2024 Vermont Long-Range Transmission Plan – Public Review Draft Transcript from May 15, 2024 Public Input Meeting in St. Albans, VT

Shana Louiselle:
Thank you very much for taking time out of your Wednesday evening to come talk with us. I know we've had a conversation last week on the phone about the purpose of this plan and I know you're very familiar with, the projection of load growth over the next 10 to 20 years, especially considering some of the potential policies that are really driving electrification particularly in the transportation and thermal sectors. VELCO as the transmission grid operator, we manage, operate monitor design construct, Vermont's high voltage trend system. So it's a one big package deal. And there are a lot of great people at the company, a lot of wonderful transmission planning engineers that spend a lot of time looking at the data that we have that's available, using that data to provide inputs into their scenario planning. And, and that process happens, as I said, every three years.

The long range transmission planning process started back in 2009 time frame. That process was born out of pain, in the early two thousands, there was a transmission project that was built in Vermont. It was the Northwest Reliability project that about 50 plus miles from Rutland County all the way up to Chittenden County. It was it was a, a needed transmission line specific for reliability in the Chittenden County area. But the conclusion of that, that project was that the public utility commission or the public service boarded that at that time, they recognize that yes, we do need a transmission line to serve the need. But we also recognize had Velco done earlier planning, there could have been a bigger conversation about other alternatives other than transmission and those alternatives could have been a better option for her. So that essentially turned into it established a process to allow a full, fair and timely consideration of non-transmission alternatives. It's pretty unique to Vermont, I don't know of too many neighborhoods that, that do that type of, of planning. Although the tides are changing, we're hearing a lot more, longer, longer term planning from, federally, meaning that more for regions.

The 2024 plan is our sixth iteration of this long-range transmission planning process. It, it will be the first plan since 2015 where we've seen load growth and transmission needs associated with low growth particularly in the 1st 10 years. The plan lives out about 20 years and we have identified some transmission needs as early as the 2029. So this is an important plan because there, there's some significant needs as we see based on the forecast that was established, that forecast gets established by the Vermont System Planning Committee statewide stakeholder group that's represented by all the distribution abilities and believe it or not, there's 17 in Vermont with one transmission to develop. There are public members that are appointed by the Public Utility Commission that sit at that table. They represent commercial residential, environmental supply demand and regional planning are all on the table having this conversation about the, the trends, the impacts and when it comes down to deciding what the best solution will be for reliability needs.

So, essentially our process, when we do these long range transmission planning processes, we spent a good amount of time, actually, the last 18 months establishing the forecast which has gone through the review at the Vermont System Planning Committee. They provided input to our initial draft. We've taken their input, we incorporated it into what is now the public review, we've sent this, this public review draft out to the public to look at it and read it. And that's the plan that we are presenting the findings on this evening. So Velco is required to do two things in this process. One, as I mentioned to, to create this 20 year outlook of transmission needs, reliability needs and two to conduct the appropriate public outreach to get public input on, on the plan. And this is our finale, this will be our fourth public meeting. We held one in South Burlington at the beginning of May. We held an all virtual meeting, and a third meeting yesterday afternoon. I want to give Tom some time to just talk more high level in, in terms of where we sit in the context of all of the energy discussion that's happening, particularly regionally because it has a big impact on the work that we're doing.

Public Member:
Sorry. Thank you. Another question. Since this is a draft. What are your next steps?

Shana Louiselle:
Oh, great question. Thank you. We collect public input through the end of May we take that input and we finalize the, we include it into the final plan and then the plan is finalized and submitted to the Public Utility Commission and the Public Service Department. We're required to do that by July 1, 2024.

Tom Dunn:
Ok. Well, thank you for being here tonight. Shana has covered a lot around it. Quickly about Velco, we're down in where we know we have about a 75 of these 10 1 over the ownership, 17 of all of the utilities and the one, the church to be Green Mountain Power, Vermont Electric Co Op, our owners of those, they're also for our customers. So it's a, it's kind of a unique aspect there, there's also a public benefits corporation that was created by the, from the merger of CVPS and Green Mountain Power back about 12 years ago. So they are, they're part of the owners of Velco. And, and so being both owners and, and customers, it's a unique kind of setup that, that, that we have here in Vermont. I think it works quite well giving every, all the utilities a voice on transmission issues. The other element is, is that the investments that we make are funded by a combination of debt and equity. The equity money comes from the distribution utilities. They give it to give it to us. They make the investments in us. We are a for-profit company and the profits on the equity to return on the equity goes back to the distribution utilities and they are required by to treat it as a credit against their costs. So effectively, it's like a cooperative financial model in terms of all of the benefits of profits that we make back to all repairs. The grid and I don't know what your backgrounds are, but if you think of the what we do, we own a very slice of the utility business. There's people that make electricity, there's people that serve, you know, buildings like this council, we, our job is to, to have to own and operate the system that moves large amounts of power. So we operate, I think about it as the interstate highway system for electricity here in Vermont, that's what we do.

And this plan looks at that system in about 20 years and is that system going to be reliable and you know, taking into account lots of information. And as Shana said, the world is changing rapidly. State policy, technology, federal money is, is available to encourage the move away from fossil fuels to cleaner resources and that is absolutely affecting our world. And we're seeing those changes in terms of policy conversations in Vermont. That was something we, we talked a lot about yesterday and I would say one of the key pieces of it, one of the key roles that we play is to give information to policymakers, to, to legislators, legislators as they think about things they want to do. What are the, what we provide information on is what is the impact of those when those actions have on the transmission system. And in terms of how Velco was regulated or regulated at the federal level for tariffs and for the rules about how we operate the system and things like that. We're regulated part of Vermont Public Utility Commission when we want to build a substation or a transmission line site is done here, me and Milano. but in terms of this plan, I would say it, it's, it's changed, you know, kind of gave you the background of why we do it. I think it's a great thing because it creates a platform to have a discussion and, and the discussion about, you know, what's going on in Vermont and how the transmission system evolves has never been more complicated. I mean, Zakia and her colleagues have done a fabulous job with the transmission planning work, which is very, very economic life and she does a great job of explaining it. However, it's only the beginning because what happens at the state level, what happens with the utilities is going to absolutely affect whether we really do need to build me additions of the transmission system or not. Actions that utilities may take in terms of controlling demand and being able to adjust demand in response to peak periods. The development of technology and things like storage and other technologies, all of these things are going to affect how much demand that we see. We you know, the planning 20 years ago was complex but it was, it was pretty straightforward, you know, I mean, I think the biggest variable was load, the demand and how quickly load was going to change. But in terms of how electricity was being made, it was being made by large, mostly fossil units by, by nuclear units. And that's evolving. Some of those units are, some of those generators are still around, but more and more, it's thousands of solar projects that collectively have a significant impact. In fact, Vermont has, I think somewhere around 500 megawatts of solar that's been built and we are we at a peak in the winter in the summer, it's around 1000 megawatt peak. So sunny day, most of the most electricity being used in Vermont is being used well generated by the solar projects, you know, so that part of it is interesting. I would say though that, of course, when it's cloudy by at night, when the wind isn't blowing the goal of the transmission system is absolutely essential. And if we start to make more things that use electricity, if we get rid of our oil burners and put in heat pumps, if, if I get rid of my Tundra and, and buy a Lightning or something electric vehicle that has the potential to add a lot more demand. And as Shana said for the first time in many, many years, we're seeing the increase the projection that an increase to a point where we have to start doing things. So that starts the conversation of, let's make

