Santee Cooper IRP | Public Stakeholder Meeting #4

This Q&A Summary documents the questions and comments that were asked, and the responses that were provided in the Q&A window during the IRP meeting. The questions and written answers are generated by the Zoom platform. The live answers are transcribed from the recording and are an attempt to capture each as closely as possible, as it was provided. All live answers have been edited for readability and may have been reordered to connect conversations. [Square brackets] are used to identify post-meeting ammendments or restated questions and material references.

#	Question	Asker Name	Response Type	Answer
RH		John Kramer	open mic answered by Stewart Ramsay	So with that, I'll just ask John, John, you got a question? Feel free to unmute yourself and ask the question. John Kramer, you should be able to unmute yourself. *[mic not working?]* Well, I'll continue on. And John, if you've got a question, feel free to chime in or drop it into the chat box.
RH	I, you know, I see your summary that there's a lot of satisfaction with the process. And I felt like at this point rather than just let that go unremarked that, you know, it has to be said that we have stakeholder meetings, and then we submit comments often seeking information and the degree to which we get that information. We can't say in advance in the stakeholder meeting, how satisfied we'll be afterwards. But the degree of transparency in the process that allows us to actually contribute meaningfully impacts dissatisfaction a lot. And also, you know, you mentioned some of the things that have happened in the interim between meetings. And there have been quite public indications that Santee Cooper is working together with dominion and with the legislature to develop something that I would consider to be possibly the cornerstone of the IRP, which is the energy replacement for the retiring coal plants. And I've raised this in the first	Eddy Moore	open mic answered by Stewart Ramsay	Absolutely, I understand. So Eddy, thank you very much for the feedback. And so we agree completely. And it's it's one of the reasons if you look back at meeting number one and meeting our two, this meeting actually wasn't in the schedule. And around the time we were heading into to meeting number three, Santee Cooper, Bob and the folks at Santee Cooper and Vanry. Were all looking at everything that was happening and said, you know, there's a lot of new stuff emerging, we should probably plan on another meeting, just to, you know, I think initially, it was Ray, that that sort of had us all thinking, yeah, these impacts, could be significant. And even if they're not, we should be telling stakeholders, what's happening with respect to the discussion with Dominion. You know, that was one of the conversations we had earlier with Santee Cooper. They said there are some conversations going with Dominion that we need to let the stakeholders know about. Nothing's been decided yet. But you know, we're going to be jointly looking at some things. And so we should let them know that that's underway so that they're not surprised when they see the results of whatever that analysis turns out to be, you know, working its way.

	meeting, and I raised it again after the last meeting. And in since that time, there have been more and more indications that a core part of the IRP is essentially being hashed out somewhere else. And I'll say that, I felt like it's irresponsible. But I'm not trying to impugn your integrity, I think it's irresponsible not to mention it, because it's so it's such a high profile and important thing. And so I just want to say that the satisfaction with the stakeholder process could really be eroded if the core of the IRP is actually developed elsewhere. And in that regard, you know, I'll say finally, we had yesterday stakeholder process, with Dominion. And that's part of where these indications are coming from.			So we and I absolutely appreciate the feedback. I think Santee Cooper is working hard to make sure that everything that is meaningful is provided to the stakeholders as early as possible. So if you have a view that that's not the case, then, by all means, let us know. Our intent is really no surprises, the stakeholders should be seeing everything as it comes together.
		Eddy Moore		Well, I mean, not to put a point on it. I wouldn't be surprised if the outcome is a joint combined cycle plant because that's exactly what people are saying. So it wouldn't be an issue of surprise, or not being notified because I'm bringing it up because I'm aware of it. The issue would be whether the IRP actually comes out of a legitimate modelling analysis informed by stakeholder comment or whether it comes out of a deal somewhere else.
			open mic answered by Stewart Ramsay	Right. No, I understand that question. And I've got my view. I'm an external party as a facilitator, and so I hear the conversations that Santee Cooper and its experts are having and I believe that the decisions are going to emanate from the IRP I believe Bob all along when he said no, we don't have an answer that we're trying to divine. You know, we want to see what the analysis shows us and move in that direction. But that's, you know, that's me, they're gonna have to demonstrate that to the stakeholder satisfaction for sure. And so we're going to be working hard to do that. And I appreciate your feedback. And if it looks like we're not accomplishing the goal of being transparent, by all means, keep speaking up. I appreciate this input. And I know they do as well. With that. Forest, you had a question?

RH	Yeah. Thank you so much. And my question is about kind of feedback and engagement from stakeholders this, I feel like we've moved into the phase where that is the most valuable and important, there are some more detailed assumptions, methods, starting to be some results coming out. And this is where for a stakeholder, you know, it sort of shifts from a checkbox on on stakeholder meetings to actual engagement. And so I guess I have a question related to that, because I do see, and you noted this just a moment ago that, you know, that there's one more meeting after this and one of the later slides, it's labeled as final IRP results. So, you know, I want to make sure that there really is an opportunity for stakeholders to review detailed information that we can respond to that we can provide recommendations related to, in time that the the utility can incorporate the feedback into what it does with the IRP. So, you know, that's just kind of the setup. But this specific question, I guess, is, you know, When is the deadline for us to provide substantive recommendations? And when will we get the more detailed information that would serve as the basis that we would review and be able to respond to, for instance, related to the demand side management potential study, or but there will be others as well. So that's kind of my main question.	Forest Bradley Wright	open mic answered by Stewart Ramsay	Good. I think that's a wonderful question. And, so we're gonna hear from Bob later today, I'll ask Bob to sort of weigh in on what, what we think that timeline is, is looking like, it's just so you know, and I really do appreciate the question. It was probably two weeks ago that we, my team and Santee Cooper and the Nfront team. spent about an hour just working through that, you know, having conversations about what that would look like, how much, and, when is it that the information becomes available to stakeholders? What's the timeline for them to have reasonable feedback? So we've been in that question and trying to make sure that we're managing the schedule accordingly. So it is something that I know Santee Cooper takes very seriously. And we've been trying to make sure that we're going to provide everybody ample opportunity to digest the information, run your own analysis if you if you want to and and provide meaningful input. So thank you for that. And again, so I'm not, you know, with this slide here that's up in front of you, we're not trying to put words in the stakeholders mouth. This is just a summary of the feedback that we've had from the stakeholders to date and what we are what we are doing in response to that so we're trying very hard to listen and adapt as necessary to take care of the needs of the stakeholders. And we'll continue to ask for feedback and do our best to to respond to it.
			open mic answered by Rahul Dembla	Hi, good. Good afternoon. This is Rahul. You did a great job of tackling everything I just wanted to step in and respond to Eddy's prior question. I just wanted to assure and confirm what you said and that hey, listen, what we are doing for a joint development, it's diligence, it's trying to understand the costs of the different options, but that is not going to be useful to a full IRP process. We will do sound analytics and that information appropriate will be made available, we're just not there today. What we're doing is trying to do that diligence and make sure we have the appropriate costs and all the different options. So it's a lot of work to do. So we have to do it in parallel a little bit. But just like you said, Stewart, we will be transparent and make things available as we make progress. So I wanted to clear that up.

1	Good Afternoon, my name is Findlay Salter and I am here with Anthony Sandonato, O'Neal Morgan and Jeffery Gordon participating on behalf of the South Carolina Office of Regulatory Staff along with our colleagues from J Kennedy and Associates, Leah Wellborn and Phil Hayet.	Findlay Salter	written	Good Afternoon Findlay and team. Thanks for joining us today. - Rahul
2	We are grateful to Santee Cooper for pulling everyone together today for discussion on their Integrated Resource Plan. I want to let everyone know that even though we are here participating in this stakeholder session and future sessions this does not represent an agreement on the positions discussed. ORS is tasked by statute to represent the concerns of the using and consuming public with respect to public utility services, regardless of the class of customer, and preservation of continued investment in and maintenance of utility facilities so as to provide reliable and high-quality utility services. When this matter is brought forward before the Public Service Commission ORS will review all information presented and draft its position with its statutory requirement as a guide.	Findlay Salter	written	thank you
3	?small nuclear inandem such as NUSascale Idaho State using	John Kramer	written	We are looking at SMRs as a potential resource. Thanks for the question/direction.
4	Nuclear	John Kramer	written	Thanks for clarifying.
		John Kramer		NUSCALE uses thermal energy and resulte in MUCH safer and because of using thermal energy instead of mechanical energy it is also much less expensive than previous Nuclear. It is far less pollutins and alomost zero CO2thay units are manufactured inhouse instead of on site and can be connected to generate 12 X77MWE. Approved byUS regulatory commission so at least 6 years ahead of other SMR ??Cost
			written	Thank, John. Noted and we believe is reflected in the EPRI assumptions dataset...certainly a technology we will include in the evaluation.

