A. -- note. I'm not sure about SMECO or any of the other cooperatives off the top of my head. So, with just that caveat in my answer, but certainly, the investor-owned utilities, that's been fully deregulated.

Q. Yes. And customers of the investor-owned utilities shopping for electricity in Maryland can choose to buy electricity from either a competitive supplier or to take standard offer service from their local electric company; is that correct?

A. It was --

MS. McLEMORE: Objection. I'm sorry. Objection. Form.

THE WITNESS: Those are the two key options. The third being off the grid, but we don't need to talk about that.

BY MR. GUNDERSON:

Q. And are you familiar with the fact that under Maryland's SOS service, the local electric company purchases wholesale power from the wholesale market?

A. Again, if the question was the local utility, the incumbent utility will purchase the service from wholesale suppliers as part of the standard offer service?

Q. Yes.

A. That is correct.

Q. And they make those purchases through competitive -- a competitive bid process; is that right?

A. That's my understanding.

Q. The prices that the local incumbent utility obtained on the wholesale market, you agree that those are then passed on to customers who are receiving SOS service?

A. Yes.

Q. Do you agree that the price of the SOS service at any given time reflects the market conditions on the day that the auction was conducted?

A. Daily movements in prices at times can be significant. The prices reflected -- reflect the

conditions when that offer was submitted in response to a solicitation. It literally could be the hour before, but, yes, the offers reflect the market conditions from the eyes of the offerer.

Now, one note in relation to my prior answer. To the extent SOS involves a fixed price where the supplier is taking a risk with the tranches that they bid, then, as you say, it's market conditions that they bid an offer in, that's the price for standard offer service. They still have an element of risk with the hourly subsequent changes in prices if they've not hedged it.

Q. Okay. And the wholesale suppliers evaluate and account for that risk if they're making such an offer; is that fair?

A. Prudent businesses will factor in their cost to provide the service and the risks associated with those costs --

Q. Right.

A. -- and incorporate it into their offers.

Q. As a result of congestion on the AP-South

Reactive Interface and the AEP-DOM Interface and in the PEPCO zone, the BGE zone, you agree that wholesale electricity prices in Maryland are higher than they otherwise would be if there were no or reduced congestion in those zones?

A. Yes.

Q. And those higher prices are ultimately passed on to Maryland's customers through SOS service?

A. Yes.

Q. And --

A. Again, directly or indirectly depending on how the offer of the SOS service is bidding for, be it fixed or variable.

Q. So, do you agree that congestion harms customers?

A. No, not all customers.

Q. Okay. Why not?

A. You can have negative congestion.

Q. Okay. Does congestion that is resulting in higher wholesale electricity prices harm

customers?

A. Yes.

Q. In your testimony, you used the word discretionary to describe market efficiency projects; do you recall that?

A. Yes.

Q. Why did you use that term?

A. I used that term because I view market efficiency projects brought before the commission as discretionary. Meaning that unlike a reliability project where there's a date certain when something needs to be built or a solution to a reliability problem has a date certain; whereas, a market efficiency project is a financial proposition.

The commission can look at it, as it properly should, as a financial proposition and decide whether it thinks it should burden customers with the cost of that in hopes of the benefits.

It can also simply delay the project or defer the decision, because there's no reliability

violation that requires being solved.

And so from that perspective, it's discretionary, just like any businessperson trying to make a decision whether to make an investment. And they have to make that decision or not? Is it discretionary? And I have other choices?

Q. Is that your -- describing market efficiency projects as discretionary, is that something that you came up with on your own, or is it something that you've seen that term used to describe market efficiency projects in other contexts?

A. One thing we have to keep in mind is that I'm talking about market efficiency projects are discretionary before this commission, as they would be a market efficiency project in another state would be discretionary before that commission.

Your question poses the question "market efficiency" projects are discretionary out of the context that I used it.

Q. Okay.

A. For PJM, they have their operating agreement that has Schedule 6. They have to follow that from their perspective.

Market efficiency projects are mandatory. They have a mandate to follow that process. Not so before this commission; not so before any other state commission. They don't have a similar mandate. So, context in terms of the use of the term discretionary is very important.

I've used it and developed that phrase myself in the context of this proceeding to describe the proposition before this -- this commission.

Q. Okay. So, when you use the term discretionary, are you intending to convey that it is a factor for the commission to consider that, that this commission can kick the can down the road, if it wants to, and I guess ignore PJM's mandate to resolve congestion and to propose market efficiency solutions?

MS. McLEMORE: Objection. Form.

THE WITNESS: There's multiple thoughts in there, and we should probably start over. You used resolved, and I can't use resolve. Shall we try again?

BY MR. GUNDERSON:

Q. Sure. When you use the term discretionary, are you suggesting to the commission that it's up to them to decide whether -- up to this commission to decide whether a market efficiency project is needed as opposed to PJM's mandate to resolve congestion or mitigate congestion for the PJM transmission system?

MS. McLEMORE: Objection. Form.

THE WITNESS: Let me try and answer potentially a piece of it, and that is the use of the term need.

In a reliability project, there's a need. There's a date certain, and it has to be resolved for transmission owners to remain compliant with NERC reliability standards.

A market efficiency project to value

proposition is that it would reduce congestion. That's a benefit. A benefit is not necessarily a need. It gives the decision-maker the discretion to say, what's the benefit relatively speaking? What are the risks relatively speaking? What are the costs relatively speaking? All of which should be factored into the decision-maker's decision as to whether or not they ultimately decide the benefits are worth the risks.

One may say, having made that decision, and they've said, it's needed. I don't think you necessarily need to use that term, but it's worth pursuing, and it's worth in this case, should that occur, a proposed project receiving a CPCN.

BY MR. GUNDERSON:

Q. So, do you rank reliability projects as higher than market efficiency projects?

A. No. It's just an element of time. In other words, a reliability project I know I need it, and a market efficiency project is almost a different animal because it's discretionary.

Is the benefit high? I can go after it. Is the benefit not something I can get comfortable with? Then no. So, is it more important than reliability? Reliability has NERC reliability standards that you have to adhere to.

In that regard, it's distinct in its almost realm in which it's brought before PJM, brought before a commission. Much -- market efficiency projects are much different.

Would I rank them higher, lower? You've got to solve reliability. In that specific instance, one could say it's ranked higher.

If you have a situation where a market efficiency project is just extraordinarily beneficial, extraordinarily beneficial, then you'd go, maybe I will pursue that first if I have a choice in terms of time just to capture the benefits. But it would be very difficult to necessarily say one is more important than the other because they address different things.

Q. Well, do you think it's possible to

address both market efficiency and congestion and also address reliability issues at the same time?

A. One could become confused about what address means. As one of the PJM witnesses says, RTEP baseline projects, which have been approved for reliability, have been found to reduce congestion as well. Meaning that a transmission system enhancement needed for reliability can also reduce congestion costs.

The same has been identified in this particular case. A project proposed for market efficiency benefits can also provide reliability benefits.

The challenge with the term address is there's different cost drivers, reliability projects, different cost drivers for congestion, and so while you can say that a reliability project will reduce congestion, when you get into address, it's moving into cost-benefit tests that aren't even part of a reliability project, but the important thing is transmission system enhancements

or expansions provide multiple benefits to the system. One is reliability; one is economic.

Q. But I guess what I'm asking is, it seems like what I'm hearing you say is that this commission or -- either state commissions or PJM need to pick and choose between either pursuing reducing congestion or pursuing resolving reliability issues; is that -- am I incorrect in that assumption?

A. You are incorrect.

Q. Okay. So, when you use the word discretionary for market efficiency projects, is it really the time element that you're focused on, that in your belief if a market efficiency project is delayed or not pursued, there's no reliability violation that's going to immediately occur?

MS. McLEMORE: Objection. I'm sorry.

BY MR. GUNDERSON:

Q. Go ahead.

MS. McLEMORE: I thought you were finished. Objection. Form.

THE WITNESS: Certainly, that's one element, that if you don't approve a market efficiency project, there's still congestion that could be resolved if a market efficiency project is brought back before a "state commission," and the state commission decides that the value proposition or the financial proposition is worth pursuing. But there is, as you say, no reliability violation that remains unresolved, and that can't happen.

Those reliability violations have to be addressed, to the extent PJM can, before moving to operational procedures that are short term in nature.

BY MR. GUNDERSON:

Q. All right. So, in this case, Project 9A does both, right? It resolves or addresses, reduces, whatever word you want to use, congestion and would also resolve reliability issues and concerns. Doesn't that take it, Project 9A, then out of the element of discretionary market efficiency projects?

