Powering Michigan Session 2 Building a Smarter, Stronger Grid

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35m 40s

Kelsey O Peterson 0:18

Hi everyone. Thanks for joining. We're going to start the meeting in just a minute. All right. Thank you everyone for joining. My name is Kelsey and I'm a manager at DTE supporting distribution system planning. I want to start by thanking you again for joining us. This is the second session in our Powering Michigan series titled Building a Smarter, Stronger Grid.

First, a few housekeeping items. Closed captioning of today's presentation is available in multiple languages by clicking on the closed captioning symbol on the upper right hand side of your screen. And then questions or comments can be submitted anytime during today's event by using the Q&A function that is also on the upper right-hand side of your screen. We do encourage you to submit your questions as soon as you think of them, and then we'll address them after the presentation. We have several subject matter experts on hand to help answer your questions, but in the event the appropriate expert is not present for a particular topic or question, we'll respond after the presentation via e-mail. And the meeting is being recorded and transcribed. So copies of today's presentation, the recording, transcription and the responses to the questions will be posted and available at dtecleanenergy.com.

With that, let's review today's agenda. DT Electric regularly engages in two different planning processes, the Integrated Resource Planning process for power generation and the Distribution System Planning process for delivery of electric service to our customers.

It's important for us to connect with our customers and other community stakeholders so we can learn what's important to you as we develop these plans. We've had a high-level overview of our energy systems and those planning processes back on October 1st. And so today is really focused on the Distribution System Plan or DSP as you'll hear me refer to it. And then the next session on November 3rd will be focused on the Integrated Resource Plan. So for today we plan to provide an overview of DTE Electric and the distribution system, a summary of the DSP purpose and process itself. And then even a preview of some of the DSP content, including a

reminder of our four-point plan to improve reliability, some new enabling technologies and our approach to determine cost effectiveness of our investments. Again, we're going to answer questions at the end, but reminder to please go ahead and already start asking your questions as you think of them through that Q&A function.

OK, so let me introduce you to some highlights of DTE Electric. The company was founded in 1903 and generates and distributes electricity to 2.3 million customers in Southeast Michigan. DTE Energy, which is the parent company of DTE Electric, has nearly 10,000 employees with approximately half of its workforce represented by labor unions. And now we can transition to a video that shows more about how the energy system works.

Speaker 1 5:20

Electricity plays an integral role in modern living, and although the power that lights your home arrives at the flip of a switch, there's a lot of work that goes into providing you with the safe, reliable electricity you count on. The power journey from where it's made to how it's delivered to your home can be divided into three parts: Generation, transmission and distribution. Let's start with generation. Electricity is made at power plants and nuclear facilities, as well as through wind and solar sources. Once the power is made, it begins its journey to your home on cables and wires called transmission lines. These tall towers and wires are like highways for electricity and are critical in moving large amounts of electricity over hundreds of miles from generation plants to your home or business. Similar to how you would add gas to your car before a long road trip, we must prepare electricity so it can travel long distances. We do that by increasing or strengthening the electricity's voltage level. Once electricity arrives in your community, it makes a stop at a local substation. Substations are safely fenced in areas full of wires and large metal electrical equipment located in many communities.
This equipment is a lot like the electrical breakers in your home. Just as those breakers route power to different rooms in your house, substations help route electricity to different homes and businesses in your community. They also lower the electricity's voltage to levels that are safe to deliver to homes and businesses.
Now that the voltage has been safely adjusted, the electricity travels along smaller poles and wires called distribution lines. These DTE power lines bring electricity

directly to your home. Using equipment on a utility pole or in your yard, the power's voltage is lowered one more time to a safe level for homes to use so you can charge your devices and turn on the lights. This process occurs 24/7 to ensure that our customers can enjoy safe, reliable power. Learn more about how we're working to deliver safe, reliable power at empoweringmichigan.com.

Kelsey O Peterson 7:39

Great. So a few more stats for you before we get into the specifics of the DSP. Our distribution system is vast to serve our 2.3 million customers. We have more than 31,000 miles of overhead circuits and that includes about 28,500 miles of distribution circuits and then 2500 miles of sub transmission circuits. And we also have 14,500 miles of other underground cable. And then throughout our territory we have 780 substations, more than 1,000,000 poles and over 450,000 pole or pad mounted transformers.

