Committee Meeting

of

SENATE LEGISLATIVE OVERSIGHT COMMITTEE

"The Committee will receive testimony from invited guests to discuss preparing New Jersey for the increasing energy demands of artificial intelligence"

LOCATION: Committee Room 4
State House Annex
Trenton, New Jersey

DATE: March 3, 2025
10:00 a.m.

MEMBERS OF COMMITTEE PRESENT:

Senator Andrew Zwicker, Chair
Senator John J. Burzichelli
Senator Bob Smith
Senator Robert W. Singer

ALSO PRESENT:

Madelynn K. Correnti, Esq.
Office of Legislative Services
Committee Aide

Rosa Farias
Senate Majority
Committee Aide

Thea Sheridan
Senate Republican
Committee Aide

Meeting Recorded and Transcribed by
The Office of Legislative Services, Public Information Office,
Hearing Unit, State House Annex, PO 068, Trenton, New Jersey

Madelynn K. Correnti
Neha Mehta Patel
Office of Legislative Services
Committee Aides
609-847-3855

NEW JERSEY LEGISLATURE

SENATE LEGISLATIVE OVERSIGHT COMMITTEE

STATE HOUSE ANNEX · P.O. BOX 068 · TRENTON, NJ 08625-0068
www.njleg.gov

COMMITTEE NOTICE

TO: MEMBERS OF THE SENATE LEGISLATIVE OVERSIGHT COMMITTEE

FROM: SENATOR ANDREW ZWICKER, CHAIRMAN

SUBJECT: **COMMITTEE MEETING - MARCH 3, 2025**

The public may address comments and questions to Madelynn K. Correnti, Neha Mehta Patel, Committee Aides, or make bill status and scheduling inquiries to Stephanie Cenneno, Secretary, at (609)847-3855 or e-mail: OLSAideSLO@njleg.org. Written and electronic comments, questions and testimony submitted to the committee by the public, as well as recordings and transcripts, if any, of oral testimony, are government records and will be available to the public upon request.

The Senate Legislative Oversight Committee will meet on Monday, March 3, 2025 at 10:00 AM in Committee Room 4, 1st Floor, State House Annex, Trenton, New Jersey.

The committee will receive testimony from invited guests to discuss preparing New Jersey for the increasing energy demands of artificial intelligence.

Issued 2/24/25

For reasonable accommodation of a disability call the telephone number above or for persons with hearing loss dial 711 for NJ Relay. The provision of assistive listening devices requires 24 hours' notice. CART or sign language interpretation requires 5 days' notice.

For changes in schedule due to snow or other emergencies, see website http://www.njleg.state.nj.us or call 800-792-8630 (toll-free in NJ) or 609-847-3905.

TABLE OF CONTENTS

	Page
Jason M. Stanek, J.D. Executive Director of Governmental Services PJM Interconnection	4
Joseph F. Accardo, Jr. Senior Vice President State Regulatory Affairs and Centralized Services Public Service Electric and Gas (PSE&G)	35
Ed Gray Vice President - Asset Management and Planning PSE&G	41
Phillip Vavala Regional President Atlantic City Electric (ACE)	50
David Weaver Vice President of Transmission Strategy Exelon	57
Abigail Phillips, J.D. Vice President, and Chief Risk Officer FirstEnergy Corporation	70
Kieran Tintle Senior Advisor, NJ Governmental Affairs Jersey Central Power & Light (JCP&L)	70
Aaron Price CEO TechUnited: New Jersey	84
Justin Trugman Co-Founder, and Head of Technology BetterFutureLabs	87

TABLE OF CONTENTS (continued)

Brian Klingbeil
Chief Strategy Officer
Ensono 89

APPENDIX:

Comments of the PSEG Companies
submitted by
Federal Energy Regulatory Commission (FERC) 1x

Testimony
submitted by
Jason M. Stanek, J.D. 27x

Testimony
submitted by
Phillip Vavala 34x

Testimony
submitted by
Abigail Phillips, J.D. 37x

Testimony
submitted by
Aaron Price 51x

Testimony
submitted by
Justin Trugman 53x

Testimony
submitted by
Christine Guhl-Sadovy
President
New Jersey Board of Public Utilities (NJBPU) 55x

Written Comments
submitted by
PSE&G 57x

mej: 1-100

SENATOR ANDREW ZWICKER (Chair): Good morning.

Thank you to everybody who is here today for the Legislative Oversight Committee on artificial intelligence and its energy implications for New Jersey.

I want to thank Senator Smith for joining us today -- the Chairman of the self-proclaimed "most interesting committee in the Legislature."

SENATOR SMITH: That sails everywhere but in another committee.

SENATOR ZWICKER: (laughter)

Let's try to rival you with having an interesting discussion today.

SENATOR SMITH: (indiscernible)

SENATOR ZWICKER: And, to Senators Burzichelli and Singer, I appreciate your time today.

As we all know, AI is rapidly reshaping our economy, our workforce, and our daily lives. But, it's also driving an unprecedented surge in energy consumption. As AI's capabilities expand, so, too, does its demand for electricity -- posing serious questions about our state's energy infrastructure, environmental sustainability, and economic resilience.

I want to put this into perspective so people have some idea of what we're talking about with the scale. 2023 -- calendar year 2023 -- AI consumed 4.5 gigawatts of electricity, which is about 8% of all data centers' energy use. By 2028, that figure is projected to be as much as 19 gigawatts, which would be 20% of data centers' actual power consumption. Put that into perspective: Data centers already use 2% of the world's electricity, but their demand is rising so fast that it could double by 2026. And, this level of

growth would make AI-related energy demand equal to the total electricity consumption of the entire country of -- let's say Japan. That's the challenge that is in front of us.

Can the power grid sustain this surge in AI-driven energy use without overburdening the grid, our residents, businesses, and our energy infrastructure itself? Will AI's electricity demand drive up energy costs for New Jersey ratepayers -- particularly for low-income households? And, of course, why we're here: What steps must we do to ensure that the strain from the rapid rise of AI does not delay our overall energy infrastructure; our clean energy goals; our electricity needs; and our infrastructure for our businesses, our homes, our schools, and our factories?

The environmental impact of AI is remarkable. Training a single large language model like OpenAI's ChatGPT consumes approximately 1,300 megawatt hours of electricity -- the same amount used by 130 U.S. homes in a year. Even on our phones, AI requires vastly more power than the traditional computing. If you search on Google, it takes about .3 watt hours of electricity, while a ChatGPT request takes about 3 watt hours -- 10 times as much. If AI-powered search engines become the norm, global electricity consumption can increase by 10 terawatt hours per year -- the equivalent of powering 1.5 million households.

The U.S. Department of Energy forecasts that by 2030, total electricity demand from data centers could reach 600 terawatt hours, or about 12% of the total U.S. power consumption. As AI drives this growth, New Jersey must be prepared for its impact on energy prices, emissions, and infrastructure.

And, that is the point of today's hearing, so that we can start to take proactive steps here in New Jersey. As Governor Murphy has said, the goal is for New Jersey to be a hub when it comes to AI; when it comes to driving our economy to new businesses; to making the lives of New Jerseyans that much better. So, the goal here is to foster AI; not to resist it. The goal is to put into perspective what are the potentials, but also what do we need to do when it comes to energy, so that we *can* be a leader in energy.

So, I thank everybody who is here today. We have a wonderful group of invited panelists to come up to talk about the grid; to talk about production; to talk about consumption; to talk about the environmental impacts; and to talk about some of the tremendous potential of AI today.

So, with that, I would like to kick it off by asking James *(sic)* Stanek--

SENATOR SINGER: Roll call.

SENATOR ZWICKER: Oh, wonderful -- of course we can do a roll call. (laughter)

Or, maybe we should do a roll call of who is here.

Thank you, Senator Singer.

MS. CORRENTI: Senator Zwicker.

SENATOR ZWICKER: I am present.

MS. CORRENTI: (laughter)

Senator Smith.

SENATOR SMITH: Yes.

MS. CORRENTI: Senator Burzichelli.

SENATOR BURZICHELLI: Here.

MS. CORRENTI: Senator Singer.

SENATOR SINGER: Here.

MS. CORRENTI: Perfect.

SENATOR ZWICKER: And, with that, thank you.

I would like to call the Executive Director of Government Services for PJM, Jason Stanek, to kick us off.

J A S O N M. S T A N E K, J.D.: Thank you.

Good morning, Mr. Chairman, and members of the Committee.

My name is Jason Stanek, Executive Director of PJM Interconnection.

As you may know, PJM is the largest power grid in North America, and we've been serving New Jersey for almost 100 years, when the New Jersey and Pennsylvania power grid was actually the first in the world. We currently operate 88,000 miles of transmission lines, and we operate the markets that serve your customers and citizens in 13 states, plus the District of Columbia. We are not policymakers; we are fully regulated by the Federal Energy Regulatory Commission. And, while we're technically a utility, under the terms of the Federal Power Act, we do not own any generation; we do not own any transmission assets. But, we've been proud to serve the over 9 million residents of New Jersey for the past 98 years.

So, PJM has been warning now for several years about the prospect that parts of our country could run short of power during periods of high demand. And, we've seen that recently. In earlier this year, in January, we saw the highest peak ever in terms of demand during this cold -- the cold snap. And, across the grid, we're witnessing unprecedented demand for electricity, and one of the primary drivers, Mr. Chairman -- as you just noted

-- is the development of data centers that are needed to serve AI technologies' functioning and the training of these models.

The projection on my testimony that appears at the top of Page 2 puts in sharp relief the extreme increase in demand that we've seen over the past two years. That would be figure Number 1. You'll see that from 2023 to 2024, and 2024 to, most recently, 2025, the demand growth is eye-popping.

And, while data centers have existed for decades and have served as the basis of the internet, their growth over the past two years has been fueled by the advent of such technologies and applications as ChatGPT and others. We all know that data centers require a tremendous amount of electricity to power their servers, and they need abundant supplies of clean water for cooling their chips and their processors. A single data center could use as much electricity as tens of thousands of homes, depending on the size of that data center. And, if we're talking about a campus of data centers, it could rival the consumption of enough power to serve some medium-sized cities.

As noted in my testimony, over the next five years, demand for electricity to serve data centers alone will triple from currently 4% today -- of PJM's demand, is data centers -- to 12% in five years from now. And, this challenge that we're experiencing at PJM is not just a regional challenge. The North American Electric Reliability Corporation, which is the body for setting reliability standards across the nation, and now it's that large sections of our country now face this daunting prospect.

While PJM's top priority is to maintain grid reliability 24/7, we share the concern about rising prices that your constituents are beginning to

see on their utility bills. And, we're also worried about the supply-and-demand imbalance that we're seeing. And, we've taken some steps that I can discuss at the Federal level to mitigate some of these price impacts. I'll also note that PJM has been approving new, mostly renewable and clean generation projects to connect the grid at a relatively record pace. We've approved approximately 50% megawatts of such projects. Unfortunately, however, most of them have not been connected to the grid quickly enough due to some factors outside of PJM's control. Of that amount, approximately 3.5 gigawatts -- which represents dozens of projects in New Jersey -- have not yet been built. And, this includes offshore wind, solar, and battery storage projects.

And, I can tell you, there are many reasons for why some of these projects are not being constructed after PJM grants full approval. We've heard that there are problems obtaining the necessary citing permits at the State and local level; projects -- problems with project financing; and, of course, supply chain issues -- getting the infrastructure and supplies needed to develop this clean-energy infrastructure. However, we do remain open to additional solutions, as long as they will help us keep the lights on.

And, while PJM leaves the policymaking to the lawmakers -- both at the State and Federal government -- we do remain open to additional solutions. And, we respectfully ask that all lawmakers consider these three points when deliberating.

The first is to avoid policies that would have the effect of pushing resources that are currently on the grid *off* the grid until we have a sufficient amount of resources to replace them.

Second, we ask the help of our states to bring new generation resources onto the system that will support reliability. And, to do that as quickly as possible.

And, third, we ask that you analyze your state and local challenges, with respect to citing and permitting energy infrastructure -- whether it be transmission towers, generation stations, solar panels, offshore wind, and battery storage. Nobody -- most people -- would not want energy infrastructure in their backyard. But, in a state like New Jersey -- which is relatively compact -- energy infrastructure needs to be built *somewhere*.

So, we would ask that you consider those challenges and enact policies that would expedite the construction and development of what I would say is really needed infrastructure in New Jersey.

With that, I will yield back and be happy to answer any questions.

SENATOR ZWICKER: Thank you.

Senator Singer.

SENATOR SINGER: Thank you for your comments.

Some of them I might disagree with, but if you look at your electric bill or your gas bill or anything else, you'll see all the nonsense on it has nothing to do with the generation. It has to do all with all kinds of things we throw onto it, which -- clean wind and nonsense like that crap.

But, let me talk-- Let me ask you a question. The biggest problem I'm seeing right now, statewide -- and housing the second-largest industrial park in the State of New Jersey -- is that the substations have not been upgraded in years. And, one, they can't get the equipment upgraded fast. We need-- For example, I have eight to 10 buildings -- brand new office

buildings we'd like to build -- that we have tenants for. We have to wait anywhere from two to five years until the substations -- forget about the power -- just the substations are upgraded enough to provide that power. We're talking about 20 megawatts. Not gigawatts; megawatts.

So, if -- and, I understand, because I had the President of BPU down. It's a problem statewide. So, granted, we need generation of power. But, if we don't have the capacity of delivering it to the sites -- which is a problem right now statewide -- what are we doing to upgrade the next two to five years to even produce the electricity to the site? And, why is there such a hang-up in getting the transformers and the equipment in? Because there's such a backlog. And, what are you doing about that?

MR. STANEK: Well, the development, Senator, of energy infrastructure is not quick or cheap. The substations' average age is about 38 years old. They need investment; they need maintenance; some will need to be replaced; and some are at or over capacity. So, we do work with our utility partners -- the distribution utilities on the ground -- to ensure that their equipment; that their substations; their transformers; all their switch gear are in proper order and well-maintained.

At the grid level, however, we don't -- we don't manage. We're not the regulator for the utilities. But, we recognize that demand is increasing. New Jersey is a net importer. On an average annual basis, New Jersey imports about 20% of the electricity it needs; hence, it needs the transmission -- adequate transmission -- to get there, and all the other equipment, as you noted, including transformers and substations.

It's a national issue. A lot of the equipment is built and constructed overseas now -- in Korea, Japan, and other countries -- so it takes

several years to develop; make the requests; and have that equipment shipped to the United States. It's a concerning problem.

SENATOR SINGER: Yes, but when were you going to tell us that there's a problem with our substations? If you knew about-- *We* didn't know about it.

MR. STANEK: Well--

SENATOR SINGER: Obviously, the BPU didn't know about it.

MR. STANEK: As the grid operator, we manage the wholesale grid. The substations, the transformers, are on the distribution grid. So, your utilities are responsible for that equipment.

SENATOR SINGER: I didn't say "responsible." But, you had to have some idea this was a problem.

MR. STANEK: This has been a problem for the past -- past two decades.

SENATOR SINGER: And, when were you going to tell the Legislature about it?

MR. STANEK: This-- This is a known problem. I would argue that as the wholesale grid operator, we do not own -- we are not responsible for that equipment.

SENATOR SINGER: Well, I think you have the responsibility of letting us know there's a problem coming. Because, if you have the power, and we can't get it to the site, what good is it?

So, it's very lovely to say, "This is the future; we're going to need more power." But, right now, the State of New Jersey cannot deliver the power to the site. So, if you wanted to house a brand new facility anywhere

in the State of New Jersey, you couldn't produce the power to it -- even if you have it in the grid.

And, you know, it's nice to say, "Well, that's really not our problem." But, I run a utility. And, my problem goes far greater than just my on-site problem. So, I think part of the blame for this entire thing is no one has really told us -- unless other members of the Committee knew about it. I only found out about it last year, of how short we are in upgrading of our substations -- statewide. That there's a power-- Granted, if you want to build a single-family home, I can produce the power for you. But, if you want to put up a 200,000-square-foot office building, I can't -- in many areas. And, any large developments -- you talk about housing -- can't be built right now. And, this is an issue.

