Building Electrification: Protecting Public Health, Mitigating Climate Change, and Supporting Housing Justice

Moderators: Chloe Winnett & Marice Ashe***
*Panelists: Bret Andrews,*** Srinidhi Kumar,*****
*Benny Zank,***** & Chris Jensen*******

Chloe: Our next panel of the day, I'm super excited about this one, is called "Building Electrification: Protecting Public Health, Mitigating Climate Change, and Supporting Housing Justice." Before I pass the baton, I'd like to introduce our moderator, Marice Ashe. She's the retired founder of ChangeLab Solutions, where she served as CEO for nearly twenty-five years. Throughout her career, Marice pioneered the use of law and policy to solve complex problems related to structural inequities and poor community health outcomes. Marice now teaches public health law here at Berkeley Law, and she graduated from the University of Notre Dame and received her advanced degrees in public health and law from UC Berkeley. With that, I will hand it over to Marice for the panel discussion.

Marice Ashe: We have a really great panel today. We're going to start with Dr. Bret Andrews, who was the Associate Director of Neurology at Kaiser Oakland during his career, and now is on the Board of Physicians for Social Responsibility, and in that organization, he, in particular, is really a leader on this issue. He did his medical degree at Michigan State, and did his residency and fellows at Colorado, bouncing around the country, not only the US, and Minnesota. He'll be setting the context for us from a medical, public health point of view. Srinidhi Kumar is the Campaign Director for the Sierra Club Building Electrification Campaign. She's worked at the California Housing Partnership. She's a Steering Committee Member of Energy Efficiency for All Coalition, and she's designed and implemented the first utility-funded, low-income heat pump program in the country. Really, an applied person in

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environmental justice. She's a homegrown intellect. She did her undergraduate and master's degree in city planning here at UC Berkeley, so she's back home and in familiar territory being with us today.

Next is Benny Zank. Benny is a Building Decarbonization Coordinator for the San Francisco Environmental Department. One of our take-home messages, I'm just telling you now, is local government. Yay to local government. He's also the Program Manager for the San Francisco Climate Equity Hub. Ask him what that means. He's worked on state and federal energy policy. His degree is from Canada, so he's from McGill. Finally, Chris Jensen is the attorney on our panel. He's a partner right now with Hanson Bridgett, but he was a former city attorney with Cupertino, and before that, here in Berkeley, the Assistant City Attorney. In that role, he really did the groundbreaking work on a national level, getting rid of gas appliances, starting with a local government initiative with the hope that that would roll up forward.

Anybody who's taken my public health law class has heard me say, this snowballing effect, going into larger and larger, didn't work out quite as we hoped. He's going to tell us that story and answer questions on that. His environmental chemistry degree is from UC Berkeley. He has a master's degree in atmospheric science from MIT, and his law degree is from Stanford, so he's been working on these issues from many different perspectives his entire career. With that, it's a fantastic panel. Let me pass it to Bret.

Bret Andrews: We use health arguments to push for building electrification. Physicians and health professionals, that's our lane. We can say that electrification prevents disease and premature death for large populations, which is much more than I can do as a physician, treating the end stages of the consequences of pollution. You can join us and help us save lives and health. The health benefits, especially for those who are environmental justice (EJ) communities, are generally the strongest arguments for reducing fossil fuel emissions. Not only will building electrification help our future health through reduction of climate change pressures, but also the reduction of emissions from building electrification will have profound and immediate effects on health today and every day going forward, through improved air quality.

This also helps reduce health disparities for our environmental justice communities. What are these evils that are in the fossil fuel pollution? We have particulates, or soot, and we have gas pollutants. The soot, or PM2.5, these are 2.5 micron particles or less, they are about one-thirtieth of a human hair, very small, but very toxic. As well, we have gases, like nitrogen oxides. Nitrogen dioxide is one of the bad ones that we measure a lot and associate with health problems. As well, we have ozone, benzene, and others. The Bay Area is the fifth worst at annual particulate emission levels in the nation, and hundreds of Bay Area residents die annually, prematurely, from air pollution.

Fossil fuel emissions have profound health associations. Asthma, chronic lung disease, stroke, heart attacks, lung and brain development effects, premature death, dementia, cancer, and poor birth outcomes. These especially

affect children, those with preexisting medical conditions, and the elderly. There are no established safe levels. When we talk about indoor air and outdoor air, 80 percent of the fossil fuel emissions from buildings are from the space and water heating side, and those are venting outdoors and worsening outdoor air quality. While residential buildings contribute about 8 percent of greenhouse gases in California, they present a larger share of nitrogen dioxide emissions than passenger cars. When we come to indoor air, the lion's share of pollution comes from our gas stoves and oven, which are not venting outside, and we hope to get rid of it with venting hoods if they're available. Many houses do not have them. Many houses don't turn them on. In fact, a minority do in California.