5	I have a question, but actually don’t see a way to come off mute. Are you able to take me off mute from your end?	Forest Bradley Wright	written	We will yes, once Mr. Moore’s question adressed
				[see the RH exhange with Mr. Bradley Wright above]
6	Has the MPS been made available?	John Brooker	live answered by Patricia Housand	The results that you'll see today are straight out of the model as of a week ago, and so the measure list is going to be made available almost immediately. But then the report will follow that. There's another aspect to that, because we're using the same set of resources at Resource Innovations, where let's go to the next bullet. And I'll circle back around Stewart, if that's okay, is that we've asked Resource nnovations. I have not been able to find anyone with any knowledge of us having ever having done a demand response market potential study. So we instead of having Resource Innovations put together the final report for the energy efficiency MPs, we had them immediately start the resource, the demand response market potential study, and this will inform us of where we get the 35 megawatt potential by customer segments. And so we're looking to have that the demand response market potential study, the initial results ready by the beginning of February 2023. And so, answering back we'll get the finish report from energy efficiency demand market potential study completed after we get the initial results and then the the QC results from the demand response market potential study and all that It'll be made available. Okay? We're just having to do it consecutively rather than a lot of things in parallel because of resource constraints. And then the last point that we'll talk about is information that we received from Central just to speak about their 2020 IRP filing.
			live answered by Stewart Ramsay	
7	In addition to EV and Solar, what about IRA load impacts on customer uptake of energy efficiency?	Forest Bradley Wright	live answered by Jim Herndon	So that's actually a good segue to the next slide. I appreciate that actually, thank Eddy and Forrest to asking questions that T's up some discussion. So yeah, so I definitely was, seeing those questions on IRA, I was going to mention that. I would say that we are, I mean, obviously, everyone's been furiously reading the IRA and trying to figure out the impacts. We are and are trying to incorporate, as we understand impacts overall of the energy efficiency components of the IRA.

<table>
<tr><td>8</td><td>Why do you expect no impact on load from the Inflation Reduction Act’s investments in energy efficiency and other demand side management?</td><td>Chris Carnevale</td><td rowspan="2"></td><td rowspan="2">I think he mentioned the rebates available for some individual heat pumps, building envelope type things, as well as some of the more packaged, you know, targeted percent savings in homes, things like that. So we definitely looked to confirm that those measures are included in our measure list. And I think we did just distribute the measure list for the study to look to see that those are in there. And then as well as as I get into this slide, I think there's implications of the IRA that as I mentioned on the last slide, that red box was around achievable potential. And we were somewhat intentional in determining potential more based on achievable potential here, due to those kinds of things. We weren't like trying to limit it to existing Santee Cooper programs, or programs only offered by Santee Cooper. Really, what we looked at was more of market based potential, which is described on this slide to say, "Well, let's look at the cost of a technology, and what's the available offset or rebate, upfront costs, customer payback, those kinds of things". So it doesn't really matter if it's coming from a utility sponsored program, or funds from the IRA, or what the funding source is. It really just looks at the economics. So they may just to talk through this slide. So I guess that's the quick answer. And maybe I'll talk through this slide and come back to that, if that sounds okay. Or works for everybody.</td></tr>
<tr><td>10</td><td>The IRA provides significant new tax credits for efficient HVAC plus multi-billion dollar programs with rebates of up to $14,000 per home for efficiency and electrification. There is a major efficiency component in addition to EVs and PV.</td><td>Eddy Moore</td></tr>
<tr><td rowspan="2">9</td><td rowspan="2">Did the rooftop solar capture growth from nonprofit orgs with the new direct-pay provisions - essentially a whole new sector? Is Santee Cooper looking to encourage this type of commercial solar through Tariffs? Also there are enhanced credits for community solar projects, are these captured?</td><td rowspan="2">John Brooker</td><td>live answered by Greg McCormack</td><td>Yeah, I think maybe the easiest way to address that would be for me to speak through this slide. And then we can circle back. Maybe I'll have you repeat that question. I can answer it at that time, Stewart, if that's okay.</td></tr>
<tr><td>live answered by Greg McCormack</td><td>[Did the rooftop solar capture growth from nonprofit orgs? With the new direct pay provisions, essentially a whole new sector?]

Yeah, and so the way that we project our solar using this EIA information, it doesn't break down where the growth on the solar system is coming from. So it could be commercial, it could be residential, you know, we have been sort of generic about that. So to the extent that the EIA is incorporating that new sector as a result of the IRA, and you know, to be quite honest, the EIA case is not directly resulting from the IRA act, but they just sort of happened to be at a similar timeframe. To the extent that they've incorporated some of that into their analysis, we would be capturing it in ours as well.</td></tr>
</table>

				[is Santee Cooper looking to encourage this type of commercial solar through tarrifs?] That's not really a question I can answer. That's not a load forecast question. So that's maybe better pushed to somebody more appropriate.
				[There are enhanced credits for community solar projects, and are those captured or the impact of those captured?] So I think it would be the same answer as the first one where to the extent that EIA is seeing these different pieces of the act or whatever, increasing solar adoption, we would just naturally pick it up based on how we're projecting solar adoption.
11	A point for clarification, but do these tax credits continue along with 45Q credit for generation resources in that they don't roll off until the U.S. reaches certain emissions targets?	Ryan Deyoe	written	At this point, we do not have total clarity on all aspects of the IRA in terms of potential phase-outs of each of the energy efficiency-related tax credits, but generally it appears that the phase-out here would be similar. Certainly, the loan programs reflect particular dollar figures in aggregate that may be expended within that timeframe (i.e., 2032/34). We are all awaiting additional guidance from the Treasury on a lot of points as well as the updated Code of Federal Regulations to get that clarity.
			written	Ryan - Just to clarify; in talking with the load forecast team here, a couple of the key tax credit provisions appear to phase-out but others may not. Whether there is a phase-out or not appears to vary depending on the specific provision. In addition, it is unclear whether the phase-out is tied to a particular year or that the statement we've reviewed is referring to the GHG target timeframe (i.e., is dependent on targets being met).
12	Do you assume that EVs retain the current level of energy efficiency, or could they become more efficient in order to reduce battery costs and thus use less electricity?	Eddy Moore	written	Good question Eddy; While we do forecast the improvements in the availability of EVs and electric vehicle batteries, we do not forecast changes in future technology.
		Eddy Moore		I feel like this is particularly pertinent because the real growth in load from EV adoption mostly occurs in the 2030's, so Santee Cooper might decide in 2023 to develop generation to meet load that doesn't really happen until ten years later and depends on the assumption that the vehicles a decade from now will be as inefficient as the first vehicles to market.