sure before we say we need to build a transmission system, we answered a lot of questions. First and foremost is how do we maximize the system that we have today? We're looking at technologies to do that. We're actually going to do something up in the islands up in the Grand Isle that will allow us to get a more out of what we have. And then as Shana was talking about alternatives to building transmission. Let's make sure we look at that and if they make sense to those rather than build transmission and you know, that's the conversation that we have to have the answers to all of those questions. Before we go to the Public Utility Commission, you can seek approval for a project that we want to do. We have to be able to say this is the best option because we've looked at all this other stuff. But in terms of what's going to happen, I, I would say even five years from now, it's hard to predict how quickly are technologies going to develop, how quickly are people go? How quickly am I going to replace my truck with an electric vehicle? You know, there's, there's lots of questions there. I think the policymakers here in Vermont are very much moving for encouraging the development and deployment of both solar resources around the state. They're also encouraging people to, to adopt, you know, clean tech, clean heating technologies. So, you know, again, this, this serves as a platform, the conversation and you know, again, that's why we're here tonight to have, continue to have the conversation. And most importantly for us is we're involved in the discussions with utilities, with legislators, with policymakers interested stakeholders to understand, to do the best we can to understand where what's happening on our system because if we have to build a transmission project, they take a long time, take two years, three years to do it. And, and so that's why when we do this plan and calls for upgrades, we need to start looking at the questions that I was talking about. So thanks for being here. I'm going to hand it off to Zakia, but we can do this very interactively.

Public Member:
Yeah, the Public Utility Commission will be the arbiter of your final report?.

Shana Louiselle:
The final plan will be submitted to them. At that point, once it's submitted, it's essentially giving them the guidebook to the non-transmission alternative analysis that they are requiring of the Vermont System Planning Committee. And for the next two years, the long range transmission plan will be the guiding document that requires these non-transmission alternative analyses that will be required to take place and that will essentially begin a string of other filings to the PUC of what those non transmission alternatives might look like. And if they are the most cost-effective and reliable solutions.

Public Member:
So the PUC then has a pretty large voice in the non-transmission alternative. They, they are the arbiter.

Shana Louiselle:
The PUC is the arbiter of what gets built in Vermont.

Public Member:
So, so you providing them a road map. Now, I have to decide what we want off ramps.

Tom Dunn:
It also would follow the utilities because for example, if, if we identified an area that, that we thought was going to be reaching a level of demand that was going to cause us to look at doing a transmission project, you know, some of the solutions are going to give them, the utilities purview, in terms of flexible demand and deploying storage. And now, now they of course, would see cost recovery at the Public Utility Commission.

Public Member:
I didn't read the entirety but was there a discussion about the, perhaps increased cost but public support for burying new transmission lines, within the plan?

Shana Louiselle:
Within the plan? No, because I, Hantz, I know you're on the line too if you want to chime in. But I, I think that likely would come after the solution is identified if it were to be transmission or a non-transmission alternative. I don't think there's a lot of discussion in the plan about underground lines.

Public Member:

No, not, not going to cut it. Not a lot of discussion on underground.

Shana Louiselle:
I don't believe the plan discusses underground or burying lines.

Public Member:
All right.

Shana Louiselle:
And I just, I want to recognize we have a guest that's joining us on the Zoom meeting and want to welcome Tori Helwig. It looks like she might be from the Lamoille County Regional Planning Commission. So thanks for being here, Tori. And if you have any questions or comments that you'd like to provide, feel free to, to chime in and it looks like you can hear us. So that's a good thing.

Public Member:
Yeah. Thanks for accommodating me online and is now a good time for me to ask a question.

Shana Louiselle:
Sure, anytime.

Public Member:
I'm just curious, you know, you mentioned in your spiel how the state is encouraging electrification and adoption of things like solar. And I'm curious, I know I had submitted this in my ticket to get in here on Zoom tonight. But you know, to what degree are you coordinating with these efforts to transition to other energy technologies? And also consider, you know, the state's desire to grow and develop, you know, invite new folks to move here and you know, if act 250 ever reformed fully and new housing comes online, like is there going to be kind of a mass overhaul of the transmission and distribution system in the state or is that like too long in the future from now?

Shana Louiselle
It's a great question. And I don't think that's too long into the future. We're, we're looking, the 20 years. And that's not too long, at least not in my opinion. And so I think the one of the things and Zakia will be talking about this, the 2024 plan has a call to action that is requiring further coordination with energy stakeholders in Vermont. And this plan is very specific to the transmission system. But certainly we're connected to the distribution system and flow is, is coming up in aggregate to the transmission system. So that that is why the, I don't know if you heard when we were talking about the Vermont System Planning Committee. But that's a critical stakeholder group because we have all the distribution utilities at the, and those, those public representatives to be talking about those needs over the next 10 and, and 20 years. Now I recognize that's, that's a very limited view to just transmission system. And I think you're asking something a little bit bigger.

Tom Dunn:
I would just add as you, as you think about the policies to encourage electrification. I think the nature of the demand that will be added is going to be different from the perspective of a lot more of it will be controllable or responsive to either price signals or reliability programs that may be offered by the distribution utilities. I think some of the technologies actually will help us manage peaks even more effectively than we're able to do today. And what I'm thinking about is storage and the ability for us to make a lot of electricity, say during the day or when it's very windy and put some of that energy into storage. And then when the peaks or demand all like in winter time is typically around dinner time rather than, you know, more of the demand coming onto the transmission system. Some of it will be met by the use of storage. People will just turn their batteries on and that will definitely, it is already showing up on our system. And I think that's going to be a, an absolutely critical and a very important resource going forward. So it's, it's different than 20, 25 years ago when the ability to control demand was, there weren't nearly as many things available. You can control water heaters and a few other things, you might have a snow making might be controlled, might be an interruptible load. And, but I think it'll be a lot more sophisticated going forward as technology develops programs get deployed. And, and I think, you know, it won't be on or off in some cases, it might be, it might be adjusting the thermostats across thousands of places just by a few degrees can be a meaningful change in how much demand there is for electricity.

Public Member:
And it just, and regional planning commission, we are getting more and more applications for battery storage. Green Mountain Power and those at Mac are also invested. Green Mountain Power has got a contract with some battery storage company and they have several facilities now in, in Chittenden anad Franklin County. So you're going to the wind and the solar are going to take care of the evening. So we take care of the evening which will be less strong on the outside of the state.

Tom Dunn:
You know, we, we have it in, in our facility in our building in the facility in Rutland. I think it's a 500 KW solar project in a big battery that is part of the Green Mountain Program. And what happens when it's going to be really hot at the end of the day? Or it's going to be really cold at the end of the day and it runs at dinner time. We are notified that they want us to discharge our battery and that saves us a lot of money because the most expensive time to be using electricity is during those peak hours. And that simply reflects the kind of things that are making electricity at that time. And the fact that we design our system for peak, if we can lower the peaks, we don't, we don't have to spend as much money made designing for our system. So it's a real win, win. And I, and I, and I think back to the, the, the utilization of the assets in, like on our system, it's probably about a 50%. So there's a huge amount of ability that we can adjust demand throughout the course of the day. And over the course of the year, we can get a lot more out of the system that we have so that I think that's going to be a big part of what we do and along with, you know, other, other partners, not in the industry.

