) 405:10 escape (1) 391:1 especially (2) 396:24;456:19 essential (1) 466:8 essentially (13) 353:1;358:8;368:2; 384:2;385:7;388:24; 390:7,19,22;400:19, 22;405:8;447:7 establish (2) 429:5,18 established (2) 386:5;411:22 establishing (1) 406:19 establishment (1) 411:6 estate (17) 402:15,18;403:4, 18;404:5,13;408:13; 412:9;414:7,17; 415:14;417:11,19; 418:24;420:16;421:1; 475:14</p>	<p>estimate (5) 404:4,18;434:12; 449:9;453:21 estimated (1) 449:10 estimates (11) 431:12,14;433:8; 436:15,17;439:13,14, 20;442:18;443:5; 466:11 estimating (1) 436:4 etc (4) 371:18;374:9; 377:8;395:20 ethanol (2) 469:3,5 Eureka (2) 411:15;413:6 evaluated (6) 367:20;368:16; 369:10;376:11;381:2; 422:23 even (15) 368:4;372:5,19; 375:21,23;379:12,13; 387:7;389:21;391:3; 395:23;444:12; 461:15;467:11;478:6 evening (9) 376:2;380:15; 431:6;455:16;458:6, 12;476:18;478:21; 479:1 events (1) 390:10 eventually (1) 429:20 everyone (1) 402:7 everywhere (1) 426:19 evidence (3) 422:5;423:3,8 exact (3) 370:18;374:3; 377:11 exactly (5) 362:10;368:22; 373:23;389:20; 444:22 example (8) 364:8;373:16; 374:5,21;376:21; 377:6;445:11;477:14 exceed (3) 366:17;378:16; 401:1 exceedances (2) 393:24;394:20 exception (1) 456:7 excessive (1)</p>	<p>396:20 exclude (1) 453:24 excluded (6) 390:15;412:5; 415:11;416:13; 418:21;419:24 excuse (2) 410:19;427:15 excused (9) 382:4;401:17; 430:10;453:13;458:3; 460:3;472:4;474:2; 478:16 executing (1) 433:9 Exhibit (12) 361:15;374:17,17; 377:14,15;382:11; 392:23;401:21,21; 430:20,20;455:6 Exhibits (1) 401:24 existed (1) 406:24 existing (3) 378:1,3;411:12 exists (1) 416:5 expand (1) 405:23 expanded (1) 426:19 expect (8) 396:5,8;400:10; 401:5;444:2;446:21; 450:14;472:18 expectation (1) 449:16 expected (3) 393:24;394:16; 411:24 expecting (1) 472:14 expediency (1) 458:18 expended (1) 466:13 expense (1) 469:10 experience (3) 362:9;383:4;466:2 experienced (1) 421:16 experiencing (1) 421:17 experiment (2) 406:8,13 explain (3) 352:13;353:15,18 explained (2) 476:1,2 explaining (1)</p>	<p>475:8 explosives (2) 437:23;438:18 exposure (2) 406:9,14 expound (1) 448:12 expressed (1) 384:10 extensively (2) 416:12;419:23 extent (3) 361:7;440:13; 477:19 extraneous (1) 386:12 extreme (1) 391:22</p>	<p>475:20 far (9) 355:16;357:13; 362:5;372:12;395:9; 427:21;447:20;450:4; 454:14 farm (33) 397:2;407:11; 421:6,13,17;423:24; 424:8,8,11;428:6,24; 429:9;443:20;445:20; 455:21;461:21; 468:17,18,19;470:9, 10,10,24;471:1,4; 474:20;475:3,11,16; 476:3,5,21;477:8 farmer (3) 459:6;467:1;472:22 farmers (3) 466:21,24;467:13 farmette (10) 404:5;407:6; 417:10,19;423:20,24; 424:15,16;425:3; 429:9 farmettes (14) 405:17,23;406:1; 407:3,10,17;414:20, 22;415:5;416:9; 417:3,20;423:19,21 farming (4) 421:8;459:9; 469:10;476:20 Farmland (4) 421:7,14,15;423:10 farms (12) 379:11;397:1; 403:14;407:11; 428:13;432:3,6; 435:8;443:18;445:18; 474:24;475:20 fast (2) 371:2 favor (2) 462:9;467:10 favorable (2) 390:7,13 Federal (7) 365:14,15;385:20, 21,22;470:3,4 feel (2) 385:13;476:19 feeling (2) 475:9;477:7 fees (4) 436:13;439:11; 440:1,17 feet (14) 354:1;357:16; 359:14;395:21,21; 436:24;437:1,2; 439:3;441:7;451:2,4, 6,6</p>
F				
			<p>facet (1) 404:10 facilities (10) 402:11;406:22; 415:24;422:4;426:9; 430:3;432:18,18; 434:17;447:5 facility (39) 404:2,7;406:17; 407:2;408:1,4; 409:17;410:1,6; 412:19,21,23;414:10, 12,19;415:23;416:5; 417:14,15,21;419:10, 12,15;420:19,21; 421:3;422:7;423:1,4, 7,10;426:15;432:23; 433:20;435:11; 460:13;464:20; 467:14;472:19 fact (2) 457:12;475:10 factors (1) 395:12 fairly (2) 352:20;386:9 fall (3) 365:4;451:13; 457:11 familiar (4) 362:22;363:12; 400:7;408:15 family (33) 404:4;405:16,22, 24;407:3,7,14,15; 411:9;413:11;414:6, 17,18;418:4;419:20; 420:16;421:1,2; 423:23;424:2,17; 426:18,22;429:12,13; 461:11,21,23;468:20; 471:1;474:19,20;</p>	

fell (1) 438:18	2;439:3;441:7,14; 450:5,10,14;451:2,4, 6,6;454:11	478:18	401:20;402:4,8	369:24;426:16; 429:15;469:12
felling (1) 437:23	five-year (1) 450:4	fossil (1) 434:16	gathered (1) 409:6	Good (13) 361:24,24;364:22; 380:9;384:6;391:4; 402:7;429:19;431:6; 435:15;448:14; 455:16;475:18
fellow (1) 403:6	fixed (1) 452:16	found (12) 407:17;409:15; 410:9;413:24;422:16; 424:3;425:14,16; 426:1,16;427:5; 465:16	Gauger (25) 351:14;356:16,16; 358:20;359:1,12,13, 23;423:17,18;428:21, 22;446:16,16;447:3,9, 22;448:5;449:7,7; 451:9,9,22;452:3; 479:6	government (2) 460:21;467:14
fertilizer (2) 459:9;469:11	fixing (1) 476:5	foundation (1) 437:1	gave (3) 413:15;416:2; 477:14	grade (9) 436:22,24;437:1,2; 438:21;439:3;441:7; 451:2,7
few (6) 375:16;403:16; 422:13;453:15,20; 475:4	flat (2) 372:6;459:13	foundations (3) 426:3;439:1,2	GE (12) 355:10,18;368:16; 370:14;376:9;377:11; 388:6;389:4;393:17; 394:11;442:13,19	graduating (1) 469:12
field (1) 476:10	flicker (41) 354:17,20;361:15; 362:3,13;363:12,14, 17,21;364:5,7,9,15, 22;365:16,23;366:3,7, 16,20;367:4;369:23; 371:6,9;372:2,17; 373:7,17;374:7,23; 375:12,15;377:2,19, 21;379:10;380:7,8, 14;388:8,13	founded (2) 363:1;467:6	gears (1) 438:22	graduate (1) 403:19
fifty (1) 477:23	flip (1) 424:8	four (8) 362:7;385:5; 402:22;426:8;427:1; 469:16;470:10;479:3	general (5) 402:21;434:19; 436:22;466:15; 476:18	grain (1) 459:7
figure (1) 356:9	Florida (1) 431:18	frame (4) 413:12,14;415:6; 419:21	generally (2) 385:16;405:7	graph (1) 377:11
figures (3) 410:18,19;412:4	flow (1) 421:8	frankly (1) 379:23	generate (1) 459:16	graphical (2) 373:16;376:21
file (3) 414:14;417:17; 420:23	fluid (2) 446:20;447:1	frequencies (14) 384:3,8,11;387:14; 388:2;393:3,4,4,21, 22;399:17,18;400:1,3	generated (2) 460:18;466:12	graphically (2) 374:16;392:16
files (1) 387:20	fluids (2) 446:17;447:4	Frequency (5) 384:1,5;399:11,12; 400:8	generation (3) 432:15;434:16; 461:24	graphics (1) 412:22
final (5) 354:20,21,22; 355:4;381:5	focus (1) 410:2	front (3) 353:23;358:9; 361:16	generations (1) 461:24	great (1) 475:17
Finally (3) 376:6;377:18;467:8	fog (1) 390:23	frontage (1) 424:6	geometrical (1) 388:15	greater (5) 411:2;418:1; 420:17;421:19; 456:21
finance (1) 402:17	folks (2) 446:7;455:8	full (2) 377:16;380:7	geometry (1) 375:15	greatly (1) 471:3
finances (1) 456:3	follow (4) 371:1;386:18; 465:18;466:4	fully (3) 387:21;388:20; 390:15	Georgia (1) 402:19	Green (17) 353:20,22;354:15; 356:3;357:6,9,15,19; 358:1,4;381:19,20; 416:3;453:14,17,19, 19
financial (4) 455:21;456:10; 460:19;467:9	following (9) 412:17,17;415:20; 416:8;419:6;421:5; 422:19;423:2;442:18	functionally (1) 456:9	gets (5) 389:18;390:10; 392:10,11;397:15	Greene (1) 459:5
find (1) 413:24	follows (2) 387:22;464:18	funding (1) 455:24	GIBSON (2) 464:9;471:9	Greenhouse (2) 369:14,14
findings (2) 420:7;457:12	food (1) 424:12	funds (1) 432:4	gigawatts (1) 383:10	grid (1) 392:15
fine (2) 458:21;472:12	foodprint (7) 406:24;410:6; 460:12,14,22;461:14; 465:21	further (11) 374:1,3;381:18; 390:24;393:19;415:2; 428:19;461:13; 473:20;474:4;478:12	giving (1) 471:14	Gridley (3) 455:6,12,18
fire (2) 460:20;470:16	format (3) 373:14;374:16,22	future (3) 461:24;467:15; 468:22	glass (2) 369:15,21	ground (12) 388:16,17,20,22; 390:20;392:2;395:16; 424:4,19;428:24; 438:17;477:15
firm (7) 362:20,23,24; 363:8;383:14;432:12; 433:5	formed (2) 431:11;436:17	G	Glen (1) 460:9	group (29) 405:18,18;406:5,6, 6,11,12,15;408:1,12, 12;411:14,17;413:2,3, 4,6;414:1,2,21;417:5, 7;418:9,12,13;420:7,
firms (1) 447:7	formula (1) 411:4	gain (1) 467:9	goal (1) 404:2	
first (15) 352:1;353:10; 361:14;365:14; 368:11;371:16;379:3; 419:9;422:1;433:13; 437:11;469:7,20,22; 474:23	forth (2) 353:6;403:21	gained (1) 475:8	goes (4)	
five (23) 356:18;357:23; 358:10,12;368:17; 385:9;397:13;409:22; 424:19;436:24;437:1,	forward (3) 382:3;456:11;	Gary (3)		

