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HOUSE OF REPRESENTATIVES

CONSUMER AFFAIRS COMMITTEE
PUBLIC HEARING

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THURSDAY, AUGUST 26TH, 2021
10:00 A.M.

PUBLIC HEARING ON
SOLAR ENERGY IN PENNSYLVANIA

BEFORE :

HONORABLE JIM MARSHALL, MAJORITY CHAIRMAN
HONORABLE ROBERT MATZIE, MINORITY CHAIRMAN
HONORABLE FRANK A. FERRY
HONORABLE THOMAS MEHAFFIE
HONORABLE CHRIS QUINN
HONORABLE STEVEN MALAGARI
HONORABLE DARISHA PARKER
HONORABLE PETER SCHWEYER

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SUBMITTED WRITTEN TESTIMONY

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(See submitted written testimony and handouts online.)

P R O C E E D I N G S

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3 MAJORITY CHAIRMAN MARSHALL: Good morning. I'm
4 Representative Jim Marshall from Beaver County, and I want
5 to thank everyone here in attendance and everyone viewing.
6 We'll have some great testimony today on solar generation,
7 and looking forward to learning as much as possible about
8 solar in PA.

9 Chairman Matzie, you have opening comments?

10 MINORITY CHAIRMAN MATZIE: One mic at a time,
11 right? Good morning, everyone. I'm Representative Rob
12 Matzie of the Consumer Affairs Committee. Thank the
13 Chairman Marshall and Representative Quinn for hosting us
14 and having this informative hearing today.

15 As Jim mentioned, he's from Beaver County. I am,
16 as well, so we made that trek 300 plus miles to be here
17 with you here today and look forward to the informative
18 testimony. So thank you all for being here that will be
19 testifying and those listening and watching via the
20 internet. Thank you.

21 MAJORITY CHAIRMAN MARSHALL: Thank you, Chairman.
22 I would like to also thank you Penn State Brandywine for
23 the facility. Today it's a beautiful campus, and we're
24 grateful to have the opportunity to meet here.

25 Representative Quinn, would you like to make some

1 comments?

2 REPRESENTATIVE QUINN: (Indiscernible - away from
3 microphone) this Committee with me. I want to welcome
4 everyone here to Delaware County, which is my district. So
5 thanks for coming. I'd also like to thank Penn State
6 Delaware County for hosting us.

7 Today's topic is solar power in the marketplace
8 within Pennsylvania. I've been an advocate for increasing
9 Pennsylvania's role in the solar market since the beginning
10 of my tenure in the House. Solar energy is a growing
11 sector of our economy. And as our society continues to
12 look for clean energy alternatives, it will continue to
13 grow. In fact, in the last decade, the number of solar
14 jobs nationwide has more than doubled, and the industry
15 will only continue.

16 Many states are taking advantage of this booming
17 industry and creating a favorable marketplace to attract
18 more solar installations, the economic benefits that
19 accompany them. While Pennsylvania's solar energy market
20 is growing, it continues to lag behind our neighboring
21 states in the number of installations.

22 Since its founding, Pennsylvania has always been
23 a leading producer of energy in all of its inceptions.
24 Energy production has been a driving force behind the
25 Commonwealth's economy, and we cannot allow the

1 Commonwealth to fall behind. I look forward to more jobs
2 in the solar industry, and again, I look forward to the
3 testimony today. Thank you, Mr. Chairman.

4 MAJORITY CHAIRMAN MARSHALL: Thank you,
5 Representative. We currently have Members on the way here,
6 and they'll be Members coming and going, I'm sure, during
7 the hearing. With us we have Representative Schweyer,
8 Representative Parker, and I believe Representative Farry
9 will be joining us soon. We would like to begin with Scott
10 Elias for an overview of solar generation and the different
11 scales of solar in PA.

12 MR. ELIAS: Well, thank you, Chairman Marshall,
13 Chairman Matzie, and Members of the Committee for inviting
14 me here today. Hopefully, you will have this slide deck
15 digitally. I guess there's a technical difficulty, but
16 thank you for having me here. SEIA is the national trade
17 association for the solar energy industry. And I want to
18 start out by just level-setting some background information
19 about the solar industry, and that is that the industry has
20 experienced massive growth since 2000.

21 In the last decade alone, solar has experienced
22 an average annual growth rate of 42 percent. And in 2010
23 solar share of total U.S. electricity generation was just
24 .1 percent, but today that's over three percent, which is
25 36 more times than it was over a decade ago, and that

1 growth means jobs.

2 The solar industry is 25-billion-dollar industry
3 with over 230 American jobs. And between 2014 and the
4 start of the pandemic, solar jobs grew five times quicker
5 than the overall economy, including right here in the
6 Commonwealth.

7 What you'll see in the slide deck is that the
8 solar industry right here in Pennsylvania means business.
9 The industry invested nearly three billion dollars in
10 Pennsylvania and employs over 4,000 workers. And last year
11 the industry installed nearly 250 megawatts. And if we
12 keep up the momentum, not only will we exceed the
13 Pennsylvania solar goal of a half a percent, which we
14 already have, but we will near over a gigawatt of solar
15 installations.

16 And so let me put in perspective what we mean
17 when we talk about these installations. You know, there's
18 different types of solar. There's customer generators,
19 which is what you conventionally think of as solar on a
20 rooftop. That might be a home in Lancaster, a home in one
21 of your districts. But it also is solar on businesses.

22 You know, for instance, in Cumberland County,
23 there's a Walmart, Kohl's, and a Target that all have about
24 a 400-to-500-kilowatt customer generator on their roof. So
25 in Pennsylvania these customer generators can be up to

1 3,000 kilowatts or three megawatts, and they can be either
2 ground-mounted or on the roof. And so for context, Centre
3 County, for instance, has 1.197 megawatt customer generator
4 that's saving Centre County four to six million dollars
5 over the next 40 years.

6 Now, the next sort of scale or a middle scale is
7 community solar or mid-scale solar. Now, right now in
8 Pennsylvania there's none of that. HB1555 will change
9 that. And these are products that are larger, 30 -- they
10 could be maybe up to 5,000 kilowatts, more in the, you
11 know, 20 to 30 acres range. And these are solar that's
12 shared within a community. And so you can get credit on
13 your electric bill, even though you don't necessarily have
14 the solar on site the way that you would for customer
15 generator.

16 And then last but not least, there's utility
17 scale or grid scale solar. These are much larger projects.
18 The key distinguishing factor is that they're connected
19 directly to the transmission system. So to the PJM grid.
20 These products are -- there's not as many of them in
21 Pennsylvania currently, but there's increasing interest in
22 them. These projects range in size. They may be 20
23 megawatts. They may be 50 megawatts, 100 megawatts. They
24 usually are on, you know, more acres of land. But the key
25 distinguishing factor is that they are connected directly

1 to the transmission system.

2 And you'll see in the deck some of the sort of
3 brands that have gone solar within Pennsylvania. I
4 mentioned Target, but Penn State -- University of
5 Pittsburgh is in the process of installing a grid scale
6 solar facility in Beaver County that's going to save the
7 university a lot of money.

8 In Franklin County right now, Penn State, where
9 we're at, one of their facilities -- but Penn State has
10 three utility scale projects that is saving them millions
11 of dollars, but it's also empowering local landowners,
12 giving them a source of revenue for the next 25 to 30
13 years. And so there's more benefits, obviously, than just
14 the generation.

15 And Western Pennsylvania also has a growing solar
16 industry. You know, the Pittsburgh airport just installed
17 a solar and natural gas-powered micro grid. You know, Mill
18 19 at Hazelwood Green is the larger single sloped solar
19 structure within the United States. And so there's growing
20 interests.

21 And one of the slides that you have also shows
22 sort of the interest within the grid scale, which I said is
23 increasingly coming. Right now, the vast majority of solar
24 within Pennsylvania is residential customer generators.
25 There's over 34,000 of those right now within Pennsylvania.

1 But right now there's over 400 projects within the PJM
2 queue, totaling over 15 gigawatts of interest right here in
3 Pennsylvania.

4 And so I want to, I guess, pivot to sort of just
5 talking about while that growth is great, you know, where
6 Pennsylvania compares to the rest of its neighbors is it's
7 lagging. And in part that's because Pennsylvania over a
8 decade ago decided that its goal would be one half of one
9 percent solar generation. And so we need to increase that.

10 And to put things in perspective, New Jersey has
11 6.6 percent generation. Maryland has 4.3 percent. And in
12 the slide, it shows that Pennsylvania is really lagging in
13 PJM. Ohio has a higher percent generation of solar within
14 the state.

15 And so I guess I'll conclude by noting that, you
16 know, if my primary message is that solar means business,
17 my secondary message is that we need more solar deployment
18 of all shapes and sizes, and that will benefit
19 Pennsylvania. It will benefit Pennsylvania's economy. It
20 will allow homeowners to control their energy future.
21 It'll allow businesses to control their energy future. And
22 that's the reason why SEIA is supportive of Representative
23 Quinn's bill, HB1531, as well as the Community Solar bill.
24 I'm happy to answer any questions you may have.

25 MINORITY CHAIRMAN MATZIE: Scott, thank you for

1 testimony. Looking forward to the slides. And we had a
2 conversation beforehand where we're talking about some of
3 the projects from around the Commonwealth relative to
4 deploying solar. And I thought the interesting aspect of
5 the conversation was -- and you said it in your testimony
6 was it's not a one size fits all approach. It is all sizes
7 because I think there are a variety of folks out there that
8 are talking about a different generation, but I think
9 oftentimes when they think solar, it's either a few panels
10 on a roof, or it's a whole field.

11 So it's really everything in between as well, and
12 I think that for us to have this conversation and really
13 expand upon the APS, the discussion -- you know, obviously
14 when that was done in the Commonwealth, it was probably
15 really a pro-active approach, and it was probably one of
16 the better ones around the country, if not the best, but of
17 course, over time we have seen other states increase their
18 numbers, and we haven't.

19 Both Chairman Marshall and I have been on record
20 being for an all energy approach a variety of times
21 throughout the course of our tenure as Chairmen of this
22 Committee, but even as Members of the General Assembly. So
23 any time we have an opportunity to hear testimony from you
24 and from others to really find out where we are -- and I
25 think that's really the key. And if we from a policymaker

1 perspective can put forth the policies and have good
2 discussion around the table and come up with some
3 solutions, you know, that just benefits everybody.

4 So the project you mentioned, the Beaver Founding
5 Project that really specifically deals with the University
6 of Pittsburgh really intrigued me when I saw it on your
7 sheet, you know, this morning. The fact that University of
8 Pittsburgh is probably about 16 miles away from where
9 they're actually going to put the actual solar field --
10 explain for the general public, for the laymen, how that
11 works.

12 I think that one of the complex things for us as
13 policymakers trying to explain to folks that, yeah, the
14 University of Pittsburgh is going to do this, but well, how
15 does that happen? I mean, you know, obviously, we
16 understand the grid, and how it all goes, and how it works,
17 but from your perspective, explain especially those folks
18 that might be watching.

19 MR. ELIAS: Sure. So that type of structure is
20 usually done through either a power purchase agreement or a
21 virtual power purchase agreement where the off taker -- in
22 this case, the University of Pittsburgh -- is buying the
23 power that is being produced from the project, even though
24 it's not necessarily on site. And so they're purchasing
25 basically -- not necessarily the direct electrons, but the

1 power that's being produced on it. So it's a financial
2 mechanism, you know, similar to how, like, obviously, you
3 know, you don't necessarily -- you're not directly
4 connected to a coal plant or you're not directly connected
5 to a natural gas plant.

