How Energy Transmission Can Save the Grid – and Electrify the U.S. Economy
Ken Irvin and Larry Gasteiger
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Ken Irvin:
The U.S. electric grid needs critical enhancements as extreme weather continues to impact infrastructure and our economy. The Biden administration recently announced $3.5 billion dollars in grants to fund clean energy projects that combat climate change and promote renewable energy. But design issues, mounting costs, and pushback from politicians threaten to impede progress and leave companies and consumers in the dark.

Larry Gasteiger:
We've got aging infrastructure that's going to need to be dealt with. A lot of the transmission that we use today was built back in the 1950s or 1960s. There's even some infrastructure out there, frankly, that was built in the 1920s. It's going to be a long-term process in developing this infrastructure, and it's going to be taking an all-hands-on-deck approach from the industry in order to make it happen.

Ken Irvin:
That's Larry Gasteiger, executive director of WIRES, a nonprofit trade association here in Washington, D.C. that promotes investment in the North American electric transmission system. In today's podcast, we'll discuss what businesses need to know about modernizing the electric transmission grid, and the role it plays in our economy.

From the international law firm Sidley Austin, this is Accelerating Energy. We drill down on critical and late-breaking topics in energy transition and policy. We help businesses look over the horizon to see what lies ahead. I'm your host, Ken Irvin.

Hello, and welcome to the first episode of Sidley's Accelerating Energy podcast, our inaugural episode number one. Larry, it's great to have you

here with us. Thank you very much for doing this podcast with us. These are very exciting times for energy.

Larry Gasteiger:
I absolutely would agree, Ken, and let me just start off by thanking you for having me here today. I'm really excited to talk about some of the challenges and some of the opportunities that are facing the nation's grid in the years ahead.

Ken Irvin:
Before we dive into the issues, let's talk a little bit more about yourself and your organization. First of all, Larry, you have a very impressive resume — time at FERC, rising to chief of staff, private industry, and now you're head of WIRES.

You and your team at WIRES help advance investment in high-voltage transmission, and I know you work closely with your members to promote the importance of a resilient grid to our policy-makers, industry, and to consumers. Larry, tell us more. How long has WIRES been at these issues?

Larry Gasteiger:
Well, Ken, WIRES has been focusing on the issues around the need for and the benefits of transmission infrastructure, and the challenges to getting that infrastructure built, for just about 20 years now. And looking ahead, we're going to have plenty to do for about as far as the eye can see on these issues.

They're not going to be resolved any time soon, and just a little bit more about WIRES and what we do, we're very heavily focused on both educating around the issues that deal with transmission and doing advocacy on some specific issues around transmission. So, those are the two principal areas that our group tends to focus on.

Ken Irvin:
I know you've been a big help to me with the education and the information-sharing you provide. When I need to learn something more about transmission, I often look to you, and to what WIRES has put out there. I want to turn, to start us off, to the Biden administration and its efforts. Recently, the White House and the Biden administration announced

a $3.5 billion dollar grant for projects to protect the grid from extreme weather, and another $1.3 billion to shore up power lines in the northeast.

This sounds terrific, but we are headed into what's supposed to be a pretty substantial, El Nino winter, that could mean unwelcome weather to parts of the country that aren't so comfortable with snow and cold. How prepared do you think our country is? How do you think our grid will be able to manage another perhaps tough winter?

Larry Gasteiger:
Frankly, I think there's work to be done. There are a lot of issues that are facing the grid right now, and going back to your opening comment on this point about the Biden administration, I think that some of the steps they've been taking are going to be helpful, and will be beneficial in addressing some of those challenges that lie ahead.

And while figures like $3 billion dollars in investment may sound like a lot, if you look at the total projected need that our country is facing on transmission investment, over the long haul, say the next two to three decades, we're talking about, frankly, hundreds of billions of dollars, possibly, I'm going to change that B to a T, possibly even trillions of dollars over that time period.

