

Sarah Mills v2 mixdown

Sun, Feb 26, 2023 6:08PM 1:05:58

SUMMARY KEYWORDS

communities, energy, rural communities, wind farm, michigan, people, solar, state, solar farms, renewables, wind, places, project, big, development, land, building, zoning, tax credits, renewable energy

SPEAKERS

Sarah Mills, Michael LaBelle



Michael LaBelle 00:00

and harvesting the wind planting renewable energy in the Midwest interview with Sarah Mills, Episode 77. Welcome to the My energy 2050 Podcast, where we speak to the people building a clean energy system by 2050. I'm your host Michael LaBelle. This week, we speak with Sarah Mills, a Senior Project Manager at the gramm Sustainability Institute and lecturer at the school for Environment and Sustainability at the University of Michigan. Uniquely, for this podcast, we are learning about the Midwest of the United States and my home state of Michigan. For me, this is one of the most eye opening interviews I've done in a very long time. And I realized that sounds odd. I mean, our focus here on the podcast is usually Europe. But even in my own home state in the backyard there, I was really surprised by a lot of the research Sarah has done in what she talks about in this interview, and who supports and who doesn't support the development of renewable energy projects at the community level. This rural community level is the focus of our discussion this week. And it's quite wide ranging. But I found it fascinating and surprising. And I think you will, too. Because as you'll hear throughout our conversation, the acceptance or rejection, for example, wind farms, we also talk about solar, is that it depends on community members perspectives on the use of the land, we really get into the zoning and ordinances and the conflict that happens around or who the conflict happens around, for example, farmers supporting win, while those that may have a second home and a nearby lake. So they live full time in the city, but they have a vacation home, which is quite common in Michigan, they may actually oppose the projects. Sarah explains that the rollout of renewable projects that impact the landscape is only recent, well, somewhat recent, we could say at least here. But it's stemming from our historical reliance on coal fired power plants, which took up less space. So Sarah describes how change in land use is a real challenge for communities, zoning boards, who lack the expertise and experience to balance the polarized views from the community. So think about this, a lot of communities actually haven't even dealt really that much with renewable energy projects, the big one being solar, or the big one being wind, sorry. And then the smaller one being solar now. But there's also going to be more and more things being rolled out across the United States. So this is why this discussion about the rule of versus where you would say even urban areas and where renewable energy projects, I think it's a really important conversation that we have this week. For example, in this discussion, we look at how policies in Washington will be impacting communities across the US,

we kind of have a view of this. And from Sara's research that she's done in the past, I think these topics are going to become even more prevalent as the discussion is happening. Specifically, what I mean is we discussed the expansion of tax credits to foster more renewable energy projects on a huge scale. This is the impact of the Inflation Reduction Act, and also the bipartisan infrastructure law that's in the United States. Really enjoyed my discussion with Sarah. And as you hear the remain important obstacles for renewable energy that communities must deal with, is it fair to standardize zoning regulation? So for example, at the state level at the national level? Or is it better to have different requirements every six miles or so when the jurisdiction changes? So these are real, everyday problems that developers that are interested in having and rolling out, say, wind farms or solar farms, what they have to confront every day is these, we could say arbitrary lines, but lines of government and the people and how they organize themselves. So it's not just the natural features of the land, and where's best to develop a renewable energy project? But also, what do the local governments have to say what a local residents have to say? And how do they weigh this? So we have a brief discussion about energy justice, that kind of brings it all out towards the end there of local versus state or national standards. So is it really fair to exclude the local in deciding to build these energy projects? Because the subtext of our conversation really is about this these ambitious targets the United States has and and I would say throughout the world, right, we have these big targets, we have to use more renewable energy, but what about the local level where it actually these projects have to be built? So as you'll hear, this is not a theoretical argument, but one that is happening more and more and we will be continuing to happen more and more. The intent of the my energy 2050 podcast is to spread the knowledge about how the energy system and I would even say the debates can assist our transition towards it. greener future. And now for this week's episode. I'm here today with Sarah Mills, Senior Project Manager at the Gramm Sustainability Institute. She's also a lecturer at School for Environment and Sustainability at the University of Michigan. So Sarah, welcome to the My energy 2050 podcast.

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Sarah Mills 05:19

Thank you. It's my pleasure to be here.

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Michael LaBelle 05:21

It's great. And I know we've had a great discussion so far. So I'm just happy that we can get it kind of down now. And on the record, basically, my first question to you is, how did you get interested in renewable energy? And that's a very broad question. It can be just energy, but maybe your background and why it was so interesting for you.

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Sarah Mills 05:43

Um, it is not a linear path at all. I am a recovering engineer. So my first degrees were in engineering, and I did my master's in engineering for sustainable development. And I looked at whether renewable energy could be used to desalinate water. So so you would think that it comes from that, but it doesn't actually know. I then followed my heart and my husband kind of all over the place that happens. And ended up in South Sudan, between the vote for independence and becoming an independent nation. I was asked to do the towns, this, the town that we were living in asked to be their town surveyor. Okay. During moving to a system

of private land ownership, I realized that I didn't know about planning in Africa or rural environments. So realize that most of that research like the there hadn't been much written at least in planning in rural environments in in the US for some time. So when we came back to the US to get my PhD, I was going to study farmland preservation. Okay, which is weird, right? There's no energy in that. Yeah, I was driving up the middle of Michigan to my in laws cottage and went through a wind farm that I had never known existed, and googled it and realized that it was being promoted as a farmland preservation tool. And so that became my dissertation, understanding whether renewable energy or wind energy specifically was a farmland preservation tool. And then since then, a whole bunch of my work has been on this the rural side of renewable energy development. So that is my sort, which is it all makes sense. Now, in retrospect, right. And engineer turn social science seems like it's very linear. And it's not at all. No, but I think I think it's a common story for people in energy, because energy collects people with all different types of backgrounds. And I would say, eclectic backgrounds. Yeah, it's it's this topic of energy and sustainability, and all these, your zoning, planning, all these engineering, it's technology. So it's all these different types of this is why I find the topic so interesting, I think because it's not just, I don't know, maybe one discipline, you really have to be thinking in a linear manner, and involved with lots of different types of people. Yeah, absolutely. But I'll tell you like, okay, most people when they ask me, I'll say, I'm expert in farmland preservation, like to know energy, like, I don't know, like, yeah, sorry, what that wind farm was that make? Gratiot County rich VanderVeen. Rich Vander vines project rich, yes. Small world.