6 So it's a similar sort of structure, and it's a
7 financial arrangement that allows you to benefit from that
8 electricity and lock in fixed costs. And so that fixed
9 cost would be less than the energy otherwise would've been,
10 saving, of course, the university money in the process.

11 MINORITY CHAIRMAN MATZIE: Tremendous. Well,
12 again, thank you for your testimony. Look forward to
13 working with you on coming up with solutions from a policy
14 perspective. Thank you.

15 MR. ELIAS: Likewise. Thank you.

16 MAJORITY CHAIRMAN MARSHALL: Scott, in your
17 testimony, you mentioned a large solar site that you said
18 was a -- was it a single slope site? Could you give more
19 details on that?

20 MR. ELIAS: Yeah. So the project that I'm
21 referencing, which is, you know, in Pittsburgh is the
22 largest single-sloped structure. So I believe it's around
23 two megawatts. The sloping has to do with, you know, the
24 actual structure of the building, it being sort of a single
25 slope, as opposed to -- you could have panels with

1 different sort of axes [sic] and different types of
2 mounting.

3 MAJORITY CHAIRMAN MARSHALL: Thank you very much.

4 Representative Schweyer, do you have a question?

5 REPRESENTATIVE SCHWEYER: I do. And thank you
6 Chairman.

7 Thank you so much for your testimony. I actually
8 am really looking forward to seeing the slides. One of the
9 challenges, as Chairman Matzie mentioned, that we are
10 struggling with is trying to balance and making sure that
11 we're not necessarily putting one sector of the solar
12 industry in direct competition and at a competitive
13 disadvantage with another one.

14 Your stats about our neighboring states,
15 including Ohio -- which is not exactly a bastion of
16 progressive activism there -- is disconcerting to me. It
17 seems like we have an opportunity as an energy exporting
18 state that we should continue to push the ball forward and
19 export all kinds of energy that we have while, you know,
20 improving our environment and lowering costs for our
21 consumers here.

22 So what I'm asking for is just a simple -- and
23 perhaps, it isn't in your slides. Do you have a state-by-
24 state comparison, at least within the PJM marketplace, of
25 the different policies, if there's subsidies, if there are

1 things that are missing so that we can compare
2 Pennsylvania, the others, and see how we can increase our
3 footprint in this industry?

4 MR. ELIAS: Sure. So and I know some of the
5 future testimony's going to actually get into that, but you
6 know, one of the slides sort of shows -- and I guess could
7 hold it up, but you know, the solar share of in-state
8 generation and of the PJM states, Pennsylvania is behind
9 all but two. West Virginia and Kentucky are the only two
10 that Pennsylvania's ahead of.

11 In large part, that's because some of these other
12 states have more aggressive goals. You know, Maryland, for
13 instance, has a, I think, a 14.5 percent goal of solar by
14 2030. But there's a variety of different, you know,
15 factors that range into it. I think, though, increasing
16 Pennsylvania's in-state goal from a half a percent to
17 something like 2.5 percent by 2030 would create more
18 demand, and that would raise the price of SRECS that would
19 allow for more solar employment to happen within the state.

20 REPRESENTATIVE SCHWEYER: That last piece was
21 what I was looking for. I mean, it's great for us to say
22 we have a goal of, you know, X, but what are the policy
23 changes? What are the incentives? What are the subsidies?
24 What are the regulations that we need to be taking a look
25 at that would actually get us to move that number? And

1 that's kind of what I'm looking for. So I'm glad we're
2 going to be hearing more of it later. Look forward to sort
3 of that breakdown. Just kind of keeping it, you know, as
4 compact as possible so we can see how -- where we need to
5 address it.

6 MR. ELIAS: Sure. No, I'm happy to follow up
7 also with more information, too.

8 REPRESENTATIVE SCHWEYER: I appreciate that.
9 Thank you.

10 Thank you, Mr. Chairman.

11 MAJORITY CHAIRMAN MARSHALL: Thank you.

12 Scott, thank you very much for your testimony,
13 and we will have the opportunity to view your slides.
14 Apologize that they weren't ready for us today. And we
15 will move to utilities' perspective on solar generation. I
16 believe we have Tom Bonner from PECO.

17 TOM BONNER: Thank you, Mr. Chairman and Members
18 of the Committee for the opportunity to testify today on
19 the future of solar energy in Pennsylvania. I'm Tom
20 Bonner, Manager of State Government Affairs at PECO.
21 PECO's the electric distribution company serving 1.6
22 million customers in southeastern Pennsylvania. And we're
23 pleased to work with our customers and communities to
24 deliver clean and affordable energy solutions.

25 Along with our colleagues at the other excellent

1 utilities companies, earlier this month, PECO announced our
2 Path to Clean initiative to reduce our greenhouse gas
3 emissions footprint by 50 percent from 2015 levels by 2030
4 and establish a goal of net zero emissions by 2050. While
5 these goals reflect our internal operations, we're also
6 committed to assisting our customers in reducing their
7 emission footprints, as well.

8 At PECO, we believe that a clean energy future
9 requires investing in people, developing new programs, and
10 promoting policies that will make clean energy more
11 accessible, more affordable, and more equitable for our
12 customers and communities.

13 We believe a clean energy future begins with
14 people, specifically education, workforce development, and
15 building our internal capacity to work with customers who
16 are interested in installing solar on their homes and
17 businesses. We're proud to sponsor the Bright Solar Future
18 Program with the school district of Philadelphia and the
19 Philadelphia Energy Authority to teach young people about
20 solar energy and stoke their interests in the clean energy
21 jobs of the future.

22 We've also partnered with the Opportunities
23 Investment Council to support their smart energy technical
24 training program to provide workforce training for
25 individuals from diverse communities who are interested in

1 energy careers. We build up our internal capabilities by
2 establishing our Green Power Connect Organization to work
3 with customers and developers to identify solutions to
4 complete solar interconnections more quickly and at lower
5 costs. We were recently pleased to hire an outstanding OIC
6 graduate for paid internship within our Green Power Connect
7 Group.

8 The second component of our strategy is the
9 development of new program offerings to promote solar in
10 our region. PECO is currently in the process of executing
11 our innovative local solar program to obtain 4,000 solar
12 renewable energy credits or SRECS from within our service
13 territory while still meeting Pennsylvania's least cost
14 requirements.

15 Through our research and development team, we're
16 also allowing our customers to avoid installing expensive
17 inner connections by installing what are called smart
18 inverters to ensure that customers' solar installations
19 won't overload the distribution grid in areas that are
20 capacity constrained. And we're continuing to work with
21 our national research and development organizations to
22 identify other potential win-win opportunities.

23 The final piece of this puzzle is public policy.
24 Pennsylvania's APS requirements were established in 2004
25 and have reached the peak levels established at that time.

1 The APS, as you've heard earlier, requires all energy
2 suppliers to provide 0.5 percent solar renewable energy
3 credits as part of their energy supply. For EDCs, these
4 credits must be purchased through lease cost procurements
5 that ensure that our default service customers are paying
6 the lowest possible price for these environmental
7 attributes.

8 As you're aware, there's an eight percent
9 requirement for other renewable or actually, renewables in
10 whole. That half of one percent is included in that. And
11 ten percent for other alternative energy resources, what we
12 call Tier 2.

13 Over the last 15 years, APS has proven to be an
14 efficient, cost-effective tool for integrating solar and
15 other alternative energy sources into the Commonwealth's
16 energy mix. PECO believes that expanding the APS
17 requirement is the most efficient way to continue growing
18 solar in the state. Along with a complementary set of
19 policies, we can substantially increase solar share of our
20 electric mix while ensuring affordability and equity.

21 PECO has a comprehensive solar proposal that
22 includes the following elements: Increasing the state's
23 APS requirement by 900 percent to five percent by 2030,
24 authorizing community solar programs that allow customers
25 who cannot install solar on their own homes or businesses

1 to purchase virtual shares or subscriptions in large-scale,
2 highly efficient solar projects. But we need to do that
3 while ensuring that these customers are paying for the use
4 of the distribution grid, which is something that has been
5 a concern in some of the legislation we've seen.

6 Ensure recovery for long-term utility SREC
7 procurements contracts so that we have that guaranty when
8 we enter into a longer-term contract, which is better for
9 incentivizing the development of the projects. Provide
10 bonus credits for rooftop solar projects to enable them to
11 compete with large-scale solar.

12 So we've been concerned about some of the
13 proposals where the solar mandate is a set aside within the
14 APS set aside, and then there's talk about having a rooftop
15 set aside within that set aside. We think this can be done
16 more efficiently by just saying if you're installing solar
17 on a rooftop in Pennsylvania, you get two credits, and that
18 will allow for competition between the larger-scale solar
19 and the rooftop energy while still reflecting the fact we
20 know they have a higher cost on the rooftop side.

21 Permit EDC ownership of low-income focus
22 community solar projects that ensure our low-income
23 customers can share in the technology. Update the
24 compensation system for solar, which we can't do now
25 because we have to treat a solar customer exactly the same

1 as any other customer. They generally produce energy at
2 more valuable times, and if were able to compensate them
3 for the time they were producing versus a 24/7 average,
4 they would get a more favorable compensation.

5 We can do that through time of use rates, but
6 it's a little imperfect and then phase out full retail rate
7 net metering to eliminate regressive cost shifting on the
8 system and allow the establishment of distribution
9 generation-specific rates.

10 So the net metering, what happens is customers
11 get a full retail rate credit when they sell power back to
12 the grid, even though what they're selling back is energy,
13 and that ends up being a cost that's shifted on all the
14 other customers. So if you eliminate that or phase it out,
15 really, that regressive cost on our customers while
16 increasing the APS, you guarantee the markets there, and
17 you're encouraging solar in the most efficient way
18 possible.

19 We commend Representative Quinn for the
20 leadership role he's taken on these issues. And House Bill
21 1080 incorporates a number of these elements and is really
22 the best bill we have seen thus far. And we commit to
23 working with the Committee on a bipartisan basis to develop
24 a comprehensive framework that really allows Pennsylvania
25 to move forward in that most equitable and cost-effective

1 matter possible. Thank you for the opportunity to testify
2 today.

3 MAJORITY CHAIRMAN MARSHALL: Thank you, Mr.
4 Bonner. Questions from the Members?

5 MINORITY CHAIRMAN MATZIE: Yes, Representative.
6 Yes.

7 REPRESENTATIVE PARKER: Okay. There you go.
8 That's better. Hi, good morning. My name is
9 Representative Parker from Philadelphia. You did mention
10 OIC.

11 TOM BONNER: Yes.

12 REPRESENTATIVE PARKER: And that sounds good, but
13 I just want to know what type of other incentives that you
14 have. When I'm looking in this room and then when I go
15 back to my district, this is like a conversation that I
16 know we need to always have, and the doors need to remain
17 open. What type of partnerships do you have as it relates
18 to more individuals of color to be in the energy space?
19 That's my first question.

20 And my second question: When you're talking
21 about energy, what type of programs or incentives are you
22 doing for the older adult community that's definitely going
23 to be affected by any type of this new innovative that
24 you're talking about? I just want to make sure that these
25 populations are covered, because a lot of the times, and

1 especially during these times, it's lost. Thank you.

2 TOM BONNER: Yeah. You know, the OIC partnership
3 is one that is, you know, it's located in North
4 Philadelphia, disadvantaged community. We've been very
5 pleased. I think we've graduated three classes -- don't
6 hold me to that. I'm not 100 percent sure. Maybe four by
7 now -- through the OIC program. And we've also stood up
8 this year, a full workforce development group within our
9 community relations group to continue looking for
10 opportunities to expand our workforce development and
11 engagement in diverse communities.