What are the health benefits? By completely transitioning to electric space and water heating in the Bay Area, it's been estimated, and we're talking about preferably heat pumps because they're much more efficient in the electricity they use, we can prevent eighty-five deaths and 110 asthma cases annually in the Bay Area alone, and as well as countless emergency room visits, missed work, school, and the many other health harms could be prevented. If California went to all-electric stoves, there would be 20 percent less childhood asthma. EJ communities are comprised mostly of people of color and low income. We've heard the story. They are the sacrifice zones. They have compounded health risks.

By design, they are closest to pollution sources, refineries, major highways, industry, ports, airports, et cetera, and redlining and economic policies perpetrated this. They are compounded with other health burdens by additional social and environmental determinants because of their circumstances, and compounded health burden because they often live in aging homes that are smaller, older, have no venting to the outside, so they have very poor indoor air. Versus white neighborhoods, Bay Area environmental justice communities have 55 percent higher nitrogen dioxide exposure based on a recent study. This is unjust.

Industry and corporations that make money by polluting aggressively fight off paying for their pollution with large legal teams and donations for political influence. They should pay. EJ communities must be prioritized in policies to reduce fossil fuel emissions. If you look at local EJ communities, Richmond has two times the national average of childhood asthma. East Oakland, emergency room visits are three times the Alameda County average and life expectancy is up to twelve years less than more affluent communities right next door. Stove research shows that stove and oven use are producing unsafe levels through normal use that can last for hours in bedrooms in that same home. The smaller the home, the more the dosing, up to four times as much nitrogen dioxide. The homes of Native Americans, 60 percent, and Black and Hispanics, 20 percent more nitrogen dioxide. What can you do? There's a long list of things that we get involved with. Often, we're working with local communities and we're working in coalition with other groups to move forward with policy.

I can't cover this list right now, but I have a few seconds to say that supporting air districts and local governments in implementing policies is a huge area as well as advocacy for EJ communities in their own fights.

One example might be the port traffic or airport traffic in reducing emissions. We also are going to be probably seeing more [Strategic Lawsuits Against Public Participation (SLAPP)] suits at the national level. There are many ways you can get involved. I'm just going to say that we have more resources at the San Francisco Bay Physicians for Social Responsibility (PSR) website. Ask me later when you have questions, I can talk a little bit more about what's happening now with the Trump administration and its effect on the campaign. Thank you.

Srinidhi Kumar: Thank you. We've worked very closely with PSR on almost all the campaigns, and it's very inspiring to see medical professionals come and stand in line with us on a lot of our work. I want to start on a more depressing note. [laughter] Just, a lot of things have happened in the last month. I wanted to talk about three really, really important policy programs and policies that the Trump administration has rolled back or cut in various ways. One thing that undercuts all our work here is the Justice40 provision. It essentially says that any federal funding that goes, 40 percent of that funding should go to environmental justice, social justice communities.

That changes, the definition changes largely, but they had a map that involved a screening tool very similar to the CalEnviroScreen tool that's available on the website that actually UC Berkeley helped build. Then, just this week, the Trump administration laid off the entire team that helped run this program called the Low-Income Home Energy Assistance Program (LIHEAP). It's one of the only programs in the country that actually helps mitigate energy burden for consumers. That's really important both because of extreme heat, but also extreme winter. In the past, that was the program that helped make sure that people, during winter months, their utilities are not shut off. Utilities do that quite often. If you've not experienced a shut-off, it's brutal. We were essentially fighting LIHEAP to actually expand the program to also have the same protection during extreme heat months, which has been one of the biggest causes of climate-related death in the last few years.

The last is the U.S. Department of Housing and Urban Development (HUD). This is very close to me, so it's going to be very sad. In 2009, during the Obama administration, there was a rule that essentially passed to say that HUD should keep changing its building codes to make sure that the homes that the lowest-income communities live in are greater than our two basic standards, not really any high standards. From 2009 until last year, HUD didn't really change. This is under different administrations. I also want that to be really close to the heart as we're talking. It doesn't matter which administration.

Of course, this is terrible right now, but there's a lot that could happen under every administration. I just want to put it out there. HUD changed its rule last year under a very, very good team. It was supposed to have better building

codes, essentially just improve the energy efficiency of a home, which actually helps with the energy burden again. That got lifted out. These are really, really important federal rules because they help energy burden and housing burden, both of which are significantly high at this point in time right now. I want to bring it back home to Richmond, which Bret talked about.