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Michael LaBelle 08:32

Okay, so because I interviewed him for my PhD when I was back in, I don't know, 2000, early 2000s. I did my PhD was on deregulation in Michigan and Wisconsin, looking at the two different states. So that was it. So I came into contact with him then, at

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Sarah Mills 08:52

that point, he had probably developed the two wind turbines that are up by the Mackinac Bridge. Yes. But not the entire wind farm because that didn't come in till 2008 10. Yes,

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Michael LaBelle 09:05

yeah. So before then, so yeah, what a small world that's really small world. Okay. Okay. So that was one of our side tracks. And then, but now you're at the gram Institute, or sorry, gram Sustainability Institute. Right. And and what goes on here, we're sitting here and so you have actually windmills and you're all it's a Lego windmill.

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Sarah Mills 09:27

It's a Lego windmill. I can turn it on. Yeah. Wow. Okay. You don't have to. Amazing case in case Europeans care. Oh, okay.

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Michael LaBelle 09:35

Excellent. Oh, so, yeah,

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Sarah Mills 09:38

so So the green Sustainability Institute sits within the Provost Office at the university. So it's a cross campus unit, trying to connect the outside world users have knowledge, whether it's companies or governments or communities with the research that goes on on campus and we see ourselves as kind of this bridge, Oregon. As a nation, so I lead our energy programming here, we also have programs on water. Those are kind of our two big focal areas. And then we have some education programs that are co curricular. So we don't offer any degrees. But we try to connect students that are in different departments on campus to each other to work together. And

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Michael LaBelle 10:22

okay. And I'll ask the question, how does that how well, or how does that work by the students being involved? Because as we just mentioned, including your background, right, we for the energy sector as a whole, it requires a lot of different backgrounds, a lot of different disciplines. So for the students themselves, they're in one department, but maybe you need to cooperate with another department. How does that without getting into politics? How, how does that work? Or their internships? Or how do you foster this collaboration? Yeah, so

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Sarah Mills 10:53

for particularly for the student programming, they meet regularly kind of as a cohort, then they work together on a project that requires them meeting outside of class time. Actually, while I was doing my PhD, I was in one of the student cohorts, and I would say it was the, one of the most formative experiences, because it forces those students to figure out how what they're doing, how to use their language to a different kind of scientists. Yes, yes. Yes. Um, you know, we do I don't lead the programs. So I'll, so I'll brag on my colleagues who do a really fantastic job filling in a lot of the translational skills that scientists Yes, citing scientists need in this space, in terms of communications and kind of talking to, to non academics. So yeah, I think I think that this is one of our kind of crown jewels that Graham and the University of Michigan, there's not Yeah, tons of programs like that.

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Michael LaBelle 11:58

No, no, I love it. Because in my class is about energy and sustainability. I see we, we teach actually, some similar courses. It's you're bringing in all these people, the students from different disciplines, and then they putting them into a class or on a project, and they have to work together and speak the same language or learn to speak the same language. And I love it. It's really exciting.

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Sarah Mills 12:20

I insist that when I'm teaching my class that I open it up to people in different departments, because the students learn more when they're forced to explain their assumptions. Yes. To engineers, or to, you know, public policy students or to business students. Yeah. So yeah,

M Michael LaBelle 12:39

no, I love it. And they kind of look at me funny. Like, what what are we supposed to? Do? You figure it out? Absolutely. Yeah. Yeah. No, I love it's a little chaos. But I love it. So. And then, also, one of the interesting areas I've seen that you also do is you're serving on the Ann Arbor Planning Commission. Is that right? It is, it's

S Sarah Mills 12:58

a volunteer appointment. It is my little bit of public service.

M Michael LaBelle 13:02

I will ask you how many hours a week you work, but anyways, but what do you as a researcher, how do you what do you learn by doing that, that you bring from I would say academia, and what is it? How does it inform your own research as well?

S Sarah Mills 13:19

I would say it was not intentional, that it that it kind of links to my job. I did it literally as my way to like, do public service, right like to do a little bit of volunteerism. I get so I think I'm a better planning commissioner as a result of my job in understanding kind of the land use considerations in rural communities. If for people who might not know Ann Arbor is it's a small city. I mean, by some standards for Ana, for Michigan standards, it's pretty big. We've got 120,000 people, our population swells with students. But it's it's not huge. And so the issues that we're dealing with are quite different. But to my day job, my experience on the planning commission gives me so much empathy for the local for the planning commissioners in rural communities that are faced with a big renewable energy project. We are really fortunate in the city of Ann Arbor to have a pretty big planning staff. I think we have six or seven planners, most of the places that I do my research in and with in rural communities, don't have any planners on staff. Maybe they get part of a consult of planning consultants time. So it's just kind of understanding how difficult it is in Ann Arbor as a planning commissioner with all of this expertise, and what it must be like to be in the shoes of a planning commissioner in a rural community where there's a lawyer showing up who wants them to the site, you know,

M Michael LaBelle 14:59

right, right. And to get the opposition or at least maybe maybe I won't say opposite. Well, that that can the reservation from the local communities?

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Sarah Mills 15:07

Exactly. I mean, we know, I know from my time here in this city of 120,000 people, if 30 people show up to a planning commission meeting, that's a lot of people. I have been in a rural community of 500 people, where there are 75 people showing up to a planning commission meeting, mostly to speak against a wind or solar farm. Okay. Yes, yes, yes. So like, there's huge amounts of empathy in in the city of Ann Arbor, we meet we have, there's lots of development happening, we meet every Tuesday night, in some of these rural places, their planning commission meets once every three months.