			written	You make a good point Eddy. We attempt to address a wide range of outcomes due to the uncertainty of electric vehicle adoption. The Base Case is dependent upon actual trends in our service territory and region, rather than future policy implementation.
			written	Eddy, I did want to follow-up that a base assumption for EV demand is to shift ~70% off the expected impact off of the peak period.
13	Can you further explain Santee Cooper's consideration specifically of the heavy-duty EV credits on load? My understanding is that electrified heavy duty trucking hubs will cause significant increase in load in specific grid locations that will be different from residential customer EV adoption impacts and require, as a result, a different utility approach to prepare for.	Gennelle Wilson	written	Thanks for the question Gennelle; all electric vehicle types are included in our forecast, regardless of economic activity they are used for. For our load forecast, we forecast primarily to inform resource planning, rather than distribution or transmission planning.
14	Does Santee Cooper expect downstream effects (i.e. increased adoption of EVs nationwide) due to California's announcement to phase out sale of new ICE vehicles by 2035?	Ben Garris	written	Thanks for the question Ben, in our High Case, we assume that California and other states' EV friendly polices do drive substantial electric vehicle growth in South Carolina.
		Ben Garris		Thank you. Was this factored into the base/reference case as well?
			written	We used regional and state data for the base case, so California and other state policies are less impactful.
22	Thanks!	Ben Garris	written	Thanks for participating.
15	Separate from the DSM Potential Study (which is discussed a little later), their should be IRA load impacts from customer adoption of energy efficiency outside of utility EE programs. Also known as "natural energy efficinecy."	Forest Bradley Wright	written	Thanks Forest; as the High and Low cases for our residential and commercial customers, we performed a stochastic analysis to capture a range of outcomes. The changes in average use per customer that you describe are captured in that analysis, and are therefore baked into our Low Case.
16	To confirm Greg's explanation, do I understand correctly that in developing the existing high rooftop PV case, an additional 50% growth in EIAs Low Oil and Gas Supply case, but no extra 50% adder was applied to EIA's new case developed around the time of the IRA's release? If so, why was this adder not applied to align with the High case development?	Jonathan Ly	written	Thanks for the question Jonathan, you are correct that we did apply a 50% growth adder to our High Case but not the IRA analysis. The High case was intended to capture the highest reasonable outcome, and the IRA Case was to evaluate if the new law would be higher than our High Case.

		Jonathan Ly		Thanks for the response, Carl! Was there a reason why the 50% growth adder wasn't also applied to the IRA Case? It seems to me there's a bit of a discrepancy between the methodologies if no adder was applied.
			written	Yes, the difference was the purpose of the analysis. Conceptually, the intent of the High Case was to capture any future changes in the policy or economic environment that necessitated that we change our forecast. We did not apply the 50% adder to our base case, which is more in line with IRA case.
17	Do your studies include DER curtailment limits for solar, grid stability, and the limitations of EVs on the grid. Will a TOU rate structure be considered as with other states to address DER and EV usage.	Phillip Sheckler	written	At this point, Santee Cooper does not have such controls in place for DER, though that may change in the future as DER penetration grows beyond certain limits. Hence we did not include any DER curtailment capability in our studies. Santee Cooper recently announced experimental TOU rates for EV users and would consider expanding such programs in the future as needed. Yes.
18	Have you recieved updated Load projections from Central Electric Cooperative based on impacts of IRA provisions?	Findlay Salter	written	Not at this time. They use a similar process as Santee Cooper to project their base/high/and low cases so we would expect similar results for them as for us.
19	Have you looked at California Title 24 for EE management, it works. Will Santee Cooper be developing EE training programs for both commercial and residential customers.	Phillip Sheckler	written	Thanks for the question Philip. Santee Cooper currently offers educational marketing and outreach material to customers through multiple channels (online savings tips, EE rebate programs, personal discussions with Energy Advisors, Trade Ally Network, etc.). We have not specifically looked at California Title 24 for EE management. We would be glad to take a look at what they are doing to determine if it would be effective for our customers.
20	Could you please state again the timeline for the EE and DR MPS study results? To confirm EE will come first. Then DR will be provided later (in February-ish, right?)	Forest Bradley Wright	written	I'll answer this with sequential steps: 1) EE MPS is currently going through one more quality control check before results will be considered final. 2) We have the measure list that passed the UCT screening and will be posting that within the next day or so. 3) DR MPS model is currently being loaded with Santee Cooper's customer data and will be worked on throughout Dec and Jan with preliminary results available somewhere around the beginning of Feb. Final DR MPS results are planned to be available beginning of March. Final report for EE MPS and DR MPS available by approximtely the end of April.

			written	Forest, I need to correct how I answered point number 2 in my previous answer to your quesiton at 2:06 PM. The measure list that will be posted within the next day or two is a list of ALL measures that were screened in the 2022 EE MPS.
21	??Cost NuSCale has approval US REgulatory commision. Much less risk and about Zero CO2 emissions.Unit going? Idaho State ? and planned PennState?	John Kramer	written	Hi, John. We are generally aware of these developments and believe they directly influece the EPRI datasets we are using. Thanks for the info!
23	Does that mean that the MPS results on the next slides include both utility-administered EE and also naturally occurring (combined)? Just clarifying since MPS studies (especially in an IRP) are typically distinct to utility-administered savings. And naturally occuring EE is separately identified.	Forest Bradley Wright	live answered by Jim Herndon	Yeah, that's a good question for us. And it's kind of in the nuance or the details of the study. We would categorize it as it's everything we're doing. And I think it actually ties back to the the load forecast, and there's not been an adjustment. It is still aligned with the load forecast, that there was not necessarily your DSM adjustment or the load forecast. So what we try to capture with market potential, or doing these types of studies is additional energy efficiency opportunities outside of what's already in the load forecast. So what's going to happen in the market? So there's a utility load forecast that that does already estimate some amount of energy efficiency is going to naturally occur. And then our studies look at what energy efficiency opportunities with say, a 30% incentive or a 50% incentive or 75% incentives. What energy efficiency would occur on top of that. So in addition to the load forecast, or how would the energy efficiency under those scenarios impact the load forecast? So I don't know that I quantify what we're capturing as naturally occurring. But like I said, it's not tied to a specific Santee Cooper program. So it's a little more broad. And maybe some of it is things Santee Cooper could capture. I guess it kind of varies or maybe it's down into the details of what technology we're talking about, or the measure we're talking about. But the idea is that it's available, it's achievable potential beyond Santee Cooper's baseline load forecast ... I think there's still a lot to be figured out on the IRA. This is outside the study. So, but it could, in theory, if there are these available incentives from other sources, that maybe there's less need, there are different ways utilities would try to influence the market. But I think that's still to be determined.

24	So how does this relate to determination of Santee Cooper's EE resource investment related to the IRP? I'm perplexed.	Forest Bradley Wright	live answered by Jim Herndon	Well, I think that's still to be determined. Right? I think right now, what we're assessing is the potential under three scenarios that's feeding into an integrated resource plan. So I think that to me, and again, I'm, on the outside on this, but I guess that my perspective is that still to be determined, right? We're just trying to lay out what those scenarios are for different levels of investment in energy efficiency and the different opportunities for those different levels of investment.
25	So will the load forecast be adjusted based on MPS? I'm confused why the load forecast would not reflect more people undertaking EE measures and therefore reducing load.	Chris Carnevale	live answered by Jim Herndon	Well, everything we do, we try to be very deliberate in what's being assumed for the load forecast. So where the load forecast assumes that over time, lighting is becoming naturally more efficient, or the SEER ratings because of codes and standards and other things, things naturally change over time. And that's captured in the load forecasts. So what we do in our studies is try to understand, in addition to what's already being assumed there, if there is an a incentive or rebate, things like that, what could influence the market to go beyond what's already in the load forecast? So I think, the idea is that we're doing this DSM potential study to feed into the IRP and the load forecast that gets included there. So I think that's the premise of why we're estimating these scenarios.
26	I have two questions regarding Slide 18:Does the Medium Scenario of the Achievable Potential EE Scenarios reflect a base case assumption that SC will increase its program incentives?	Jonathan Ly	live answered by Jim Herndon	I think generally, yes. I mean, the 50% incentive rate is higher than the average incentive rate that Santee Cooper currently offers so yeah, the average incentive would be, and not every incentive is the same. It's hard to do these measure by measure with the exact incentive amounts, but generally, yes, it does assume a higher incentive than what's currently offered on average and what's offered in Santee Cooper's programs.
		Jonathan Ly		Thank you!
27	So what relative proporation of the incentive is assumed to come from the utility? That would seem to have a significant impact on UCT.	Forest Bradley Wright	written	For the economic screening, the full incentive amount was assumed to be a UCT cost.