I was working at a community choice aggregator in 2017. Part of the work I was doing involved doing income. It was running a program. It was a heat pump install program. You have to go into people's home to understand or see if they're eligible for the program. Two hundred percent of the federal poverty guidelines was the threshold for the program, which is obscenely low for Bay Area. If you can survive living in the Bay Area for that amount, it's just mind-blowing. It's like $30,000 to $40,000 annually per person. Basically, you have to go into people's homes, see if they're eligible or qualified for the program.

There were a lot of problems with it because, essentially, many of these homes, one, there are undocumented immigrants. They don't trust you. You go into these peoples' homes and you're asking for income documents, which are very sensitive. I wouldn't be comfortable giving it to anyone. That was one layer of it. These are residents living in California's disadvantaged communities, so these are already redlined communities. I'm guessing you all know redlining, so I'm not going to go into that. If you look at the historic redlining map, and then if you overlay that with the California disadvantaged communities map, it's almost like it matches very closely.

If you look at all the socioeconomic indicators, Richmond was one of the most sensitive neighborhoods. There was a lot of power that the utilities could have expended, and the California Public Utility Commission could have changed to make sure that these programs are made easier on the residents who were benefiting from it. We had to go into these homes, collect all these income documents to make them eligible. A lot of them don't have those documents. Now their utility rates are already high, but even back in 2017, they were paying $400 for a single person, small unit home. They didn't have access to efficient heating systems. They didn't have a HVAC system. These were people having just plug-in heaters, which, for a lot of us, we have to plug in only when we need additional heat. There is that.

In addition to that, we were essentially saying if they don't have the documents, we have to make them ineligible for the program, which they desperately need. All this to say—and these homes also have existing issues as Dr. Bret spoke about, so mold, asbestos, a lot of these programs—both the federal programs and state programs and local programs make it impossible for you to make those upgrades if you're living in a place with mold or asbestos. Unless that's remediated, no contractor would touch these homes. These are all very important things to consider.

On top of all of that, in the last few years, building electrification movement has come to a reckoning because it's impossible to touch low-income homes without having the fear of eviction or gentrification. Both of

these have come directly in. It's just become a part and parcel of the movement right now. This is to say we lack newer housing stock. Our existing housing stock is extremely old. These people have been neglected for years and decades. Our current programs don't work. Right now, California is also doing a terrible job because we're also going back on some of our budget commitments and making sure these homes are electrified. This is not new. Different states currently, California is one of the more progressive states, in that many cities actually have eviction protections, really solid. Even with that, there's a lot of fear around evictions. In states like Illinois, for instance, there's an active law that says that local jurisdictions don't have the authority to even pass the tenant protection law.

I think that's pretty much what I wanted to talk about, is just building electrification movement is now going through this massive reckoning, as historically, most of the climate movements have ignored housing. For instance, solar, very few people were able to access solar. We're really trying now to make sure that we're not doing the same thing. A lot of really, really interesting policies have come up at the city level, so I'm really excited to hear both of them talk about it. Keeping in mind that environmental justice and housing justice should be at the forefront of everything. If it doesn't work for even one person, it is actually a problem, and so really not thinking about exemptions, but really thinking about, "how do we make sure that there are supplemental policies in place so that we're doing the right thing?"

Benny Zank: I'm with the City of San Francisco. Srinidhi did a great job laying out the challenges that we're facing, and so I want to talk a little bit about how we're trying to tackle them. I really appreciate the point that for a long time, when we're talking about the climate movement, when we're talking about energy efficiency and electrification, the philosophy was to deploy technology as quickly as possible, provide incentives for early adopters. When we say early adopters, we mean wealthier, whiter constituents to be able to put it into their homes first, and that ideally brings down the price for the rest of us.

What we've seen is that what often happens is wealthier folks who actually can afford the technology are receiving the majority of the subsidies, and so there's a real shift, at least an attempt at a shift happening where we put public dollars towards supporting those who need the most financial support and wraparound technical and advisory support for putting these technologies into older homes, ones with more difficulties, and providing higher levels of financial support potentially for that as well. What we're doing in San Francisco is [that] I manage a whole project called the San Francisco Climate Equity Hub.

It's made up of an advisory committee, of which PSR is one of our members. We have a lot of local community-based organizations that are part of our advisory committee, as well as technical experts. They help us inform our focus and direction as we try to deploy this type of technology. What we're talking about is replacing gas equipment, so primarily furnaces, gas, water

heaters, sometimes gas stove, gas dryers with high-efficiency electric alternatives. What we really try to focus on is deploying for our completely free of charge or for an extremely low copay for low-income communities, primarily in our environmental justice communities.