A. No. Your question relies on the premise that it's been determined that it's a good project and the right project relative to alternatives, so it doesn't take it out of the realm of discretionary.

Q. Well, you agree that if Project 9A is not constructed, the reliability violations would, otherwise, occur if no other solution is presented?

A. Yes, that's in my testimony.

Q. So, is it your opinion that it's still a "discretionary project" because the reliability violation that Project 9A would resolve is not immediate enough?

A. It's discretionary because it was presented as a market efficiency project, so it's a discretionary financial proposition.

If the commission can't get comfortable with that financial proposition, then -- and denies a CPCN, we have a reliability violation that PJM has identified that needs to be addressed, and will be addressed. And so to the extent that this

project, this particular project, not generically, but this particular project has not been demonstrated to be the right solution for that reliability problem against potential alternatives, then it's left with, is it a -- it's still a discretionary financial proposition before the commission.

Q. So, you are essentially completely discounting any reliability benefit that Project 9A provides, and you're just focused -- isolating and focused on the market efficiency aspect of the project?

MS. McLEMORE: Objection. Form.

THE WITNESS: I'm not discounting what PJM has said, that this project can reduce congestion costs, and without it, there would be reliability violations that need to be solved. But it's my testimony that there's been no determination that this is the right project to solve reliability violations or to address the congestion on -- in particular -- and my answer is

very specific in that regard -- relative to the IEC-East project, because that's the thrust of my testimony.

BY MR. GUNDERSON:

Q. All right. So, I think part of your answer was that it's your understanding or belief that if Project 9A is -- does not receive a CPCN from the commission, then PJM will identify an alternative solution to the reliability violations that Project 9A would address; is that correct?

A. That's correct.

Q. And I guess first off, if -- if Project 9A was a reliability project or for reliability projects that are presented for CPCNs, if that project is not the right solution for the reliability, the result of the reliability violation and is denied a CPCN, wouldn't the same thing happen? It would go back to PJM, and PJM would have to identify another solution for that reliability violation, correct?

MS. McLEMORE: Objection.

THE WITNESS: They would.

MS. McLEMORE: Objection. Form.

THE WITNESS: They would. To the extent --

BY MR. GUNDERSON:

Q. So, why --

A. To the extent a reliability violation remains, it has to be solved.

Q. Right. So, why aren't reliability projects, in your opinion, also discretionary for the commission?

A. It's not the financial proposition necessarily before the commission from a need perspective. The need can be linked to a reliability criteria violation that has to be solved for the integrated transmission system to stay in compliance with reliability standards.

The same is not the case with a pure-play market efficiency project nor is it necessarily the case with an accelerated market efficiency project. That's a financial proposition that the commission

should look at and weigh its relative risks and benefits and try to get comfortable with it before entering into a decision.

Q. Right. But under your logic, wouldn't -- I don't understand why a reliability project wouldn't also be discretionary. Because if the commission determines that a reliability project is not appropriate, for whatever reason, to receive a CPCN, PJM would still have to work quickly to resolve the reliability violation, correct?

MS. McLEMORE: Objection. Form.

THE WITNESS: With a reliability criteria violation, the commission is looking at, again, a link between the proposed project's need to solve something that has to be solved pursuant to NERC reliability standards.

To the extent that the commission denies a CPCN for an application for a project that's been presented as solving that reliability criteria violation, the commission has every right within

its -- within the statutes and its authority as a decision-making body to deny that CPCN, knowing full well that PJM may have a time element in terms of resolving that reliability criteria violation by starting the process again. That doesn't also hold true with the market efficiency project.

BY MR. GUNDERSON:

Q. Okay.

A. There's not that reliability criteria violation.

Q. Well, in this case, have you conducted any analysis to determine potential solutions for the reliability violations that Project 9A would resolve if Project 9A -- assuming Project 9A is not constructed?

A. The only reliability criteria violation that I've been looking at in terms of working with PPRP on conceptual alternatives is the overload on the Peach Bottom-Conastone 500 kV line under precontingency conditions. I have not looked at the other four that PJM has identified beginning

approximately in the fall of 2018.

Q. Okay.

A. Other than I have been to Lincoln Substation, and I have testified that there are 115 kV violations there. I have gotten nowhere near Three Mile Island.

Q. Okay. And what have you determined with respect to other ways that the Peach Bottom-Conastone reliability violations could be resolved?

A. I have only looked at resolution of that reliability criteria violation without Project 9A -- as I've testified, it doesn't exist with Project 9A -- in terms of transmission solutions involving conceptual alternatives, both PPRP has conceptualized and also to the extent that there's been proposals by PPL.

Q. Okay. So, you're referring to, in particular, Conceptual Alternative 3A as we've talked about?

A. I'm referring to 2, 3, 4, --

Q. Okay.

A. -- and 3A, and then PPL's various proposals, including a recent proposal that they've made in the most recent long-term market efficiency window as being relevant.

MS. McLEMORE: Let me ask you a quick question. When do you intend on breaking for lunch?

MR. GUNDERSON: I mean, it's up to the witness.

THE WITNESS: I don't eat.

MS. McLEMORE: Well, I do, so we'll have to go soon.

MR. NAYAR: We can take a break now and then come back.

MR. GUNDERSON: Yes. Five minutes. Let's take five minutes.

(Recess taken -- 11:49 a.m.)

(After recess -- 11:53 a.m.)

BY MR. GUNDERSON:

Q. Mr. Etheridge, I think where we left off

is you were talking about your consideration or review of the conceptual alternatives and PPL's various proposals for resolving the reliability criteria violations that Project 9A would resolve.

A. We were discussing those, and keep in mind in the context of our discussion, reliability projects also provide congestion-cost benefits in many instances.

Q. Okay. And what have you determined from your review of the conceptual alternatives as to whether they would be viable options for resolving the reliability criteria violations that Project 9A would resolve?

A. Conceptual Alternative 1 is not viable.

Conceptual Alternative 2 would be viable to the extent that we can install higher capacity conductors to reduce the overload on the conductors from the Furnace Run Substation into the Graceton Substation with that alternative.

Conceptual Alternative 3 -- let me correct Conceptual Alternative 2. We also have to

address the issue of a transformer overload at the Furnace Run Substation.

With Conceptual Alternative 3 and 3A, 3A being we've added a transformer, that has the potential to be viable without having higher capacity conductors.

Conceptual Alternative 4, also potentially viable with higher capacity conductors, again, given the need to address the transformer overload. I say that, in part, because it's a proposal that PPL has available or has presented in the most recent market efficiency window in some context.

Because that's propriety information, I can't look at it, but it indicates to me that there are alternatives to leveraging existing infrastructure to address, contribute to, potentially resolve the overload PJM has identified on the Peach Bottom-Conastone 500 kV line without Project 9A.

Q. Okay. What do you know about the PPL

proposal that it has presented in the most recent market efficiency window?

A. I know that they have proposed a 500/230 kV substation in conjunction with the existing 230 Otter Creek Switch Station, so that would involve a tap of the Peach Bottom three-mile 500 kV line, 500/230 kV transformers all located adjacent to the existing Otter Creek 230 kV Switch Station.

In addition, they have proposed reconductoring the existing Otter Creek 230 kV line and adding a second Otter-Creek-to-Conastone 230 kV line.

In addition in that proposal, they talked about reconductoring related to the Manor-Graceton existing line. I have seen nothing more than that, which is listed in a TX slide, generally.

Q. And was this PPL proposal presented to resolve the reliability violations that Project 9A would resolve?

A. It was presented for the drivers for that market efficiency window. I believe in that market

efficiency window, there were drivers related to some of the transmission facilities in and around Gettysburg that had been creating violations. I do not know if it was -- those drivers included, for example, explicitly addressing the Peach Bottom-Conastone 500 kV line.

Q. But it's your understanding that the PPL proposal that you've discussed is a market efficiency project, not a reliability project, correct?

A. I would have to verify as to the drivers to see if it was such that the drivers included reliability issues in addition to market efficiency. I just haven't gone back previous -- to the previous TX to study this most recent window, beyond I saw that we've got a proposal from PPL.

Q. And do you know whether the PPL proposal would address the reliability violations that Project 9A resolves?

MS. McLEMORE: Objection. Asked and

answered.

THE WITNESS: There are five reliability criteria violations that PJM identified as occurring without Project 9A. I do not know the extent to which particular project, PPL project we're discussing would address or contribute to any of those five violations.