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Michael LaBelle 15:49

Okay, okay. There's nothing to talk about. Oh, no, it's another not much to talk

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Sarah Mills 15:54

like this. This, you know, there's not gigantic development proposals. And so this is really a shock to some of these, you know, to the system in a lot of places you have someone

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Michael LaBelle 16:05

comes in from the outside. And, and actually, we're going to segue now to your research, because you've done research in this way in how well, at least from some of the publications, how well was it like prior consultation? There's there's differences between the acceptance of wind or solar and how much consultation goes on? There's some better practices in this area?

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Sarah Mills 16:28

Yeah. So, um, my research is kind of when I see some, a community needs an answer to something, I'll usually start a research project. So it doesn't all make sense. There's a there's a decent amount of literature from the US on public acceptance in the wind space, growing amount in the solar space. But in the wind space, a lot of that research is talking about the process. And kind of the distribution of benefits. I've done a little bit in that space, probably in, what I would say is, I'm not famous, but the thing

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Michael LaBelle 17:13

you're known for, oh, no, I understand.

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Sarah Mills 17:16

The thing in this space that I'm known for, is to say, hey, we have developers who are more or less following the same process, but being met with really different reactions. So why is it? Yes? So if even if you have the same community benefits, and you have the same process, why do

some community say we want more wind and others say we don't? And so, one of the things that I have, I have a paper called farmers versus Lakers.

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Michael LaBelle 17:42

I love that title.

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Sarah Mills 17:45

Well, and it comes from something that happened during my dissertation. So I went to a rural community in Hillsdale County, which is super rural, the middle of the state. If there was a wind farm proposal, they had to move the meeting from the township hall into the school auditorium, because there were so there to the school gymnasium. Yes, yes. Because there was they were expecting such a crowd. When I sat down, the lady next to me said, Are you here with the farmers? Or are you here with the Lakers? And I was confused, because I didn't. There's, it's this farm territory. But apparently, there was a tiny inland lake Michigan has a whole bunch of small lakes. Yes, we think of the Great Lakes, but it's also the small inland lakes and there was one there, and people had their kind of second homes or their retirement homes there. And they were really opposed to the wind farm. And so a couple of years later, I did this study to try to understand Are there patterns in communities that support or oppose wind and we were able to find that there are in places in the US where there's more farmers where there's more agricultural activity? Wind is less contentious, because it's another way to make money. Yeah, exactly. And in places where there are more Lakers, yes, amenity landscapes. People see this as a change to that amenity. And so there's more opposition.

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Michael LaBelle 19:07

Oh, that's so that's such a amazing study how it's set up like that, actually. I mean, it's, I don't say black and white, but it's very polar. You're almost the polar opposites. And but how, how do they bridge this gap? Is there a way to bridge this gap? Or is it they just? Well,

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Sarah Mills 19:26

I mean, I think one of the things that makes wind or these projects really contentious in communities. And this is really true in Michigan, like Michigan, actually, by the numbers is probably has some of the most contentious wind projects. Because we have people who are there people living in the very same community, yes. Where these kind of productivist that's actually from the European preservation literature. There's a lot of like, productive use of this language. We actually I think the European languages would say there's multifunctional landscapes. Okay, yes. So there's this productivist quality and this amenity quality, and where you have people there for those two different reasons, that's where things really get contentious. So

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Michael LaBelle 20:08

to clarify: amenities would be like the retirees, second home owners who are there because it

to clarify amenities, we'd be like the retirees, second home owners who are there because it made it lake, the lake view, the outdoor environment, and then the production. This would be like the farmers, the people producing from the land.

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Sarah Mills 20:24

Right. And I mean, some of my work my survey work finds that people who have wind turbines on their property don't all believe that wind turbines are beautiful. Okay. Yes, they, but I like the kind of anecdote that I give is that my mom's side of the family raised hogs, raise pigs, okay. And like, they also don't believe that hogs are like, nice smelling and creatures, yes, yes. This is the way you make money off of their land like this is how my my dissertation work was effectively, like wind energy development is a is a farm diversification strategy, you can diversify your income. So you can weather the ups and downs of the agricultural market. And so even a farmer who doesn't believe that wind turbines are beautiful, sees this as a way to diversify and stay in business more or less, but their non farming neighbors, of which there are many, yes, in rural places, they

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Michael LaBelle 21:17

probably have more money, and they often have

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Sarah Mills 21:19

more money. Do not necessarily see this, as you know, as something that's in keeping with why they moved to the rural community.

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Michael LaBelle 21:28

And now you can place yourself in the shoes of the planning commissioners in this type of setting as well.

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Sarah Mills 21:34

And understand like, and this is one of the two things right, like you have to if you're if you are a planning commissioner in a rural place, you've got to think like, I'm not used to getting peep, lots of people showing up to my planning commission meetings. And you're also thinking like, how prevalent how representative are the people that are showing up? And yes, and telling me I don't want this thing? And yes, yes. Yeah. How representative are they of the overall populace? Yes. And we know what from the planning side, I can say from the city of Ann Arbor Planning Commission. Yes. That there's often a silent minority, or I'm sorry, a vocal minority. Yes. Who shows up? Yes. When they don't like a change in their backyard? Yes. Where there's the kind of silent majority who just doesn't show up at all, like, yes. And so I am super empathetic.



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Michael LaBelle 22:27

Yeah. Especially for the law planning. Commissioners. Are they elected? Yeah, they're appointed, appointed. Appoint, they're appointed.

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Sarah Mills 22:34

And and so it's a volunteer position. Oftentimes, they don't get pay.

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Michael LaBelle 22:38

Okay, so then county commissioners appoint them usually.

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Sarah Mills 22:41

So county commissioner in places where the Michigan is even weirder, right. So how, yeah, so but it's either the county commissioners, where it's county level zoning, which is most common in the US in rural communities, or, in the case of Michigan, we have hyper local zoning, which is kind of at the sub county level. So in that case, it's the township boards.

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Michael LaBelle 23:02

Okay. And I was I was going to Okay, so I wanted to maybe transition just a little bit, and maybe look at the state of Michigan, or why, like, what is prompting, and this kind of goes maybe for like tax incentives as well, like what policies incentivize, say, wind farm developers to come into these communities? Or why are they coming into these communities to set up wind farms? Right?