That's where the highways are running, that's where the old Navy shipyard is in the southeast of San Francisco. That's the communities we're talking about. What we really try to do is we look at holistically what is the condition of the home, what are the different types of measures that need to be done as pre-work in order for a successful installation. We've started with the heat pump water heaters due to the Bay Area Air District rules that are upcoming, and that I think Chris will talk a little bit about, maybe. We're also looking at pairing that with HVAC upgrades as well as full electrification, doing the stove potentially drier as needed, and we're building that out.

Alongside that, a really big focus for us is local workforce development. We are working with our partners, Emerald Cities Collaborative, which again is a community partner and also a national nonprofit, on connecting this work to local minority contractors primarily, and ensuring that prevailing wage is paid on all the projects, that these are well-paying, family-sustaining jobs. What we're really trying to do is have the energy transition be a positive financial opportunity for those who have been disadvantaged the most historically within our city.

That's by providing these upgrades to low-income folks who still manage to own homes, oftentimes because it's been passed on through family, that they're able to build wealth in their home. Then also, that people are able to find work in this transition, and that it's not a race to the bottom in terms of the cost of installation. We want to make sure that people are paid, compensated fairly for their work. That's a big focus for us. We're really just getting started. We're hoping to do probably fifty to one hundred installations this year, and just grow from there.

We also are partnering very explicitly with our Department of Public Health and our asthma and allergy clinics, so that those who could have the most immediate benefit, when we're talking about environmental conditions leading to acute asthma and allergy, are receiving those benefits. That's a big focus for us as well. The funding is challenging, honestly. We have our own budget crisis in San Francisco. We have our own challenges funding our programs, so we look for as many partnerships as possible. We have managed to hold on to some federal funding that has been paused, but is coming back to us, thankfully.

Then we're looking to leverage and collaborate state opportunities as well and looking into alternatives in terms of local bond measures, local tax measures, seeing what's feasible there because, like Bret is saying, that in San Francisco, half of our emissions are from buildings. The nitrous oxide emissions, which is leading to the really bad air quality that we have, is being driven by buildings, and so it's a big focus for us.

Chris Jensen: Thank you. I'm going to shift focus a little bit and actually talk about new buildings. I'm also going to try to run through about six years of policy making and litigation in seven minutes, so try to bear with me. One, I think new buildings are an opportunity for some of the reasons that you've been hearing, is that once you have the natural gas infrastructure, other climate unfriendly infrastructure installed in existing buildings, it's an issue to transition and get rid of it. You're also talking about installing infrastructure with a long lifetime and new construction that hopefully we're not going to be using fifty years from now. If we are, then we're going to have a lot of problems.

That was some of the motivation for starting to look at limiting natural gas infrastructure in new buildings in Berkeley. The initial push really came from advocates, particularly the Building Decarbonization Coalition was very involved. One of the great things about working and being in local government is if you have an idea, if you have a complaint, if you have a problem in a medium-sized city like Berkeley, your elected officials will listen to you. They'll meet with you. They might not agree with you, but you will get their attention. That's certainly what happened here. The Building Decarbonization Coalition and other advocates were looking at the problem of emissions from buildings, which are significant and would have to be really dealt with to meet the climate goals at the state level. Based on that problem, they got the attention of people on the Berkeley City Council, and particularly Council Member Kate Harrison, who really spearheaded a lot of the work here. It was an opportunity to move forward at a local level at a time, which we're in again, where any sort of sustained attention or even taking issues of climate change seriously on the federal level was paused.

We've just been through, really, cycle after cycle of that over the course of the last thirty years, and we're going through it again. It's just it's an opportunity to think about other approaches. Certainly, local approaches are one option. The City of Berkeley approached this issue as a public health issue for some of the indoor air quality reasons you've heard about earlier, but also, I think, the fact that global warming and climate change are a public health issue. We approached it as that issue; it's a local health and safety regulation. It's not any different than banning home appliances that would catch on fire. That's certainly how I always viewed it from the start.

It was a novel approach at the time. From the perspective of an attorney for the city, we always recognize the legal risk, even from the beginning, and we weren't really surprised by the litigation. I think just trying to give some perspective as an attorney when you're in that situation and you're advising policymakers on those risks, you want to be clear with them, but you also want to look for ways to mitigate the risk in the legislation. That was really part of the process that the city attorney's office in Berkeley did in working with our clients, with the city council, with the advocates for this measure.

We took some important steps as far as building and exceptions to the prohibition, making sure that the ordinance was implemented prospectively, which helps just limit the potential for somebody, say somebody with a development project that's in the development pipeline that would have to redo a lot of work that they've already done. Just to avoid that disruption, we took that step. I thought at the time that some of these changes would really insulate the ordinance from a federal court challenge for standing and rightness and other reasons.