When we are planning for a generation or distribution, our planning is guided by 5 key objectives. Safety is our top priority at DTE. Our objective is to build, operate and maintain a distribution system in a manner that ensures the safety of the public and of our workforce.

Next is reliability and resiliency. We're building the grid of the future that is both reliable and resilient with minimal equipment outages and disruptions to our customers. And affordability is another focal point. We aim to provide cost-effective service to our customers and we want accessibility for those customers, providing flexible energy options and ensuring timely two-way communication with customers and stakeholders and all our communities.

And then last but certainly not least, DTE is focused on creating a cleaner, healthier environment today and for generations to come and is committed to achieving.
a net zero carbon future.

Getting into some specifics of the DSP itself, DTE plans for how we serve our customers existing and future electric distribution needs through the Distribution System Plan and that was formerly called the Distribution Grid Plan. So you may have heard that terminology as well.

We file the DSP every three years with the Michigan Public Service Commission to provide transparency into our detailed five-year investment plan and then we also provide an additional look 10 to 15 years into the future. Engaging stakeholders like you, our customers is a key part of this process and allows interested parties and the

Commission to fully evaluate our plans for necessary and significant investments. And then going forward, the five-year investment plan in the DSP must also align with any of our future rate proposals so that there is a direct tie between the DSP and future rate cases.

Through an order in July, the Commission has set guidelines for us to follow with the DSP. There's a lot of detail in here that I won't read word for word, and again, this presentation will be available for later viewing, but I will cover this at a high level and that's the Commission is expecting us to lay out our objectives and goals, summarize our community outreach efforts, provide an overview of the current state of the distribution system, and then detail our planning efforts for the future. As can be expected, the planning efforts will really be the heart of the report, and I'd like to call out that there's a clear request here for describing our grid modernization efforts, including how we're thinking about incorporating new enabling technologies as well as a directive to provide increased benefit cost analysis. And we're going to be talking about both of those in more detail later today.

And then I'll provide one more slide of context before I pass it over to another colleague. This next iteration of the DSP will actually be the 4th that we filed since 2018. This all started nearly 10 years ago, back in 2016 when the Commission directed DTE and other utilities in Michigan to develop a five-year distribution investment and maintenance plan. We have since filed plans in 2018, 2021 and then most recently in 2023 and they really have evolved with each iteration. The current Distribution System Plan that we filed two years ago in 2023 is well underway and has a goal of reducing power outages by 30% and cutting outage duration by half by 2029. And then this next DSP will need to be filed by June 30th of next year. That comes from that same order that the Commission provided back in July.

And so with that, I'm going to hand it over to my colleague Jamie, who will provide more information on our four-point plan and then other content we're preparing in development of the DSP.

Oh, it looks like you might be on mute there, Jamie.

Jamie Kryscynski 12:19

Thank you, Kelsey. You'd think I'd know how to use technology by now, but still some days it's a struggle. Anyway, thank you very much, Kelsey. Just to introduce myself, my name is Jamie Kryscynski. I'm director of DTE's Distribution System Planning group and so one of my jobs is to work on this system plan. So there's a four-point

plan that was in the 2023 Distribution Grid Plan now DSP. And we plan to continue these four points into the next plan while adding some additional stuff. But it's important to kind of ground ourselves in these four points. And so I'm just going to take them one by one and work through them over the next four slides.
The first is transitioning to a smart grid. And so, our plan here is to fully automate the electric grid by 2029 with smart devices. And the device you see on the screen here in the picture is called a recloser and it's probably the most important device we're putting out there right now. What it does is 2 things. It helps crews pinpoint the damage. So if a tree falls on a line or if there's some other equipment issue on a line, it will create a fault on the line and this recloser will be able to see it, will be able to sense where that fault occurred and so then we can send crews directly to the outage as opposed to having to patrol the entire line looking for the damage. So, it saves a lot of time and patrol time. The next thing it allows us to do is when you have multiple reclosers on the line, it allows us to what we call "sectionalize" or isolate that outage into a much smaller area than previously. Previously the entire circuit might have been out of power when we had a fault and now, we can isolate it to a much smaller area. Then we know where the outage is, and our crews can go straight there and fix it. So, it really does a lot of good in terms of limiting the scope of the outages when we do have them. So, this is our first point of our four-point plan is a smarter grid.