And that number is almost breathtaking, when you think about it. So, while $3 billion dollars of investment here, other programs that the administration has undertaken will be helpful, I'm reluctant to use the phrase "drop in the bucket," but it's really a small amount in the overall figure of investment we'll need. But nonetheless, I think it's helpful that the administration has been so focused on transmission issues over the last couple of years.

And frankly, that's been building for the last several years, the attention that we've been getting on transmission, and I think that's all great. But it's amazing to me that we're now in a period where we have a Secretary of Energy who talks about transmission, it seems like, almost every day, and puts a real focus on that issue, which I don't really recall happening anywhere near the extent that we're seeing today, at least not in past years.

And I think even the president has mentioned transmission infrastructure at least once, in either a State of the Union address or a major speech. So,

that type of focus is really helpful for getting the nation to look at these issues, but when you talk about, you talked about the challenges that we're facing that lie ahead. There are so many areas I could focus on right now. We've got an aging infrastructure that's going to need to be dealt with.

A lot of the transmission that we use today was built back in the 1950s or 1960s, Ken, that probably predates even you and me to a certain extent, or at least comes close to it. There's even some infrastructure out there, frankly, that was built in the 1920s, that still needs to be dealt with. So, we've gotten our money's worth out of that, but that infrastructure's going to need to be replaced.

We've got challenges just in a broad level, in terms of meeting goals associated with clean energy mandates and renewable mandates. We've got an economy that's becoming increasingly electrified, that's going to require more demand for electricity and deliverability of it through transmission. And then, the other piece, which ties into the age of the grid and some of the reliability issues you talked about, with extreme weather events coming up, is, I'll just call it resilience of the grid, and the need to bolster that as well.

So, all of those areas are areas that we're going to need to be focusing on within the next two to three decades.

Ken Irvin:
I appreciate the age of some of that infrastructure. I can agree that the '20s are well before me. Unfortunately, the '60s, you know, I might have enjoyed four or so years of the '60s.

Larry Gasteiger:
Yeah, I'm right there with you, Ken.

Ken Irvin:
Or maybe six. But you hit on a number of points there, and I want to kind of unpack and dive through that, because these issues are potentially terrific for everybody if we invest in it, that's jobs, that's enhancement, resiliency. But it's also trouble if we don't. As you're thinking about how disruptions, extreme weather, or wildfires, or otherwise, can impact, what are the key issues, the key concerns that you would talk to your members about, you

would want business to understand about transmission projects, and the need to develop more?

Larry Gasteiger:
Yeah, well, when you talk about the issues around disruptions from some of the extreme weather events, like you just mentioned, it really varies on a regional basis as to what those are. Out west, in California, you'd be talking about issues around wildfires and how to address those. On the eastern seaboard, you're probably looking at things more like hurricanes, or, as you move further north, and frankly, sometimes not even further north, you're dealing with extreme cold weather events that wind up impacting the grid.

Those need to be addressed as well. So, it really varies from region to region, as to how you go about addressing those different issues. I want to circle back to one thing that you mentioned, though. You were talking about the economic benefits associated with transmission, and I'm going to put a little plug in here for a report that WIRES did a couple years ago, that focused on the benefits that can result from the investment in transmission.

And I thought some of the numbers that came out of that report, which is available on the WIRES web site, by the way, were pretty intriguing, because that report reflected that if you looked at just constructing the transmission projects that were already planned to be developed, we're not talking about hypothetical stuff so much as stuff that's already through the planning process, at that time, this was a year or two ago now, you were looking at $83 billion in planned transmission projects.

And what are some of the economic benefits that flow from that? Our study showed that completion of those projects would add $42 billion to GDP, it would create 442,000 jobs, and it would boost local spending directly by $39 billion dollars. So, those are some pretty impressive figures that come out of the investment in transmission. And back then, we were looking at it as the country was just emerging from COVID, to see if that moved forward and how that would impact economic development.

But those types of figures are still relevant today. So, I think those were pretty impressive, in terms of what the benefits are that are associated with transmission development. So, I think from a business standpoint, that's an important set of figures for everybody to be aware of, not just the companies that are focused on investment in transmission.

