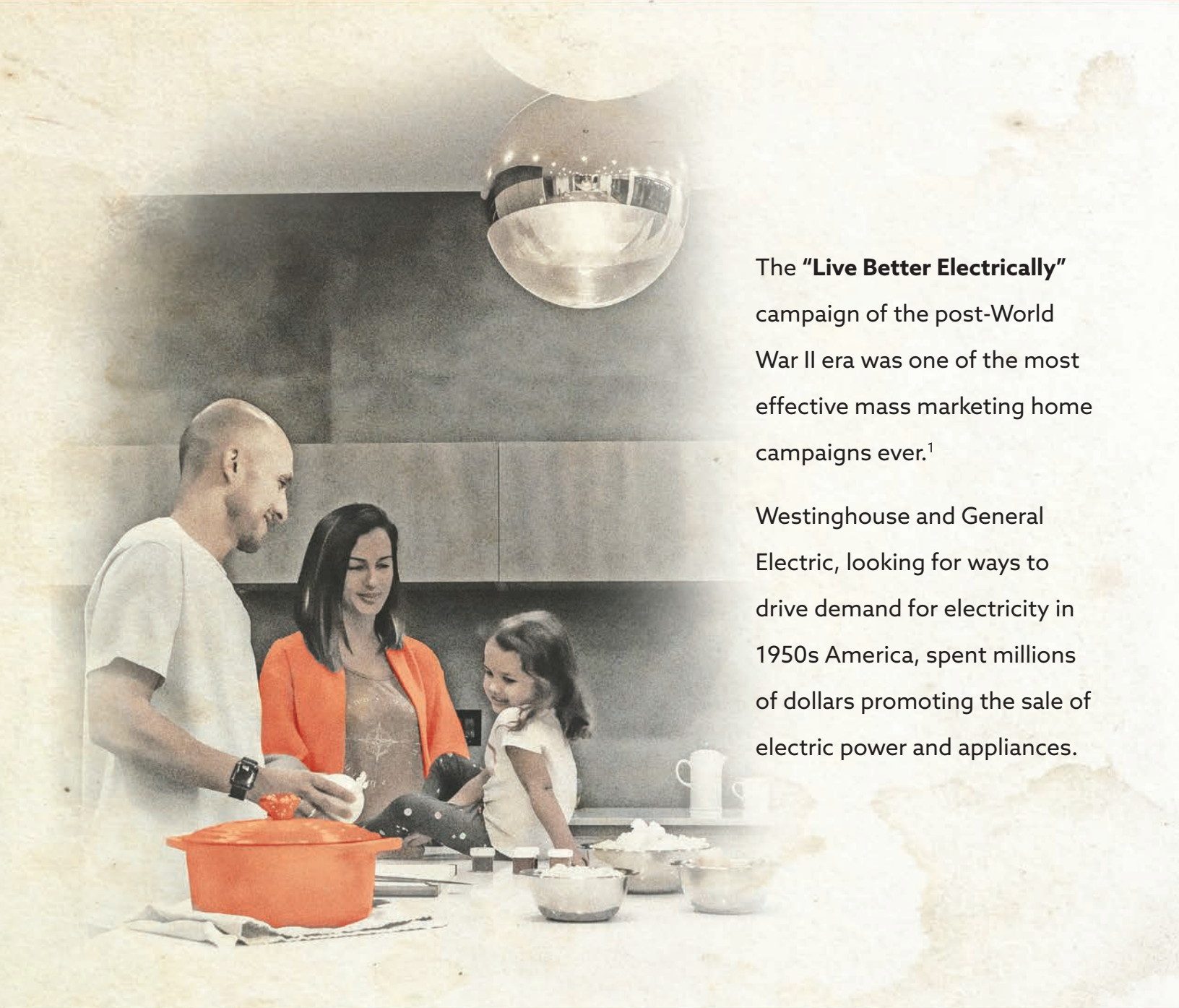


ALL-ELECTRIC: Beneficial Electrification Gets a Second Shot at Ubiquity



The “**Live Better Electrically**” campaign of the post-World War II era was one of the most effective mass marketing home campaigns ever.¹

Westinghouse and General Electric, looking for ways to drive demand for electricity in 1950s America, spent millions of dollars promoting the sale of electric power and appliances.