The courts weren't actually receptive to that argument, but that was certainly the thinking. It did, however, from a political standpoint, really ensure that at the local level, there was really no opposition to the adoption of the ordinance. PG&E was very supportive. There was no meaningful opposition from the development community in Berkeley. Even restaurants, which were ultimately the trade group that challenged the ordinance, were silent at the time of the adoption. It wasn't really until quite a few months after the ordinance was adopted in July 2019 that we heard anything and that really the first sign was that a lawsuit that the California Restaurant Association filed against the city.

I won't spend too much time talking about the details of that litigation, but that the essence of the claim that was litigated is the California Restaurant Association argued that the ordinance was preempted by the Federal Energy Policy and Conservation Act, and specifically provisions in that statute that set uniform national standards for appliance energy efficiency. We took the position in the District Court and the Court of Appeals that this was a health and safety regulation. The District Court agreed. The Court of Appeals, and I'm going to rush through this a little bit, did not. It basically held that the prohibition on installing natural gas appliances regulated the use of energy, and that was preempted by federal law. Okay. That decision was not reheard en banc by the Ninth Circuit. The City of Berkeley eventually did settle with the plaintiffs in the case, and so to a great extent, there's been a rollback on a lot of these ordinances that were adopted in California. I do think there are some paths forward that people are looking at. One thing that Betty alluded to earlier was standards that are based on nitrogen oxide emissions, air quality emissions in indoor air. There are exemptions from federal preemption for building standards that jurisdictions are looking at, and also just more limited restrictions that carve off, say, natural gas-fueled stoves, which is more of a political decision than anything else

I think the obvious question is whether there was any progress made from adopting an ordinance that was ultimately struck down by the Ninth Circuit. I do think it certainly moved the conversation forward. We are having the conversation today, and I think it showed what's possible at the local level. I'd like to think that local jurisdictions will continue to push for these changes as we really see pushback and rollback at the federal level, and just the ongoing

struggles of international cooperation in this area. I think with that I am out of time, and I will turn it to you, [Marice].

Marice: I'm going to move us to two parts and go right into Q&A here.

Benny: Yes. I think maybe, as a lawyer, Chris can't speak as openly about that ruling. It was an absurd, totally absurd ruling by the Ninth Circuit. Extremely politicized and a total misreading of federal law. Really upsetting. The en banc review was not moved forward, also along political lines of who the judges were appointed by. Just really absurd. Unfortunately, more than fifty local jurisdictions had ordinances on the books. Every single one, except San Francisco, has either suspended or not moved them forward. Ours is still in place. We have had to amend it to allow a difficult path forward for gas and new construction.

What we are seeing is, because of new rules from the California Public Utility Commission, removing subsidies for gas line extensions, removing subsidies for electric line extensions for mixed fuel buildings, and only providing those for all electric, now 80 percent of new construction in the state is all electric. A few years ago, it was 1 percent. We are still seeing, despite those setbacks, that the move is towards all-electric, especially new construction. It's much cheaper. It makes a lot more sense. It's where things are headed. It doesn't make sense to put in gas. There are some positives there, for sure, but the local jurisdictions have been very hamstrung by that rule.

Chris: Yes. Just for the record, I agree with everything that Benny said about the Ninth Circuit decision.

Marice: My public health law students have heard me talk about politics. Srinidhi, I pick up your sadness, and I've had so much sadness as a public health person in the last couple of months, and this last week with Center for Disease Control. I'll just ask the first question, which is this idea of when politics are in your face, and they're not in your favor, but in your face, how do you manage through that as an advocate, as an attorney in the face of direct opposition? It's very hard, and I'd love your thoughts on that.

Liam: Hi, I'm Liam, one of the editors-in-chief [of *Ecology Law Quarterly*]. As someone in the Chinese American community, I've noticed that a lot of the pushback against building electrification comes from that you can't generally use woks on them. I'm just wondering, particularly in cities and in a region that has a lot of Chinese Americans, what sort of engagement are you guys doing about that?

Marice: Great. Another question. Yes, Chloe?

Chloe: What sets gas stoves apart from all other gas appliances, such that they are selected out, as Chris mentioned? You mentioned that there's a political reason to keep stoves away from the rest of the dialogue, so I'm just wondering what sets those things apart.

Marice: Okay. I just open it to you all to jump in.

Chris: Yes, I can take the gas stove question. I think it's the idea that people, they're very much attached to their gas stoves, and at least for certain

types of development, builders are attached to having gas stoves in their homes. The conversations that I've had with developers is mostly building for rental housing. Most developers are very comfortable with all-electric construction, including gas stoves. It's for-sale housing, and particularly higher-end housing, where you tend to get a lot of pushback. It's a political risk management decision to adopt that kind of ordinance that has that carve-out, and some jurisdictions have adopted to do that. Which I think is understandable given some of the risks that the current Ninth Circuit case law poses for them.

