Electrifying Efficiency

Heather Payne*

It is evident that corruption has infected energy policy and programs at all levels of American government, and that the state regulation of investor-owned utilities has failed to mandate activities that are in the public interest. While there are multiple examples of this, this paper focuses on energy efficiency programs. This Article proposes a complete redesign of energy efficiency programs to stimulate more useful programs, which need to be a critical part of our response to climate change. Under the framework proposed in this Article, states, not utilities, would administer energy efficiency programs. Each state would establish some type of independent organization—similar to those already in place in four states—that would completely remove the operation of energy efficiency programs from utilities.

In the abstract, energy efficiency programs are good, so it might seem counterintuitive to radically redesign them. They are a bit like "motherhood and apple pie"—everyone is, ostensibly, for them. But, like much of our energy system, they need to change, and not in minor, incremental ways. They are subject to regulatory capture and political pressure by utilities, which has led to inefficient program designs, execution, and oversight. As a result, the majority of state energy efficiency programs don't help the people they are designed to (or should) help, and allow utilities to pocket excessive profits while pretending to cut energy consumption.

This Article posits that existing state programs are woefully insufficient. To combat the ills of climate change, we need to do much, much more to decarbonize buildings—and, specifically, to improve building efficiency and the systems they use for heating, cooling, hot water, and cooking. The framework proposed here is a start. State governments need to commit to stringent energy efficiency programs that take utilities out of the picture for program design and administration. These programs

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*Associate Professor of Law, Seton Hall University School of Law. J.D., University of North Carolina School of Law; B.Ch.E., Georgia Institute of Technology. Thanks to the participants of the Seton Hall Law Summer Faculty Workshop for their thoughtful comments and suggestions. Many thanks to Matthew Fay for research assistance.

should use smart meter data—currently unutilized data already paid for by ratepayers—and should achieve equity goals as well. We have all the pieces for successful, targeted programs—what we need now is action.

I. INTRODUCTION

"This decade, 2020-2030, is our last best chance to secure a sustainable future."[1]

"So much of what happens in these things are just accepted as the norm by the people who sort of swim in those waters. And they have a hard time viewing it as wrong because the guy next to them does it too. And sometimes we only know about this stuff by virtue of one person being caught or one enterprise being ousted, but what else is going on that we don't know and understand?"[2]

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1. RICK STEINER, OASIS EARTH: PLANET IN PERIL viii (2020).

2. Chris Quinn, *The Honest Man in Ohio's Nuclear Bailout Scandal, and Does Anyone Believe FirstEnergy needed $1 Billion: A Bribery Episode of This Week in the CLE*,

We are in the midst of confronting social, economic and health crises. Climate change has the potential to magnify each of these, and there is evidence that it already has. We know we must accelerate the energy transition to decarbonize our economy, but there is ever more persuasive evidence that the very entities that *should* be at the forefront of confronting these threats to the livability of our planet and transitioning us to a clean energy future are, at best, undeniably unethical, and, at worst, corrupt.[3]

Utilities, regulators, politicians. All are implicated in the latest utility scandal around Ohio HB6. The current 82-page indictment[4] regarding bribery, racketeering, and other activity to benefit Ohio's incumbent utilities and their nuclear and coal plants is actually the end of a much longer story—one that only began after the utilities were stymied from obtaining what they wanted directly from regulators. After regulators attempted to provide additional funding for First Energy's plants—not once, but twice—and were prevented from doing so, the company turned to the legislature.[5] Ohio House Speaker Householder "used the money to enrich himself, bolster his political allies and promote a bill that bailed out FirstEnergy power plants."[6] Rolling back energy efficiency standards and renewable energy requirements, HB6 provides $150 million annually to two nuclear plants, $60 million annually for coal plants—so, over time, the "'conspiracy was to pass and maintain a $1.5 billion bailout in return

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CLEVELAND.COM (July 25, 2020), https://www.cleveland.com/news/2020/07/the-honest-man-in-ohios-nuclear-bailout-scandal-and-does-anyone-believe-firstenergy-needed-1-billion-a-bribery-episode-of-this-week-in-the-cle.html.

3. This is stronger language than I would typically use. However, in this day, this time, anything less is complicit in what is going on.

4. Complaint at 50, United States v. Matthew Borges, No. 1:20-MJ-00526 (S.D. Ohio filed July 17, 2020), https://assets.documentcloud.org/documents/6999130/Ohio-House-complaint.pdf.

5. Benjamin Storrow, *Energy Transitions: Bribes, planes, power. Inside a scheme to keep coal alive*, CLIMATEWIRE (July 22, 2020), https://www.eenews.net/stories/1063606685 ("FirstEnergy CEO Charles Jones met with Trump in 2017 to try to stave off the bankruptcy of a subsidiary, FirstEnergy Solutions, that once ran the company's power plants . . . . Jones loudly supported the Department of Energy's push to provide financial support to struggling coal and nuclear facilities . . . . But they ultimately failed, with the Federal Energy Regulatory Commission rejecting an Energy Department proposal to subsidize coal and nuclear plants . . . . Failing to get that, they shifted their focus to acquiring bailouts from states like Ohio and Pennsylvania, Ohio being the place where they had the most success.'").

6. *Id. See also* John Funk, *Top Ohio Lawmaker Charged with Accepting $61M Bribe in Scheme to Pass Nuclear Bailout*, UTILITYDIVE (July 21, 2020), https://www.utilitydive.com/news/top-ohio-lawmaker-charged-with-accepting-61m-bribe-in-scheme-to-pass-nucle/582055/ ("'Team Householder,' . . . constituted a large enough voting bloc to determine the outcome of nuclear bailout legislation that FirstEnergy had been trying to get approved for several years.").

for $61 million in dark money.'"[7] That $1.5 billion came from Ohio ratepayers. Incidentally, the bill was unpopular—those behind it attempted to keep what it did as hidden as possible, acknowledging that "polling shows the more we explain it, the worse it does."[8] It was also unknown exactly how much was needed to keep the plants operational, as the utility would not answer basic questions about its finances.[9] But the utility did not have to—the Ohio legislature was willing to give it the money without any proof that the company actually needed it.[10] As at least one commentator has noted, "if I'm asking you, give me a billion dollars and you say, 'I need to see your books, Chris. I mean, I trust you, but I need to see them.' And I say, 'Well, I can't . . . I can't show them to you.' Your answer's going to be 'Well, then I'm not giving you the billion dollars,' right?"[11] But that was not the answer from the Ohio legislature. "This was not done in the dark, but because the fix was in, nothing happened about it."[12] The Ohio legislature said: here is the money, no proof needed.

Because the bill was so unpopular in Ohio, there was actually a drive

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7. Storrow, *supra* note 5. The final vote was so important that "Ohio House leaders almost sent a state-owned airplane to Chicago to bring back lawmakers from a conference in Chicago so they could vote on the bill after it had fallen short of needed votes days earlier." John Seewer, *Nuclear Bailout Tied to Bribery Scandal Was Years in Making*, ASSOCIATED PRESS (Aug. 3, 2020), https://apnews.com/91ba582c11e9c773b18ffaf30bba63b1.

8. Complaint, *supra* note 4 at 50.

9. Quinn, *supra* note 2.

10. *Id.* ("How much of a bailout was actually needed. Now that we know that First Energy paid $60 million in bribes to get this done, according to the federal charges. You wondered, did you really need a billion dollar plus bailout? And there's evidence that you didn't, they claimed they were broke, they were bankrupt and that they couldn't afford to keep these plants going without this infusion of cash. But as soon as they got it, they pay it off $300 million to investors and they paid $60 million in bribes. Way back when this was going on, Jeremy, we asked you to dig into it, to see if you could figure out whether they actually needed the money. And you did a very nuanced story. The takeaway I got was everybody's just making stuff up and it's going to be very hard to say what their real needs are. Talk a little bit about that story from a year ago. Well, one of the things that really stunk from the get-go about this deal was First Energy Solutions, which is now Energy Harbor, they wouldn't open their books. They wouldn't say how much they're losing. So everyone had to rely on these extrapolations and read the tea leaves indirectly from these statistics they would put out about how much they were making or losing. And it was very weird at the time because if you're talking about more than a billion dollars of money, and you're not relying on hard facts, you're just kind of relying on extrapolations. That was one of the very weird things about this from the start. But the reason they knew they didn't have to open their books is because they had to fix in. I mean, it is colossally amazing. This is one of the most striking facts of this case. They got the Ohio legislature, Ohio governor, to go with a bill that takes $1.3 billion out of the rate payers of Ohio and dedicate it mostly to them without ever showing proof that they needed it. What's wrong with this picture?").