28	Second question: does the UCT of 0.7 necessarily indicate that these measures may be uneconomic relative to a new generating resource?	Jonathan Ly	live answered by Jim Herndon	To avoid a cost benefit relative to the program cost. From a UCT [point of view], it's, I think it's hard to make that direct comparison using the UCT test. Usually you use something like levelized cost. You're gonna have some measures that would still have a UCT higher than 1.0, and so you would offset it more easily from a program perspective, or a portfolio perspective, you would still be above a 1 on the UCT. But I think, pause I'm thinking on the fly here. I don't know that UCT is the right metric to compare to supply side.
		Eddy Moore		Jonathan LY: would be interested to discuss this topic: eddym@scccl.org
29	Can you please provide afterwards the input values for the avoided energy, capacity, T&D, line loss and other benefits that were used in the analysis and describe which hours are used to determine the capacity value and how it is calculated? Thank you!	Eddy Moore	written	We will provide these values as a part of the Market Potential Studies.
30	Regarding Slide 23: Do the summer and winter peaks represent data from a particular day, or are these loads modeled? What months are included in each of the summer and winter averages?	Jonathan Ly	written	Yes, these figures (which are illustrative, not currently based on actual Santee Cooper data) represent hourly loads on a summer peak day and winter peak day. For the Santee Coopre MPS similar data will be developed using actual interval data (not modeled data). The seasonal averages were included for comparison; our analysis will rely on the peak day data that aligns with utility system peak and not a summer or winter average value.
31	What is the status on each of Astrape's other studies (reserve margin and ELCC)? WIll the reports for these studies be provided before the IRP is complete?	Jonathan Ly	written	Thanks for your interest; reserve margin and ELCC report will be provided within the week. Solar integration study is still under internal review but is expected to be released soon.
		Jonathan Ly		Understood. Thanks for the update!
32	Since the EE MPS and DR MPS appear to be on different timelines, could you please provide the EE MPS sooner? Otherwise, it would appear that it will not be possible to provide feedback prior to Santee Cooper running the IRP modeling. In other words, our opportunity to contribute feedback would come after it is essentially certain that it won't be incorporated, which defeats the purpose of getting stakeholder feedback. Thank you for your consideration.	Forest Bradley Wright		Forest, We appreciate your observation. After talking with Jim Herndon at Resource Innovations, we estimate being able to pull the EE MPS report ahead to be available by the end of January 2023 without sacrificing the DR MPS schedule too much (drawing from same resource pool to produce all aspects of both EE and DR MPSs)

33	Didn't Astrape use a 10-min interval for its 2021 Duke integration analysis? If that's accurate, why is a 5-min interval used for Santee?	Hamilton Davis	live answered by Nick Wintermantel	Now, I'll have to go back but am pretty sure we used a five minute dispatch as well. I think maybe the confusion there is that the operating reserves the way that we're measuring ramping is on a 10 minute basis. So we're trying to understand how much 10 minute ramping I can have, say at noon, right here in my example, how much 10 minute ramping can I have? But we still dispatch the system at five minute intervals.
34	Ok, thanks.	Hamilton Davis		*[in response to live answer above]*
35	How large is this flexible unit assumed to be?	Ryan Deyoe	live answered by Nick Wintermantel	I've got a slide here later for that. But it was a 200 megawatt resource that was made completely flexible.
		Ryan Deyoe		For the SEEMs sensitivity
		Ryan Deyoe		Ok, will ask again later on this.
			live answered by Nick Wintermantel	So the SEEMs sensitivity, again, started with the 2029 case with a two on one combined cycle. And all we did was take some of the inflexible market megawatts that we put in to make the system reliable and actually made them very flexible. So we took 200 megawatts. I've got a 20 minute start time, but they're completely flexible. I think they're in 50 megawatt blocks. So they can go from zero to 50 megawatts. There's a 20 minute start time to kind of reflect what we're currently expecting with SEEMs. But again, similar to the battery, because our no solar case assumes SEEMs is there, as well as the solar case, our flexibility excursions and the no solar case came down somewhat. And so the cost actually remained very similar to the base case. We're still seeing kind of this zero to $2 range. We still see the significant curtailment. The most per curtailment benefit we saw was due to the storage. And so I think that the takeaways here, given the current system, currently, certainly getting to 1500 megawatts or 2000 megawatts of solar. While we think it's possible to be done, there are substantial costs to that. And so it likely would make sense hopefully, as we move through time and get to those levels that Santee Cooper does have some more flexible options on the table and potentially retired some of the more the slower, less flexible resources.

36	So all of the 2029 cases include a 2x1 CC? Were there no scenarios where Winyah capacity is replaced with only solar + storage?	Jake Duncan	live answered by Nick Wintermantel	Yeah, that's correct
37	Are there any power quality issues from 500 MW to 2000 MW of inverters pumping harmonics to the grid?	Dennis Boyd	live answered by Nick Wintermantel	As part of this study, that wasn't looked at or studied. The model is a pipe and bubble representation of the system. And so we're not getting down to that level of detail.
		Dennis Boyd		This is most likely best answered by Santee Cooper
38	Given that SEEMs is coming and existing market purchases already exist. Is the base case being run as an island?	Ryan Deyoe	live answered by Nick Wintermantel	So Santee Cooper is islanded but we've added, I guess, purchase proxies, if you will, Ryan. So to get the system to be reliable. We realized that Santee Cooper, kind of based on the prior reserve margin study, if Santee Cooper is going to maintain a 17% reserve margin, but there's no market assistance, then it's going to be fairly unreliable. So in order to make the system reliable, we do add in CT proxy units that the system has access to, to serve load throughout the study. So it's islanded with market proxy units, if you will, on the existing fleet.
		Ryan Deyoe		Ok, thank you for the follow up.
39	I think it was the CC	Eddy Moore	written	Thanks for the clarification Eddy!
40	Apologies if this has previously been addresssed, but what is the assumed resource providing the operating reserves/load following?	Jonathan Ly	live answered by Nick Wintermantel	So that can be any resource in any given hour, Jonathan, the model is going to determine that economically. So any resource that's minimum capacity is below its max capacity and has that opportunity to be online, then it can serve load following and so SERVM is going to determine what's the most economic commitment and dispatch of those resources to serve both load and additional load follow.
41	Was there a reason for a 350 MW battery to be installed? It seems that there is additional opportunity to both enhance flexibility in the system while further reducing curtailments.	Ryan Deyoe		*[Ryan Deyoe]* Let me clarify. Why is there only a 350 MW (what's the duration) battery?
		Ryan Deyoe		With 4% curtailment occurring throughout almost all the scenarios, it seems that more storage is needed. Which has added flexiblity benefits too.

			live answered by Nick Wintermantel	Yes I think the question is more for Santee Cooper. But I can at least address what was modeled. So the 350 megawatt battery was four hour storage, replacing a CT in the model. I think it was just fairly generic, we just kind of wanted to understand how things might move if you add it.
		Ryan Deyoe	written	Ok, thank you. I'm guessing the battery is assumed to be in place based on Santee's expectations, but I'll let them answer that.
BREAK				
42	Can you please explain how this study interacts with the rest of the IRP? For example, how its inputs (solar tranches, 2x1 CC, BESS) and their scale are chosen, how the ancillary costs are determined, and finally how the study's outputs inform the rest of the IRP?	Chris Carnevale	written	Hi, Chris. We will be discussing this a bit in the next segment, but generally, the solar integration costs would be added to the variable costs of the intermittent resources. If you have further questions during the next segment, please get a new question going. On the inputs, certainly there's some interaction with the rest of the IRP in terms of data going back and forth where appropriate. If you have something more specific, on the Astrape study itself, we can direct a follow-up to Nick W. Let me know. Thanks.
43	If a battery sized to the integration need (say, for 1,000 MW solar) is added first, could it create savings by delaying the need for other flexible resources and allowing flexible resources to be added as they are needed?	Eddy Moore	written	It could. Certainly, the integration study provides insights into the capabilities of various flexible resources and integration costs of intermittent resources. This inputs help inform the IRP. Confirming impacts and integration costs with further, limited analyses is something we are considering. Thanks for pointing this out.
44	Why is SEEMs only a sensitivty and not a base case, as SEEM is currently operational?	Findlay Salter	written	Findlay - at the time scenarios were identified it was not operational. SEEM is in early stages. We did anticipate SEEM moving forward and included the sensitivity so we can start understanding the implications.
45	Can you explain again what the incremental cost represents in the context of these study results?	Hamilton Davis	written	Yes, the incremental cost represent the cost of the incremental 500 MW of solar in the tables. For example on slide 38, the last 500 MW of solar cost $4.06 (optimized case) to integrate but the entire 2,000 MW of solar cost an average of $1.70/MWh.
		Hamilton Davis		Got it. Thanks!