BY MR. GUNDERSON:

Q. Okay. And do you know whether the PPL proposal was based on a system topology that includes Project 9A as being constructed?

A. I believe it does include Project 9A as being constructed, yes.

Q. If Project 9A does not receive a CPCN and is not constructed, have you done any analysis to conclude whether any of the conceptual alternatives would otherwise be constructed?

A. Your question uses constructed. That involves CPCN processes. I have done no analysis to determine whether any conceptual alternative or PPL proposed project would somehow make it through

a CPCN process and be constructed as you said.

Q. All right. Have you done any analysis to conclude whether any of the conceptual alternatives, assuming Project 9A is not constructed, any analysis as to whether any of the conceptual alternatives would be proposed to PJM to be constructed?

A. I've done no analysis to determine what transmission owners or independent transmission developers may propose as a solution to reliability criteria violations should the commission deny CPCN for the Project 9A.

Q. So, is it fair to say that you also have done no analysis as to how quickly one of the conceptual alternatives could be constructed to resolve any emerging reliability violations?

A. I have not done any such analysis, no.

Q. If the commission determines that it's appropriate to reduce congestion in Maryland and the surrounding region and at the same time resolve the reliability criteria violations that Project 9A

would resolve, do you agree that Project 9A is a viable option for the commission?

A. Yes.

Q. Other than the conceptual alternatives and the PPL proposal and the most recent PJM market efficiency open window, have you done any other analysis on potential alternative solutions to the reliability criteria violations that Project 9A would resolve?

A. The only other transmission facility that I think would be responsive to your question would be PPL's discussion of a 500 kV solution in testimony in the Pennsylvania case.

In your question, you said analysis. The analysis I would have conducted, and it would have been conceptual. In other words, it's an idea developers and/or transmission owners may propose as a potential solution because PPL put it on the table.

Q. Okay. Other than just understanding that PPL put it on the table, have you done any

substantive analysis of that idea?

A. The substantive analysis that I did of it is I've driven the route of the Otter Creek-Conastone line, and I've stood on one of the particular Pennsylvania highways and looked at a structure that's currently part of the Conastone or the Otter Creek-Conastone line, and I thought, well, how might you put a 500 kV line through this particular area? That's the extent of it. No analytical studies in terms of mathematics, costs, and so on.

Q. Okay. So, you had -- you have not determined whether a 500 kV line could fit within the existing right of way, for example?

A. That's correct.

Q. And are you aware of the fact that PPL has itself also not determined whether that 500 kV line option is viable?

A. That's --

MS. McLEMORE: Objection to form.

THE WITNESS: That's my understanding as

well.

BY MR. GUNDERSON:

Q. Are there any other potential alternatives that you have considered or analyzed with respect to the reliability criteria violations that Project 9A would resolve?

A. Is your question has my mind thought of any of the particular transmission elements that are in the area in question? If the answer (sic) is that, I've thought of each of the elements of the transmission system in the area.

For example, the -- the Cooper line that comes into Graceton has a particularly low rating in a particularly congested corridor.

Have I done any studies of any alternatives in terms of analytics beyond the ones we've discussed? No.

Q. Right. Okay. Yeah, I'm focused on substantive analysis.

A. One where one would say, "that's an alternative" as opposed to you thought of the

Cooper line, for example, but I just wanted to clarify that I have thought about alternatives in the area.

Q. Got you.

A. Keep in mind -- and I did say in the testimony -- there's the corridor where the Face Rocks -- of Five Forks to Face Rocks that's going to be rebuilt, and that is something that may stimulate ideas by transmission owners or transmission developers. It's a one-time opportunity to do something in that corridor.

So, I think we should probably at least add to the list, while not a conceptual alternative because we could not describe what would go there, as I have not described it in my testimony, it is, nonetheless, a consideration.

Q. It's a consideration, but it's not something that you have conducted any substantive analysis of to present it as an alternative?

A. Nor should we call it an alternative.

Q. Okay. When we were talking about

the -- your use of the term discretionary to describe market efficiency projects, I just wanted to clarify. Is that your own term that you have come up with, or have you -- is that something that you're aware of that, for example, a regional transmission organization has used that discretionary word to describe market efficiency projects?

MS. McLEMORE: Objection. Asked and answered.

BY MR. GUNDERSON:

Q. You can answer.

A. Financial propositions are discretionary. Market efficiency projects are financial propositions presented to state regulatory commissions. That's the context I -- I use it.

Q. Okay. So, you're not aware of whether -- you're not aware of FERC ever describing market efficiency projects as discretionary?

A. It would seem unlikely that FERC would, given that it has approved a mandate, so it can't

be discretionary and FERC-sized.

Q. Are you aware of any regional transmission organization describing market efficiency projects as discretionary?

A. No.

Q. Are you aware of any state commissions describing market efficiency projects as discretionary?

A. I'm not aware of other CPCN applications with market efficiency projects that have been brought before a state regulatory commission, other than this particular project, and so for that reason, the answer is, no, nor has the issue necessarily come up from the research that I've done with these other state commissions.

Q. Okay. Do you agree that congestion on the transmission system often shifts from one zone to another?

A. I can't agree necessarily with the term shift. I can agree that congestion on any particular transmission system element changes over

time and can be influenced by multiple factors.

Q. Okay. Well, how about if -- for example, if you have a proposed project to resolve congestion, do you agree that that -- that a proposed project can be unsuitable because it resolves congestion in one location, but then increases congestion in another location?

A. I don't believe that would render something unsuitable.

Q. Okay. But do you agree that it happens or it can happen I guess?

A. When you change the topology of the transmission system, you change power flows. When you change power flows, you change congestion. It can be influenced.

So, for example, with the particular project, you have the IEC-West. You have the IEC-East. PJM in describing its review of this project, and other projects, indicated that there could be influences, for example, in the eastern area if you have a project in the west, and that's

understandable.

Q. Right.

A. It's just the nature of a transmission system.

Q. Do you agree that that's -- that is why the IEC project has an east and a west leg, is because the IEC-West project resolves congestion in western Maryland, and the IEC-East project prevents that congestion from being shifted over to the BGE zone and resolves congestion of the BGE zone?

A. I believe that the IEC project has the eastern portion of it because Transource dreamed that up when it studied the system.

To the extent that they viewed bundling the IEC-East with the IEC-West, in addition bundling with, for example, the rebuild of the Conastone-Northwest lines, it's all the value they saw in terms of congestion benefit reductions that would help to sell their project relative to the cost that they put into their proposal.

Now, the transmission system topology has

changed, so your question is, why was it included? They were looking at the -- the system topology in 2014 that PJM had posted. What it does today in terms of one element changing congestion on another element in the transmission system is different.

Q. Have you not analyzed whether the IEC-West project and the IEC-East project work in tandem today?

A. I have not. The information that I have available to me was that we have the -- I believe in the March 2016 time frame individual estimates of the benefit-cost ratio for the IEC-West and IEC-East, and I have not looked at any additional information because I don't believe PJM has published the synergies of the two projects.

Q. Okay.

A. But, again, with power flows, if you change -- if you put the IEC-West project in, it will change power flows. It did in 2014. It does today. I just have not studied the material -- the magnitude of how it changes power flows and how

that then translates into congestion.

Q. You agree that at least back in the March 2016 time frame, the combination of the IEC-West project and the IEC-East project produced greater benefits than just one piece of those projects alone?

A. Yeah. I agree that at PJM's studies, the IEC-East project combined with any of the four other west options, that being the IEC-West or three competing alternatives, was such that the IEC-East project created benefits. Standalone, it didn't pass the benefit-cost ratio. Could it -- those benefits be pursued -- those synergies be pursued in a subsequent window? Of course.

It was discretionary. They didn't have to prove the IEC project which PJM did, but at the time, there was a synergy, and PJM modeled that synergy and presented it.

Q. Well, do you agree that the IEC-East project and the IEC-West project work in tandem to resolve congestion without increasing congestion in

another area of the grid?

A. Based on the studies that PJM did and presented in the March 2000 time frame, there were synergies in terms of reducing congestion by at that time bundling the IEC-East with the IEC-West.

The congestion synergies that were gained could also be gained in the future with a similar or different transmission system enhancement in the area of Peach Bottom and Conastone.

The synergies would not have changed if they existed when studying the 2015 or 2015/2016 data. They're not going to go away. They may change a little bit, but they won't go away.