11. *Id.*

12. *Id.*

to put a measure on the ballot to overturn HB6. The same "social welfare" organization that received support from Householder "received $38 million to help defeat a ballot measure aimed at overturning H.B. 6. Some of that money was spent attempting to bribe signature collectors by offering them money and airfare to stop collecting names."[13] They were also bribed to "find out details about how well the signature signups were going."[14] Fifteen signature-collection firms were also paid "at least $450,000" to conflict them out of being able to work on the ballot campaign.[15] Executives knew about this behavior.[16] The group also ran blatantly racist, completely untrue commercials claiming that China was behind the repeal effort.

On a recent earnings call, FirstEnergy's CEO said unequivocally that neither he nor the company did anything unethical.[17] To say that commentators are incredulous would be an understatement. From one:

> [C]ould we talk a little bit just for a few minutes about the definition of the word "unethical." I mean for the CEO to say, "We did nothing unethical." I want to remind everyone about those commercials that ran attacking the efforts to put this on the ballot. It was red scare nonsense . . . . It was over-the-top nonsense about "China is trying to take away your rights," and all this big ugly language. Now I would argue, because that was completely false, that that would meet the definition of unethical.[18]

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13. Storrow, *supra* note 5.

14. Tom Johnson, *After $60M Bribery Charges, Questions Renewed over Ratepayer Subsidies for Nuclear Power*, NJ SPOTLIGHT NEWS (July 28, 2020), https://www.njspotlight.com/2020/07/after-60m-bribery-charges-questions-renewed-over-ratepayer-subsidies-for-nuclear-power/.

15. *Id.*

16. Quinn, *supra* note 2. ("[A]t one point the CEO was driven out by Matt Borgias to see some of these petitioning collectors.").

17. Funk, *supra* note 6. Other tidbits from the earnings call. Q: "How do you assess whether those funds were directed toward that 501c would be used for like "social benefits versus political aspirations"? Chuck Jones: "With all due respect Shar, I'm going to stay away from that question." Chuck Jones: "I bracketed the amount of money that we spent on House Bill 6, I'm not going to get into the details of how we spent it on this call." Q: "Were you aware of the investigation prior to the FBI's announcement and press conference this week or without the first time that you became aware of the investigation?" Chuck Jones: "I'm not going to comment on that one." Chuck Jones: "It'd be really nice. We got about 15 minutes left, if we could actually talk about the great quarter that we had at some point here." *See also* Transcript of FirstEnergy Corp. (FE) CEO Chuck Jones on Q2 2020 Results—Earnings Call (July 24, 2020), https://seekingalpha.com/article/4360675-firstenergy-corp-fe-ceo-chuck-jones-on-q2-2020-results-earnings-call-transcript?part=single.

18. Quinn, *supra* note 2.

FirstEnergy money's paid for those ads, which were shown to FirstEnergy executives. "So it's in the complaint that they weren't just idling by or even just writing checks . . . there were just hundreds of phone calls between the top officials."[19] The question is then whether all of this combined—paying off politicians, running completely false ads, intimidating petition signature gatherers or trying to bribe them to stop—rises to the level of being unethical. "I think most people would say that fits the definition of 'unethical' and First Energy paid for that. So when you say we've done nothing unethical, then you are coming up with a whole new definition for 'unethical' compared to everything I've ever known."[20] At this point and despite all this coming to light, HB6 remains the law in Ohio.[21] Perhaps also tellingly, the board of FirstEnergy has failed to determine that an independent investigation is necessary.[22] The rates FirstEnergy charges its customers are "on autopilot . . . through May of 2024."[23]

This latest situation in Ohio is far from the only indication that utilities are corrupt.[24] ComEd has agreed to pay $200 million based on bribery charges related to activities in Illinois that included "arranging jobs, monetary payments and subcontracted work for 'various associates of a

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19. *Id.*

20. *Id.*

21. There are calls for repeal, but it has not yet occurred, and may never. *See generally* Brittany Patterson, *Power Failure: A Massive Bribery Scheme Could Change Ohio Valley Energy Systems*, OHIO VALLEY RESOURCE (July 24, 2020), https://ohiovalleyresource.org/2020/07/24/power-failure-a-massive-bribery-scheme-could-change-ohio-valley-energy-systems/. Householder was removed from the position of House Speaker and replaced by Bob Cupp, who has signaled his willingness to repeal HB6 and "start anew." Seewer, *supra* note 7.

22. *FirstEnergy Corp. (FE) CEO Chuck Jones on Q2 2020 Results- Earnings Call Transcript*, *supra* note 17 ("Right now, we're planning to do an internal review of everything involved in the affidavit . . . .").

23. *Id.* It is also seems that they are earning significantly higher Return on Equity (ROE) than necessary- in fact, "north of 20%". Q: "If I can just elaborate on the seat [sic] and more specifically, you've disclosed the earned ROE [(return on equity)] of 10.9% in Ohio for 2019, but when I look at the net income of the subsidiaries subtract out the DMR [(distribution modernization rider)] and just do the simple algebra, it points to something significantly higher like north of 20%, can you just help me reconcile those numbers and why it seems like a pretty big disparity between the [10.9] and what the net income from those subsidiaries look like?" John Taylor: "Yeah. So, this is John. So, I think what you see in our Ohio utilities, financial statements and what's included and see, obviously we start with what's in the financials, but there are exclusions per the regulations and adjustments that you need to make in order to calculate the seat [sic]."

24. There are also questions about FirstEnergy's dealings in West Virginia. *See e.g.*, Patterson, *supra* note 21. *See also* Akela Lacy, *Energy Companies Have Spent Billions on Projects That Go Nowhere*, THE INTERCEPT (Aug. 7, 2020, 8:45 AM), https://theintercept.com/2020/08/07/nuclear-power-energy-utility-bribery-scandal (discussing how West Virginia lawmakers passed a bill "allowing the utility to avoid $12.5 million a year in taxes . . . . It included a narrow definition for covered companies, which in effect applied only to FirstEnergy's Pleasants Power Station.").

high-level elected official in the state of Illinois' from 2011 to 2019."[25] Just in case there is any question about what ComEd got in return, "a high-level elected official in Illinois . . . 'controlled what measures were called for a vote in the Illinois House of Representatives and exerted substantial influence over fellow lawmakers concerning legislation affecting ComEd.'"[26] In addition to the fine, the company has agreed to institute a vice president of compliance and audit and put in place "new policies for interacting with public officials and prohibiting the use of third-party lobbyists."[27] Notably, this does not include the same limitations for ComEd's parent company, Exelon, which actually owns the nuclear plants that benefited,[28] or a commitment from either company not to fund dark money, 501(c)4, or other "social welfare" groups.