<p>9,10,12 groups (9) 406:18,21;407:22; 409:14;414:21;418:6, 6,14;427:13 Grove (27) 351:7;378:9,17; 381:12;394:3,7; 404:1;409:17;410:1, 3,6;412:23;416:5; 419:14;423:9;433:13; 439:8,15;442:4; 446:7;453:2;455:7; 460:12;464:20; 467:14;471:4;472:19 grow (1) 456:4 growth (24) 412:3;413:20,23; 414:1,2,3;415:9,10; 416:16;417:6,8,14,22; 418:18,20;420:3,4,8, 11,12,20;424:12; 462:1;466:15 guess (9) 396:9;427:23; 428:10;433:13; 443:22;447:19; 451:19;463:9;468:4 guest (1) 403:19 gutter (1) 424:6 guys (2) 361:7;464:12</p>	<p>hard (1) 393:7 hardest (1) 393:5 Harnessing (1) 459:16 harsh (1) 351:10 haul (4) 439:19;445:9,10,13 hailed (1) 446:19 hauling (4) 434:20;439:21; 444:21;445:2 head (1) 448:2 headquartered (1) 362:24 health (8) 399:5,5;456:17; 463:2;464:4,17; 473:12,15 hear (14) 354:16;356:3; 395:9,17;396:2; 398:16,16;400:16; 444:23;450:2;463:5, 24;472:9;477:14 heard (3) 368:20;372:16; 408:16 hearing (2) 401:4;476:19 Heavy (5) 436:2;451:23; 452:2,9;454:21 hedge (1) 364:10 height (3) 370:9,15;395:17 heights (1) 389:3 held (3) 414:14;417:17; 420:23 help (3) 475:16,20;477:8 helped (3) 434:24;435:1;469:3 helping (1) 476:23 helps (1) 389:18 Henry (1) 406:2 here's (2) 376:6;466:16 hertz (5) 389:9,10;393:2,2, 21 Hey (1) 477:13</p>	<p>high (10) 372:7,10,12; 374:10;387:19;390:9; 403:15;426:9,21; 447:24 higher (7) 372:8;389:9,10; 399:13;410:17; 439:13;459:10 highest (2) 389:11;426:11 highly (2) 368:1,6 Hills (1) 446:8 hired (2) 453:16,21 hiring (1) 441:15 historic (1) 411:24 historical (1) 372:24 history (3) 425:13;431:22; 446:11 HODEL (5) 459:2,2,23,24; 460:2 hog (1) 379:11 hold (3) 402:16;403:3; 471:22 HOLMES (84) 351:2,5,12,24; 353:20;355:20,23; 358:21,23;359:11,21; 360:7,9,15;361:10,20; 379:2,5;381:19,22; 382:5,14,17;394:23; 395:2;398:6;399:21; 401:14,18;402:2; 423:15;430:4,11,16, 22;431:1;444:16; 445:1,15;449:19,24; 450:18,22;452:5,5,9, 18;453:11,17;455:3,9, 13;457:4,7,19,24; 458:19,24;459:22; 460:4,7;462:10; 464:14;467:18;468:1, 8,12;471:6,12,17,21; 472:5;473:22;474:3, 11,15;475:21;477:9; 478:12,17,24;479:5,7, 9 home (12) 364:9;366:4;369:8, 17;377:24;409:8,12; 410:12,20;461:12,13, 18 homestead (1)</p>	<p>456:7 homogeneity (2) 430:1,2 honest (1) 448:21 hope (1) 368:3 host (1) 367:22 hour (2) 378:10;446:3 hours (14) 365:23;366:8,9,13; 367:17;369:2;374:8, 8,9;375:22;376:3,15; 378:13;394:18 house (11) 374:11;375:16; 397:10,11,12,12,15; 407:7,11;424:4;456:6 housed (1) 400:23 household (3) 409:11;410:12,15 houses (2) 369:15;390:16 housing (7) 404:5;405:13,22, 24;411:9;418:4; 429:22 Howell (8) 382:9,19,19,23; 398:20,24;399:9,16 H-O-W-E-L-L (1) 382:20 hub (7) 370:9,9,15;389:2; 395:16;400:21;448:9 hubs (1) 436:10 human (3) 379:9;398:17;409:1 hundred (1) 422:13 hundreds (1) 383:8</p>	<p>383:12;384:6,7,12,20; 386:4,4;387:1; 396:19,23;402:17,20, 22;406:1;407:4; 414:23;419:13;421:6, 12,13,15;422:21; 428:14;431:17;432:7; 443:21;445:19,23; 446:2;455:12;464:21; 465:19;468:16;470:7; 474:14 illustrate (1) 454:5 immediate (1) 463:8 immediately (3) 354:2;374:12; 426:20 impact (27) 354:11;392:9,11; 401:22;402:10; 403:11,12;404:3,9,9; 405:15;414:6;417:10; 420:15;422:6,14,15; 423:5;425:14,16; 427:3,5;455:21; 457:1;465:14;466:1, 24 impacts (8) 354:23;401:20; 411:11;421:23; 422:24;456:17; 457:16;465:2 impede (1) 463:13 impediment (2) 427:19,21 imperceptible (1) 385:17 imperfect (1) 427:21 implemented (1) 437:10 important (13) 363:16;367:24; 369:11,22;372:5,10; 374:24;384:22; 385:14;388:2;406:19; 429:4;435:21 impossible (1) 391:17 improve (2) 376:17;478:7 improved (1) 407:6 improvement (2) 463:14;478:4 improvements (4) 437:4;451:20,21; 477:17 inaudible (1) 385:16 incident (2)</p>
H		I		
<p>half (3) 368:17;395:23; 396:6 hammered (1) 439:3 hand (2) 403:22;409:23 handed (2) 361:17;382:10 handle (1) 381:16 happen (11) 364:15;366:3; 372:21;373:7;375:21, 23,24;376:24;380:14; 381:14;398:23 happening (4) 358:7;367:9;374:7; 378:15 happens (8) 364:23;367:10,15; 375:11,13,13;391:6; 425:22 happy (2) 378:24;423:12</p>	<p>heard (3) 368:20;372:16; 408:16 hearing (2) 401:4;476:19 Heavy (5) 436:2;451:23; 452:2,9;454:21 hedge (1) 364:10 height (3) 370:9,15;395:17 heights (1) 389:3 held (3) 414:14;417:17; 420:23 help (3) 475:16,20;477:8 helped (3) 434:24;435:1;469:3 helping (1) 476:23 helps (1) 389:18 Henry (1) 406:2 here's (2) 376:6;466:16 hertz (5) 389:9,10;393:2,2, 21 Hey (1) 477:13</p>	<p>history (3) 425:13;431:22; 446:11 HODEL (5) 459:2,2,23,24; 460:2 hog (1) 379:11 hold (3) 402:16;403:3; 471:22 HOLMES (84) 351:2,5,12,24; 353:20;355:20,23; 358:21,23;359:11,21; 360:7,9,15;361:10,20; 379:2,5;381:19,22; 382:5,14,17;394:23; 395:2;398:6;399:21; 401:14,18;402:2; 423:15;430:4,11,16, 22;431:1;444:16; 445:1,15;449:19,24; 450:18,22;452:5,5,9, 18;453:11,17;455:3,9, 13;457:4,7,19,24; 458:19,24;459:22; 460:4,7;462:10; 464:14;467:18;468:1, 8,12;471:6,12,17,21; 472:5;473:22;474:3, 11,15;475:21;477:9; 478:12,17,24;479:5,7, 9 home (12) 364:9;366:4;369:8, 17;377:24;409:8,12; 410:12,20;461:12,13, 18 homestead (1)</p>	<p>ICC (1) 460:22 idea (3) 395:10;425:8;476:1 identical (1) 404:17 identified (1) 407:23 identify (2) 404:14;409:2 IDNR (1) 466:6 Illinois (38) 362:8,15;365:17;</p>	

<p>454:19,20 incidents (1) 426:8 include (4) 441:19;442:21; 449:17;466:8 included (14) 392:10,11;401:24; 407:9,10;409:7; 416:13;419:18;440:2; 442:20;443:1;444:3; 449:8,11 including (10) 354:21;362:7,13, 14;403:11;444:5; 448:5,7,11;453:2 inclusion (1) 443:24 income (14) 409:2,7,11,12; 410:12,13,16,24; 424:22;459:16;461:2, 5;470:5,23 incorporate (1) 436:14 increase (6) 423:11;466:18; 469:17;470:4,6; 472:19 increases (3) 421:8,9;439:12 increasing (2) 456:13;472:16 increasingly (1) 459:14 incurred (1) 433:3 Index (1) 436:2 indexed (1) 436:5 Indiana (1) 431:17 indicated (2) 389:5;465:18 indicates (1) 403:11 indirect (1) 441:13 indirects (1) 441:14 individual (14) 366:4;367:18; 374:6,15;381:13,15; 384:8;387:2,14; 388:1;389:7;392:13; 393:9;465:9 individuals (1) 476:23 industrial (6) 408:11;426:2,2,7, 12,13 industries (1)</p>	<p>383:8 industry (11) 362:8;363:10,11; 366:9;367:6;380:22, 23;381:3;387:23; 431:24;436:3 influence (15) 404:6;405:21; 406:16;407:20,23; 411:16,19;413:5; 414:19;416:24; 417:20;418:8,11; 421:3;429:7 influenced (1) 408:2 information (11) 374:14;408:8; 412:11;415:16;421:5; 432:15;433:2;446:3; 453:10;455:20;463:1 informational (3) 434:1;444:1;454:4 infrasound (4) 398:19,23,24; 399:11 infrasounds (1) 398:16 ingress (1) 463:17 inhabited (1) 365:24 in-house (3) 432:17;435:15,19 initial (1) 419:1 initially (1) 427:2 injurious (2) 463:7,11 ink (1) 477:24 input (3) 373:10;435:1; 466:22 inputs (6) 367:13,22;368:12; 376:13;388:5;459:10 inside (5) 411:19;414:19; 417:20;418:11;421:3 installing (3) 377:23,24,24 instance (2) 412:5;418:21 instances (2) 381:15;426:7 instead (1) 388:20 Institute (4) 382:24;403:3; 404:12;408:21 Institution (1) 403:5</p>	<p>instruct (1) 403:17 instrumental (2) 472:15;476:23 insure (3) 433:18;465:20; 470:24 intending (1) 352:12 interest (1) 464:21 interested (27) 361:2,8,9;377:16; 382:1;398:7;401:15; 430:6;452:20;457:24; 458:13,19;459:23; 464:10,24;465:4,6; 467:19;468:5;471:8; 472:1;473:7,23; 474:5;477:11;478:13, 18 Interesting (1) 427:4 International (1) 403:7 into (23) 367:3,23;370:23; 373:5,9;379:21; 386:20;390:5,5; 393:12;407:19;420:7; 428:23;429:15; 430:17;438:1,13; 442:17;443:9;461:13, 23;466:14;469:4 introduce (1) 431:9 introduced (1) 432:8 introduction (1) 362:4 inversion (1) 390:21 involved (5) 403:13;431:24; 445:18,21;446:7 involves (1) 404:10 IPCB (10) 386:4,18,20;388:3; 392:21;393:5;394:1, 4,8,22 irrelevant (1) 429:9 ISO (1) 387:23 isolated (1) 404:18 issue (8) 353:12;407:19; 424:11,21;464:4,12; 472:24,24 issues (11) 360:12;361:13;</p>	<p>399:5;402:10;405:7; 406:14;425:16;429:8; 461:10,14;472:24 issuing (1) 353:12</p> <p style="text-align: center;">J</p> <p>jack (1) 439:2 jackhammering (1) 435:12 James (1) 468:10 Janssen (1) 360:18 January (1) 375:4 Jason (1) 360:16 Jeff (5) 430:18;431:3,15; 453:16,21 jeopardy (1) 468:24 Jerry (22) 351:16;357:4,12; 358:15;359:3;360:1; 379:7;380:5;395:5; 399:21;425:4;445:16; 448:10;449:21;457:9; 462:13;467:20;472:5, 8;475:22,23;477:2 Jerry's (1) 381:21 Jim (1) 468:16 job (5) 424:23,24;469:21, 23,24 jobs (3) 433:9;461:6;476:24 JOHNSON (6) 398:13,13,22; 399:7,15,20 JORDING (26) 351:12,14,16,18,20, 22;356:5;357:21; 358:23;359:1,3,5,7,9, 23;360:1,3,5,7,12,15, 16,16;361:6,10; 449:20 J-O-R-D-I-N-G (1) 360:17 judge (1) 463:6</p> <p style="text-align: center;">K</p> <p>Kansas (2) 362:24;431:5 Kaufman (19) 464:6,10,16;</p>	<p>467:16;471:9,11,13, 14,16,19,22;472:5,9, 11,18;473:3,17,24; 474:1 keep (5) 355:8,14;468:19; 470:21;475:2 Keith (4) 474:13,18;477:13, 15 KELSEY (15) 474:13,13,17,18; 475:23;476:3;477:1, 4,7,10,12,19;478:5, 14,15 K-E-L-S-E-Y (1) 474:17 kept (2) 379:21;475:7 key (4) 353:12;435:18; 436:1;440:10 Keyt (33) 351:24;352:2; 354:7;356:7,20; 358:5;360:9,11; 361:4,11;379:2,4; 382:5,7,7;394:24,24; 399:2;401:18,19; 423:14;430:8,18; 452:22;453:7;455:4; 457:14;458:4,4,6; 474:3;478:19,20 kids (1) 457:2 KIM (83) 351:2,5,12,24; 353:20;355:20,23; 358:21,23;359:11,21; 360:7,9,15;361:10,20; 379:2,5;381:19,22; 382:5,14,17;394:23; 395:2;398:6;399:21; 401:14,18;402:2; 423:15;430:4,11,16, 22;431:1;444:16; 445:1,15;449:19,24; 450:18,22;452:5,5,9, 18;453:11,17;455:3,9, 13;457:4,7,19,24; 458:19,24;459:22; 460:4,7;462:10; 464:14;467:18;468:1, 8,12;471:6,17,21; 472:5;473:22;474:3, 11,15;475:21;477:9; 478:12,17,24;479:5,7, 9 kind (19) 352:5,6;353:15; 385:8;392:22;393:7; 431:9;434:9,17; 435:9;437:11,18;</p>