Ken Irvin:
So, that sounds like a direct, almost immediate return on the investment. You mentioned resiliency, which maybe is something that we get over the long haul, or a longer return. Maybe you could say more about how building out the grid enhances resiliency.

Larry Gasteiger:
Yeah, absolutely. I think resiliency, which covers a lot of areas, by the way, it's not just looking at aging infrastructure, it's looking at generally speaking reliability, also how we deal with physical security around the grid, cybersecurity issues around the grid, things of that nature. But I think for people who are at the retail end of the receiving of electric power, you and me and other folks who use it at their homes, businesses, like that, it really comes down to the question of, when they turn the light switch on, do the lights come on or not, right?

And at the end of the day, I think we're seeing, within our economy, the expectation that that happens is increasing, and the tolerance for outages is decreasing at the same time. People, I believe, are increasingly of a frame of mind that when they turn that light switch on, they expect that power to be there, because we've become so dependent on electricity in our daily lives.

I think we always have been, but I think increasingly, we're more of the case…when you turn on your laptop, for either being at work or working from home, when you need to have your cell phone charged, those are the types of things that affect people all the time, throughout the course of the day, and the tolerance for not having that electricity there when you need it is going down.

Ken Irvin:
I would say there are well more issues about the need for electricity. Food preparation, food storage, food delivery depends on electricity, medicine, everything about healthcare depends on electricity, right? And I'm aware of studies and reports that show if you have extended periods of blackout, of loss of electricity, it's fatal to people.

Larry Gasteiger:
And we've seen that already just in the last couple of years, with some extreme weather events that knocked power out for extended periods of

time, whether you're talking several days or a week or two. Unfortunately, that sometimes does become a matter of life or death for some people. But from a customer standpoint and perspective, it also depends on the nature of the customer, because the other issue we're seeing increasingly with respect to the importance of transmission is data centers that are being developed in different parts of the country.

These are huge power customers, and customers with basically no tolerance for disruption to the electricity, to their systems. So, that's been a bigger issue on the rise as well, in terms of depending on the reliability and resilience of our electricity system for the services they're going to require.

Ken Irvin:
I don't want to get too dark and gloomy about this, but the financial system depends on electricity. Those data centers are payment centers, they're social security? Critically important.

Larry Gasteiger:
All of that, in addition to the traditional areas that we've been concerned about, like hospitals, as you mentioned earlier, or schools, and other local businesses. But to me, I'm just trying to emphasize the fact that the range of customer classes and the importance of the reliability of the system has expanded over the last, I'd say, five to ten years, and I don't see that changing any time in the near future, either, in terms of lessening.

Ken Irvin:
Another issue I want to ask about, you recognize the increased dependence on electricity, electrification of our economy, cars, heating, become more and more electrified. How do we mesh that with, say, national security? Does transmission have a role to play there in making sure that things are secure?

Larry Gasteiger:
Yeah, absolutely. You know, there are different sets of issues associated with those different topics. On the electrification of the economy and the increased use of electric vehicles, how you go about planning the system, and where you locate transmission, and where it will be needed is resulting in all kinds of new challenges for how we plan our transmission system and our grid.

So, that's one set of issues. You know, on the national security front, we've been seeing increasing issues, particularly around physical security for, I'd say a good decade or so now, with individual incidents that have cropped up throughout the country. Cybersecurity has been an issue for quite a while. If you talk to any of the RTOs or ISOs who are responsible for operating the system, they'll tell you they're having thousands of attacks on a daily basis on their systems from a cybersecurity standpoint.

And that's true with individual utilities as well. So, needing to keep their cybersecurity systems up has been critical as well, and look abroad, at what's happened over the last couple of years internationally. You can see how critical continued, stable electricity access is, and how the electricity system is being targeted. I mean, if you look at what happens in Ukraine, for instance.

So, there are lessons to be learned, I think, for us, as to how we may need to strengthen our system because of what's happening, not just domestically, but internationally as well.