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Sarah Mills 23:29

Well, historically, right. And historically, I'm only going back like 15 years. The US policy, like there's two big US policies, right, pushing development. At the federal level, there's a production tax credit that incentivizes that made it cheaper, like gave gave wind and solar developers tax credits for building things. But at the state level, the big policy was a renewable portfolio standard, so a state level mandate requiring utilities to get a PERS portion of their power from renewable sources. And so Michigan passed its first renewable portfolio standard in 2008. And that really created the market, we that policy was that they wanted to have 15 or 10%, renewables by 2015. So seven years to go from effectively like zero to 15%. Yes. And it worked. I mean, that's the first wind farms in the state, including the one that I that inspired my research that got me on this path, like those were all built as a result of the renewable portfolio standard, okay, in the state of Michigan, in 2008. Maybe it was 2018. That was renewed and increased slightly to 15% renewables by 2021. Okay. We, the utilities achieved that goal as well. Right now, the big policy, or the big thing that's driving renewables development in Michigan is economics. The state requires that utilities do integrated resource plans, which I don't know how common those are. No, I don't know. So, so the

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Michael LaBelle 25:16

you explain.

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Sarah Mills 25:19

So effectively, the state requires the utilities to figure out to make plans for the next 15 years, where they're going to get, like how they're going to have coupled capacity and effectively generation in the next 15 years. And it requires them to look at a range of scenarios in terms of the cost of fuel inputs, you know, they're thinking about this is what they use to determine when they retire an old power plant. Yes, or when they build new power plants, how much they get from within the state versus how much power they're importing, and the running a range of scenarios. And in all of those scenarios, renewable energy sources. I mean, there's a lot of gas that that is showing up too. But both utilities both are Michigan has two big investor owned utilities, both of their integrated resource plans are finding renewables are the cheaper sources. Wow. So So Consumers Energy, I just looked at these numbers the other day is looking to build eight gigawatts by 2040. Of justif. Solar that's solar solar. Wow, the DTE Detroit Edison is looking to do 6.5 gigawatts of solar by 2041. And I can't remember something like two gigawatts of additional wind. Right now, in the state of Michigan. We have about three gigawatts of wind and about half a gigawatt of solar, but that's really switching as the cost of solar has come down. So we're seeing a whole lot more solar.

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Michael LaBelle 26:52

Do you think because Michigan? I mean, you know this more than me, but it has a lot of potential wind potential. Is that just kind of where it maxes out at about? Just to know.

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Sarah Mills 27:02

So I think that there's a couple things going, okay, the cost of solar has come down more. So that's why we're seeing more solar. Also, there's obviously like, the difference in the when the grid needs power, like the the, like matching time of year and time of day. Okay. Okay, in terms of when our wind resource is, yes. versus solar resource. But the other thing that's really driving so much of this solar development is that there's community opposition to wind energy. Okay. Yes. So I mean, I've had utility executives tell me like we wind pencils out to be cheaper. Yeah, totally. But you can't get a wind farm bill right now. And so we're not putting our so if if there's a private developer that can get a wind farm bill, they will totally buy those like, yeah,

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Michael LaBelle 27:52

totally. Yeah. Because it is cheaper than solar. Because it's cheaper than

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Sarah Mills 27:56

solar. Yeah. But not as much cheaper as it was before. Okay. Okay. Okay. Yeah. And, and it's just really, really hard. Like, it's so hard to get.

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Michael LaBelle 28:07

Yeah, the planning permission, as we just talked about, basically, yeah. And offshore wind is that just like nonstarter in Michigan,

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Sarah Mills 28:15

so the state holds the lake bed in trust. And so the state would have to effectively auction off leases for that. So far throughout the Great Lakes states, the only state that's done this is Ohio. And one of the challenges with offshore wind in the Great Lakes is that they freeze. Oh, okay. And so that's not common and European.

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Michael LaBelle 28:38

Saltwater, basically. Yeah, the freshwater

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Sarah Mills 28:40

versus so actually, the there is a project that's been under development, honestly, for over a decade, in Lake Erie off of the coast of Cleveland, Ohio, the name of the project is called icebreaker, because it's to try to, like, that's one of the technical challenges is, is figuring out how to deal with ice. And yeah, how that works.

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Michael LaBelle 29:01

Okay, so even on this technological area, there's still a lot of research and development that needs to occur basically in this

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Sarah Mills 29:08

right work. Yeah, and some of our and some places, particularly if you're getting offshore enough that you don't have concerns with social acceptance from the nearshore neighbors, the water gets pretty deep pretty quickly. And so this is where they'll kind of offshore like deep water offshore technologies are required. So so the limitations of offshore wind in the Great Lakes has been both both the ice Yeah, and this.

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Michael LaBelle 29:36

Wow, I would have thought okay, yeah. Okay, this is great. I mean, I think it's really interesting then that it's because yeah, for those that don't know, when you go out to like Lake Michigan or

Lake Huron, like you can't see the other side. It's like this giant sea or ocean, right, that there's no end to it basically. So so you

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Sarah Mills 29:56

could put them you could put offshore turbans 20 He miles off the coast and still not see them from either. Yeah. Either side. Yeah, I mean, except maybe you can see the red lights at night, which is one of the things that oh, yeah, they've been talking. Okay. Um, but but then you have the you know, it's deep. Okay. Okay. We don't have a shallow

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Michael LaBelle 30:18

Yeah, no, no. Okay. Okay, that's a cool. And let's see, I don't want to keep you too long. And then some of the new new areas, though, we mentioned, you mentioned this at the beginning, but I'm really interested in the community centered solar development, you can correct me on this. But, Mike, I, it's one of my questions I had before, though is, how does that tie me to to energy communities? I'm really interested in energy communities, and maybe you could talk about energy communities, and if that ties into that or not, so when

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Sarah Mills 30:52

you talk about energy communities, this is referencing federal government's kind of definition of energy communities within kind of the inflation Reduction Act. And that which is effectively as the federal government is using the term it's places that have historically been dependent on energy infrastructure and the revenues associated with that, is that right?