Potentially improper behavior certainly is not limited to supporting specific plants. Letters sent by politicians, including the governor of North Dakota, "emphatically supporting" natural gas pipelines to the Federal Energy Regulatory Commission were, in fact, written in large part by fossil fuel company employees.[29] "Although the fossil fuel industry's dominance of North Dakota politics is well-known, the records shed new light on the extent of the industry's role in shaping what the public—and federal regulators—hear about these industries from supportive state and local officials."[30] The pipeline company issued a "statement that they see nothing improper about public officials passing off letters written by the company as their own."[31] And in Wisconsin, a former regulator "sought

25. Iulia Gheorghiu, *ComEd Admits to Bribery Charge in Illinois, Agrees to Pay $200M Fine*, UTILITYDIVE (July 20, 2020), https://www.utilitydive.com/news/comed-admits-to-bribery-charge-in-illinois-agrees-to-pay-200m-fine/581895/. The deferred prosecution agreement means that "charges will be dropped if ComEd meets certain conditions and pays $200 million. If the company does not completely perform or fulfill its obligations to the U.S. in the next three years or violates the agreement, it could face an additional fee between $240 million and $480 million." *Id.*

26. *Id.* (ComEd has indicated that the high-level elected official is Illinois House Speaker Michael Madigan, who has denied any wrongdoing.).

27. *Id.*

28. Mark Chediak & Gerson Freitas Jr., *Bribery Scandals Taint Efforts to Save U.S. Nuclear Plants*, BLOOMBERG|QUINT (July 23, 2020, 1:29 AM), https://www.bloombergquint.com/business/bribery-scandals-taint-efforts-to-save-u-s-nuclear-plants.

29. Will Parrish, *Revealed: Legislators' Pro-Pipeline Letters Ghostwritten by Fossil Fuel Company*, THE GUARDIAN (July 2, 2020), https://www.theguardian.com/us-news/2020/jul/02/us-legislators-pro-pipeline-letters-ghostwritten. ("The records . . . show that three North Dakota state legislators and a Williams county, North Dakota, commissioner signed and mailed letter to Ferc [(Federal Energy Regulatory Commission)] [sic] and the US army corps of engineers that reproduced word-for-word letters sent to them by MDU Resources' political strategists."). MDU Resources is the developer of the pipeline project.

30. *Id.* (noting that the pipeline company employee who provided the template for comments had previously worked for the North Dakota commerce department).

31. *Id.*

to lead one of the state's largest utilities just months after voting to approve two of the company's projects."[32] In the five months before he left his position as a regulator, he authorized two projects totaling almost $1.2 billion for the utility he then wanted to be the CEO of.[33] While Wisconsin "prohibits state officials from profiting off their past positions . . . the law does not preclude them from seeking employment in industries they oversaw."[34]

The evidence that utilities have forsaken the public interest just keeps coming. AEP, another utility in Ohio, admitted to partially funding—through a $350,000 donation—the misinformation campaign and bribery around HB6; a good return, given the ratepayer charges associated with HB6 "generate[] about $50 million a year to subsidize a pair of old coal-burning power plants it partly owns . . . ."[35] After the filing of an 87-page complaint,[36] a former utility executive pled guilty to fraud charges for misleading regulators and investors on the status of a failed nuclear project in South Carolina.[37] Entergy in Louisiana paid actors to show up

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32. Chris Hubbuch, *Former Wisconsin Regulator Sought Job as Utility CEO Months After Voting to Approve its Projects*, WIS. STATE J. (Aug. 5, 2020), https://madison.com/wsj/news/local/govt-and-politics/former-wisconsin-regulator-sought-job-as-utility-ceo-months-after-voting-to-approve-its-projects/article_0d2986de-88b2-54e0-91cf-e77bd4c2d88f.html?utm_source=Sailthru&utm_medium=email&utm_campaign=Issue:%202020-08-05%20Utility%20Dive%20Newsletter%20%5Bissue:28898%5D&utm_term=Utility%20Dive ("'The public can fairly ask, would Commissioner Huebsch have felt free to vote against Dairyland . . . if he were thinking about, in the near future, seeking a job as CEO? . . . It just stinks.'").

33. *Id.*

34. *Id.* The article notes that "Huebsch would not be the first utility regulator to go to work for a utility." *Id.* What he would not be able to do is "receiv[e] pay to appear before or negotiate with state agencies for 12 months after their public service." *Id.*

35. Randy Ludlow, *Columbus Utility Giant AEP Funded Dark Money Spending in HB 6 Campaign*, COLUMBUS DISPATCH (July 25, 2020), https://www.dispatch.com/news/20200725/columbus-utility-giant-aep-funded-dark-money-spending-in-hb-6-campaign. AEP owns 43% of the coal plants, which were built in the mid-1950s. *Id.* ("The plants -- Kyger Creek near Cheshire, Ohio, and Clifty Creek near Madison, Indiana -- were built in the mid-1950s to supply electricity to the former uranium-enrichment plant near Piketon, Ohio. AEP owns the biggest stake in the coal plants at 43% and buys about 60% of the electricity generated by the plants.") This is in addition to other political contributions that AEP made directly and through other campaign accounts. Additionally, it is unclear what AEP's other contributions to "social welfare" groups went toward. *Id.*

36. Complaint, SEC v. Scana Corp., No. 3:20-CV-00882-MGL (D.S.C. Feb. 27, 2020), https://www.sec.gov/litigation/complaints/2020/scana-complaint-022720.pdf.

37. Andrew Brown & Avery G. Wilks, *Former SCANA Executive Pleads Guilty to Fraud Charges Tied to Failed SC Nuclear Project*, POST AND COURIER, (July 23, 2020), https://www.postandcourier.com/business/former-scana-executive-pleads-guilty-to-fraud-charges-tied-to-failed-sc-nuclear-project/article_26e23ca8-c50b-11ea-8377-e7b39854212b.html ("SCANA and its senior executives repeatedly deceived investors, regulators, and the public over several years about the status of a $10 billion nuclear energy project. When the truth was revealed, it resulted in hundreds of millions of dollars in losses to SCANA's investors and to South Carolinians."). *See also*, *supra* note 36 at 1-2. ("From 2015 through 2017, construction of the new nuclear units at V.C.

at a city council meeting in New Orleans to support a new natural gas plant, without any indication to the council that those making comments had been hired through a social media casting call and were there in exchange for $50 and a free t-shirt. APS in Arizona spent $30 million to support the election of certain Public Service Commission (PSC) commissioners, then received favorable decisions around solar policy, and now are embroiled in a scandal that a methodology the utility developed to help ratepayers understand which of the company's rate plans would be most beneficial for them in fact pushed customers into plans that were more expensive and, therefore, more beneficial to the utility than individual ratepayers. The parent company of PNM in New Mexico "spent $440,000 in a 2018 race to elect members of the commission that oversees it; the utility wholly funded a PAC protecting two incumbents and attacking their challengers."[38] SoCalGas "used customer funds to try to block a federal efficiency standard for gas furnaces" and now has acknowledged using ratepayer funds to support pro-gas and "balanced energy" advocacy, although the full extent of the ratepayer funds used for these activities is unclear because SoCalGas has refused to comply with a subpoena from the California Public Utilities Commission, which would provide that information—including "refusing to give regulators full access to its financial records."[39]

This list is in no way exhaustive—there are many more instances.[40]

Summer was a tale of two projects. Publicly, SCANA touted progress being made on the project in its periodic filings with the SEC, on earnings calls with financial analysts, in press releases and video presentations, and in filings and testimony before the South Carolina Public Service Commission ("PSC"). These false statements enabled SCANA to bolster its stock price, sell $1 billion in corporate bonds at favorable rates, and obtain regulatory approval to charge its customers more than $1 billion in increased rates to help finance the project. Internally, however, SCANA knew that—contrary to its public statements—the project was significantly delayed, the construction schedule was unreliable and unachievable, and the company was unlikely to qualify for $1.4 billion in federal production tax credits because the new units would not be completed by the January 1, 2021 deadline for receiving the tax credits. SCANA and its senior management knew that the expansion project was not viable without those tax credits.").