Shana Louiselle:
OK. What I'd like to do is hand it over to Zakia. We put together a presentation that really outlines all of the plan's findings. And the, these first few slides actually dive into how the, the plan, the inputs that went into the plan to give you an understanding of where that data came from and how we got to our solutions and the assumptions that we used in the analysis and for the sake of Hantz and Tory, I'm going to flip this camera around so that we can see Zakia's beautiful face. There we go. OK? And then, so if you hold on one second, they cannot see the screen. So let me just share. I want to just do a quick check in with Tori and Hantz and make sure you can see the title slide of the presentation.

Hantz Presume:
We can. Yes.

Zakia El Omari:
OK, great. So we, we heard a little bit about the long-range plan, about the span of it. So just a little bit more information here. Some of the studies are underlying this plan is what ISO New England is, is running, you know, the kind of studies. So every year they perform what they call a needs assessment. So these studies are basically for 10 years. They only look to your head. They also look at the transmission plan. So the transmission system, so they are not looking for example of the subs substance sub transmission system. And so that's why we supplement all of that with the 20 year span that we use for the, the, the long range plan. And also in our study, we make sure that we are modeling sub transmission system that we are studying. We're looking if there are any issues in the system. And so we, we report those and we look at those issues. also, in terms of how we perform the study, we make sure that we are following the federal requirements in terms of how the studies are performed, the assumptions that we use, et cetera, we use also the, the regional requirements for study these plans as well. And another point that's important here is the input from the Vermont System Planning Committee throughout the whole process. So whether it is at the beginning when we're looking at the forecast for the load, how the load is going to be or the system overall. As we go through the study as well, when we are coming with partial solutions or the graph, we share all of that on the table for all the VSPC stakeholders to give us some input there. So they are an integral part of the, the planning. OK.

Next one. OK. What you see here is, is the actual planning cycle. So what is in red is what we have been performing so far. So VELCO starts with bringing on all the data that we need. Starting the discussion about that data about the forecast. Speaking with the VSPC and we do this every three years looking at the 20 year plan. And then once we complete all the analysis, we start the discussion of the results. So we already finished step 1, 2 and three. So three is what we are here today. So today is the last day of the public outreach. And then when we finish all of these recommendations, the, the, all this outreach and we include all the comments into our plan. Then the blue cycle starts.

And so the blue cycle is where the distribution utilities are. So that's where they basically look at the plan that we provided, which is the starting point for all the discussions. And at that point, they would start to look at all the, the non-transmission alternatives looking at the problems that we found and finding ways to address those in a way that basically is cost effective and allows us to move forward.

OK. Where do we get our data? So we have Itron, it's a company that specializes in forecast. So they are basically the company that we use to pro produce this, the, these forecasts for low and they work with VSPC in that, you know, they, they get the input from VSPC. So for example, all the heat pump and electrical vehicle trends that we use for this study are coming from this collaboration between Itron and VSPC. We also are going to see a study about the distribution generation trends, you know, where we are going and, and we did a, I look at scaling up that distribution generation and look and at the impact of that. So one of the inputs to perform this study is to look at the distribution utilities data. So we are modeling the load, we are modeling the distribution generation that is currently in place. And so, and we also look at the distribution transformers, the capacity of all of that. So that's all input that was used for the long range plan. We also used a lot of information from ISO New England. Mainly the load flow location. So these are the cases that we started with for the simulations. So we use that we include all the data to transform these cases into something that we could use. Go ahead.

Public Member:
Do you check with municipalities to see how the land use planning is changing with the, with particularly with the new laws where you can now have houses water heaters. Both ST Albans Town and with city last night talked about how we can increase housing and it's going to be in the 10 or 8 year plans but that seems like it should be something fed to you or to Itron for injections. We're also participating climate people will move from the coast inland.

Shana Louiselle:
Yeah, I was just going to say that that level of detail is not like we're going into the transmission system analysis. However, because housing, residential homes, commercial buildings are, are served by the local distribution utility. That type of plan would likely be part of the distribution utilities. They, they do a I don't know, it must be a three year process and it's called their integrated resource plan.

Public Member:
I never send a request for housing and now that we're into a crisis with lack of housing and we're planning how to rezone these two municipalities for more about which seems to me it's going to create a demand, right? Just my, my just because I've been around and listening and nobody talked to municipalities. There planning fits into this perfectly, not in terms of electricity, but we know that the houses have to have electricity, right?

Zakia El Omari:
OK. OK. So, so when we took all of that data, we are looking at different scenarios here for the study. So when it comes to the peak demand, which is when do we have the highest demand for power in our system? So Itron came up with two scenarios. So the first scenario is what we call the Vermont road map. So the road map is basically looking at all the efforts and all the policies that are currently in place and, and coming in the future, if all of that is successful where we will be in terms of load. So that would be the first scenario. The second scenario is if we go with what is currently in place. And, and we continue at that level where we would be in terms of load. So that that would be the, the, the, the other scenario that we call the low forecast scenario. We also looked at both summer peak and winter peak so that we can cover both, both possibilities. And when we took one look at the 20 year plan, we also look at 10 year, 10 year and 20 years so that we can see anticipate if there are any issues that are coming a little bit earlier than that. So that's what is covered in terms of growth of the load. We also looked at the impact of distribution generation since we have so much distribution generation in our system. Last year we at some point, we actually started to export to our the neighbors A generation. So we are basically looking at that trend and seeing where it's going. We started with a 500 megawatt which corresponds to the DG that's currently in place. And then we scaled that up to 1300 megawatts and we looked at increments of 100. So we looked at 500, 600, 700 et cetera all the way to 1300. And for each one of those windows, we are looking at what's going on in the system. Are there any capacity issues that we see? And we reported all of that in in the study and we also looked at all the behind the meter generation that's currently in place outside of solar that was also taken into account.

OK. Next one, all right. Some more information about those two scenarios that we mentioned before. So the, the Vermont roadmap policy and maybe that kind of talks a little bit what, what you mentioned there about, what, what went into it. So the, the assumptions there is that the annual sales of heat pumps is going to increase by 18,000 annually by 2029. For the, the electrical vehicles, we're assuming that that would grow to 90% of the vehicles by 2043. And for the fleet, electoral vehicles were anticipated 100% electrification between 2038 and 2043. That would be the Vermont road map. How that translates in terms of growth and in terms of load is what you see in the diagram. So those continuous lines show the policy winter and the policy summer. As you could see in 2023 there are about 100 megawatts and then by 2043 you see a growth for the policy summer by about 40% increase. And then for the winter, you see about 60%. So that's, that's what, what the electrification of load will translate to by the year of 2043. And for the continuous growth, which is a lower expectation there where we are, what we're assuming is the annual sales for heat pumps will remain at 10,500 and for the non-fleet EV, electrical vehicles that they would grow at 60% to, to, represent 60% of the vehicles in 2043. For the fleet EV, we're assuming that that's going to be constant at the 2032 level. And so you see that, that translate at, at a more modest growth. So the summer, curve as you see there go from about 1000 to about 1200. So about 20% 20% more for the summer and 40% more for the winter. Any questions on this diagram? And if you, you have access to the, the, the document itself, the plan, there are some breakdown of this information there as well where you can see what the, what the heat pump growth is going to be separate from the EV et cetera. So I I thought that's an interesting diagram to look at the contribution of those two parameters into the peak.

