Ways & Means Season 8, Episode 2: Getting Strategic with Solar

Simran Sethi: From the Sanford School of Public Policy at Duke University, this is Ways & Means. I'm Simran Sethi.

Joe Opyoke: The thing is it all involves safety when you go underground. Because going underground, it's, uh, it's not a place where humans normally go.

Simran Sethi: This is Joe Opyoke . He's the third generation to make a living off coal mines in West Virginia. He's known since he was a kid that the work is dangerous.

Joe Opyoke: In November 1954, I was five years old. Okay? And my mom and dad was [sic] sitting out on the porch. Dad was getting ready to go to work. And there was a noise. And as we looked up the hollow, there was a white cloud, like a mushroom cloud coming up over the horizon. And it turned out to be an explosion that went through an elevator shaft. That's what I seen. And -- it's it was quite an experience, especially for a five year old.

Simran Sethi: 16 miners died in that incident. But, even with those traumatic memories, Joe grew up to work in the mines, and he made a good living. Eventually he had a position that took him to mines all over the region. He remembers one mine in particular – they served free ice cream to the men while they waited to go underground. There was even a see-through floor – where you could look between your feet to see straight down into the mine shaft. He's retired now, but keeps a collection of maps from all of the mines he worked in.

Joe Opyoke: Every time I look at those maps, and I point my fingers showing somebody something, I see a visual in my head of exactly what that area looked like, like a snapshot.

Simran Sethi: Today though, his community is changing in a way that he would have had a hard time predicting just a few years ago.

Joe Opyoke: Most of my family's worked in the coal industry all their lives. I think, actually, I think I might be the last one of that lineage to work in the coal industry.

Simran Sethi: His daughter Elizabeth – who would have been the fourth generation to make a living from the mines – has taken a different professional direction.

Elizabeth Opyoke Cruikshank: It was a – how do you tell your dad, who's a coal miner, "Hey, I'm going to work in the solar industry."

My name is Elizabeth Opyoke Cruickshank. I work for Solar Holler, and I am in West Virginia

Simran Sethi: Solar Holler installs rooftop solar on homes in the area. And business is booming.

Elizabeth Opyoke Cruikshank: And I said, so I got this new job. And he was like, "Well, what is it?" And it's like, "I'm going to be working in solar in West Virginia." And the look that he gave me, he's very proud of me. He never would have told me no. But he looked at me like I was absolutely crazy.

Simran Sethi: But West Virginia – as perfectly suited as it is for coal mining- is equally well suited for solar.

Elizabeth Opyoke Cruikshank: We get about 85% of the sun that Miami Beach gets…there's actually a study out that says the mid-Atlantic is actually one of the best places for solar in the entire United States.

Simran Sethi: And it's true – some places are simply better than other when it comes to solar, and the impact solar panels can have on the environment. And now new research shows why – and here's a hint, it's not because there's more sun.

(Music)

Simran Sethi: In this episode of Ways & Means …. Location, location, location – why place matters so much for the future of solar power. This is the second show in our series, "Climate Change Solutions."

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Simran Sethi: Making the move to renewables is hugely important for the nation and the world. In order to stop the earth from warming to catastrophic levels, we have an urgent need to change the way we work and live, especially when it comes to our sources of energy. It's a big challenge --- and switching to renewables is a part of matrix of solutions we need to address the climate crisis. But such a big change requires political will – and, for some, a new mindset. Elizabeth Opyoke Cruickshank says that for lots of her friends and neighbors, especially those who have such deep roots in the coal industry, this new perspective is challenging.

Elizabeth Opyoke Cruikshank: I was at the grocery store the other day, and I had a Solar Holler T-shirt on and the guy said – it was raining - he looked up, he said, "Solar is not working today. "

Simran Sethi: Elizabeth was quick to point out, that is not how solar power works. Solar customers generate electricity - and have access to it - on both sunny and rainy days.

Bobby Harris: Yeah, when I was younger, you know, I wasn't thinking about electricity markets or how the electric grid works or measuring environmental benefits of renewable energy.

Simran Sethi: Bobby Harris also grew up in a rural area – not West Virginia, but North Carolina. Bobby received his PhD in environmental economics and policy at Duke University. He studies solar in part because of what he saw on his own family's farm in northeastern North Carolina.

Bobby Harris: So, it's in Pasquotank and Persimmon counties in North Carolina, and so it's a rural farming area. Farmers in the area have long called this area the desert because there are few trees, but it's mostly just open farmland.