Q. Right. Okay. Is that why each of the conceptual alternatives that PPRP proposed in discovery in this case incorporate the IEC-West project?

A. No.

Q. Why is that?

A. To create an apples-to-apples comparison.

Q. Do you have an opinion as to whether

adding two geographically separate transmission lines, the IEC-West project and the IEC-East project, would have a resiliency benefit to the grid?

A. I couldn't say that adding the separate geographic locations would -- as far away as these two are geographically would create a resiliency benefit. I would see resiliency more to the extent that you're looking at a particular, for example, 500 kV corridor, and you're ensuring that corridor is more resilient than it is today. The distance between these two and the fact that they're a 230 and the fact that neither was originally needed for reliability doesn't lend itself to an argument of resiliency at this point.

Q. When you say the distance, do you mean that they're too close to be -- to have a resiliency benefit? They're too close in proximity?

A. They're too far away.

Q. Too far away. Well, if there was a

catastrophic event in Washington County that took out the IEC-West line, wouldn't the fact that you had the IEC-East line available to carry additional capacity in eastern Maryland provide a resiliency benefit?

A. I don't see it as being likely from a power-flow perspective, because my understanding is you're looking at power flows primarily coming from west to east into the Dominion-AP zone that would have to find their way up to Ringgold, just as they do today without the IEC-West project.

Now, if you add an element like the IEC-East project, you are changing the nature of flows on the AP-South. It did have some benefit in terms of reducing power flow on the AP-South Interface.

Now, when you jump to resiliency though, then you're implying a reliability benefit, but we didn't see a reliability issue at the time. So, it's more of an economic benefit. It just doesn't jump to resiliency until you create a much tighter

link between loss of the IEC-West and the need for another transmission element in that very area for that Maryland county.

Q. Well, how do you define reliability versus resiliency?

A. I have not ever tried to compare the two and come up with a definition. I'm talking about resiliency, which is, let's say -- shall we say related to reliability. There's a clear relationship there.

I was talking about economics. Because there was no reliability criteria violation at the time, then loss of the IEC-West didn't require liability, didn't require resiliency to ensure service to the customers in Washington County. It was an economic issue, so that's why it doesn't rise to resiliency.

Q. Well, you agree that resiliency is different than reliability?

A. Reliable -- yes. Yes.

Q. Resiliency deals with unexpected

catastrophic events as opposed to reliability, which is PJM tries to plan for based on future conditions?

A. I have not looked at any technical definition of resiliency in my work. Having not been able or having not looked at that, it's going to be difficult to compare that to something, for example, reliability that has specific reliability criteria and standards.

Q. Do you agree that the IEC-West project brings power from southern Pennsylvania into Maryland?

A. If constructed, yes.

Q. If constructed, yes. That's the intent?

A. But it doesn't exist, so --

Q. Do you agree that the IEC-East project, if constructed, would also bring power from southern Pennsylvania into Maryland?

A. Yes, and for both questions, the power flow would be from the 500 kV system into the 230. That's the direction the power is going to flow.

Q. If we focus on the IEC-East project alone, would you agree that constructing an additional transmission line in that area would provide a resiliency benefit to the northeast Maryland and southeast Pennsylvania grid?

A. It provides a reliability benefit, because without it, there's a violation. So, we've established that.

How much more resilient it makes the grid and to the extent that's different and of greater value than the threshold we just crossed by solving a reliability criteria violation is something I haven't studied.

Q. Okay.

A. So, it's difficult to opine on.

Q. I guess would you agree that currently there is, for example, the Otter Creek-Conastone 230 kV line and the Conastone-Graceton 230 kV line in northeast Maryland, and if one of those two lines go out, then there's only one 230 kV line there to take the load?

A. I got lost.

Q. Sure.

A. I was drawing. Can we start again with the lines of the question?

Q. Yes. So, currently in northeast Maryland, there's the Otter Creek-Conastone 230 kV line and the Conastone-Graceton 230 kV line. So, if one of those lines go out, there's only one 230 kV line to take the load in northeast Maryland?

MS. McLEMORE: Objection. Form.

THE WITNESS: There are still multiple 230 kV lines coming into Conastone, those being the Conastone-Northwest lines. Depending on power flows at any given point in time, powers can come into Conastone if you lost one of those lines.

In your question, I think you said take the load or something to that effect, which wasn't clear, but the concept is there's multiple -- there's two other 230 kV lines that come into the Conastone Substation.

BY MR. GUNDERSON:

Q. Okay. We'll make it simpler. With the IEC-East project, there will be an additional transmission line coming into Conastone, correct?

A. There would be an additional double-circuit 230 kV transmission line coming into the Conastone Substation; correct.

Q. And so with that addition, would you agree that that additional transmission line coming into Conastone would allow the transmission grid in northeast Maryland to better able to withstand a loss of one of the other lines coming into Conastone?

A. But unnecessarily so. Given that there's no reliability criteria violation, there's no need.

Q. All right. But what about under a catastrophic scenario where it's not a predicted loss of a line or projected loss of a line or an overload situation, but a catastrophic event, would you agree in that scenario that the addition of the IEC-East project in northeast Maryland provides or would allow the system in northeast Maryland to

better able to withstand a loss of one of the lines coming into Conastone?

MS. McLEMORE: Objection. Form.

THE WITNESS: Not knowing what the catastrophic event is, I can't opine on the scenario.

BY MR. GUNDERSON:

Q. Well, I guess in my hypothetical, it doesn't matter what the catastrophic event is, other than it takes out one of the lines coming into Conastone.

A. A catastrophic event would not be one of the lines coming into Conastone. A catastrophic event would be multiple lines, like a storm coming through and taking down multiple lines, so they just don't link.

Q. Okay. Well, if we assume that the catastrophic event is taking out multiple lines that are coming into Conastone, would you agree that the addition of the IEC-East project would allow the grid to be better able to withstand that

catastrophic event?

A. The fact that the proposed Furnace Run-Conastone line, for the most part, parallels the existing Otter Creek-Conastone line, they're only a few miles apart, and with a catastrophic event, they're likely both down, so, no.

Q. All right. If we assume that the catastrophic event does not lead to the IEC-East project lines going down and takes out other lines that are coming into Conastone, would you agree under that scenario that the IEC-East project would allow the grid to be better able to withstand a loss of those other lines?

A. You know, hypothetical, it is so interesting that it could take down all, but the Furnace Run-Conastone line. Then in that extraordinarily rare circumstance, because I can't even think of what that event would be, you've got the Furnace Run-Conastone line existing.

So, essentially your hypothetical is, if all else fails and my line stays, did I provide

value? Of course. I mean, it's hard to determine how that creates any value from a decision-maker's thinking, but, yes, nonetheless, that would be true.

MR. GUNDERSON: Let's break now for lunch.

MS. McLEMORE: That's good. Thanks.

(Recess taken -- 12:28 p.m.)

(After recess -- 1:23 p.m.)

BY MR. GUNDERSON:

Q. All right. Hope you enjoyed your lunch.

A. Thank you.

Q. What does it mean for a project in PJM to be a baseline project?

A. A baseline project is a project that's been included in PJM's RTEP either for reliability purposes or market efficiency, and these projects are generally labeled as project numbers that begin with a B.

Q. Do you agree that Project 9A is a baseline project?

A. Project 9A has multiple baseline components, but let's just say, for generally speaking, it is a baseline project.

Q. Do you agree that Project 9A would increase the capability of the regional transmission grid to import power from the 500 kV transmission system in southern Pennsylvania into northern Maryland?

A. It would, and back to baseline projects. There's two distinct projects in baseline projects, and then there's sub-projects. Subject to check, either the west or the east is, I think, B-2743 in sub-numbers, and subject to check, either the west or the east B-2752, and then sub-numbers for the different components. So, from PJM's perspective, they are two distinct baseline projects.

Q. And do you agree that Project 9A, if it was constructed, would reduce congestion in the BGE zone?

A. Yes. It's projected to reduce congestion -- congestion in the BGE zone.

Q. And do you agree that Project 9A, if it was constructed, would reduce wholesale electricity prices in the BGE zone?

A. Yes.

Q. And do you agree that the BGE zone serves electric customers in Harford County?

A. Yes, but I would like to go back to the prior answer. Project 9A will reduce congestion costs that will reduce electricity costs.

Electricity costs will also rise in the BG&E zone because of the recovery of the costs associated with the revenue requirement, so I think you and I were speaking as to congestion costs. That reduces the price of electricity.