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Michael LaBelle 31:16

No, I will just say, I'm coming from a European perspective on energy communities means about like, interconnecting the community, in a smart grid system or something like that. So but I'm really interested, I hadn't even looked into the inflation Reduction Act and what that means so so yeah, please explain. From your perspective, yeah.

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Sarah Mills 31:37

So within energy, so the reason that it's like a big thing is so the inflation Reduction Act is one of the Biden administration's like big climate wins. And they're kind of been two different big climate bills. One is the inflation reductor. One is what is actually called the bipartisan infrastructure law, which is all kinds of infrastructure, and, and including energy infrastructure. But it's more or less about grants, I'm kind of putting dollars to building stuff. The inflation Reduction Act is really about expanding the tax credits that energy developers can receive. Okay. And, again, those tax credits have been for wind and solar have been around for a while. And that actually, that's a key driver nationwide of, of our deployment. Today. The inflation Reduction Act chain modifies them a little bit. First of all, it adds on new technology. So now you can get it. One of the things is previously you couldn't get tax credits, if you weren't a

taxpayer, which was maybe this this is sort of linked to the European definition of energy communities are our local governments don't pay taxes. So if you wanted to put solar panels on City Hall, the roof of City Hall, you couldn't get the 30% tax deduction on that. So you had to have these like crazy arrangements with a private equity firm, which I totally I don't totally understand. But the idea that it can be direct paid down, is really important. Oh, okay. The other change that happened to a lot of those tax credits in the in IRA as a shorthand is that there's additional bonuses for a range of different deployment scenarios for renewables. So for example, if you are and one of the US over the energy communities one, yeah, so energy communities is defined as communities that have that have a particular amount of their employment, or of their their public revenues coming from fossil energy infrastructure. And so the sense is, for this new clean energy infrastructure, like, we know that those fossil communities could be losers. So let's try to direct some of it there. So this so that's one of the tools that the federal government's use to try to direct additional energy, clean energy infrastructure in those historic I understand energy transition, yes. Can like a just transition total just transition? That's Yes, that's the terminology that we got going on here. There's also you can get tax credits by having by using prevailing wages. So kind of paying workers more fairly or by having apprenticeships which is really tied to union labor unionized. So you can also get additional tax credits, credit tax credit benefits by developing on brownfields or like previously disturbed lands. So all of these things are helping well our tribe To induce developers wind and solar developers to do things that may be seen as more preferable. I mean, one of the critiques of this is, what if there's an energy community that has historically, you know, had coal or oil and gas? Who's done being an energy community,

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Michael LaBelle 35:20

they want to move out of the exhausted, yeah, the resources and everything and they want to move on, they

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Sarah Mills 35:24

want to move on to something else. And so there's some question about whether it makes a lot of assumptions about what it makes the assumption effectively that energy infrastructure is a good, which, given that there's a whole bunch of opposition?

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Michael LaBelle 35:38

Oh, yeah. Because maybe, I don't know, they want to go to tourism or something, something much more sustainable and green. Well, from there, from for sorry, I know getting some judgment.

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Sarah Mills 35:50

They want to have a different version of how they want to transition their economy. Yes. And so I mean, I think that that's a little bit tied up in this as well. But that's the energy community, but based on what you were saying, yes. I think the kind of maybe the term that we would use

more is we often talk about, like community solar. Yeah, exactly. Yeah. It's effectively own like the, the investor. Yes. And the viability of that varies from state to state, because the state effectively determines whether or not they forced the utilities

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Michael LaBelle 36:26

to I see Yes.

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Sarah Mills 36:29

To allow for competitors in this way. Yes. Right. Where, in most of the US, the utilities kind of have a lock on the market. It's not necessarily kind of fully kind of competitive, and community ownership of renewable project is seen as kind of a competition. So in the state of Michigan, the utilities are not forced to allow for community solar.

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Michael LaBelle 36:56

Yeah. Well, we could have a big discussion about what the two big utilities do in Michigan. But okay, so and so in Michigan, they're not so into competition from the community level,

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Sarah Mills 37:08

right. So the project that we're talking about this one that's that is funded by the Department of Energy, Solar Energy Technologies Office, the kind of primary or the the lead on this is Lawrence Berkeley National Lab. But the the grant is called community centered solar development. And so what we're trying to understand is, there's a couple parts of it, the parts that I'm most involved in our first kind of looking, doing some case study research, across seven different solar farms, to understand person, like, what happened, like, yeah, really in depth understandings of kind of how those projects came to be like, what worked well, and what didn't work well in the planning process, what people feel, how neighbors feel about the project, now that it's built. Okay. The part that University of Michigan is leading in this is a nationwide survey of solar farm neighbors. And again, like, we're, this is large scale solar. So the smallest projects that we're looking at are one megawatt. Everything else is, is bigger than that, we're looking to some extent, we want to, we believe a lot of the literature finds that there's different perceptions based on community ownership. But community owned projects tend to also be small. And so we're trying to tease apart ownership from site like scale of project from whether it's developed on a brownfield site versus a greenfield site versus whether they have as agricole takes, yes, I used a lot. Okay. So it's trying to understand kind of neighbor perceptions of those. Yes. From a bunch of different kind of design features, design, not just being physical, but also kind of policy. And really, to try to figure out how would people living with a near wind solar farms or solar farms? What, what would they suggest for future development? Okay, and then our final part of this project is to have community led discussions, like develop a toolkit for communities to have a proactive conversation. Yes, yes. No, what's what, what they would want to see in terms of solar in their communities?

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Michael LaBelle 39:24

I love this. This is so interesting, because yeah, so there's a lot of one I'm kind of surprised it's taken so long to do a project like this. So I mean, I don't know if that's insulting or not, but but that's great. You know that that finally they're they're looking at this or you're looking at this as it's wonderful, but I was just wondering, maybe is this also a project then that can begin this discussion more in these communities? I don't know. Just say communities. And you can define, however, where these projects may be. To start talking about how energy is produced or electricity produced, like, what is the role of renewable energy in these communities, this is a means to provoke dialogue.