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<p>441:3,4;444:1;456:9; 462:14;470:12;478:8 knowledge (1) 447:17 known (1) 384:4 Kopp (26) 430:18;431:3,3,15; 444:23;445:3,22; 446:6,15,21;447:5,14, 24;448:7,13;449:3,6, 12;450:8,15;451:5, 14;452:1,8,14;453:5 K-O-P-P (1) 431:4 Kurz (8) 455:5,11,11,16; 457:4,6,8;458:2 K-U-R-Z (1) 457:6</p>	<p>466:19 landowner's (2) 366:1;451:16 lanes (1) 476:8 language (2) 366:18;476:7 large (4) 383:14;407:8; 424:9;433:4 larger (5) 377:14,17;399:12; 420:13;424:19 LaSalle (1) 406:2 last (23) 371:15;372:16; 385:7;412:3;413:21, 22;415:9;416:17; 418:19;420:3;422:19; 428:10,12;435:18; 436:11;443:22; 444:23;457:5;459:12; 468:13;469:16; 474:15;476:13 lastly (1) 433:4 late (7) 375:19;376:2; 413:19;415:7;416:15; 418:17;420:2 later (2) 440:22;458:16 law (2) 457:15;462:7 laws (1) 476:12 Lay (62) 351:16;357:4,4,7, 11,12,17;358:15,15; 359:3,17;360:1; 379:7,7;380:5,5,20; 381:5,18;395:4,5,6; 399:23,24;406:20; 425:4,4,6;429:1; 445:16,16;446:5,10; 448:10,10,23;449:4; 457:9,9,23;462:13,13, 18,21,23;463:5,24; 467:21;471:10,21; 472:6,8,8,12,21; 473:10,20;475:23,23; 476:17;477:3;479:4 layout (3) 354:18;367:2; 368:16 layouts (1) 368:14 lease (2) 421:14;475:10 leases (1) 476:7 least (3)</p>	<p>372:16;411:21; 451:6 leave (2) 451:3;477:13 lecturer (1) 403:19 left (6) 375:4,9;424:15; 440:6;451:1,13 legal (1) 358:14 legitimate (1) 422:22 less (15) 354:23;368:8; 372:2;393:12;410:16, 21,22,22;411:1,2,3; 421:16,18;436:23; 445:10 lessened (1) 469:5 letter (12) 455:7,19;457:10; 467:22,24;468:3; 472:6,13,13,14;473:6, 13 level (16) 365:14;366:21; 383:17,18;384:16,17; 385:20;386:3;389:24; 392:1;395:16;409:7, 8;422:10,17;476:13 levels (12) 384:10,23;385:21; 387:13;388:1;389:4; 393:11;394:7,12,14; 395:24;396:14 libraries (1) 459:19 Library (2) 460:23;465:4 licensed (2) 362:6;402:20 life (7) 433:19;435:14; 437:8,11;459:5; 466:7;468:17 lifetime (1) 471:5 light (1) 416:3 lights (1) 470:21 likelihood (1) 356:13 likely (4) 368:24;388:7; 456:4;465:13 likes (3) 424:24;425:1;469:7 likewise (1) 365:7 limit (6)</p>	<p>355:9;387:5,8,10; 397:5,9 limitations (1) 365:15 limits (8) 366:7;385:22; 387:4,12;392:21; 397:4,14;401:1 line (8) 364:11,16;371:10, 23;374:13;385:7; 397:22;413:23 linear (3) 384:24;385:2; 413:23 lined (1) 458:8 lines (9) 370:2;371:17; 373:21;374:6;377:1, 8;403:15;426:21; 451:1 Lisa (21) 351:10,12,14,16,18, 20,22;356:5;357:21; 358:23;359:1,3,5,7,9, 23;360:1,3,5,7;449:20 Lisa's (1) 353:7 list (1) 469:8 listening (1) 473:19 Listing (1) 408:14 literature (1) 422:22 little (24) 352:14;355:2,2; 367:3;373:21;375:8; 386:21;392:17;393:8; 402:14;415:21;426:4, 5,5;427:19;431:7; 432:9;439:13;441:4; 455:20;458:9;474:22; 475:5;476:11 live (7) 402:5;424:23,24; 468:11,16;475:3; 477:20 lived (1) 459:5 lives (1) 461:12 livestock (1) 459:8 living (5) 369:9;397:12; 401:11;459:7;477:23 LLC (1) 351:7 load (2) 439:4,18</p>	<p>loaded (4) 438:2,4,13,24 local (14) 386:15;422:17; 436:6,11;455:22; 456:1,15,19;461:4; 465:2,5,14,23;466:21 located (20) 365:22;403:2; 406:17,21;407:24; 408:4;411:9,12,16,19; 412:20;414:23; 415:24;418:8,11; 422:3,6;423:6; 463:12;465:15 location (13) 352:10;353:23,24; 354:3,8;357:5,7,11; 359:14,15;360:19; 409:8;439:21 locations (3) 354:21;367:11,12 lodge (1) 399:2 logarithmic (2) 384:9,24 logarithmically (1) 392:13 long (4) 376:5;447:16; 468:20;470:24 longer (2) 373:21;426:13 look (26) 357:12;370:6; 371:16;372:4,6,21; 379:18,24;392:17; 404:24;405:2,5,16; 407:2;409:5;413:15; 416:3;429:5;437:1; 441:2;456:2,10,11,16; 459:15;473:4 looked (20) 368:13;369:6; 370:7,14,21;376:13; 413:4,5,8;415:3; 416:22;418:2;439:21, 22;440:22,23,24; 442:13,13,14 Looking (15) 365:13;373:19; 377:17;385:19; 386:15;405:10; 408:22,23;411:8; 428:11;436:9;440:1; 442:16;448:19;479:1 looks (4) 365:11;373:17; 374:21;454:7 lot (20) 379:11;384:19; 388:21;395:12; 432:14,16;433:2;</p>
L				
<p>labor (2) 434:19;450:11 Laboratory (1) 408:20 Labs (1) 422:2 lack (1) 415:1 lady (1) 398:10 Lake (1) 403:2 laminar (1) 390:8 land (27) 386:21,23,24,24; 387:4;396:12,21,22, 23;397:3,3,8,17; 407:8,9,12;424:24; 429:2;437:16;457:17; 459:8,17;460:17; 461:22;469:13; 475:15;478:10 landfill (11) 436:13;439:8,11, 24;440:15,16,19; 444:5,8,9;448:16 landfills (3) 403:13;449:1,4 landlord (1) 470:9 landowner (10) 354:6;366:6; 381:13,14;440:5; 442:10;460:11;465:6; 467:8;475:9 landowners (7) 352:17;358:2; 366:14;376:14; 458:14;460:14;</p>				

435:6,10;443:5; 448:13;450:8;459:17; 469:2,6;470:20; 475:5,8;476:5;477:21	management (1) 362:19 Managers (2) 421:6,13 managing (3) 402:24;431:18; 441:17 mandated (1) 385:23 manufactured (2) 370:20;389:17 manufacturer (1) 389:15 manufacturers (1) 355:12 manufacturing (2) 426:9,15 many (17) 383:7;384:3; 403:10,12;408:15; 421:21,21;423:19; 424:9,9;425:7;426:7; 428:5;434:13;461:2; 466:13;471:1	436:9 matter (1) 360:12 maximum (9) 376:1;389:4,24; 390:19;391:4,7,7,10; 392:1 may (15) 378:2,4;379:18; 382:22;397:1;402:10; 406:8;418:16,16; 419:7,7,21,21;425:24; 468:20 Maybe (6) 380:21;424:5,17, 18,19;456:22 McDonnell (10) 362:21,22;363:7; 383:14;431:19,20,23; 432:9,12;454:3 mean (5) 364:3;369:8; 444:21;447:6;476:2 meaning (3) 368:7;377:2;477:6 means (4) 369:14;394:11; 433:7;436:2 measurable (2) 380:18;383:21 measure (7) 404:14;412:2; 413:20;415:8;416:16; 418:18;420:2 measured (7) 370:23;381:1; 383:24;396:15; 397:15;401:7,8 measurements (1) 394:19 measures (1) 463:16 measuring (3) 364:7,8;405:9 mechanical (5) 362:18;383:1; 400:22,23;401:5 median (6) 409:11,11;410:12, 12,15,20 meet (1) 394:22 meeting (1) 351:4 megawatt (2) 368:17;456:5 member (7) 382:24;403:3,4,5,7; 461:11;464:22 members (2) 430:5;462:5 membership (1) 408:11	memory (1) 451:2 Mendota (1) 446:8 mention (3) 363:7;372:17; 383:15 mentioned (14) 371:12,17;373:23; 381:7;383:13;388:6; 391:23;393:13,20; 395:14;396:11;435:5; 440:11;442:1 mentions (1) 396:19 Mercer (1) 406:2 merit (2) 462:6;463:19 merits (4) 457:21;462:16,18; 468:4 met (2) 367:2;438:15 Metal (4) 436:8;441:1; 444:18;447:21 Metamora (2) 411:15;413:6 meter (1) 368:18 meters (8) 370:9,13,15,17; 389:3,3,10,11 method (1) 394:21 methodology (3) 405:19;431:10; 434:4 metric (1) 384:18 microphone (1) 477:16 middle (3) 397:2,13;428:8 Midwest (5) 402:22;408:13; 412:9;415:13;418:23 might (4) 379:1;453:8; 458:17;469:19 Mile (12) 395:23,23;396:6; 409:16,22;410:3,5,10; 412:23;416:5;419:15; 469:22 miles (6) 406:16;407:24; 408:2,3;422:3;475:3 million (4) 442:20,22;443:1,3 mimic (3) 370:24;371:14;	373:6 mine (1) 425:18 minimal (1) 465:13 Minonk (7) 411:12,19;413:8; 468:11,16;474:14; 475:3 minor (3) 352:3,4;358:5 minute (2) 367:15;375:24 missed (1) 380:21 Missouri (2) 431:5,17 mitigate (3) 377:21;394:21; 395:13 mitigation (5) 377:19;378:6; 381:6,10;394:6 mitigations (1) 381:13 mode (2) 369:14,14 model (37) 366:3,4;367:4,8,21; 369:20,24;370:24; 371:6,8;372:8,13; 373:5,9;379:21; 387:17,22;388:4,14; 390:2,5,13,17;391:2, 6,14,21;392:8,15; 394:4;434:11,18,22; 435:2,3;442:14,17 modeled (6) 368:18;369:13,21; 370:18;372:3;376:8 modeling (4) 368:12;371:15; 372:9;389:1 models (5) 370:8;387:23; 391:9;434:24;442:16 moderate (1) 390:20 moment (3) 367:13;374:20; 471:22 money (2) 443:14;466:14 month (9) 367:15;373:1; 375:9,16;415:2; 418:15;440:24;441:2; 444:18 months (5) 365:4;374:4;375:3; 376:4;442:5 moon (4) 380:7,11,17;381:3
M				
ma'am (1) 353:22 machine (7) 355:14,19;370:8, 11,14;378:19;393:18 Machinery (1) 459:11 machines (4) 355:6;370:24; 376:8;442:24 Mackinaw (1) 465:17 macro (1) 422:10 Madam (5) 358:15;359:12,17; 457:9;479:4 magnitude (1) 385:2 MAI (1) 403:3 maintain (4) 378:10;394:7; 475:20;476:23 maintenance (2) 448:24;461:7 major (1) 427:19 majority (2) 424:22;456:1 makes (3) 423:20;452:23; 459:17 making (1) 366:22 man (1) 475:1 manage (1) 461:4 manageable (1) 438:2 manageably (1) 438:6	map (7) 353:22;357:10; 359:16;365:12; 373:20;377:14,16 maps (2) 353:17;368:24 mark (1) 366:9 marked (1) 382:10 market (10) 412:8;429:17,18; 436:8;441:1,2; 443:13;444:19; 450:11;466:22 markets (3) 409:3;427:20;436:6 Marshall (3) 406:2;414:24; 416:22 Marty (5) 351:18;355:23; 359:5;360:3;449:20 mash (1) 373:9 mask (1) 390:11 master (1) 464:22 Master's (2) 362:18;402:18 match (2) 437:16;442:8 material (7) 425:19,20;435:20; 438:7;439:9,16; 443:12 materials (3) 425:18;434:20;			