An Interview with Kathy Kuntz

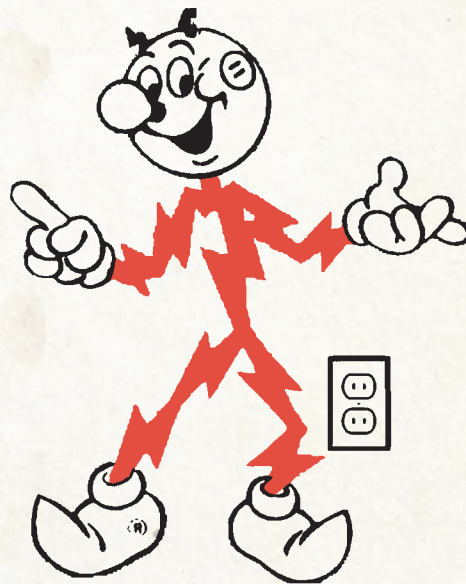
Electrification at the turn of the millennium tapped into a unique set of existential themes—climate, equity, health, safety. Beneficial electrification only lives up to those values if we achieve a cleaner grid, save customers money in the long run, and do it in an equitable manner.

Some uses have already achieved cost-efficiency—electrifying some buildings and many vehicle types.² And, on the buildings side, California and communities in Colorado are experimenting with campaigns to switch to heat pumps and create new building standards.

Just this summer, California opened up the state's \$1B energy efficiency budget to build electrification.³ It's clear that the electrification trend is growing.

For more than 20 years, our industry has been promoting high efficiency natural gas appliances. Pivoting to electric end uses—while technically feasible and arguably beneficial from a climate standpoint—will not be easy. It will take time and intense effort to work with manufacturers, distributors, and contractors to support new technologies. Not to mention it will take years to change regulatory schemes that have long forbade incentives for fuel switching.

Research questions about how people view natural gas in their homes, what they think about electric appliances versus their gas counterparts, and what they would be willing to pay to incorporate new technologies are all central to understanding how to increase adoption. ILLUME is pushing forward discussions of beneficial electrification and what it will take to understand and move the market in the coming years. We are excited to devote these next few pages to an interview with Kathy Kuntz, an industry thought leader, to talk about some of the key themes and tensions around beneficial electrification.



Reddy Kilowatt is a fictional character that acted as corporate spokesman for electricity generation in the United States and other countries for over seven decades.



Kathy, Founder of Kanndo Consulting and former Executive Director of Cool Choices, believes that addressing climate change requires both technological breakthroughs and engaging millions of people. She has spent most of her career developing and implementing programs that facilitate change and believes communities can mobilize residents and businesses to achieve deep emission reductions via electrification, clean energy, and energy efficiency.

Q How has your perspective on electrification changed over the last several years?

A It's changed dramatically. I distinctly remember being at a climate advocates conference, three or four years ago, when a presenter talked about scenarios to get us to zero emissions by 2050. He said that one of the metrics would be to get sales of high-efficiency heat pumps to overtake the sale of boilers and furnaces by 2025. The room was full of advocates, so they are like 'ok.' But as a program implementer, I went into a tailspin. Because for 20+ years in this industry, we have been telling people to move away from electric heat. It's been one of the most consistent things we've said. The Wisconsin Energy Bureau used to monitor the number of electric water heaters left in the state and we watched the number go down each year. And a decade later we are going to now tell contractors and homeowners the opposite? Changing how people think is a gargantuan task.

I totally get why electrification is the answer. The question is how! Since that first discussion three to four years ago I've been obsessing about how we might get this done. I think a lot about how we make inroads and start to make progress toward full electrification given our ambitious climate goals. On transportation, I think we're starting to see a little progress, but relative to buildings in the Midwest, we've got a great deal left to do—we've not yet even engaged the industry players effectively.

Q How does renewable energy fit into the electrification movement?

A We don't yet have a clean electric grid and yet we need to start electrifying things right now given the lifecycle of products. For example, we only replace boilers every 20+ years, so we can't achieve deep goals unless we start electrifying some of those items right away. For heating equipment, we'll likely only get two opportunities to get this right before 2050! So, we are doing two things at once: making

the grid cleaner and transitioning people to electric transportation and buildings.