Simran Sethi: That desert is not only a great spot to grow corn and soybeans – it's also optimal for harvesting wind.

Bobby Harris: I actually got to sign my name on one of the turbine blades before they before they put it up. You know, that's cool to know my name's spinning around on a blade in Pasquotank County.

Simran Sethi: In 2021, renewable sources, like wind, solar and hydropower, accounted for about 20 percent of total electricity generation in the U.S. – and that percentage is growing. When Bobby got to Duke, he decided to study renewables more closely, with a focus on solar. His research explores the costs and benefits of solar energy – that includes the subsidies that some states and the federal government offer to encourage people to install solar on their rooftops.

Bobby Harris: We are interested in thinking about how the size of the subsidy that households receive for installing rooftop solar compares to these environmental benefits that rooftop solar generates.

Simran Sethi: Turns out, no matter where you live, you probably don't have to pay the full dollar price to install solar on your home. First off, the federal government will cover some of the costs of installing rooftop solar in the form of a tax credit. And then your state might further subsidize costs. California, for example, offers some of the most generous subsidies. And this is where Bobby's research comes in. He's investigating what states give incentives for solar — and what kind of environmental benefits come from those incentives. Bobby argues that there should be more nuance in how subsidies are offered and that the greatest environmental benefit depends a lot on where you live. The biggest environmental benefit comes from regions that are powered by coal. So, If your local electric utility runs on coal, and you install solar panels on your home, it means that the power plant doesn't have to burn as much coal to power your home. And the more people who install solar in that area, the less that coal-powered plant has to work. And, of course, that means a reduction in greenhouse gases, such as carbon dioxide and methane, that exacerbate climate change. But, let's say you live in California, where most residents get power from natural gas instead of coal. There are different kinds of environmental impacts.

Bobby Harris: And natural gas plants are relatively clean compared to coal. You know, whereas in northern Virginia, if I install solar, it's nearly guaranteed to be a coal plant that responds. So, what does that mean? Well, that means in terms of environmental benefits, solar in northern Virginia is much more valuable than solar in California. And we should subsidize solar in northern Virginia more.

Simran Sethi: Despite what the industry tells us, natural gas is a pollutant due to emissions, and the impacts of extracting natural gas through fracking. But, coal is dirtier.

Bobby Harris: And so a dirtier power plant -- avoiding emissions from a dirtier power plant is just more valuable than avoiding emissions from a cleaner power plant.

Simran Sethi: That value – in the face of a climate catastrophe – is priceless. It would be smarter, Bobby Harris says. to be more strategic with subsidies and rebates. Governments should offer bigger incentives in places where coal-burning power plants are concentrated. But sadly, politicization of science has led to the opposite.

Bobby Harris: You know, in fact, that's not what we do in practice. California has some of the largest solar subsidies in the country and the subsidies in, you know, northern Virginia, for instance, are smaller.

Steven Sexton: Coal fired power is by far and away the dirtiest form of generation.

Simran Sethi: Meet Steven Sexton

Steven Sexton: And I'm an associate professor in the Sanford School of Public Policy.

Simran Sethi: Steven has conducted research with Bobby Harris and says it's crucial to stop thinking about the benefits of solar in silos, on a state-by-state case. Take West Virginia, for example, where Solar Holler is located. West Virginia is powered by coal. But, the power grid runs through the country, so even if someone in West Virginia puts solar on their roof, it may not impact a coal plant in the state. And that's because West Virginians may actually get their energy from a coal plant in a nearby state.

Steven Sexton: That coal plant that those solar panels could be causing to turn down could be located in some adjacent state. Right. And that's just a reflection of the way the electricity flows across the grid

Simran Sethi: And that means lawmakers need a robust national policy. One that takes place into account. Here's Bobby again.

Bobby Harris: Ideally, we would have a federal policy that says we're going to subsidize each location differently. But, of course, this runs into various political issues, and voters are not excited. You know, voters in California are not going to be excited about getting a smaller subsidy for their rooftop solar installation than voters in in Virginia are.

Simran Sethi: The politics Bobby just referenced are counterproductive. Climate change doesn't draw its lines at state or national borders. We're in this together. And that leads to another important point: equity. Bobby Harris says policymakers should be much more strategic about where to offer incentives -- so when solar panels come online, they reduce the impacts of coal first, not only because of environmental health, but because of intertwined impacts to human health – and justice.

Bobby Harris: If we want to consider environmental justice, if we're worried about exposure to local pollution, then where we site panels really matters; where we put rooftop solar really matters.