<p>moonlight (1) 381:1</p> <p>more (48) 352:14;355:2,3,3; 362:10;365:4,5,8,23; 366:13;373:3,24; 374:5;375:18;376:14; 377:22;380:5;385:6, 7;398:19;422:17; 434:3;436:18,20; 439:13,14;441:4; 443:14;448:4;450:18; 453:9;454:4,4; 456:12,22;458:8; 459:12;461:18; 462:14;465:7;469:14, 19;470:7,20;474:4; 475:8;476:6,17</p> <p>morning (2) 376:2;390:22</p> <p>most (13) 365:19;368:23; 369:11;372:14;375:6; 377:6;384:18,20; 404:23;405:6,13; 445:20;467:5</p> <p>motion (6) 358:11,21;359:11, 21;360:9;479:1</p> <p>Moultrie (3) 406:2;414:24; 416:23</p> <p>move (8) 352:12,20;357:2, 13;358:16;359:13; 467:24;479:4</p> <p>moved (7) 352:10;353:9; 354:1,5;356:10,21,22</p> <p>movement (2) 354:13;360:18</p> <p>moves (4) 354:16,18,22;355:4</p> <p>moving (1) 456:11</p> <p>MSA (3) 410:11,18;411:2</p> <p>much (12) 367:6;378:23; 384:16;393:4;422:12, 12;430:8;439:9,16; 450:21;453:12;458:2</p> <p>multiple (5) 383:11;408:14; 432:1;464:21,22</p> <p>municipal (2) 407:16;414:22</p> <p>municipalities (5) 411:10,15;418:7, 10;459:20</p> <p>municipality (4) 407:16;411:18; 424:4,7</p>	<p>myself (2) 362:5;431:9</p> <p style="text-align: center;">N</p> <p>nacelle (7) 370:10;400:21; 438:4;446:18,19; 447:11;448:8</p> <p>nacelles (1) 446:22</p> <p>name (24) 361:24;382:8,18, 23;398:11;402:2,4,7; 403:16;431:1,3,15; 455:9;457:5;458:24; 459:2;460:7;468:9, 10,13,16;474:12,16, 17</p> <p>National (3) 408:19;422:2;436:5</p> <p>Natural (1) 465:19</p> <p>naturalist (1) 464:22</p> <p>nature (1) 376:21</p> <p>near (2) 422:6;465:15</p> <p>nearby (6) 354:6;358:2;378:4; 404:17;423:10; 439:21</p> <p>nearest (5) 407:1;412:19; 415:22;417:13; 419:10</p> <p>nearly (1) 404:17</p> <p>necessarily (6) 353:4;391:3,8; 396:6;399:13,19</p> <p>necessary (2) 358:11,13</p> <p>need (19) 352:15,18;353:4; 356:21,22;357:2; 381:4;398:10;399:2; 436:14;458:21; 459:15;462:1;469:18; 470:7,20;474:8; 476:14,15</p> <p>needed (4) 394:19;406:21; 441:16;463:24</p> <p>needs (1) 469:8</p> <p>negative (14) 414:6;417:10; 420:15;422:6,14,15, 24;423:4;425:14,16; 427:5;465:2,14;473:5</p> <p>negotiate (1)</p>	<p>455:1</p> <p>neighbor (1) 464:3</p> <p>neighborhood (1) 425:12</p> <p>neighboring (2) 357:1;460:24</p> <p>neighbors (1) 386:2</p> <p>net (2) 443:11;445:7</p> <p>new (12) 352:15,17;353:12, 24;357:5;359:16; 360:19;450:9;451:15; 461:6;466:14;474:8</p> <p>News (1) 432:14</p> <p>next (27) 369:6;370:6;372:4; 374:9;382:6,7;390:4; 393:1;401:19;407:14, 19;408:7,22;410:8, 14;413:1;414:20; 416:20;417:4;419:17; 420:6;421:20;427:23; 430:18;446:10;455:4; 461:24</p> <p>nice (1) 386:9</p> <p>night (5) 380:7;395:15; 470:22;478:22; 479:10</p> <p>nighttime (3) 387:12,13;392:21</p> <p>nine (1) 422:4</p> <p>nobody's (1) 374:11</p> <p>noise (25) 354:9,17,20;355:3, 16;361:17;382:8,12, 21,24;383:4,8,11; 384:18;386:14;389:1; 391:19;394:7,10,18; 395:8,17;400:19,23; 401:5</p> <p>noises (1) 386:12</p> <p>none (3) 394:16;452:21; 467:6</p> <p>nonparticipating (5) 366:1,6,14,17; 376:14</p> <p>nontypical (1) 447:13</p> <p>Nordex (3) 355:6,14,18</p> <p>normal (1) 463:13</p> <p>north (10)</p>	<p>352:13;360:22,22; 374:5;398:14;402:5; 446:3;448:3;455:11; 460:10</p> <p>northeast (5) 354:1;359:15; 365:9;373:21;374:3</p> <p>northeastern (1) 474:21</p> <p>northwest (2) 365:7;373:22</p> <p>Northwestern (1) 403:18</p> <p>note (3) 354:7;384:22; 412:18</p> <p>noted (5) 409:23;411:4; 418:5;421:4;422:8</p> <p>notes (1) 403:22</p> <p>notice (2) 356:23,24</p> <p>noticeable (1) 385:10</p> <p>noticed (2) 381:6;472:13</p> <p>notices (3) 352:15,17;353:12</p> <p>notified (1) 352:18</p> <p>noting (1) 410:14</p> <p>number (20) 355:11,11;358:13, 17,17,17,17,18; 359:14;362:13; 363:17;367:12;368:1; 369:2,23;374:10; 375:1;432:11;447:24; 448:2</p> <p>numbers (5) 356:7;373:2;392:4, 19;435:16</p> <p>numerically (1) 373:13</p> <p style="text-align: center;">O</p> <p>objection (1) 399:3</p> <p>obstacle (1) 364:11</p> <p>obstacles (2) 371:16,22</p> <p>obstructions (2) 364:6;378:3</p> <p>obvious (1) 456:22</p> <p>obviously (3) 372:19;458:7,9</p> <p>occasion (1) 403:17</p>	<p>occupied (5) 364:9;367:18; 379:19;380:4;388:12</p> <p>occur (9) 363:18,22;366:7; 372:18;388:16;391:9; 435:10;443:20; 446:24</p> <p>occurred (9) 413:11,13,14,16; 415:3;416:1;418:15; 470:14,19</p> <p>occurring (6) 372:1;377:22; 415:6;416:10;419:7, 20</p> <p>occurs (1) 363:14</p> <p>octave (7) 384:8;387:14; 388:1;389:7,8; 391:23;392:14</p> <p>OEAAA (2) 357:14;359:19</p> <p>off (8) 353:6;380:16; 388:19;394:12; 403:24;407:12; 424:23;448:2</p> <p>offer (1) 428:15</p> <p>office (12) 352:15;353:8,11; 403:1;408:17,18,19; 412:13,13;415:18; 419:3,4</p> <p>offices (1) 412:14</p> <p>offsite (6) 438:3;439:5,7; 440:13;444:9;446:24</p> <p>often (2) 372:24;404:20</p> <p>Ohio (2) 418:10,13</p> <p>oils (1) 437:12</p> <p>old (1) 357:7</p> <p>once (5) 371:5;376:17; 425:23,23;478:9</p> <p>one (64) 352:20;354:7; 355:5,11;357:13,15, 20;358:5;362:15; 367:16;368:14; 369:13,15,20;374:5; 380:5;382:2;384:20, 22;385:15,19;387:15; 392:9,10,10,22; 394:13;395:4;396:18; 398:9;404:10;409:18;</p>
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<p>411:21;414:4;418:12; 420:7;422:1;423:3, 17;425:16;427:17; 429:6,6,8;432:11; 439:6;440:18;443:22; 444:16;446:1;451:10; 452:22;458:2;460:1; 462:13;465:7;469:12, 22;472:24;473:7,10; 474:4;476:17;477:3 ones (3) 353:6;384:19; 388:13 only (15) 361:6;375:14; 376:16;379:24; 380:19;386:11,14; 388:10;459:18; 460:17;462:24;465:8; 466:23;477:3,24 open (2) 379:11;444:14 open-sided (1) 379:12 operate (2) 370:22;389:24 operated (2) 371:5;461:21 operating (3) 378:20;392:1;461:1 operation (7) 364:2,3;368:8; 371:14;378:5,19; 424:9 operational (1) 429:8 operations (2) 421:9;454:17 opportunities (2) 448:14,17 opportunity (3) 373:6;404:24;459:4 opposed (4) 385:2;427:10,13,15 opposite (1) 374:4 option (2) 378:5;394:15 order (6) 351:4;363:18; 370:4;371:21;372:17; 379:22 orderly (1) 463:13 orders (1) 385:1 ordinance (25) 365:13,15,21; 366:6,18;367:1; 368:5;376:16;378:11, 17,22;386:16;433:12, 15,16;436:19;442:6; 443:23;449:10,18;</p>	<p>450:3;453:24;454:13; 462:8,9 organization (1) 465:9 organizations (2) 464:23;465:11 original (3) 357:11;359:15; 437:16 others (2) 380:24;381:2 out (33) 352:16;356:9,9; 357:1;361:17;378:3; 381:1,12;382:11; 384:18;392:4;393:14, 19;396:2;397:1; 411:10;424:14; 425:22;429:7;432:10; 435:12;437:5,7; 438:7;441:3,9; 442:18;443:4,11; 451:17;460:17; 466:17;473:4 output (3) 391:4,7;435:3 outputs (1) 373:10 outside (13) 395:20;405:23; 407:18;411:16;413:4; 414:18,22;416:24; 417:20;418:3,8; 421:2;423:24 over (24) 353:14;354:19; 361:19;383:4,10; 384:17;386:13;403:9; 421:22;424:15;425:8, 9,12;426:3,23;431:21, 24;432:2;433:5; 434:12,18;441:5; 466:7;469:16 overall (4) 376:6;427:1,4; 456:17 overhead (1) 403:23 oversee (1) 363:9 oversight (1) 441:15 overview (4) 383:15;421:20; 431:11;436:16 own (5) 363:24;385:24; 459:8;466:2;468:18 owned (1) 461:21 owner (3) 424:21;441:14,17 owners (1)</p>	<p>432:19 owner's (1) 432:23 ownership (4) 409:8;443:12; 445:6;466:7 P package (2) 403:12;473:18 pad (1) 386:22 page (5) 390:4;411:5;417:4, 5;428:12 pages (3) 392:18,19;393:1 paid (3) 439:12;441:12; 461:18 paired (5) 404:11,11,20,22,23 pandemic (1) 456:20 Panther (27) 351:6;378:9,17; 381:12;394:3,6; 404:1;409:17;410:1, 3,5;412:22;416:4; 419:14;423:9;433:13; 439:8,15;442:4; 446:7;453:2;455:7; 460:12;464:20; 467:14;471:3;472:19 paper (1) 470:16 parameters (2) 368:12;371:15 parcel (3) 352:16;354:2;407:6 park (1) 426:2 Parkway (1) 431:4 part (11) 360:24;444:17,23; 460:13;461:20; 463:10;464:3;469:10; 470:3;475:2;476:11 participant (1) 460:12 participants (2) 406:7,13 participate (1) 366:15 participating (1) 352:17 participation (1) 465:10 particular (9) 358:12;363:18; 375:12;406:10;409:4;</p>	<p>412:5;417:24;433:15; 462:24 particularly (1) 407:5 parties (15) 382:1;398:8; 401:15;430:6;452:20; 458:1,13,20;459:24; 471:8;472:1;473:23; 477:11;478:13,18 partitioned (1) 407:12 parts (3) 362:12;375:7; 400:22 party (6) 361:2,8,9;464:11; 468:5;474:5 Paso (8) 372:22;398:14; 411:18;413:8;455:5, 18;460:10;465:3 passes (2) 359:11;363:15 past (4) 373:4;441:5;443:6; 456:23 Paul (1) 360:17 pay (3) 381:21;470:4; 472:23 payer (2) 466:13;467:2 paying (3) 468:18;470:5; 475:14 payment (1) 466:18 payments (1) 466:23 pays (1) 381:10 peaks (1) 441:3 people (11) 354:10;356:11; 357:3;397:12;413:10; 416:9;419:19;422:10; 428:5;448:19;458:10 Peoria (5) 410:17,22;411:2; 440:15;470:16 per (26) 365:23,24;366:8, 10,13;367:18;369:3; 374:8,9;375:22; 376:15;378:10; 389:10,11;409:12; 410:13,24;442:10,21, 23;443:2,3,15;445:12, 13,14 percent (23)</p>	<p>410:17,22;411:1; 414:1,3;417:6,6,7,8; 420:8,10,12,13,13; 440:8;441:14,19,24; 448:3;455:24;460:13; 469:14,17 percentage (2) 447:23;456:4 perceptible (1) 385:9 perfect (1) 430:1 perform (2) 378:14;433:5 performed (3) 361:18;382:12; 389:2 period (5) 378:20;384:17; 415:2;418:15;475:5 periods (1) 375:14 permanent (2) 393:12;461:7 permit (1) 466:10 permitted (2) 463:9,15 personal (1) 466:2 personally (4) 380:24;425:10; 461:8;465:22 perspective (2) 440:1;465:10 Peru (2) 418:7,12 petitioner (2) 351:6;360:21 Petitioner's (1) 379:23 phenomenon (2) 363:13;380:10 physical (3) 383:20;387:5; 397:10 physically (2) 369:4;391:17 physics (1) 362:17 physiological (1) 399:10 picture (4) 357:5;363:23; 364:17;427:2 piece (1) 435:18 pieces (2) 400:24;438:2 pin (2) 354:3,5 pinch (1) 455:23</p>