Ken Irvin:
Strengthening our system, I think, is one of the ways to do that inter-regional transfer? I know WIRES recently hosted a discussion, you had one of the FERC commissioners talk about inter-regional power sharing, and how that is a top priority for FERC. Explain to us what it means to say inter-regional power sharing, or inter-regional transfer capability, and why that's so important.

Larry Gasteiger:
Yeah, so, historically, our electricity system was much more Balkanized, and that's just a function of how the electric grid developed back, say, over a hundred years ago, and as it's grown, we have seen the system become more interconnected over time. We're now at the point, though, where a lot of that stuff is looked at from a regional perspective, which I think is good, and I think that provides a lot of the ability to offset outages in some areas, or provide greater access to different generation resources when they are needed.

But now, we're looking at inter-regional transmission for a number of reasons. One is because of reliability and resilience issues, but there's also a driver behind it related to the changing resource mix that we're seeing

within our energy system. And by the changing resource mix, I'm referring to a gradual shift, some would say maybe more speedy than gradual, away from traditional fuel sources, such as coal and natural gas and oil, to cleaner resources like solar and wind.

And that shift in the resource mix is placing greater demands on our transmission system, and greater needs from our transmission system than we have right now, because those resources, the wind and solar, don't have necessarily the locational flexibility that we have with coal or natural gas plants, where you have the ability to locate those plants maybe close to load.

That's not always going to be the case with where the best wind and solar resources are. So, they tend to be out in the Midwest and the Upper Plains states, but areas like that. And in order to access those, you're going to need longer-distance transmission lines that are going to cross multiple states in order to get it from where the power source is to where the load centers are.

And in all of those situations, we're looking at increasing the ability to access them, but also, we're also looking at alternative paths, so that when one may not be available, we have alternatives to access some other thing. So, that gets into the creating greater interconnectedness within our system, and where we're talking about trying to increase the inter-regional transfer capability. That's where that type of concept comes into play.

Ken Irvin:
In data networks, we have a mesh, and they're self-healing, right? Like, you can find alternative paths to direct the bytes of data from source to sync. So, it sounds like what you're talking about with transmission is emulating that, creating a mesh network so that no single disruption in a line stops the electricity from getting from its source to its use, its end user.

Larry Gasteiger:
I think that's a good way to put it. We heard about that at the WIRES meeting last week, where we had the FERC Commissioner Clements speak, and you mentioned earlier. Her focus was largely on the currently pending Regional Transmission Planning and Cost Allocation Rule, which she's pretty clear she's anxious to see some movement on sooner rather than later.

But that rule doesn't really tackle what you were just talking about, which is this focus on inter-regional transmission planning and development, which is a harder piece, frankly, and that's not to say that the regional side is easy, by any stretch of the imagination. I think the idea was to focus on trying to improve planning at the regional transmission level as a stepping stone to really looking at how can we make improvements on inter-regional, which is a much harder nut to crack when you're looking at transmission development.

Ken Irvin:
You're listening to Sidley Austin's Accelerating Energy podcast. We're speaking with Larry Gasteiger, executive director of WIRES, about energy transmission investment and the inherent challenges and opportunities it presents for companies.

We've been talking about from the middle of the country out, transmission that'll take the ability to generate renewable energy from the wide open plains area and Tornado Alley to the load centers on the coast.

Let me turn your perspective around to offshore wind. Now, the Biden administration especially has made a big bet on offshore wind, just recently approved the largest offshore wind project ever in the country. Let's hear it for Virginia. How ambitious is this, from a transmission development point of view? What do you see to be the challenges and the opportunities as we look to develop gigawatts of offshore wind generation on both coasts?

Larry Gasteiger:
I like, you used the word ambitious. It feels like ambition and transmission go hand in hand these days, and there's nowhere, perhaps, more visible in terms of the ambition and some of the transmission challenges than when you talk about offshore wind. Yeah, it's a different perspective, and I think there are some different challenges associated with development of that infrastructure compared to what we're seeing traditional, I'll just call it traditional transmission infrastructure that's throughout most of the country.