38. Lacy, *supra* note 24.

39. *See* Sammy Rother, *Is America's Biggest Gas Utility Abusing Customer Money? A California Watchdog Demands Answers*, LA TIMES (July 23, 2020, 3:26 PM), https://www.latimes.com/environment/story/2020-07-23/is-americas-biggest-gas-utility-fighting-climate-action-california-demands-answers ("SoCalGas can spend shareholder money however it wants. But as a state-sanctioned monopoly, it's required to spend ratepayer money strictly on programs that benefit ratepayers, such as infrastructure upgrades that improve safety or efficiency programs that help customers reduce gas use.").

40. Other utility actions which are certainly questionable—and at least demonstrate capture, if not more—are the ratepayer funds expended for the Mississippi Power Kemper plant, Alabama Power's 14.3% ROE, the Montana PSC decision around solar, and Dominion's pipeline and new natural gas plants—all subsidiary agreements, which worked until they didn't. Watchdog groups

But all these situations—like every rate case, each utility rider—have one thing in common: they are matters of public concern. "It is critical they are decided on their merits, not on behalf of undue political influence."[41]

> The monopoly gas and power companies are lucrative enterprises by their nature, and their rates are generally under direct government control. Using money to influence politicians and regulators is nothing new. But there is reason to be especially alert to it now, because these companies too often are standing in the way of the switch to clean energy that the country so desperately needs.[42]

And while "electrify everything" has become a rallying cry for those interested in combating climate change, the reality of how to both make buildings more efficient and to move away from using natural gas for heating, hot water, cooking, and clothes drying is far more complex than that slogan would indicate and the path to do that goes through those very same regulators, politicians, and utilities that have shown themselves unworthy of our trust.[43]

The carbon emissions from our buildings is a challenge we must address if we are to diminish and, ultimately, eliminate economy-wide carbon emissions. The issue with building electrification is that there is neither a simple electrification solution nor simple jurisdictional boundaries—different facets of buildings fall under the jurisdiction of

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have cataloged others as well, including around Florida, other APS election law issues, and providing nonprofits with funds. *See, e.g.*, Matt Kasper, *FirstEnergy Scandal is Latest Example of Utility Corruption, Deceit*, ENERGY AND POL'Y (July 23, 2020), https://www.energyandpolicy.org/utility-corruption/. There are also new allegations about First Energy Solutions / Energy Harbor and a tax break for a plant they own which was shepherded by Gov. Jim Justice after a meeting with officials from the company and the campaign contributions that followed. *See* Steven Allen Adams, *FirstEnergy Associates Donate Thousands to Justice Campaign After Power Plant Tax Break*, JOURNAL (July 22, 2020), https://www.journal-news.net/journal-news/firstenergy-associates-donate-thousands-to-justice-campaign-after-power-plant-tax-break/article134913bd-3af2-54e5-a0be-2114ffab3920.html. Dominion has also overcharged customers and has refused to refund the money. Alexander C. Kaufman, *Virginia's Energy Kingpin Could Finally Face A Reckoning Over Race*, HUFFPOST (July, 23, 2020), https://www.huffpost.com/entry/dominion-energy-thomas-farrell-pipeline-confederacy_n_5f188364c5b6296fbf3cc73c ("Between 2009 and 2018, the company overcharged Virginians by an average of $234 million per year, according to analysis by the advocacy group Clean Virginia. In 2018 alone, state regulators found that the company overcharged ratepayers by nearly $300 million, which averaged out to an extra $113 per customer for the year.").

41. Johnson, *supra* note 14.

42. Justin Gillis, *When Utility Money Talks*, NY TIMES (Aug. 2, 2020), https://www.nytimes.com/2020/08/02/opinion/utility-corruption-energy.html.

43. *Id.* ("For citizens elsewhere, the big message from all these scandals is that you cannot assume your state government is working in the public interest as it oversees the energy transition.").

cities, counties, states, as well as being subject to certain federal mandates. But we must immediately start moving our buildings away from fossil fuel uses, and electrification—as disparate as it will be, depending on jurisdiction—is how we do that.[44]

Electrification alone, however, will not be enough to deal with building emissions. Electrification and energy efficiency must go together[45]—electrifying without increasing efficiency will increase electricity loads making the transition to one hundred percent zero carbon or renewable generation more difficult.[46] In order to achieve these twin goals, there are various challenges: building code requirements; contractor resistance, knowledge, and training; landlord/tenant splits on costs, especially where tenants pay for utilities; and the need for homeowners to have sufficient capital to purchase new appliances as well as the potential electrical upgrades that go with them.[47]

These barriers could all be overcome with well-designed energy efficiency programs. The challenge in many parts of the country is who would actually be tasked with implementation of those programs: the local utilities who have proven time and time again that they do not have ratepayers' best interests as their primary concern. Utilities have every incentive, up until the point that their costs are disallowed by regulators, to run ineffective efficiency programs, as doing so has the potential to

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44. *See* Heather Payne, *The Natural Gas Paradox: Shutting Down a System Designed to Operate Forever*, 80 MD. L. REV. (forthcoming 2021). *See also* RACHEL GOLD, ANNIE GILLEO & WESTON BERG, NEXT-GEN. ENERGY EFFICIENCY RES. STANDARDS 15 (2019), https://www.aceee.org/sites/default/files/publications/researchreports/u1905.pdf.

45. GOLD, GILLEO & BERG, *supra* note 44, at 15 ("policymakers are considering how to . . . incentivize both beneficial electrification and energy efficiency in tandem . . . .").

46. And our grid is up to the task. *See, e.g.*, Reem Rayef & Merrian Borgeson, *California's Grid is Ready for All-Electric Buildings*, POWERGRID INT'L (Apr. 17, 2020), https://web.archive.org/web/20200612160814/https://www.power-grid.com/2020/04/17/californias-grid-is-ready-for-all-electric-buildings/.

47. Justin Gerdes, *So, What Exactly Is Building Electrification?*, GREENTECH MEDIA (June 5, 2020), https://www.greentechmedia.com/articles/read/so-what-exactly-is-building-electrification. The agent/principal problem is especially problematic as many of those who are energy insecure are renters. *See* BASAV SEN, GRIFFIN BIRD & CELIA BOTTGER, ENERGY EFFICIENCY WITH JUSTICE: HOW STATE ENERGY EFFICIENCY POLICY CAN MITIGATE CLIMATE CHANGE, CREATE JOBS, AND ADDRESS RACIAL AND ECONOMIC INEQUALITY 7 (2018), https://ips-dc.org/wp-content/uploads/2018/08/Basav-report-final-online-1.pdf ("Even though energy efficiency upgrades have the potential to save a lot of money over their lifetime, the high initial cost of some energy efficiency upgrades can deter many households and small businesses from investing in energy efficiency. Another constraint that limits wider adoption of energy efficiency in rental housing is that tenants are typically responsible for paying utilities and are therefore the ones who benefit from energy efficiency, but traditional financing mechanisms (such as home equity loans) are tied to property ownership, and owners of rental properties have no incentive to invest in energy efficiency if their tenants pay the bills. The two problems are intertwined, since a disproportionately large share of low-income people are also renters.").

increase their revenue. If as little efficiency occurs as possible, this helps the utility in three ways: 1) as many residential bills are based on the volume of energy used, utility revenues are higher when customers use more; 2) if either energy use overall or peak use increase, then the requirement for more "poles and wires" also increases, leading to more capital spending by the utility and, again, higher customer bills and more revenue for the utility; and 3) utilities get reimbursement for energy efficiency programs—plus profit in many cases—whether those programs are effective or not. In other words, a highly effective energy efficiency program is diametrically opposed to the utility's self-interest. On the other hand, energy efficiency reduces required capital investments in both generation and transmission and distribution and therefore limits costs for captive ratepayers. One study found that "[e]very dollar invested in energy efficiency saves ratepayers between $1.24 and $4.00."[48]

Unfortunately, this inherent conflict of interest is likely to only get worse as we move toward electrification if more is not done.[49] Even with more appliances becoming electric and therefore load potentially increasing,[50] the same reasons for utilities to minimize the impact of efficiency programs continue to exist. From a ratepayer perspective, this could translate into higher costs in three ways: 1) a higher monthly utility bill due to increased volumes with electrification; 2) a higher monthly utility bill due to increased capital spending by the utility which is recovered over time with about a ten percent return on equity; and 3) the capital spent paying for the new electric appliances and associated upgrades.