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<p>place (7) 353:5;364:16; 365:18;378:2;440:6; 441:10;451:7</p> <p>placement (1) 359:16</p> <p>plan (10) 431:11;433:18,23; 436:16;449:8;451:5, 11,13,15;453:4</p> <p>planning (1) 445:24</p> <p>plans (1) 465:23</p> <p>plant (1) 371:14</p> <p>planting (1) 378:1</p> <p>please (15) 351:11;358:22; 359:22;382:17;402:3; 431:2;455:9;457:5; 458:24;460:7;468:8; 474:6,11,16;476:2</p> <p>plus (4) 383:5;385:3; 434:13;456:8</p> <p>PM (7) 351:9;375:6,10,17, 20;479:3,11</p> <p>point (15) 358:5;361:16; 381:23;391:20; 402:12;411:23,23; 430:21;432:10;439:6; 443:4,22;444:20; 445:1;447:19</p> <p>points (2) 429:19,19</p> <p>Pollution (2) 386:4;387:1</p> <p>popular (1) 426:18</p> <p>population (5) 409:7,11;410:12; 413:9;419:19</p> <p>populations (2) 409:1;416:8</p> <p>portion (3) 406:7,13;407:9</p> <p>portions (1) 435:1</p> <p>positive (2) 457:1;464:24</p> <p>possibility (4) 371:9;466:6; 467:12;473:6</p> <p>possible (11) 355:15;366:16; 369:5;396:2,8,10; 400:15;401:10;439:9, 16;440:14</p> <p>possibly (3)</p>	<p>369:4;381:8;391:17</p> <p>post-graduate (1) 383:3</p> <p>potential (6) 465:2,4,6;466:24; 467:9;473:8</p> <p>Potentially (3) 395:24;397:20; 398:1</p> <p>poultry (1) 379:13</p> <p>power (15) 361:16;363:4; 383:17,19;385:13; 391:4,7;402:12; 403:15;430:21; 432:12,15;434:15; 441:6;450:24</p> <p>powered (2) 387:19;426:21</p> <p>practice (1) 447:4</p> <p>practices (1) 454:6</p> <p>Prairie (1) 460:23</p> <p>precision (1) 426:9</p> <p>predictable (5) 364:23;365:2,10; 374:24;377:20</p> <p>predicted (1) 392:5</p> <p>prediction (1) 391:10</p> <p>predictions (2) 387:21;390:18</p> <p>predictive (1) 394:3</p> <p>preexisting (3) 437:17;442:8,9</p> <p>prefer (4) 382:14;430:22; 468:6;471:17</p> <p>premarked (1) 455:6</p> <p>prepare (2) 433:7;434:10</p> <p>prepared (7) 380:23;402:13; 431:12;432:4;433:11; 434:5;447:10</p> <p>preparing (1) 436:15</p> <p>present (6) 374:16;431:13; 440:21;456:24; 467:22;470:1</p> <p>presentation (6) 377:13;382:9,10; 402:12;423:12; 428:12</p> <p>presented (9)</p>	<p>354:23;368:23; 414:14;417:17; 420:23;422:22; 433:24;443:16;444:1</p> <p>presenting (1) 464:16</p> <p>pressure (5) 383:18,21,22,23; 388:1</p> <p>pretty (11) 384:14,16;385:14; 387:19;389:19,22; 390:1;391:11;444:14; 447:24;454:23</p> <p>previous (9) 374:23;413:16; 415:1;416:3;417:5; 446:8;461:19;469:15; 474:7</p> <p>previously (1) 382:10</p> <p>price (8) 405:5;414:16; 417:18;420:24;445:5, 9;450:11;469:2</p> <p>priced (1) 459:10</p> <p>prices (5) 404:15;433:3; 459:13;466:23; 468:23</p> <p>pricing (1) 429:23</p> <p>primarily (1) 465:16</p> <p>primary (2) 380:3;410:2</p> <p>principal (1) 402:24</p> <p>prior (6) 411:21;413:18; 415:7;418:17;420:1; 446:22</p> <p>probabilities (1) 372:24</p> <p>probability (1) 372:21</p> <p>probably (7) 356:12;358:11,13; 426:17;448:3;452:23; 458:15</p> <p>problem (3) 381:8;426:10,11</p> <p>problems (1) 470:14</p> <p>procedural (4) 352:3,4;360:12; 361:13</p> <p>procedure (1) 358:14</p> <p>proceeding (2) 354:19;376:18</p> <p>process (3)</p>	<p>433:3;436:15; 438:12</p> <p>processed (3) 438:4,5,23</p> <p>produce (2) 395:9;459:17</p> <p>producing (2) 459:7;465:1</p> <p>production (3) 424:12;459:6; 460:18</p> <p>productivity (1) 435:21</p> <p>professional (4) 362:6;421:6,12; 431:16</p> <p>profit (1) 459:15</p> <p>profitably (1) 433:10</p> <p>program (2) 367:5;387:19</p> <p>prohibits (1) 396:19</p> <p>project (40) 366:5,15;368:8; 376:23;411:12; 433:19;440:7;441:16, 18,22;443:20;445:7; 446:6,9;454:21; 455:21;459:21; 460:15,19,22;461:12, 13;462:2,4,7,9;464:3, 24;465:5,13,15,17,21, 24;466:7,12;467:5,9, 11;473:5</p> <p>projects (5) 362:11;435:7; 461:1,3,9</p> <p>project's (1) 465:22</p> <p>promises (1) 462:2</p> <p>propagation (5) 387:22;390:7,14, 19;391:8</p> <p>properly (1) 433:18</p> <p>properties (13) 404:15,17;405:17; 407:15;413:17; 417:23;418:22; 421:15;426:12,19,20; 429:12,13</p> <p>property (50) 366:1;396:20; 397:10,13,14,21,22; 401:20,22;402:10; 403:1;405:1,2,3,7,9, 10;408:16;411:11; 412:9;415:14;418:24; 421:10,18;422:15,24; 424:16,21;426:13,23;</p>	<p>427:6;428:14;429:10, 14;442:5;446:12; 451:16;456:2,13; 459:11;460:18; 461:10,17;463:8,14; 467:1,2,12;472:23,23</p> <p>proposed (2) 427:12;464:20</p> <p>proprietary (1) 434:11</p> <p>protection (1) 465:20</p> <p>provide (6) 383:20;432:19; 457:18;460:19; 463:17;466:17</p> <p>provided (6) 359:16;389:7; 447:10;449:13,14; 466:11</p> <p>provisions (2) 356:23,24</p> <p>proximate (4) 406:8;414:9; 417:13;420:19</p> <p>proximity (2) 423:1,6</p> <p>public (6) 412:12;451:12,14, 18;463:2;473:12</p> <p>pull (1) 424:14</p> <p>pulling (1) 441:9</p> <p>purchaser (1) 429:14</p> <p>pure (1) 429:11</p> <p>purpose (1) 463:9</p> <p>purposes (10) 371:6;402:9; 422:11,12;434:1; 439:10;444:1;445:24; 446:1;454:4</p> <p>pursue (1) 461:22</p> <p>push (1) 392:4</p> <p>put (11) 360:13;365:12; 366:2;367:10;370:23; 378:7;387:19;425:21; 431:8;439:18;474:22</p> <p>Putnam (3) 406:3;414:24; 416:23</p> <p>putting (3) 353:6;442:17; 456:12</p>
Q				

<p>quality (1) 428:24</p> <p>quantitative (1) 404:13</p> <p>quarries (2) 403:14;425:18</p> <p>quarry (4) 425:17,17;426:3,10</p> <p>quarter (1) 469:17</p> <p>quick (3) 383:15;444:14,16</p> <p>quicker (1) 392:18</p> <p>quickest (1) 394:13</p> <p>quickly (1) 382:21</p> <p>quiet (1) 395:18</p> <p>Quiram (1) 360:18</p> <p>quite (4) 454:24;469:1; 475:4,5</p> <p>quote (1) 445:5</p>	<p>ready (1) 360:10</p> <p>real (22) 395:16;400:7,17; 402:15,18;403:4,18; 404:5,13;408:13; 412:9;414:7,17; 415:13;417:10,19; 418:24;420:16;421:1; 424:21;472:12; 475:14</p> <p>realistic (1) 444:12</p> <p>reality (2) 369:17;370:1</p> <p>realized (1) 385:11</p> <p>really (20) 358:6;393:3;395:9, 11,21;403:24;404:3; 408:14;429:9,11; 435:19;441:20;444:2, 13;448:16,20;449:15; 454:5;456:5,8</p> <p>realm (1) 457:11</p> <p>Realtors (4) 408:15;412:9; 415:14;418:24</p> <p>reason (8) 355:7;365:1,1; 369:22;373:23; 413:15;440:6;441:2</p> <p>reasonable (2) 378:11;394:18</p> <p>reasonableness (1) 435:3</p> <p>reasonably (5) 378:14;406:8; 414:8;417:12;420:18</p> <p>reasons (1) 473:7</p> <p>recall (1) 426:8</p> <p>receive (1) 468:23</p> <p>recent (2) 415:1;445:20</p> <p>receptor (13) 364:12,16,20; 367:12,18;369:8; 371:10;374:15;375:1, 2,12;391:13,13</p> <p>receptors (8) 367:16;369:7,12, 21;376:11;379:8,18; 380:1</p> <p>recommend (1) 457:12</p> <p>recommendations (2) 465:18;466:9</p> <p>recommended (1) 466:5</p>	<p>record (4) 360:13,14;382:18; 467:24</p> <p>recorder (1) 408:17</p> <p>recorder's (2) 412:13;419:3</p> <p>recording (1) 402:8</p> <p>records (4) 412:12;415:17; 419:2;432:14</p> <p>recyclable (1) 447:23</p> <p>recycle (2) 447:8;448:17</p> <p>recycled (3) 437:7;440:13,14</p> <p>recycling (6) 439:8,16,22;444:7; 448:14,20</p> <p>red (2) 374:13;377:7</p> <p>reduce (3) 377:21;394:14; 423:5</p> <p>reducing (1) 394:12</p> <p>reduction (1) 427:22</p> <p>reemphasize (1) 368:1</p> <p>reevaluated (1) 450:5</p> <p>reevaluation (1) 450:10</p> <p>reference (2) 477:22;478:10</p> <p>references (1) 428:11</p> <p>referred (3) 404:20;423:18; 446:1</p> <p>refile (1) 357:20</p> <p>refiled (1) 359:20</p> <p>reflect (1) 379:22</p> <p>reflection (1) 380:16</p> <p>reflections (1) 388:19</p> <p>refresh (1) 451:2</p> <p>refurbish (1) 442:4</p> <p>regard (1) 352:9</p> <p>regarding (2) 429:8;466:4</p> <p>regardless (1) 435:11</p>	<p>regards (1) 352:22</p> <p>registered (3) 431:16,16;464:11</p> <p>regrade (1) 437:15</p> <p>regs (1) 388:3</p> <p>regular (1) 448:24</p> <p>regulate (2) 384:7;385:24</p> <p>regulated (1) 378:18</p> <p>regulates (3) 366:19;386:13; 387:2</p> <p>regulating (1) 378:5</p> <p>regulation (2) 378:11;396:24</p> <p>regulations (8) 365:18;384:13; 386:19,21;393:6; 394:1,5,20</p> <p>reject (1) 467:5</p> <p>relate (1) 402:11</p> <p>relates (1) 432:11</p> <p>relative (2) 389:15;421:23</p> <p>relatively (1) 459:13</p> <p>relegated (1) 426:14</p> <p>relevant (1) 457:17</p> <p>relocated (1) 353:11</p> <p>relying (2) 378:1,2</p> <p>remain (1) 451:21</p> <p>remained (1) 459:13</p> <p>remediation (1) 441:23</p> <p>remember (1) 357:18</p> <p>reminder (2) 351:8;474:6</p> <p>remodeled (1) 377:4</p> <p>removals (1) 368:20</p> <p>remove (9) 352:23;353:5,9; 355:6,13;388:11; 437:12,21;438:19</p> <p>removed (16) 356:2,6,8,15,18;</p>	<p>357:24;358:6,18; 377:1;393:14;406:14; 436:23;440:5;446:17, 18,22</p> <p>removing (5) 353:3;369:3; 376:17;377:9;451:15</p> <p>renewable (4) 363:8,10;408:19; 465:1</p> <p>regulate (1) 434:16</p> <p>renotice (1) 356:10</p> <p>renovated (5) 412:6;415:13; 416:12;418:22; 419:23</p> <p>renowned (1) 408:12</p> <p>rent (2) 404:19;459:8</p> <p>rental (2) 404:16;434:20</p> <p>rents (1) 404:15</p> <p>REOs (2) 415:12;418:22</p> <p>repeat (2) 398:20;474:7</p> <p>replace (1) 437:16</p> <p>replaced (1) 448:24</p> <p>replacing (1) 442:8</p> <p>report (3) 421:14;436:8; 444:19</p> <p>reporter (1) 362:1</p> <p>repowering (2) 454:18,19</p> <p>represent (3) 360:17;361:6; 465:11</p> <p>representative (1) 432:23</p> <p>representing (1) 465:9</p> <p>represents (2) 374:6;410:5</p> <p>request (4) 354:5;358:1,16; 428:6</p> <p>requested (1) 354:14</p> <p>required (2) 439:11;462:8</p> <p>requirement (2) 436:20;466:10</p> <p>requirements (7) 363:17;367:1;</p>
R				