So, so now we'll go to some results of the scenarios, the studies that we have performed based on all the data that you have seen. And the scenarios that we looked at this is the worst case scenario. So we are looking at the peak in 2043 policy or the Vermont road map. And as you can see here, we identified some issues in 2043. So all the, what you see in blue are transmission lines and that are overloaded. So they're exceeding the, their capacity. And so we counted about 75 miles of all overload transmission lines there. We also those circles are in yellow, those are the transmission transformers. And so those we saw 19 of them overload for this particular scenario.

Shana Louiselle:
Zakia, I think it would be helpful if you were to talk about some of the key assumptions that went into the policy scenario. Specific to what we were modeling for flexible load management programs and what we're modeling for generation output during this peak time.

Zakia El Omari:
So, so we basically removed any energy efficiency programs that were already in place. The goal was actually to see what does it look like without any load modification, you know, so and then that would be the baseline for any changes to that, you know, we just wanted to see what the, what the that level offload will do to the system, absent of any programs that would help with reducing output. And what's the other question?

Shana Louiselle:
In terms of the generation output, so we, we have roughly 500 megawatts of instate generation, distributed generation.

Zakia El Omari:
So for the, for the peak cases, we, we are not modeling any solar or distribution generation, mainly the solar because it's not contributing to the peak. So typically our peaks come in at night. So they they are not, there is no contribution of solar during that time. It's basically whatever is available jumps of a local generation and mostly what is imported through our tie lines.

Public Member:
But not what about batteries.

Zakia El Omari:
So batteries also, we made an assumption that the batteries are not contributing to the peak. The reason for that is that there is no clear policy in terms of how it is being used. So this would be a more conservative, look at, at the at the results. So absence of any ways of controlling load, whether it's by batteries or by any other ways of shifting load or controlling it, this is the how the picture would look like.

And then after that, we are coming up with some solutions, we are looking at how much we need to control load so that we take care of all these new lines and then goes back to being an all green no issues.

Shana Louiselle:
It's an important reminder because we know distribution utilities are doing a really good job of implementing those flexible load programs to be able to shift. But we really needed to identify what the most severe case could be so that then you can really target locations when it comes to the NTA. That non-transmission analysis work that will be started this year.

Public Member:
You're working on a project in Highgate. Is that dealing with the Highgate SHEI problem?

Shana Louiselle:
No, the, the Highgate Substation work is it's specific to just, not allowed to say any old equipment but maintenance, maintenance related work and in terms of it, it's a 60 year old substation and, and, and it needs upgrades.

Public Member:
So it's not going to increase the capacity.

Shana Louiselle:
It is not going to be have an impact on the Sheffield Highgate Export Interface.

Zakia El Omari:
Ok. So, so how about we go a little bit more into these details, you know. So the first thing we are going to look at is the northern Vermont areas concerned. So this is what you see there above the, the discontinued pipeline. So in that area, we looked at contingency scenarios. So a contingency scenario N minus one minus one is based looking at that system and taking out one of the transmission elements. So it could be a transmission line or transmission transformer. And then in addition to that taking another line or another transformer, so we have a loss, the loss of two elements and we do that because that's part of the federal regulation. The requirements is for us to study in essentially,

Tom Dunn:
That's to stress the system to a degree that they think is appropriate in terms of getting results that are important.

Zakia El Omari:
Absolutely. Yeah. And so, and so based on that, what we saw are, are overloads. So we saw lines that exceeded their capacity with a transformer that exceeded their capacity. We also saw that the voltage in some areas is collapsed. And so when we see a collapse in voltage, that means that if this actually happens in reality, we might get into a blackout situation. So it's a serious issue. And so it needs to be addressed. One of the solutions or the, the solution that we propose here that would work is to have a new 115 KV line between Essex and Williston. And that's what you see there in orange. So that would take care of this this issue of thermal overloads and collapse of voltage and that will be needed by 2032. So 2032 winter is when, when we saw this issue,

Public Member:
The New York Times, we saw an article on new electric cables where they made out of the central core of the cable made out of carbon fiber and then the surrounded by aluminum superconductors, is that right? But when you, when you start replacing these lines, when you use these more powerful or…

Tom Dunn:
I think it's an option as we look at options, I think the and Zakia could explain this better, but there are different reasons why there's a reliability problem. What you're talking about is the, is the thermal limits that is, there's so much energy flowing through the, the steel and aluminum conductor that it actually sags. What you get from using the composite core conductors is the ability to run that was at a higher

level. So if we have a thermal issue, they might be a, they might be a good solution. There are other things that are different limits that aren't related to the heating up the conductors that could be a problem too.

Zakia El Omari:
So, so that might take care of the capacity but maybe not the voltage issue in this situation, for example. And so, so that that would be one option, the other option would be what we talked about the, the flexible load control adding batteries in this situation, you know, so that's what we call the non-transmission alternative. And in this case, what we calculated is that we would need 75 megawatts of load reduction here.
The, you know, regardless of technology could come from any other ways of doing it, but we would need about 75 megawatts in 2033. Now, as the load grows from 2033 to 2043 that 75 megawatts would also need to increase accordingly. So as that grows, we need to reduce more that load in that area.

Ok. So the next area you see here is the northwest, I think. Could you go back once? Oh, sorry, sorry. Is the northwest Vermont area. So it's the North Vermont area plus an additional area that you see over there. So it includes the, the original area. Again, when we look at this, this area here, we saw that we have some overloads, some the thermal capacity exceedance. How we, we suggest to fix it. It's by rebuilding the West Rutland Middlebury 115 kV line that you see over there in blue. And so in order to fix that, we, we would need to rebuild the line by 2034. Yes, I'm sorry. Yeah. by 2029. and I, I, if we were not to build this line, if we want to avoid that, then the non-transmission alternative would be to reduce the load north of this line, the black line by 80 megawatts in 2032. So that's, that would be the solution. So that would be five megawatts addition to what you saw in the first in the first area of concern.

Tom Dunn:
Rebuilding the line between West Rutland and Middlebury. What would that entail? What would we be doing? Putting a bigger wire?

Speaker 4
Yeah, correct. Because we are seeing an overload of that corridor. So we would need to increase the capacity of that line so that it wouldn't sag and

Tom Dunn:
Put a bigger wire and we might have to replace the structures. The wire is heavier and, and structures might have to be replaced.

Public Member:
Working in tandem with green on power?

Tom Dunn:
If they're in a corridor with us, we, we would have to in that corridor there nearby. I don't, I don't know, there's probably places but yeah, they would be part of the planning as necessary. But in terms of looking at the 80 megawatts, they would definitely be the key to say, well, we could do these things to get you to the 80 megawatts that you need, you know. Yeah. This planning thing is more complicated than it's ever been, as I said at the outset.

Public Member:
I, I credit you all.

Zakia El Omari:
Yeah, it takes it takes a lot of simulations. So for example, what you see here, it took 50,000 simulations, 50,000 simulations that we, plug into the, the program and it keeps running and it looks at all those. So when we say take out this element, take out the other element looks at so many permutations and for all of those, it looks at the outcome and then it reports to outcome and then we go and filter all that information to see which ones are actually causing issues in the system.

Public Member:
But the issue is get back to human behavior.

Shana Louiselle:
That's right. And that is, that is such an important point.