The cost of the project itself is factored into the transmission rates. Those also find their way to customers, so we were just talking the numerator effectively, and we agree that congestion or wholesale electricity costs would come down, BGE customers. Not their total bill, though. We believe it will, --

Q. Okay.

A. -- but I just wanted to clarify that at one point, we were talking about the BGE's customer's bill.

Q. Right. Not the -- you're -- when you say BGE customer's bill, are you talking about their retail electric price?

A. Yes.

Q. Okay.

A. And just, again, there's two components to the projects. There's the benefits reduced congestion cost, reduced wholesale electricity cost. BGE customers would be responsible for paying for some of the cost of the projects. That would serve to increase their bills. That doesn't show up in LMPs to reflect the wholesale market electricity cost.

Q. Do you agree that on -- one moment. Okay. Do you agree that it's fairly common for congestion constraints to lead to reliability issues?

MS. McLEMORE: Object to form.

THE WITNESS: I have not formulated an opinion on that. I have seen discussions of it in this case, but I have not formulated an opinion on it.

BY MR. GUNDERSON:

Q. So, you agree that in this case, that is what is transpired, and what I mean by that is that there is congestion or has been congestion on the Peach Bottom-Conastone 500 kV line that has evolved to result in an emerging reliability violation on that line?

A. I have not seen that in this case. I've just seen a general discussion that I think one witness may have said over time, persistent congestion in a particular area can lead to reliability issues, but nothing further than that. So, certainly, nothing in line with what you just said.

Q. Do you agree with that position, that persistent congestion in a particular area can lead

to reliability issues?

A. I believe it could. Again, as I stated earlier, I haven't really formulated an opinion on that because I haven't, for example, seen past instances that would prove that true.

Q. Do you think that it's just a coincidence that the Peach Bottom-Conastone 500 kV line has been congested, and then now PJM has discovered that in 2023, it will have a reliability violation as well?

MS. McLEMORE: Objection. Form.

THE WITNESS: I did not see in historical data the Peach Bottom-Conastone as being a significant congestion driver, which is implied with your question.

BY MR. GUNDERSON:

Q. Okay. Are you aware of other projects in PJM that have been constructed that resolved both market efficiency and reliability issues?

A. Because we discussed earlier the concept that a reliability project can contribute to

reduced congestion costs, then, to the extent I have seen a reliability project that's been approved that "likely contributed to congestion" cost reductions, that might fall into the way you've phrased the question as market efficiency and reliability benefits, because you and I seem to agree, and accurately so, that congestion cost reductions are part of market efficiency projects.

Q. Do you have any examples in mind?

A. Any reliability project that's been approved.

Q. Okay. So, it's your opinion that any reliability project that has been constructed in PJM has a corresponding market efficiency benefit?

A. Not any reliability project, because that means it has to occur in all instances. The discussion some witness had mentioned was that generally, and this is Horger I believe, reliability projects have been shown to contribute to reduce congestion costs. That doesn't mean all do.

That's not his testimony nor would it be mine. It's just the reliability project is likely to contribute to a reduction in congestion costs.

I think in response to your question, it could be such that a transmission line would be more likely than, say, some other transmission element, for example, in a substation, but I haven't delved into Mr. Horger's statement to figure out which instances you would have of this particular reliability project contributes to congestion cost reduction versus this one does not.

Q. Are you aware of any reliability projects that have shifted congestion costs to other areas of the grid?

A. I'm generally aware that congestion drivers in the subsequent long-term market efficiency window from when Project 9A was approved, that being the 2016/2017 market efficiency window, was trying to address congestion on the BGE transmission system in large part, and I believe, in part, the IEC-West or the IEC-East

project, rather, contributes to congestion on the Graceton or on the Conastone to Graceton 230 kV line.

Q. My question was, are you aware of any reliability projects that have shifted congestion costs to other areas of the grid?

A. Because of the nature of a tran, interconnecter integrated transmission system, when we add the transmission line, its reliability project is going to shift congestion. It may be minuscule; it may be material. Without defining those terms, it will shift congestion.

So, to the extent I'm aware of any reliability project, I'm also aware of the potential for it, but I -- to shift congestion elsewhere in the grid, but I have no specific memory of linkage that project shifted that congestion that would give a precise answer to your question.

Q. Do you agree that Project 9A resolves the emerging reliability issues that PJM has identified

at no added costs?

A. I saw testimony to that effect, and it's kind of unusual testimony in that there's a cost of the project. It does ben- -- market efficiency benefits Project 9A would. Now all of a sudden it also gets reliability benefits. So, do I allocate so much reliability to the costs associated with the project and a portion of the market efficiency benefits to the cost of the project, as both occur by spending the money on the project, or do I claim one is free and one is not?

I just find it preferable to simply say, these are the benefits it produces for this cost. Neither is free. If you weigh the benefit in any way on trying to render your determination as to approve a project or not, it's not free. It's part of how you decided to spend the money, make the decision.

Q. Do you agree that the reliability benefits that Project 9A would provide increases the value proposition for Project 9A?

A. Yes.

Q. Have you quantified that increase?

A. No.

Q. Have you performed any analysis or reached any opinions on how much an alternative solution to the reliability violations that Project 9A would resolve would cost?

A. I have not yet. I'm waiting for responses in discovery on PJM's analyses of Conceptual Alternative 3A.

Q. Okay. Is it your intent to include such an opinion in your surrebuttal testimony?

A. I haven't formulated what I'm going to put in my surrebuttal yet.

Q. Other than with respect to Conceptual Alternative 3A, have you performed any analysis on how much an alternative solution to the reliability violations that Project 9A would resolve would cost?

A. I have not.

Q. If Project 9A is not constructed, would

you agree that it is possible that the best solution to the reliability violations that Project 9A would have resolved could involve additional greenfield transmission?

MS. McLEMORE: Objection. Form.

THE WITNESS: If Project 9A is not approved or is denied a CPCN, it would be presumptuous at this point to -- to guess what solution PJM may ultimately approve, and it is possible, as the question states, that it could approve of a greenfield project that would then be back before the commission for a CPCN hearing.

BY MR. GUNDERSON:

Q. Have you calculated the avoided cost of constructing an alternative reliability solutions to the reliability violations that Project 9A would resolve?

A. The question is have I --

Q. Yes. Let me -- have you calculated the avoided cost of constructing an alternative reliability solution to the reliability violations

that Project 9A would resolve, provided that Project 9A is constructed?

A. I don't understand the question.

Q. All right. So, let me try this way: Are you aware of the fact that under PJM's rules for reviewing market efficiency projects, that if at the time that a market efficiency solution is being reviewed, it's discovered that that solution would also provide reliability benefits, then PJM includes the avoided cost to solve those reliability issues as part of its benefit calculation for the benefit-to-cost ratio?

MS. McLEMORE: Objection. Form.

THE WITNESS: I am not aware of what you've just posed.

BY MR. GUNDERSON:

Q. Okay.

A. It may be in the context of Schedule 6 of the operating agreement, but it sounds like the FERC-approved cost allocation somehow would change with the tone of your question, and that's what's

confusing me.

Q. No. What I'm talking about is if a market efficiency project provides reliability benefits, in addition to the congestion cost relief benefits, in that scenario as PJM is reviewing the benefit-to-cost ratio for that proposal, it would include in the -- on the benefits side the avoided cost of having to otherwise resolve reliability issues that the market efficiency project would resolve?

A. Yes.

Q. Is that your understanding?

A. Yes, and I think Witness Smith for OPC discussed the various components of PJM's Schedule 6 of the operating agreement that talks about reliability benefits and how they would be incorporated into the benefit calculation for a market efficiency project. But, again, as we're discussing, that's at the time it's approved.

Q. Right.

A. Whereas, this one, that wasn't the case

when it was approved in August of 2016.

Q. Right. Correct. And so that leads to my question that I was trying to ask you so artfully is, have you calculated that avoided cost with respect to Project 9A?

A. I don't know what that --

Q. The avoided cost of having to revolve the reliability issues that Project 9A resolves?

A. The avoided cost would be the next best solution, or even a superior solution, and I have not calculated the cost of either the next best or superior solution that would be avoided by spending the money on Project 9A.

Q. Okay. Thank you. When we were talking about Conceptual Alternatives 2 and 4, you noted that there were reliability violations created by those conceptual alternatives as they're currently proposed or designed; is that right?

A. Yes.

Q. Okay. Have you determined the cost to resolve the reliability violations that are created

by the current design of Conceptual Alternative 2?