We all thought -- and, maybe myself, because I run a utility -- that our problem is always going to be sewer and water. It's *not*. It's electricity. And, I think that, again, I was unaware of it; maybe some of the members of the Committee were aware of the tremendous shortage we have statewide that's been a problem, as you've said, for decades. We didn't know that.

So, just an interesting aspect to look at, Mr. Chairman.

SENATOR ZWICKER: Thank you, Senator.

Senator Smith.

SENATOR SMITH: Following up on a couple of comments from Senator Singer.

And, probably one of the biggest comments is how come so many problems, so fast, and therefore the great impact on rates? Theoretically, if we were to remember the last 20 years, through the gradual improvements to

the grid, it wouldn't be a 30% rate increase that we're looking at. It might be 1% or 2%. So, we haven't been improving it as we've been going along.

And, Senator, the way that the states in ISO -- including New Jersey -- found out that they have a problem, is they can't get-- They can't get projects approved. You can't-- If you want to interconnect to the grid, you're going to wait a year -- not only for approvals -- or longer -- but you're going to have to pay the utilities for what your new power means to the grid. What kind of repairs have to be made?

So, the failure -- the generic failure -- is that we've known for at least two decades that we have a grid that doesn't work. And, we haven't invested into it. Now, I think what Mr. Stanek would say is, "Well, we've got to look at the projects as they come in one at a time." But, there really was no overall gridwide planning. Or, if there was, nobody heard about it, because-- I believe PJM should have had neon -- red neon signs flashing for the last 20 years, saying, "You're going to have a major problem." And, we have a major problem. If we're going to see 30% rate increases come July 1, there's going to be thousands of people with pitchforks and tar looking to tar and feather whoever they think is responsible for this.

So, we've got some problems. Now, the problem is being exacerbated by this discussion of AI. And, by the way, very funny -- over the weekend, I watched *The Matrix* for the seventh time. And, of course, they blamed everything on AI, where machines took over the world. And, I'm not afraid of AI.

But, why shouldn't we put a demand on AI facilities that they have to bring their own energy to the jurisdiction? And, the reason for that

is then our ratepayers are not subsidizing that infrastructure with this enormous financial impact. Why shouldn't we do that?

MR. STANEK: You have the opportunity to do so, Senator. I would say that, currently, in legislatures across the country from Georgia to Texas, they're looking at doing that -- ensuring that large customers such as data centers do not have any adverse impact on the rates of customers who are currently on the grid. And, it's possible to do that with State law, and it's possible to do that with your State regulators at the BPU.

And, most of these large hyper-scalers, data centers -- so, we're talking about Amazon, Google, Microsoft, and Meta -- have publicly acknowledged that they do not want to have an adverse impact on their potential future neighbors, and that they will pay what they owe.

Currently, those guardrails may not be in place. So, if you have a large customer -- it could be a manufacturing plant that moves into a community -- there could be some second-order effects that end up on the retail utility bill for PSEG or ACE or JCPL. This is an issue that came relatively fast -- the entire load growth associated with artificial intelligence. So, many of your colleagues across the country right now are figuring out how do we ensure that data centers effectively hold harmless existing ratepayers on the system. And, as I understand it, most of these data centers are willing to do so.

SENATOR SMITH: So, does PJM have any role in that? Should PJM adopt a policy that, across all of the states in PJM -- or, at least put it up for a vote by the states within PJM -- that we want AI, but you've got to bring your energy with you. Is that something that an ISO -- an Interstate Service Organization -- should be doing?

MR. STANEK: I would argue that a multi-state RTO, such as PJM -- we're at the wholesale level, so we don't have any ability to sort of influence the dialogue on the retail level. So, that's more of a State concern, I would argue.

SENATOR SMITH: Yes, but you run the capacity auction, right?

MR. STANEK: We do run the capacity auction.

SENATOR SMITH: You're the guys who are setting the rates through your system.

MR. STANEK: Well, we are currently having a multi-party discussion at the Federal Energy Regulatory Commission in Washington -- they just issued a pretty significant order about two weeks ago, with respect to the co-location of large loads next to generating stations -- particularly nuclear generating systems--

SENATOR SMITH: So, what does it say?

MR. STANEK: The order that was issued said-- It provided a timeline; it did not provide any guidance or uncertainty, much to the chagrin of many of the market participants who were expecting a decision in February.

They did not receive that; however, what FERC did was they put together a procedural timetable, where that guidance should be issued by June of this year. And, then we'll see what FERC has to say. In between then, PJM has compliance obligations; then there will be an opportunity for public comment in the month of April. After that, FERC will review those comments and hopefully have a decision in June.

SENATOR SMITH: So, none of that is totally satisfactory.

July 1 we get the rate increases -- as I understand it. So, what should ISO-- What should PJM be doing to maybe adjust the capacity auction, as its starting point?

Do we have enough demand on PJM's system now that there's a justification for this 30% increase in rates? Do you have data centers-- Do you have AI in the queue that justifies that 30% increase?

MR. STANEK: So, our queue is to interconnect more generation. Utilities -- the distribution utilities -- have a queue that interconnects demand -- so, customers. And, we've heard from some utilities -- you'll hear from PSEG later on this morning -- that their number of entities seeking to connect to their system has more than, I believe, has quadrupled. It's got to be here in my testimony -- it's gone from 400 megawatts a year ago to 4,700 megawatts of interconnected data centers. So, I don't know-- The quick math there is like a factor of 10 times in just 12 months.

It's coming; it's coming fast. We recognize that the capacity prices from our last auction will hit the bills of your customers this coming summer.

SENATOR SMITH: July 1.

MR. STANEK: July 1. And, that is a function of supply and demand.

Similar to that 10 times number that I just mentioned, our capacity prices went up by a factor of nine times over the course of just one year. Recognizing the steepness of that demand curve is going up, and the fact that we're going to triple -- we're projected to triple our data center load -- our data center demand -- in just under four years now. By 2030 is only four and a half years away.

These numbers are astounding; they're staggering. Nobody was talking about data centers two years ago. And, PJM's forecast-- I'll be honest, back in 2023, we did not see where we were going and where we are today.

SENATOR SMITH: It's still not working for me. This rate shock that's coming is going to be horrendous, and -- in all communities, no matter what your economic level is -- a 30% increase in rates is going to get your attention big time.

So, do we say, "Well, PJM just didn't see it coming?" Let me ask you a revolutionary question. Why shouldn't New Jersey maybe talk to one of the other PJM states and form its own RTO or ISO? We are a net importer; maybe we do a deal with a net exporter and become our own ISO. Can we do things faster and better than you do?

MR. STANEK: The economy is a scale of a 13-state grid results in billions of dollars annually, in terms of efficiencies. But, we recognize the affordability concerns are out there.

What -- to your question, Chair (*sic*) Smith -- we've attempted to address this, and we have-- I believe we will successfully address this with a number of proposals that were recently approved by FERC. Just last month, we received four very positive orders that, when enacted and put in full effect -- hopefully later this year -- will have a downward, suppressive pricing effect on some of these inputs that will ultimately end up on utility bill rates--

SENATOR SMITH: What's the nature of those new developments?

MR. STANEK: One of them was the Reliability Resource Initiative -- RRI. That was a proposal that we made back to FERC at the end of December. What it effectively does, it would allow up to 50 shovel-ready

generation projects to advance in the queue on an expedited manner -- we actually just opened the application period up on February 28 -- to get these projects online and in service before 2030, which would be a remarkable feat, because you know how long it takes to build energy infrastructure.

It was a rather controversial proposal, but FERC, recognizing the criticality of the situation, approved it about 10 days ago and allowed PJM to go forward with this. So, we're hoping that when this window closes very shortly, we'll have 10 projects that can certify for us that they will not only bring a fair number of megawatts to the system, but they'll be able to do it quickly, and the shovels will get on the ground in the very near future. Because, they will have a commitment to supply by 2030.

SENATOR SMITH: Do you think the 30% increase is enough to get the generation to capacity that PJM needs?

MR. STANEK: We've heard from some generators that that's a -- it's not high enough of a signal. We've heard from others who have tendered their retirement papers to PJM who said, "You know what, we'll take our retirement papers back. We liked what we saw in the last auction." In New Jersey, it cleared at $269 per megawatt day. So, we did see some generators on both sides of the argument saying, "We'll stick around, and we'll hope to continue to capture that high price."

We've heard from others that they're uncertain -- will that replicate -- will a high price replicate in the next auction? Will it be so suppressed where they can't earn a return? It remains to be seen. But, we were supposed to schedule an auction in December. We worked with a number of our states who -- and ratepayer advocates -- who asked that we delay the auction. We went to FERC; we asked for a six-month delay. It was

granted; so, that auction was moved from December 2024. It will now be July 2025, this year.

SENATOR SMITH: So, last session, or the session before it, we had a very wonderful senator in this State Senate named Ray Lesniak. And, he put a proposal on the table for what was called a "pre-emptive rate increase." That pre-emptive rate increase was to build new generation capacity.

Is this a -- this capacity auction result -- is it a pre-emptive rate increase? Or, do you actually have the need for that 30% starting July 1? Do you have that many demands for new generation through the PJM system for that rate increase -- capacity increase, whatever you want to call it -- to actually justify it?

MR. STANEK: Thank you.

Based on our load projections, that *is* justified. As you know, the capacity market operates on a three-year-forward basis, so we're purchasing capacity that we will need today, March 3, 2025, for March 3, 2028. We want to ensure, as an insurance policy, that those generators will be there three years into the future. And, based on our projected demands, we will need that generation.

Of course, if they don't perform, we are able to claw back the revenue -- because they received that revenue today, or on July 1 -- not only be able to claw back that revenue but assess penalties as well for non-performance.

I should also note: You may have heard about the Brandon Shores Generating Station in Maryland -- that unit did not participate in the last auction -- approximately 1,800 megawatts. And, when you have such a

steepness on the demand curve where it intersects with the supply, it sets the capacity price. That's why we saw the price go from $29 the previous auction to $269 for the zone that New Jersey is in.

That unit is now going to be on a reliability must-run contract. And, due to a recent approval -- again from FERC -- we're going to include that capacity in the next auction. That should have a price-suppressive effect when we run the results in July of this year.

SENATOR SMITH: So, tell me about the deal that was struck between the four governors and PJM.

MR. STANEK: You're referencing the settlement in principle that was agreed to by PJM and Governor Shapiro of Pennsylvania. It was just Governor Shapiro.

That is currently pending at FERC. The Governor filed litigation against PJM on December 30 of last year. There was a concern on PJM's part that there was a tremendous amount of uncertainty that would have been thrown into this next capacity auction. So, we determined it was in the best interest for PJM, and its members, and states to have these conversations.

Ultimately, what is contained in the settlement is a price floor and a price ceiling for the next capacity -- the next *two* capacity auctions. So, the next one will be run in July of this year. The floor would be set at $175 per megawatt day. There will also be a cap, and the cap would be $325 a megawatt day. So, there's some symmetry, because we moved down by $175 and we moved the floor up by $175.

That will be in place for the next two auctions. It does give generators some certainty that, at a bare minimum--

SENATOR SMITH: One-seventy-five.

MR. STANEK: At the same time, there is a cap of $325. As we discussed earlier, some generators were saying, "Hey, we need $400; we need $500 to stay in the market."

So, we'll see if FERC will have the final say as to whether or not this settlement is approved by them. But, in the meantime, it does provide some certainty to our market, both customers and generators, as to the results.

SENATOR SMITH: When the participants in the capacity auction bid in to what they think the price should be, do they have to justify it to PJM?

MR. STANEK: That is a question-- That's a good question. I don't know the answer for certain, if they need to show their math.

Obviously, it's a competitive auction. Some generators would bid in at zero, because they know that they'll be-- If you bid in at zero, you will of course be accepted by the auction. And, then, whatever the last clearing price is for that last marginal unit will effectively set the price for all of the price takers.

I suspect our independent market monitor does have a way to analyze that. But, I'll get that answer back to your office.

SENATOR SMITH: So, the obvious question -- at least in my mind -- is when you have this 10-fold jump in rates -- capacity clearance rates -- any chance there was any collusion among the energy generators? Because how is it everybody figured 10 times higher this year?

MR. STANEK: Well the--

SENATOR SMITH: Or, is it actually based on projects that are in the queue and you know you have to have it?

MR. STANEK: There's the ability to launch investigations at all levels, including our market monitor. FERC has a division of investigations that they take a look at potential collusion for physical withholding of your capacity; economic withholding -- effectively setting a price too high.

Based on all of our indications running the last auction -- we call them Base Residual Auction -- we did not see that. What we--

SENATOR SMITH: Was it actually investigated?

MR. STANEK: We have a report; I don't believe there was any investigation, nor do I believe that anybody--

SENATOR SMITH: With a 10-time increase in rates, there's no need to do an investigation?

MR. STANEK: The fundamentals were relatively clear to us. We did not see any type of withholding, or otherwise untoward behavior in the markets. And, these markets and the auctions *are* supervised; they are fully regulated. There had been investigations in the past. This is a situation where we saw so much demand projected out that we effectively cleared all the bidders of capacity into the auction with just a few megawatts remaining. Everybody that was there we needed to maintain our reserve margins.

SENATOR SMITH: Would you take back the suggestion that this might be the time to do an investigation?

MR. STANEK: I will--

SENATOR SMITH: Because, I'm telling you, that July 1 -- August 1 -- everybody in this room is going to have to explain to somebody why the rates went up as much as they did. And, we better have a real explanation.

SENATOR SINGER: Senator Smith. (laughter)

SENATOR SMITH: What's that?

SENATOR SINGER: Well, I'll say, "Call Senator Smith."

SENATOR SMITH: Ah, man. I'm going to an unlisted number.

SENATOR SINGER: Just, through the Chair, just one thing, to Senator Smith's comments, if you don't mind.

SENATOR ZWICKER: Sure.

SENATOR SINGER: First of all -- and, you know, him and I are like the Renaissance men here. There are two things: Number 1 is the gas price went up substantially during the winter. The problem we didn't see a lot of people calling our offices is -- and, the same thing with the power factor with the electricity is -- people are on the budget plan. And, they don't see the reaction until their budget suddenly says, "OK, now instead of having a credit, you now owe us $2,000." So, you're going to see that with the gas, because natural gas went up very high. And, people who pay the monthly bill saw it, but the budget people didn't. The same thing with the electricity.

The other thing is that New York City -- and, New York State, as such -- a lot of the building there requires it, where they found they have self-generation, because they couldn't wait for Con Ed or anybody else to provide it. So, they've done a lot of that here.

I will tell you, in our discussions with the utilities, they tried to discourage that since those people who built it are going to operate it, and therefore not going to the grid. So, they're not happy with that because that's competition for them, and they want that.

So, you're right. In a lot of other states, people build -- create -- their co-generation plants on site, which means they never hook up to the grid.

SENATOR SMITH: And -- I hate the role of Cassandra -- 2023 was the hottest year in the history of humanity; 2024 was hotter. And, guess what 2025 is going to be? Another record winner.

And, not just New Jerseyans, but all the people in other states that are in PJM, they'd like their air conditioning, especially on really, really hot days. So, it's not just AI; there are other demands for energy, and we're -- I just wish we had recognized that, like, 20 years ago and we're having orders to build, I wouldn't say, "Do a little extra for the grid," or, "Do a little extra, period." And, maybe the mandate that we have to have the cheapest possible rates -- not one penny more than is needed -- was short-sighted.

Maybe we should have been investing in the grid as we've been going along. And, by the way, I have this argument with the New Jersey Ratepayer Advocate every time he's in my Committee, all right, because I think the philosophy is terrible. In other industries, we're always trying to be more resilient for the future. So, when you do your renovation, you do a little extra. Maybe you put in a new electrical system, or a new plumbing system, or a new whatever. But, we haven't been thinking that way. We let 20 -- well, we let 100 years -- of not really investing the way we should, and now we're reaping the wind something worse.

In any case, please take back the hint to do a little bit of investigation to see if these bids were coordinated, and in-- You have to start talking to all of us, the 11 states, as to what we need to do to either not allow this situation to continue-- And, by the way, back to that capacity auction question. What happens after the two -- you have a deal with Shapiro and, I think, three other governors -- but maybe more -- to not -- to have two bids

where you're not opening up, you're going to keep it within that gap. What happens after that?