12 So we have what we've done already. We're also
13 working, as I mentioned, in the schools. We funded through
14 the Philadelphia Energy Authority an evaluation of three
15 city of Philadelphia school district high schools to look
16 at the feasibility of installing solar at those high
17 schools. So we're working -- do a lot of work with
18 community partners and have stood up more resources within
19 PECO to continue expanding those efforts.

20 REPRESENTATIVE PARKER: Thank you. And I want to
21 make sure we circle back to that. Thank you so much.

22 TOM BONNER: You're welcome.

23 MAJORITY CHAIRMAN MARSHALL: Thank you,
24 Representative Parker.

25 Representative Quinn?

1 REPRESENTATIVE QUINN: Thank you for being here.

2 TOM BONNER: Oh, you're welcome, sir.

3 REPRESENTATIVE QUINN: You mentioned the term
4 "regressive net metering." How will the growth of solar
5 impact ratepayers in this region and across Pennsylvania?

6 TOM BONNER: Well, and solar is still an above
7 market energy resource. You know, if it weren't, we
8 wouldn't need any of these programs. It would just be, you
9 know, of selling on its own. Through net metering, what
10 happens is you have a growing number of customers adopting
11 solar who are able to avoid part of their costs of
12 distribution service. And as more customers adopt solar,
13 your group of customers who can pay that little bit extra
14 continues to shrink, so you're moving more costs on there.

15 What we know from looking at where we have solar
16 customers in the five counties we serve is that
17 Philadelphia customers end up spending significantly more
18 for their distribution services than they would if there
19 were no net metering at all. Delaware County is a very
20 modest, you know, kind of loser, for lack of a better term.
21 You know, the cost shift moves in the other direction, the
22 beneficiaries are basically Chester and Bucks County. It's
23 just most of the marketing, most of the homes that are
24 solar-compatible tend to be in, you know, more well-off
25 communities. You have more single-family homeowners. You

1 have more people with larger groups that can accommodate
2 solar.

3 So when you put a cost on the system, it's just
4 the way it works out that people of lower incomes, renters,
5 end up bearing those costs, and people who are better off
6 tend to be the beneficiaries. I think that's kind of the
7 opposite of what we generally try to do in public policy.

8 So by moving away from that net metering system
9 and just subsidizing the growth of solar through the APS,
10 everybody ends up paying based on how much electricity
11 they're consuming, which more well-off people tend to, you
12 know, consume more electricity than less well-off people.
13 So you get to a more, you know, kind of progressive
14 allocation of the costs of encouraging solar.

15 REPRESENTATIVE QUINN: So it is your belief then
16 that as solar does proliferate that we will have to
17 eventually eliminate net metering in order to able to
18 continue to pay for the system?

19 TOM BONNER: Yeah. Yeah. There's sometimes
20 people talk about a death spiral. You know that's been
21 predicted for a long time. You know, we don't see that,
22 you know, type of thing happening, but it's just little by
23 little those who don't have solar or can't get solar will
24 pay a little bit more, you know, with each passing year
25 that you don't address net metering.

1 And when it was originally done, a lot of times
2 utilities were supportive of it because it was relatively
3 simple. It didn't make sense to build the IT systems to
4 develop two separate rates for, you know, distributed
5 generated customers. Now, when you're talking about tens
6 of thousands of customers -- and we know that number is
7 just going to continue to grow -- it really does make sense
8 to start that transition. It's something that can be done
9 gradually. We're still -- as we talked about earlier --
10 relatively low level of penetration, but the larger it
11 gets, the more difficult the problem is to solve.

12 REPRESENTATIVE QUINN: Thank you.

13 MAJORITY CHAIRMAN MARSHALL: Thank you,
14 Representative.

15 Any further questions?

16 Thank you very much, Mr. Bonner. We may reach
17 out to you after the hearing with additional questions and
18 questions from Members that were viewing online. Thanks,
19 again.

20 TOM BONNER: My pleasure. Thank you very much
21 for the opportunity to be here today.

22 MAJORITY CHAIRMAN MARSHALL: Next, we will hear
23 from Kathleen Robertson from Sol System and Katie Rever
24 from IGS Energy.

25 MS. ROBERTSON: Morning. My name is Kathleen

1 Robertson, and I offer comments today on behalf of Sol
2 Systems and our over 2,500 customers here in Pennsylvania.
3 Chairman Marshall and Matzie, Committee Members, and fellow
4 panelists, thank you for your time today on this important
5 issue.

6 Sol Systems is a national solar energy firm with
7 development, infrastructure, and environmental commodity
8 businesses. To date Sol has developed and financed over
9 one gigawatt of solar projects valued at more than one
10 billion dollars for Fortune 100 companies, municipalities,
11 counties, universities, and schools. We provide services
12 to nearly 17,000 customers across the U.S. as well as in 57
13 counties across Pennsylvania.

14 We are based in Washington D.C., but have been an
15 early and active participant in Pennsylvania's renewable
16 energy beginnings by providing homeowners and small
17 businesses with the ability to monetize solar renewable
18 energy credits or SRECS. We also have employees located in
19 suburban Philadelphia and the greater Harrisburg area.

20 My comments today aim to focus this Committee on
21 the significant investment and economic growth potential
22 Pennsylvania risks losing to states with more favorable
23 regulatory frameworks. All forms of solar, like all forms
24 of clean electricity, bring diverse benefits to the grid
25 and are worth supporting now, as Pennsylvania looks to its

1 third century of energy leadership.

2 As Scott noted, renewable energy is in a period
3 of remarkable growth. Bloomberg New Energy Finance
4 estimates that the -- just the 285 corporations that belong
5 to the RE 100 could drive as much as 93 gigawatts of
6 incremental wind and solar projects by 2030. In fact,
7 corporate demand for solar alone is estimated to exceed 50
8 gigawatts by the end of the decade.

9 Even in 2020, which, you know, little bit of a
10 hard year, companies announce nearly 12 gigawatts of new
11 projects, representing 43 percent of all new electricity
12 capacity additions in 2020. Still, we estimate that to
13 reach the national clean energy commitments. The solar and
14 renewable energy industries will have to at least quadruple
15 in size. Considering that the U.S. solar market is
16 currently valued at over 20 billion dollars, this is a
17 significant opportunity.

18 Capturing this once in a generation opportunity
19 relies on stable, favorable business climate like
20 Pennsylvania has historically provided. In 2004, over the
21 passage of the legacy renewable standard, Pennsylvania
22 became a national clean energy leader in addition to its
23 long-running role as a fossil and nuclear leader. This
24 early framework provided a critical degree of regulatory
25 certainty that drove 15 years of growth. That is now in

1 jeopardy.

2 The most efficient standards thrive because they
3 establish a known and long-term requirement, use market-
4 based mechanisms to facilitate private investment and
5 renewable electricity, and provide regulatory certainty to
6 homeowners, businesses, and investors financing long-term
7 energy infrastructure and development. This gets out to,
8 Chairman Matzie, your question about the pit field, as this
9 is the type of project that is supported by RECS and SRECS
10 in a way that you don't have to actually plug the solar
11 field into the student union.

12 Pennsylvania's current framework uses a market
13 base design that is highly compatible with the restructured
14 and competitive retail energy markets of which Pennsylvania
15 was also an early leader. Portfolio standards have since
16 demonstrated a remarkable nationwide track record of
17 driving renewable electricity costs effectively. Given the
18 market-based nature of the program, when the standard is
19 too low or stops growing, the price signal declines, which
20 is what we are facing now in the solar market in
21 Pennsylvania, as the legacy standard flatlines with no
22 planned replacement.

23 This sent a clear signal that Pennsylvania's no
24 longer open for business in the fastest growing energy
25 sector. This is a mistake for Pennsylvanians across the

1 Commonwealth. Pennsylvania has long been a national and
2 global energy leader, but risks falling behind if we do not
3 offer a supportive framework for the clean energy resources
4 demanded by customers, businesses, and investors while
5 growing opportunities for family-sustaining jobs throughout
6 the Commonwealth.

7 These jobs at the end are a critical component of
8 the workforce development programs that my colleague, Tom,
9 highlighted. A successful component of a workforce
10 development program is obviously jobs at the ends of it.
11 We don't want to train up all these people really well and
12 then lose them to New York and Virginia. So we think
13 that's an important part of the pipeline.

14 Corporates and importer states are increasingly
15 demanding clean electricity. In order to main [sic] its
16 status as the region's major electricity exporter,
17 Pennsylvania must increase clean electricity, particularly
18 in the context of the expected electrification over this
19 decade. Without a supportive regulatory framework,
20 Pennsylvania will lose its leadership role to other states
21 that share Pennsylvania's geographic advantages within the
22 PJM inner connection.

23 Supporting needing levels of electrification
24 while maintaining or preferably growing Pennsylvania's
25 energy exporter status requires a stable, supportive, and

1 clear policy framework that supports all forms of clean
2 energy, including the full spectrum of solar from utility
3 scale to distributed generation. Each has a key role to
4 play in a clean, electrified economy, one which
5 Pennsylvania has the choice to lead.

6 However, if Pennsylvania lawmakers take no
7 action, the Commonwealth stands to lose billions over the
8 next decade. In addition, Pennsylvania must protect the
9 ability of homeowners and businesses to benefit from
10 installing solar and other clean energy, the details of
11 which my colleague, Katie, will delve more deeply into.

12 This means ensuring that any policy adopted has a
13 clear path for distributed generation as well as all forms
14 of solar -- like all forms of clean electricity, bring
15 diverse benefits to the grid, which, again, Tom
16 highlighted, and are worth supporting now as Pennsylvania
17 looks to its third century of energy leadership.

18 Thank you again for the opportunity to testify
19 here today in favor of ensuring a stable, favorable
20 business climate that maximizes investment in and regional
21 benefit of Pennsylvania's clean energy leadership.
22 Hopefully, you'll agree this is a use of a very sunny, very
23 steamy day. Thank you.

24 MAJORITY CHAIRMAN MARSHALL: Please go ahead.
25 Thank you.

1 MS. REVER: Chairman Marshall, Democratic chair,
2 Matzie, Members of the Committee, thank you so much for
3 having us here today. I really appreciate the conversation
4 and continuing the conversation about solar policy in
5 Pennsylvania. My name is Katie Rever. I'm director of
6 Legislative and Regulatory Affairs with IGS Energy. I'm
7 here today to talk about customer-sited solar policies in
8 Pennsylvania and the PJM market. A little bit about IGS
9 first.

10 We were founded in 1989 by Scott and Marv White
11 when Ohio restructured the natural gas service with -- and
12 we focused in the founding years on delivering natural gas
13 to commercial and industrial customers. Today, we have
14 over one and a half million residential and commercial
15 customers in both gas and electricity in about 20 states.
16 We service about -- or 150 million or 150,000 here in
17 Pennsylvania. We have three sales offices and employ over
18 40 people in the Commonwealth.

19 In 2014, the White family -- we're a family-owned
20 company. The White family realized that customer-sited
21 energy resources were really a key part of the energy
22 future and started innovating business lines and solutions
23 to meet these trends and these needs of the future. We see
24 an energy future where technology located behind the
25 customer's meter -- such as solar, electric vehicles,

1 batteries, smart appliances -- are used in conjunction with
2 each other to be able to provide flexible load -- to be
3 able to provide flexible load and also to provide
4 supplemental power to the grid during times of stress.

5 I'm here today to talk about customer-sited
6 solar. This is a key pillar in this distributed future,
7 and also, to testify in support of HB1531, which is in
8 front of this Committee now. This bill is designed to
9 foster this customer-sited industry.

10 So today I'll talk about briefly an overview of
11 net metering and how it works, a comparison of the
12 distributed generation policies in PA versus the rest of
13 the neighboring PJM states. And also, I'd like to paint a
14 picture of the types of economy and jobs that Pennsylvania
15 has already -- is already growing with its customer-sited
16 solar industry.