These likely ratepayer impacts have the potential to at least slow—if not stop—the movement toward electrification of household uses. For regulators to ensure the movement toward electrification is as quick and inexpensive as possible for ratepayers, the money for both the transition and within efficiency programs must be spent efficiently. Having utilities drive these programs will assure that is not the case.[51]

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48. SEN, BIRD & BOTTGER, *supra* note 47 at 6.

49. *See* TRIEU MAI ET AL., ELECTRIFICATION FUTURES STUDY: SCENARIOS OF ELECTRIC TECHNOLOGY ADOPTION AND POWER CONSUMPTION FOR THE UNITED STATES ix (2018), https://www.nrel.gov/docs/fy18osti/71500.pdf (defining electrification as "the shift from any non-electric source of energy to electricity at the point of final consumption.").

50. *Id.* ("Electrification has the potential to significantly increase overall demand for electricity, although . . . compound annual electricity consumption growth rates are below long-term historical growth rates."). Historic growth rates are 4% per year from 1950 to 2016. *Id.*

51. Jeff St. John, *Why Most US Utilities Are Failing to Make the Most of Their Smart Meters*, GREENTECH MEDIA (Jan. 10, 2020), https://www.greentechmedia.com/articles/read/why-most-u-s-utilities-arent-making-the-most-of-their-smart-meters.

This Article addresses how regulators might make these dollars go as far as practicable and therefore enact as much change as equitably possible. Incremental changes are not going to work. Public processes like regulatory proceedings can be co-opted by those who have the most at stake, so utilities, which have the single most concentrated interest, will use money and influence to ensure their interests are still met. The discussion starts with a compilation of the reasons why utilities should not be in charge of these programs. It continues with buildings, and why the spaces where we live and work must be a central focus in our electrification and efficiency efforts given the need to address climate change. It then generally outlines building and energy efficiency programs at the federal, state, and local levels. Working with that background, the article demonstrates how a different model—one focused on electrification, in which a government agency or separate nonprofit entity controls transition and energy efficiency funds—can speed transition, target funds more effectively, and act in the public interest in a way that investor-owned utilities are precluded from doing due to their fiduciary duty to shareholders and other conflicts of interest. This requires determining which agency or organization is going to take over these duties. Given how little ratepayer benefit there has been from advanced metering data, this new paradigm must also include mandatory data sharing. Unlike the majority of current energy efficiency programs, any new paradigm must also focus on additionality and equity.

II. THE NEED FOR CHANGE

Even though "energy efficiency policies and programs reduced US energy use by about 25 quadrillion British thermal units in 2017," utility sector energy efficiency programs only accounted for about a tenth of that.[52] The majority of energy efficiency programs—Corporate Average Fuel Economy (CAFE) standards, mandatory and voluntary appliance and equipment standards—apply universally. Utility energy efficiency programs, on the other hand, are designed to operate individually instead—and therefore will only be used by a small subset of the population.

52. Vehicle fuel economy standards save about 9 quadrillion British thermal units, mandatory appliance standards save about 6 quadrillion British thermal units, and voluntary programs like ENERGY STAR® save about 4.2 quadrillion British thermal units. Utility sector energy efficiency programs save about 2.7 quadrillion British thermal units. *See* Kathryne Cleary & Karen Palmer, *Energy Efficiency 101: The Basics of Improving Energy Efficiency, from How It Can Reduce Energy Use and Mitigate Climate Change to the Policies in Place to Encourage People to Invest in Energy-efficient Products*, RES. FOR THE FUTURE (June 17, 2020), https://www.rff.org/publications/explainers/energy-efficiency-101/.

Utilities spent more than $28 billion on energy efficiency programs in 2018. However, only 62% of that figure was actually spent on energy efficiency; 38% was spent on administrative, marketing, and other expenses.[53] For comparison purposes, Charity Navigator will only give a score of 10 to those organizations that spend more than at least 82% of their funds on programs, rather than administration, marketing, and fundraising.[54] Their "data shows that 7 out of 10 charities we've evaluated spend at least 75% of their budget on the programs and services they exist to provide. And 9 out of 10 spend at least 65%."[55] So utility energy efficiency programs are spending less on programs than 90% of the charities out there. Even the Better Business Bureau recommends that "at least 65 percent of a nonprofit's total expenses should be for program expenses."[56] As discussed for the remainder of this section, there are good reasons for utilities to disfavor successful energy efficiency programs.

A. *How Utilities Take Advantage of Energy Efficiency Programs*

The majority of energy efficiency programs which provide money directly or through subsidies are administered by utilities.[57] Based on the specific state and utility, these can include a variety of programs: rebates for hot water heaters and furnaces, a utility-administered website to purchase energy efficient lightbulbs or lightbulb subsidies provided at the time of purchase in hardware stores, home efficiency audits, and weatherization programs, to name a few. As with all utility investments, generally any capital that is invested in the program is recouped from captive ratepayers with a guaranteed profit.[58] While it would make more

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53. *Utility Energy Efficiency Spending and Savings Declined in 2018*, U.S. ENERGY INFO. ADMIN. (Feb. 27, 2020), https://www.eia.gov/todayinenergy/detail.php?id=42975.

54. *Financial Efficiency Performance Metrics*, CHARITY NAVIGATOR, https://www.charitynavigator.org/index.cfm?bay=content.view&cpid=48#FinancialEfficiencyPerformanceMetrics (last visited Aug. 5, 2020). The 82% is for Public Broadcasting and Media. It goes up to 83% needing to be spent on programs rather than administration for museums, 85% for general and grantmaking organizations, and 92% for community foundations, food banks, food pantries, and humanitarian relief. *Id.*

55. *Id.*

56. *How Much Can a Non-Profit Legally Spend on Overhead?*, SMALL BUS. CHRON., https://smallbusiness.chron.com/much-can-nonprofit-legally-spend-overhead-72388.html (last visited Aug. 5, 2020).

57. The largest energy efficiency programs—CAFE standards, appliance and equipment efficiency standards, and EnergyStar—are adopted for different types of goods (vehicles, appliances) and incent efficiency through mandatory or voluntary technological improvement rather than by paying consumers directly for their adoption.

58. *See* Heather Payne, *Private (Utility) Regulators*, 50 ENV'T. L. 999 (2021) (discussing how utilities have been maintaining large profits even as interest rates have been historically low).

sense for utilities to have lower profits on energy-saving investments—these are, after all, programs funded completely by ratepayers, for which the traditional reasons of providing a regulated rate of return do not exist[59]—a lower profit margin has not, for the most part, been adopted. In New Jersey, a proposal to lower utility profit on energy-saving investments was ditched because "stakeholders and efficiency advocates had warned it would reduce the incentive for utilities to invest in efficiency."[60] Even a 100 basis point reduction in Return on Equity (ROE) was deemed too significant, with utilities and others claiming that would "decrease the incentive" to make energy efficiency investments.[61]

Utilities take action—and receive credit—based on imperfect indicators.[62] Research has found that the actual savings due to energy efficiency improvements are significantly lower than the savings reported[63] or expected.[64] Basically, "for every unit of energy we expected to save, only half a unit was actually saved."[65] This could be true for a variety of reasons. Let's explore a common utility energy efficiency program, however, to illustrate what may go wrong: the free or heavily subsidized efficient lightbulb.[66]

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59. Bluefield Waterworks & Imp. Co. v. Pub. Serv. Comm'n of W. Va., 262 U.S. 679, 692-93 (1923) ("A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties; but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures."). The standard rate of return is to provide a measure of profit that is commensurate with the risk investors are taking in spending the capital. There is basically no risk with these programs.