MR. STANEK: That's correct.

And, the three other governors, they were participants to the concerns exressed by Governor Shapiro, but not parties to the settlement.

So, after two years, the settlement terms provide that the rules revert to what they currently are, or whatever the current rules are in effect at the time. So, we attempt to operate open and competitive markets. So, the cap and the floor would no longer apply after the next two auctions are run.

Hopefully by then we'll have some of these new projects online; we'll see the benefits of this ROI proposal. We've also received permission from FERC to have a must-offer requirement, because a lot of renewables actually don't participate in the capacity market. But, because renewables are an increasing portion of our generation portfolio, there will be a requirement now that they actually do participate in the capacity market.

So, whatever we can do to get more capacity onto the system -- generating capacity -- that will have -- that will have a suppressive effect on prices.

SENATOR SMITH: All right, so, we're not blindsiding you; we're -- I think we're going to be doing legislation that says we love AI, but don't come to New Jersey unless you have your own energy supply. And, we're going to try to sell that to the rest of the members of PJM. But, they won't have the same legislation, because the worst thing that would happen is we say, "No AI unless you bring your energy," and everyone else says,

"Come here." And, then, we get the rate increase without any of the benefits of AI.

But, if we can get maybe half the states in PJM to say, "We're going to get these rate increases; we're not going to be able to justify it to our residents," this is the best way to try and take some control over the situation. And, I'm not trying to pick on an industry -- we'd love to have AI here -- but they're making the ratepayers pay for the upgrades to the grid that are required by *them* -- that's just not fair, and our ratepayers are going to see it that way.

So, I've been on the soapbox enough.

MR. STANEK: No, thank you, Senator.

And, you're right. A number of states are looking at bring-your-own generation -- BYOG. And, I should note that New Jersey is well-represented through the BPU at its discussions with the other 13 states at PJM. So, those concerns will be carried back.

SENATOR SMITH: Thank you.

SENATOR BURZICHELLI: Thank you, Chairman.

Senator Smith, that was well done and sweeping.

And, good morning to you.

And, you may feel a bit under fire -- that's not really the intention, but we don't get to see you. So, you're welcome here. You're not viewed in an adversarial role, because, frankly, the operation of the grid -- particularly PJM -- has a rich history of being successful. You're in the business of moving electricity, but there is a growing criticism with these rate circumstances -- particularly on the base generation side, which you play a

considerable role in, as the recent exchange between you and Senator Smith points out.

So, when you go with that large of an increase on base generation, there's a simple question to be asked: Where'd the money go? I mean, what's the profit margins of these generators?

Well, let me back up a bit. How many people participate? How many entities are in the generation auction?

MR. STANEK: That's a good question. I don't know the exact number, but it's a fair amount of both competitive generators, as well as regulated utilities who offer their generation into the market.

In PJM, we have two types of states: We have those that have been restructured, such as New Jersey, and those that are fully -- we call them fully regulated. They're vertically-integrated utilities that own their own generation; they own the wires; they're the distribution utility, so it's sort of one-stop shopping there.

But, there's-- I don't know the exact number; I can get that to you. But, it's a fair amount of resources across our footprint that participate.

SENATOR BURZICHELLI: And, curious, the makeup of the PJM board does not include any of the State's BPU organizations?

MR. STANEK: We have nine independent directors. They have backgrounds in different areas, as required by PJM. The BPU is represented on what we call OPSI, the OPSI Board. It's the organization of PJM states, so there's 14 board members who represent each of the states. We, as the PJM board, will regularly meet with the OPSI Board. They just met last week to share any concerns coming from each of the states.

SENATOR BURZICHELLI: And, how is the process internally at PJM that arrives at these base-generation structured numbers? Like, for curiosity, Senator Smith points out with the settlement with Governor Shapiro -- and, Governor Murphy was in that mix, so that went from a proposed $500 cap, down to $350 as a cap. It--

MR. STANEK: Three-twenty-five, sir.

SENATOR BURZICHELLI: Three-twenty-five. I feel much better, thank you.

So, good. But, I mean, the number moves -- why did the number move? I mean, I guess I should back up. How did $500 get set, and then suddenly, in a settlement, $325 could be lived with?

MR. STANEK: Well, you could argue -- and, rightfully so -- that numbers are arbitrary; $175 or $325 cap. The initial number -- $500 and change -- is set by taking a look at a hypothetical proxy generating unit. What would it cost? What's the cost of new entry to build this proxy unit? And, that sends a signal as to what we would need -- sorry, what the generators would need -- to actually enter the market.

That unit is continually reviewed every other year. Currently, it is a combined cycle gas unit that serves as the proxy unit. At one point, it was determined, what is the cost of new entry of a unit that could be constructed in the course of three years? And, that is symmetrical to the three-year forward nature of the capacity market.

So, there's a science behind why that number is chosen. I would-- I would say, and admit, that there is less of a science as to these numbers in the settlement.

SENATOR BURZICHELLI: And, by the way, it's been discussed when this next wave of increases occur, there's going to be outrage. That outrage has already begun. Recent-- Recent town meetings in the state of Delaware were bordering on hostility. People are feeling this already; that's before what appears to be coming.

So, as these auctions are considered, and these numbers are granted, if the demand does not materialize, does the generator have a windfall profit? Because I take it -- now, remember, I'm a layman; I'm not an engineer -- there's only going to be so much electricity generated. And, the auction occurs, and that means you're going to be able to meet this demand. So, whether they were bidding at the old number prior to the $270 -- which was how much? How much was it before the $270? Seventy-nine dollars? Eighty dollars?

MR. STANEK: Twenty-nine dollars.

SENATOR BURZICHELLI: Twenty-nine dollars.

At one point, they were generating electricity at that number. Suddenly, you need a 10-fold increase. That's a big increase. I mean, there's not-- There wasn't a 10-fold increase in raw materials, but there was in natural gas; in coal; or oil; or nuclear.

So, how is that number justified?

MR. STANEK: Well-- And, I would note that the capacity number going from $29 to $269 -- so approximately a nine-fold increase -- is solely for capacity. That's just one component on your bill. The actual production of the electricity, the generation of that watt -- the electric commodity itself -- is another number, and it's a much larger number compared to this discussion that we're having on capacity.

So, initially -- and, we all recognize this here, utility bills not going up by a factor of nine, that is just one component of one line item in a utility bill.

But, the question, "How did it go up nine times?" You are correct -- the raw materials did not go up in cost for nine times. But, this extreme increase in projected demand, compared to our supply -- which is actually declining -- so this is the worst possible situation. Demand is increasing dramatically. Supply, we have generating resources -- primarily thermal resources; primarily coal resources; followed in a distant second by natural gas resources -- are aggravating that supply-demand situation.

I hate to draw an analogy to eggs, but I think folks on the ground, average citizens, understand when they go to their supermarket every week and see the price of eggs now approaching, like, $10 for a dozen, understand that there's supply-demand component. And, it's relatively -- it's more complex, but relatively similar to the production of electricity three years in the future.

SENATOR BURZICHELLI: It's frustrating for people when they open their bill. And, as we understand it, I'm in the Atlantic City Electric service territory. A significant portion of my bill is on the generation side. I want to say 65%-plus; others will speak today and will confirm that.

So, this discussion about generation is just absolutely critical. And, so, with all the success PJM has in its technical operation, it feels like managing these auctions has gotten away. Whether it's allowing -- unintentionally, but inadvertently -- windfall profits; taking advantage of projections that may or may not come.

So, I guess the base question I would have -- no pun intended -- is, is this working at this point? I mean, it seemed to serve us for the longest time, as de-regulation came, but are we in the right place now with regards to securing generation, and is it time to go back to some degree of regulation in this area?

MR. STANEK: Well, you're asking good questions, Senator, as some of your colleagues in other states are also asking, of course. For many, many years, when the capacity prices were relatively low, we did not have the need for hearings such as today.

What I can tell you is having this capacity market is akin to having an insurance policy. Other RTOs and grids don't have that -- for instance, Texas, they don't have an energy-only commodity market. So, there's not necessarily a guardrail on prices when supply and demand are out of whack. And, you had the winter storm a few years ago where prices shot through the roof.

What I can tell you is that FERC is working with PJM. We're pulling every lever possible to make changes to our tariff at the wholesale level. It's not going to affect the prices that your constituents and the southern part of the state will experience later on this summer. But, we're hopeful that the capacity market, we can get new capacity in; get it in timely; work with our states to build new generation as soon as and as quickly as possible. And, then, hope that our demand forecasts are coming a little lower than what we initially projected it to be.

But, everything we have, and these forecasts, we work closely with the utilities such as ACE, because they know that customers on the ground -- they know the environment -- they would know if a data center is

going to be developed. They roll that information up to PJM so we could create these new trend lines that you see at the top of Page 2 of my testimony.

I would really hope that next January, when we draw the 2026 line, it's not higher than 2025's.

SENATOR BURZICHELLI: We are-- We're in a difficult spot, collectively, because with all the great progress being made, it doesn't help-- It doesn't help residential customers, small business customers, if they can't afford the electricity. And, in the end, if someone doesn't get their arms around this, we're going to be on the verge of America's greatest conservation of electricity ever conceived -- which is people just can't afford it, so they're not going to be able to pay their bill. There are wonderful programs to help people, but that's going to have its limit as well.

Chairman, if I may close on this one? What are you hearing out of the Federal Government on staffing FERC? Because, they play such a large role in this. Has that department felt the cutbacks that others are feeling?

MR. STANEK: Not as of yet. No probationary employees at FERC have been dismissed.

I was a former FERC staff member for 17 years, so a lot of my former friends and colleagues are still there, but it's a time of uncertainty. Many FERC employees took that fork-in-the-road deal, and they had to separate last Friday -- this past Friday -- from the offices.

So, FERC is losing staff. They are not, at this time, allowed to hire new staff. So, it is just a one-way attrition of some really talented employees. And, of course, we need utility regulators not only to monitor and oversight and provide regulation for PJM, but the demands of the country require that we have experts -- expert regulators in place at both the

Federal level and at the State level, such as the Public Service Commissions and Board of Public Utilities that we--

SENATOR BURZICHELLI: And, should this -- through the Chair -- should this Legislature direct our utilities to re-enter the generation market?

MR. STANEK: That is a determination left up to the State. I know the State of New Jersey restructured about 20-some odd years ago.

There's a question: Do you want your regulated utilities in that business of owning generation, or do you leave it to the competitive market to determine? There's pros and cons with both models, and, as noted, about half of the states in PJM are restructured -- some say deregulated, but the proper word is "restructured." And, others continue to be vertically integrated.

SENATOR BURZICHELLI: And, Chairman, I'll close on this.

It would be-- It would be safe to say to you to take back to your Board that there is a high level of dissatisfaction of how this generation auction has unfolded over these couple years, that this is teetering on crisis circumstances for residential customers and small business customers. It's not satisfactory.

With all the good work PJM does in moving electricity, not doing well on this one. This thing got away from somebody, somewhere, and there are questions remaining. Are there windfall profits? Is there -- collusion is a strong word -- but do people speak to each other? I mean, for a marketplace to explode as it has raises nothing but questions. And, yes, demand is there, but the cost to generate electricity has not increased to the level of the generated electricity that's now being charged through the pipeline to

consumers. So, there seems to be a great deal of work to be done. Something is out of whack.

And, we very much appreciate you being here today--

MR. STANEK: Senator, thank you.

I will carry that information back, and we will hope that some of these new proposals that will go into effect this year will have a price-suppressive effect. I will share that with our board.

SENATOR BURZICHELLI: Thanks.

SENATOR ZWICKER: Thank you.

Before we let you go, I wanted to just bring it back to data centers and AI.

In your previous testimony, you talked about this idea of "BYOG" -- bring your own generation. And, there have been some headlines about that. Microsoft is working to restart Three Mile Island, as an example. But, is that realistic for-- Given the explosion of AI, New Jersey certainly has a de-commissioned nuclear facility that, in principle, I suppose, could be restarted.

But, is this-- I guess my question to you is, is this realistic? Is "BYOG" realistic to meet the demands that we expect to see in data centers and AI over the next few years?

MR. STANEK: As you know, the pace of change is quite extraordinary, as to sort of how much electricity is going to be used by the data centers. Technology in place to make them more efficient, or to cool them at an expense less than running air conditioners for the entire facility.

But, you raise a good question, with respect to "BYOG." There's only so many Three Mile Islands that can be sort of re-commissioned after

effectively being dormant for so many years. There is a tremendous focus now on Washington, at FERC, with respect to this topic. Do you want to have private generation, effectively, behind the meter, off the network, invisible to PJM?

Many data centers say, "No, we want to be able to rely on the grid in case our dedicated generator fails or needs maintenance or service." Because, they need high quality electricity 24 -- 24/7. So, the "BYOG" concept is only one that we've heard about over -- maybe about this past six months; relatively new. I think it's yet to be seen.

I think when we hear from FERC as to Federal guidance that we'll receive, that will be applied nationally. I think that will be instructive.

SENATOR ZWICKER: Yes, I certainly struggle with this idea that there are nuclear plants or other things that people can just turn on -- and, certainly not turn on in a timed, expedient way, given the explosive rise of data center needs.

And, then, related to that is my final question, which is, as you admitted previously in your testimony, PJM didn't necessarily -- back in 2023 -- project this level of data center demand. And, frankly, nobody saw this happening until OpenAI and ChatGPT burst onto the scene.

But, given that, as you start-- As you talked about, Senator Smith, in particular, the possibility of floors and ceilings and things that can be done to try to handle some of the volatility, how confident are you that your future projections are even realistic? I mean, there have been headlines out of China suggesting that there may be a revolution that would help us all, and driving the consumption of data centers down -- we'll see if that's

realistic. Meanwhile, as New Jersey and many other states try to become hubs for AI, we expect to see this go up.

So, in your projections, what little confidence-- Or, how do you account for that, given all the volatility that my colleagues have asked you questions about?

MR. STANEK: So, we take forecasting seriously, and we spend the better part of six months out of every year coming up with our forecasts that we typically release the third week of January.

We receive data from dozens of sources, but, as I noted earlier, our Number 1 source for the best quality information is our utilities on the ground; sharing information as to what they're seeing in terms of customer base; who is planning to connect to the grid. But, aside from that, we look at information from government sources; we look at economic data; unemployment data; information from the DOE's Energy Information Agency. We take a look at weather trends going back to 1993, looking at the weather on a daily, hourly basis, taking a look at, of course, trend lines, with respect to building electrification; port electrification; EVs. If we know about particular information or data points in particular states or counties, we'll include that. For instance, New Jersey, we took a look at the BPU's electrification order, recognized that, and put that into the mix.

So, we try to get as granular as possible information in order to have that trend line be the most accurate. But, as you noted, on Figure 1 of my testimony, we've missed the mark for the past two years in terms of the forecast for '24 and '25. So, with additional efforts, with additional information, whatever particular states could supply us with, in addition to the utilities, will help us determine that trend line, which goes out 20 years.

SENATOR ZWICKER: Thank you.

And, as Senator Burzichelli said, we appreciate very much you being here. Obviously the questions-- There is deep concerns from not just us here on this Committee, but from all of the folks that we represent.

We appreciate very much your time, and ask that you not be a stranger as we move forward, as we try to get our arms around all of this -- both AI data centers and, in general, the cost of electricity over the next few years.

MR. STANEK: Thank you, Mr. Chairman.

And, we will be in touch with Committee members who asked for additional data.

Thank you.

SENATOR ZWICKER: Thank you.

With that, I'd like to move towards the utilities and start with PSE&G.

Can I ask the folks from PS to come up.

And, if you could let us know your names and titles for the record.

J O S E P H F. A C C A R D O, Jr.: Good morning, Chairman Zwicker, and distinguished members of the Senate Legislative Oversight Committee.

My name is Joe Accardo, Senior Vice President of State Regulatory Affairs and Centralized Services for Public Service Electric & Gas Company.

Also with me today is Ed Gray, Vice President of Asset Management and Planning for PSE&G.

Thank you for the opportunity to make these statements today.

This will be a bit of a summary, and we've also provided the Committee with written testimony that is -- expands upon what we're going to be talking about here today.