17 So first, an overview of how net metering works.
18 So I've brought slides. This is just a pictorial image of
19 a house that has an electric vehicle, a solar system. It's
20 tied to the distribution system. So the first step in net
21 metering, obviously, is you -- sorry, going the wrong way.
22 You're installing a solar panel on your roof. This is a
23 picture of a home. It could be a commercial building, as
24 well -- a school, a library, a business. Solar panels
25 convert energy from the sun into DC or direct current. You

1 have an inverter that converts the DC electricity into AC
2 electricity. This is the type of electricity that flows
3 through the power lines on the distribution system, and
4 it's also the type of electricity that most of your
5 appliances in your home use.

6 This electricity is then used on site or self-
7 consumed to power your needs in your homes and business
8 first. And then whatever you're not able to use at that
9 time is sent out. That excess generation is set out onto
10 the distribution system. Now, customer-sited solar,
11 because by definition it's located close to load, it's also
12 generally located close to other sources of load. So those
13 electrons physics dictate that the electrons then flow to
14 the nearest source of the next load. So they don't flow
15 back onto the transmission system, like back, but they'll
16 flow to the next source of load.

17 So what this is enabling, what this is creating
18 is two-way power flow instead of the traditional one-way
19 power flow from centralized generation systems across
20 transmission lines down distribution lines to load, but --
21 and then so the next piece is your smart meter measures how
22 much grid electricity you've consumed and how much excess
23 generation you've sent back to the grid. And then your
24 excess generation is credited to you on your next bill.

25 So that's just very simple overview. What

1 happens within this red box here, the steps that are
2 happening within the red box are the behind the meter.
3 It's what's happening behind the meter. So today with
4 solar, solar looks like energy efficiency or peak demand
5 reduction because solar happens in coincident with the peak
6 demand period of the summer months in the afternoon.

7 In the future, as DER devices grow and
8 proliferate, and we're able to combine these DER devices,
9 and are given appropriate price signals from the market,
10 this is where customers can start to manage their load to
11 further benefit the grid. Steps in the blue box that --
12 these are what I call in front of the meter steps -- they
13 dictate the terms of a financial relationship between the
14 customer and the utility.

15 So this is where the net metering rules in a
16 state determine how often -- this is the accounting
17 mechanism. This is where it depends -- how often are those
18 excess credits trued up? Or the way that I call -- it's
19 called the netting period. What's the netting period? So
20 these rules determine what's the netting period and the
21 compensation for the excess generation that's sent back to
22 the grid. So very kind of high-level overview of how that
23 works.

24 So next, I'll turn to a discussion of the types
25 of customer-sited solar policies across the PJM states.

1 There are two major types of policies that support
2 customer-sited solar or that enable this type of energy,
3 net metering and an incentive program.

4 So this graph up here shows the amount of
5 customer-sited solar per capita. So it gives you a sense
6 of for every person living in the state how much solar --
7 customer-sited solar -- is deployed in that state. I've
8 taken out utility scale solar. So I think Ohio -- Scott
9 was talking about Ohio having more solar than Pennsylvania.
10 If you add in utility scale solar, you would get that same
11 result. This is only customer-sited solar.

12 So Pennsylvania for net metering has annual
13 netting for its -- for the net metering policy. So you can
14 kind of think about this like roller a minute. As the
15 gentleman from PECO mentioned, it's a very customer-
16 friendly easy way to explain what happens to your excess
17 generation. They're essentially rolled over to the next
18 month, and then at the end of a given period of time
19 within -- at a point in the year, they're "cashed out",
20 quote-unquote, at a certain price.

21 So every state in -- every neighboring state
22 within PJM has annual netting, except for Ohio. Ohio's the
23 only state in the neighboring PJM area that does not have
24 annual netting. So again, it's a critical policy, and it's
25 not an uncommon policy. And we are at less than a half of

1 percent of customer generator penetration here in
2 Pennsylvania, so it's a very, very, very small part of the
3 retail sales in this state.

4 So again, every state except for -- so the next
5 policy to talk about are incentives, and every state except
6 for West Virginia has an additional incentive on top of --
7 in addition to the net metering. Ohio, I've put in there
8 in the kind of dotted lines, as well. They recently
9 reduced their SREC -- they've recently reduced their SREC
10 incentives, so it's pretty low.

11 All of these incentives are very different. The
12 programs are structured very, very differently. And we
13 could spend an hour together talking about them. But just,
14 suffice it to say for right now that if you want a
15 meaningful customer-sited industry, you need robust net
16 metering rules and some additional type of incentive.

17 And I think, you know, another thing with net
18 metering is we think about this future of distributed
19 resources. Solar is at the tip of the spear of distributed
20 resources. And as we think about net metering and what is
21 the right compensation methodologies and mechanisms for
22 distributed resources, we need to think being not just
23 solar, but all of these technologies combined as we move
24 forward to the future.

25 This is really the work of the next decade. How

1 do we figure out? What are the right regulatory policies
2 and frameworks to realize the benefits of customer-sited
3 solar and customer-sited resources in ways that benefit the
4 entire distribution system?

5 So I'll next turn to the industry in the state.
6 And this graph shows the deployment of solar in
7 Pennsylvania over the last decade. The blue bars are
8 customer-sited solar. Again, the history in the vast
9 majority of the industry in Pennsylvania has grown up
10 around the customer-sited or customer generators.

11 And indeed, when you look at this from a jobs
12 perspective, it's even more pronounced. Because of the
13 decentralized nature of these systems, the type of
14 industry -- it impacts the type of industry that grows up
15 around to serve it, and it's much -- these jobs are
16 inherently local. They're very similar to the
17 construction, like, the home industry construction. And
18 indeed, a lot of companies that have grown up to serve this
19 industry have come from HVAC, or stone masonry, or roofing.
20 That's a natural evolution.

21 So who is the customer-sited industry in
22 Pennsylvania? And I've got a couple slides and little
23 stories to share. So it's the family-operated solar
24 business in Bucks County which took root in 2009 and now
25 employees 17 people and delivers solar solutions across the

1 tri-state area. It's the stone masonry business in
2 Lancaster County that expanded into solar in 2009,
3 employees over 60 people in Pennsylvania, and operates in
4 eight states.

5 It's the recently married guy who moved back to
6 his hometown in Beaver County last year and started a
7 company helping small farms manage their energy costs
8 through installing solar. It's the guy in Mechanicsburg,
9 Pennsylvania that started a solar company in 2010 after a
10 long career in accounting and now employees 11 people and
11 provides millions of dollars of subcontracting each year.

12 It's the guy who started a solar company in 2009
13 out of his garage, just last year moved into a warehouse
14 and bought a forklift, and now employees 10 people in the
15 Pittsburgh area. These are the folks that make up -- this
16 is the backbone of the solar industry of the customer-sited
17 industry. And this is who HB1531 is designed to foster.

18 Thank you.

19 MAJORITY CHAIRMAN MARSHALL: Thank you very much.

20 Questions from Members?

21 Thank you very much. I'm sure we will get some
22 to you in the future, and appreciate your testimony.

23 MS. REVER: Thank you.

24 MAJORITY CHAIRMAN MARSHALL: Our next group with
25 discussion on larger scale, solar development, is Joel

1 Harrington from Enel North America and Brad Alderfer from
2 Community Energy.

3 Gentleman, please begin at your convenience.

4 MR. HARRINGTON: Good afternoon, Mr. Chairman,
5 Chairman Marshall, Chairman Matzie, distinguished Members
6 of the Committee. My name is Joel Harrington. I'm the
7 head of our eastern US region for Enel North America. Enel
8 North America or Enel is one of the largest private
9 renewable developers in the world. We are also one of the
10 largest energy companies in the world. Otherwise, called
11 the super major, as defined by -- or regarded by the Wall
12 Street Journal.

13 We're in 18 US states. We developed wind solar
14 geothermal and battery energy storage. We have invested
15 about 11 billion dollars since 2,000, and up to 80 billion
16 dollars we intend to invest in North America in the next
17 several years. We're very proud to be working in the
18 Commonwealth. We have four utility scale solar projects
19 currently under development. All of our projects are at
20 the transmission level. We don't do customer-sited
21 generation. We participate in capacity markets. And also,
22 we are a direct supplier to many of the world's largest
23 companies.

24 We have been in Pennsylvania for more than a
25 decade. We have employees that live and work here. You

1 may be familiar with our business line, NLX, which is a
2 demand response program. We have about 484 megawatts that
3 demand response currently in that program, and we send
4 about 19 million dollars in checks to the largest
5 industrial consumers and businesses in the Commonwealth.

6 I'm also here today for my comments on behalf of
7 the Mid-Atlantic Renewable Energy Coalition. Enel is a
8 Member, and I sit on the board. Merrick is a industry
9 trade association representing developers that work in the
10 Commonwealth.

11 Today, I want to speak on -- briefly on two
12 topics. One is how do we participate in the passing market
13 in PJM and just briefly touch upon how do we go about
14 developing projects. As some of you know, PJM's 13 state
15 regional transmission organization that Pennsylvania is
16 part of -- and I won't go into background on that. I'm
17 sure you've been well-briefed on that. But they operate
18 what's called the capacity market, which is primarily how
19 we participate with our large utility scale solar projects.

20 Every quarter -- actually, it was last spring,
21 the -- PJM goes out for what's called a quarterly auction,
22 and they plan three years ahead. And basically, what
23 they're doing is looking for adequate resources on the grid
24 to ensure demand can be met during peak times into the
25 future.

1 And this is really looking at the emergency
2 situations during those peak times. Do we have enough
3 supply in the market to be able to operate during extreme
4 weather events or other emergencies? And that's what this
5 planning process does. And it's a pay performance
6 mechanism. You get paid for you performing at that time
7 when you're called upon. And they're called capacity
8 payments. And we receive those capacity payments if we get
9 selected into the auction, and in various amounts depending
10 on the nature of that auction. And I won't get into too
11 much detail on that. But the idea here is grid security,
12 grid reliability, and a matched supply with future demand.
13 So that's the primary mechanism that we operate on. About
14 10 percent of PJM's supply comes from utility scale solar
15 and the rest, 89 percent, is other sources.

16 How we go about developing projects -- I'll just
17 refence we have four projects currently underway. I'll
18 give you one example. In York County, which I apologize
19 none of you here represent York County, but it's a fine
20 area, and there are fine people out there. But we have a
21 60-megawatt project in Dover, and which we pair with which
22 we called hybrid resource. We always pair our products
23 with a battery energy storage. And that's a 20-megawatt
24 battery energy storage project.

25 And the purpose of that is to smooth the energy

1 supply during intermittent periods throughout the day or
2 during peak periods of time. And then we discharge that
3 battery onto the grid and get paid for that supply going
4 out into the grid during those peak periods. That project
5 alone has about 339 jobs, 21.6 million dollars in labor
6 income, and 55.1 million dollars in local economic output.

7 In the course of the 20 years of that project,
8 we'll be doubling the school budget in that town. And all
9 of these projects, when we start developing a project, the
10 first criteria we really need to look at is the inner
11 connection. Is this site the appropriate site where we can
12 interconnect to the grid so we don't have a long lead
13 generation line which increases costs for the project? So
14 siting is really key. And there's a lot of engineering
15 work that goes behind that.

16 The second is a willing landowner who wants to
17 participate and get lease payments over the life of that
18 project. And I would say the third thing is what we call
19 shared value community support. And that comes in various
20 degrees and approaches, but our goal is to support the
21 infrastructure, the needs of that community, work with the
22 fire departments, work with the county officials to make
23 sure that as a good corporate neighbor that's going to be
24 in that area that we are creating that shared value.