60. Robert Walton, *New Jersey Sets 'Top Tier' Energy Efficiency Goal, Targets More Than 2% Electricity Savings*, UTILITYDIVE (June 11, 2020), https://www.utilitydive.com/news/new-jersey-sets-top-tier-energy-efficiency-goal-targets-more-than-2-ele/579620/.

61. Robert Walton, *New Jersey's Energy Efficiency Approach Could Reduce Incentive to Invest, Stakeholders Warn*, UTILITYDIVE (Apr. 2, 2020), https://www.utilitydive.com/news/new-jerseys-energy-efficiency-approach-could-reduce-incentive-to-invest-s/575313/ .

62. This is certainly not only true in the United States, but the way we administer energy efficiency programs at the utility level—with the utility gaining profit based on its actions—makes it especially problematic.

63. Gianluca Trotta, *Assessing Energy Efficiency Improvements and Related Energy Security and Climate Benefits in Finland: An Ex Post Multi-Sectoral Decomposition Analysis*, 86 ENERGY ECONS. 104640 (Feb. 2020), https://www.sciencedirect.com/science/article/pii/S0140988319304372 (study from Finland, but the same is likely true for the United States).

64. Meredith Fowlie, *The Search for Good Green Stimulus*, ENERGY INST. BLOG (June 1, 2020), https://energyathaas.wordpress.com/2020/06/01/the-search-for-good-green-stimulus/ (noting energy savings are typically 50% of projected savings).

65. *Id.*

66. It appears that there are now calls for independent external investigations of Southern California Edison's lighting program. The issue is specifically around "unaccounted for" lightbulbs

When a utility sends you a box of lightbulbs, they get credit for the reduction in energy use that you, as a homeowner or renter, installing all of those bulbs would provide. But here's the catch: how many people took those bulbs out of the box, screwed them in, backed away in horror at the poor light quality of that cheap compact fluorescent lightbulb (CFL) or LED, promptly removed it and put it in the back of a utility closet? Likely a not insignificant number, given magazine article headlines like "How to Find Energy-Efficient Bulbs That Give Off Not-Horrible Light" as late as 2018.[67] This, however, is not the fault of the homeowner or renter: the utility is providing products that people don't want, because they are better off economically if you do not use the more efficient lightbulb.

Using the lightbulb example, the situation on the ground may even be far worse than regulators imagine. However, the utility gets credit for energy efficiency improvements when they deliver those lightbulbs to you. They do not need to provide any verification that you have actually installed the lightbulbs and that you continue to use them.[68]

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and the finding that there had been "unusually large volumes of light bulbs shipped to many small stores in SCE and SDG&E territories." DNV GL ENERGY INSIGHTS, UPSTREAM AND RESIDENTIAL DOWNSTREAM LIGHTING IMPACT EVALUATION REPORT: LIGHTING SECTOR PROGRAM YEAR 2017: CALIFORNIA PUBLIC UTILITIES COMMISSION 3 (2019), https://pda.energydataweb.com/api/view/2166/CPUC%20Group%20A%202017%20Upstream%20Lighting%20Impact%20Eval%20Report%20FINAL.pdf. A report also found that "the market could not have supported the volume of sales that the 2017 program data reported as shipped." SCE's and SDG&E's reported shipments of lamps combined were about three times the number of statewide sales of lamps in 2017. "In the discount and grocery store channels, approximately 80 percent of SCE's program bulbs and 95 percent of SDG&E's program bulbs may not have been sold to customers and were likely overstocked or missing entirely. These discrepancies made up roughly 60 percent of SCE's and 80 percent of SDG&E's total upstream lighting program bulbs." The Utility Reform Network, Comments on How the Commission Should Address the Findings of the Upstream Lighting Program Impact Evaluation for Program Year 2017 (Feb. 14, 2020), https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M328/K473/328473944.PDF. A proposed settlement "would see SDG&E refunding $51.6 million to ratepayers . . . Under the settlement, the utility would also pay a $5.5 million fine because it 'knowingly submitted inaccurate information' about the mismanaged program . . . ." Rob Nikolewski, *SDG&E on the verge of refunding $51.6 million to customers for botched lightbulb program*, S.D. UNION TRIB. (Dec. 11, 2020), https://www.sandiegouniontribune.com/business/story/2020-12-11/botched-lightbulb-program. And yet, the utilities received credit for years for all those bulbs being in use.

67. Maxine Builder, *How to Find Energy-Efficient Bulbs That Give Off Not-Horrible Light, According to Interior Designers*, N.Y. MAG. (Oct. 4, 2018), https://nymag.com/strategist/article/best-energy-efficient-light-bulbs.html. I will not be addressing the theories that CFLs may harm skin and other unsubstantiated health effects.

68. While not the proposal put forth in this Article, requiring verification through the use of differences in advanced metering infrastructure (AMI) readings might be one way to require utilities to use the AMI systems that ratepayers have already paid for to benefit customers. If a utility wants to take credit for the efficiency of things like lightbulbs, they must demonstrate it based on load, and only take credit for the efficiency that actually happens in the real world—not the theoretical efficiency which occurred instantaneously and forever upon the act of obtaining said lightbulb (or

Even worse, as discussed more below, we aren't getting energy efficiency products to those who would actually use and benefit from them the most:

> The existence of consumer rebate programs does not ensure that low-income residents, in particular, have access to energy-efficient lighting. A recent study of energy-efficient lightbulbs in Detroit found that they were both less frequently available and higher-priced in areas with high poverty rates. Similarly, they were less frequently available and higher-priced in smaller stores (such as neighborhood hardware stores, convenience stores, etc.) than large retailers. Also, large retailers generally did not have locations serving low-income neighborhoods. Since residents of low-income areas often do not own cars and lack access to adequate and affordable public transit, they were not necessarily able to purchase energy-efficient lightbulbs from the stores in higher-income neighborhoods where they were more readily available and lower-priced.[69]

While rebates are available for energy efficient lightbulbs in Michigan, availability is focused on "'selected neighborhoods' with a 'high percentage of home ownership.'"[70]

In addition to the direct profits that utilities continue to make on capital investments in any energy efficiency program, they use energy efficiency programs in yet another way that contributes to higher customer bills: by using the "success" of energy efficiency programs to push for decoupling.[71] Decoupling, now in place in twenty two states, allows utilities to continue having increasing revenue even though they

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other efficient product).

69. SEN, BIRD & BOTTGER., *supra* note 47, at 25. While one would hope that online shopping or digital marketplaces would have helped this, it likely has not, based on both the digital divide and the lack of access to credit, both of which are needed to take part in utility programs offered in an online format.

70. *Id.*

71. Travis Kavulla, *Will regulators allow utilities to reap a windfall because of COVID-19?*, UTILITYDIVE (June 23, 2020), https://www.utilitydive.com/news/will-regulators-allow-utilities-to-reap-a-windfall-because-of-covid-19/580279/ ("Decoupling's advocates observe that utilities will be more likely to embrace energy efficiency programs if their revenues are decoupled from their sales volumes. Perhaps. But today, decoupling's practical effect is to shift the risk of a major economic downturn from a utility's shareholders to a utility's captive set of customers."); *see also Utility Rate Decoupling*, ALLIANCE TO SAVE ENERGY (Oct. 24, 2013), https://www.ase.org/resources/utility-rate-decoupling-0 ("Decoupling refers to policies designed to 'decouple' utility profits from total electric or gas sales so utilities do not have an incentive to try to sell more energy. Decoupling modifies traditional ratemaking practices to adjust rates frequently to ensure that utility revenue is neither more nor less than what is needed to cover costs and a fair return . . . . Decoupling in and of itself does not provide utilities with incentives to increase energy efficiency.").

may be selling less of their product.[72]

There are certainly reasons besides energy efficiency programs that utilities would want decoupling—it has been described by one utility CEO as a way to shift risk from utility shareholders to ratepayers, which it does.[73] Electricity load growth has been stagnant for years.[74] Electricity load growth and gross domestic product have become decoupled, so utilities can no longer assume that increasing economic activity will lead to increasing energy use. Average electricity bills have increased faster than most other parts of the Consumer Price Index (CPI),[75] and regulators have started to question some large utility asks,[76] leading to some concern among utilities that they may not be able to continue with large capital programs to insure continued profit levels for investors.[77] Decoupling provides a mechanism for the utility to adjust rates without the public input of a rate case, often automatically changing bills at specified

72. Kavulla, *supra* note 71 ("Simply put, decoupling allows utilities to charge customers for electricity they never sold.").