Srinidhi: I was going to build off of [that]. In affordable housing specifically, having gas stoves is a liability issue. Most affordable housing developers specifically go in for electric stoves, but it's changed to induction more recently because of the efficiency narrative. When we were working on gas stoves, we got Freedom of Information Act requests and we weren't able to communicate about gas stoves. We were not able to put our strategy in emails. It was really bad. Even now, funders want to step up, they don't fund us to do gas stove work because it's just been so politicized under the Trump administration. Even previously, this was under the Biden administration, but things got really bad.

Even now, with most governments, the pushback and the lawsuit comes in the language around community choice. They've essentially taken over the language on our community choice. Washington recently had [a bill], but they're using community choice as a way to undo all the work we've all been working on.

I wanted to talk about the woks. Building Decarbonization Coalition has a chef influencer program, and they've done some cooking demos with woks. Colorado had a chef, like an Asian restaurant specifically. I don't know if it was a Chinese restaurant, but he was using woks in an induction cooking setting. I don't know the appliance, but I know there's been a lot of work that is going into it, acknowledging the fact that, I will say as an Indian, I can't cook some of the things on the induction stove, but that health benefit for me personally outweighs everything else.

I wanted to answer another question quickly, too. I think movement building is so important, and I think you mentioned labor. Having a broad-based coalition I think is so, so, so important because in a lot of fights, like not working with a restaurant union. There are a lot of people who care about electrification, and it's a relatively new movement in comparison to a lot of other work. I think there's a lot of work happening in reaching out to neighbors, and reaching out to housing justice communities, and reaching out to environmental justice communities. I just think that is so critical now more than ever to make sure that we defeat false narratives around that the gas industry is spewing.

Chris: Just to address the questions about the impact on Asian communities. One example: Cupertino, where I just recently worked is a majority Asian city, did have electrification ordinance that's been modified in

response to the Ninth Circuit ruling. One of the things that the city did was have a presentation with a chef that came in and demonstrated how induction cooking is effective for [using woks].

I think that kind of outreach is important. It's always difficult to get people's attention. In local government, you always have to deal with the reality that 95 percent of people, or probably more than that, are just not paying attention. They've got other things going on in their lives. I think there's definitely been that effort, I think, in a lot of communities.

Benny: Just to talk about this, though, for one more second, we have to understand it's incredibly cynical, the campaigns. In red states, almost everyone cooks on electric, because electricity is very cheap, and that's just how buildings have been built, is mostly electric. Where do we see the most gas stoves? Actually, in blue states, in New York, in New England, in California.

It's just the whole thing is so made up, anyway. These campaigns of getting people fired up, they're going to take your gas stoves. Actually, these people don't have gas stoves in those states, so it's just very absurd.

Bret: I just wanted to underline two points. Looking at California: California has, and local regional air districts have had very ambitious plans to regulate emissions by moving appliances for space and water heating to all-electric. Bay Area Air Quality Management District, now called Bay Area District (unfortunately, BAD, I guess for short), now is still pursuing that officially.

I think what we've been outlining is the challenges are high. One of the big challenges is that electricity costs are really high. This would be an undue burden on justice communities along with all of the other housing challenges mentioned. The California Air Resources Board was hoping to piggyback on this, and over the next few years, roll out required transition.

Whenever replacements were required, the space and water heating would be electric. They may have to pull back on those because of all the challenges that also include the cost of electricity itself, going from gas to electric.

Then on the nitrogen dioxide, I want to underline what's already been mentioned, which is that this is an area of opportunity. The California history is that the California Environmental Protection Agency set limits, or not limits, but recommendations for nitrogen dioxide for indoor air based on the World Health Organization and Canada's air limits at the time. Those actually have been upgraded by the World Health Organization and Canada to be much lower. We have the opportunity to recommend indoor air be on nitrogen dioxide at much lower levels, then that will help move along as a health argument movement in this direction.

Marice: Did you want to talk about politics? You said something about Trump earlier.

Judy Grisel: I said it with the Bay Area Air Quality District, because Trump is basically trying to claw back all of these incentives that we've been discussing, which are necessary for EJ communities to be protected in that

transition. We can make arguments that EJ communities will benefit the most from transitioning as fast as possible on the health side. We have to look at all these other issues.

Audience member: I have two questions, if that's allowed. Two very different things. In the global south, particularly, I know in India's context, there's a lot of shifting and providing, like nonprofits that provide gas stoves to people who primarily rely on wood burning. I was wondering about your thoughts on that as a transition tool, and the inequities of the global south still getting what's not the best technology for their health, and how you manage those trade-offs if anybody has worked in the global context.