So, it's no secret that New Jersey is facing significant challenges in both reliability -- where there is an increasing concern that there will not be enough power to keep the lights on -- and, affordability, with electric bills set to rise significantly this summer. This rise in prices is due to the cost of the electricity itself, which PSE&G does not control. And, that cost is being driven by one main factor: A lack of generation supply to meet expected demand for electricity.

Currently market rules, set by the Regional Grid Operator, PJM, simply are not sending a signal to the market to build urgently needed new generation. And, because electrification, electric vehicles, onshoring of manufacturing, and data centers are all pushing electric demand higher without electric supply increasing, prices are rising. PSE&G is here today to explain why New Jersey is facing this serious situation, and outline the steps that New Jersey can proactively take to assume control and maintain reliability and affordability for its residents.

At PSE&G, providing our customers with safe, reliable, and affordable electric and gas service is at the foundation of everything we do, and we take these responsibilities very seriously. We uphold this responsibility by first making prudent investments in infrastructure, distribution reinforcement, and other programs to ensure that New Jersey's energy network remains reliable, resilient, and ready for load growth. PSE&G updated its five-year capital plan to replace aging infrastructure while accommodating the projected growing demand. Over time, customer

affordability will benefit as fixed costs are spread across a larger customer base.

Second, being part of a robust process in which these investments are reviewed closely by our New Jersey Board of Public Utilities and New Jersey Ratepayer Advocate and other parties to regulatory proceedings.

Third, ensuring PSE&G's electric and gas infrastructure remains reliable and resilient with infrastructure modernization, energy efficiency, electrification programs, and system readiness to support load growth.

Lastly, PSE&G does not delay processing customer interconnection requests. As recently posted on our website, PSE&G leads the way in the state in addressing customer requests to connect to the grid -- whether that's solo requests; interconnecting generators; connecting to the high-voltage system; or, large and complicated customer connections.

Over the years, PSE&G has worked closely with the New Jersey policymakers to keep costs down and bills affordable. We rigorously manage costs while continuing to operate our system at a high level. As a result, PSE&G's combined electric and gas bill compares favorably with other New Jersey utilities, and both we and the State as a whole remain a leader across the nation in the important "share of wallet" metric, as this will remain the case even after these increases in June. This is especially true for low- to-moderate-income customers who take advantage of payment-assistance programs.

Importantly, electric utilities like PSE&G do not earn a profit on -- nor do they control -- the cost of the power, but *are* required to pass that cost onto customers through utility bills. The Electric Discounted Energy Competition Act of 1999 required New Jersey's electric utilities to divest

themselves of their electric generation assets. New Jersey's electric power is acquired through an interstate market that is run by PJM and delivered to New Jersey customers. And, you heard a little bit about that before.

So, here's how it works: PJM is the regional transmission grid planner and operator, responsible for ensuring the reliable flow of electricity in a 13-state region that includes New Jersey. PJM, with input from the electric utilities, is responsible for first forecasting across its region how much electric demand there will be in the future, and, second, ensuring that sufficient electric generation is procured to meet that demand. PJM develops a regional load forecast every year to project electric demand across the region 20 years out. This forecast is a critical component of both PJM's transmission planning process and, importantly, its capacity market, which pays powerplants for being available to deliver power when customers need power the most.

PSE&G recognized the growing load requirements, and work closely with New Jersey to try to ensure that PJM's load forecast accurately reflected the demand it expects to serve the needs of our customers. For the past two regional load forecasts, PJM has gotten closer to PSE&G's projected demand numbers -- and, as a result, its load forecast -- both for the PSE&G zone, and across the PJM footprint -- has recently increased significantly.

In its 12-month load forecast analysis, PSE&G has found four key drivers: Commercial and residential electrification; electric vehicles; onshoring of manufacturing; and artificial intelligence, with data center requests growing considerably from 400 megawatts to 4,700 megawatts. Nearly 20% of the power New Jersey uses is generated in other states and moved through the interstate wires that PJM plans and operates.

So, what is the problem? Current market rules set by PJM are simply not working. Capacity market developments of PJM -- most recently the outcome of its 2024 capacity market auction -- will have a significant impact on electric customers' bills later this spring. PJM's market is not procuring sufficient supply. When coupled with increased electric demand, this is resulting in significantly higher rates for our customers.

And, while we can discuss responsibility for the challenges that the PJM market is facing, there is consensus around one clear fact: New generation is urgently needed to meet this rising demand. As reflected in PJM's load forecast, demand for electricity has grown significantly, and is projected to continue to grow further. In the past, flat load growth masked flaws in PJM's capacity market design. But, now, the lack of a long-term price signal to (indiscernible) new generation -- which has only been exacerbated by auction delays. And, the retirement of significant amounts of coal generation have resulted in a projected shortage of supply to meet demand and a capacity market price spike that will hit New Jersey customer bills in June.

So, what's next? New Jersey is at a critical decision point to assess ways to alleviate these constraints and ensure adequate power supply in the Garden State. While we cannot fix this challenge without regulatory or legislative changes, PSE&G has thought through potential approaches, with the intended purpose of fostering a collaborative dialogue amongst stakeholders. PSE&G stands ready to partner with New Jersey to develop a comprehensive, integrated plan to address both reliability and affordability; looking at the supply-demand imbalance in the state holistically; and considering concrete solutions to address it.

For example, New Jersey has made statutory changes in the past to allow rate-based generation for renewable resources to stimulate the development of in-state renewable generation. The State could consider doing so now to develop high-capacity factor generation resources to meet demand. The State could also run a targeted RFP process, as it did with offshore wind generation, to procure a specific amount of new supply resources for peak demand as part of a competitive solicitation.

In addition, through a comprehensive resource plan, the State could work with its utilities and with PJM to develop regional transmission solutions that would move out-of-state power into New Jersey. A partnership among the State, PSE&G, and the state's other electric utilities could drive to an integrated, comprehensive solution that allows the State to take its destiny into its own hands and make sure there is adequate generation to keep the lights on for New Jersey customers in a cost-effective way. PSE&G has been actively involved in PJM's capacity market discussions, and has submitted detailed comments into the record here, that can provide additional context for some of these evolving issues.

In conclusion, PSE&G advocates for finding a long-term solution that benefits our customers. The consensus is that we urgently need more generation in the PJM region, including New Jersey. Utilities do not control generation in the state, but PSE&G welcomes the opportunity to work with New Jersey, and PJM, as policy choices are deliberated to help achieve a more affordable future. Without immediate change, costs to New Jersey utility customers will only continue to increase, and New Jersey will not be able to continue its efforts to electrify homes; electrify transportation; or enjoy the economic development from onshore manufacturing or artificial intelligence.

Thank you for the opportunity to make these comments here this morning.

SENATOR BURZICHELLI: Thank you.

And, the second person, would you like to speak now?

E D G R A Y: No, I'm just-- I'm here to help Joe answer questions.

SENATOR BURZICHELLI: OK, very good.

Senator Singer, any questions?

SENATOR SINGER: Yes.

What are you doing with the people on the budget planning? Are you doing anything about that?

MR. ACCARDO: Pardon -- with people--

SENATOR SINGER: On the budget plan. I know you have a lot of people on your budget plan.

MR. ACCARDO: Yes, so we -- with, in coordination with BPU -- have spent a considerable effort to make people aware of all the options that are available to pay bills and get help to support that. That happened throughout the pandemic; those issues came to the forefront during a moratorium. So, we've worked very closely with the State to figure out ways how to best make our customers aware of the various bill assistance options.

SENATOR SINGER: That's not what I'm asking. I'm asking you -- you have people who are on your budget plan now.

MR. ACCARDO: Yes--

SENATOR SINGER: Not anything with BPU -- they're on your budget plan.

At some point, there's going to be a day of reckoning when the budget plan suddenly says, "OK, but you owe X amount of dollars." Are you

rectifying that now, for them to understand that their budget plan that was done last year is not sufficient enough this year, based on the rate increase you're taking?

MR. ACCARDO: The customers-- I'm misunderstanding your question.

SENATOR SINGER: OK, I'm a customer of you, and, for arguments sake, I pay $150 every month for my electric bill. Even though, during the winter, I only maybe used $30 worth. And, that's part of the budget plan, so that you don't get hit with big bills.

The problem is, that was based on a different rate usage of pricing. You now have a new rate price. Are you going to go back to those people in the budget plan and say, "Wait a second, that $200 we were charging you for the month of July and August can't be $200 anymore, it's going to $350." Or were you just going to wait until they get to the -- they go through a renewal period and say, "Oh, by the way, you owe us $1,000?"

MR. GRAY: Yes, so, we have -- obviously -- I know your concerns are with your constituents; they're our customers as well. So, we know-- We're developing a comprehensive plan to how we're going to communicate to customers. I don't think we have-- I can't tell you exactly what it is right now, but it hasn't happened yet.

But, to your point, it will happen to them. So, we are developing ways to outreach to customers so they're aware of what's happening and maybe give us some different options to deal with that.

SENATOR SINGER: By the way, through the Chair, the reason why I say that is because most of my constituency is on a budget plan. Especially because they have a large senior population. That's why.

SENATOR BURZICHELLI: Chairman.

Bob is next.

SENATOR SMITH: I'd like to know more about that 4,700 megs of request for new service. How would you characterize it? Take the 4,700 -- what percent is AI, what percent is new residential, subdivisions -- whatever. Do you have a (indiscernible)?

MR. GRAY: The 4,700 is actually specifically the data centers, and I'll just--

SENATOR SMITH: *Just* data centers?

MR. GRAY: Yes, but let me break it down for you, to your question.

So, we have 700 megawatts of that, which is a solid -- this is a service request. We have already done a feasibility study; they know what they need to do; they're ready; they want to go. This is like -- there's -- 2,500 of those are ones that they have a property and they want us to do a feasibility study. So, they may build there; they may not. But, they're real farther along.

SENATOR SMITH: But, in order to ask for it, they have to own the property, correct?

MR. GRAY: They don't have to own it, but they have to give us a piece -- "This is where I'm looking to do." Because they might not have bought it yet, but they're trying to decide.

SENATOR SMITH: Is there any chance that -- not the 700 that are already enrolled, the rest of them -- may be speculative on their part?

MR. GRAY: Yes, and we don't -- yes. So, let me just-- So, there is another one where it's more, it's much more of a -- about 1,700 megawatts

of -- I'm sorry, 1,500 megawatts of, "I'm just -- I'm thinking about this place; how does it work?" Maybe they haven't built with PJM for (indiscernible) -- that's the other -- that's the balance of it.

But, you're-- It's a good question. We don't-- All those numbers are not in our forecast. We discount that, and we do-- Obviously, new business ones get a lot higher percentage of (indiscernible). These other ones we discount. And, this is not a one-year thing. Every year, we're looking at this--

SENATOR SMITH: Over the years.

MR. GRAY: Yes, and we--

SENATOR SMITH: What--

MR. GRAY: --and, we update it, so--

SENATOR SMITH: What was your-- In the capacity auction, what was Public Service's price? What was it they put into the auction, to be considered as a capacity generator?

MR. GRAY: You mean, the nuclear facilities? Or-- I'm not understanding the question. I'm not a generator.

SENATOR SMITH: All right, OK, you're district--

MR. GRAY: Yes, we're the utility, yes.

SENATOR SMITH: You're solely distribution.

MR. GRAY: Yes.

MR. ACCARDO: We are.

SENATOR SMITH: So, the nukes would only be the ones that would be bidding in the capacity?

MR. GRAY: No.

SENATOR SMITH: Public Service doesn't get a bid?

MR. ACCARDO: Not the utilities.

SENATOR SMITH: So, I'm trying to figure out again how the utilities work in conjunction with whatever the PJM process is.

Did you have to submit to PJM either requests for additional service so they can potentially forecast demand?

MR. GRAY: So, we give them a load forecast -- and, I think in Joe's testimony, it's not -- obviously data centers are a portion of it, but really the AI stuff really hasn't kicked in for the current -- these take some time to build, so the 4,700 isn't -- this is not happening next year.

SENATOR SMITH: Right.

MR. GRAY: But, there is electric vehicle adoption; there's other construction. There's-- You do a look at econometrics. If the economy is going to grow, generally electricity consumption is going to grow. So, there's multiple factors, and we listed all four of those, I think. So, we kind of-- That's how we do our load forecasts.

And, then, we give that to PJM and PJM develops a regional forecast for our service territory and all the other ones.

SENATOR SMITH: All right, so, full disclosure, I'm trying to figure out, in terms of how this -- the number comes up in the capacity auction, and how PJM is evaluating load. And, you're the wrong people to ask. But, maybe the -- is the PJM fellow, Mr. Stanek, still there?

Do you-- If I can ask you a question. Do you -- when you do the load projections, how do you handle the part of Public Services -- as an example -- the part that says, "Well, we might have an additional X thousands if these data centers or other customers go on and get the requested power

from us?" How do you handle it, in your capacity calculations or load projections?

MR. STANEK: Thank you, Senator.

So, we have 21 distinct zones within PJM; so, PSE&G is one of those zones. We determined whether or not that particular utility service territory meets its minimum reserve margin in terms of the capacity that we will need to supply the minimum requirements for the load forecast that we worked on with PS. So, I'm not sure if that answers your question.

SENATOR SMITH: What I'm trying to find out, somebody -- and, I can't ask the question articulately -- if the speculative part of the load projection was included as a part of the calculation of the capacity -- the base capacity rate.

MR. STANEK: I understand now.

Depending on sort of the quality of the information from the utility provider, how certain do we expect that load to materialize in three years; in five years; in 15 years?

SENATOR SMITH: Yes.

MR. STANEK: We will look at various statistics, including site control, is one issue -- do you actually own the title to that property--

SENATOR SMITH: Great--

MR. STANEK: --to develop the infrastructure?

We're also worried about potential double counting, where if you have a data center shopping in the JCPL service territory, but also in the PSEG--

SENATOR SMITH: Another (indiscernible)--

MR. STANEK: --we need to reconcile that somehow so we don't have two utilities planning for the same exact data center.

MR. GRAY: Right, and that's why the new business ones, we know they're ready to go and we discount the feasibility ones. We have a lot of ongoing-- We have a whole organization that talks with these folks; we try to judge where they're at.

And, this is not unique to data centers. We get this from developers all the time about, "Hey, I have a very expensive plan to do this, and we kind of -- we judge where are they, and how serious are they? And, we do discount the ones that are -- we don't feel like are close enough and they don't--

SENATOR SMITH: So, in that 4,700 megs, how much was data centers?

MR. GRAY: No, that number *is* all--

SENATOR SMITH: All data centers--

MR. GRAY: That number is just supposed to reflect the big increase in, like, data center requests--

SENATOR SMITH: Right--

MR. GRAY: --from what we've seen to what we have now. So, in the last 12 months, we've seen a very big increase in potential customers. We're not saying they're real customers, but these are potential customers who are at least interested in connecting to the PSE&G grid.

SENATOR SMITH: Now, the problem that I have with that, it sounds like we're doing an anticipatory rate increase.

MR. GRAY: Yes--

SENATOR SMITH: Pre-emptive--

MR. GRAY: No, no--

SENATOR SMITH: Because you have-- In that 4,700, you really can't say how many are going to actually be--

MR. GRAY: No, so, let me be clear.

So, the ones that we've included in our-- Actually, 40% of what we've included in our data center portion of our forecast is actually existing data centers that are expanding their operations--

SENATOR SMITH: Wow--

MR. GRAY: Right? And, then, the other 60% is very much of a discount of those other numbers -- about -- it's a discount of these larger numbers. And, again, as projects come in -- and, when we do this, we'll see projects that become real and then we'll add to it.

So, it's not a one-and-only thing. So, we don't -- most of what you're seeing here is real -- what we really believe is real load. And, obviously, we're going through this on an ongoing basis, as things come in.

SENATOR SMITH: OK. I think I have the clarification I need.

SENATOR ZWICKER: Can I just follow up on that?

For the 4,700 that you're talking about -- what you said, 100% it's real. What percentage of that is related to your total capacity, or your total you're putting out there? Of your total customers -- 4,700 megawatts, right?

MR. GRAY: Yes, peak last year was about 10,000; about 10,000 megawatts, for context.

Again, this is-- Again, these are not all going to happen--

SENATOR ZWICKER: Understood--

MR. GRAY: Yes, right, OK.