Tom Dunn:
Well, things like climate change, if we had a winter, like last winter, nothing. Right. But we know we're going to get a winter when there's two weeks of below zero temperatures, that's going to absolutely stress our system and stress a lot of the system. And that's going to be part of the uncertainties that we have to take into account.

Public Member
I can just tell you the day I moved to Vermont February of 2015, it was minus 18 degrees for several days. I think we brought the warmth from the south.

Zakia El Omari:
I'm coming from Georgia too, so I, I'm contributing to the global warming here a little bit.

Ok. All right. So, moving to the central Vermont area. So as you can see here, it's a, it's an even larger area than we saw before again N minus one minus one look into, into the issues here. We saw thermal overloads, we saw transformers that affected and in this case, what, what we recommend would be to rebuild the, the Coolidge Cold River to North Rutland KV line, that's what you see there in in orange in yellow actually.
And that would we need to be done by 2034. And so that's where we started to see the issue happen there. If we were to avoid this upgrade, then the, the load needs to be kept at the, the level of 2033. If we can reduce the load with any different means of all kind of means that if we keep it at 2033 level or lower than in, in the central area in that area above the Black Line, then we could avoid this over.

Public Member:
Would you ever break down to regions? How much electricity you can draw out? Say that could you if have you have you thought about or been discounted already? But dividing the state into quadrants and then within each quadrant, you said how much electricity they can have?

Zakia El Omari:
Yeah. So, so this is very much what we are doing with these areas of concern. So we are taking into account where the load centers are, where the power likes to flow. And so for example, this this area here, the load in this area here has an impact on that line. For example, if the load is lower, then it won't have an impact on those on those. For example, on the Cold River to up to North Rutland. So we are looking at it from, which, which zone is stressing, which stress

Public Member:
If, what if someone that's stressing the system. And you said that's it, that's all you're getting, you figure out what you're going to do, what you've got.

Shana Louiselle:
Well, it's our, it's our responsibility to serve the load. So, whatever, whatever the, the zone needs in terms of transmission needs, we have to meet that reliability need.

Public Member:
So just imagine, I can't imagine what the thing would be, but I built a company that could just go soon. Why would the the databases for us, the gambling or the gold. So where we put one in Franklin County that draws in tons of electricity and affects Rutland. Aren't you going to say that us get rid of your gold?

Shana Louiselle:
We, we would not say that. Unless you were connecting to VELCO system, which unlikely. But there would likely be studies conducted by the distribution utility. If there's development, it's the utility's responsibility to serve that load.

Tom Dunn:

Now, there might be a situation where such a large load would have to make a contribution to the cost of their imposing on the system. I mean, I know in other parts of the country if you know, we live New York Times. The Wall Street Journal, learn about data centers and, and these are enormous floats in Virginia and Texas and other places. Some of them as big as half of the peak of Vermont, just one data center. So that, that's, you know, potential. But I think we're not aware of anyone that wants to build a data center in Vermont because the cost of electricity is pretty high. But relative to what they can get in other places and other things like being close to main fiber optic folks and stuff like that.

Shana Louiselle:
But to your question about, about the regions, and it's, it's more specific to how the planning in, in our planning world, we do divide Vermont into zones. There are 16 zones to help get more specific to each of those regions. And there's a, there's a map at the end of here that shows what that what those zones look like.

Zakia El Omari:
Yeah, and those zones were created in such a way that we, we can anticipate the growth of each zone because each of those zones goes differently than the other. So, so that's more of a load growth trend. What we see here is more like the influence on, on the, on the future on the power flow. What we see in terms of stressing the system, you know, this area stresses this, you know, causes this much issues here versus another area, et cetera. So it's more like the what, what load in this area causes versus.

Public Member:
Now I have to set up also. But thank you very much for coming. You have a result. But thank you. Nice meeting you. Thank you.

Zakia El Omari:
Thank you for coming.

Tom Dunn:
Appreciate it.

Zakia El Omari:
Ok, so the next zone, the southern zone you can see here in, in the south, we start to see impacts on the neighboring system. So this is not just about Vermont. And in this case, as you see, this is the National Grid Line, the one that you see in yellow. So what we found is that that line is stressed out and then we can, we need it to stress and then we actually need to rebuild it. So the Bellows fall to Ascutney that need that for 115 KV line. We also saw that the, the, the other line, GMP Vernon Road to Newfane 46 Cable Line, the one we see over there is also overloaded. So by 2034 we would need to upgrade these lines to rebuild them. The other alternative of that we, we would need if we wanted to avoid this rebuild is to keep the load at, at the values that we have and below the 2033 load level. In, in the southern Vermont area. Yeah.

The last one here is overloads that are impacted by the entire Vermont area, the, the whole area of concern. So in this case, what we would need to do to avoid the, the issues, the thermal issues that we found is to build a new 345 kV line between Vernon and Eversource Northfield. And so for that, we would need to rebuild that line by 2034. If we were to avoid that, we would need to keep the Vermont load at below the 2033.

So that's the, the last one last slide for the detailed look at the impacts of the the load growth on the area. What you see here is the summary of all of the discussed. The second line is the cost estimate, a high level cost estimate. These are not for the underground, these are for overhead transmission lines and also for transformers. So, very high level. Again, this is the planning estimate. The third line shows the non-transmission alternatives that we discussed. Also all of these solutions, the non-transmission alternative solutions are going to be part of the discussion that will start once we complete this this cycle and the distribution utilities are going to take over. So all of these assets are going to be part of their discussion to come up with the best cost-effective solution to address these issues. And the last column will show you who is the distribution utilities that will lead this effort. And in this case, GMP is going to be the one leading all of these. Even though all of the Vermont is affected. And also you see maybe there will be some coordination also with Eversource and National Grid for the, that those last general issues that we identified.

Public Member:
GMP is the lead in all of these scenarios. So, so is, is each build out of the grid, each of these areas, Green Mountain Power on the (inaudible).

Tom Dunn:
I think Green Mountain's responsibility is though the utility is, it's their service territory where the demand is projected to increase and to a point that triggers sub transmission upgrades. So we would, we would be working with them on the end if they were viable NTAs but they would, they would be responsible for implementing and they not by, (inaudible) of course, the cost of which would be paid for by Green Mountain ratepayers.

Public Member:
I incrementally not, not just all, it's not all going to be done between now and 2033?

Tom Dunn:
This again reflects the most stressed case. The likelihood is that the pace of, electrification of heating and electric vehicles and it's going to be slow. And as a consequence, the dates at which these are needed is like are like is likely to be pushed out. So this is really a this information is sort of if you think of it as starting a conversation about, you know, what we might have to do, we go really, really fast

Public Member:
And can, can you describe screen and what, what is the definition of screened in?

Shana Louiselle:
Yes. So the screened in process is there are a number of criteria that would basically decide whether or not this transmission project or transmission solution would need to go through a non-transmission alternative analysis. So if it, when a when a deficiency comes to the table, our planners basically have to ask, they have to answer a few questions. I is it maintenance related or is it for reliability? Is there a cost threshold? And if it does meet those requirements or those criteria, it screens in meaning it needs to now go through further analysis which essentially starts the non-transmission analysis.