A. I have not.

Q. And have you determined the cost to resolve the reliability violations that are created by the current design of Conceptual Alternative 2A with a third transformer?

A. I have not.

Q. And have you determined the cost to resolve reliability violations that are created by the current design of Conceptual Alternative 4?

A. No.

Q. Now, in your testimony, you describe the benefits of Project 9A as having a level of volatility or being elusive. I wanted to get your -- get a better understanding of what you mean by -- when you use those terms, volatile or elusive.

A. When a benefit-cost ratio for Project 9A was posted in the materials that PJM's board approved -- when PJM's board approved that project, and that would be materials in the August 2016 time

frame, the b-c ratio was 2.48. A little over a year later, in September of 2017, the b-c ratio fell to, I believe, 1.30.

When you take a financial proposition like this and you walk into a decision-maker and you say, this is a fabulous project, you're going to get 2.48 benefits for every dollar in cost, and then you go and have to return back to that same decision-maker that bought your financial proposition and explain to him that it's now down to 1.3, I would expect that decision-maker to grill you as to what the heck happened, because that's a volatile change in projected benefits from when I originally put money on the table to invest in that particular financial proposition, and to me, that's volatile.

Q. Okay. Do you take into account the fact that the benefit-to-cost ratio in PJM's most current analysis is 2.17?

A. I've discounted that, and that is because it's results not from a change in the underlying

value proposition as it was originally presented to the decision-maker of 2.48, but reflects a 50-percent increase in the benefit-cost ratio due to a change in methodology, which would also, I think, cause a decision-maker pause.

Q. And the -- what is the change in methodology that you reference?

A. The change in methodology relates to what projects from PJM's queue are included or not included in the modeling that PJM does to calculate market efficiency benefits.

(Brief pause.)

BY MR. GUNDERSON:

Q. All right. Do you agree that the change in methodology that you mentioned was accepted by FERC as reasonable?

A. Yes.

Q. Do you agree that that change was reasonable, that you -- you yourself agree that it was reasonable?

A. I have not independently evaluated what

was filed in that particular docket upon which FERC rendered its decision.

Q. Do you understand the reasoning behind the change?

A. The reasoning behind the change was, as I understand it, there's no easy way to figure out how to do this. This appears to be better than the status quo. Let's give it a try.

Q. Well, wasn't the reasoning behind the change the fact that generation facilities were being included in PJM's projections that were not being constructed?

MS. McLEMORE: Objection to the form.

BY MR. GUNDERSON:

Q. You can answer.

A. That was one of the rationale or one of the reasons that PJM was looking to change the methodology, but it was really the whole concept of, can we approve upon the status quo?

Some generation that we included in the model was not being built. Likewise, some

generation that they may have not included in the model might have made it. It's hard to predict what happens in the queue. So, you have to pick a method, stick it into the computer, and run with it.

Q. Okay.

A. But it's not an easy thing, and by no means, is it, shall we say, "robust statistically."

Q. Well, the congestion that the methodology change excluded are -- did I say congestion? Generation. The generation that the methodology change excluded is generation that only has an FSA associated with it, correct?

A. It is my understanding that there was also the -- a change regarding the suspended ISAs, but I know it was the FSAs.

Q. Okay. And --

A. That was just something that was in the back of my mind, whether that was involved in that case, but certainly the FSAs.

Q. Do you agree that only about 36 percent

of generation facilities in the PJM queue that only had an FSA were actually being constructed over the past years?

A. That number sounds familiar from the documents in that case. Keep in mind, we don't know where that 33 percent relates to, other than the entire footprint.

Q. Right.

A. So, it's not necessarily relevant to what does this methodology do to change BGE's own projects versus ComEd projects. It's generic within the BGE footprint, but that number seems like something I have read in that docket.

Q. And so do you think that it was unreasonable for the methodology to be changed to exclude generation that -- in the PJM queue that is -- only has a 36-percent change likelihood of being constructed?

MS. McLEMORE: Objection. Asked and answered.

BY MR. GUNDERSON:

Q. You can answer.

A. I don't believe that, in and of itself, was the entire reason that PJM changed the -- or sought to change the methodology.

They also have a history of looking at the numbers. They could also test their models. If we do it this way or that, what does it do? And for me to determine if that single item that you mentioned in your question is reasonable, without any, you know, rigorous testing on my own, I can't do it.

On its face, should it be something considered in deciding whether to change a methodology? I think absolutely it should be something you take a look at.

Q. Do you agree that if any of the excluded generation that's excluded from the -- PJM's current methodology is -- is intended to be cited on the receiving end of the congestion constraint that Project 9A is intended to resolve or address, that that -- if that generation was actually

constructed, it would only add to the congestion relief that Project 9A is projected to provide?

MS. McLEMORE: Objection. Compound.

THE WITNESS: In reading Mr. Smith's testimony, he implies, based on his studies, that because the benefit-to-cost ratio increased by 50 percent when this FSA generation was excluded, that had the generation been included back in, the congestion -- it would have resolved congestion. It would have been on the far side of the constraint, and, therefore, Project 9A would not have increased the -- in value, but would have decreased, which seems contradictory to how I understand your question.

BY MR. GUNDERSON:

Q. I'm sorry. Are you -- you're suggesting that Mr. Smith said -- said what? You lost me there.

A. You may have lost me. How would you like to try and resolve it?

Q. All right. Let me -- I don't think you

answered my question which was, do you agree that if any of the FSA generation in PJM's queue is cited on the receiving end of the congestion constraint that Project 9A is intended to reduce or resolve, if that FSA generation is actually constructed, that would only add to the congestion relief that Project 9A is projected to provide?

A. Quite the opposite.

Q. You think that if FSA generation is constructed on the receiving side of the congestion constraint, that it would reduce -- that it would increase congestion?

A. Reduce congestion.

Q. Right.

A. In other words, if I build or -- generating facilities in Baltimore County that's on the receiving side of the constraint, then that's going to reduce congestion trying to get into the BGE area because I have generation, incremental generation in the BGE area.

Q. Correct.

A. Austin's testimony -- I mean, Smith's testimony was if you take FSA facilities out, Project 9A's benefit increases. If you put them back in, because they're on the receiving end of the constraint, it brings that benefit back down, lowering the benefit-cost ratio.

Q. Right. But the construction of the FSA generation on the receiving side of the constraint, it doesn't eliminate the benefit that Project 9A brings. It is additive to that benefit?

A. No, quite to the contrary. If I have a constraint -- the receiving end is where the prices are higher, and the sending end is where prices are lower. We'll call sending Pennsylvania; receiving Maryland.

If I built generation in Maryland, I don't need to bring power across that constraint to the extent I previously did without that incremental generation. That reduces congestion costs. It doesn't increase congestion costs. That's how I have answered each of these questions.

Q. Aren't you then assuming that the Project 9A is eliminating all congestion in the AP-South and the AEP-DOM zones?

A. No. No.

Q. No. There --

A. I have said it doesn't eliminate it.

Q. Right. Even after Project 9A is constructed, there's still going to be congestion in the AP-South and the AEP-DOM zones, correct?

A. There still is going to be congestion.

Q. Right.

A. It hasn't resolved it.

Q. And so the addition of additional generation facilities in the AP-South or the AEP-DOM zones would further reduce congestion beyond what Project 9A would provide, correct?

A. You said AP-South, AEP-DOM zones. Those are not zones.

Q. All right. Interfaces.

A. They're interfaces. Put it this way: Dominion, if they build generation, it reduces

transfers from west to east. It reduces flow across the AP-South/AEP-DOM interfaces. That reduces congestion. That's building incremental generation on the receiving end.

We're talking about if I invest in a market efficiency project intended to reduce congestion, if I, in turn, build generation on the receiving end, I'm losing value for what I spent on that market efficiency project.

Q. How are you losing value if there's still congestion that exists after Project 9A is constructed? Then the additional generation into the AP-South Interface and the AEP-DOM Interface would further reduce that -- that residual congestion, correct?

MS. McLEMORE: Objection. Form.

THE WITNESS: A financial proposition with a market efficiency project is, I'm willing to reduce congestion. Give me some money; I give you reduced congestion. The economics of that project are affected thereafter over time depending on

whether that congestion materializes.

If you go back after the fact and review, how well did my investment do? Well, how much congestion did it reduce?

What I'm saying is if incremental generations I didn't anticipate was built on the receiving eye -- receiving end of the constraint, then my project -- my investment in, for example, this Project 9A is not worth as much any more. I didn't get the return on the investment I thought I would because someone went and built generation inside the constraint, and that generation then can reduce flows across the constraint.