SENATOR ZWICKER: But, you're saying this is a 40 -- just based on that -- a 40 -- a potential 47% increase.

MR. GRAY: Over multiple years, because it'll take years -- they take time to build, and they have load build up schedules and everything else.

But, yes, everything happened as asked, which would be unusual. But, everything happens. That would be the number.

SENATOR ZWICKER: And, in your projections, over how many years is this?

MR. GRAY: We have a load-- I mean, everyone has its own timing based on where they're at--

SENATOR ZWICKER: Yes, would you say on average -- how many years?

MR. GRAY: Usually, if a -- if one of these facilities, a large facility -- it would probably begin to five years before they would reach kind of the full load, if they were really going hard, I think.

But, it varies. I don't want to speak for every developer. There are times, if they had bought transformers, that's a big deal for them. Every developer is a little bit different on where they are on their readiness to get going.

SENATOR ZWICKER: And, is-- In your service area, is the grid ready for this level of increase?

MR. GRAY: Well, we have a lot of options for different types of data centers. We hook up a lot at 26 KV; we have a 69 KV system that can handle up to 100 megawatts. And, then, the larger ones -- these are sophisticated developers -- look for connections near high-voltage systems. So, they're not -- they're not -- they kind of know where they should be

looking to hook up, because if there's no transmission there, and they're really a (indiscernible), they know their options there are limited, so--

SENATOR ZWICKER: OK, thank you.

Thank you, we appreciate your time.

MR. GRAY: OK, thank you.

SENATOR ZWICKER: Next up, the folks from Atlantic City.

And, if you could just start by telling us your names and your titles at ACE.

P H I L L I P V A V A L A: Sure, sure.

Yes, good afternoon.

Thanks for your opportunity to speak today.

Phillip Vavala; I'm the Regional President for Atlantic City Electric.

With me today is Dave Weaver, who is the Vice President of Transmission Strategy, here to help answer any transmission-related questions we may have.

So, I appreciate the opportunity to speak with you today.

I have some written testimony I just kind of would like to walk through, and then, obviously, any questions that the panel has, we can certainly address those as well.

SENATOR ZWICKER: You're welcome to summarize; you don't have to read it in its entirety.

MR. VAVALA: OK, thank you; thank you.

At Atlantic City Electric, we understand the need to support the development of large data centers within our service territory, among other things, propelling forward the AI revolution for our state. We presently have

several feasibility studies, four potential data centers -- and, we'll provide the details on those as we get into the conversation today.

I want to say it's really important for us to partner with our local and State economic development teams, making sure that the real estate firms, the pre-screen deployment of the parcels, as well, and making sure that we're not committing to a specific amount of power or availability for a site until the screening evaluates the needs for the surrounding grid infrastructure and the improvements necessary there.

I want to be clear that we want to promote and encourage the development of data centers. With our parent company, Exelon, we've joined efforts with local coalitions to pass data center tax initiatives in other states, including Illinois, Maryland, and Pennsylvania. And, these incentives preserve local property taxes paid in the communities where the centers are developed, but reduce or eliminate the sales tax on the equipment that gets installed in the data centers. In the past 10 years, new data centers have not built in states that do not offer data center tax initiatives.

We're seeing, as it's been discussed already today, a significant need for transmission investments that support our goals as a state. Electrification and the building additional transmission expansion needs -- these are challenges that we're building out and making sure that we're trying to deal with not only issues related to regulatory uncertainty; citing and permitting challenges; generator project delays; and the interconnection queue backlog. But, we believe that the interstate and aid in regional transmission development will enable us to strengthen our ties with our neighbors and increase resiliency.

Even with those ongoing investments, to ensure the strength and reliability of the energy grid for now and the foreseeable future, additional transmission, generation, and demand investment -- or, demand response investment projects -- are still needed to address the evolving needs. In addition, additional State and Federal policy may be needed to enable new transmission build-out, distribution, and generation improvements.

As has been discussed today already, the base residual capacity auction results signaled resource adequacy concerns within our state, and Atlantic City Electric customers began to feel that last summer, as many of you are aware. This emphasizes the need to ensure that data centers and co-location of data centers with generation resources is implemented correctly. New large loads, such as data centers, co-located or not, will have impacts on supply, demand, and overall resource adequacy within PJM -- as already has been recognized in this Committee. This underscores the needs for transparent planning, collaboration, and tight coordination across stakeholders to understand that the incoming load -- including co-located load, and the implications to availability, reliability, and customer bill impacts -- are fully understood.

I should note that data centers are prioritizing speed of interconnection. And, with co-located loads, that refers to the end-use customer load that is physically connected to the facilities of an existing or planned generation interconnection system. The arrangements may be beneficial to the end-use load customer to leverage often under-utilized land, or to interconnect at the grid locations that may offer efficiencies in securing power. But, however, we must balance the co-location benefits and customer protection.

Atlantic City Electric recognizes the data centers, and therefore must pay their fair share to cover grid costs, as well to ensure that co-location benefits do not place a burden on consumers. Co-location arrangements must undergo targeted reliability studies to ensure that they are able to safely and reliably interconnect to the grid. And, a local load should be treated as a retail customer paying equitable rates and further use of the grid support.

Please note that we're excited by the possibilities that this creates for South Jersey, and what it can do for our communities; what it can do for the State and its position within the United States. The energy demands though, however, must be met in a way that is fair to all customers. While co-location can be an effective solution, equitable cost-sharing needs to be ensured. The right policies and rate designs need to be in place to partner with an equitable framework that supports the nationwide energy transformation and economic development.

We're working with our data centers to meet their needs, no matter where they are located. We've developed tools to provide quick and initial assessments; conduct feasibility studies; and, ensure reliability for our customers -- as that is our prime mission. All electric customers must pay an equitable share for grid services and infrastructure costs. We're committed to safe, reliable service to all of our customers, and, where possible, provide advantages to support both the energy sector and the local economy.

The customers we serve, we will continue to serve in New Jersey and the United States forward as AI leaders. It cannot be done, however, unless we partner together to ensure partnership and policy is enacted to be able to protect all customers.

Thank you for your time today, and we'll open for any questions.

SENATOR ZWICKER: Senator Burzichelli, would you like to go first?

SENATOR BURZICHELLI: Thank you, Chairman.

Welcome, Mr. President.

The PJM discussion, I felt, was very interesting. What percentage of my residential bill -- because I do not go to a third party to secure generation, so I go through Atlantic City Electric -- so, what portion of my bill is generation?

MR. VAVALA: It's 40-60% of your bill, sir.

SENATOR BURZICHELLI: How much? I'm sorry.

MR. VAVALA: Forty to sixty percent.

SENATOR BURZICHELLI: Forty to sixty percent.

MR. VAVALA: Yes.

SENATOR BURZICHELLI: One of the issues with PJM has been their lack of response on getting things online. But, often, a finger is pointed back at Atlantic City Electric. Their large solar projects can't make their way onto the grid because of infrastructure restrictions. How many projects are in the queue in the Atlantic City Electric territory, waiting to get onto the grid?

MR. VALALA: There's a number of projects, sir. I don't have the exact number with me today.

But, to your point, we focus specifically on interconnection for solar projects. We have a project plan, and we have a project manager assigned to accelerating those deployments for two pieces: One, for new interconnection projects that are proposed; but, then, also, you're speaking

referred directly to, I believe, closed feeders, which are feeders that cannot accept interconnection because of capacity concerns.

Those are part of a work-down plan, as well, that we're working to conclude those and ultimately open those spheres back up. But, we'll get back to you with an exact number of projects, because it is variable, sir.

SENATOR BURZICHELLI: That kind of information is very helpful, related to this overall discussion. I mean, are they real? Are these projects -- are they financed? Can they really happen?

And, then, the other question is going to be, why the delay in battery backup on -- not battery backup, battery storage -- on the large solar fields? Is that an issue of our BPU, with regards to how those things should proceed?

MR. VAVALA: I know-- I'm not going to say it's an issue directly related to the BPU. I believe the broader issue related to battery backup nationally -- not just the State, and not just our utility -- is there is a considerable amount of information, I think, related to battery storage systems. They are an effective operation -- emergency operations planning related to them. And, I believe that, more broadly, we need a better ability to educate customers and the public on the proper use and their advantage to help deal with capacity issues.

SENATOR BURZICHELLI: So, through the Chair -- so, is the pursuit of battery storage of a large solar field -- is that technology not yet available? Is that not real?

MR. VAVALA: No, large-scale grid battery storage is an available technology. I think, like many things that we've talked about today in terms of utility infrastructure, there may be, in some cases, public opinion that does

not want one technology versus another located near their premise and that type of thing.

So, we've talked about windmills; we can talk about nuclear power; we can talk about combined cycle generation. Battery energy storage, in and of itself, also is a technology that I believe that there's a possibility for better public education related to its advantage, and, then, ultimately, what it can do to help lower energy issues.

SENATOR BURZICHELLI: Has there been a public outcry against battery storage? I don't recall seeing any of that.

MR. VAVALA: No, sir, I'm referring to sometimes what you might see from media outlets. I saw most recently there was an issue with California regarding a large battery plan as well that had an issue.

SENATOR BURZICHELLI: But, not in New Jersey.

MR. VAVALA: Not that I'm aware, sir.

SENATOR BURZICHELLI: How do you react to this -- PJM and the management of their auction, and the numbers you're seeing?

MR. VAVALA: So, it's certainly presenting a challenge, for sure. As you've heard from testimony from all of the parties here this morning, our focus, primarily, is on our customers. We want to operate the safest and reliable and most efficient business that we possibly can, and provide that at the lowest cost to our customers.

Obviously, as a leader in a corporation, I want to make sure that I'm providing the best service at the lowest possible price. And, the supply cost in and of itself, I believe we need to work both with yourself and the other members of the Legislature, in addition to FERC and PJM, to help drive this price down.

D A V I D W E A V E R: And, I would say that one of the key roles we have is to make sure, as PSE&G mentioned, that we have to get the load forecast right. So, we need to support PJM in understanding what the loads actually are. I think it was talked about by Mr. Stanek, around the surprise of the load growth. And, it has been a surprise to our industry. But, certainly some utilities, we're starting to see that, and even they were surprised by the growth of that data center over time.

So, I think it's very important that we get the forecast right, and we're all informing PJM and then informing our states as we start to proactively look at-- One of the orders that FERC came out with is 1920, that requires a long-range scenario-based planning so that some of this data center growth's public policy needs are identified, and we can be as proactive as possible in identifying transmission and generation solutions to meet that need.

SENATOR BURZICHELLI: And, let me add -- just for the record; I think it's important to say it -- I think Atlantic City Electric has done well in the improvement of their general system, from storms a number of years ago, before you became associated with the New Jersey side. Their reliability, I think, has been very, very good. And, that needs to be said.

Now, the other side of the coin is, can people afford it? And, that's a big question that we're heading into now. With all the great minds that are in this room -- not on this side of the dais, by the way; for your groups sitting in the back -- they're very, very smart people. But, somehow, we've lost touch with the fact that at a given point, people are going to have trouble paying. That's very significant, and this gets back to the generation question -- which you don't control, because you're not in the generation business, at

least your unit's not. Other parts of your company are. We have further questions about that.

Because, again, it's all going to be wonderful as long as people can afford it. There's a great struggle taking place at the moment, and we're just seeing the beginning of it. You can't walk away from it.

MR. WEAVER: And, that's the challenge with proactively building infrastructure to meet those needs. And, they can't be speculative; they have to be nailed down, and--

SENATOR BURZICHELLI: All that stuff. All that stuff.

MR. VAVALA: I do want to-- I appreciate you pointing out that the surrounding distribution reliability (indiscernible), is that is part and parcel of what we are focused on as a company. When we can have a direct impact on the investment that we make on the distribution system to provide 41% reduction in the outages and an increase in reliability over a 10-year period. I've seen it; I've lived it.

SENATOR BURZICHELLI: And, I get less calls during storms, so that part tells me it's real. But, the calls we're getting now are not pleasant, and that's on the bill. And, we can only pass that off so far.

So, as you leave here today, just leave with all this good intention of how we're going to manage that -- data centers, AI, all these things. We can't let this number get away from people to be able to have the lights go on in their home.

Remember, people take electricity for granted until they get the bill. We're very fortunate that we live in a place where the lights generally go on, as long as you pay the bill. So, I don't think there's going to be a short-term answer here. I mean, we're going to continue to raise questions about

the bidding process, and what takes place on PJM's side. I'm not suggesting there's anything -- there's something corrupt going on -- but something is going out of whack, and we're not going to get that answer today.

Thank you.

Thank you, Chairman.

SENATOR ZWICKER: Thank you.

Senator Singer.

SENATOR SINGER: First of all, I would never question the brightness of our Chairman and Chairman Smith, *ever*. I guess the Junior Senator doesn't want to get a bill up.

But, just one quick question. You're owned by an out-of-state conglomerate. How many states do they service?

MR. VALALA: Six states -- well, six municipalities.

SENATOR SINGER: Do we-- Proportionally, do we get our fair share of money for infrastructure compared to the other states?

MR. VALALA: So, our investment-- Our infrastructure, sir, is based on an investment portfolio that we propose that's adjudicated Board of Public Utilities, that is directly based on our system planning; our new business growth; our investment and our reliability as well. I do believe we get a very generous investment to be able to improve the reliability and expansion of the system as necessary.

SENATOR SINGER: So, you feel that we get our fair share compared to the other states. You have no question that you're getting the money you need for the infrastructure that we need to have both in?

MR. VAVALA: Sir, I believe that we are getting the money that we need to run the system; to make the necessary investments there; and

that, again, as I pointed out, our investment in the system is part of a very rigorous process where we demonstrate prudency for our investments.

Before the Board of Public Utilities, the Public Advocate is also part of that discussion, and they are looking at our investments saying yes, very clearly, that these are prudent investments to expand the system--

MR. WEAVER: --and, I will say--

MR. VALALA: --and, improve the system as necessary--

MR. WEAVER: --on the transmission grid, there is a collection of reliability criteria -- NERC, PJM criteria -- that we plan the transmission to. And, PJM plans on our behalf.

So, the ACE system needs the same planning criteria that the rest of the PJM transmission owners do.

SENATOR SINGER: What is the delay you have now in getting transformers to the system for your customers? Is it a two-year window?

MR. VAVALA: So, just to be specific, are you referring to distribution transformers, sir?

SENATOR SINGER: That, and upgrades of substations and on site.

MR. VAVALA: So, I can't speak to delays that we're seeing related to upgrades and substations. What I would say is, as we came out of the pandemic -- obviously we had a broad worldwide supply shortage -- I saw the vast majority of that on distribution transformers. We work very closely with a number of suppliers, we work closely with new suppliers, to obtain transformers necessary to be able to shorten that gap in lead time between customer-requested construction and energization, and work very tightly to try to close that gap as well.

But, if there were specific circumstances, we certainly can adjust those.

SENATOR SINGER: But, the gap is, in some cases, years, correct?

MR. VAVALA: In the very beginning of the pandemic, yes, there were multiple years in being able to get transformers. Yes.

SENATOR SINGER: But, there's still that gap now?

MR. VAVALA: So, I'm not seeing that gap, sir, unless there's a specific situation--

SENATOR SINGER: OK, so you're telling -- just so I understand -- you're saying that Atlantic City Electric has no problem or gap problem when a client comes in and says they need a transformer, or you have to upgrade a substation? You have no problem getting those -- that equipment in a timely manner?

MR. WEAVER: I think it really-- Obviously, it depends on what the configuration is.

So, if a customer is coming in, typically we might have -- and, if you're talking about a more remote area like Atlantic Electric *(sic)*, where our substations might have capacity for 30 megawatts, versus say, in downtown Chicago, where our substations may have the capacity for hundreds of megawatts, the ability to serve another 30 megawatts a customer typically will require us to put more infrastructure in to be able to serve that amount of load.

So, if we have to put in a new substation power transformer, yes, the lead-in times on those have been a couple of years.

SENATOR SINGER: OK.

MR. WEAVER: So, we-- But, it also depends on what the configuration is. Do we need to build out that substation? Do we need to physically expand that substation beyond its current boundary, its current fence line? And, those are some of the considerations, in terms of is it just transformation? Do we need to put other substation equipment? Do we need to expand that station, is a big component as well.