46	Won’t AEO update longerm gas forecast (2023 Outlook) prior to the filing of the IRP?	Eddy Moore	written	That's a great question, Eddy...The timing of the AEO varies a bit but it does seem likely that it will come out in a similar timeframe. We will certainly review this information as soon as it comes out and assess its likely impacts on the modeling. Note that we will be doing analyses across a wide range of potential fuel prices, so I would expect our analyses would be robust to most variations that can be expected in the AEO reference case. Does that make sense?
47	When will Santee Cooper "lock in" its fuel price assumption for inclusion in the IRP modeling?	Jonathan Ly	written	We anticipate that the fuel assumptions being shared today will be used in the IRP study; subject to a major event that would cause us to reevaluate.
		Jonathan Ly		Thank you!
		Jonathan Ly		As a follow-up, are all of the costs shown (resource capital costs and the renewable PPA costs) the finalized assumptions that will be used in the IRP study barring any major events?
			live answered by Bob Davis	I would suggest, as I as I mentioned, that the wind technologies are still under review and investigation and are subject to change. I would say that we feel fairly comfortable with the fossil fuel and nuclear resource assumptions as well as the solar and battery assumptions. - - If there are any changes, I'm not going to commit that these are absolute and will not change because you always have the run the chance of uncovering something new that that shouldn't be factored into the evaluation. Any changes will be posted to the Forum.
48	On the subject of capital cost: Has Santee Cooper investigated using the U.S. Department of Energy Loan Program Office’s Energy Infrastructure Reinvestment Program, enacted by the Inflation Reduction Act? The program offers low-cost capital for power plant redevelopment projects such as clean energy. The Loan Program Office is encouraging potential project applicants to contact them to learn more and explore opportunities. It could be a good opportunity for Santee Cooper to lower costs for customers.	Chris Carnevale	written	Thanks Chris. We will look into this opportunity and how it compares with Santee Cooper's cost of capital (primarily tax-exempt debt)
		Chris Carnevale		Especially for existing energy communities impacted by coal plant retirements.
		Chris Carnevale		Thank you, Rahul. Here is more information on the program: https://www.energy.gov/lpo/articles/deploydeploydeploy-2-energy-infrastructure-reinvestment-eir-program
			written	That's helpful. Thanks for sharing the link.

49	The 2x1 CC capital costs seem very low relative to neighboring regions (DESC) CC costs. What do you think is the basis for this?	Ryan Deyoe		*[Ryan Deyoe]* For context, DESC has 1163 $/kW for a 2x1 CC and you are showing 792 which is very low from public sources I have reviewed. In addition to this, the CT costs quoted by DESC were upwards of 1100 $/kW as well. They had approximately a 90% increase in CT costs. These differences are substantial.
			live answered by Bob Davis	So I can tell you that the 2 on 1, one caveat that I would caution, the roughly $800 a kW that we're showing there, do need to make sure that these are apples to apples. So whether they're an HAO 3 class technology or not, you can certainly see a fairly significant cost reduction based purely upon changing from an HAO 2 to an HAO 3 configuration just due to the increased size of the equipment. If that is at the end of the day identified as a non-issue, I would suggest there are other factors that we need to double check and make sure are correctly reflected within any comparison that might be made. The capital costs that we have here exclude any costs for land, which we anticipate to be minimal. Transmission, interconnection and natural gas interconnection. So the direct facilities to inter-tie this facility with the transmission system, and to interconnect it with the natural gas pipeline, so we need to be careful and make sure that the appropriate cost considerations for those components are included. Assuming another critical component here is also based upon a rating of the unit, we're using an average ambient rating and need to make sure that the the cost assumptions that may be represented by Dominion are not based on a summer rating, which again, would would tend to increase their assumption. If we got to the point that all of those assumptions were clarified and adjusted for, then I'd say we're into a situation of, you know, whose assumptions are better, whose assumptions are more representative, I can tell you that the assumptions that we've been working with here are based upon not only the the EPRI tag data, but other engineering estimates that have been paired internally by Santee Cooper and their engineers, developed for some detailed representations of capital costs associated with a recent construction. So the reason I say that is this is not old data. This is relatively new data. It represents current costs for construction and equipment. So beyond that, recognizing the adjustments I said, it would be down to a situation of validating or verifying that the underlying sources of information between the two parties are either consistent or not and where those differences may lie.

		Ryan Deyoe		Is the expectation then that the natural gas connection and transmission costs of a 2x1 CC are minimal? We haven't seen much on these costs.
			live answered by Bob Davis	Generally minimal. I mean, what's minimal from this standpoint is enough to make many of us very happy with retirement. So it's a function of how big out of the grand total. I would say that the those costs are generally relatively minor. They were enough to move the needle, but they aren't, they aren't zero.
		Ryan Deyoe		*[Stewart Ramsay, restating question posted earlier]* Following up with a comment on the Renewable cost increases. Are there not cost increases coming for thermal resources, such as what I quote above for DESC?
			live answered by Bob Davis	I would say yes. To the best of our ability, we believe that these numbers represent costs that are consistent with current estimates for technology today. So I'm not sure I can state that any more succinctly.
		Ryan Deyoe		Is it possible for stakholders to get access to some of these assumptions?
			live answered by Bob Davis	I'll tell you what, what I would recommend in that regard. Because, I would suggest these are our assumptions. If there is a more detailed question that requests be made to the IRP forum, and we can follow up accordingly.
		Ryan Deyoe		Will do, thanks Bob
50	Where did the SMR estimate come from? In an IRP stakeholder meeting with Dominion SC yesterday, they shared an initial estiamte of $6,490/kW and then verbally stated that their estimate had increased to $12,354/kW. Of course, costs can differ utilities, but that is an order of magnitude difference and should be investigated.	Jake Duncan	live answered by Bob Davis	I would agree, If Dominion is willing to share that information with us and how they got there, we'd be interested in it too. I think the uncertainty with regard to the SMR technology, we haven't even hit plant 000 or 001 yet, so it is uncertain. We are relying upon, for purposes of the information presented here, information from the EPRI tag web data source. They have been in contact with *[Utah Associated Municipal Power System]* UAMPS to review their assumptions. This is not the lowest cost estimate that would be developed or assumed under the EPRI tag or UAMPS This is what EPA would classify as their conservative assumption for the SMR technology. So if we're seeing a doubling of that cost, then I would certainly be interested in what might be driving those assumptions. Any additional information that might be provided by the questioner would would certainly be desirable.
		John Burns		I heard it too, but there was no printed backup. "Based on internal numbers"

		Jake Duncan		I dont have any additional info to share. They stated this verbally yesterday and cited conversations with a construction group in Richmond as the source. I would encourage you to reach out to their resource planning team.
51	Is the assumption of a PPA limiting the flexibility of any of these assets based on contract assumptions?	Ryan Deyoe	written	No. We treated these as similarly flexible as owned assets.
52	My understanding is that under the IRA, both solar and wind resources are eligible for a PTC. Is there a reason why Santee Cooper assumes an ITC rather than the PTC?	Jonathan Ly	written	That is correct. At this point, we are assuming ITC across the renewable PPAs. It is unclear at this point whether the developer community will gravitate toward PTC, but this is something we are monitoring. Certainly, solar assets at higher capacity factor may be able to take advantage of PTCs to yield a somewhat lower cost than with an ITC, though with some added risk, in our view. Thanks.
		Jonathan Ly		Thanks for the explanation!
			written	Sure thing. Thanks.
53	I understand the Authority is not studying utility built renewable resources in the capacity expansion model. What is the basis for this decision?	Findlay Salter		*[John Brooker]* Isn't it possible that Santee Cooper could take advantage of low cost financing that others could not (private companies) which might provide lower cost for customers?
			written	Findlay, John - IRP will provide a resource roadmap and not make a determination regarding the best financing mechanism (self financed versus PPA). We will explore lowest cost options at the time of procurement. At the time we will capture the benefit of direct-pay and potentially tax-exempt financing.
		Ryan Deyoe		Rahul, doesn't the IRP still inform what is expected (and maybe should be planned for). Other planning processes might not have adequate timing to add additional low cost resources to capture these benefits if we pre-screen them with higher costs than might be available. A range would be helpful here.