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Sarah Mills 40:11

That's my hope. And I mean, this. The part that we're funded to do is really about solar. But I mean, I'm a planner, right? I mean, I am. Yeah, I think what's really hard, most of this, most of us are reacting to proposals by private developers for energy, rather than thinking about the role that renewable energy can play in their community. In parts, there's some elements of I mean, this may be different than than Europe. In a lot of rural America, there's not a huge concern over climate change. Okay. And so, so very few rural communities are saying, like what we really need. There's lots of things that, you know, there's disinvestment. Yeah, rural communities, there's lots of things that they were energy infrastructure committee tool to get them the things that they need. Yes. Well, they usually, like, aren't thinking about that from the get go, like, okay, conversation that way. So but that's increasingly because of the plan. Is them and I think the conference, their conversations will end up better. Yes, they are. They're coming to themselves. Yes. This is something that we want in our community that is going to get us the things that we've entered, the infrastructure is going to bring that economic development or the jobs or the Yes, whatever. Yes, yes, is what our community really needs. And so I see this kind of community centered solar development as one piece of that puzzle. I hope that we are working on other things to try to have the conversation about wind about we're seeing a lot of battery storage starting. Yes. Really. I go back to that kind of a place I have at this at the University of Michigan. We have people on our north campus, our engines where our engineering school, yes, designing the next technologies, the kind of advanced nuclear and the hydrogen. And yes, and I really love for them to understand early on what? Yeah, but they can design that into their new technologies, rather than coming up with the technology. Communities.

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Michael LaBelle 42:35

Yeah, this is what we have. We have coping with it. So interesting. How? Because I know. Yeah, I definitely know, I would say the conversation level, even in rural areas and in Europe would be, and this would include, like Poland and Hungary even and certainly France and Germany and other countries would be, yeah, these renewable technologies, like solar or wind are really exciting. And we want to use them. But they're really expensive. So we can't use them. So so something like that. So people are aware of it, and they want to do it, and they want to transition away from they know, they need to get away from coal or something dirty, but they're just they don't know kind of what to do. But in America, more rural communities, what would people say?

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Sarah Mills 43:18

Well, I would say rural communities want their power to be more reliable. Okay. Which is problematic, because it's the distribution side, rather than the transmission grid, big power, big sources are feeding into this. So so that is their relationship with power. There is a bunch of energy poverty in rural communities throughout the US. So they're paying a disproportionate share of their income towards energy. But they are part of utilities, they're served by a utility that has a bigger territory that also includes urban areas. And so And because we because we have these monopolistic utilities, yes, yeah, don't really have an opportunity to kind of pull out of that. And so as the cost of renewables has been coming down. Yeah. And I think that this is one of the things that's really hard to. I'm not an energy economist, but I believe the economist when they tell me that, like, actually building new renewables is cost effective, right? Like, yes, yes. But the cost of electricity keeps going up. And the cost of electricity keeps going up for the maintenance of the

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Michael LaBelle 44:32

dirty system. Yeah, yes. Yeah, exactly. And so

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Sarah Mills 44:35

for the average person, like, they're being told we need your community to host this power to keep our power prices low, but then their electricity bill keeps going up. And so there's a lot of distrust and like, it's hard to know what would happen if those new renewables weren't built? Like what would happen if instead it was coal, like yes, their bills would go up

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Michael LaBelle 44:58

even higher? Yeah, because That's even more expensive.

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Sarah Mills 45:01

But, but that counterfactual doesn't exist. And the so

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Michael LaBelle 45:05

they don't feel the benefit. So they don't see it and feel it. They don't see it

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Sarah Mills 45:09

or feel it. And so there's some, the state of New York, for example, has a program where the people that are within the vicinity of a wind or solar farm, they have a small rebate on their utility bill, so that their electricity bill goes down. Yeah, right. It's honestly not big enough to make much of a difference. It's a couple of dollars, like, and so it's a really a kind of a drop in

the bucket. But it's getting at the right idea and some of my work. And there's an there's maybe not tons of work in this space, but is also looking at the different development models and community compensation models, that developers that wind and solar developers use. Because it matters. It matters for the neighbors of these projects that matters for the communities that they're cited in. So again, because of kind of the utility system, it's not super common to have a community ownership in a project. But if there's a way to have community wide benefits, yes. And or direct economic benefits to neighbors, and there are that's that's a common thing in the wind space now, increasing a little bit in the solar space. But that's, that's really important for how, you know whether a community thinks that they this is good for them or not. But it's almost

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Michael LaBelle 46:31

like a social, it is a social justice issue, then where maybe, is, particularly when you're speaking of energy poverty. So people live in an energy poverty, but in some places with lots of wind, and then but their bills don't go down. In fact, they increase and at the same time, they live in this wind farm, and it's all the electricity is sent to the city. But okay, maybe they get some of it back. But but this this is the issue is a justice issue?

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Sarah Mills 46:57

I I think so. But I think one of the things that's really tricky, that some folks would say is that a lot of these rural communities that are experiencing energy poverty, have been importers of power forever. So they haven't had to see the, the enforce the energy infrastructure, right. They don't live with the coal or natural gas power plants in their backyard. Those are, those tend to be urban communities, they tend to be lower income, they tend to have more people of color in those communities, and those power plants that bring with them, like not just a visual disability, but also pollution that are really, really felt in those communities. Like there's like, there's also an argument that rural communities that say no to wind and solar are perpetuating the environmental justice, injustice felt in those fossil fossil communities. And you can't just close that coal fired power plant and replace it with wind and solar. Because yeah, same land area. There's not enough land area there. And sometimes the places that host those fossil fuel plants, they're so economically reliant. octant I think

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Michael LaBelle 48:17

it's a it's a really, yeah.

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Sarah Mills 48:19

When we talk about the justice, yes, it's really sticky. But I, I regularly feel like the weird person saying, like, justice in these rural communities, and we usually get shouted down, so I'm so happy to find a kindred spirit.