My second question is more specifically about the Sierra Club. I'd be interested to hear what kind of work or collaboration you do with the lawyer side of Sierra Club because, firstly, I've not had a great experience talking about EJ with Sierra Club attorneys. I don't know if you have any insights into how to get environmental attorneys more onboard with EJ rather than other sides of Sierra Club.

Audience member: My understanding of Building Electrification is a little weird in case, so I appreciate you guys being here for equity, but my understanding is that there's a lot more usage when people are back from work. Like high overload. I wonder what's the collaboration with verticalizing so that there's not reliance on building all the buildings to power buildings, whether it's higher need. If you have any information on that. Sorry if that's not 100 percent clear.

Audience member: With my apologies of throwing a fourth question into y'all: Benny, I know you mentioned a little bit about the issues with the solar development is mainly white, upper-income communities, and a lot of the work that San Francisco is doing now is targeting those lower-income communities. Was curious about your comments or anything about a lot of these benefits who require showing income.

All those folks who are undocumented, don't have EB-2, or are scared off by that. Was just curious about strategies you all have learned now to make sure those benefits are going to those communities without scaring them off, and making them not have to provide those income or white neighborhood policies ways to deal with that juxtaposition.

Srinidhi: I'll talk about the global south question first. It's something I've been [contemplating] a lot. There's been a lot of conversation that comes from a few organizations, both around the mining that's happening for the batteries. That's definitely an issue that's come up a lot. Now, very good. Sorry, I don't mean to sound theoretical at all, but there are really good books just exposing how harmful that is. Very recently, it was a really frustrating conversation. As probably you're aware, heat pumps are already a thing in India. HVAC systems, they just work really well. Water heaters too.

Very recently, I had to be in this conversation around grid capacity. A large part of India is dealing with extreme heat. People were talking about how

we shouldn't be influencing them to get air conditioners. That was a very touchy subject for me, because I was like, "Oh, well, have you lived there?" I don't have an answer per se, but I come straight with that whole, just an attitude around how America and other more elite communities think about the communities that have historically, one, not contributed significantly to the pollution, but also have not had the same level of wealth to access some of these technologies. That's just something.

On the Sierra Club question, it's just very funny and sad at the same time, because I was in a call with a lawyer two days ago, and was talking to an environmental justice organization around climate rights. It was horrible. I have no excuse here, but there's a lot we can learn from both, given the history of just the organization being from the climate movement, and now focusing on it. Also, one thing everyone, again, in the space has been working on is how much of all this falls on the big movement itself. I can't talk broadly about Sierra Club, but I can talk about the Building Electrification campaign that I specifically work in.

It's just, really, I don't think it's possible anymore to run a campaign that touches people's homes without talking about eviction. It's just something we can't do. I am increasingly seeing people not renting talk about these policies. It is really frustrating, because you can just tell that they've never rented probably in their lives, which to me is just—sorry, this is getting personal—it's just really mind-blowing, because this person was like, "A heat pump can't cause eviction." Which is true. Probably just having a heat pump can't cause eviction, but we need protections in place.

I think it's a conversation that we are having internally a lot about, like what does it mean? We work more closely with organizations that lean on this work. In California, we are working with the California Clean Unit Coalition. In other parts of the state, we are trying to work with environmental justice organizations and directly fund them to do that work. Personally, I'm opposed to doing pass-through grants, so we also try and fundraise for them from big donors. These are baby steps we are taking to just work on things we missed tackling to start on.

To answer your question, I think it touches on what I just said. I think, for instance, for the Inflation Reduction Act, some of the comments we wrote was along with immigrant rights communities, making sure that those are represented. Again, we worked with U.S. Department of Energy lawyers very closely, and they essentially tell us what is possible and what's not. That's also very fascinating to just know what the bounds of the work are within these smaller programs.

Chris: I really want to briefly comment on the sort of keeping in mind the global south in these conversations. I just wanted just a perspective. This is the same conversation that we were having when I was in grad school studying these issues in the nineties, right? It's the access in the global south to technology, and the right to develop it in the context of a global problem. I

think it's a good point to raise since we're talking about local solutions in one of the most affluent places in the world, like in this region. Just that context that, yes, I don't have a solution other than to say that this is a conversation that people have been having for a long time. I don't really think it's going away.

Benny: Just to emphasize Srinidhi's point on India, I think it's maybe 4 percent of the population has AC or something like that, very, very low. With increasing temperatures, the need for AC is, of course, rising. The thing with electrification is it's only as effective in fighting climate change as how your electricity is generated. In most countries, in most states in the US, our electricity is coming from fossil fuels. There's that component as well, where putting in new electric appliances will increase the use of fossil fuels unless you're changing the source of the electricity as well.