25 We create education programs to support the

1 community colleges. We do just transition programs where
2 folks that maybe in other industries that want to get
3 training in clean energy areas, we will develop those
4 programs to local community colleges. And I can certainly
5 go into more detail on that.

6 On the agricultural side, we're now doing what's
7 called agrival techs (ph), where we actually have active
8 either grazing, pollinator-friendly seed mixes, or we use
9 actual crops that we now grow underneath the modules. And
10 this, we pioneered this working with the US Department of
11 Energy, NREL. And we're continuing to evolve in that, and
12 there's information attached to my testimony on that. And
13 after all that, we go through the permitting approvals with
14 county boards, state environmental agencies, and then we
15 begin construction. So I'm going to stop there. Again,
16 thank you for your time. I'll turn it over to my friend
17 here. And Brent, turn it over to you. Thank you.

18 MR. ALDERFER: Thank you, Joel.

19 Good morning, Committee Chair and the Members.
20 My name is Brent Alderfer. I'm founder and director of
21 Community Energy. We're a Pennsylvania-based solar and
22 wind developer, and we've developed about 3,000 megawatts
23 in 19 states, including several hundred megawatts here in
24 Pennsylvania.

25 I'm here today on behalf of a coalition of

1 utility scale, grid scale developers, to give you a picture
2 of what it might mean for Pennsylvania to bring that
3 investment in this sector into the state. So I'm going to
4 do three things quickly. First, touch on the economics of
5 solar generally at this scale, which is different than the
6 customer side that we've heard about. And then second,
7 look at what it could mean for Pennsylvania ratepayers and
8 taxpayers. And then third, give you a quick outline of a
9 policy proposal that lets us move this forward in
10 Pennsylvania.

11 So first, this is a study done annually by
12 Lazard, the investment banking firm, on the relative costs,
13 apples-to-apples comparison of new generation of all types.
14 And what you see is in the last 10 years utility scale
15 solar has come down about almost 90 percent to the point
16 that today, unlike some of the references earlier to more
17 expensive solar, solar at scale is actually the least
18 costs, most competitive form of energy you can build to
19 serve the grid.

20 So utility scale solar each project might serve
21 30, 40,000 homes, and it feeds power, as was mentioned,
22 directly into the transmission grid, which means it serves
23 all of us. Serves the wholesale market, just like natural
24 gas, coal, nuclear, and other sources do. And then
25 finally, on a quick policy option.

1 So first, what these economics -- the slide in
2 economics that Lazard has shown year by year could mean for
3 Pennsylvania. So Pennsylvania has a good set of
4 characteristics to benefit from investment that companies
5 like Joel's and others are staged to make.

6 One, we sit right in the middle of the PJM
7 market. Two, we've built out a lot of transmission in PJM
8 but particularly in the Keystone Center of PJM in
9 Pennsylvania. And lastly, two things: We have a good
10 amount of affordable land that can benefit from the
11 revenues that come from the investment, and lastly, we have
12 a well-qualified labor pool to build this out.

13 So first, we ran a study with PowerGEM. That's
14 the firm that runs the daily dispatch model for the PJM.
15 That's the 13-state, 65-million customer, wholesale market
16 generally thought to be the most transparent and effective
17 wholesale energy market in the world. PowerGEM runs that
18 daily dispatch model to let everyone know what resources
19 will be needed to meet the load that day. Is nuclear
20 coming on? Is coal coming on? They come on every day.
21 How much additional units are required?

22 They ran a study to show what would happen if we
23 built out in Pennsylvania enough solar to serve 10 percent
24 of Pennsylvania load. And what we found is -- and not a
25 surprise, is that when it gets to scale the impact of that

1 additional solar resource on the PJM wholesale market
2 lowers the cost of energy for all Pennsylvania consumers by
3 over \$600 million a year.

4 I know that sounds like it may be too good to be
5 true. We ran it by PJM, it's well documented around the
6 country, and it happens when you're at scale. It doesn't
7 happen with the first megawatt or the first 100 megawatts.
8 But when you get to 3- and 4,000 megawatts, which we can
9 easily support, you get this kind of savings in the
10 wholesale market.

11 And very quickly in the lower right as to why
12 that happens, as demand goes up on a day like today and
13 yesterday, when it's 90 degrees plus, additional units are
14 brought on to meet that demand each hour, and the cost of
15 those units goes up as you bring on more units. And on a
16 day like today you may actually have, and yesterday, not
17 enough units. So PECO may actually pull back. And you
18 heard of programs to pull back on the amount of demand;
19 that's very expensive, not only in terms of the cost to the
20 utility grid and to ratepayers, but it's expensive in terms
21 of the economy.

22 So at the very top of that dispatch chart is
23 where solar produces the most energy; that is on hot summer
24 days. So the benefit you get is you get peak shaving,
25 sometimes called, but you get a reduction in wholesale

1 prices at the time when you need it most, and that's what
2 leads to that savings.

3 So how do we get to that in Pennsylvania? First,
4 quickly, I want to talk about the rumors or statements that
5 developing solar at the scale necessary to get these
6 benefits takes farmland or is not a good use of farmland.
7 The fact is building out what we're talking about is about
8 0.5 percent of farmland in Pennsylvania of the seven
9 million acres of farmland in Pennsylvania. And most
10 importantly, it preserves farmland.

11 And I just wanted to give you this quick picture.
12 This is a Lancaster County solar project we built on
13 Lancaster Pike. That was a dairy farm, and then a poultry
14 farm, and frankly, it was slated for development in the
15 next five years. With that lease, the farm receives four
16 to five times per acre on that solar 30 acres there than it
17 would with crops and it let them keep the farm.

18 And it's standard practice in our industry, in
19 all states including Pennsylvania, that we post a
20 decommissioning bond, which we did here, so that when we're
21 at the end of the solar life, which is 25 to 30 years, the
22 funds are available to take those -- it's just pounded
23 fence stakes with a 350 pickup truck. It takes them back
24 out of the ground, recycles the panels, and the land has
25 been improved by lying 30 years with deep-rooted fescue

1 grass and other agricultural-designed materials.

2 So Lancaster County, when we first came in, said
3 this is sacred -- Lancaster County farmland. By the time
4 they saw the impact of this, it was a unanimous vote to say
5 we've now preserved for 30 years, and we'll improve with no
6 taxpayer dollars, that land.

7 Lastly, as has been mentioned, we generate tax
8 revenues at a level that the townships are just not used to
9 seeing. We often double tax revenues from one project in
10 the township, as well as increasing farm income and
11 preserving farmland.

12 So I wanted to give you a quick picture of that.
13 Happy to provide more on that as we go forward.

14 So finally, what's the policy option that lets us
15 do this segment of solar? It's competitive procurement.
16 It's just what it sounds like. It sets up a system that
17 puts solar developers like us into a competitive bidding
18 situation, gets the best projects funded at the cheapest
19 cost, and it does it by focusing -- you can focus on
20 consumer protections, have an annual competitive bid, and
21 you've got a market-based way to get to scale at the best
22 cost.

23 Some say, wouldn't these projects get built
24 without this? There's a lot in the queue. We've all
25 invested with projects that are ready. The answer is some

1 will; mostly they'll be built outside of Pennsylvania; and
2 lastly, they won't be built at the cheapest cost.

3 So it's just the way markets work if you've got a
4 competitive procurement in place. We don't always like it.
5 I don't always like bidding against Joel for the lowest-
6 cost project, but it does deliver low-cost solar and
7 delivers the benefits, hundreds and millions of dollars a
8 year for ratepayers and taxpayers that we described.

9 Finally, I don't know if this video will run but
10 I wanted to give you a picture of what it looks like on the
11 ground. This video is our lawn mowing crew coming into the
12 field with their head coach in the lead, ready to mow the
13 project. And this is one element of what Joel mentioned
14 that increasingly we're finding that rather than being a
15 replacement for agricultural use of the property, we're
16 compatible with an agricultural use of the property.

17 Thank you.

18 MAJORITY CHAIRMAN MARSHALL: Excellent. Thanks,
19 gentlemen. Thank you both.

20 I'd like to recognize the Members that joined us
21 during the hearing: Representative Malagari,
22 Representative Farry, Representative Mehaffie.

23 And we will have questions from Members now,
24 starting with Representative Mehaffie.

25 REPRESENTATIVE MEHAFFIE: Okay. Thank you, Mr.

1 Chairman.

2 You talked a little about the capacity market and
3 I think it was a hearing or two ago when we talked about
4 and there was a great concern about Texas and what happened
5 in Texas -- sorry, and what was going to occur here if we
6 didn't have the capacity market.

7 And my understanding, the capacity market hasn't
8 been bid for two years; is that correct?

9 MR. HARRINGTON: That's correct, Representative.

10 REPRESENTATIVE MEHAFFIE: Okay. So you guys get
11 subsidies to do these projects, correct?

12 MR. HARRINGTON: We do, yes.

13 REPRESENTATIVE MEHAFFIE: Okay. So the FERC
14 ruling that came through on MOPR says that you can't enter
15 the capacity market if, and correct me if I'm wrong -- you
16 can't enter the capacity market if you get subsidies; is
17 that correct?

18 MR. HARRINGTON: Yeah, the --

19 REPRESENTATIVE MEHAFFIE: Yeah. You can't
20 reflect it in your bid.

21 MR. HARRINGTON: Yeah. You --

22 REPRESENTATIVE MEHAFFIE: But I mean, you can't
23 use the subsidies to reflect to your bid pricing; is
24 that -- how does that affect you and what occurs at that
25 point in time?

1 MR. HARRINGTON: Yeah. I mean -- thank you,
2 Representative, for that question.

3 So the MOPR is going away. I mean, it's been --
4 there was an order that came out of FERC, basically
5 indicating that the MOPR will be going away. PJM has
6 instituted some ways to, I think, work with the MOPR when
7 it was -- as it's in effect.

8 But that rule applies to all energy sources. It
9 applies to nuclear. It applies to gas. It applies to
10 clean energy resources, as well. And so the effect on the
11 MOPR is not just in the clean energy technologies. The
12 effect of the MOPR is pretty much all through all other
13 technologies, as well.

14 We did not support the MOPR. We filed that
15 motion at FERC because we don't think it creates a
16 competitive environment with other sources, and it also
17 increases costs for ratepayers, as well, because you're not
18 getting the lowest cost technology into the market.

19 REPRESENTATIVE MEHAFFIE: Will that affect you,
20 though, in the capacity market, and have they figured out
21 what they're going to do with the capacity market that you
22 know, I mean, as far as PJM? Are they going to move on
23 something? Has anything been -- I mean, you guys are boots
24 on the ground so I'm assuming you're waiting for something.
25 And this occurs every year for a three-year bid.

1 MR. HARRINGTON: Right.

2 REPRESENTATIVE MEHAFFIE: We're almost at that
3 three-year bid. So what happens to us as far as electric
4 users, you know what I mean, if we don't have that capacity
5 market and bid? I guess that's where I'm going.

6 MR. HARRINGTON: Very fair question. Yeah. So I
7 think you're right. We're all kind of waiting to see what
8 the next steps are from FERC. I'd have to get back to you
9 on what PJM has recently done. I can -- I'd have to reach
10 out to our regulatory affairs folks on that, but I know
11 they have taken some initial steps. But it is a concern.
12 But I think the indications we've received from FERC are
13 promising for the industry.

14 REPRESENTATIVE MEHAFFIE: Okay. And my last
15 question is, since you do large solar fields, we just
16 passed a bill out of Committee here. It is on the House
17 floor for consideration. I think it's 1161, Mr. Chairman;
18 is that correct? Representative Mizgorski's bill. And
19 then Representative Quinn has a bill -- House Bill 1555.
20 Correct me if I'm wrong on the numbers. 31 -- I apologize.