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Michael LaBelle 48:33

No, no, no. I like writing about in fact, yes. It's this gray area of of, you know, there's there's, yeah, I like this idea of energy justice. But getting into this gray area of justice for who? So this is always the big question,

S Sarah Mills 48:51

Justice for who is the injustice of a visual disability the same as one associated with like, one that has health impacts, it's really going to harm you. Right? Yes.

M Michael LaBelle 49:06

Climate climate change, right. Well, future generations.

S Sarah Mills 49:11

Exactly. So yeah,

M Michael LaBelle 49:15

yeah. Yeah. It's, I love this area. So yeah, exactly. But But maybe, to move on. So discussion later, more and more later, later, is another project that you have this zoning database in six states. Oh, this this was about it? Well, database.

S Sarah Mills 49:35

Yeah. So I mean, one of I mean, I can sorry, if people are really I mean, there's not. There are not too many planners in the country. So I don't know how this translates in Europe. Zoning is the local land use authorities. It's usually a function of local governments in the US to regulate land use and a Uh, like I said before, it's really diffuse. In Michigan, even in other places, though it's kind of even in other states, it tends to be at the county level. And there are very few planners in the country, the entire US that have given much thought to energy infrastructure, because historically we haven't had to, because we have these all of these centralized power plants. And that is not necessarily a land use planners function like it's an energy planners function, right. And so now we have all of these power plants, these renewable energy power plants that have land use implications in a lots more places, because they stretch over larger territory. And so one of the things that I've got a lot of active work on trying to figure out how rural communities are thinking about energy infrastructure, how they are regulating it through their zoning. And it's a it's a thankless job, but also, I'm trying to build a database for other researchers, we are pulling together a database of all of the zoning ordinances in the in rural communities, I haven't gotten all of the cities in the state of Michigan, I have all the cities and villages too. But in in the six states, kind of in the Great Lakes region, all of the rural places, and right now I think I have over 1900 PDFs, I mean, and we're only halfway through.

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Michael LaBelle 51:22

But it's so important. And it should be, I don't know, how well would a more standardized approach be useful in this context about renewable energy and zoning.

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Sarah Mills 51:38

And there's lots of calls for that. Because when the rules are changing, every six miles, which is common in the state of Michigan, it can be really tricky. Most wind farms in the state of Michigan, are in multiple local governments. And so they've got to comply with, you know, with those different zoning rules. So on the one hand, I'm gonna do the total normal academic thing. Okay. On the one hand, it would be easier, like, and there's a lot, there's many, many calls for more standardized approach, especially in light of communities who want to block projects. And in light of local governments who operate with a whole bunch of volunteers. Yes. Who are not necessarily trained in? Yeah, in energy race. Yeah. So so that's the argument for kind of more standardization. The argument for not having for allowing this is that first of all, in the US, we have a strong tradition of Yes. These all of these governments determining the use of their land, yes. Financially, most of most governments in the US are our, their budget is based on their property taxes. And so what happens on in terms of land development is really important to them. And so, so if you think that like, having 2000 acres occupied by solar farms, like you're precluding some other kind of development, yes. And if that local government is financially, like, reliant on their on their property taxes, like that might be a reason to kind of give some local discretion. But also, this is the idea that I think that there's a lot of concern that if there was more standardization, that there would be less of an opportunity for communities to decide for themselves, what fits. I mean, we have a huge diversity in terms of kind of land use functions. And the sense is like, I don't, if a standardized approached includes a single set of rules for the entire state. I couldn't come up with that with the state of Michigan and like, this is what I said 10 years like trying to study Yes. Something that works like all across the state. And I don't know, I think that that's, I think that that's really tricky to figure out. So

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Michael LaBelle 54:07

I'm glad I asked you that question. Yeah, so yeah. Because I've been thinking about if you're, but you know, this, if you're a wind farm developer, you're like, and this is part of the national debate about how long the permitting process takes and everything. Yeah, right. So if we need to meet these goals, do all these things. We have to massively roll out wind farms, solar farms, and if each municipality or jurisdiction has different rules, it just takes forever then to do that.

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Sarah Mills 54:38

Yes, there are calls again, again, and even so you talked about going back to like what's driving Michigan policy, like our governor has a had a council come up with a climate a carbon neutrality plan, in that there's an interim target to try to get to 60 Right now we're at about 20% Like just over 15% renewables the Plan calls for 60% renewables by 2030. Wow. And citing these local land use rules and ability to deploy this infrastructure is cited as the number one barrier to getting to that. There's been calls here and in other states to just take away take away local control, like make it more centralized, like a more standardized approach. And actually, a couple months is that month, it's a couple of weeks ago, in the state of Illinois, which

is not far. Yes. That's exactly what they did. Like the there. They took, they took over local control. Well, actually, they didn't totally take it away. They said, here's the standards that we're gonna have statewide. And honestly, in many ways, it's a giveaway to industry. Local governments can still be less restrictive, but it effectively says, every land that is industrial or agricultural, the local government has to allow wind and solar.

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Michael LaBelle 55:58

Wow. That's really something that's something

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Sarah Mills 56:01

so that. So I should say, I think like, will that policy lead to more renewables being deployed in the short term? Yes. Will it lead? Would it be a durable policy? Yes, that is going to withhold changes in political administrations. That is, I mean, already today, and I read Midwest energy news like that. It's my it's a fantastic news source. Okay. The headline was about county pushback, like Illinois to this? Because yeah, the sense is from these rural communities, like the state government has taken away. All of our power. Yeah. Even in communities that were that had policies that were favoring wind and solar development that aren't really affected at all by this change. Like they already were allowing it. The sense is that like, if this is such a I mean, and this is my Oh, yes. If we believe that these technologies are such a good thing, then why is it so hard to get a community to say yes, and my sense is, maybe the design of the technology right now? Are the benefits that communities are given? Yes. Isn't it in keeping with the things that they need? Like?

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Michael LaBelle 57:15

That's so interesting. No, yeah. Is the technology, how does the technology need to change to get social acceptability?

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Sarah Mills 57:23

Both in terms of like, the technology itself? You know, I mean, this is America. Right? The bigger is better. And so like, we are our soul, I mean, the size of our solar farms is just, I don't I don't know if you have seen that there's a project in Indiana, that's called the mammoth solar farm. That's 1.2 gigawatts. Oh, wow. Is 13,000 acres.