73. Complaint at 55, United States v. Borges, No. 1:20-MJ-00526 (S.D. Ohio July 17, 2020) ("Decoupling is the dissociation of annual revenue from volume of energy sales . . . . [T]he CEO stated, '[decoupling] fixes our base revenues and essentially it takes about one-third of our company and I think makes it somewhat recession-proof. So, I get a question a lot about where I'm worried about a future recession. It's 2 million customers in Ohio that this is going to help make sure that that doesn't impact us.'"); *see also* Kavulla, *supra* note 71 (noting that "today, decoupling's practical effect is to shift the risk of a major economic downtown from a utility's shareholders to a utility's captive set of customers.").

74. Lucas Davis, *Evidence of a Decline in Electricity Use by U.S. Households*, ENERGY INST. AT HAAS, (May 8, 2017), https://energyathaas.wordpress.com/2017/05/08/evidence-of-a-decline-in-electricity-use-by-u-s-households/ (noting that residential electricity consumption, which historically grew at an average rate of 4% a year, peaked before 2012 and has either declined or remained flat each year since). This has not, however, stopped some utilities—especially vertically-integrated ones—from claiming that loads in their territories were going to increase much higher than the nationwide average, leading to the inevitable conclusion that they needed to build more generation capacity. JUAN PABLO CARVALLO ET AL., LOAD FORECASTING IN ELECTRIC UTILITY INTEGRATED RESOURCE PLANNING vii (2016) (finding that "there continued to be a systematic over-estimation of load growth rates"). That generation capacity, of course, was wholly utility owned, and therefore all that capital was subject to the guaranteed profit from captive ratepayers.

75. Payne, *supra* note 58, at 1016-19.

76. *See, e.g.*, Iulia Gheorghiu, *Virginia rejects Dominion's $752M smart meter plan, other grid mod proposals*, UTILITYDIVE (Mar. 27, 2020), https://www.utilitydive.com/news/virginia-rejects-dominions-752m-smart-meter-plan-other-grid-mod-proposal/575007/; *see also* Robert Walton, *As Kentucky regulators reject smart meter plans, troubling trend continues for AMI*, UTILITYDIVE (Aug. 31, 2018), https://www.utilitydive.com/news/as-kentucky-regulators-reject-smart-meter-plans-troubling-trend-continues/531384/.

77. Many regulated utilities pay dividends, and are loath to cut them. With the perhaps notable exception of PG&E, utility stocks have been very stable performers, and are often large holdings in low-risk, high-dividend portfolios held by retirees.

intervals, to maintain revenues and therefore profit.[78]

While utilities may want decoupling for these (and additional) reasons, the "success" of their energy efficiency programs at reducing demand to the point where it should be seen as a fundamental and insurmountable detriment to their business is not one of them. Nationally, energy efficiency programs saved just 0.71% of electricity demand.[79] In the Southeast, it was only 0.31%.[80] Despite considerable research, another regulated business where losing on average less than 1% of sales was put forward as a reason for propping up revenue and mandated profits was not found. Given how little these programs are helping drive change and how much they are being used by investor-owned utilities to argue for decreasing risk to the utility business model, energy efficiency programs must change.[81]

B. *Why Non-Utility Administration is Important*

Investor-owned utilities make a profit by spending capital. "The price of electricity has been regulated for so long that price regulation is widely considered proper and necessary. The reality is that rate regulation was needed only to enable utilities to raise investment capital for building large central power plants and transmission lines. But this financial arrangement has had far-reaching unintended consequences. It has made infrastructure investment a major business concern of utilities, to the detriment of cost reduction and technology advancement."[82] There are

78. *Utility Rate Decoupling*, *supra* note 71. ("Decoupling refers to policies designed to 'decouple' utility profits from total electric or gas sales so utilities do not have an incentive to try to sell more energy. Decoupling modifies traditional ratemaking practices to adjust rates frequently to ensure that utility revenue is neither more nor less than what is needed to cover costs and a fair return.").

79. Matthew Bandyk, *FPL, other Florida utilities far behind rest of US on energy efficiency, advocacy group says*, UTILITYDIVE (June 12, 2020), https://www.utilitydive.com/news/fpl-other-florida-utilities-far-behind-rest-of-us-on-energy-efficiency-ad/579684/.

80. *Id.* The situation is even worse for energy efficiency in Florida. TECO had the highest energy efficiency gains, at 0.66%, followed by Duke with energy efficiency savings of 0.21%. FLP's energy efficiency programs saved just 0.05%, and Gulf's only saved 0.04%. *Id.*

81. Decoupling is obviously not the only way that utilities are attempting to use increasing efficiency for their benefit. Utilities are also using increased efficiency to push for residential demand charges, which make it harder for efficiency improvements to be profitable for homeowners. *See* Patty Durand, *The Risk to Beneficial Electrification: Residential Demand Charges*, UTILITYDIVE (May 18, 2020), https://www.utilitydive.com/news/ratemaking-risk-to-beneficial-electrification-residential-demand-charges/578084/.

82. Martin Stevenson, *Opening the Electricity Market to Competition a Win For Renewables, and Ratepayers*, RENEWABLE ENERGY WORLD (Mar. 8, 2018), https://www.renewableenergyworld.com/2018/03/08/opening-the-electricity-market-to-competition-a-win-for-renewables-and-ratepayer/.

multiple reasons that we should consider an entity other than the utilities having responsibility for these programs. These include: 1) conflicts of interest; 2) the potential for regulatory capture; 3) ROE; 4) insufficient targeting; and 5) utilities will stymie recovery if we want to use this as stimulus. Let's look at each of these in turn.

This is by no means the only place that utilities have a conflict of interest that regulators have failed to properly address.[83] However, the conflict that exists within a utility and energy efficiency programs should be at the heart of this conversation. Investor-owned utilities exist to sell more energy—either electricity, gas, or both, depending on the utility—and, through the rates they charge for that energy, recoup their revenue requirement from ratepayers. Energy efficiency programs go exactly against the utilities' reason to exist.