SENATOR SINGER: Thank you, Mr. Chair.

SENATOR ZWICKER: Sure.

Senator Smith.

SENATOR SMITH: Does ACE have requests for additional service for AI in your territory?

MR. VAVALA: We do. We have approximately five projects--

SENATOR SMITH: Yes, could you tell me the--

MR. VAVALA: Sure--

SENATOR SMITH: --number of megs?

MR. VAVALA: Yes, it's about five projects, and it's about 1.5 gigawatts of total load. Three of the five opportunities, they are under feasibility studies. They have a high probability of actually success as well, but the other two are under assessment.

SENATOR SMITH: And, 1.5 what?

MR. VAVALA: Gigawatts.

SENATOR SMITH: So, that would be 1,500 megs?

MR. VAVALA: Yes; that's correct.

SENATOR SMITH: About a third of what Public Service has.

If the AI -- if the AI centers were required to bring their own electricity, the way they would do it, I think, would be co-located on their

property. Instead of buying a 10-acre property, they would have to buy a 50-acre property. They would not necessarily be using the transmission lines; the utility.

But, if they're asking for backup -- even though they may have emergency generators; battery storage; whatever -- it would probably be foolish of them not to ask for backup. What's the fair compensation for the utility to be -- for providing backup?

MR. WEAVER: Well, I do want to make sure it's clear -- we're not aware of any customer who's seeking to co-locate generation, and bring generation, who is not seeking to also be synchronized to the grid. So, they are not isolated; they are just connected behind a customer's point of interconnection, versus right at a utility substation.

So, it's-- Electrically, you can have a situation where the connection is one in the same; equivalent.

SENATOR SMITH: But, on the odd chance that they set up that way, how should the utility be fairly compensated?

MR. WEAVER: Well, so I think that the co-location arrangement would be that they're synchronized to the grid. They'd have generation; they could have that generation be behind the meter. But, I think then, at that point, you'd just have to-- They would have to pay fair prices for that backup capacity out of the market.

SENATOR SMITH: And, my question was is a fair price assumed based on if they're going to be using that power all the time? Or, is it just for any upgrades to the grid and the normal rate case? What would it be?

MR. WEAVER: Yes, I mean, I don't know how they answer what that market price would be. I mean, they would have-- I mean, obviously, it would depend on what configuration they have. Is the generation meeting the load -- the full amount of the load that they have? Would they have a requirement for full backup? Would they have the ability to isolate themselves from the grid? *Truly* isolate themselves from the grid, and go away if the generation goes away?

So, I think that there's-- There are tariff arrangements that can still be contemplated for how to deal with that customer in the event that they've got one arrangement versus another arrangement, in terms of what they need from the grid for that backup.

SENATOR SMITH: So, is it possible that the arrangement could be that they pay for whatever upgrades are required to the grid -- so, they could be a backup, theoretically, and then they provide their own electricity and they do their thing on their (indiscernible); use their emergency generation if they need it; or their battery storage, if needed? And, then, pay if they ever do need your backup -- pay for any electricity consumed? Or, is there a different way to charge them?

MR. WEAVER: I mean, I would say that they would-- They would-- I mean, you have to figure out what retail arrangement did you set up with that customer. But, the customer, if they took backup power from the grid, then they would need to participate like anybody else does -- they would be able -- a load like anybody else's in the PJM footprint, and paying a retail rate. That retail rate may be adjusted because of the fact that they're only taking backup power. But, that backup power -- the cost of that energy and capacity -- would likely be based on some market--

SENATOR SMITH: If they did collate -- co-locate -- the electric power, what would be the impact or reduction of impact to the rate -- the other ratepayers?

MR. WEAVER: Well, see--

SENATOR SMITH: Because the argument that was used earlier on is that it was supply and demand. We're anticipating a *huge* demand in future years. If they brought their own electricity, you'd have to worry about an occasional need for backup power, but, theoretically, they're not going to be on your system 24/7. It might be on your system maybe a day a year -- who the heck knows?

But, if they're bringing their own electricity, what does that do to rates for ratepayers?

MR. WEAVER: Yes, I mean, I would think in the end it would sort of net out. Because, you'd have as much load entered into the grid as you have generation on the grid, so it would offset.

And, again, it depends on how that customer was treating that generator. Would that generator be producing power and contributing into the PJM market, so if that load fluctuates, or if that load is something other than the generation, would that generation participate in the PJM market? Or, would that generation be behind the meter offset of the load? It makes a difference in terms of how they get compensated; whether they're going to get compensation from the PJM market, or if there's just going to be compensation from a reduced demand.

SENATOR SMITH: Do you think that the BPU should be doing new rules?

MR. WEAVER: I think that there are opportunities for tariff -- retail tariff treatments -- of these loads for different configurations that are being contemplated.

SENATOR SMITH: Right. Do -- in other cases where you have industries, whatever -- not necessarily AI, but when they're going to have a major impact on the grid -- do we allocate costs to those new industries? Or, do we kind of let the ratepayers just suck it up?

MR. WEAVER: Well, I'll say that when -- when you said the ratepayers suck it up, the loads that we're connecting -- Phil just talked about some of those, the megawatts or gigawatts -- they do drive needs on the grid, but those customers -- those customers actually pay a significant amount of the utility bill. Like, the transmission, a lot of these customers are interconnecting directly to transmission voltage level, and the upgrades are socialized to cross all the customer base. And, so, they represent -- if you think about 1.5 gigawatts, and ACE's peak load is about 26-27,000 megawatts, so it's about 2.7 gigawatts, they would cover a good -- very strong piece -- of the transmission formula rate.

SENATOR SMITH: OK, thank you.

SENATOR SINGER: Just through the Chair, just one thing to tell Senator Smith one thing.

In the sewer and water business in this state, we have a minimum charge whether you use it or not. So, in other words, if -- for argument's sake -- you are a snowbird and leave your home to go -- you still pay that minimum charge.

So, I think what you were getting to is, is there a minimum charge even if they don't use it?

SENATOR SMITH: Right.

SENATOR SINGER: And, they do -- we do it right now in sewer and water. I don't know about electricity.

SENATOR SMITH: Yes, I just don't know if it's kosher in the electric world.

SENATOR SINGER: Well, we're an MUA, so we're not under BPU.

But, the other thing is, that -- and, the same conversation we're having is -- we also, as a large utility user, we go after bid outside of your normal Atlantic City Electric, JCP&L, for electricity, and get a better rate by just using their transmission lines. And, we do that with a consortium.

So, that's happening with large users throughout the state all the time. And, I'm sure that's happening in your area also.

MR. WEAVER: Sure, the customers that are taking supply from somebody else? Exelon doesn't own any generation across any of our Exelon operating companies.

SENATOR ZWICKER: So, I just want to follow up, my only question to what Senator Smith was asking about.

So, 1.5 gigawatts proposed of data centers, and you said your peak right now is 2.7 gigawatts. So, the proposal is more than a 50% increase. So, I still am really struggling to understand how any data center is going to be able to co-locate and generate 1.5 -- in total -- 1.5 gigawatts.

Again, we can turn on a decommissioned nuclear plant, but it will take--

MR. WEAVER: How many of those are there--

SENATOR ZWICKER: --years-- Right; well, we have more.

MR. WEAVER: (laughter)

SENATOR ZWICKER: And, it will take years.

MR. WEAVER: Yes.

SENATOR ZWICKER: Yet, the need-- These proposals in front of you right now, you said several of them are looking pretty realistic.

MR. VAVALA: That's correct.

SENATOR ZWICKER: Under that scenario, how many years before you would expect to see their load on your lines?

MR. VAVALA: (indiscernible)

MR. WEAVER: Well, I would say, when you're talking about really significant loads, it's similar to what PS share. For ramp rate, you're probably talking five, six years.

What we're working-- We're working with a lot of customers. In fact, on my drive up here, I was on a call with a developer with our team, and that's one of the things that's important for us to understand, is what is your ramp rate, and when -- is there something we can serve in the interim? You're looking for service by 2028 -- can we serve you with 300, rather than a gig, in order to be able to accommodate that need?

SENATOR ZWICKER: Right.

MR. WEAVER: But, it's a very legitimate question that you're asking, in terms of the resources. That's why we're having this conversation -- these conversations. Just having sufficient resources to serve all these loads that we're seeing across the nation, let alone just in PJM and the transmission--

SENATOR ZWICKER: And, is there any feasible, possible way that someone could build generation in New Jersey in five years? From scratch? No, right?

OK, so -- I mean, it's not a criticism--

MR. WEAVER: Yes, yes, I mean, I'm not a generation developer. But, yes, I'm figuring that it's probably taking you about five years if you're going to even build a gas plant.

SENATOR ZWICKER: If everything goes perfectly and all permitting and regulatory issues are handled, yes. OK.

So, my only other question then is -- I'm under the working assumption that this will be a load on your existing grid. You mentioned before the need for people to pay their fair share; to protect customers. What does that mean, exactly, for you?

Because, these data centers -- now that they want their-- I mean, you raise a good point, can they ramp up? But, they want a lot of electricity, and they also need reliability. They cannot-- So, they need backup.

So, how do you balance that, a customer who wants a significant portion of your total peak load, with protecting the rest of your customers?

MR. VAVALA: Second, the line of questions that Senator Smith was going down was precisely getting at the heart of what we were saying in terms of fair share, which is that some -- *some* potential contractual constructs might look and say the data center load would be located behind the meter, and would use up the available capacity of the unit to which it is connected. And, in a behind-the-meter type arrangement, would not be subject to network upgrade costs as part of its services agreement.

What we firmly believe is that its load is load, and the line of questions that Senator Smith was saying -- "Well, what would that construct look like? Could it be interruptible? Could it be this?" We're just raising the flag here saying when we consider either co-location or any load, let's make sure that the socialization of the cost to interconnect, the socialization of the cost for the network impact, are done in a way that is distributed -- socialized -- and fairly, across the customer base that we're targeting.

So, that's what I was getting at.

SENATOR ZWICKER: OK, thank you.

I appreciate your time.

MR. VAVALA: Thank you for your time.

SENATOR ZWICKER: Next up is FirstEnergy, JCP&L.

And, then after that we'll have one more panel before we conclude.

A B I G A I L P H I L L I P S, J.D.: All right, good morning.

My name is Abigail Phillips; I am the VP and Chief Risk Officer for FirstEnergy and JCP&L.

To note, I am a resident of Morris County here in New Jersey.

K I E R A N T I N T L E: Hi, I am Kieran Tintle; I handle Government Affairs for JCP&L.

MS. PHILLIPS: So, we've submitted testimony; I am not going to go over all of the words in the testimony. But, I am going to hit on three points.

The first point, I'm going to talk about a concept called the "energy trilemma." The second point, we're going to touch upon the concept of resource adequacy, which we talked a lot about today. And, the third,

we're going to talk about some solutions and ideas for you all, for the State of New Jersey, that my colleagues have already touched upon.

So, the first thing I want to delve into in terms of what I just talked about -- in terms of the energy trilemma -- and thinking about the intersection of AI and energy policy. You probably don't get a lot of Chief Risk Officers talking to you when you're testifying, but, I wanted to point out that when I think about AI and resource adequacy, it's a risk *and* it's an opportunity.

And, you know, when I -- when we study resource adequacy as a risk -- AI as a risk and opportunity -- you have to think about, would the intersection of energy policy -- three different components that you're trying to balance -- and, sometimes you can get all three, and sometimes you can't. And, you've already touched upon these three elements today, through all your dialogue.

So, the three elements are reliability -- that is really important. There is cost, or equity to customers, and, there is sustainability, or the environment. And, if you think about it in a triangle, where you're trying to pull and balance all three, most of the time you can get two of these things fairly well. So, you can get reliability and cost; sometimes you can get reliability fairly cheap cost. But, if you pull in that sustainability or environmental aspect, it's-- Sometimes, it's hard to achieve. Similarly, you can get reliability or environmental, and you can get two, but it's really hard to get three.

So, the reason why I wanted to bring this up for you all is, as policymakers, and you're struggling with this inflection point, with the advent of AI -- which we have seen with it causing this increased demand

you're going to be faced with -- what do we need to balance? What do we need to prioritize? And, what do we need to potentially compromise, in the short term, for the betterment of the long term? And, this is how we're thinking about it at FirstEnergy and JCP&L, where sometimes we might need to-- And, today we've heard a lot about affordability. We might need to prioritize affordability in the near term and the medium term to get to reliability, and *then* potentially environmental and sustainability in the long term.

But, this is something that -- as we have this ongoing dialogue with one another, with all of our stakeholders, with our peers, and everyone in this room -- it's a way and a framework that we can think about what is most important to us. What do we want to achieve for our customers and for the State of New Jersey? So, I just wanted to frame the conversation today to help us think about this. Because these are things that we're constantly trying to balance as we go forward.

So, as we think about AI and how this intersects with energy policy, as it relates to resource adequacy, AI is a tremendous opportunity. And, I was fortunate enough to attend the AI Summit at Princeton last April, where I learned a lot about the benefits of AI, but also how much computing power it needs. And, I think you spoke about that earlier, and just how it has been an inflection point that *no one* saw two years ago. And, there's a lot of, "Why didn't we see this coming? Why didn't we better prepare?" Well, we didn't know. And, now we're faced with a point where we have to-- And, my favorite quote is someone who was talking the other day, is, "Instead of skating to where the puck is, we need to skate to where the puck is going."

And, we really need to prepare infrastructure and our grid and our economy and the State of New Jersey to where this is going.

And, right now, there's a lot of speculation as to what that looks like, but the most conclusive-- What I do know is that it is coming. I don't know how much, but it was actually correct that we are going to have a lot more demand on our grid, and we're going to need *a lot* more generation, so we need to prepare for what is coming. Because AI -- what I hope -- is going to help us solve for some of those problems. So, if we don't prepare our grid and prepare infrastructure to build -- to have the AI solve for some of the challenges that we need -- we're not going to be able to solve. So, it's kind of a self-fulfilling prophecy that we need the AI to help solve, but, if we don't have the generation to help solve for it, we're not going to get there. So, that's -- in terms of the energy trail, I just wanted to, again, frame that.

The second point that I wanted to get into a little bit is the resource adequacy challenge. And, I want to talk about it in terms of causes and consequences. I think we've talked a lot about it today, in terms of unprecedented load growth because of data centers; because of what AI can do. So, I'm not going to get into that as much, in terms of the first cause. The second cause is really-- We touched upon this, but I want to go into it a little bit further, about the PJM capacity market. And, the point that I want to make here is that the capacity market -- and, PJM does a great job at balancing energy -- but the capacity market was built to serve a different purpose, where we were overbuilt with generation, and now we're underbuilt with generation.

And, right now, in terms of what we need to have the supply meet the demand, the market doesn't really meet the current circumstances

where generation is highly capital-intensive, with long lead times. You can't really truly, effectively store the product. I mean, there is storage, but you can't really, truly, effectively, commercially viably store the product right now. And, there's really no substitutes for electricity. So, with that, the markets are struggling to keep up with the current circumstances of high demand. And, then, we also have the third cause of the economic and policy pressures are having the retirement of the dispatchable resources that really sustain the grid during those peak times. If you take a look at the snapshot of what PJM looks like to maintain reliability on that peak day, less than 10% are renewables right now. We *need* that firm, dispatchable base load generation still to maintain the reliability of the grid.

So, these are really some of the causes of the challenges of what we have, from a resource adequacy standpoint right now in PJM. And, also, New Jersey is a net importer of generation right now. So, with the resource adequacy challenge, it's exacerbated further with the fact that New Jersey is a net importer of generation. And, so, if we don't do something in New Jersey right now -- which, I'll get to in my third point -- we're going to have a challenge bringing the economic development, economic growth, and AI to the State of New Jersey, because of some of these causes.

The consequences that I'm going to talk about echo what we just talked about in the energy trilemma. Because some of the consequences are, if we don't have the right amount of generation, we are going to have reliability issues. During peak times, we could have rolling outages in the State of New Jersey, and some of our customers and our residents are not going to have the electricity that they need to run their daily lives; run their operations; and, during those peak times. And, that timeframe of when that

could happen is getting closer and closer because of the causes that we talked about in that confluence of the causes.