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Michael LaBelle 57:48

How many miles is that?

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Sarah Mills 57:49

That's like, 16 square miles. A cow. Oh, my goodness. That's a lot. Wow, there are issues of

scale, but okay. At some point, yeah. It's changing entirely hands. Yeah, absolutely. And I feel like there's not tons of safeguards, honestly, in the, in the approach that that Simon industry would push in the states, including the bill in Illinois. Yeah, that says like, yeah, yeah, exactly. You're gonna keep things with amazing.

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Michael LaBelle 58:20

Yeah, because I would say maybe a European approach would be mixed mixed use, I would say, just because the landscape and houses and everyone's much closer together, less vast open areas and everything. So there has to be cohabitation. We'll call it Yeah. Between the technology. And so like, there. Yeah. Like you'll see a small solar farm on the side of the road. But you know, maybe two or three hectares Max, something like that. Not Not too big, but just kind of there, but quite a few of them around the landscape. Right. And yeah, and then it may be the farmer owns it. And then they feed in or, I mean, depends on in Austria, there's there's big wind farms as well, that's more general where they cluster them together. But also like biogas is something that's been developed more and more. So bringing the farmers in into this area of renewable energy and making sure that they make money off of these technologies. And even I would say maybe for the urban city, people kind of have this awareness that yeah, we need to have these renewables and people generally support it. But also, I would say maybe in these former coal mining regions, getting the transition going as well. Similar, I guess, when these energy communities as it's defined in the US is you have replacing putting solar panels, solar farms on the old coal mining Hills type of thing, where the lignite was extracted as part of the redevelopment process or some wind farms there as well, but wind farms are quite loud too. So there has to be this kind of, I mean, I've been in Scotland where it was really windy and I It was like, What is that noise. And then after riding down the road a little bit, then I saw this giant windmill. But so there's the noise factor, all this type of stuff has to be accounted for and not kind of just thrown away, because you mentioned Illinois, but by the state legislator pushing this through, then that gives a I wouldn't say a bad name, or if there's a counter political pushback to that.

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Sarah Mills 1:00:26

I think that's what we're gonna see Leah Stokes from UC Santa Barbara has some research that finds this political blowback in Ontario, Canada, when effectively the same thing happened, where it shifted from kind of local control to provincial level control. I, we have elements of this in the state of Ohio, it was state level control lots of communities saying like, we don't want this so so they've kind of reversed and given local governments veto power over these project. Yeah. Now, it's really hard to get anything. And so I mean, time will tell you right now, folks believe that there's a political window that it makes sense I, I think, in all of this space, and I think this is where I'll go back to like, really, I came back, because I grew up in a rural to get my PhD because I grew up in a rural community. And I care about like giving rural communities tools to be able to prepare for the future in the way that is compatible with where they want to be. Yes. Um, I think that I worry that there's a lot of policies being pushed for. From urbanites. Yes. And there's a there's a perception that, yeah, are our rural areas in the United States are vast, but that there's nothing going on there or that there's not a lot of people that live there? And that's not true? Yes. spaces have some function. And in sometimes it is an agricultural function sometimes, like, there's usually somebody there, sometimes it's an ecological function like there. Yes. I know that the I mean, I know that in Europe, there's much more discussion about kind of multifunctional kind of rural landscapes. And the kind of rural takes a different

flavor there than it does here. But I I think this is this is forcing a conversation about rural land use that I think that we're just at the cusp of in American rural land use. I think we're just at the cusp of and yeah, and I maybe I'm just a worrywart. But I do worry. Like, I think that this is the place that we can either build build bridges, because this is we need rural communities in order to achieve decarbonisation. Yes. Or this is a place where we can really have an even bigger kind of political and social divide. If if rural communities are feeling like they are bearing the brunt? Yeah, the burden of that.

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Michael LaBelle 1:03:11

No, I liked it. I liked that bridge building. So I think it's a great opportunity, right? Yes, yes. So Sarah, will conclude, but I just have one. One final question then because this is the My energy 2050 podcast is. So Michigan has these goals you mentioned? And what do you think Michigan will look like in 2050?

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Sarah Mills 1:03:34

That is a really great question. There's a lot of talk about Michigan being a climate refuge. We have great access to water. I, I think that our conversation about renewables is going to start to prompt conversations about how we fit it all in. I think that there's there's a lot of folks who care about our water quality and, and know that kind of the fossil fuel Information Industry is not great. Yes, yes. No. And so I think that it will prompt I think it will prompt a conversation. I think that we will decarbonize. i My sense is that it may not be entirely through renewables. i Okay, I think that there will be

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Michael LaBelle 1:04:22

a lot of room for gas, maybe I will,

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Sarah Mills 1:04:24

I mean, maybe that we already have a lot of nuclear and maybe it's just that I grew up in the shadow of a nuclear power plant that I feel like,

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Michael LaBelle 1:04:32

Whatever, I'm alive,

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Sarah Mills 1:04:35

we got to figure out ways, but I think that we'll get there. But I think I think Michigan 2050 is going to have a lot more people. Okay, okay. Um, and I think that I think that we're gonna our energy landscape. We will have a lot more renewables than what we have now. But maybe it's I don't I can't imagine Not being 100% renewable.



Michael LaBelle 1:05:02

Okay, that's great. All right, sir. Thank you so much. Yeah, thank you. Thank you for joining us. For this episode, we produce the my energy 2050 podcast to learn about cutting edge research and that people building our clean energy system. If you enjoy this episode or any episode, please share it. And remember, each episode is equivalent to consuming 10 journal articles one book and 500 charts and how to implement the energy transition. And you get it all in less usually than 60 minutes for each podcast guarantee. I can actually say no other podcasts makes this guarantee. The more we spread our message of the ease of an energy transition, the faster we can make that transition. You can follow us on LinkedIn where we are most active on the My energy 2050 page or on Twitter and Facebook. I'm your host Michael LaBelle. Thank you for listening to this week's episode.