Simran Sethi: The health effects of exposure to pollution from coal-fired plants are significant and far-reaching. In expert testimony to the House Committee on Natural Resources, given back in 2021, Duke professor Drew Shindell explained– and I am quoting here - "The sulfur and nitrogen oxides emitted by coal-fired power stations produce fine particulate matter and surface ozone, both of which increase risk of respiratory and cardiovascular diseases when inhaled." He went on to say: "Air pollution also causes pre-term births, loss of cognitive function in the elderly, decreases in IQ in children, and a host of other impacts that are difficult to quantify. " Lower income people and communities of color, regardless of socioeconomic status, tend to reside in areas that are dense and highly populated. And they face some of the most egregious impacts of polluting industries.

Steven Sexton: And so installing solar in the vicinity in the state of Pennsylvania is helpful because you're avoiding pollution in the vicinity of Philadelphia. Any generation that we're able that fossil generation that we're able to turn down in those regions or really, essentially, upwind from those population centers is going to be most valuable.

Simran Sethi: This new research says policymakers should not only offer financial incentives for people to install solar but think very carefully about where those incentives have the greatest impact. WE have an oppurtunity here to not only install solar in places where coal plants don't have to work as hard, but, when done strategically, they also help right an environmental injustice by protecting people who suffer the greatest health impacts.

You might be thinking, “Well, coal is being phased out, isn’t it? Aren’t we moving towards solar already?” Elizabeth Opyoke in West Virginia says "absolutley.” Coal companies in her region are employing fewer coal miners, but ….

Elizabeth Opyoke Cruikshank: The coal industry - we're employing a lot, lot, lot less people and digging more coal. That's what a lot of people don't understand. We are ,we're producing a lot of coal in the state of West Virginia, but because we don't have to use pickaxes any longer, you know, we have long walls that are able to do what several men did in a day. And so we just don't have to employ those people any longer. I mean, there is a train that runs right in front of my house and ten times a day it's filled with coal every -- I mean, every time it goes past!

Simran Sethi: Elizabeth is trying as hard as she can to talk up solar to her friends and neighbors, including neighbor Andrea Fleming.

Elizabeth Opyoke Cruikshank: Hi Andrea, how are you?

Andrea Fleming: Um, hoping it dries, so we can mow grass.

Simran Sethi: Her family has installed a solar array.

Andrea Fleming: Yeah so our array is actually on the back.

Elizabeth Opyoke: Can we see it?

Andrea Fleming: Yeah, you can see it from right out here…it’s wet.

Simran Sethi: Andrea says that she began to look into solar because of her family’s electric bill. In 2015, they were getting really big bills. One month - over $1,000. And because bills were unmanageable, she says, she turned to solar.

Andrea Fleming: You can kind of see them, I mean, it’s huge, here’s my other one.

Simran Sethi: Andrea says – financially -- solar has helped a lot. In the winter, instead of paying $1,000 a month, she’s now paying $300-$350. And in the summer, she doesn’t pay anything at all for electricity. They jokingly call themselves a power generation station, and extended family members (even some connected to the coal and energy industries) are now considering going solar. Elizabeth says helping more people go solar is exactly the kind of work that needs to be done right now, especially in places like West Virginia.

Elizabeth Opyoke Cruikshank: Knowing that I have 20 houses between here and the next town that the train, that the coal train passes by, I mean, that makes me so proud. We have houses in Charleston, West Virginia, that overlook John Amos power plant. John Amos is a coal fired power plant, and we have houses with solar panels overlooking that. It's a neat juxtaposition of the transition of energy here in the state of West Virginia.

Simran Sethi: The Inflation Reduction Act includes a residential clean energy credit that allows homeowners to subtract 30 percent off solar costs of federal taxes for the next decade. The Biden administration has also announced a program for five states and Washington, D.C. to connect low-income families to solar energy.

Simran Sethi: We'll have a link to the research we've been talking about, and to the company Solar Holler at our website, Ways-and-means-show-dot-org. If you're enjoying this series, please review and share. Ways & Means is produced by Carol Jackson, Alison Jones, and Kirsten Khire with Jack Maples. We get help from two Duke students. Our assistant producer is Akshay Gokul and our artist is Joy Liu. Our reporter in West Virginia was Molly Born. Johnny Vince Evans is our engineer. And, I am your host, Simran Sethi. Thank you for listening.

Season 8 of Ways & Means is made possible thanks to support from the Office of the Provost at Duke University.