21 The difference in the two, how does that affect
22 you? Because my understanding is the other bill is more
23 for larger solar projects where this is more on the smaller
24 solar projects; is that correct? Or how does that work
25 exactly?

1 MR. HARRINGTON: Brent, can you speak to those?

2 MR. ALDERFER: Specifically, the policy that gets
3 the lowest cost solar is not in either of those bills, and
4 could be in both, so that the competitive procurement
5 language that we've circulated is not in a bill at the
6 moment.

7 The other bills deal with, frankly, what may be
8 the more difficult issues of customer-sided net metering,
9 mean tariffs, and customer-sited, more expensive solar is
10 part of what's required in the state but those are issues
11 that have to be dealt with that PECO mentioned on the rate
12 side.

13 On grid-connected solar, which is community solar
14 and large-scale solar, those issues are much more
15 straightforward. It's a bid.

16 And if I could reference your question quickly on
17 capacity, that slide I showed on that bottom right chart
18 with how the dispatch curve works, Texas doesn't have a
19 capacity market. So they relied on those high-priced days
20 basically to pay for new capital investment. Not a great
21 way to finance capital investment because you're waiting
22 for, basically, emergency situations and peak price days,
23 which is not good for consumers.

24 So the PJM is really -- I'd say it's the best-
25 designed market in the world. Really well designed with

1 its capacity market, and yes, it needs to get back in gear
2 in the next year, Representative, as you said.

3 Well designed with the mix we described to let
4 solar carve off the peak prices that no one likes. No one
5 likes to have to pay, you know, \$900 a megawatt hour, or to
6 cut back, as happened yesterday. And then the capacity
7 market comes in underneath to make sure we have the natural
8 gas and the base load facilities, which we are not -- be
9 sure they're there and financed and capitalized.

10 So it's really a good situation for the kind of
11 investment we're talking about. Texas was not.

12 REPRESENTATIVE MEHAFFIE: Thank you, Mr.
13 Chairman.

14 Thank you, gentlemen.

15 MAJORITY CHAIRMAN MARSHALL: Thank you.

16 Question from Representative Schweyer.

17 REPRESENTATIVE SCHWEYER: Yes. Thank you, Mr.
18 Chairman.

19 Just a quick one and you may have said it and I
20 missed it. You said PJM's marketplace is about 10 percent
21 of industrial-grade solar, correct?

22 MR. ALDERFER: The supply mix in PJM is about 10
23 percent solar.

24 REPRESENTATIVE SCHWEYER: 10 percent, okay. And
25 how much of that is actually generated from Pennsylvania?

1 MR. ALDERFER: I don't know. I'd have to get
2 them, but it's very little --

3 REPRESENTATIVE SCHWEYER: Very little.

4 MR. ALDERFER: -- I would say. We're about 0.5
5 percent in Pennsylvania, so that gives you the ratio. And
6 we have the capability as the largest center state to be
7 more than the rest.

8 REPRESENTATIVE SCHWEYER: And that's kind of what
9 I was getting at, the opportunity for us to grow and be a
10 bigger part of that mix, et cetera, et cetera, which you
11 know, as part of PJM, would drive down costs for all of it,
12 et cetera, et cetera. I get it. All right. I was just
13 kind of curious about how much of that was ours.

14 That's all I have, Mr. Chairman. Thank you.

15 MR. HARRINGTON: Representative, if I may, can I
16 expand upon that?

17 MAJORITY CHAIRMAN MARSHALL: Sure.

18 MR. HARRINGTON: The question, I think -- the
19 fundamental policy question, you know, for the Committee to
20 think about is attracting economic development, is
21 attracting investment.

22 You know, a company like Enel over the next seven
23 years is going to invest \$80 billion somewhere in the
24 country. And that's going to be in Pennsylvania. It might
25 be in Ohio. It might be in Illinois. We don't know. But

1 it's going to be based on the regulatory environment, the
2 policies that are in place. It may be an incentive
3 structure that attracts those jobs. But really, we see
4 this as an infusion into that economy over those next
5 several years.

6 I mean, I know there's these political debates
7 about the value of solar. For me and for us, as investors,
8 as people who build the projects and people who own the
9 projects for the long term -- we don't build and leave,
10 it's really about what are we giving to these communities?
11 What are we giving to the Commonwealth of Pennsylvania in
12 terms of that development -- economic development over many
13 years, 20, 30 years, potentially.

14 MAJORITY CHAIRMAN MARSHALL: Thank you.

15 Representative Quinn?

16 REPRESENTATIVE QUINN: All right. Taking off on
17 that, how do you define competitive procurement, just more
18 broadly speaking, trying to hone in on it? Because I've
19 heard a number of different definitions. How would you
20 define it?

21 MR. ALDERFER: It's having a creditworthy buyer
22 have a competitive process to let us bid for long-term
23 energy contracts. So competitive buyer in Pennsylvania is
24 basically the distribution utilities. And you say, well,
25 why do you need long-term contracts? Some folks say, well,

1 if we did long-term contracts for coal, wouldn't we
2 preserve coal?

3 No. The difference is other sources of
4 generation are fuel-based sources and solar is all capital.
5 So once the expense is made up front, there's no fuel cost.
6 That price is locked in for 20 years. And in addition,
7 what defines the cost of it is the cost of capital.

8 So we've reduced the cost of building a new
9 project, the capital cost, the capital expenditure through
10 technology improvements, streamlining construction, a whole
11 host of things over the last 10 years. And we've improved
12 the cost of capital by giving investors confidence that
13 these projects just flat work. They just sit there and
14 produce.

15 The last piece is the mortgage rates. It's like
16 building a house. If you said, I think I'm going to go out
17 for a 25-year contract for my fuel oil for my house, no.
18 You'd -- that would make the -- that would raise your cost
19 of fuel oil, not lower it. But if you say, well, I want a
20 five-year mortgage for my house, you couldn't build it.
21 You've got to have a 30-year low-interest mortgage.

22 So that's the difference and that's what
23 competitive procurement does. It simply adapts the market
24 to say we want Pennsylvania to have the lowest cost solar,
25 and we want the jobs, and we want the taxes, and we want it

1 at scale. And the only way we're going to get that is
2 we're going to do competitive procurement to make you guys
3 work and we're going to give you long-term capital to make
4 long-term contracts to make the capital bring it down, a
5 30-year mortgage.

6 You don't want a five-year mortgage, which would
7 be exorbitant. We want a 30-year mortgage, which lets you
8 build houses. Same way, it lets you build solar.

9 Is that what you're looking at?

10 REPRESENTATIVE QUINN: That was perfect.

11 MR. ALDERFER: Yeah.

12 REPRESENTATIVE QUINN: Thank you.

13 MAJORITY CHAIRMAN MARSHALL: Thank you,
14 gentlemen. We will be sure to reach out to you again with
15 further questions. And we'll move to the next presenters.

16 Discussing community and mid-scale solar in PA,
17 Leslie Elder with the Coalition for Community Solar Access.
18 Thank you very much for being here today.

19 MS. ELDER: Thank you. So thank you, Chair
20 Marshall and Chair Matzie, and Members of the Consumer
21 Affairs Committee.

22 It's really nice to be in front of you again
23 talking about community solar and solar policies at large.

24 So just as a reminder, the Coalition for
25 Community Solar Access is a trade association made up of

1 businesses and nonprofits who work to build and maintain
2 community solar markets across the country. We have
3 members that are headquartered in Pennsylvania, including
4 myself, and then others that are really excited about the
5 opportunity to invest in Pennsylvania.

6 So community solar will allow private sectors to
7 work collaboratively with our EDCs to use private capital
8 to upgrade the grid and provide local energy to our
9 communities and reduce costs to our customers.

10 Community solar refers to homegrown energy with
11 third-party owned solar facilities shared by multiple
12 community members who subscribe to these facilities and
13 then receive credits on their electric bills for the power
14 that is produced.

15 Community solar provides homeowners, renters,
16 businesses alike to gain access to the benefits of solar
17 energy without like having to go through the barriers that
18 sometimes you receive from solar energy, so if they rent or
19 if their roof doesn't have access or if there's financial
20 barriers that can prevent them from entering.

21 So community solar facilities are distributed
22 generation so unlike what Brent and Joel were just talking
23 about, they are on the distribution grid and not on the
24 transmission grid. So they're also smaller than the grid
25 scale but they're also not on your roof like some of the

1 other projects that have been talked about earlier today.

2 So these facilities would statutorily be limited
3 to 5 megawatts and so about 1 megawatt requires about 4 to
4 6 acres of land, so these would be no larger than 30 acres
5 of land and can be put on roofs, brownfields, landfills, as
6 well as agricultural land. So we're kind of the middle-of-
7 the road product from all of the other things that have
8 been talked about.

9 So looking at the economics, we had a study that
10 was done by Penn State and it shows that community solar,
11 if the legislation were to pass, specifically House Bill
12 1555, we would bring in \$1.8 billion of economics into the
13 state, create over \$790 million of labor income, and that's
14 in over 48 counties, so it's really all over, both urban
15 and rural areas.

16 This will also generate \$83 million annually for
17 the state budget. CCSA member companies have already
18 invested over \$14 million in anticipation of this bill
19 passing since this bill was introduced in 2017 -- or
20 community solar was introduced in 2017.

21 Community solar presents an enormous opportunity
22 for farmers, similar to other conversations that have been
23 discussed. In fact, a retired farmer, Tom Reitz from Union
24 County has been facing some really tough decisions recently
25 with his 80-year-old family farm. He was looking at either

1 selling a portion of it or giving it all to development,
2 and then he recently signed a lease with a community solar
3 developer and he's able to keep his farm, as long as the
4 legislation passes, because he was able to sign a 25-year
5 lease.

6 Now, his story is not unique. We have a lot of
7 Tom Reitz's all over the Commonwealth. And if you look at
8 my written testimony, I've put in several stories and
9 several videos, and we've also submitted several letters of
10 support from farmers themselves.

11 So third-party community solar legislation, as I
12 said, was first introduced in 2017, and the legislation has
13 evolved immensely from that time. CCSA has worked with the
14 bipartisan sponsors and a lot of the stakeholders within
15 the state including the EDCs, as well as the agricultural
16 community, consumer protection groups, and other
17 stakeholders at large in order to ensure that the community
18 solar legislation fits the unique needs of Pennsylvania.

19 So some of the changes that we can note is that
20 subscribers will pay their fair share. Specifically, they
21 will be paying for their distribution portion of the grid.
22 There will not be an expansion of net metering in order to
23 have community solar come into the state. There will be a
24 guaranteed cost savings for anybody that subscribes into
25 community solar. There's robust low-income consumer

1 participation and much more.

2 So we also remain committed to make sure that
3 we're working with you and other members of the
4 Legislature, House Leadership, and then, of course, the
5 other side of the Chamber to make sure that we can get this
6 bill across the line.

7 So obviously CCSA stands in strong support of
8 House Bill 1555, and we'll do whatever we can in order to
9 make sure we get that over the line.

10 Thank you so much for your time, and I'll answer
11 any questions.

12 MAJORITY CHAIRMAN MARSHALL: Thank you.

13 Questions from Members?

14 Representative Schweyer.

15 REPRESENTATIVE SCHWEYER: Thank you. This is
16 more of a statement. And Ms. Elder, thank you.

17 And I wanted to say this earlier with Ms. Rever
18 and Ms. Robertson. One of the challenges that we have,
19 Representative Parker and I represent very different
20 districts than my colleagues over here. My district's six
21 square miles. My average salary is \$34,000 a year. It is
22 extremely poor. We are extremely dense in terms of
23 population density, and -- I want to make that
24 clarification. And we have very limited access to solar.