And you're right, now we're talking about trying to bring power that's generated out in the ocean into the shoreline, and then from the shoreline further in to the rest of the country, where it may be needed. There are some real challenges when it comes to that. It's expensive. How you go

about trying to set up the transmission system offshore, whether that's individual lines coming inshore, or collected somewhere offshore, and then coming in onshore, are the types of debates that are going on right now.

And then, once you hit the shoreline, most of the infrastructure we have in the country, as you mentioned, is more from inland and radiates outward towards the coastline. Now you're talking about, as you said, flipping it, having it come in towards the coastline, and then radiate from the coastline out to the more inland portions of the country, and our infrastructure just simply isn't set up that way.

So, there's going to need to be a lot of local transmission developed at the shoreline that can help transmit and bring that energy inward. And frankly, when you look at development along shoreline areas, those tend to be really popular and highly priced real estate locations. It raises a lot of issues around permitting and siting, and a phrase we hear frequently on energy infrastructure, NIMBYism, you know, not in my backyard objections, to the development of that infrastructure.

A lot of it would be required to be undergrounded. That's really expensive, and frankly, hard to do with sand. There's one existing offshore wind developed project on Block Island, Rhode Island, that already has had to have a couple of times the shoreline redone over undergrounded lines, because of erosion around the covering up of those lines. So, there are a whole host of challenges when you're talking about offshore wind that are unique to that type of resource development.

Ken Irvin:
Obviously, a lot of obstacles, and some of them are pretty significant challenges. You sound, however, like an optimist. Like, you do have faith that it will come together, although over a number of years. How do you rate or how do you assess the Biden administration's progress in meeting our clean energy goals and the role that transmission plays? Are they doing what you want? Could they do more, or…?

Larry Gasteiger:
I guess I would put it as it still feels like we're in the early stages of all of that. So, again, I would turn back to, their focus is impressive, on trying to move forward on these issues, and yeah, I certainly don't want to be viewed as a pessimist. I prefer realist, in terms of what we're dealing with,

and I do think, I've used the phrase also that we have to sync up the ideal world with the real world at times.

So, I think we've got to be cognizant and aware of all of the challenges involved, but still move forward on trying to meet some of these goals. So, I think we're seeing progress. It's probably a little bit more incremental than some folks would prefer, and I do think that the timelines are going to be difficult on some of these. Where you have either mandates or goals that are targeting net-zero in 2035, gosh, there are some states that have objectives in 2030, and we're right on the brink of heading into 2024.

So, that's only six or seven years ahead for some of those earlier-stage goals. That's a really tight timeline when you talk about things that are going to be depending on the development of transmission infrastructure in order to meet those goals, particularly when, if you use as just a standardized benchmark of it takes about ten years for the development of transmission infrastructure, well, the math doesn't match up, some of those, right?

Ken Irvin:
Right.

Larry Gasteiger:
So, I think we're going to need to probably make some adjustments to our expectations, but that doesn't mean that you throw them out, right? And it may just take a little bit more time than people have in mind.

Ken Irvin:
Indeed, I think you've called it a wartime effort, right? You said we need a wartime effort to address the need for connecting transmission, and it was an emphatic call to action. It sounds to me like what you're saying is, we really need to work on shortening up that ten-year timeline, and advancing so we can have multiple projects going at the same time.

Larry Gasteiger:
Well, when I use that phrase, I'm looking at a number of things. One is some of these really ambitious mandates and goals related to clean energy and renewables, that's one factor. At the same time, we're looking at, as I said before, an increasing electrification within our economy that's creating greater demand. Just from a demand perspective generally, we're coming

off a pretty extended period where load growth was flat, essentially, for, I don't know, the last 10, 15 years, maybe.

We're now at a point where we're starting to see that tick up, where load growth is moving forward on a two to three percent annual rate with an expectation that that's going to continue over the course of the next several years, minimum. We're going to need to have expansion to accommodate that type of anticipated load growth as well, plus all those other resilience issues we talked about earlier, Ken.