The second one is affordability -- which you've talked about pretty extensively today. That, with the supply and demand, that with decreasing supply and increasing demand, the costs are going to go up. And, given that the market structure of what's happening and the market not designed to meet today's circumstances, you're going to have an imbalance, and the costs are going to go up just overall.

I have some suggestions, and I have some numbers, in terms of what's really going to happen.

And, the other point I would just like to make on affordability -- with increased demand, and with this risk and opportunity, costs are going to go up. So, how do we manage the trajectory of the costs? We have to balance it; it has to be over time. So, how do we think about-- If we know that costs are going to go up, how do we flatten out? How do we make sure that it's balanced? Not to say it's levelized, but how do we moderate that? And, that's something that we really need to focus on.

And, then, the last consequence, if we don't get this right, of the resource adequacy problem is that it's going to stifle our economic development. If costs go up too much, we're not going to be able to invest in the infrastructure that we need to invest in, into the commercial businesses, and the -- what we need to grow the economy in our state. So, we need to be able to plan better to be able to get out in front of us, to say we need the right kind of generation; we need to invest in AI; and we need to have the right kind of three-, five-, 10-, 15-year approach to plan this accordingly; to levelize those costs that we know are going to go up, so we

can do all the things that we need to do. So, if we know the costs are going to go up, say, all right, what makes the most sense for the people of New Jersey, for New Jersey, to say, "Yes, we're going to-- Costs are going to go up, but we're going to grow, so it makes sense for the state."

So, really, the resource adequacy challenge *is* a risk; it's an opportunity, and, if we get it right, we can plan and we can take advantage of that.

Just another data point that I want to give, in terms of the urgency and why State action is needed, and why -- what you can do, and what's so critically important, is that this gap that my colleagues talked about, in terms of what we're seeing with the demand, and just putting it into perspective for how much generation is needed. It was from the large load of what we just recently saw with PJM, what they put out in their most recent forecast. They're saying that there's approximately a 50-gigawatt gap that we need to fill by 2030. We did some calculations. My team takes a very data-based approach to trying to figure out and putting this in layman's terms. So, we said, "What does 50 gigawatts mean in terms of generation and different kinds of generation?" So, we said, "All right, 50 gigawatts to try to build this in the next five years." That means 4,150-megawatt solar installations for PJM, at the cost of $880 billion.

So, that's one-- So, that could fulfill 50 gigawatts. *Or,* it could be 75 600-megawatt SMRs at the cost of $400 billion. *Or*, it could mean 48 combined cycles about at a 1,000 megawatts at the cost of $50 billion. So, just the order of magnitude of how much is needed to be built in PJM to fill that gap of 58 gigawatts in the next five years -- we were talking about how much generation could be built. I mean, that is a lot of generation that needs

to be built to fill that potential gap. And, again, this is for all of PJM; this is not for New Jersey. Because we were just trying to paint a picture of how much is actually needed.

I mean-- And, the question isn't-- I think you asked this, "Can this reasonably be built? Do we even have enough generators?" So, the point being, we need to take action now. We need to take-- States need to take action, and we're in multiple states; we're in five states. FirstEnergy is in five states. We've been talking to legislators in all of our states saying the same thing. States have jurisdiction over the build of generation. And, this is not, "Is it PJM, or is it the states?" It is all of the above.

And, this gets into my final point: What can New Jersey do? There is no silver bullet to solve this problem. This is an all hands on deck. We need to do everything that we possibly can. We need to do peak shaving in terms of energy efficiency, demand response programs. We need to educate our customers on everything that they can do to conserve. But, we also need to prompt the build of new generation. And, some of my peers and colleagues talked about a state procurement approach, like what you've done for offshore wind. The same concept can be applied to dispatchable generation in the state as well, to say, "We need to build X amount in the state." This can be a competitive solicitation where you can have people bid, so you know the cost containment in terms of other people bidding on that generation for the state. That's a great idea.

Our colleagues-- We talk all the time. We've been talking about this for over a year and a half, because we've seen this challenge coming, and we are open to having those dialogues with you as legislators to say what makes the most sense, not only for New Jersey, but also for our customers.

But, we need immediate action now, because we need more electrons to be able to power not only our state, but also to be able to serve our customers.

So, that's what we wanted to come to say. We are happy to partner with you, and we're happy to help with any policy objectives. But, we just wanted to make sure that you know our best interests are for our customers and the State of New Jersey.

Thank you.

SENATOR ZWICKER: Thank you.

I just have one question before I open it up to my colleagues.

One of the things that you didn't mention in your testimony -- or, maybe you just alluded to -- is energy efficiency measures. Wouldn't it make sense to have all hands on deck as well to change insulation in schools and factories; do everything we possibly can around lighting; to try to reduce energy consumption at the same time?

MS. PHILLIPS: Absolutely. The building envelope, I think, is really important when you think of how much you use. And, that is definitely part of the all hands on deck, in terms of making sure that you can use less if you have a tighter building. So, that should be part of the all-of-the-above approach, for sure. Absolutely.

SENATOR ZWICKER: OK.

Colleagues.

SENATOR SINGER: Oh, yes.

SENATOR ZWICKER: Senator Singer.

SENATOR SINGER: Yes, I have JCP&L.

Major concern -- I live in the fourth largest town in the state; largest in Ocean and Monmouth County. They have 160,000 people. We

have -- as you -- I mentioned before, eight to 10 buildings I can't build. Necessity -- not for gigawatts; I need, maybe, 30 megawatts. And, I can't get it.

I just heard Atlantic City Electric say, "Well, during the pandemic, there was a problem. But, now, it's not bad." Why is it such a problem with your company? I mean, I have to wait two to five years to get 20 megawatts into-- By the way, economic development -- eight to 10 buildings; hundreds of companies; and, thousands of jobs for New Jerseyans coming from out of state, that are waiting to come. Shovel-ready, by the way. These are all approved; they have all their permitting. All they need is they have no power. How is it happening to you, and not to PSE&G, and not to Atlantic City Electric? Or, is this just a problem that Ohio doesn't care?

MR. TINTLE: Senator, the-- Specifically the project that you're referring to is over there by the airport; I believe it's called the Keystone Project, is that correct?

SENATOR SINGER: It's the Cedarbridge--

MR. TINTLE: Yes, sir.

So, I believe earlier when the question was posed to Atlantic City Electric, the response that was provided was in and around distribution transformers. And, of course, here we're not talking about distribution transformers; we're speaking specifically about substation transformers.

We actually just recently met with that customer, and the amount of time that it would take to produce those transformers has drastically been cut down. I believe last I heard, the delivery date is January 2026. But, you're not wrong. We have gone through a period in time where supply and demand -- mainly around substation transformers -- has provided

very, very prolonged outlooks on when these transformers will be received. You and I had met approximately a year, year and a half ago, and, at that time, five years was it. That's what we were discussing. We would have nothing for five years.

We've thought outside the box; we've onboarded new vendors -- U.S.-based vendors, in fact -- to try to expedite. I think what we just recently got back to the Chambers Bridge developers shows that -- that we'll be able to deliver that transformer in under a year.

But, this actually gets at something else, and that's what our planning process is. We've been using industry best practices to plan for future capacity. And, as you and I have met with -- and we've met with many of our community leaders in Ocean County -- that area has pretty much blown that up. It's-- We can't continue using the industry best practices for the largest-growing city in the United States of America, let alone in New Jersey.

So, we have upended our own process and program related to the way we're looking at future and planned capacity to be able to better meet our customers. So, in some ways, what I'm saying is that we will be better, and it's the partnership that we've encountered with the communities we serve -- specifically down in Ocean County, as of late -- to figure out what that best practice will be for us going forward.

And, to the supply-and-demand issue -- it is has, fortunately, let up a little bit, related to substation transformers. But, it's not the same as being able to go to a RadioShack and pull something off the shelf, and plug-and-play--

SENATOR SMITH: I think they're out of business--

MR. TINTLE: --we wish it was; we wish it was so easy. But, when we're looking at upgrading transformers within a substation, a lot of this has to be built custom. And, so, orders need to be had; we need to know exactly what kind of load the customers are going to be putting online.

So, again, we think it's getting a lot better. We anticipate delivery of these substation transformers much sooner than we've discussed in the past. But, there's a lot more to it than just that.

SENATOR SINGER: Just, through the Chair-- First of all, I thank you to hear that we're talking about a year. I mean, that's phenomenal.

But, we have a lot more industrial parks. We have another industrial park we're going to start the work on, which we can't until we figure this out. And, the (indiscernible) general.

But, I'm hearing that-- You heard other suppliers talk about it -- Atlantic City Electric and PSE&G -- it's not just the generation of power; it's also that they provide that power to where you need it. And, as you're seeing these large AI-type facilities coming in, they need large areas. They need big acreage. And, it may not be just where someone is.

So, I think when we talk about it, the investment that these companies have to make have to be early on. Many times, with the utilities, they don't do anything until you give them a check. For example, this really started with Cedarbridge, with a $2.5 million check, correct? (no response)

Well, the more recent-- But, I'm just saying, that's the kind of money we're talking about. So, a lot of these programs are not taken to realization with the utilities until they get a check. Not just talk about it -- checks. So, I think we have to take a look at the entire overall aspect -- not

just the generation of dollars, but where can they provide those powers to different areas within their scope?

SENATOR ZWICKER: Thank you, Senator.

Senators?

SENATOR SMITH: Does-- Has JCP&L received requests for data center allocation that's now in your queue?

MS. PHILLIPS: Yes, but it's nowhere near the scale of what our peers have. So, we have about, approximately, 20 megawatts with a projection in the next five years up to 140.

SENATOR SMITH: OK. So, it's tiny.

Your discussion of efficiency. What do you think the potential of that is for New Jersey, in terms of trying to deal with some of this problem?

MS. PHILLIPS: So, unfortunately, it's not as great as you'd like. I would say it's about peak shaving, as opposed to really solving the problem. So, if you would take one out of 100, it probably would take about 1% off the total. So, it will help. And, how I think about it, it's more about having customers have some control over their own energy use and demand, as opposed to solving the problem. So, it's more about customer empowerment, as opposed to really solving the overall energy supply-demand problem. So, that's one of the ways that -- from having customers know about their use and their power -- that's one of the ways that we can help customers be more knowledgeable and informed and empowered with their own use.

SENATOR SMITH: OK.

This is-- It doesn't have a lot of potential?

MS. PHILLIPS: Not really.

SENATOR SMITH: OK, so--

SENATOR ZWICKER: Senator, I'm sorry.

So, I've seen studies that show a much more significant potential of energy efficiency. So, if you could just share the data that's behind that, I would love to see it.

MS. PHILLIPS: Sure.

And, I would also caveat, it just depends on the customer. So, someone -- a residential customer versus a large industrial customer, it varies by customer class.

SENATOR ZWICKER: OK, OK, yes--

MS. PHILLIPS: So, I'll just caveat that.

SENATOR SMITH: So, the question I should have asked every utility that came up, but I'll ask you, and then maybe I'll ask for a quick response to it.

Battery storage of electricity on our grid -- does that have any potential for utilities, in terms of solving this problem, or ameliorating it?

MS. PHILLIPS: So, the challenge with battery storage is you need energy to fill the batteries.

SENATOR SMITH: Yes--

MS. PHILLIPS: One of the calculations, actually, that-- So, there is potential. I'll just-- To answer your question, yes, there is potential.

One of the calculations that I did that I didn't read off that I'll just read off now is the same-- I said, "How much generation do we need to solve the problem?" We did a hybrid of solar and storage of units. You can use significantly less solar with batteries, and so you'd need, instead of 4,000 solar, you'd only need 435. But, then, you would need 1,312 storage units. So, you can have a combination.

So, it *is* viable, but you always need that generating source to go along with the solar. And, it's going to be expensive, but you kind of have to have the right configurations with it.

And, the other challenge is it's still not-- It doesn't have the same characteristics as the dispatchable kind that keeps that reliability intact. But, it can be -- as, again -- it can be part of the solution, as long as you have the right configurations with it.

SENATOR SMITH: Thank you.

SENATOR ZWICKER: Senator, I'll just add, in the "all the above," we should look at pumped hydro. There are studies out there that show even in a relatively flat state like New Jersey, there's enough of an elevation difference that it's not going to solve the problem, but in all-of-the-above, it's something that we should be looking at in terms of storage.

SENATOR SMITH: Sure.

SENATOR ZWICKER: Thank you; appreciate it.

MS. PHILLIPS: Thank you.

MR. TINTLE: Thank you.

SENATOR ZWICKER: Our last panel for today's hearing: I would like to call up Aaron Price from TechUnited, and Brian Klingbeil from Ensono.

Your choice for who goes first.

Rock, paper, scissors.

A A R O N P R I C E: We can ask AI.

SENATOR ZWICKER: We don't have the energy to ask AI.

MR. PRICE: (laughter)

We literally don't have the energy. Nor does this audience.

(laughter)

MR. PRICE: Good afternoon, Chair, and members of the Committee.

My name is Aaron Price -- excuse me. I am CEO of TechUnited: New Jersey. We're a nonprofit trade group that represents technology, startups, and entrepreneurs. I'm a lifelong entrepreneur myself; an advocate for the startup and tech communities of New Jersey.

I do want to thank Senator Zwicker for being a great partner and advocate for the tech community for so many years. So, thank you for your leadership.

Just last week, we hosted our own AI energy event at NJIT. It was standing room only, filled with entrepreneurs, investors, and innovators, and one thing was very clear: This issue is top of their minds. Can New Jersey provide the energy and infrastructure needed to power this AI revolution, or will we continue to lose startups in growth-stage companies to other states?

For the last 20 years, New Jersey has lost the edge on tech startups in the growth-stage tech industry. Companies start here, entrepreneurs live here, but, too often, they grow and scale elsewhere -- to New York; to Texas; to California; to Boston; and, notably, *not* in New Jersey. Because we haven't built the infrastructure or the incentives to keep them here.

Right now, we have a rare second chance. AI is projected to be a $1.3 trillion industry by 2032, growing at 20% annually. To put this in perspective, this outpaces the peak of cloud computing and e-commerce. If we act boldly, we can capture a significant share of this market -- potentially

tens of billions of dollars in investment, jobs, and new company formation. But, if we hesitate, we will again watch other states take the lead.

AI-driven businesses -- whether in fintech, in biotech, or in logistics -- have one non-negotiable requirement: the thing we're talking about today; reliable; affordable; high-density power. AI data centers demand up to 50 kilowatts per rack, which is five times more than traditional centers. Without the right energy infrastructure, these companies will not stay here, and we're already seeing this happen. Companies are choosing Virginia; they're choosing Texas; North Carolina, where power is cheaper; notably, permitting is streamlined; and, grid modernization is happening now. In New Jersey, our outdated infrastructure and high energy costs are driving companies and startups out of the state.

There is some good news: AI itself can offer part of the solution. AI-driven smart grids can cut peak energy costs by 20%; it can prevent blackouts; and create a more resilient, low-cost energy supply for businesses and residents. The question is *if* we have the courage to make this infrastructure investment, or will we wait until we lose another generation of high-growth companies.

This is also not just about energy. We've spent most of the day talking about energy, but geography -- and, AI in particular, the topic we haven't spent as much time on -- is critical. We have a once-in-a-generation advantage in the AI era. We sit at the crossroads of major data exchanges, making us uniquely positioned for AI inference -- something that you'll hear more from my colleague momentarily. It's the real-time processing of AI models. It's a massive economic opportunity that aligns perfectly with our location, our workforce, and our infrastructure potential. The bottom line is

clear: If we invest in the right energy infrastructure today, we can win this innovation market tomorrow.

So, here are four steps that New Jersey must take to secure its place in the AI economy: One is to invest in AI-optimized smart grids; two is to provide targeted energy incentives for startups in growth-stage tech companies; three is to support public-private partnerships for AI and energy research; and, fourth, to fund nonprofits to educate the community on the impacts of AI and the economic opportunity that exists in the industry.

For 20 years, we've watched most of the promising startups in our area leave New Jersey. We can count on one hand the few unicorns that exist here, versus the many hundreds that exist just across the river in New York City -- partly because of issues like this. This is our moment to change the narrative. The states that invest in the AI infrastructure today will dominate the AI-driven economy tomorrow. We have the location, the talent, and the ambition. I hope we have the courage to act now.