<p>radius (8) 409:16,22;410:3,5, 10;412:24;416:6; 419:15</p> <p>raised (1) 379:12</p> <p>raises (1) 475:15</p> <p>range (4) 379:11,12;407:23; 443:18</p> <p>ranked (2) 363:4;432:12</p> <p>rate (26) 412:3;413:20,23; 414:1,2,3,8,11;415:9, 10;416:17,19;417:6,8, 11,14,22;418:18,20; 420:3,5,8,11,13,17,20</p> <p>rates (1) 435:22</p> <p>rather (1) 455:13</p> <p>ratio (1) 384:9</p> <p>read (5) 398:2;427:18; 464:4,7;472:7</p> <p>reading (1) 473:13</p> <p>reads (3) 365:21;367:2; 464:18</p>				

378:16;426:6;433:12; 436:18;462:8 requires (2) 376:16;433:16 requiring (1) 385:22 resale (1) 405:1 reseal (1) 469:24 resealed (1) 469:21 research (1) 409:6 residence (14) 367:19;369:8; 380:4;387:2,6; 391:13;392:6;396:12, 15;397:6;423:6,23; 424:17;428:6 residences (14) 369:12;388:12; 392:6,14;394:3; 407:3,16;413:11; 414:18;419:20;421:2; 422:3;424:3;478:2 resident (1) 460:11 residential (25) 387:5,9;397:5,7,9, 12,19,20;404:5; 405:13,17,22;407:14; 411:9;414:7,17; 418:4;420:16;421:1; 423:10;426:18,22; 428:14;429:12,13 residents (2) 460:14;461:8 re-site (1) 360:22 re-sited (1) 360:23 Resource (4) 408:16;412:10; 415:14;418:24 resources (2) 436:1;465:19 respectively (1) 376:10 respond (3) 378:13;394:17; 457:14 responsibility (1) 467:4 restored (1) 452:15 restoring (1) 435:13 restraints (1) 464:17 restrictions (2) 365:16;466:5 resubmit (1)	357:14 result (5) 365:23;375:1; 392:22;425:22; 426:10 results (19) 365:11;366:24; 368:6,21;369:1; 373:13;376:7;377:4; 379:22,24;388:8; 392:17;410:14;413:2; 431:13;434:7;435:4; 440:22;442:19 retail (1) 403:14 retained (1) 450:15 retired (1) 469:24 reuse (1) 439:22 revealed (1) 422:5 revenue (9) 460:18;466:12,20; 469:19;472:16,20,22; 475:11;477:18 review (2) 419:8;434:24 reviewed (4) 380:23;435:2; 465:22;473:18 reviewing (1) 472:6 right (40) 351:2;355:23; 356:19,20;360:15; 361:20,23;372:19; 374:9,12;375:4; 383:14;387:16;389:1; 392:3;395:2;396:9; 398:7,9;401:12; 403:7;409:23;413:7; 430:5,16;448:2,19; 450:19;453:11,17; 455:23;468:4;472:2; 473:24;474:8;475:5; 476:6,9,16;478:24 rip (1) 478:4 rises (3) 365:3,5;373:24 rising (1) 466:22 River (1) 465:17 road (19) 372:23;398:14; 402:5;424:5;451:12; 452:7,13,17;454:15, 16,22,22;459:3;460:9, 21;468:11;469:20; 470:1;474:14	roads (13) 437:3;439:17; 451:12,15,16,18,19, 20;452:15;454:14,15; 463:16;469:21 Roanoke (3) 411:16;413:6;459:3 roaring (1) 401:10 robust (1) 435:19 rock (5) 437:3;439:17; 440:4,18;444:6 role (3) 363:6,8;431:22 roll (3) 351:11;358:22; 359:22 roof (1) 369:19 roofs (1) 370:2 rotate (2) 363:15;371:3 rotating (2) 364:4,4 rotor (3) 368:18;370:12,16 roughly (5) 375:6,10,20; 383:11;408:3 round (1) 373:2 routine (1) 448:24 routinely (1) 433:8 row (1) 364:10 Royal (1) 403:5 RS (1) 436:2 rubble (1) 439:4 rule (1) 385:8 rules (2) 351:10;386:10 rumble (4) 400:8,10,14,17 run (5) 352:6,7;392:4,15; 476:3 Rural (3) 421:7,13;456:19	463:2;473:12,15 sale (38) 405:1;407:11; 411:21;412:3,4,7,7; 413:10,13,21,22,22; 414:18;415:1,9,10; 416:3,9,13,17,18; 417:19;418:19,19; 419:8,9,19,23,24; 420:3,4;421:2,16; 423:5,11;438:24; 461:15,16 sales (46) 404:11,11,14,16,21, 22,23;405:22;406:1; 411:20;412:2,6; 413:14,18,19,20; 415:3,5,7,7,8,11,12, 12;416:1,2,11,12,14, 15,15,16;418:15,16, 17,18,21,22;419:7,22; 420:1,1,2;421:18; 422:13;428:3 salvage (3) 449:8,10;453:3 same (17) 368:22;375:11; 377:11;380:8;388:13; 389:20;391:16; 393:17;405:3,8; 415:16;418:23; 421:10,11;422:9; 438:19;461:13 sample (2) 416:7;419:18 sampling (1) 422:1 saw (1) 400:1 saying (2) 397:8;429:17 scale (3) 385:2;387:18; 422:12 scattered (2) 363:3;390:10 scattering (1) 390:9 scenario (1) 439:23 scenarios (7) 439:20;440:18; 441:9;442:2,13; 449:13,17 scene (2) 469:1,4 school (4) 403:20;455:22; 456:15;459:19 schools (5) 456:19;457:2; 460:20;469:18;471:2 science (1)	402:16 scope (1) 453:10 scrap (38) 434:20;435:23; 436:9,10;438:14,24; 440:21,23,24;442:2, 20,22;443:1,2,8,12, 15,24;444:3,4,12,17, 21;445:2,5,6,8,11,13; 447:12,15,18,19; 449:14,15;450:12; 453:3,24 scrape (1) 439:18 scrapped (2) 437:7;438:9 screen (5) 367:7,8;373:15; 402:13;403:23 seasons (2) 365:7;376:4 second (13) 357:15;358:20; 389:10,11;395:5; 406:4;413:13;416:2; 419:8;428:11;469:8; 479:5,6 seconded (1) 358:22 Section (4) 365:21;386:16; 396:18;433:16 seed (2) 437:15;469:11 seeding (1) 435:13 seeing (4) 355:1;368:9;382:2; 461:4 seeking (1) 466:16 seem (1) 469:8 seemingly (1) 390:24 select (1) 433:22 semi-frozen (1) 388:23 semi-reflective (2) 388:18;392:2 sense (7) 367:8;399:14; 429:11;452:23;453:8; 458:17;459:18 sensitive (1) 465:16 separate (2) 429:7;438:7 separated (1) 438:23 separately (2)
		S		
		safeguard (1) 386:2 safety (3)		

407:13;443:10 separating (1) 438:9 September (2) 415:4;416:10 series (2) 368:17;408:24 serious (1) 467:5 serrated (1) 394:9 serve (3) 432:22;456:15; 457:2 Service (1) 408:14 services (1) 432:19 session (1) 430:17 set (2) 371:15;411:10 setbacks (1) 374:11 sets (6) 365:3,8;374:2; 412:16;415:20;419:6 setting (2) 407:7;457:21 setup (1) 476:16 seven (3) 389:9;405:3;409:22 several (3) 407:9;445:17;458:8 shadow (51) 354:9,17,20;355:2, 16;361:15;362:3,13; 363:12,14,17,20,20, 21,22,24;364:5,5,9, 13,15,18,20,22; 365:11,16,18,23; 366:3,7,20;367:4,14; 371:6,19;372:1,17,20; 373:16;374:23; 375:15;377:19; 379:10;380:6,8,11,13, 18;381:3;388:8,13 shadows (6) 365:6,9;370:3; 372:12;374:1;376:5 shall (2) 365:22;463:12 shape (1) 373:18 shaped (1) 465:10 share (2) 455:20;456:14 sharing (1) 456:24 shed (1) 424:18	sheets (1) 389:8 Sheridan (1) 402:5 sheriff (2) 415:12;416:13 sheriff's (3) 412:7;418:22; 419:24 shielded (1) 406:14 shielding (1) 388:15 shines (2) 373:1;375:6 shining (1) 364:19 shock (1) 425:21 short (1) 426:22 shot (1) 367:7 show (4) 352:8;355:4; 368:24;459:15 showed (4) 381:9;393:23; 401:2;475:1 showing (2) 368:5;369:2 shown (5) 357:7,9;389:5; 444:4;456:21 shows (1) 409:20 side (4) 364:20;424:8; 476:4;478:9 sides (2) 369:18,18 sidewalk (1) 364:1 sidewalks (1) 424:6 sight (2) 364:17;371:11 Sigma (1) 389:13 signaled (1) 413:13 signed (1) 475:10 significant (8) 391:11;406:7,12; 457:1;461:9;466:1, 18;476:12 significantly (1) 444:10 silo (1) 364:10 similar (18) 406:23;410:18;	412:21,22;414:4,8; 415:20;416:4;417:12, 23;418:23;419:15; 420:10,18;421:17; 422:21;430:3;460:24 similarly (3) 388:8;438:11,15 simple (3) 352:19;363:12; 476:8 Simply (6) 353:5;366:2; 367:10;380:16; 407:15;426:15 simultaneously (2) 389:24;392:1 single (29) 391:12;392:6,7; 404:4,19;405:16,22, 24;407:3,7,14,15; 411:8;413:11;414:6, 16,18;418:3;419:20; 420:15,24;421:2; 423:23;424:2,17; 426:18,22;429:12,12 site (18) 359:13;370:23; 371:13;372:6;435:13; 436:6,12;437:15,24; 438:4,12,23;442:7; 443:12;445:5,14; 446:19;465:6 sits (1) 370:10 sitting (2) 372:10;477:17 situated (1) 424:19 situation (8) 391:4,8;395:15,22; 405:6;447:13,14; 456:3 six (2) 351:9;383:10 size (4) 416:7;419:18; 424:9;438:2 sized (1) 438:7 skew (1) 412:8 skyrocketed (1) 459:11 slew (1) 390:3 slide (14) 407:19;408:7; 409:20;410:8,14; 412:16;413:1;419:17; 420:6;421:5,20,21; 422:9,19 slightly (8) 352:13;373:3,3;	377:17;393:17,18; 394:12;417:24 slow (1) 400:16 slowly (1) 401:4 small (3) 389:22;456:20; 460:17 smaller (3) 422:17;424:3,5 snapshot (1) 392:22 Society (2) 421:6,12 soft (1) 388:23 software (2) 367:5;373:12 soil (3) 437:17;442:9; 477:22 soils (1) 475:13 solar (1) 434:17 sold (5) 405:2,3;407:12; 461:12,18 someone (6) 366:14;369:9; 399:4;401:11;450:6; 451:11 Sometime (1) 428:18 sometimes (2) 361:13;477:24 somewhere (3) 369:9;424:20; 425:11 son (1) 474:19 sons (1) 468:19 soon (1) 469:2 sorry (3) 386:6;398:20;452:8 sort (6) 353:12;373:17; 376:3,22;380:2;444:6 sound (42) 383:17,18,19,21,23; 384:2,9,10,16,17,23; 385:12,12,13;386:5; 387:3,4,22,24;388:8; 389:4;390:7,9,10,11, 17,19,23;392:16,24; 393:11;394:12; 395:13,24;396:14,20; 397:4;398:15;399:1, 12,13,14 sounds (1)	394:14 source (7) 383:21,22;384:2; 386:9,11;408:10,13 sources (7) 385:4,21;408:5,7; 409:18;464:21; 470:20 south (6) 354:2;357:10; 365:5,6;374:1;469:7 southeast (2) 373:22;393:15 southeastern (2) 376:23;377:6 southerly (1) 365:8 southwest (1) 373:22 soybeans (1) 469:6 space (3) 387:22;425:1; 434:16 speak (6) 382:13;458:14,15; 459:4;468:15;478:19 speaking (2) 405:8;474:18 special (7) 352:24;353:1,13; 358:7,9,19;361:1 specialty (1) 447:7 specific (12) 353:2;375:14; 384:23;386:8,8,14; 389:5;390:22;395:14; 436:7,12;457:15 specifically (17) 363:10;383:9,12; 384:4,5,12;386:18; 393:1,14,23;394:8; 399:11;400:13;432:4, 10;434:14;435:9 specifications (1) 370:19 speed (4) 372:8;384:1; 400:16;401:8 spell (3) 457:4;468:12; 474:15 spelled (1) 402:8 spend (1) 461:2 spin (1) 371:1 spinning (3) 371:8;378:20;401:4 spits (1) 392:4