Zakia El Omari:
And so, so that, that's the last slide for the, the looking at the, the load growth, you know, so now we are going to shift that look at the generation. So this is the generation growth. So solar generation growth in particular, right. So, so we did this study called the solar PV hosting capacity basically. And, and the basis of the analysis is to look at the current trend. So the first one that you see there, this is the solar map for Vermont for 2015. So in this year, you see about 84 megawatts that is installed. And then going into 2023, and we are at about back then at about 450 it's actually about 500 now. And, and so you see that the, the trend is towards the heavily populated center. So that's where you see more, more, more DG growth or so, especially solar growth. And so we use this to inform our trend as well. So when we scale from 500 to 1300 megawatt of DG, we use this as a baseline to help us locate, locate where that would be in our cases. And again, we are going from 500 to 1300 by 100 megawatt increments and creating a snapshot for each one of those years… of those levels.

OK. Next slide. And so here is the, the worst case scenario. So we are 1300 we have 1300 megawatts of DG in our system and this is the impact on the system. So all the lines that you see there in orange are lines that are exceeding their thermal capacity. So we counted about 156 miles of lines that were overloaded. And the blue circles, those are the transformers, the transmission transformers. So all of those transformers also exceeded their

Tom Dunn:
Just a second. Are, are you familiar with transformers? Okay.

Public Member:
And this is the current 10 overloads today.

Zakia El Omari:
So this is the 1300 megawatts.

Public Member.
I'm sorry, thank you.

Zakia El Omari:
So currently we're at five hundred.

Shana Louiselle:
And we modeled that based on conversations at policy level of doubling Vermont's in state requirement. It's the current renewable energy standard requires 10%. And in 2018, and then again, in 2021 there were conversations about increasing that 10% to 20% and even most recently, 30%. This plan does not take into account the existing bill that was just passed by the General Assembly H.289. We're, we're not modeling H.289. We basically took a very rough estimate of what 10% means to instate generation Vermont, which is about 700 megawatts and doubling it to 1300 megawatts.

Public Member:
OK. Thank you.

Zakia El Omari:
OK. Now we are looking at the solutions. So we looked at the solutions that are transmission level. Now we are looking at the load control solutions for 2043 in particular. So for, for the peak level, so going back again to the load growth 2043. So, based on the issues that we saw in the system and if we wanted to avoid all of the transmission upgrades, so this is, you know, to make sure that we are not upgrading any, anything in the system, we would need to reduce the load by about 440 megawatts in for the winter peak and about 400 megawatts for the summer. In aggregate. Again, location matters in this case also, you know where we are reducing but in aggregates, that's the number that we came up with. And, and that reduction can be either through reducing demand, could be to injecting generation in certain locations, you know, to battery storage could be microgrid solution. So it could be different solutions could be a combination of all of this most likely a combination. But in, in aggregate, that's, that's the total number that, that the analysis come up. Would you have a question?

Public Member:
This is the, this is the graphic of the NTA.

Zakia El Omari:
Correct. Absolutely.

Public Member:
And in, in the analysis, the burden is on those utilities to educate the public, to install the whatever. And I haven't heard a word and to,

Shana Louiselle:
And to incentivize to join specific programs. If you're an electric vehicle owner, are you participating in the load shift program?

Public Member:
Because I follow this as a customer. We're talking about a black box here but these utilities is actually getting me to decide that maybe you can tell me I can't do the wash on certain hours and my wife says I have to and I think that's true for half the GMP service here.

Tom Dunn:
I think they're already doing this, a lot of this stuff. We are ramping the projects. I, I knew they're ramping them up. Are they to the scale yet?

Public Member:
But yet I, I hear no, I get no mail. I get no, no information whatsoever. I, my wife said, well, I have to do the laundry. I said it's probably expensive right now. I don't know. You know, this should be something that comes with your washing machine or

Tom Dunn:
Do you run time of use meters or not?

Public Member:
No. That's, that doesn't matter.

Tom Dunn:
That doesn't matter when you do the wash from a cost perspective. But I don't, unless you're on time of use your meter.

Public Member:
I'm not,

Tom Dunn:
Then if you do your, your wash at peak, it doesn't matter to you financially, you don't get a penalty but you do your wash at the wrong time.

Public Member:
Well, I'll tell my wife.

Tom Dunn:
Well, you should confirm that.

Public Member:
Il I can but not a topic of great discussion in our home, but I just say that that is another we should be doing the laundry at midnight

Tom Dunn:
And likewise, think about, think about looking at vehicles. Certainly one of the things we need to make sure happens is that the vehicles will be charged at the right time. That's going to be (inaudible).

Zakia El Omari:
Yeah. And more and more, you know, especially on sunny days. It's like that time where the ti, the, the, you know, around between 12 o'clock, you know, like 10 to 2 o'clock, that's the perfect time to do all the load, you know, like, turn everything on because that's where we have the most generation from, from the DG when the, when the solar is at its maximum, that's where we need as much load as possible to absorb all of that generation. And, and that's a great segue for the for the next one which is for the hosting capacity.

So you saw that how the map looked like at 1300 megawatts, all the lines that were overloaded. Here is a solution for that, that would not include any upgrades. So the solution would be to reduce the load, the to increase the load in this case by 480 megawatts. And so that again could be, you know, energy storage, right? You know, so this is when you start actually to charge the batteries.

Tom Dunn:
So this is time sensitive. This isn't, we don't want this 24 hours a day. We want this, we want this load to show up when the maximum amount of solar is being produced. So solar doesn't have to get up onto the transmission system, but rather the solar generation gets consumed locally.

Zakia El Omari:
Absolutely. Yeah. So when we looked at the hosting capacity, we looked at daytime load where the load is at its mail. So maybe a spring day like today where we are not using the heating system, we are not using the cooling system and the sun is shining. So the distribution generation is at its maximum.

And so that's where you have this imbalance between load and generation that is at least worse or we have the most excess generation. And so that's when we need it. We don't need it the entire day. But this is where we need as much as much load as we can during this, this particular scenario. So that we, we don't o overstress this,

Tom Dunn:
One of the interesting technologies that's being developed that could play a role in the future is the production of hydrogen using this renewable energy. And, and then the benefit of producing hydrogen and storing it is then it becomes an energy source for other times of the beginning of the, of the day when you don't have the solar, you know, but it is still a little tough.

Public Member:
Just from 1960 I'd say that's a great conversation. Ok.

Tom Dunn:
Well, I will tell you the government is spending literally billions of dollars to advance the technology and the financial viability of renewable hydrogen.

Public Member:
But they're going to reform actual gas to make the hydrogen.

Tom Dunn:
Well, that's what I'm saying. That's, that's, that's a different kind of hydrogen, same hydrogen, but it's made of what I'm talking about is using renewable. What the government wants to do is to see hydrogen made. But rather than using that the gas use, renewable electricity. I just, that's, that's what's going on. the, the economics of it are tougher.

Public Member:
I'm good up their voice pumping carbon dioxide into them that they're on the same plane as reality might be.

Tom Dunn:
This is definitely part of there. Definitely

Zakia El Omari:
Good. And so, so that's OK, here, here's another, another look. So all of that is in here. So you see a lot of colors there. So the, the colors are about the hosting capacity of each region. So we have 16 regions there. And basically, instead of asking ourselves the question, how much a generation we can use in each area, we actually went and looked at each one of these regions and said, OK, how much can we put into each region before we trigger an overload somewhere? And, and so this basically what, what tells you is that in that green area, we can actually put between 200 and 300 megawatts of distributed generation before we trigger any problems, you know, so it has enough capacity for about 200 or 300.