			written	Ryan - I think you are suggesting difference between levelized cost of self-build vs PPA will be siginifcant enough to alter the resource path. We will keep an eye on that. It is no different from other traditional resources where we may assume self-build but will remain open to all procurmenet options that result in low cost and risk to our stakeholders.
54	Have you investigated the presence of "energy communities" as defined by the White House that are elligble for additional ITC adders under the IRA, thus reducing the price of solar PPA? See the White House mapping tool here https://screeningtool.geoplatform.gov/en/#3/33.47/-97.5 and high level info from SEIA https://www.seia.org/modules/adder-credits-domestic-content-and-energy-communities-0	Jake Duncan	written	This is something we are certainly considering, recognizing there are limitations, particularly given the footprint required for solar facilities. We are aware of the mapping tool and will be taking this under consideration. Thanks for the note!
55	Why do you assume only a 30% ITC (for solar, wind, and BESS) when 10% bonuses are available for domestic content and energy communities? The energy community tax credit adder is particularly of interest given the retirement of Winyah coal.	Chris Carnevale	written	Agreed. The difficulty with domestic content is the uncertainty of the capital cost impact and the reaction of the manufacturers to develop domestic capabilities/capacity. This is something we are considering. On energy communities, we have another question on this topic, but generally, this is also something we are looking at but the footprint required for solar to achieve economies of scale may limit its applicability given the limitations of this aspect of the IRA...which may itself yet require additional Treasury guidance.
		Chris Carnevale		The energy communities bonus is also for BESS ITC, which opens up even more possibilities for lowering customer costs.
56	Does Santee Cooper have a range of data for LCOE based on what adders to tax incentives are used?	John Brooker	written	That's something we could take a look at. Certainly, we've been assessing impacts of variuos tax incentives. However, as stated elsewhere in the QA, the footprint for solar may limit applicability of the energy communities adder. For other adders, there may be significant capital cost impacts that may be difficult to assess. Let us know your thoughts, either here or perhaps better in the IRP e-mail, so that a more complete answer could be provided.
		Ryan Deyoe		This is an important assumption when considering where to optimally place solar assets and storage assets to maximize benefits and reduce costs!
57	Can list the difference between the prior assumption and IRA update that Bob shared verbally?	Jake Duncan	live answered by Bob Davis	Happy to incorporate a table of The kind of the raw percentages that I discussed earlier. Yes

58	What is the approximate capacity factor for onshore wind operating in Class 9 Wind please?	Eddy Moore	written	Sure. CFs start in the upper 20s and increase over the study horizon into the low 30s. It's difficult to assess the likelihood that wind assets at this wind resource base could be developed at scale to achieve the economies of scale reflected in our capital cost estimates (from NREL). Does this make sense?
		Eddy Moore		Yes, the old rule of thumb in the midwest was that 30% CF was a threshold but with later technology may now be different.
59	Doesn't santee cooper have a test wind turbine in Myrtle beach to gain data from?	Findlay Salter	written	Findlay, good memory - we do have a demonstration turbine on the Grand Strand that was installed probably a decade or more ago. Because it is onshore, it isn't relevant for helping us evaluate offshore wind potential.
		Findlay Salter		I heard Bob's comment was that for assumed "onshore" wind values the team was using national values
			written	That comment is in reference to the capital cost assumptions, which importantly reflect industry experience, which is mostly in other regions and reflects large numbers of turbines, which may not be appropriate for this region...given topography and land availbility. Otherwise, the production assumptions are specific to the assumed wind resource class from NREL (class 9) and profiles are pulled from representative locations using NREL's SAM model. Let me know if that doesn't clarify sufficiently.
60	Also, Duke hosted an Ex Parte briefing to the PSC showing solar under the IRA could be around 40% lower than base case - I believe they modeled this using the PTC. They do have a higher base case price, but it seems interesting to have such different interpretation of IRA impacts between SC utilities.	John Brooker	written	Hi, John. We did take a look at Duke's information, though it wasn't perfectly clear to my recollection. Bear in mind that there are a lot of differences between the starting point we have here and the two cases by Duke. The latter apppeared to be internally consistent for all assumptions other than the IRA. Ours reflected a lot of updates to align with ther wider updated assumptions in the IRP. We are assessing the impact of PTC v. ITC, so it's possible we will update these assumptions further. We continue to monitor the developer community to understand the direction they will head at the level of production we can expect in this region.

61	The LCOE for solar seems high given the company has access to lower cost capital through the IRA, and now can monetize the tax credit wouldn't that actually make solar cheaper? Is Santee modelling these tax credits to see the difference in costs between self-build/own, and PPA/Build-and-transfer?	Justin Somelofske	written	The credit monetization option in the IRA, specifically the direct pay provision, carries with it a potential hit to the credit of ~15% as well as requiring domestic content, which is something that may limit its applicability for some period into the future as the manufacuring capabity in the US develops. This is something to continue evaluating but at this point, it is not clear this adds value. Does that make sense?
62	Are annual values available for new resource LCOEs?	Diane Crockett	written	We may be able to make data available, but the charts herein provide indicative values for each COD as shown. Specific data from our model may provide a false precision and it seems to me that the approximate values from the charts get you what you are after. Does that not make sense? Can you clarify what annual values you are after?
		Diane Crockett		Yes, thank you.
			written	Ok...thanks. Just wanted to be clear that the LCOE values in the chart are by COD and reflect the 20-year PPA pricing we will be assuming.
				Subject to continuing review and the feedback/other sources or assumptions we obtain from this group.
63	I felt like we rushed through the new dispatchable generating options. What is the status for a shared resource with other utility partners? How will a shared resource will be modeled as an additional resource?	Findlay Salter	written	Findlay, if by "shared" your reference is to potential joint development, it is "too early to say". Depending on how the conversations and joint analysis progresses, i belive we will draw from our resource option cost estimates that Bob shared (may need to align assumptions with the partner); transmission analyses, fuel supply etc. The primary implication will be ability to capture economies of scale (50% of large CC vs 100% of smaller more expensive CC) and risk sharing. We will try to address this in the "results" stakeholder session
64	what is santee cooper doing to get empirical data on wind resource in SC?	Mike Smith	written	We are researching sources of data and are open to data you might suggest. At this point, we are utilizing data from NREL's ATB. Bear in mind that empirical data at the elevations we are talking about (100-120m) may not be available and must be estimated from lower elevation data (iperhaps simply in terms of capacity factor).
65	DESC did look at H Class equipment.	Eddy Moore		Thank you Eddy.
		Findlay Salter		What i heard from DESC is that they use internal Dominion data from richmond

		Ryan Deyoe		Yes, they have their quotes from their DESC green sheets which is their construction group.
66	Is the Hampton site a greenfield site? We asked DESC and they said they would not speak for Santee Cooper.	Eddy Moore	written	We haven't finalized a specific site in Hampton County, but all that are under consideration could be considered greenfield sites, although there is some infrastructure already available on most sites.
67	Is the 17% planning reserve margin informed by Astrape's latest results? Is Santee Cooper requireed to maintain a minimum reserve margin by any external entity?	Jonathan Ly	written	Yes the 17% reserve margin Santee Cooper is targeting to achieve by 2026 is informed by the Astrape' study. There isn't a minimum planning reserve margin required by an external entity.
68	Are you assuming that Winyah, Hilton Head and Myrtle Beach units all retire 12/2028?	Diane Crockett	written	Yes Diane that is correct.
69	What activity is occurring in regards to Transmission Impact Analysis for a potential joint development resource as it relates to transmission costs for the Canadys and Hampton Co. sites?	Findlay Salter	written	An MOU related to the exploration of a joint resouce were just recently signed and discussions related to TIA related assessments are just kicking off.
70	I assume this means substantial coal remains online through 2042?	John Burns	written	John, slide 61 is Santee Cooper's current load and resource position it makes no assumption for what future decisions will be made; the IRP study will determine future resource decisions.
		John Burns		thank you
71	referring to slide 61	John Burns		Thanks for the clarification.