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<p>spoke (1) 446:17</p> <p>spot (3) 352:21;357:2; 424:23</p> <p>spots (1) 372:7</p> <p>sprawl (1) 426:20</p> <p>spreading (1) 388:15</p> <p>spreadsheet (1) 434:11</p> <p>square (2) 476:9,10</p> <p>standard (3) 367:6;387:24;442:7</p> <p>standards (1) 442:11</p> <p>standing (2) 371:20;453:1</p> <p>standpoint (2) 372:11;379:23</p> <p>start (14) 352:11;365:14; 373:10;376:4,5,17; 385:15,19,20;394:14; 403:24;423:24;436:4; 476:7</p> <p>started (4) 351:3;361:24; 433:12;459:9</p> <p>starts (1) 373:10</p> <p>State (31) 362:7,14;365:17; 382:17;386:3,13,18; 398:11;402:2,22; 410:11,18,19,22; 411:2;422:18;428:8; 14;431:1;432:7; 443:21;446:2;455:9; 456:3,11;458:24; 460:7;470:6,7; 474:11;476:13</p> <p>stated (4) 405:20;421:14; 445:19;470:16</p> <p>statement (4) 462:14;464:5,18; 477:4</p> <p>states (14) 362:7,11;363:5; 365:19;383:7,11; 385:23;402:23;408:8; 422:5;431:17;432:1; 447:9;449:10</p> <p>stating (1) 353:5</p> <p>stations (1) 403:14</p> <p>statistical (1) 409:1</p>	<p>statistically (3) 406:6,12;409:23</p> <p>status (1) 361:3</p> <p>stay (2) 368:22;471:1</p> <p>steel (4) 438:9;445:11; 447:15,20</p> <p>step (2) 467:15;477:15</p> <p>stick (1) 355:13</p> <p>still (7) 352:16;356:9; 392:10;393:22;428:3; 446:20;453:1</p> <p>stipulation (3) 359:18,19;360:21</p> <p>stock (1) 429:23</p> <p>stood (1) 381:1</p> <p>stop (2) 372:1;378:19</p> <p>straight (1) 413:23</p> <p>streams (1) 466:20</p> <p>Street (2) 403:2;424:5</p> <p>stricken (2) 457:13;467:24</p> <p>strictly (1) 379:9</p> <p>stringent (2) 436:18,20</p> <p>structure (3) 369:9;380:2,3</p> <p>structures (1) 390:17</p> <p>studied (3) 380:10;405:20; 422:11</p> <p>studies (24) 354:9;362:14; 363:9;367:7;380:13; 383:6,8,11;398:18; 401:23;403:11,12; 421:21;422:8;425:7; 427:5,9;428:16; 432:1;434:6,11; 445:18,19,24</p> <p>study (40) 354:20,22;355:4; 361:18;364:14; 366:23;367:20;368:6; 376:7;380:20;382:8, 12,21;385:18;388:10, 13;404:3,9,9;405:15, 23;406:10;407:5; 409:4,10;411:10; 428:17;431:8,11;</p>	<p>432:21;433:12,23,24; 439:10;440:4;448:1; 454:1,3,3,10</p> <p>stuff (2) 373:8;379:13</p> <p>sub (1) 386:6</p> <p>subject (7) 406:24;409:15; 410:2,10,16,21;411:1</p> <p>subjective (1) 401:13</p> <p>submit (1) 354:20</p> <p>submitted (3) 455:19;464:6;472:7</p> <p>submitting (1) 472:14</p> <p>subscribe (1) 408:10</p> <p>substantial (3) 424:10;456:15; 466:17</p> <p>substation (2) 438:20;439:1</p> <p>substations (1) 437:4</p> <p>successful (1) 468:18</p> <p>suggest (3) 422:13;423:9; 458:11</p> <p>suggests (1) 423:3</p> <p>sum (1) 475:18</p> <p>summarization (1) 416:21</p> <p>summarize (1) 419:5</p> <p>summarizes (1) 420:6</p> <p>summary (7) 376:6;408:7; 409:20;410:8;413:1; 417:4;419:17</p> <p>summer (2) 374:4;375:19</p> <p>sun (11) 363:14,19;364:19; 365:2,4,8;373:1,24; 374:5;375:6;380:16</p> <p>sunlight (1) 372:20</p> <p>sunny (6) 363:19,21;371:10; 372:18;373:3;380:7</p> <p>sunshine (1) 372:24</p> <p>Super (3) 376:19;388:18; 395:15</p> <p>superintendent (2)</p>	<p>455:5,18</p> <p>supplier (1) 370:19</p> <p>support (5) 459:20;460:15,15, 20;464:19</p> <p>supporting (1) 467:11</p> <p>suppose (1) 368:22</p> <p>sure (11) 356:21,22;357:3; 398:3;407:4;408:16; 412:19;427:20; 450:16;451:10; 475:11</p> <p>surfacing (3) 437:3;439:17;440:4</p> <p>surprises (1) 441:21</p> <p>surround (1) 405:7</p> <p>surrounding (3) 352:18;437:16; 463:14</p> <p>surveyed (5) 411:15,18;414:22; 418:7,9</p> <p>Surveyors (1) 403:6</p> <p>Susan (1) 398:13</p> <p>suspect (1) 356:11</p> <p>swear (5) 361:21;398:10; 458:21;471:13;474:8</p> <p>switch (1) 438:22</p> <p>sworn (17) 353:21;361:22; 382:15,16;402:1; 430:23,24;455:13,15; 458:20;460:5,6; 467:22;468:6,7; 471:18;474:10</p> <p>system (2) 433:17;441:6</p> <p>systems (1) 386:17</p>	<p>talk (10) 361:15;362:3; 367:19;377:18;399:4; 402:9;431:7,10; 432:22;450:3</p> <p>talked (5) 352:14;360:13; 376:18;398:15;430:3</p> <p>talking (18) 353:13;384:13; 385:1,15;404:1; 410:9;429:11;430:19; 433:15;438:6;439:7; 445:23;448:18; 456:11;477:18,18; 478:2,2</p> <p>talks (1) 457:16</p> <p>taller (4) 398:19,22;399:15, 16</p> <p>tar (1) 469:21</p> <p>target (28) 405:18;406:5,5,6, 18,20;407:22;409:14; 411:17;412:15;413:3, 6,10;414:2,9,21; 415:19;416:22;417:7, 12,24;418:5,9;419:5; 420:9,12,18;429:6</p> <p>targets (1) 417:1</p> <p>tax (20) 456:1,2,6,13; 457:16;460:18; 466:12,13,16,18; 467:2;469:19;470:5, 7;472:16,20,21,23,24; 475:14</p> <p>taxed (1) 478:7</p> <p>taxes (8) 459:11;467:1; 469:13,13;470:4,5; 472:23;477:15</p> <p>taxing (2) 465:5;471:2</p> <p>tear (1) 445:6</p> <p>tech (1) 426:9</p> <p>technical (1) 363:9</p> <p>technically (1) 387:7</p> <p>technique (2) 404:13,16</p> <p>techniques (1) 377:23</p> <p>technologies (1) 434:15</p> <p>tells (2)</p>
T				
			<p>table (1) 353:6</p> <p>tables (1) 392:23</p> <p>tabular (2) 373:14;374:16</p> <p>tabulate (1) 407:2</p> <p>takeaway (2) 369:11;371:12</p>	

375:11;470:2 temperature (1) 390:20 ten (12) 385:11;405:3; 416:11;422:3;424:20; 432:6;441:19,24; 445:18,23;459:12; 476:13 Ten/four (1) 478:11 tend (1) 412:8 tension (2) 403:15;426:21 Teresa (25) 351:14;356:16,16; 358:20;359:1,12,12, 23;423:17,18;428:21, 22;446:16,16;447:3,9, 22;448:5;449:7,7; 451:9,9,22;452:3; 479:6 term (3) 369:7;380:3;426:22 terms (7) 356:23;357:1; 361:1;362:16;368:11; 381:15;456:6 terrain (3) 372:4,9;388:14 testify (2) 354:10;458:21 testimony (11) 457:10,12,20; 463:11,21;464:13; 471:14;473:18;474:7; 476:19,21 Thanks (1) 431:6 Therefore (3) 420:14;421:9;462:5 thinking (1) 473:14 third (1) 418:2 though (7) 368:4;372:5;387:7; 389:21;391:3;422:10; 461:15 thought (2) 357:17;421:4 thoughts (1) 427:18 thousand (1) 354:1 three (16) 361:7;371:16; 377:6,7;385:6,7,8; 387:18,21;393:15; 425:9;426:24;461:19; 468:19;470:19; 474:20	threshold (1) 378:21 throughout (7) 365:16;366:10,23; 375:13;383:3;432:2; 436:3 thrown (1) 387:12 thumb (1) 385:8 Thursday (5) 356:11;399:4; 458:8;478:22;479:2 Thus (2) 414:5;416:13 tile (1) 476:3 times (4) 364:24,24;405:13; 458:10 tip (4) 370:12,12,16,16 tipping (4) 436:13;439:11; 440:1,16 Title (2) 386:6,7 today (3) 402:9;448:14,17 together (3) 384:23;431:8; 474:20 told (2) 373:12;475:1 ton (3) 445:12,13,14 tonight (8) 351:3;354:11,17, 24;355:1,16;382:20; 468:15 took (5) 370:22;389:7,11; 405:16;411:8 tool (1) 436:3 tools (1) 434:10 top (8) 363:4;370:11; 426:13;432:12; 437:16;441:13;442:8; 448:2 torn (3) 432:24;435:22; 446:2 tornado (1) 391:18 total (18) 352:7;366:8,16; 367:17;369:2,23; 370:5;372:1,15; 378:21;410:15,20,24; 413:9;416:7;418:14;	419:18;442:19 totally (1) 462:22 touch (1) 451:14 toward (2) 467:15;475:10 tower (4) 370:11;446:18; 448:8;456:5 towers (6) 403:15;429:1; 438:11,15;447:11; 470:10 town (1) 446:5 towns (1) 456:20 Township (1) 459:5 townships (2) 459:19;460:20 tract (2) 424:5,19 tracts (2) 407:8;424:3 traded (1) 436:11 trailing (3) 394:10;440:24; 444:18 transactions (2) 421:16;422:20 transfer (1) 403:13 transformers (1) 438:21 transmission (3) 363:4;432:13,16 travel (4) 390:18,24,24; 395:20 treasurer's (4) 408:19;412:14; 415:18;419:4 treated (1) 369:15 tree (4) 364:11;370:2; 371:17,23 trees (1) 390:16 trends (1) 421:14 triangle (1) 373:19 tried (1) 429:7 trigger (1) 419:8 Tri-Global (5) 447:11;462:3; 466:3,11;475:24	Troy (1) 360:18 truck (2) 438:3;439:19 trucks (5) 438:5,13,24;439:4; 469:1 true (1) 374:4 trustee (1) 465:3 try (4) 429:5,24;430:1; 474:6 trying (5) 409:3;412:18; 461:3;463:20;466:14 tubular (1) 370:11 turbine (77) 352:9,12,20;353:7, 15,24;354:8,13; 355:11;357:5;359:14; 360:19,21;363:15,23; 364:2,3,6,12;365:22; 367:11;368:12,14,17, 19;370:7,8;371:4,19; 372:7,9;373:19; 374:10,12;376:9,9; 377:12;378:5,17,18; 381:8;383:10;386:22; 387:3;389:2;391:12, 20;392:7,9,10; 395:10;397:1;398:19; 400:6,15;401:3,8; 406:16;407:21,24; 408:3;411:17,20; 416:24;418:8,11; 425:15;435:20; 437:21;442:21,23; 443:2,3,15;447:23; 467:12;475:9 turbine- (1) 401:3 turbines (60) 352:22;353:2; 355:3;356:2,5,8; 358:17;360:20;369:3; 370:21;371:8;376:10, 17,22,24;377:3,6,9; 383:9;384:4;387:16; 388:6,6,11;389:17,23; 391:5,14,24;393:9,10, 13,15;394:10,11,13; 398:22;399:12;400:2, 9;405:21;406:9; 421:7,15,18,24; 422:14,24;427:6,10, 14;437:13;439:2; 442:14,15;461:15,19; 465:7;475:18;476:9 turkeys (1) 379:11	turn (3) 353:14;361:19; 371:1 turning (1) 400:16 turns (1) 393:11 twist (1) 474:22 two (33) 355:11,13;368:13; 370:7;376:8;379:16; 383:18;384:23;385:5; 389:12,16,19;391:14; 393:9;401:23;409:22; 416:2;418:6,13,14; 420:11;421:4;423:8; 425:16;429:8;439:20; 442:5,12,16,17; 470:19;474:24;475:3 two-thirds (1) 455:24 type (4) 373:9;434:7; 435:11;469:11 types (7) 367:6;383:8; 432:18;434:6,15; 438:7;442:1 typical (2) 429:16;443:7 typically (17) 383:23;400:10; 404:9;405:19;407:17; 423:19;424:3,16; 434:5;443:9,10; 444:6,7;445:3; 447:12;448:4,15
U				
ultimate (1) 433:23 unabated (1) 390:18 unable (1) 464:17 unborn (1) 398:17 uncertainty (4) 389:14,16,21; 391:24 uncovered (1) 411:20 under (6) 374:12;386:6; 396:9;444:17;451:13; 452:16 underlying (1) 424:11 underscores (1) 427:18 understood (1)				