So, moving on to point #2 - Updating our existing infrastructure. So, I sometimes like to use the car analogy when we're talking about the distribution grid because it's the grid is so big and so complex, but everyone kind of understands a car. So, this is basically regular change-out of components of your car. Putting new tires on it when it needs it, new belts, new hoses, changing out the filters, doing all of the basic things to just make sure your car has new components and is up and running. We do the exact same thing with the electric grid, right? And so, what we're out there doing is inspecting and upgrading our poles and cross arms and transformers and any other pole top equipment out there. We also obviously are looking at underground equipment as needed and basically looking at substation equipment, all of our different equipment is kind of covered in this group. The main focus we have here is on our pole top equipment. We have a lot of work to do here in terms of getting out, inspecting our equipment and then replacing that equipment with stronger material. So, both when we put a pole in, we put a new higher class and higher strength pole

in, we put new fiberglass cross arms. We put polymer insulators out instead of porcelain that crack, especially overtime in the Michigan freeze thaw cycle. So, all of these things can better withstand severe weather. And so already this year we've upgraded more than 700 and sorry, 575 miles of electric equipment. We're still going to do a lot more than that before the year's over. So really excited about this. We've been putting a lot of effort in this pillar and will continue to do so going forward, which we will detail in the next DSP filing.

So, we'll move on to point #3, which is rebuilding significant portions of the grid. So back to the car analogy, sometimes it just comes to the point where replacing components on your car no longer makes sense, either because there's a new feature on the car that you need to have - I always think of like a backup camera or some other safety feature - or because the car just overall is too old and just needs to be renewed. And so that's the time we buy a new car. And so that's really what this grid or this part of the plan is the Third Point is rebuilding significant portions of the grid. That's both our distribution system lines, our sub transmission lines and our substations. A lot of times what we're doing is we're taking an older lower voltage of 4.8 KV voltage or 4800 volts and we're upgrading it to a 13.2 KV system. So, we're increasing the voltage and what that really means is we have more capacity on the lines when we do that. And that extra capacity allows us to incorporate more load on the system in terms of new business, in terms of additional like electric vehicles as they're charging. And also, it provides extra capacity in case there is an event. Sometimes we have an event on one circuit and then what we do is using the reclosers we just talked about, we will put load onto another circuit automatically. And so, we can't do that unless there's enough capacity on the circuit. So that's why we sometimes need to upgrade. So, we've recently completed 7 new substation projects, some in Ann Arbor, Detroit, Port Huron. We also have more that have kicked off in 2024, Northville Township, Pontiac, Shelby Township. So, we are we are building new substations adding capacity across the grid.

Moving on to the 4th and final of the four points, which is tree trimming. So, tree trimming is incredibly important. Trees account for more than half the time our customers are without power, and it's one of the most effective ways we have to improve reliability. As such, we've been working since 2015 on what we call our enhanced tree trimming specification, where we're cutting and pulling the trees farther away from our lines than we had previously. And by doing that, we've seen

tremendous increases in reliability. Any place we've trimmed trees sees about a 40% reduction, usually a little bit over 40% reduction in the number of tree trim outages on that circuit or in that area. And by the end of this year, we've been working at this for a long time, but by the end of this year we will have trimmed our entire system and have it on a five-year cycle. So, we're really excited about that. It'll be the first time in a long time where we've had all of it done to our new specification and we're seeing the results of that reliability, those reliability gains. So again, great, great work here. This is something that we're going to have to come back every four or five, six years and trim these circuits to make sure that we're maintaining them and keeping these trees away from the from our poles and wires.

So that's kind of what we've had in the past and what we're going to continue into this next DGP, or DSP, sorry, I'm still getting used to the new acronyms DSP, but the DSP is going to have some new stuff as well. And one of the things we're really looking at the direction of the Commission, the urging of the Commission, although we've been looking at these things ourselves as well for a while, is some new technology, right, that can help us be more productive, more efficient, more effective.

And the first is kind, this first bucket on the left-hand side and “Enhanced grid Visibility”, what does that really mean? It really just means advanced metering, right? And so we're going to look at advanced metering technologies that are going to allow us to see what's going on at the individual residence in a way that we can't right now and also allow for future integration of the solar and batteries at individual's home into the grid. So that's something we're going to be looking at over the next 5 to 15 years.