Public Member:
Can you point to what, what area was that, that you were saying? Two or 300 the south.

Zakia El Omari:
Yeah. So for example, for the Rutland area, you can see about between 150 and 200 megawatt that, that we can we can host there so that DG can grow there up to 200 before we start to see problems. And so, so basically this, this map can opens the discussion, right? And so this is all that we do. We are, we are basically offering options. And so if we do it this way, we call optimization, geographical optimization instead of the, the policies are driving the, the, the DG growth, there are better places for the DG than others. If we are concerned about causing stresses to the transmission system, the transmission system and we concerned about cost. So if cost effectiveness is important to us, then this is one way to do it. You know, this is these are areas that we can target for DG growth that would allow us to add more DG without needing any upgrades to the system or overload, flexibility or load control for the matter.

And so when we looked at now, so based on that, we saw that we could actually put about 1057 megawatts of DG without stressing the transmission system and without stressing the sub transmission system.

Tom Dunn:
But again, it's only a perspective of it from the transmission perspective alone. Yeah, it doesn't take into account all the multitude of factors that go into, you know, where are the best places to solar? But this is purely, this is the best place for solar from a transmission system.

Zakia El Omari:
All right. So, so that's the, the last side of the of the analysis. This is, this is the last part of our analysis. Again, what where we take away from all of this is that we are, we are seeing issues, we are seeing issues both when we are looking at the load growth, we are seeing issues when we do generation growth, distribution generation growth and, and we are seeing it as early as 10 years for the for the load growth. So, there is a need to do something, you know. So this is our call for action. These are the recommendations that we have for the, the NTA process that will start. We also as you, so we saw that we are impacting other neighboring systems. We saw issues on the sub transmission system. So that tells us that we need to have even stronger collaboration among all the stakeholders. So we can come up with a cost-effective solution to all the issues that we saw. You saw that we have a need both for a load reduction and for a load increase. And so how can we find ways to find comprehension kind of solutions that will be cost effective on, on globally, not just for these few areas that we looked at. So we are only looking at the worst case scenario for peak load summer or winter. We're looking at peak day for the, the spring, but we are not looking at 24/7 all year long. Whereas the solutions that we need from an NTA perspective, how to take care of all of that and look at it from what is the, the best and most effective cost wise solution for all of that. So all of these technologies, all of those considerations need to be taken into account. So that's, that's really our message. And I hand it back to Shana. She has comments …

Public Member:
I think it's Itron. Could you describe your relationship to Itron? And is there information to you public record?

Shana Louiselle:
We contract with Itron to complete the economic analysis that, go into the long range transmission plan analysis.

Public Member:
The forecasting also did Itron do that?

Shana Louiselle:
Yes, and it's all public and I can send you the links to all of their presentations to the Vermont System Planning Committee load forecast subcommittee. And yeah, if there's, its high level presentations, but if you want any, you know, more granular data, I'm sure we can find a way to provide that to you.

Public Member:
And where is Itron located?

Shana Louiselle:
I think they're all over the place. I think their closest office is maybe Boston.

So if there aren't any other questions, I'll just in terms of next steps, you know, this is our, final public meeting. Although we are continuing to conversations with regional planning commissions and really, if anybody wanted to reach out and, and have further discussions, we are open to talking with anybody and taking any additional input. We're requesting that input be submitted by the end of May to provide us time to incorporate that input into the final plan. Because we'll be wrapping up our plan the third week of June to, to submit to the Public Utility Commission in time for that July 1st deadline. So if it came in early in early June, I certainly wouldn't shut the door on any public input. And because it's an important part to the plan.

Public Member:
So have you provided this description to my Senator, Senator Bray?

Shana Louilselle:
Senator Bray has received the invitation to review the public review draft. All of the legislators, an invitation was sent to the entire legislature. And we did testify in the Senate Natural Resources just a few weeks ago. It was specific to the H 289 RES Bill. So it didn't, it wasn't a, a full presentation of our long range transmission plan. I would say it was very high level and also talking about more of the regional picture in terms of other transmission projects that could be that have potential to, to take place, which would essentially be a game changer for this, this long range transmission plan because there are a number of states just in New England that are looking to are looking for more distributed generation in their own portfolios. They've submitted, you know, their own RFPs. Hence the transmission kind of rail railroad wars of these past few years. But that's a really important part because there are a few of those transmission projects are looking at Vermont as a gateway to the load centers in, in New England. And currently, the, project that is being built or it's underway right now is in it's called the New England Clean Energy Connect. And that transmission line is being built by Central Maine Power Avangrid. It's going through the state of Maine from Canada through the State of Maine down to those load centers in Massachusetts and Connecticut.

Public Member:
Wasn't it blocked?

Shana Louiselle:
It's had a wild ride. It's, it's actually in development right now. There are transmission, transmission is being built right now to that. Yeah, it's, it, it certainly, it went through a cycle of being alive and then being blocked and of course, right. But to that point, there are other projects that are in the queue, the interconnection queue, including a project that would be going through Vermont and connecting to the Vermont system. That project is the New England clean Power Link. And that project is still very much alive. It's, it's currently submitted an application through the DOE's grid resilience and innovation program or GRIP application to receive federal funding to build that project. That application was just submitted recently and I think they're expecting to hear back this fall, whether or not their submission was selected or awarded. And there will be more that, that certainly come as we've seen that

Public Member:
Some thought that Lake Champlain would be an ideal.

Shana Louiselle:
That's the New England Clean Power link and it's still very much on the table.

Public Member;
Excellent.

Tom Dunn:
And they're building a that same company is building now. Another line that is going to go in Lake Champlain down in New York City. Yeah, that was under construction.

Public Member:
Any discussion about Maine's offshore wind. I, I have talked with TJ Poor. I've talked with Lou Cecere they said, well, we can't outbid New York City. I don't know. What the, the, the power contracts would go. They have to be priced …Yeah, I think, what's his name? Blittersdorf said, no, wait, we, we just little people compared to the big demands in Massachusetts and, Maine said, but I even suggested to Maine's governor and that team that they should be talking with the governor here about why don't we just sit down and talk? Is there some other way that we can invest in (inaudible) out there ourselves?

Tom Dunn:
I think, I think Vermont's opportunity, we should not restrict ourselves from one spot. I think it may be interesting for Vermont to buy offshore wind up in Massachusetts. Doesn't really matter.

Public Member:
I, one thing I say Maine is probably the only game.

Tom Dunn:
No, I don't think so. So we can it from occupy, we can buy all offshore wind from these projects in Massachusetts.

Public Member:
And, and the Maine ones, the Maine ones that with a big investment is seemingly going and it's not off the coast of Cape Cod, it's off the lobster traps.

Tom Dunn:
Yeah, I don't know. But I think even that, that power is likely to be landed in either southern New Hampshire actually in Massachusetts.

Public Member:
Oh, the nuke probably the nuke,

Tom Dunn:
Well, maybe south of there actually right there. Yeah. Yeah. What's going on in southern, the southern coast is they're reusing substations that were built for coal plants that have retired. So they're just plugging right into the substations with these wind projects. Makes sense.

Public Member:
And they're still young. What? They're still young.

Tom Dunn:
Yeah, they were not even, I don't think they're 70 years old.

Shana Louiselle:
Yeah. No comment.