BY MR. GUNDERSON:

Q. I don't think you answered my question, though.

A. I've tried several times.

Q. If additional -- if congestion still exists after Project 9A is constructed, then would you agree that the additional generation that is added to the AP-South Interface and the AEP-DOM

Interface would address that residual congestion?

A. It's not an answerable question. I've tried, but you're talking about adding generation on the AP-South and AEP-DOM Interfaces. You can't add generation right on those interfaces.

Think of it this way: One of the four transmission lines in the AP-South Interface going from west to east, you've said add generation on that interface. Well, maybe a point right in the middle? Well, how do I determine whether it's flowing, you know, on the constraint into the constrained area, outside?

What we should be talking about is here is a constraint. We're either talking about generation in West Virginia that's going to flow across those lines or generation in Dominion not on the constraints. I'm saying if you have incremental generation in Dominion, the flows from West Virginia will be reduced.

Q. Okay. Let me try it this way: If congestion still exists in PJM after Project 9A is

constructed, would you agree that additional generation that is constructed on the receiving end of that congestion, that it would address or reduce the residual congestion that is left after Project 9A is constructed?

MS. McLEMORE: Objection. Asked and answered.

MR. GUNDERSON: That's a different question.

THE WITNESS: Yes. When you put generation on the constrained side of a constraint, incremental generation, it reduces congestion.

BY MR. GUNDERSON:

Q. All right. You agree that the PJM transmission system topology is constantly changing?

A. Yes.

Q. And do you agree that it is appropriate for PJM to continuously reevaluate any project that it approves to determine whether that project is still needed as the system topology changes and

before the project is in service?

MS. McLEMORE: Objection. Form.

THE WITNESS: Importantly before it's too late --

BY MR. GUNDERSON:

Q. Right.

A. -- you should look at it. I was waiting for you to add that, but yes.

Q. Yes. And because the system topology is always changing, isn't it a virtual certainty that the level of benefits provided by any project that PJM selects will change over time?

A. Certainly in the case of market efficiency projects. We also have other baseline projects, reliability projects.

Q. And I mean that -- that also applies to reliability projects though, doesn't it?

A. It's hard to go back necessarily after the fact and say, but for the project, yes, we would have had a violation. I suppose you can go back and model a system in that regard.

Q. Right. But I'm speaking about the time frame between the time that PJM approves it and the time frame where the project is actually in service.

A. I stand corrected.

Q. During that time frame, you agree that, even for reliability projects, the level of benefit that will be provided by that proposed project will necessarily change over time?

A. I agree.

Q. All right.

A. Just one note. Keep in mind with the reliability and criteria violation, it's discrete. It is or it isn't.

Q. Right. Right. But it can still -- it can still be -- the level of how much it resolves the overloads on a line, for example, can change, correct?

A. That's a very good point. Yes.

Q. And also for reliability projects, the time for when the projected reliability violation

will occur can change over time as well?

A. It can, yes.

Q. So, do you agree that it's a strength of PJM's process that it reevaluates projects over time before they're constructed to confirm that they're continuously needed?

MS. McLEMORE: Objection. Form.

THE WITNESS: I don't know if it's necessarily a strength, so much as it is simply being prudent, that you're not going to spend money without keeping an eye on whether or not that investment still makes sense.

BY MR. GUNDERSON:

Q. And do you agree that Project 9A for each reevaluation conducted by PJM passed PJM's 1.25 benefit-to-cost ratio threshold?

A. It did exceed that bright-line threshold, yes.

Q. Have you determined or do you have an opinion on whether the PJM's current benefit-to-cost ratio of 2.17 for Project 9A is

inaccurate?

A. I have no reason to believe they're unable to run their models and present an accurate result of their computer models. So, no, I have no reason to believe that 2.17 doesn't reflect what inputs went into their models and what outputs came out.

Q. Have you calculated an alternative benefit-to-cost ratio for Project 9A?

A. I have not.

Q. Do you agree that PJM's current benefit-to-cost ratio for Project 9A was based upon the most up-to-date system topology and load forecasts that PJM had available?

A. The topology would have been -- I believe, for example, the forecasts would have been this 2019 forecast, the most recent. Whatever other information they had, at which point they had to start their modeling run would have been the most current and up to date.

From the time that they started that,

there's going to be a couple weeks' lag until you print out the numbers, but, you know, clearly it -- I think they made every effort to use the most current information they had available to them.

Q. And do you agree that it is prudent to use the most current, up-to-date information to evaluate the projected benefits of Project 9A?

A. Yes.

Q. Have you performed any analysis to determine whether there is sufficient generation in PJM's queue to reduce congestion to the same level as Project 9A has projected to reduce congestion?

A. No.

(Whereupon, Etheridge Deposition Exhibit 4, Direct Testimony of Dwight D. Etheridge, marked for identification.)

BY MR. GUNDERSON:

Q. All right. The court reporter has marked as Deposition Exhibit 4 the public version of the direct testimony of Dwight D. Etheridge in Case

Number 9471, and it also includes the public exhibits.

MS. SCHIPPER: No.

MR. GUNDERSON: Oh?

MS. SCHIPPER: Yes, sorry.

MR. GUNDERSON: That's all right.

MS. SCHIPPER: They're here.

MR. GUNDERSON: I'll just note, for the record, that the Deposition Exhibit 4 only includes the Exhibit A1.

THE WITNESS: The appendix to my testimony.

MR. GUNDERSON: Okay. That's all right. I don't think we need to include exhibits for right now, but if we need to reference them, they're available.

MS. SCHIPPER: Okay.

BY MR. GUNDERSON:

Q. And I believe, Mr. Etheridge, that this is the most up-to-date version of your direct testimony that includes the changes that you

circulated or your Counsel circulated last night?

A. Yes, I believe it is.

Q. Turn to page 6, please. All right. I'll direct you to the line 22 of page 6 of your direct testimony.

A. Yes.

Q. And you say here that the IEC project should not be granted a CPCN, primarily because Transource failed to reasonably consider alternatives to the IEC project that would utilize existing underutilized transmission infrastructure. So, I want to focus on that part of this bullet point first.

A. Yes.

Q. What analysis is it your opinion that Transource needed to undertake to reasonably consider alternatives to the IEC-East project that would utilize existing underutilized transmission infrastructure?

A. I believe that Transource should have made a showing that its project -- its IEC-East

project, with superior options, that could have used existing underutilized transmission infrastructure in a manner sufficient for then the commission to -- to weigh in on the matter, but that simply wasn't even included in the application.

Q. And when is it -- when should Transource have undertaken that analysis in your opinion?

A. I believe that Transource could have undertaken that analysis prior to filing its application in this case to justify its proposal, if it so chose.

Q. Do you believe that Transource should have undertaken that analysis prior to PJM's selecting Project 9A?

A. I think it would have been preferable for Transource -- well, the answer is -- is, no.

Q. Okay. So, is it your opinion that Transource should have undertaken this analysis after PJM selected Project 9A?

A. I believe that if one wanted to make a

convincing argument to the commission that you would look at alternatives in the most up-to-date topology and such and, therefore, in preparing an application in December of 2017, you might want to look, if I was Transource at that time, to say, is my application likely to gain a CPCN approval?

What one does back in 2014/2015 time frame in terms of preparing a proposal for a PJM market solicitation is different topology, different study that an independent transmission developer would undertake.

Q. Now, you're aware now that Transource and PJM have performed market efficiency analyses of Conceptual Alternative 3A, correct?

A. I am, yes.

Q. Is the analysis that has been performed on Conceptual Alternative 3A sufficient to -- for Transource to have reasonably considered alternatives to the IEC-East project that would utilize existing underutilized transmission infrastructure?

A. I don't know.

Q. Why don't you know?

A. I haven't looked at responses in discovery on the analyses that have been done on the Conceptual Alternative 3A that present the benefit-cost ratio.

Q. When a transmission developer is preparing an application for a new transmission line in Maryland, which existing infrastructure should that transmission developer analyze in your opinion?

A. It would be specific to any given application, so I don't have an answer for that.

Q. Okay. Well, to make it specific to this project and this application, which existing infrastructure should Transource have analyzed?

A. For this particular application, I will narrow the question just to the IEC-East project if that's all right.

Q. That's up to you.

A. All right. I'll answer relative to the

IEC-East project. Then I think what's relevant is we've got a 500 kV system as a source, and we've got two 230 kV substations as potential sinks, and so I would analyze combinations of utilization of existing infrastructure both in the Otter Creek and Conastone and the Manor-Graceton corridors to get transmission capacity, incremental transmission capacity, and how the 500 kV system, and into northeastern Maryland.