72	How will the earliest practical retirement of Cross be determined for the future coal retirements portfolio? Will there be a separate coal retirement analysis performed?	Ben Garris	live answered by Bob Davis	At this point in time, we are not anticipating a separate coal retirement analysis, we recognize that that may ultimately come through the IRP hearing process. But given time constraints of our process that we currently have in place, we feel like we will be handling the largest aspects of the coal retirement, what would normally come through a coal retirement plan within our existing IRP process. Llet me explain that a bit, we're obviously looking at a previously announced retirement of Winyah project or the Winyah generating station in 2029. We're looking at a earliest practical retirement of the Cross station in 2034. We have discussed, both internally and externally, the potential to model an earlier coal retirement strategy in order to make sure that we capture any ELG costs that might be available, should we retire Cross earlier. I will remind people that Cross has already had installed the majority of the equipment and systems that are necessary in order for Cross to meet ELG requirements. So there is is very little cost to be saved by retiring Cross early. But we recognize there may be some interest and understanding the sensitivity to valuation to that. And then we've also talked about what could happen if we need to extend the operating conditions for Winyah and incur additional ELG costs. So all of those ideas are still on the table. Through that set of evaluations, we hope to provide sufficient information to allow stakeholders as well as Santee Cooper in general, to get a better grasp and understanding of how various decisions for coal retirements would affect economic strategies and cost for systems for Santee Cooper.
73	Are there any annual limits on solar capacity additions? If so, what is the basis for these?	Ryan Deyoe	live answered by Bob Davis	Assumption to be determined. We recognize that Duke has significantly limited their solar implementations, (I won't say significantly) has limited their solar implementations based upon the practical ability to add solar to their system over time. At this point in time, we're treating our evaluation to assume that solar can be installed without limitations. So at this point, we have not factored that into our evaluation. Should we see cases that are approaching limits of solar implementation, that start to create concerns for the transmission service and integration considerations, then we will factor that into our evaluations, but at this time, we aren't seeing a need to do that.
		Ryan Deyoe		We think that's a good starting point. It's helpful to see that optimized amount and then step back from there if needed rather than pre-select outcomes.

74	Do any of the current porfolios to be studied change previously discussed assumptions related to Winyah Generating Station closure.	Findlay Salter	live answered by Bob Davis	No
75	Forgive the confusion please, but in a recent Board meeting, a board member said this is the last chance to get the "biggest, baddest gas plant possible" and the CEO responded that he agreed. That is part of why the question comes up. It was not characterized as "due dilligence" to maintain an option, but as an agreed plan. On October 24, the Post and Courier reported: "In an abrupt about-face, Santee Cooper now plans to build a natural gas-fired electric generator in rural Hampton County . . ."	Eddy Moore	written	Eddy – our board members bring diverse and valuable viewpoints. They also support our robust IRP process. We are all committed to a transparent, analytical IRP process with stakeholder input to drive our resource decisions.
76	No BESS to come online to support Winyah retirement?? It provided substantial flexibility for the system, and with no emissions plus the benefit of shifting solar.	Ryan Deyoe	written	As Bob suggested, these results are preliminary, so this may change...certainly, we included BESS in the evaluation to date but we have more work to do. Importanlty, BESS costs are projected to decline into the study horizon (both capital and FOM costs) so they will become more economic in the out years based on NREL's projections, recoginzing that we've seen very large cost increases recently...really across all technologies.
		Ryan Deyoe		Understood, thanks Jonathan.
			written	Thanks for sticking with us through this.
77	Regarding the resource need slide that says that Santee Cooper needs approximately 1,650 MW of firm capacity needs: How are variable generation sources and demand side management able to contribute to meeting winter peak? Would your model run in the no new fossil scenario require the entire gap to be filled by firm BESS?	Chris Carnevale	live answered by Bob Davis	Short answer no. We will be simulating the level of energy efficiency and DR that has been evaluated as part of the NPS studies incremental as resources within the evaluation. We already incorporate non-firm loads, interruptible loads, direct load control, etc within our current simulations that we're evaluating. So all of those factors will be captured within the load that has to be served. Ee already have a fairly significant number of megawatts that are factored as dispatchable interruptible load within the simulation model.
78	Is this a new slide, I don't see it in what was shared in advance? Maybe I'm missing something	John Brooker	written	Yes the Initial Learnings slide was just posted today; we wanted to share recent information.

		Jake Duncan		I also did not have it in the deck that I had pulled from the Santee Cooper email containing slides. I just clicked the link on their IRP page and it is in there, it seems like this was added recently. (we are referring to slide 63 - initial learnings)
79	Can Santee Cooper review what sensitivity cases are being evaluated in terms of senstivity scenarios and assumptions that these portfolios will be studied under?	Leah Wellborn	live answered by Bob Davis	I would say that the fuel price forecast sensitivities you can see that in the prior slides that are presented here today, through the DSM MPS studies will be reporting the low medium and high assumptions that we'll assume for DSM with regard to load forecasts the low medium and high forecast have already been presented in the June stakeholder meeting, as well as CO2 assumptions.
		Chris Carnevale		With federal clean energy tax credits available up to 60-70%, it seems like tax credit sensitivities would be a good sensitivity to add, at the least, rather than a blanket asusmption of 30% ITC on all clean energy projects. I understand that there is uncertainty over what tax credits will be available where and to what projects, so a sensitivity analysis could help capture the value for ratepayers, even with outstanding uncertainty.
80	Will Santee Cooper provide more information about how a 2034 retirement date for Cross was determined in a written response after the meeting please?	Ben Garris	written	Ben, Santee Cooper views 2034, five years after the Winyah retirement in December 2028, as the earliest practical retirement date for Cross.
		Ben Garris		Thank you, I am looking for more detail about how Santee Cooper reached that determination for purposes of modeling the coal retirement portfolio. *[see question 85, open mic answer from Bob Davis]*
81	When is the deadline for stakeholder responses to be considered for inclusion in the results in meeting #5 and the final IRP results? Did I miss that?	John Brooker	live answered by Rahul Dembla	Bob also chime in please. We don't have a final deadline. I'll tell you the process, Stewart. As soon as we start finishing some of the related studies like solar integration and the reserve margin study and we start uploading that information. So I think as stakeholder absorb it the job that if you provide us that information, I think January, February will be very intense analytical months and probably March. The sooner you get it to us, the better. I think, and Bob, you, please, you have to run the process, but I would say that if it comes to early March and we don't have input, it will become hard to incorporate this in the analytics. Would you agree with that, Bob?