25 MS. ELDER: Sure.

1 REPRESENTATIVE SCHWEYER: The conversations that
2 you have about a farmer being able to save his farm field
3 is wonderful and I absolutely -- I'm thrilled about that
4 and supportive of it.

5 However, that same opportunity needs to be
6 extended to the constituents that we serve. It can't
7 just -- solar cannot become yet another avenue -- another
8 way for us to divide the haves and have nots. People that
9 have limited access to space, people who live in historic
10 districts, people who live in apartments have to be able to
11 have access to this, as well.

12 So as we continue to move the conversation
13 forward on consumer-generated -- whether it's on the
14 community solar side or slightly larger, we have to be
15 mindful that it has to be accessible to all of our
16 constituents. Otherwise, candidly, folks that are
17 traditionally going to be historically the biggest
18 supporters of renewable energy are going to have a hard
19 time with it because it has to be -- whatever we ultimately
20 decide on has to be accessible.

21 We've had 150 conversations over the last five or
22 six years talking about this. It's just something that I
23 want to get out there that we have to make sure that
24 ultimately whatever we -- the policy decisions that we make
25 have to be mindful of accessibility for folks, regardless

1 of if they live in a one-bedroom apartment in Philly or
2 Allentown, or if they live in a 5- or 6-acre house or a 40-
3 acre house in Union County as the case may be. It's just
4 something that I like to continue to continue to remind
5 folks of. So that's all I've got.

6 MS. ELDER: May I respond?

7 REPRESENTATIVE SCHWEYER: Sure.

8 MS. ELDER: Excellent. So I think that is one of
9 the unique opportunities that community solar actually
10 provides, right? So because the facilities are built
11 offsite and you can subscribe, it actually does provide
12 opportunities for those people, in particular.

13 But even more so, so it's not just farmers that
14 are building and are being able to get the land leases,
15 which I think is what you're actually referring to. We do
16 have the flexibility to be able to build in a wide variety
17 of different places.

18 So utilizing Philadelphia as an example, we have
19 the old refinery site that is being rebuilt. And without
20 getting into the overall politics associated with that,
21 there has been a decision that has been made there's going
22 to be buildings that are going to be built with solar-ready
23 roofs. This is an opportunity that we can put community
24 solar on that so you can serve the community around it.

25 The beautiful thing about this is because you can

1 put it on roofs, you can put it on landfills, you can put
2 it in brownfields, you can put it on land. You can put it
3 in a wide variety of different places and then subscribe to
4 other people. You can have a twofold experience where the
5 person that owns and operates the building can actually get
6 the land leases. It can be in Philadelphia, it can be in
7 Allentown, it can be in the surrounding area as long as it
8 is within that utility territory and serving customers
9 within that utility territory. Really, it's endless. The
10 opportunities are endless.

11 REPRESENTATIVE PARKER: Just to follow up with my
12 colleague's -- and now we're going to be quiet -- with my
13 colleague's comments -- it is definitely your fault. When
14 we were talking about the solar spaces, one of the affluent
15 parts of the Philadelphia area that's in my district is
16 East Falls. They have been extremely aggressive as they
17 have been talking about the project.

18 MS. ELDER: Yes.

19 REPRESENTATIVE PARKER: But there's other parts
20 of my district that aren't as affluent, as my colleague did
21 mention.

22 MS. ELDER: Absolutely.

23 REPRESENTATIVE PARKER: What does that look like
24 as it relates to your company, and like what is the
25 demographics, what is the minority participation, what is

1 individuals of color and Latino community and the bilingual
2 that are going to be in these spaces? Because when you're
3 talking about a refinery, I'm also thinking about, you
4 know, there's other projects that are going to be coming
5 down the pike. What would that, you know, look like so
6 that we can continue this conversation further?

7 MS. ELDER: Yeah. Thank you for that. And I
8 think it's something that's incredibly important. So my
9 organization is a nonprofit so we represent members, and I
10 can't actually speak to the individual make-up of all of my
11 members themselves. I can say that, you know, this is a
12 high priority within the solar industry at large and
13 something that we have been talking about and working and
14 making sure that this is a high priority for us.

15 Speaking about the refinery itself and what that
16 looks like, specifically, for Eastwick and the community
17 members that have been struggling for a long time, I think
18 that those are very sensitive items that we are having
19 actually very open conversations around. And I would like
20 to continue to have those conversations with you,
21 specifically putting the appropriate numbers in front of
22 you if you would be open to doing that. But my company is
23 only 10 people.

24 REPRESENTATIVE PARKER: Not a problem. And I
25 definitely will make sure that the colleagues that the area

1 that you're speaking about would be involved and would be
2 open to the conversation.

3 MS. ELDER: Excellent. That would be great.

4 REPRESENTATIVE PARKER: Thank you so kindly.

5 MAJORITY CHAIRMAN MARSHALL: Thank you very much
6 for your testimony, and we will certainly continue to work
7 with you and stay in touch. Thanks.

8 MS. ELDER: I look forward to it. Thank you.

9 MAJORITY CHAIRMAN MARSHALL: Our next presenter
10 is Tim Mills, Program Manager, The Renewable Energy
11 Division of ARM Group.

12 MR. MILLS: Thank you, Chairman. Thank you,
13 House Committee Members. I really appreciate all your time
14 today. We're just going to set up really quickly.
15 Appreciate your patience.

16 As we get this set up, I'll just give you a quick
17 background of who I am and who ARM is. I'm Tim Mills. I'm
18 program manager for ARM Group. We're a local engineering
19 consulting company. We have 14 offices across the Mid-
20 Atlantic. We employ over 215 people: engineers,
21 scientists, project managers, coordinators, highly
22 technical jobs. Most of our offices are based in
23 Pennsylvania.

24 As you can see, we really canvas the East Coast
25 here, and I'm personally located in our Hershey, PA

1 headquarters. And we have seen our renewable practice area
2 really grow. ARM started out as really a solid waste and
3 environmental engineering company over 22 years ago and it
4 was really dominated solid waste, oil, and gas. We were
5 mine and quarry, operating a lot of different industries,
6 but over the past five years we've seen our renewable
7 energy practice area actually grow to the second largest,
8 right behind solid waste, which has been around since the
9 very beginning.

10 And we're actually cross-training a lot of our
11 oil and gas, our mine and quarry professionals to actually
12 work on our renewable energy projects. We've seen the oil
13 and gas industry really start to tail off, so being able to
14 take those engineers and cross-train them and utilize them
15 has been great.

16 But everyone that's spoken today, we've operated
17 in all those different industries. We've operated with
18 utility scale projects, community solar, and we've really
19 specialized kind of in niche sites, working on reclaimed
20 coalmining sites, landfills, oil and gas sites, greenfield
21 sites as well. So we've kind of touched all these
22 different market segments that they've talked about today.

23 And just quickly, the two projects that I'm
24 showing right here is the Annapolis Landfill Solar Project.
25 I think it was just exceeded, but for the longest time it

1 was the largest landfill solar project in North America.
2 And then the Bear Creek Elementary School, which is in
3 Elizabethtown, PA. That is a net meter project for the
4 school and benefits elementary, middle school, and high
5 school, and that's a 500 KW system.

6 I'm speaking on behalf of ARM Group, obviously,
7 but I'm also speaking for Renewables Work for PA Coalition.
8 It's a diverse group of over 70 different developers,
9 engineering companies, and other energy professionals that
10 are interested in pushing solar legislation forward in
11 Pennsylvania.

12 I think one of the biggest things we've talked
13 about today is just the economic impact and the jobs that
14 are being generated by solar, in particular. I think I've
15 seen that personally just at our own company at ARM. We've
16 seen our practice area really grow, and we've actually
17 transferred people from those other divisions to folks on
18 just solar.

19 And I'm just going to hopefully continue to see
20 that grow in the future. But I get to work with landowners
21 all the time. I work with developers. I work with other
22 engineering companies. And I've seen the impact of how
23 these benefits can really help. I've seen reclaimed
24 coalmining sites where land could not be used for other
25 purposes and it is now being developed for solar.

1 Agricultural sites were family farms. I think,
2 as Leslie was just talking about, where they're about the
3 sell the family farm and then getting a standard lease
4 payment will allow them to keep that in the family long-
5 term. So I think this benefit is widespread across many
6 different areas and different parts of the economy.

7 And then just overall energy diversification, I
8 think, is very important. Solar makes up a very small part
9 of our energy mix, and increasing that, I think, will
10 benefit overall Pennsylvania economy.

11 Currently, there's about 5,000 jobs in solar in
12 Pennsylvania right now. If we increase up to 5 percent,
13 we're seeing it get up to about 32 percent. Up to 10
14 percent, it's actually between 60- to 100,000 jobs that
15 could be created, and these are installation jobs. These
16 are engineering jobs. These are high-paying jobs with a
17 median wage of \$20 to \$38 per hour, so it's not just a
18 quick and done project.

19 I think as a lot of people kind of think, hey,
20 you build a solar project, it's done, but no. I think you
21 should think of it almost as like the housing industry.
22 You're building these projects; you're moving to the next
23 project; and then there's long-term sustainable jobs, like
24 in engineering where we're working on projects all over the
25 state.

1 Getting up to even just 5 percent we start to see
2 some of these impacts, but getting up to that 10 percent
3 mark we really start to see the private capital coming into
4 the market. We see the local economic benefits. I think
5 Community Energy was talking about their one project, how
6 that is going to double the funding for the school. I've
7 seen that for a lot of our projects. The township funding,
8 the school funding all increases from the additional
9 revenue coming in from these projects.

10 And then being able to serve up to 1.5 million
11 different customers throughout Pennsylvania, I think would
12 be very important. I personally actually subscribe to get
13 100 percent renewable energy and I think the higher this
14 goes up, the percentage, it brings down the overall cost,
15 and so it becomes the most competitive energy mix in the
16 state.

17 And then also just fuel savings and reduced
18 demand -- the demand charges, I think, overall in the
19 state, and the environmental impacts and health impacts, I
20 think, are often not talked about enough.

21 As I was just saying before, you really start to
22 see the impacts to the ratepayers where you start to see
23 the real savings once you hit that 5 percent. But as
24 Community Energy was saying, once you hit that 10 percent
25 you're seeing the scale where you're really seeing the big

1 cost savings, especially in the wholesale electricity
2 market. So that's why it's so important for us to increase
3 that. Just at 0.5 percent, we're not going to see that
4 immediate savings with those first couple projects, so I
5 think it's very important that we hit this goal.

6 As Clean Energy was showing, you can graze sheep
7 on these sites. There's a lot of benefits I like to talk
8 about. Agrivoltaics is one term I use. Solar ecology,
9 which is really turning these into dual-purpose sites where
10 you can graze sheep; you could do pollinators; you could do
11 a mix of native education.

12 And what we're seeing for farmers, you're
13 replacing what's a monoculture, maybe corn or soybean, and
14 you're putting in a diverse mix of vegetation that has
15 deeper roots. You're reducing erosion, runoff, reducing
16 nutrient loading on the site, pesticide use on the site.
17 That has tangible impacts to our waterways, water quality,
18 just overall erosion, actually improves the quality of the
19 soil on the site while you're also producing clean energy,
20 so I think that's extremely important.

21 And then just the standard lease payments are
22 much, much higher than you're getting for commodity prices.
23 I think we've seen the Pennsylvania milk prices or other
24 commodity prices fluctuate and farmers can get really hurt.
25 Getting a steady payment of \$800 to \$1,400 per acre a year

1 is a much, much higher multiple times than what you're
2 going to get for that commodity price, and it's also got an
3 inflation escalator associated with that.