<p>398:3 undeveloped (1) 407:8 unit (4) 355:10,17,18; 400:21 United (3) 362:11;363:5;408:8 units (3) 389:4;390:14; 442:19 University (5) 402:17,19;403:18, 20;428:15 unknowns (2) 441:21;442:1 unless (1) 391:17 unusual (1) 415:12 up (49) 357:12;362:9; 367:17;369:4,24; 370:5;372:11,22; 373:3,9;374:9;375:5; 385:19;387:12,21; 390:23;392:13; 395:16;396:5;398:8; 402:13;414:14; 423:12;426:5;427:1; 428:5,8;434:18; 437:24;438:1,6,13,17, 23;439:18,18;441:21; 444:10;458:9,11,18, 20;461:16;469:12,14; 475:18;476:4;477:15; 478:22 update (2) 450:4;454:11 updated (3) 377:4;388:10;450:5 upon (4) 368:3;414:13; 422:19;457:21 upwind (1) 391:12 urban (2) 402:18;426:20 urge (1) 467:15 use (30) 352:24;353:1,13; 358:8,9,19;361:1; 367:4;369:7;380:11; 384:12;386:22; 387:17;391:23; 397:17;419:2;426:6, 11;434:7,10;436:2,8; 438:18;443:13;454:2, 15,16,23;457:17; 463:7 used (26) 366:10;384:19;</p>	<p>388:14;389:12; 404:13;405:13;409:2, 18;410:7;412:2,8,16; 413:19;414:20;415:8, 13,20,21;416:16; 418:18,23;420:2; 425:2;436:3;469:6; 478:8 uses (2) 384:21;463:14 using (6) 373:13;412:12,23; 416:5;419:15;437:23 usually (2) 376:3;384:3 utilities (1) 431:21 utility (1) 431:19</p>	<p>409:14;434:5 vegetation (4) 378:1,2;381:9; 390:15 vendor (1) 383:19 vendors (1) 389:5 verify (2) 380:13;394:19 version (3) 377:14,16,17 versus (3) 416:21;421:17; 429:1 Vestas (6) 355:17;368:15; 370:8;376:9;394:10; 442:15 vice (1) 466:22 vice-versa (1) 374:2 vicinity (1) 463:8 view (3) 371:21;372:14; 373:16 visualize (1) 353:16 vote (4) 359:22;434:6; 462:6,9</p>	<p>Webster (1) 424:13 weeds (1) 367:3 weeks (1) 375:16 weighting (2) 384:11,14 weights (2) 435:20,24 welfare (4) 456:17;463:3; 473:12,16 weren't (2) 475:4;477:3 west (4) 360:23;365:3,8; 374:2 what's (10) 358:6;363:16; 364:19;367:9;368:7, 23;374:24;389:13; 424:15;448:12 whatsoever (1) 390:17 whenever (1) 360:10 whereby (1) 454:21 wherein (2) 390:8,21 whirring (1) 400:19 whole (4) 367:22;390:3; 409:22;459:20 whoo (3) 400:17,17,17 whoosh (1) 400:5 who's (3) 353:15;399:4; 474:19 widely (1) 436:3 wider (1) 422:12 wife (1) 468:17 wildlife (1) 465:20 willing (1) 440:7 Wind (128) 351:7;362:8; 363:11,15;368:14; 370:22;371:2,7; 372:7,8;380:12; 383:9,10;384:4; 386:17,22;387:3; 390:8,9,11,11;391:12, 14,15,19;394:3;395:9, 13;396:24;402:11;</p>	<p>403:14;404:1,6; 405:21;406:9,14,16, 17,22;407:1,20,24,24; 408:3,4;409:17; 410:1,6;411:12,17,19; 412:19,20,23;414:9, 11,19;415:23,24; 416:5,24;417:13,15, 21;418:8,11;419:10, 12,14;420:19,20; 421:3,7,15,18,23; 422:3,7,14,23;423:1, 4,6,9;425:7,15;427:5, 6,10,14;428:6,13,16, 24;429:6;432:3,5; 433:17;434:16;435:8; 439:2;443:18,20; 445:18,20;455:21; 459:16;460:13,16; 461:1,3,9,15,22; 464:20;465:7;467:12, 14;470:10,24;471:4; 472:19;474:24;475:3, 11,16;476:5;477:8 windows (1) 369:18 WindPro (5) 367:5,5,11,21; 373:12 windy (2) 395:12,16 winning (1) 433:9 winter (1) 365:4 wish (3) 468:19;478:14,18 withdraw (1) 361:2 withdrawing (3) 358:7,10;361:4 withdrawn (2) 358:12;360:24 within (59) 363:6,8,10,10; 365:10,17,19,20,21; 366:4;367:21;369:20, 23;371:8;372:13; 373:11;374:17; 378:13;394:18; 396:20;401:11; 407:16,23,24;408:4; 409:14,16,22;410:3, 10;413:7,11;415:6; 419:20;422:3,24; 423:6;424:4;432:6; 435:7;439:1,20; 440:3;441:9;442:5; 443:11,21;446:1; 448:1;453:3,10; 455:1;457:11;460:22; 461:8,12,13;465:21; 475:3</p>
	<p style="text-align: center;">V</p> <p>V-150 (6) 355:10;368:15; 388:6;389:3;442:15, 24 Valbridge (2) 403:1;425:10 valleys (1) 441:4 valuation (1) 402:15 valuations (1) 403:10 value (31) 389:14,18;392:7; 401:22;402:10; 404:20;405:10; 409:12;410:13,20; 411:11;414:6;417:10; 420:15;421:9,23; 422:6;423:5;427:22, 22;429:10;444:7,13; 447:16;449:9,10,14, 15;453:3;456:19,21 valued (1) 456:22 values (18) 384:7;391:24; 392:5,12,20;404:6; 421:14;422:15; 426:23;427:6;428:14; 440:21;442:2;444:17, 19;446:12;450:12; 461:10 variables (1) 409:5 variance (1) 389:16 variation (1) 427:20 various (4) 388:5;394:2;</p>	<p style="text-align: center;">W</p> <p>walk (2) 367:23;434:9 walking (1) 364:1 walls (2) 369:19;370:2 wants (1) 352:8 Ward (1) 431:4 warehouse (1) 426:15 waste (1) 403:13 wave (1) 383:22 waves (2) 390:9;425:21 way (16) 365:11;369:21; 374:9;380:8;386:9; 388:3;396:23;403:7; 415:16;423:22;461:6; 464:13;465:12; 470:24;477:2,5 ways (2) 394:14;459:16</p>		

without (16) 353:11;354:18; 356:10;357:12,14; 363:19,20;392:18; 404:6;421:18;440:23; 442:2;443:2;444:4; 449:14;461:3 witness (35) 352:1;361:12,14, 22;381:23;382:2,4,6, 8,8,16;395:3;398:9; 401:17,19;402:1; 430:7,10,18,24; 452:21;453:13;455:4, 15;458:3,5,23;460:3, 6;468:7;471:20; 472:4;474:2,10; 478:16 witnesses (4) 458:7,8;474:4; 478:21 wondering (3) 398:15;452:3;477:5 Woodford (19) 351:4;365:13,20; 386:15;394:5;405:21, 24;409:21,21;411:8, 12;412:21;414:24; 417:2,2;418:3; 422:20;472:17; 474:21 Woodhull (2) 418:10,13 word (2) 377:5;400:20 worded (1) 477:2 words (2) 405:2;414:9 work (8) 362:20;363:1; 383:13;402:21; 432:21;443:8;450:7; 477:24 Worked (3) 362:10;381:12; 443:6 workers (1) 461:7 working (4) 356:9;362:8; 424:13;425:2 world (8) 362:12;363:3; 383:7,9;387:24; 389:20;407:21; 476:10 worse (7) 368:22;371:21; 379:24;388:9;389:8; 391:23;439:23 worth (1) 383:10	wraps (1) 423:12 write (1) 465:8 writing (1) 464:19 written (3) 386:10;388:3;393:6 Y yard (5) 438:14;447:12,15, 18,19 year (25) 364:24;365:24,24; 366:8,10,13;367:15, 18;369:3;374:8,9; 375:3,7,13,22;376:15; 378:10;441:5;469:12, 14,15,21,22;470:2,8 years (28) 362:9;383:4,5; 402:16;405:4;413:16; 425:8,9,12;426:17; 427:1;431:22;434:13, 14,18;448:18;450:5, 10,14;454:11;456:4, 14;459:12;461:19; 469:16;471:2;474:24; 476:13 yellow (3) 373:19;377:8;393:9 yep (1) 450:16 yesterday (1) 405:3 Yew (1) 455:11 Z ZBA (16) 356:16;357:4,12; 358:16;359:13;379:7; 395:5;423:18;425:4; 428:22;445:16; 446:16;448:10;450:1; 457:9;475:23 zero (3) 374:8;376:13;392:9 Zillow (5) 408:16,17;412:10; 415:14;419:1 zoned (1) 397:20 Zoning (9) 351:5;352:15; 386:16;433:15;434:6; 462:6;472:8,15; 476:22 zoom (3) 357:22;471:10;	474:1 0 07 (1) 417:6 1 1,000 (5) 359:14;389:9; 393:2,21;395:21 1,500 (1) 395:21 1.2 (1) 417:7 1.3 (1) 414:3 1.4 (1) 414:1 1.5 (1) 417:6 1.7 (1) 420:13 10 (1) 374:8 100 (4) 357:16;362:11; 397:2;440:8 102 (5) 415:5,6;416:9,11, 14 105 (1) 389:3 106 (1) 389:6 107 (3) 370:15;389:3,6 109 (1) 455:11 11 (2) 406:16;408:2 1107300002 (1) 354:5 1107300004 (1) 354:4 11th (1) 413:12 12 (9) 361:16;374:17; 377:14,15;415:1; 418:15;440:24;441:2; 444:18 120 (1) 370:9 125 (3) 411:20;413:10,18 12th (1) 413:12 13 (4) 382:11;392:23; 410:17;469:14 1362 (1)	459:3 14 (2) 362:9;401:21 14A (1) 401:24 14B (1) 401:24 15 (4) 383:11;405:4; 430:20;434:13 150 (1) 370:13 1500 (3) 360:22;398:14; 460:10 158 (3) 355:10;368:18; 370:16 16 (1) 455:7 16,288 (2) 413:10;416:8 16,831 (1) 419:19 161 (1) 419:20 1645 (1) 474:13 17 (1) 442:22 171 (4) 418:15,16;419:22; 420:1 18 (2) 383:4;408:3 1866 (1) 468:11 1898 (1) 363:1 19 (1) 431:21 1990s (6) 411:22;413:19; 415:8;416:15;418:17; 420:2 1993 (2) 469:20,22 1st (1) 351:7 2 2,000 (3) 389:10;393:2,21 2.1 (1) 420:8 2.2 (2) 417:8;420:9 2.5 (1) 420:13 20 (5) 374:8;383:5;396:2; 443:2;448:18	2007 (1) 362:9 2009 (2) 469:20,24 2017 (3) 415:3;416:1,10 2018 (1) 470:15 2019 (4) 413:12;418:16; 419:7,21 2020 (11) 410:15,20,24; 413:12;415:4;416:1, 11;418:16;419:7,21; 421:13 21 (11) 352:9,12;353:15, 24;354:13;357:5; 358:13;359:14; 360:19;418:21; 419:22 22 (1) 375:1 2250 (1) 459:3 24 (2) 378:13;394:18 25 (1) 426:17 2620 (1) 460:9 27 (1) 422:4 28 (3) 365:21;386:16; 433:16 2800 (1) 474:14 2900 (2) 360:23;468:11 3 3 (2) 385:5;469:17 3.1 (1) 442:20 30 (11) 365:23;366:8,9,13, 17;375:22;376:1,14; 378:10,21;448:18 300 (1) 431:24 3158 (1) 398:13 33 (1) 410:21 35 (3) 385:2,3;386:6 360 (1) 456:8 38 (1)
--	--	---	--	--

385:3 39 (1) 402:15 3rd (1) 479:2	61738 (1) 398:14 62 (9) 352:22;356:8; 358:17;360:20; 376:22;418:17,18; 420:1,2 63 (5) 352:22;356:8; 358:17;360:20; 376:22 64 (5) 352:22;356:8; 358:17;360:20; 376:22 64114 (1) 431:5 67 (5) 411:21;412:2; 413:18,20;422:3 673 (5) 367:20;369:10; 376:10;379:18; 388:12	9400 (1) 431:4 95 (1) 448:4 9613 (1) 387:23		
4				
4.3 (1) 442:15 4:14 pm (1) 351:1 4:15 (1) 351:8 40 (1) 477:21 400 (1) 477:20 44 (4) 415:7,8;416:15,16 45 (5) 352:22;356:8; 358:18;360:20; 425:12 46 (4) 352:23;356:8; 358:18;360:20				
5	7			
5 (1) 411:1 5.3 (1) 443:1 5.5 (1) 442:19 5.5-158 (1) 442:14 50 (7) 383:7;432:2,6; 434:3,3;445:18,22 58,000 (1) 422:2	7 (12) 375:17,20;407:24; 409:16;410:3,5,7,10; 412:23;416:5;419:15; 469:17 7,500 (1) 363:2 7:15 (1) 375:10 7:36 (1) 479:11 70 (2) 385:3;455:24 73 (2) 442:14,19 76 (3) 368:18;376:10; 388:6			
6	8			
6 (1) 375:6 6:09 pm (1) 430:14 6:10 (1) 430:12 6:25 (1) 430:13 6:25 pm (1) 430:15 6:30 (3) 375:10,17,20 6033 (1) 402:5 61 (6) 353:7;356:9,12,19; 360:21,23	8 (3) 351:9;375:6;420:11 85 (1) 460:13 86 (7) 353:1;358:8; 368:15;376:10;388:5; 442:15,24			
	9			
	90 (1) 448:3 901.102 (1) 396:18			