			live answered by Bob Davis	I would agree Rahul. It just makes perfect sense that we will consider what's provided as it's made available, but we will reach a point in time where it will be impossible to consider comments in the final IRP filing, We have to have a significant period of time for actually turning the crank to get more results produced and the IRP document prepared.
			live answered by Rahul Dembla	We'll do our best to accommodate with the time we have to Stewart.
82	There are curtailments capacity of DER added to a grid which is ~15%, This is a known limitation and appears not to be addressed in this presentation, someone needs at Santee Cooper needs to some research this issue and integrated them into the IRP.	Phillip Sheckler	written	Hi, Phillip. I'm assuming you are referring to distributed solar production. If so, at this point, penetration of DG solar is not sufficiently high nor does Santee Cooper have control to have any curtailment of such generation. Curtailment of utility-scale solar at high levels of implementation may be required in the future and is something we will keep in mind. If this refers to other DER, let me know, so I can react and we can consider this issue more specifically. Thanks.
83	Rahul, please review what information you can share with the group regarding status of the potential joint development development.	Findlay Salter	live answered	*[see below]*
RH	Could you just review as much as you can about the status of the potential joint development resource? Sort of just set that, you know, just get us all on the same page here in this group? I mean, there's been a couple questions in the chat. I think you've sort of answered piecemeal, some questions that Eddie's had and some questions that I've had and others, Could you just sort of lay out, you know, where your what you can share right now? where you're at? process just to sort of clear the air on that issue as much as you can.	Findlay Salter	open mic answered by Rahul Dembla	Sure Findlay. I think the reason you feel it's piecemeal is because that process has just started. We have an MOU that we, I believe executed last week. And so the evaluation is yet to begin. I think. As you know, Santee Cooper has expressed in its board meetings and public settings that if supported by this IRP, we build a combined cyclem, if that happens, there are there are significant economies of scale. So just to position ourselves for capturing those economies of scale, we have begun this process. So I think now that the MOU is in place for the two teams to engage and figure out transmission implications and fuel access. And so we are in very, very early stages of that. So our goal would be to make progress by the time we get to the IRP submission process and capture as much as we can, at the time.
		Findlay Salter	open mic	Thank you.

RH	Thank you, in terms of the deadline, and I totally respect and understand that you need comments back to incorporate into your feedback. But let's say we're getting close to that March deadline and some of the studies that you are creating on your end, whether it's the ELCC reserve margin, market studies, is there a way you can develop a nondisclosure agreement for us to provide comments while they're still in development so that our feedback can be incorporated in before the actual final application is submitted to the PSC? I know, Dominion, we just signed NDAs to get early inputs from them as well, this week, it seems a practice that is done fairly common in the state. We just want to make sure that our input is actually met timely, if it's running up against your deadlines.	Justin Somelofske	open mic answered by Rahul Dembla	Justin, that's fair. I think what we'll do is, as I mentioned, you know, the reserve margin study, and we are hoping to upload within days. So you'll have that information with all the related detail. And we'll follow that up pretty quickly with the solar integration studies. That is not a month away, it's coming pretty quickly. You will review that and all stakeholders should look at it. And then we will address if there's information that's not in there that requires an NDA. And we'll do that on a case by case basis, as needed. Is that responseive?
		Justin Somelofske	open mic	I just think from, you know, to really make the stakeholder engagement fully worthwhile. It's about having our inputs incorporated before we get to the actual litigation at the PSC. So that just helps us get there. So that's all the point is, but thank you, that is responsive.
RH	Hi, thanks. I was gonna say one additional item that I think would be helpful in terms of strengthening the stakeholder input process would be an opportunity for Santee Cooper to indicate to stakeholders how they have responded to stakeholder input before the filing of the IRP with the Public Service Commission.	Chris Carnevale	open mic	*[Stewart Ramsay]* Sorry, could you say that again? I'm not sure I followed. *[Chris Carnevale]* Sure. I was saying it's something that could that could strengthen the process would be if Santee Cooper could reply to stakeholders once stakeholders give input, and Santee Cooper evaluates it, if Santee Cooper could reply to stakeholders, kind of responding to the feedback up before the before the filing.
			open mic answered by Stewart Ramsay	Okay, I understand. Thank you. Good input.
84	Can you share the MOU?	Eddy Moore	written	Eddy, let us check on that and get back to you.
85	Thank you for the response.	Ben Garris	open mic answer by Bob Davis	*[Stewart Ramsay]* Follow-up from Ben Garris *[question 80]* *[Bob Davis]* Ben, I would say you're looking, I'm assuming you're looking for have we performed specific economic or other planning assumptions, generation building and planning assumptions, regarding the retirement of Cross? I don't have the question in front of me, so I'm gonna paraphrase it. It seems like what you're looking for is what studies have been prepared, so that we determine that we've got a 2030 for retirement date at Cross.

				[Stewart Ramsay] Ben, if we're not getting it right, feel free to turn on your mic. *[Bob Davis]* I think Eileen answered it as succinctly as possible, Ben. We do not have an independent study that says, optimally, the unit ought to be retired on this date. What we have is a current plan to retire Winyah by 2029. We recognize in all practical application, it's going to be difficult to get 4000 megawatts of new capacity on the system within any short period of time. So we adopted a reasonable five year plan between Winyah and Cross retirements for purposes of evaluation. We're hoping that by looking at those retirement dates, we'll be able to clearly understand whether it's in Santee Cooper's best interest to retire Cross or not, and hopefully with some side cases understand whether an accelerated or delayed date for that retirement might be more advisable.
RH	Thanks. I was wondering, Bob, could you repeat what you said earlier about? Did I hear you say that you feel like you have a solid grasp on the inputs for renewables in terms of pricing?	Chris Carnevale	open mic answered by Bob Davis	I feel like we've got a pretty good grasp on the solar and the battery. I would suggest that the wind is still under review. Keep in mind that we are evaluating, Chris, assumptions that are directly derived from the NREL ATB. So the the source that we're using for capital and O&M costs, any one of us on this call could go out to the NREL website, download their model assumptions and identify the cost related assumptions that we're assuming.
		Chris Carnevale	open mic	I gotcha. Okay. Thank you. I was gonna suggest that given, I fully understand, that there's some serious uncertainties about, tax credit applicability, and kind of other funding opportunities through the inflation Reduction Act, given its newness, and how it's actively being implemented by the federal government. However, I think a lot of the implementation and guidance should be out from IRS and Treasury Department, in short order, within weeks, so I would suggest that rather than assuming a blanket assumption of a 30% ITC, it could make sense to, just keep that assumption open for when the guidance comes out, to look at what might be available to Santee Cooper. Or alternately, maybe doing a sensitivity where it could be a 30% ITC, but it could be a 50 or 60%. ITC, just depending on the circumstances. And also with the PTC.

			open mic answered by Bob Davis	We'll certainly keep our eyes out on on those relative assumptions. We, I think the industry in general it, as you're suggesting, we'd all love to have a codified set of rules and implementation from the Treasury. I know that they've been piecemealing out a little bit of guidance in the Department of Energy here and there. So we certainly will keep our eyes open. I will say that we will reach a point where we've kind of got to cut things off. I think future conditions will always be in a state of potential implementation and flux. But we will have to make the judgment call on the best assumptions that we can utilize as of a certain date as Rahul indicated, that could be in the late February, March timeframe where we really have to kind of say, okay, these are our final baked in assumptions, and we're going to turn the crank and produce some results for the IRP at that point.
		Chris Carnevale	open mic	Okay, thank you.
86	More detail in writing related to the assumption for renewables LCOE would be helpful. You mentioned it verablly but that was hard to follow i.e. the inflation cost that you mentioned on top of IRA tax impacts	John Brooker	written	Hi, John. It may make sense to pose this question to the IRP forum so we can respond at more length. Generally, though, there are significantly higher costs assumed in the early years, which abate to some extent by 2029 and higher finance costs, the latter of which offsets the IRA impacts on the basis of the assumed ITC (recognizing that the prior assumptions reflected a 10% ITC for solar indefinitely). Happy to share additional details.
		John Brooker		Great, thanks Jonathan we can continue in the forum. Have a great day!
				You to...we'll be on the lookout. Thanks.
87	Thank you all for answering our questions to the best of your ability and your engagement.	Ryan Deyoe	written	Thank you for your interest in this process! Stakeholder input adds value to this process.
88	Thank you all!	Chris Carnevale	written	Thanks to you!
89	Thank you for time here today and answers to our questions	John Brooker	written	Thank you for your time!
90	Thank you, happy holidays to all!	Findlay Salter	written	Thank you for your time and happy holidays to you!
91	Thank you	Ben Garris	written	Thanks for participating and keeping it lively.
92	Thank you to Vanry and to the Santee Cooper team	Eddy Moore	written	Thank you
93	Thank you for your time today and answering our questions!	Justin Somelofske		