Of course, there's a tension: the grid isn't yet emission free, so folks can use that as an excuse to stay with fossil fuels. I hear this most around electric vehicles (EVs). In Wisconsin, more than half of our electricity still comes from coal—it's dirty. And even so, it turns out that EVs are cleaner than most of the vehicles on the road today. As our utility adds more renewables to its mix, that electricity gets cleaner and cleaner. Humans are creatures of habit and we resist change. I'm accustomed to heating my home with natural gas, so when you tell me electricity is better, I'll look to a reason why you're wrong so that I don't have to change. Noting that my electricity comes from coal, which has more emissions than natural gas, is a reason to resist electrification—it's an excuse to keep doing what I've been doing. To achieve electrification, we're going to have to address this head on, and, among other things, that means helping consumers understand the emissions associated with various options.

Q What role do you see for electric utilities?

A It's going to be critical that utilities are transparent. As a consumer, I can see my usage on my utility site. I want to see my carbon emissions too, or at least a decent proxy of my emissions. There should be a way for me to explore how my emissions change when I replace my gas furnace with an electric heat pump or trade in my gas car for an EV. As people are increasingly concerned about climate change, they are going to want to see these data.

For air source heat pumps, we need to be strategic where we strategize in these markets—data I've seen says they are already cost-effective when compared to propane or fuel oil. But natural gas heated homes might not be the best first target. A target for utility air source heat energy efficiency programs might be new homes in rural Wisconsin, for example. The builder/homeowner needs to decide to put in a propane or fuel oil tank or pay for a natural gas line. In that circumstance, they

should think hard about electric. As an urban dweller in Madison, switching to a fuel pump isn't going to be the most rational thing to sell today. Although the niche in the urban market is circumstances like AC failure. There should be a program that incentivizes me to put in an air source heat pump that does all cooling (and some of my heating) so my furnace life will extend because it is only heating on the coldest days. It has to make sense to the consumer. The pitch cannot be that the heat pump will cost you more, but your kids will have a planet to live on.

We know—from decades of energy efficiency programs—that math is necessary but not sufficient to inspire change. People will need to see benefits that motivate them to change. Driving an EV is like paying just \$1/gallon for gas but the biggest benefit of an EV is that it's fun to drive.

The building heating and water heating challenge is enormous. For decades, efficiency programs in Wisconsin asserted that heating anything with electricity was a bad idea. Now, to address climate issues, we will encourage certain electric heating technologies and discourage gas. Folks are going to resist! Contractors are tied to manufacturers that don't make heat pumps and they will also have anxieties about the reliability of new equipment versus the gas-fired stuff they are familiar with. Change involves risks and we've got to think creatively about how we share that risk with the market providers—it's a huge opportunity for the utilities to be a credible partner. There's also a broader challenge here about how this is framed. Again, when I don't want to make a change, I look for reasons not to—so if my utility is telling me to electrify my car and house I might wonder if they are just trying to sell more electricity. Transparency is really important. How do you show in the long run this is better?

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Q What about a role for the natural gas utility?

A In Wisconsin, our investor-owned utilities are combination utilities—they sell both electricity and natural gas. The potential for electrification obviously looks different to a combination utility versus a gas-only utility. That said, I think there are big equity concerns as we move toward electrification. A few years ago, we talked about the potential for an electric utility death spiral and now there's a potential for a gas utility death spiral where affluent customers transition to all-electric homes, leaving fewer and fewer customers to pay for the natural gas infrastructure. As cities like Berkeley, CA begin to ban natural gas in new homes, we need to think carefully about the best ways to transition away from natural gas, and certainly all utilities need to be part of that conversation.

Q In your home state of Wisconsin, you've had a long history of advocating for climate change mitigation through energy efficiency and renewable energy. With Wisconsin Governor Tony Evers's recently unveiled plan to have the state go carbon neutral by 2050, how will you continue to lead the way to beneficial electrification?

A As an activist in Wisconsin, I'm advocating for spots where we can find wins around electrification, wins that will multiply. I'm really interested in the EV market. There's huge potential for collaboration around EVs—it's screaming for a market transformation approach. I have been talking to utilities and other stakeholders about coming together and building a program.