Public Member:
So it's a really great question about offshore wind and that's something that Vermont continues to keep an eye on and be part of the conversation. And when that comes to fruition, I'm, I'm sure that will be part of portfolios across New England,

Tom Dunn:
Likely that probably doesn't have from, from our perspective. Again, our narrow focus on the Vermont transmission system off shore wind is probably not, not that big of an impact.

Public Member
More east, west, west impact. I, I'm assuming that if, let's say even five years out, Maine is able to deliver to Vermont, you've still got to cross over into Chittenden County and

Tom Dunn:
Yeah, but the only thing I will say is that's true. And in fact, you know, that could happen, but the reality in terms of there's two, there's two ways to think about it. So the power plant gets built, say down in Connecticut. Most of the power that that power plant generates might only be delivered electrically relatively close by Vermont could buy some of that and the money would flow to get added to the owner of that plant. But the actual electricity just goes into the grid, the grid's free flow, right? So it doesn't have to be, that's why I said we could buy. I think when we look at offshore wind, we should look at the most the best, the best deal we can get where it's and we can get. I just said, whatever the best value is the price, the RECs everything right? Ready for another sandwich.

Public Member:
Oh, I was going to say, is it public comment time?

Shana Louiselle:
The this whole meeting has been public comment time. So please give it, give us your comment.

Public Member:
Oh, Governor Scott veto is overidden because Senator Sears was led to believe that what the PC was going to do was determine if in fact, this was doable in Vermont and, and he went along with that misinformation.

Shana Louiselle:
Are you talking specific to the, the RES bill?

Public Member:
No, no, I'm sorry, I'm talking about the clean heat standard.

Shana Louiselle
Oh OK. Yeah. From, from last session.

Public Member:
So the timeline for the clean heat standard is actually by Mid-June, the, equity Advisory group will be sending its report to the PUC which will be going to the legislature. But I'll tell you they're still trying to decide the shape of the table. I, I follow this pretty closely and, and, the few people who are just sitting in on these, zoom meetings and stuff, you know, I've got to answer a question. Should the credits go to the homeowner of which there are 330,000 in the state? You know, so they really don't have clear view of a report to the legislature by December that would be chasing if, if governor's veto, missed by one vote. I am frankly, Senator Brock, who I hoped was going to be here. We can find 11 votes because at least Senator Sears can say, well, I was misinformed. I should have voted to sustain the veto. And others will feel the same way. So I have a good idea that it may pass the legislature and the governor may veto it. And I believe the governor's veto can be sustained.

It won't come back. It, it won't come back. I, I think they'll just say, well, look at that. II, I can just count it for my home. Oil? It could be about $450 increase for the one season. We have an adjoining property that my son, that propane about another $400. So it's my special on interest to kill the darn think because it's impractical, it was only brought to the legislature because the Transportation Deployment Initiative collapsed when Massachusetts pulled out and the Climate Council went, what? The, we don't have anything and then power and others came up and said, no, I got this but 2018 paper that you need, they said, well, let's send it to the legislature. No. Now there's no cost, no, no impact to even LIHEAT clients. Ok. And, so we're starting to raise these questions that are being ignored by the, equity advisory group because they don't have answers. They, how can you exempt someone on w LIHEAT hy? He? Right. So the thing falls apart and I say the business as usual on the electrification side for thermal, it's probably a better bet than to follow some idea that on the, the, the northwest you can see a big increase in 10 to 15 years out. I don't believe it's going to happen. As far as electric cars. The next big issue in the legislature is going to be, we want to do the TCI here in the pretentions have more Rhode Island surrounded by gas stations and, but you've got the environmental it, and I'm in environments and my God, I worked in Washington as a lobbyist with environmental organizations, did the, the (inaudible) on building in the acid rain section. But they, they hear by foundations and say no, we want the TCI here in Vermont, we want the, the Clean Heat standard here in Vermont. Well, PUC will to figure out the cause it's just not going to happen, it's not going to happen.

And you have a, a need to consider worst case possible because you don't want to be blindsided by the fact that we lost and now it's implemented and in time, you know, I say we're gonna try our best to be S.5 but could pass an NTSI I, I think the public is beginning to say you're challenge the ground, stop this or we will turn the legislature around in time.

But we still have this, you know, set up done environmental fervor to turn 800,000 gallons of heating oil into electricity. The bottom line, all of the fuel is about 2.5 million tons of CO2. Ok. 2.5 million tons of CO2, that's 2, 250 million gallons times £22. But close CO2 is 37 billion tons. And we're talking about reducing the 2.5 million tons by 40% at a cost that will kill me. And I'll have, yeah, I'm a, I, I got nine acres of forest and I'm cutting wood because can’t afford, yeah, I mean, we, we're living in fantasy but again, your job is to think worst case

possible. Yeah. And, and I'm saying, that, give a little more time to the business as usual is going to stand out a little longer. Itron probably told you,

Shana Louiselle:
That's why we do the, the two forecasts, that policy forecast and then, it's called continued growth. I think it originally was called, business as usual, but continued growth, you know…

Public Member:
And, and that's, that's a good continue because we had that and that prepared for either below or the in this part of the (inaudible)) be continued moving up and they're moving not in some options, they're moving into where the jobs are shopping.

Shana Louiselle:
Thank you for the comment is on record and I would say a similar concern from some other meetings that we've had about the affordability of Vermont's energy policies. So that's something that we certainly hear it. I don't know that we have a lot of control as the transmission operator. But we certainly are mindful of those policies and how it will impact load growth, just how we connect it to our

Public Member:
The, the last map that they called the code, it's going to push up against just not a not because the younger people are moving out, the older people saying I want it the way it works and I think that demographic is going to work against expanding solar. But like you said, what you're doing is you're saying, ok, given the wires, given what we will have to do to keep business going. This could be where that green area take in 178 and et cetera. But that's very practical. That's very practical. So that people will get a sense that we're going to sacrifice a lot of our lands, or not.

Tom Dunn:
Someone made the point yesterday that the green area, there's mu much of that land, it's green mountain natural forest. But it's a challenge I think. And like I said, it's never been more complex to understand how this transition is going to play out. And how, what are the implications for us as a transmission provider? And you may know, I don't know, but we get audited on the reliability of the planning, the operator. Every particular about everything you do gets audited a federal level. So, you know, our planning is, is, is one of the key things

Public Member:
Who is the primary auditor?

Tom Dunn:
Northeast Power Coordinating Council. So start at FERC, goes to NERC and NERC through its individual at NPCC is one of the OK, which is better. So there are places that have some really interesting challenges, places that are seeing data centers show up. They're seeing dramatic load increases and how they're going to meet those load increases is a really interesting question. I'm kind of glad we don't have that.

Shana Louiselle:
So you can unless there's any public comment that you want on record, we could close out the meeting and we'd be happy to stay and talk.

Public Member
Close out the meeting then. Ok.

Shana Louiselle:
And there's also plenty of other ways for you to provide any additional comments

Public Member:
I'm going to make a comment by the end of May.

Shana Louiselle:
Ok, great. And there's, there's lots of ways for you to do that. You have my contact information and we can, we can find a way for you to submit that. Ok, great. Hi, Hantz. Thanks so much for sticking with us and I think we're actually going to close out the meeting.

Hantz Presume:
Excellent. Have a great evening, everybody.

Zakia El Omari:
Thanks.

Tom Dunn:
Great job, a great bunch of planners.