This not just about energy; it's about whether New Jersey becomes a leader in the AI economy, or a cautionary tale of yet another missed opportunity. I hope we make the right choice.

I would like to hand it over to Justin, my Co-Founder at BetterFutureLabs.

J U S T I N T R U G M A N: Thank you all for having me today.

I am Justin; Co-Founder and Head of Technology at BetterFutureLabs, a venture studio based out of Hoboken.

I am here to discuss how we can optimize New Jersey's position at the intersection of energy and AI, building on top of my Co-Founder Aaron's comments.

To begin, let's map out the major steps in bringing an AI model to life, and the relative energy needs, so we can examine further where New Jersey can or *should* play a role.

It all starts with pre-training. This is the step where you gather structure, and organize the data that will be used (indiscernible) a model. It's done by aggregating human-generated data, as well as creating synthetic data through synthetic data-generation pipelines. While the GPU inference used in these pipelines does consume energy, it's a really a tiny fraction of the overall energy cost in the life cycle of creating an AI model, compared to future phases.

Next comes the training phase. This is where you see all of those massive GPU clusters that make the headlines. Companies invest in training clusters, and they require tens of thousands -- or even over 100,000 -- GPUs. What's really interesting to note is how different the data center requirements are for training data centers than traditional application data centers. Model developers send their data to the training data center. The GPUs then work to train the model weights and, in the end, return a weighted model.

So, as long as the network can support transferring all of the data to the data center and then returning the end model, the data runs smoothly and everything runs smoothly. It's very different than a traditional application data center, where geographic proximity to end users matters. And, that's exactly why you're seeing training data centers popping up all around the country in very low-density areas where there's access to cheap, clean energy and cheap land. Because of this, it's going to be very hard for

New Jersey to compete for training data centers, given our high energy costs and our high land costs.

Now, on the other hand, once a model is trained, the next step is deploying it for on-demand customer use. This is called inference. With inference data centers, geographic proximity to users is advantageous. And, New Jersey -- being home to a high concentration of Fortune 500 companies, and located just across the river from the New York City economy -- is well-positioned to host these data centers. This proximity requirement means that we're primarily competing with neighboring states, rather than with the rest of the country and the rest of the world for training data centers. The competitive landscape that, with the right incentives, we can win it.

By focusing on data centers for AI inference, we can position our state as a hub for a low-latency, high-performance AI services, benefiting from our proximity to major business centers. With targeted incentives, and a more supportive business environment for large companies and growing startups alike, we could have a clear opportunity to secure a competitive edge and drive economic growth in the evolving AI landscape.

Thank you all for the time, and I look forward to making this vision a reality.

SENATOR ZWICKER: Thank you.

B R I A N K L I N G B E I L: I agree with that.

Chairman Zwicker and Committee members, thank you for the opportunity to provide some input today.

I am Brian Klingbeil, Chief Strategy Officer for a company called Ensono. We're a technology company, but specifically an IT-managed services company. That means we own and operate data centers and IT

infrastructure, and provide it as a service back to our clients, as well as doing consulting and development. And, of course, in that latter area, AI has emerged as a growth driver for us.

Personally, I have about 30 years of experience in IT; three continents; 50 countries. In my previous company, I was responsible for the build-out of about 25 of these data centers that we've talked about today, and managing a fleet of about 50.

What might be interesting to the Committee about Ensono is really the clients that we serve. We have a little over a billion in annual revenue, but that comes from only 230 customers. So, these are the big users of the things we're talking about. You get the idea; they're all very big, mostly large Fortune 500 companies, like some of the world's biggest banks; established brands, like Dun & Bradstreet; and various analytics. And, actually, a couple of the power companies that we've talked about here today are also my customers. We cover all types of businesses, but our largest vertical is our financial services, insurance, and state and local government -- all big users of AI, or becoming big users of AI. We serve, currently, 15 of the states; we're going for all 50.

As part of my duties, I also run a client advisory board, and that's made up of about 20 of our largest clients. And, in fact, our annual in-person meeting is next week, and I'll be moderating sessions where we talk about what they are doing with AI. So, that's obviously of interest to today's group.

Last year, we talked about the same topic, and all of them are really only doing proofs of concept -- not so much stuff in production, but they've been doing their homework and submitting it to me, and I'm starting

to read it this week. And, this year is going to be a lot different from what I can see.

Ensono has particular expertise in mainframes, of all things, and the modernization of those as well as general modernization. And, lately, of course, that's meant a healthy dose of AI. It's often said that without good quality data, the only thing that AI will give you is the ability to make mistakes with more confidence than ever before, and if there's one thing mainframes have in abundance, it's data.

So, three quick Ensono specializations that I think I can maybe bring some intelligence on today. And, it really-- We talked a lot about the supply side of energy here today, and I think this group will probably talk a little bit more about the demand side.

And, the first is data center consolidation and operation. So, a lot is being written, a lot talked about here today, about how energy-intensive the AI data centers are. But, I think what's underappreciated is the vast majority of data center energy used in New Jersey -- and, in the world -- is 90% of it's non-AI data centers, or the application data centers my colleague was referring to. And, a lot of the time, that's really inefficient.

So, you can think of data centers like cars. Data centers that are owned and operated by individual entities are usually -- you can think of them as a big 1970s Cadillac -- no catalytic convertor; poorly maintained; driven irresponsibly; big and inefficient high emissions; and, usually only transporting one person around. Cloud, or managed services data centers, are usually going to be more well designed, well maintained and operated, and kind of like a city bus -- much more efficient; lower emissions; and carrying a lot of passengers at once. This isn't because anybody is smarter

than anyone else; it's a product of scale and the ability to invest. So, if you moved all of the world's workloads into cloud data centers, you probably cut the power consumption at least in half.

So, a key initiative that can help offset all the things we're talking about today is consolidating these little Cadillacs; getting them off the road and putting them into cloud data centers and more efficient data centers to do the same work with a lot less energy.

You heard the gentleman from PJM talk about the supply-demand imbalance driving up prices, and older -- closing older data centers will help decrease that demand. We do that for these Fortune 500 companies I talked about, and, in the last three years, our collective energy use at our company has gone down 30% while we've grown more than 30% as a company.

The second thing we do is develop AI tools for our own use as a company. And, this is where we get into, how can AI reduce the demand curve? A notable example at Ensono is this thing we call "predictive engine." We're collecting millions of data points every day, monitoring all of our clients' IT infrastructure, and predicting and preventing -- using machine learning -- IT outages before they occur. So, that improves the client experience, and helps save us money in the process, but it's also going to extend the life of IT equipment, which is a net energy savings. And, I can see a future where this leads to daily lowering of energy consumption.

We also build AI into our Envision platform, which provides ongoing advice to clients on how to optimize for cost and security and performance. Clients right now are prioritizing that as cost, cost, and cost. But, that also includes energy use.

And, the final thing that I think these guys will talk about as well is we develop AI projects, consulting for our clients that look like the ones we do for ourselves, just fine-tuned for their specific businesses. So, this sometimes leverages AI to create energy savings. A great example -- we recently undertook a project where we upgraded and modernized the IT infrastructure for a large steel manufacturer. And, for those who don't know that when you look at energy consumption, you want to start with the biggest ones, and steel and concrete is, globally, the biggest consumers of energy. But, we help them modernize the absent infrastructure so they can modernize their furnace -- their blast furnace estate to electric arc furnaces.

Another great example -- a customer, but not a project we work on -- United Parcel Services' trucks only turn right. So, AI helps map out those routes, and that results in much less energy use. We're also helping one of the states modernize their applications that support Medicare. This is not about energy, but a good example of how AI can be used. The old databases, we couldn't use AI to investigate Medicare fraud, and the new ones, we will be able to do that with. So, you can sort of extend all these ideas around, "How can AI reduce the demand side of this equation that we're talking about today?"

So, looking forward to the discussion. Hopefully, we can contribute.

SENATOR ZWICKER: Thank you.

Following up on that, to any of you. So, some of what you talked about in terms of reducing energy consumption -- our applications, algorithms -- to increase efficiencies. But, you also talked about smart AI grid. And, so, when I think about smart meters, etc.-- But, what does New

Jersey need to invest in if we're going to create -- help create -- an AI-driven smart grid? Is that hardware? Is that smart meters? Is that other things?

MR. PRICE: Having been the person who brought this up, I'll field the question, but I can't claim being an expert in this.

In preparation for this meeting, this was something I learned quite a bit about, so I'd rather follow up with you on some of the key investments on this topic. In seems more software-related management of the systems than anything else, with some hardware capabilities on top of it.

SENATOR ZWICKER: OK.

Thank you.

Senator Smith.

SENATOR SMITH: So, you've indicated that there have been some -- in some states where the consolidation of data center functions into an AI facility has saved significant electricity.

Can you send the Committee Chair the actual locations, companies that did this? A little information on it, so we can do a follow up with it?

MR. KLINGBEIL: Yes, actually, one of the data centers we closed was in Somerset, actually, for one of our clients.

But, I think the general-- We talk a lot about cloud migration. A lot of companies like mine talk about cloud migrations. And, a lot of it has to do with most IT workloads in the world run in self-run data centers on traditional IT infrastructure. And, low utilization, and there's a term called PUE for data centers -- power usage effectiveness -- which means how much other energy is pumped into the data center to, basically, to cool it down. There's lighting and such as well.

But, for every kilowatt of power that goes to power a server, how many kilowatts are used for other purposes, primarily cooling? Most data centers in the world have a PUE greater than two. So, when you're able to kind of close those edged data centers and get people out of the mode of doing things themselves -- buying their own servers, building their own data centers -- and moving things -- I'm not here to advertise for Amazon or Microsoft, but moving those workloads into those data centers will usually cut power by at least 50%. So, kind of motivating--

SENATOR SMITH: It sounds like it would be self-incentivizing, but--

MR. KLINGBEIL: It is--

SENATOR SMITH: --is there anything State Government should do to incentivize companies to do this?

MR. KLINGBEIL: I can think of a few things, like maybe requirements on if you're -- if you're running your own data center, there should probably be a requirement for a certain level of PUE, at a minimum. And, if they can't reach that PUE, that would motivate them--

SENATOR SMITH: So, if we do a bill by that, can we say that it was your idea, in case anybody gets--

MR. KLINGBEIL: What was your name again? I'm going to give them your name.

(laughter)

SENATOR SMITH: PUE; write down PUE. Let's get our data centers to consolidate. It's a great idea.

MR. KLINGBEIL: It's 90% of the usage.

SENATOR SMITH: So, you guys are doing this nationwide, correct?

MR. KLINGBEIL: A little bit globally as well, mostly in the-- We're 80% U.S.

SENATOR SMITH: Right, but you're all over the country. Rate shock, I assume, is starting to occur all over the country. What are other states doing to reduce rate shock from AI?

Because I know you say, "Hey, do it, do it, do it." There's a cost associated with this. And, we're--

MR. KLINGBEIL: Yes--

SENATOR SMITH: --trying to figure out what is the equitable allocation of costs. What are other states doing? If you know.

MR. KLINGBEIL: One thing I-- Sorry, I'll let you. But, one thing I noted and took some notes from PJM's talk today -- Virginia, 200 miles away, is data center alley. Twenty-five percent of the U.S.'s data center capacity is literally 200 miles away in Ashburn, Virginia. Their rates are 29% lower than the national average, whereas New Jersey is, I think, 20% above.

I don't have a direct answer to your question, but it seems odd to me that, 200 miles away, the rates are materially lower, and obviously has created an incentive for that region to become the thickest data center capacity in the world. There's some network implications, too.

SENATOR SMITH: Which state was that again?

MR. KLINGBEIL: Ashburn, Virginia. Microsoft, Google, AWS -- there are tons and tons of data centers there.

SENATOR SMITH: All right, we'll have to look into it.

Thank you.

SENATOR ZWICKER: Do you have any idea -- just following up with what Senator Smith was asking -- the percentage of data centers that are owned and are going to be created by the big tech companies -- Microsoft, Amazon, Meta, Apple, etc. -- is that 50%, 70%, 90%? Any idea?

MR. TRUGMAN: I don't have exact statistics for you, but I would say the overwhelming majority. If you look at startups that are emerging, much easier to go with a cloud provider when you're starting a company, and then they lock you in, pretty much, and it's a lot of switching costs.

So, typically, when companies start, they pick one and they stick with that for the duration of their growth. So, an example of that is like, Netflix. Netflix, they're very publicly built on top of AWS and still are--

SENATOR ZWICKER: Right--

MR. TRUGMAN: So, we can get back to you on specific numbers and pull those, but the majority--

SENATOR ZWICKER: But, my point -- I mean, whether it's 80%, 85%, 90% -- it's the vast majority.

So, the reality is that everything we've talked about today, the majority is being driven by some of the most profitable companies on the planet, right? That's a true statement.

MR. KLINGBEIL: Yes.

SENATOR ZWICKER: And, so, to my colleagues here, as we talk about incentives, we talk about what we can do, because we are-- Focus has started around our constituents and around the cost of electricity and affordability. This AI piece of it -- this data center piece of it -- is being driven by trillion-dollar companies.

And, so, I think we have to also look at what does it mean? One of our previous folks said that everyone is paying their fair share when it comes to trillion-dollar companies driving all this. So, I think we have to look at that as well.

MR. KLINGBEIL: And, the ecosystem -- sorry -- the ecosystem includes those big hyper-scalers. But, there's also a couple companies, you'll hear Equinix, Digital Realty Trust -- they're big builders of data centers for use by other people. And, if you throw them in the mix, the vast majority of new build are either the Microsoft, Google, AWSs, and the Equinixes and Digital Realtys.

MR. PRICE: What I would add on top of that for you to consider is not just the data center (indiscernible). I appreciate where you're coming from in that point. Often, those companies can provide the most cost-effective services because of their scale. The profits behind them is a separate topic, perhaps, but they can therefore provide services at a cost that can be dramatically lower than those who use them.

I'm not advocating for enormous trillion-dollar profits, but pointing that if we incentivize the small players, we might actually drive the market out if they can't compete with the larger players.

The other thing I would want to highlight is, these things don't live in a vacuum. We are rightly talking about the data center piece of this, but it creates an engine and an ecosystem, where if we get this right, we can potentially create an engine and ecosystem that attracts the very early-stage solo entrepreneur, all the way up to the very large enterprise-scale business to build in and around this infrastructure.

So, I just want to make sure that we're thinking about this holistically. I've spoken to this Committee before about financial incentives to make sure these things happen. These are all complimentary initiatives that, if we get right, I think create a much larger economic impact than just any one specific area.

MR. KLINGBEIL: Can I just add that it is useful, I think, to think of the AI ecosystem as a continuum. Starting on the far left, you've got like, the Nvidias of the world making the chips that are needed; then you've got the data centers that those chips go into; and, then you've got the training models that were discussed. And, then, to the right of that, you've got inference models. To the right of *that*, you've got people using inference models like the large software-as-a-service companies, like SalesForce and ServiceNow, that type of thing. And, then, you keep going farther and you get end users and a lot of integrators -- probably the kind of company that you want to incentivize to come to New Jersey is a little bit on the right side of that spectrum. Based on what I've heard today, the training models aren't coming here any time soon. There's just no way to get there.

But, the New Jersey ecosystem should -- we should think of more on the right side of that chart, to create, maybe, AI tools that are sometimes used to create more efficiency on the left, but are generally used for broad purposes.

MR. TRUGMAN: The--

SENATOR ZWICKER: Thank you-- I'm sorry, go ahead.

MR. TRUGMAN: Sorry, I was going to say verticalized AI would be the sector that he's describing to look into.

SENATOR ZWICKER: I want to say thank you to the three of you.

Thank you to everybody who testified today.

Thank you to my colleagues on the Committee for, really, a very interesting discussion.

It's clear that AI is a technological revolution that's in front of us right now. The energy demands are enormous, as we heard today, and it is beholden upon us to act and act quickly to ensure that not only can New Jersey be this innovation hub when it comes to AI, but we can do so responsibly, and in a way that is affordable for the people of New Jersey.

So, thank you everybody.

Meeting adjourned.

(MEETING CONCLUDED)