And definitely there are other niches—rural homes with propane heat, certain air conditioning applications, new construction where we could prevent new gas lines. All of those niche applications will help to build the expertise we need to do even more. Additionally, I'm really concerned about how we help communities achieve their ambitious climate targets. After the push to set big goals—clean energy or zero emissions by 2050—some policymakers think they are done, but setting a goal is just talk. We haven't done anything yet that counts in my book. In Madison, we've set big goals, but we continue to approve new buildings that make it harder to achieve those goals. Very few policymakers are connecting those dots. A critical point here is to figure out a strategy that is effective for holding folks accountable for the goals they are setting. I've spent the last decade thinking about how you get people to change—I believe deeply in the power of positive reinforcement. In approving the wrong buildings there isn't a moment of positive reinforcement—and I know shaming doesn't work. These are community-scale goals—achieving them isn't as simple as assigning someone to get it done. People throughout a system have to change.

“Increasingly, electricity is fundamental to life. As electricity becomes even more fundamental to life (transportation, heating, communications), disconnections are more and more problematic.”

Q What are your thoughts on California's \$1B in efficiency funding now open to electrification and can we use this landmark decision to expand this to other states?⁴

A The California decision is important because people look to California as an example. What I really appreciated was that the Commission really thought through the math about who could claim savings and how that affected others—the electric utility pays the incentive when someone electrifies a home and then that utility claims the energy savings and, in addition, the gas utility's goals go down because that is a home they can no longer make more efficient. I appreciate how thoroughly they think through the math because that provides a better path for other states. The math can kill you. If gas utilities are penalized for electrification, then there will be issues.

Electrification may have important equity implications. One of the things we are talking about in some of the local discussions about climate planning is for limited income households that are reliant on fuel oil or liquid propane (LP)—switching them to a heat pump now might improve quality of life. We know we can be

subject to a shortage of propane, fuel spikes, etc. That creates chaos for everyone on LP but especially for limited income households. So, what if instead they were on electricity and the price doesn't jump up in January? I want to explore how electrification might yield broader benefits—quality of life, stability—it might eliminate a fuel crisis that is currently too routine for these households in the middle of winter.

Q As we move toward a more electrified future, how can we ensure that we do so in a way that is equitable to our most vulnerable communities?

A One of the huge challenges is that these electric technologies have a higher first cost. Certainly, we need to think about financing and buy down options. At the same time, ideally the ongoing costs should be lower. I've been thinking about this a lot around EVs. One of the solutions is that used EVs are depreciating faster than gas vehicles—partly because of federal incentives. So, you can very often get really terrific bargains in the used EV market. (I should know—I bought a used EV myself!) We need to think creatively about how to help move more of those used EVs into disadvantaged neighborhoods.

Bigger than access to technologies, though, we've got to figure out how to have more voices at the table in program design. We can talk forever about financing and other tactics, but we need to hear from the actual people if that is something that would help or not. We need conversations that enable us to understand what matters to local communities.

In conversations about electrification, the advocates I know are already talking about the need to revisit shut off policies. Increasingly, electricity is fundamental to life. As electricity becomes even more fundamental to life (transportation, heating, communications), disconnections are more and more problematic. I haven't heard anyone talking about that beyond advocacy circles. The current utility shut off rules—including ours in Wisconsin—are grounded in tragedy: legislation happened here because someone died one winter without power. We decided that wasn't ok. As we transition to hotter summers under climate change, is it really safe to leave folks without power in May or June? We need to talk about this as we move forward on electrification.

1. Houser, M. n.d. "Live Better Electrically: The Gold Medallion Electric Home Campaign." Accessed September 18, 2019. dahp.wa.gov/historic-preservation/historic-buildings/historic-building-survey-and-inventory/live-better-electrically-the-gold-medallion-electric-home-campaign.

2. O'Boyle, M. "Beneficial Electrification: How to Make it Work." *Greentech Media*. October 1, 2018. www.greentechmedia.com/articles/read/beneficial-electrification-make-it-work#gs.3zpxu1.

3. Walton, Robert. "California Opens \$1B in Efficiency Funding to Electrification." *Utility Dive* online. August 2, 2019. www.utilitydive.com/news/california-opens-1b-in-efficiency-funding-to-electrification/560096/.

4. Ibid.