“Last mile communications”. This is really just talking about how we're going to let all these devices on our system, our reclosers, our meters and other devices talk back to our system operations center back in Detroit. So as things are getting more complex on the grid, we're going to need more information coming back to us so we can better control and optimize it, make sure everything's working the way it should. So that's really what last mile communications is about. So it's basically fiber and kind of telecom solutions like cellular solutions in that bucket.

We're going to be looking at “asset inspection technology”. Really think about drones where we can do a really quick look after a storm and see what's going wrong or we can do proactive maintenance inspections with these as well.

So lastly, “asset analytics and condition monitoring” this is really the idea of putting devices like monitoring devices out on very important pieces of equipment like our substation transformers - very big transformers that transform the power - and monitoring them to make sure they're at the proper temperature that basically all the functionality on them is looking appropriate. And so this is kind of some of the things we're thinking about so we can get kind of get proactive information to hopefully not wait for assets to fail in place, but to actually replace them proactively if they're showing signs of distress.

So all of this technology is really cool. It will be phased in slowly over time. And so again, because it's a 15-year plan, we're kind of looking at these things both for what can we do now and what is going to need to happen into the future here. And all of these things again are going to help us have more visibility onto our system, be more productive with inspections and things like that and just overall improve and make our plan more effective than it even is today.

So next slide please.

So how are we going to make sure that we are choosing the right investments for our customers? So, this is something Kelsey mentioned it earlier in the presentation, something the Commission has really been asking us to dive into more and more and more over the last few years and that is kind of benefit, that is benefit cost analysis or BCA benefit cost analysis. And this is really an idea of comparing what are the benefits you get from a project versus the costs.

And I'm going to actually start from top to bottom. So, the first and kind of maybe the easiest to understand is the “monetized benefit cost analysis”. And that's where you know what the cost to your project is, but then you take as many of the benefits as you can and you turn them into dollars. So, there's a government formula to turn customer outage minutes into dollars. We know proactively if we replace something versus reactively, we know there's a cost savings there. So all of these things are quantified in dollars and then we look at the ratio of the benefit dollars versus the cost dollars, right? And make sure in the higher that ratio is, the more beneficial project is. So, we're going to do as much as we can in this benefit, this monetized benefit cost analysis.

I'm going to skip the hybrid for a second. I'll come back to that last. The next is kind of “least cost best fit” and so this is an area where you may not be able to quantify all the benefits, like there are things that we as a utility don't have an easy way to quantify, like safety, like making something safer. How do we quantify that in dollars?

We just don't have a good way. Another thing is capacity. How do you quantify adding extra capacity to the grid? It's hugely beneficial, but there's not a clear way to put a dollar value on it. So things where it's very difficult to quantify the actual benefits in a dollar form, we're going to look at a methodology for cost-benefit methodology called “least cost and best fit” and so we'll look at a number of different alternatives and we will select the alternative with the least cost and the best fit, meaning it best solves the problems. So, I got a lot of alternative analysis in this particular one and really again it'll be good for projects like what we call system loading relief or areas where the substation is overloaded and we have to do something that's where we might do a system loading relief project. We might be adding another substation in the area, could be adding another transformer to the substation. All of those things we will be looking at “least cost and best fit”.

And then the bottom one is “descriptive justification”. So, there's for small projects that aren't really worth, it's not really worth the financial resources to do a full BCA on or projects that are already well underway, so we've already basically spent 50. 60, 70% of the investment and built a large part of it, we will likely just use a descriptive justification. There's probably some other things like what we call operations technology investments, where a descriptive justification may be more appropriate than a monetized BCA. So we'll use those.

So let's come back to hybrid. I skipped over that. This is really just an idea of the monetized BCA at the top. We might be able to monetize some of the benefits, but not all of them. And so, the hybrid is really just an idea of doing as much of the monetized BCA as possible and then also pairing it with another justification like a descriptive justification or at “least cost and best fit” methodology. So, we are using kind of two different methods together to justify those projects.

So, this is our initial thinking on how we're doing this. We are open to feedback on this. So, this is a big thing for us and we're it's new and we're kind of exploring we've done some BCAs mostly in the monetized benefit cost analysis with some of our programs like pole top maintenance and modernization, PTMM and automation have really been focused on that top bar. But as we're kind of expanding this at the direction of the Commission, we're really going to look for input and feedback from our customers and our stakeholders as to what makes the most sense. So, this is how we're starting to think about it. I don't want to just make sure to everyone who's listening in that this is not written in stone and we are definitely open to feedback as we go forward on this.