4 So to be able to get that steady predictable
5 income for 20 to 35 years allows these farmers to keep
6 their land in their family. And then at the end of the
7 term they come in, decommission the system, and then they
8 can choose to continue to farm or develop the site for
9 other purposes. So I truly do think this is a way to
10 preserve our farmland and to retain our farms and then also
11 hit our goals with renewable energy.

12 And then the electricity mix in Pennsylvania has
13 always been very diverse, a mix of coal, nuclear, gas,
14 renewables, obviously. But with a lot of our nuclear being
15 decommissioned right now and with our really low mix of
16 solar, in particular, in the state, we're seeing natural
17 gas really eat up that -- the lost generation, and by 2030
18 we could see it grow up to 70 percent, so it would really
19 dominate our electricity mix.

20 I do think that puts us a little bit at risk with
21 natural gas pricing maybe increasing due to just various
22 factors where I think having that diverse energy mix
23 provides some security and hopefully will let us continue
24 to be a net exporter of energy.

25 And then, overall, throughout Pennsylvania, I

1 feel like I've lived this where I'm meeting with
2 Republicans, with Democrats, with Independents that are
3 extremely supportive of solar. I never thought going into
4 the solar industry I would talk to as many coal miners as I
5 am, or farmers. But these are Republicans. These are
6 Democrats. They are extremely supportive of solar.
7 They're looking for ways to get additional revenue on their
8 land and provide clean energy. So I think this has got
9 bipartisan support, and I would love to hopefully see some
10 passed.

11 Thank you for all your time. I'm happy to answer
12 any questions.

13 MAJORITY CHAIRMAN MARSHALL: Thank you very much.

14 Questions from Members?

15 Chairman Matzie.

16 MINORITY CHAIRMAN MATZIE: Thank you, Mr.
17 Chairman. And Tim, thank you for your testimony. I
18 thought, you know, from the perspective of economic
19 development, that needs to be a key component of any
20 discussion, and I think oftentimes does not come into the
21 equation. So it was good to have your testimony and see
22 some of the projects that actually have happened and have
23 transpired around the region where I am from, but also from
24 around the state, so that obviously is good news.

25 When you project out, with or without new policy

1 changes, you're still looking at growth from the
2 perspective of solar deployment?

3 MR. MILLS: Yeah. Great question. I honestly
4 think of it as a capacity standpoint internally at our
5 company. Are we going to make these hires or transition
6 people from the other practice areas? Right now, community
7 solar, there's hundreds, if not thousands of projects
8 pending that we've generated proposals for, for surveying,
9 environmental work, geotech, civil, and these groups do not
10 want to move forward with their projects and spend that
11 money if there's a risk that this legislation does not
12 pass.

13 And so we're sitting on all this backlog at our
14 engineering company that could quickly just disappear if
15 community solar doesn't pass. I think we'll still continue
16 to see utility scale projects built just because the
17 economy's at scale and just the benefits from that, but I
18 do think without legislation passing, community solar and
19 increase to the alternative energy portfolio standard, I
20 think we will see a lot of just money not flow into the
21 state, and the jobs.

22 MINORITY CHAIRMAN MATZIE: And in your example on
23 the slide, you talk about, you know, some reclaimed coal
24 mines and some other areas that really have no other --
25 quite frankly, any use or any development prospective. How

1 does that work? I mean, is it something that you just
2 identify? Is it something you work with regulators on? Or
3 how do you locate a site or how is a site determined to be
4 usable?

5 MR. MILLS: Sure. So we look at it from a
6 grading perspective, from a slope perspective. We look at
7 the environmental features. But we've got a lot of
8 different relationships just operating in these different
9 industries, so we've worked with coal miners before in our
10 mining/quarry division.

11 So they actually will approach us and say, hey,
12 we've heard people are signing up land lease agreements.
13 We're interested in redeveloping our site. We can't build
14 a warehouse. We can't build housing developments here.
15 Can we develop solar on this site? We will bring in
16 partners, development partners that can sign up those land
17 lease agreements, or even purchase the sites in some cases.

18 So but we can develop on those sites. Sometimes
19 there's grading kind of required to get the site to a
20 certain tolerance that can handle the racking systems but
21 we're still able to develop on these sites. A lot of times
22 there's infrastructure already built out from the coal
23 industry. And so we're tapping into infrastructure that's
24 really not being utilized anymore, and that's why I think
25 we're seeing a lot of development on these sites. It's

1 cheaper land, it's rural, it's honestly economically
2 depressed areas so they're just dying for the jobs and
3 revenue.

4 So they're just knocking on our door at this
5 point saying we want to sign this up.

6 MINORITY CHAIRMAN MATZIE: Final question. From
7 the infrastructure perspective of the actual construction,
8 the racks, et cetera, are you limited or does it have to be
9 a certain type of construction? I know we actually did a
10 tour yesterday and on the one facility we were at they had
11 a small solar deployment. And they had considered goats to
12 cut the grass but they felt it was a little too low and
13 they were afraid the goats were going to chew on the
14 cables.

15 So the question I have is, is that just something
16 determined, obviously, when you're making the construction;
17 is it that simple?

18 MR. MILLS: Yeah. So what we do is we actually
19 go out on our geotech investigation. We'll determine how
20 deep is it until we hit the bedrock depth? What does the
21 geology look like on the site? Are there certain risk
22 factors we have to take into account? But we take soil
23 samples, as well. So obviously, on reclaimed coal mining
24 sites we might use a different custom seed mix. It's more
25 acidic soil so we've got to develop a certain seed mix

1 that's appropriate for that versus maybe an agricultural
2 site.

3 But the racking systems, we can drive what we
4 call just the H-piles -- they're steel piles, straight into
5 the ground. Even on these sites sometimes you have to pre-
6 drill into sometimes the rock. You can use what are called
7 ground screws. They're literally just giant screws that
8 you drill into the ground. But we're able to put what you
9 saw, I think, in a lot of pictures are the fixed tilt
10 systems, but also trackers. And the technology just keeps
11 on getting better and better and they're able to handle
12 rougher terrain.

13 So we're actually seeing on almost all of our
14 reclaimed coal mining sites tracker systems, which are
15 getting an extra 15- to maybe 25 percent production boost.
16 And you see that mainly on the utility scale projects but
17 we are seeing a lot of the community solar projects going
18 towards the trackers. So they're maximizing even more
19 production throughout the day.

20 MINORITY CHAIRMAN MATZIE: (Indiscernible - voice
21 lowered).

22 MR. MILLS: Yep.

23 MAJORITY CHAIRMAN MARSHALL: Representative
24 Mehaffie.

25 REPRESENTATIVE MEHAFFIE: Thank you, Mr.

1 Chairman.

2 Tim, thank you. Thank you for locating in the
3 106th District. Probably should have carpooled down here
4 today.

5 MR. MILLS: Yeah.

6 REPRESENTATIVE MEHAFFIE: Saved gas and
7 emissions. But again, thank you.

8 I guess the question I have and because you're on
9 the engineering side and all the things that you're doing
10 in your work with all facets of electricity, RGGI is this
11 going to help out and is -- what is it going to do in your
12 opinion -- and if you can't answer it, that's okay -- as
13 far as what's going on here? We saw the dip in coal, of
14 course; the spike in gas; and you know, we're sitting here
15 still with solar.

16 So just a quick question because that's really
17 been on the forefront and on the cusp of being implemented
18 here in Pennsylvania where we're such a large exporter of
19 electricity and what is it going to do? I mean, I know
20 it's going to help out our nuke plants and some of the
21 others, but how do you think it's going to, you know,
22 affect overall here in PA as far as our solar industry?

23 MR. MILLS: Yeah. Good question. I'm honestly
24 not an expert on RGGI. I've kind of more focused on the
25 AEPS and the community solar bills, in particular.

1 But I do think solar would benefit with RGGI,
2 just reducing our overall greenhouse gas emissions, which
3 is really the coal, natural gas type of projects that are
4 producing more carbon dioxide. So I do think solar would
5 benefit from RGGI but I think I'm more focused on getting
6 the alternative energy portfolio standard passed, the
7 increase in community solar. That is more critical to
8 getting these projects built that RGGI, in my opinion.

9 REPRESENTATIVE MEHAFFIE: Yeah. I tried that
10 bill last session, and when you open up that Pandora's box
11 it seems to go wild, so I'm pretty familiar with that and
12 all.

13 I just want to comment here at the end, and Tim,
14 thanks again for testifying. It's great to see you guys
15 here.

16 The main thing here is, and Representative
17 Matzie, we have talked about this time and time again. If
18 we are to do this correctly with community solar, whatever
19 we're going to do, we as the General Assembly have to sit
20 down and have a overall talk about all energy in PA.

21 If we are to get this done, we have to have the
22 solar people, the gas. We have to have the nukes, the
23 coal. We have to have everybody together so we have to see
24 what we really want to be here in the next decades to come.
25 As far as if we want to be a top energy exporter in

1 Pennsylvania, we need to do this and we need to do it
2 right. Because if we piecemeal this, it always is a
3 failure, and we need to get this right.

4 So thank you, Mr. Chairman. And thank you for
5 putting this together. This was great.

6 MAJORITY CHAIRMAN MARSHALL: Thank you,
7 Representative.

8 Comments from Chairman Matzie.

9 MINORITY CHAIRMAN MATZIE: Thank you, Mr.
10 Chairman. As we close out the hearing here today, I thank
11 all the testifiers. Thank you. Thank Representative Quinn
12 and all the Members for taking the time to be here today.

13 And I just echo the comments of my good friend,
14 Representative Mehaffie, you know, relative to an all-
15 energy portfolio discussion. And I think that's something
16 that as the General Assembly, not only do we have to do it
17 right, we have to do it smart.

18 That's the key word. And I think, you know,
19 hopefully from our Committee's perspective as we take
20 testimony on issues like today and other issues surrounding
21 energy, those discussions can all come to a head and we can
22 actually put forth some policies that are going to be
23 beneficial for not only the consumers and the business
24 community but for workers and ensure that we have adequate
25 workforce development in place and putting people to work.

1 So again, Mr. Chairman, thank you for your
2 leadership in ensuring we had this hearing and taking this
3 testimony today. Very informative and look forward to
4 continued dialog. So thank you.

5 MAJORITY CHAIRMAN MARSHALL: Thank you, Chairman.

6 I wanted to echo Rob's comments on the
7 testifiers, those individuals and groups that brought the
8 testimony here and also groups that emailed us testimony.
9 We received testimony from Wyuna, our labor folks in broad
10 support of solar, and that testimony will be electronically
11 distributed to the Members of the Committee.

12 Certainly want to thank our staff, Beth and Phil
13 and Marcus for their hard work to get this. And thank
14 Representative Quinn for hosting us here at Penn State
15 Brandywine in his District. And Representative Quinn's
16 been a leader, especially in solar, but on really every
17 aspect in his time serving his District, and we certainly
18 appreciate the hard work he's done for us.

19 We did go a little bit long but it's important to
20 get this information together so that we can make a more
21 informed decision in the future on any solar legislation we
22 have.

23 Any closing comments, Representative?

24 REPRESENTATIVE QUINN: Thank you, Mr. Chairman.

25 I think that we learned a lot today. So as a group, as we

1 move forward, I think we heard from our testifiers that
2 there were three or four different bills that they were
3 concerned about. And I think we're going to have to go
4 back to Harrisburg and really look at the entire energy
5 portfolio and come up with a plan.

6 But I want to thank everyone who came today.
7 Thank Penn State. Thank the Chairman.

8 MAJORITY CHAIRMAN MARSHALL: Thank you,
9 Representative Quinn.

10 I now adjourn this informational meeting. Thank
11 you.

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C E R T I F I C A T E

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