You fold all of that into the mix, and when I look at that, I basically say, and I don't really think it's hyperbole or exaggeration to say, we are going to need a really focused effort on trying to develop infrastructure in order to meet all of those needs. So, whether you want to call it a wartime effort, I've also used the phrase a moonshot effort, that's the magnitude of the focus and effort that's going to be needed, I think, over the course of the next two to three decades.

I think it can be done, but it's going to require a lot of effort. It's going to require everybody rowing in the same direction, and at full speed, in order to make it happen.

Ken Irvin:
I have heard friends put it like a moonshot, you just had to go to the moon, walk around and come back. Transmission development, we're going to have to leave it there, and it's going to have to survive for multiple decades. So, maybe it's more than a moonshot. Larry, as we conclude here, you look out over the horizon. You've talked about a lot of what we can expect, but if you want to give last, parting words of wisdom, what do you see coming down the pike?

What do you think are the key issues that business and colleagues want to know about over the horizon for transmission?

Larry Gasteiger:
So, I'm going to step back from that a little bit, and say, what do I think we need to do, like, right now in order to start moving forward, okay? And one of the biggest concerns I have right now is, there is a major disconnect between what I've been talking about for a while now, which is the tremendous need for additional development of infrastructure, and what's

happening at the regulatory level to promote that development of infrastructure, to encourage it, and to try to incentivize or get the investment made in order to make it happen. And those two things, I see, to a large extent, intention, right now. On the rhetoric side, huge development, two to three times growth in the grid over the next two to three decades.

On the investment side, though, increasingly, I'm seeing actions being taken by regulators that are making transmission investment less attractive financially, either because of uncertainty around policies related to the rate of return you can earn on that investment, or downward pressure on the rates of return that you can earn on that investment, or actions that would actually make it riskier for you to make that investment, such as how you treat it with respect to the potential for recovering your costs in the event that a project is abandoned for reasons beyond your control, or the use of formula rates for recovering your transmission investment.

Those are some actually very troubling actions and signals that are coming out of regulators. If you're looking at really trying to push dramatic investment in transmission, I think that's got to be fixed immediately, right away. You've got to sync up the actions from a regulatory standpoint with the messaging that's going on right now. So, that's an immediate and pressing need that needs to be taken care of for right now.

Longer-term, I think there are issues around trying to streamline the permitting and siting process. I know that there's been a lot of effort and talk, both from a legislative and from a regulatory standpoint around trying to deal with those issues. They're more intractable because of some of the political issues, state and federal jurisdictional issues around it, but I do think that anything that can be done on a long-term basis to try to streamline those processes would be extraordinarily helpful.

And then, I think it's going to be a long-term process in developing this infrastructure, and it's going to be taking an all-hands-on-deck approach from the industry in order to make it happen. I think we can't get bogged down in debates between, should we be focusing only on distributed resources as a solution to make it, should we be focusing only on transmission, should we be looking at advanced technologies, because maybe we can just squeeze more out of our system in order to get there?

It's not going to be any one of those things. It is going to be an all-of-the-above approach. So, I think there are ample opportunities for anyone who's focusing on different aspects of how we get there, in terms of meeting the country's needs over the two to three decades, but it's going to take an all-of-the-above approach in order to make it happen.

Ken Irvin:
Larry, that's terrific. I want to thank you, and say it's been a pleasure talking with you and hearing your perspective about how transmission, transmission development, interconnection are so vital to the success of our energy industry and our economy writ large. Thank you very much for joining us, especially for this inaugural episode of our podcast.

Since you're our first guest, maybe you'll come back after a little bit, we can check in and see how progress is coming along. Larry, you've been terrific, and it's great talking with you.

Larry Gasteiger:
Well, thank you, Ken. I appreciate the opportunity to be here, and I'd be happy to come back and talk about this some more.

Ken Irvin:
You've been listening to Accelerating Energy. I'm Ken Irvin. Our executive producer is John Metaxas. Our managing editor is Karen Tucker. Subscribe on Apple Podcasts or wherever you get your podcasts.