Next slide.
So the planning process is underway. We're already working and thinking about these things as hopefully you can start to see. We're going to kind of look at all our grid needs, the new technology, customer feedback and we're going to put that all into our planning process. We'll obviously look at scenario modeling, different look at different scenarios, benefit cost analysis I just talked about and kind of the overall strategy development and we're going to do that and so we can deliver on our five-year DSP and deliver on the goals: Safe, resilient and reliable, affordable, accessible and clean.
So with that, I think it is time for questions. If we can flip there, I've I have a couple kind of thought starter, three thought starter questions here that I'll just read. Which is, What problems do you think we should be working to solve with the DSP? What goals and possible solutions should we be considering? And how should DTE balance affordability with reliability?
So with that, I will turn this back over to Kelsey, who I think is going to moderate all the questions we get, which hopefully are a lot.

Kelsey O Peterson 30:39
Thank you, Jamie. I am checking the Q&A function here and I don't see any yet. So, I'll give everyone a couple minutes to gather their thoughts and maybe find the right button and press ask. So please go ahead and do that. Maybe in the meantime, Jamie, I'll throw a question your way. You talked a lot about updating the existing infrastructure as part of the four-point plan and then you at the very end you touched on you know the pole top maintenance that's a big part of that and why do you think that has such a big impact for our plan?

Jamie Kryscynski 31:00
Uh oh. Yeah, that's a that's a great question, Kelsey. Let me start by saying the biggest impact that the biggest and first thing we need to do is trim the trees and pull the trees away from the wires, the trees kind of banging into the wires all the time, pushing the wires together, falling on the wires and breaking them, that's our number one cause of customer outage minutes. So, holding those trees back was #1. The good news I've I, you know, as I talked about a few slides ago, we're largely done there. Like it doesn't mean that there's not more to go and we can't be better and make that program better, we're working on those things, but we've gone through

that first cycle where we got everything on that five-year cycle. And so that's really exciting. And to take the next step, we have to really start focusing on our old and outdated equipment. And the PTMM program is the program that gives us the ability to kind of get through the system the fastest at a reasonable and affordable cost for our customers. And so that's us walking the lines, visually looking up, and inspecting every pole top to see if it's still in good condition and the equipment up there is in good condition. It means excavating around the base of the pole and we actually drill into the pole and do a strength test on it so we can identify if poles are weak and are likely to fail in heavy weather. And so that's really what this program is. And so, we're going to be able over the next 5 to 10 years to get, just like we did with three trim, to get down our entire system and inspect it and change out and replace all of this old equipment that's been sitting out in the weather for, you know, frankly for decades now in some situations. So, it's really going to allow us to make our grid safer most importantly and more reliable you know as also important, but second, safety is always number one for us, but reliability is a close number.
And so that's why I'm really excited about that that program. It won't solve 100% of problems, but it's it solves a lot of reliability problems and it's one of those things where like we to rebuild our entire grid or large portions of portions of our grid, but that's really time consuming and expensive and we have to take that slowly at a reasonable pace in the and do it in the areas where it really dictates by load increases and some other things. So that's why I'm pretty excited about the PTMM program.

Kelsey O Peterson 34:03

That's great. Thank you for that added info.
All right, I'll give everyone another minute or two.
And maybe while people are still thinking through, if they have a question, we can just go to the next slide, and I can share a couple more things with people before they might drop.
First, thank you to everyone for attending today, today or even watching the recording back later.
We really want to hear from you, so please e-mail us your comments and questions to dte.dsp@dteenergy.com. And then we do have a couple of upcoming opportunities to connect, so please join us.
The 1st is the third Powering Michigan session on November 3rd at 5:30 PM.
And that's where we'll be diving into the Integrated Resource Planning process in

more detail so you can find more information about that by visiting dtecleanenergy.com. And then the second is a community open house at the Canton Public Library on November 17th from 4:00 to 6:00 PM.
And I don't see any other questions coming through here, but you know where to reach out to us if anything should come up after this session with either comments or questions. So, thanks again everyone for joining and hope you have a good rest of your day.

Jamie Kryscynski 35:34
Thank you all.

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