The timing of that was or would have been -- since we're talking about the time Transource would be preparing an application, so that would have been in the fall, let's say, of 2017. I do not know when information was brought to bear that the Five Forks-Face Rock corridor was also going to be rebuilt, but it is a corridor in the area and, therefore, relevant.

To the extent it came after or it was first made public that that was likely to be rebuilt, then it would be difficult for Transource to necessarily know that, not being public

information.

So, in that case if it wasn't public, I'd limit it to what I said is, what are the options for getting power from a 500 kV system into either or both the Conastone and Graceton Substations in northeastern Maryland.

Q. So, is the standard for identifying which existing infrastructure to have -- to analyze, is it a geographic standard in your opinion?

A. I have not spoke of a standard. I just gave you one certain example to one isolated incremental piece of transmission. So, standards are -- have significant meaning in the utility industry, and I'm not speaking of a standard.

Q. Okay. So, you haven't developed a particular standard that you think the commission should apply in determining the -- which existing infrastructure should be evaluated as an alternative?

A. That's correct.

Q. How much analysis is required in your

opinion to evaluate the existing infrastructure?

A. It would depend upon the project.

Q. Why would it depend upon the project?

A. A project could cover a very large geographic area; it could cover a very small geographic area. A project could involve a connection between two nearby substations, which would limit the amount of alternatives that are even viable. So, it's going to vary from project to project.

Q. Do you agree that there are other limitations on a transmission owner or developer from being able to evaluate using existing infrastructure?

A. Yes.

Q. What other limitations are you aware of?

A. The availability of information on existing transmission infrastructure and its capabilities.

Q. Do you agree that it is also a limitation if the transmission owner that owns the existing

infrastructure isn't willing to provide that information?

A. There is a certain interesting aspect of today's competitive environment where transmission information has become proprietary.

Q. Right. So, in your opinion or view, it's not unexpected that a transmission owner that owns existing infrastructure would view information related to the existing capabilities of its infrastructure as proprietary and would not provide that information to another transmission developer?

A. No. I would agree it's something that I've just recently learned is the new lay of the land.

Q. And are you -- I'm sure you're familiar with the fact that if PJM selects a project, it signs a designated entity agreement with the transmission developer to develop a specific project?

A. Yes.

Q. And would you agree that the -- the

alternatives that you are proposing that Transource should have evaluated using other existing infrastructure would be electrically different than the project that is the topic of Transource's designated entity agreement with PJM for Project 9A?

A. Yes.

Q. So, is it fair to say that the alternatives for using existing infrastructure would not have been directed by PJM to be constructed?

MS. McLEMORE: Objection. Form.

THE WITNESS: Yes, meaning they had not been designated or approved by PJM.

BY MR. GUNDERSON:

Q. Right. And under PJM's tariff, it is required that transmission projects be approved by PJM prior to being constructed, correct?

A. Yes.

Q. Okay.

A. The voltage-level distinction, all of

those that fall under PJM's jurisdiction and so on, yes, PJM approves them.

Q. Other than access to information, are there any other limitations that you're aware of for a transmission developer from being able to evaluate using existing infrastructure?

A. I do not know whether transmission developers have the entire contingency file that PJM necessarily runs such that they could go to that depth of analysis as they're looking at alternatives.

Q. Okay. Anything else?

A. I can't think of anything at the moment.

Q. Is it fair to say that the process that you're proposing for transmission developers to evaluate existing infrastructure after PJM has selected the project and, I guess, before the project is constructed, that that process is not currently required under any FERC-approved mandate?

A. Yes.

Q. Do you also agree that that process is

not currently required under any state commission order?

A. You're characterizing what I'm describing as how an applicant for a CPCN might justify a "PJM-approved project" for which they're the designated entity, and they're trying to seek a CPCN. I'm not saying anything other than they should try and come up with the information that they feel necessary to justify the project, including an examination of existing infrastructure.

To the extent that a state has a requirement, as the state of Maryland does, to consider that, then it would behoove an applicant to have done that before they file the application, regardless of PJM's processes and regardless of any FERC order.

Q. But my question is, do you agree that that process of evaluating existing infrastructure after PJM has selected the project, the transmission developer evaluating existing

infrastructure, that that process is not currently required under any state commission order?

A. You're saying process. I'm saying put your application together. There's nothing in the state law that tells you how to put an application together.

Q. All right. Turning back to page 6 of your direct testimony. The second part of your bullet point at the bottom of the page 6 says, secondarily because the information set on how best to resolve emerging reliability issues in that area is unnecessarily limited. So, the question on that part of your testimony is, what analysis should Transource undertake to gather an information set on how best to resolve emerging reliability issues in that area?

A. I don't know how Transource could on its own complete an adequate solution set or an adequate set of alternatives for addressing reliability issues, because you're just -- Transource is a single independent

transmission developer and, therefore, on your own, you couldn't bring to bear what you, along with other transmission owners and other independent transmission developers, may be able to bring to bear in terms of identifying the best solution to the emerging reliability issues.

Q. Okay. So, how would that information set be developed?

A. To the extent that the commission agrees with PPRP and denies transfers of CPCN, PJM will, in turn, employ its processes and protocols to resolve the emerging reliability issues.

Q. So, the information set that is lacking can only be developed if the commission does not grant a CPCN in this case, correct?

A. Correct.

Q. Isn't that an impossible standard for Transource to meet?

A. My testimony isn't addressing whether we've got a standard to meet or not. What my testimony is addressing is that the process that

PJM followed wasn't robust in terms of its selection when it decided to approve the IEC-East project.

Given that there's no evidence in this record that would show that a robust look has been taken at potential alternatives, then why proceed forward and approve this project? Why not let PJM solve the emerging reliability issues with a robust set of potential alternatives so the commission can have confidence that it's picked the right one.

There hence-after or henceforth, rather, PJM will employ its processes and study reliability market efficiency projects just as its Schedule 6 operating agreement says. Just not this project. It wasn't compared against any significant -- any reasonable alternatives in terms of bringing incremental capacity from the 500 kV system into Maryland.

Q. If PJM never identified the emerging reliability violations that Project 9A would resolve, then this reason that you give for denial

of the CPCN would not apply, correct?

MS. McLEMORE: Objection. Form.

THE WITNESS: The information set necessary to approve the project would be significantly lacking, such so that it shouldn't receive its CPCN. So, all that would change in this second half of this bullet point is to resolve persistent congestion.

It has nothing to do with reliability or market efficiency. To the extent that it wasn't proven reasonable compared to alternatives, then whether the need is reliability or whether the need is persistent reduction in persistent congestion doesn't change.

BY MR. GUNDERSON:

Q. So, it's your opinion that there is not a sufficient information set on how to best resolve the congestion issues that Project 9A resolves?

A. Yes, as regards to the IEC-East project.

Q. What is lacking?

A. It wasn't compared against any reasonable

alternatives. At the end in March 2016, there were four proposals. PJM compared the IEC-East segment of Project 9A, along with the other three competing proposals, and also with the western segment of the 9A. They didn't compare anything against the IEC-East project.

Q. Do you agree that PJM did consider other transmission solutions in the '14/'15 open window that were geographically close to the IEC-East project?

A. It did. There were two alternatives that I mentioned in my testimony; one involving a new 500 kV line from Peach Bottom to Conastone, and one, a new 500 kV line from Adam, which would be a new switch station or substation into Conastone.

Q. Do you agree that during or prior to PJM selecting Project 9A, PJM reviewed and analyzed 40 other proposed alternative projects?

A. PJM analyzed 41 proposals in group one, if you're referring to the various proposals they received in the 2014/'15 long-term market

solicitation that they grouped in group one.

Q. Yes. You agree that they reviewed or analyzed those 41 proposals, correct?

A. Yes.

Q. And as you mentioned, the four finalists, as you call them, that PJM reviewed prior to selecting Project 9A, those -- that was Project 9A and then three additional modified proposals that PJM called combination projects; do you recall that?

A. Yes.

Q. And the three combination projects were different or in addition to the 40 other proposed projects; do you agree with that?

A. No.

Q. Why not?

A. In March of 2016 -- and that's the time period I'm talking about -- PJM was looking at three proposals that remained, in addition to Project 9A, and was trying to make a decision on what it should do. Now, how does that relate to