That's something that, of course, we talk about electrification being easier because it's easier to generate electricity with clean sources, but that's not necessarily happening. It's a very difficult picture. There are those aspects, though, of four countries that haven't been the ones contributing to climate change. Do they need to then pay the price by not installing AC? Probably not. I don't think that's an equitable way to look at it at all. In terms of, there was a question about peak load as you're switching. The thing with heat pumps is they are incredibly efficient.

We're talking three to five times to six times more efficient than your gas appliances. There really is quite limited increase in peak electricity draw in that four to nine window. There is also a big effort to do scheduling outside of that. Especially for water heaters, if you have a big tank of water, you just heat that up outside of those hours, it'll stay hot. It'll reduce one or two degrees over the course of the day. That's a very easy thing that we're trying to do across the state.

On the heating and cooling of your home side, that's a little more difficult. There are attempts to do some amount of scheduling. I think there's also an attempt to put in technologies that use water as a thermal battery for that as well, and be able to, you have a big hot water tank, you then convert that to space heating to avoid that as well. That's certainly being done.

Marice: I wanted just to give us an opportunity to give you some free advice on shaping your career and going forward on these issues, environmental justice issues in particular, to focus on that. I'd ask everybody to put your energy towards that. My advice to you is do exactly what Srinidhi has said, which is the listening and coalition building, the secret sauce between the science, the communities, and the law.

When you get that conversation going in a synergistic way where people are working on teams, and listening deeply to what reality is like for the people you are serving, that their needs are the focus, the science needs to address those needs, and the lawyers need to take those needs into account and keep that cycle going. It builds on itself, builds on itself, builds on itself. It's very

exciting. It is the secret sauce to winning in the long run. That's my advice to you.

Bret: I ditto that advice. I also just wanted to say there are so many opportunities for practice. Everyone, whatever their skillset is, there's room for you, everything from being in the extreme of being very policy-based and litigation detail-oriented to being someone who's interacting with those communities. It's interesting. I've encountered, just naming a different environmental organization, Earthjustice. Their model is they have lawyers who often are not mitigating, but are actually potentially leading in coalitions, but leading on advocacy. They know the details, and they are involved with the communities themselves.

One example, I see Margaret Gordon here today, and I want to welcome you. She's with the Environmental Indicators Project in West Oakland. Earthjustice works in that community, along with other groups like Physicians for Social Responsibility, to fight to stop the port from increasing emissions. There's a whole range of where you can fit in.

Srinidhi: We've heard about increasing rates, we've heard about gas line extensions, these all happen in really wonky Public Utilities Commission (PUC) dockets. A lot of environmental justice communities and organizations don't have the bandwidth, don't have the capacity to engage in many of those dockets because rate cases just go on for years and years and years, and tracking them is hard.

I can just offer like, there are two places that I've really been inspired by, definitely Earthjustice was one of them, and Just Solutions Collective, they do technical assistance for EJ groups, and I feel like they're just doing really incredible work in terms of breaking down that silo, because it's just impossible to get involved in PUC dockets, and only California I think provides intervenor compensation, no other place does, so it's also hard in terms of like, there's just no resources. I would say leaning into organizations that work closely with EJ groups and representing them is a very thoughtful way to engage.

Benny: I think both of those examples are really good. I would encourage everyone to look into working on the local level, it's very rewarding to work directly with people. I've worked on state and federal policy, and sometimes that feels like where you're having very large impacts in terms of the numbers associated with it, but it can also feel like you're very distant from the people you're trying to help. Just a plug to get involved at the local level, and I wanted to quickly speak to the question a little bit more about, "how do we not scare off communities?"

Honestly, what we've encountered to be the most difficult is serving renters, more than whether folks are documented or undocumented, just like that relationship between tenants and landlords is a very difficult one, and finding a way to intervene in that programmatically is very challenging, and that's been a challenge throughout the state. Landlords don't have a huge

incentive to improve their homes, honestly, and to put in these technologies when other people are paying the bills. It's just, it's been a very tricky puzzle.

Chris: Just quickly, I will second the idea of the plug for local government as an opportunity to practice law. If your law school experience is anything like mine, you wouldn't necessarily know that local government law exists, right? Certainly, this is, I think, the Berkeley Natural Gas Ban is an example of how you can really work on interesting, cutting-edge, very impactful projects, matters as a local government attorney, and you certainly do.

It's very much a unique role because you are balancing competing interests, and you're trying to help policy makers solve problems, and echoing some of what Benny said, is you're just really close to the people that the government is representing, and that your elected officials are representing, and so you definitely feel that impact in a very personal way. Yes, just definitely a plug for something to think about as you're going out into the world and becoming lawyers and practicing law, is that there are really good opportunities to do work in the local government field.