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83. *See, e.g.*, JOE DANIEL ET AL., UNION OF CONCERNED SCIENTISTS, *Used, But How Useful? How Electric Utilities Exploit Loopholes, Forcing Customers to Bail Out Uneconomic Coal-Fired Power Plants* 5 (2020), https://ucsusa.org/sites/default/files/2020-05/Used%20but%20How%20Useful%20May%202020.pdf (detailing the self-commitment of coal-fired power plants by rate-regulated utilities, leading to uneconomic dispatch and higher consumer costs). "By exploiting gaps in regulatory oversight and loopholes in wholesale market rules, rate-regulated utilities are cutting ahead in the merit-order line. Rate regulation, coupled with a lack of scrutiny when it comes to cost recovery, has enabled these utilities to lose money in the market without incurring actual losses on their balance sheets. This occurs when a rate-regulated utility submits fuel costs to its state utility commission for fuel-cost recovery and those costs are not compared with market prices to determine if they were indeed prudent. The utility's ownership structure (via rate regulation) allows plant owners to pass through fuel costs in regulatory proceedings. Lower electric bills could be realized today if only electric companies stopped exploiting loopholes. It is ultimately up to state regulators—on behalf of the public—to ensure that ratepayer risk is managed properly." *Id.* at 8; *see also* Esther Whieldon, Molly Christian & Ashleigh Cotting, *Holes remain in US power companies' plans to achieve net-zero carbon emissions*, S&P GLOBAL MARKET INTELLIGENCE (Nov. 11, 2019), https://www.spglobal.com/marketintelligence/en/news-insights/trending/gFEkONxlUSs3gJoOlQuu_g2 (detailing utility companies pledging to go carbon-free by 2050, but adding gas plants that will have a longer lifespan than 2050, meaning those plants will not be fully paid off by the time those utilities are supposed to be carbon free); *id.* ("Eight power companies with carbon-free goals are planning to add a combined total of 10,082 MW [(megawatts)] of generation and electric storage capacity through 2030, nearly half of which will be natural-gas fired generation."); Darren Sweeney & Richard Martin, *Overpowered: In Virginia, Dominion Faces Challenges to its Reign*, S&P GLOB. MKT. INTEL. (Dec. 4, 2019), https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/overpowered-in-virginia-dominion-faces-challenges-to-its-reign-54171542 ("Dominion's past integrated resource plans, or IRPs; campaign finance documents; and independent reports, along with interviews with utility analysts and environmental advocates and statements from Dominion officials, shows that the company has consistently over-forecast electricity demand to justify building new capacity, primarily natural gas plants with dubious economics that will ultimately be paid for by ratepayers . . . ."); Patrick O'Grady, *APS to offer refunds to thousands of customers on rate plan data mix-up*, PHX. BUS. J. (Nov. 19, 2019), https://www.bizjournals.com/phoenix/news/2019/11/20/aps-to-offer-refunds-to-thousands-of-customers-on.html (detailing how the utility's comparison tool told customers one plan would be cheaper but in reality it charged them more).

This is, perhaps, a more fundamental conflict than might be readily apparent. Utilities make money by selling product, and, for many, the amount collected is still dependent much more on volumetric charges rather than fixed fees, leading to a direct correlation between how much energy is used and the revenue collected by the utility.[84] Selling more product is therefore directly tied to profit, which is then tied to the returns gained by shareholders. Indeed, utilities have a fiduciary duty to their shareholders, which requires a focus on profit.[85]

Energy efficiency programs are in direct conflict with this basic desire to sell ever-increasing amounts of energy and return the profits that those extra sales would enable to shareholders.[86] Therefore, it should be unsurprising that investor-owned utility energy efficiency programs are not wholeheartedly embraced. Doing so in the absence of decoupling—and being actually successful in that endeavor—might spark a shareholder lawsuit that the utility was not upholding their duty to put shareholders' interests first.

Second, energy efficiency programs should be removed from utility administration because of the potential for regulatory capture. As we have

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84. Commentators are making this point especially with regard to decreasing demand during COVID-19. *See* Kavulla, *supra* note 71 ("Shuttered office buildings and small businesses mean fewer kilowatt-hours sold, and mass unemployment leaves ratepayers unable to pay what they owe to the power company. Yet, increasingly, utilities' returns are divorced from the rest of the economy. That is because government regulation of these monopolies—often imagined as protecting consumers—often does more keep intact utilities' bottom line."). The issue—from a utility perspective—is that very little of its costs are actually driven by volumetric differences. The vast majority of the utility's costs are fixed—poles, pipes, wires, plants, and, to a large extent, labor—that do not fluctuate much, if at all, with volume. Fuel, which does fluctuate, is considered an operations and maintenance expense, and therefore is recovered from ratepayers, but not with profit for investors. JOEL B. EISEN ET AL., ENERGY, ECONOMICS AND THE ENVIRONMENT 481 (5th ed. 2019) (listing fuel as operating expense and discussing ratemaking formula which has expenses as pass-through costs to ratepayers).

85. John Farrell, *How Market Power Gives Electric Utilities Political Power*, INST. FOR LOC. SELF-RELIANCE (Nov. 11, 2019), https://ilsr.org/how-market-power-gives-electric-utilities-political-power/ ("By 2019, most private utilities are owned by multi-state holding companies with a legal obligation to focus on returns to investors.").

86. *See, e.g.*, Kavya Balaraman, SoCalGas Merits $255M Fine for Opposing Efficiency Standards With Customer Funds: Ratepayer Advocate, UTILITYDIVE (Nov. 9, 2020), https://www.utilitydive.com/news/socalgas-merits-255m-fine-for-opposing-efficiency-standards-with-customer/588597/ (discussing how "SoCalGas has been involved in 'a concerted effort' to undermine California's energy efficiency goals since at least 2014, in an attempt to preserve its business model and profit shareholders."); *see also*, Dick Munson, As Utilities Embrace Change, FirstEnergy's Strategy is Resistance and Protectionism, GTM (Aug. 21, 2015), https://www.greentechmedia.com/articles/read/as-utilities-embrace-change-firstenergys-strategy-is-resistance-and-protect (discussing FirstEnergy investor presentations and that "the company's executives revealed low-cost, clean energy efforts were interfering with sales and profits").

seen in other areas of utility practice,[87] "[p]ublic regulators may lack sufficient resources to provide strong oversight, or may be 'captured' by the utility, essentially acting as a rubber stamp."[88] The lackluster utility-run energy efficiency program results to date, combined with the glaring conflict of interest, indicate that sufficient oversight has not been forthcoming. Putting energy efficiency funding in a separate organization or agency with transparency and without the baggage of utility proceedings[89] would allow the public far more clarity on what their energy efficiency dollars are actually being used for and the outcomes being achieved. Quite simply, public utility commission proceedings are almost designed to limit public accountability and participation. That should change for energy efficiency programs—both development and deployment.

Third, profit. Investor-owned utility guaranteed profits are averaging around 10%. Running energy efficiency programs in nonprofit or governmental agencies without mandatory profit requirements would enable the funding that would be used to satisfy the profit requirement to be used for more energy efficiency. Alternatively, since it would be taken out of the utility's sphere, that money could simply be used to let customer bills decrease, with no change in funding for the actual energy efficiency programs themselves. Either way, ratepayers are better off than having the utility managing the program and making a 10% profit off any capital investment.

Fourth, energy efficiency programs should not be run by the utility because the utility does not share the same social concerns. Especially for energy efficiency programs managed by investor-owned utilities, as noted above, it makes sense for them to do the bare minimum possible, and, to the greatest extent possible, to reward energy efficiency that is either ineffective or that would have happened anyway.[90] That way, the amount of decrease in energy sales the energy efficiency program generates is as small as possible, but the utility can still claim to be meeting regulatory

87. Payne, *supra* note 58.

88. John Farrell, *How Market Power Gives Electric Utilities Political Power*, INSTITUTE FOR LOCAL SELF-RELIANCE (Nov. 11, 2019), https://ilsr.org/how-market-power-gives-electric-utilities-political-power/.

89. *See, e.g.*, CHARLIE HARAK, JOHN HOWAT & OLIVIA WEIN, A CONSUMER'S GUIDE TO INTERVENING IN STATE PUBLIC UTILITY PROCEEDINGS (National Consumer Law Center, 2004), https://www.nclc.org/images/pdf/energy_utility_telecom/consumer_protection_and_regulatory_issues/report_may2003.pdf (demonstrating that it takes 43 pages to explain the basics of utility docket processes).

90. For example, giving a ratepayer a $50 rebate for purchasing a new efficient hot water heater, when the rebate did not drive a change in behavior, and the ratepayer would have purchased that exact water heater regardless.

mandates.

As discussed below, energy efficiency dollars are, and likely always will be, limited. However, the collective pot of money is not insignificant—$28 billion a year—and could make a real difference to those who need improvements to suffer less from energy burdens going forward.[91] Utility-run programs targeting especially low- and moderate-income households have tended to be add-ons rather than a focus.[92] Given their profit motive, investor-owned utilities will never be in the same position to focus energy efficiency programs for social justice reasons.

The fifth reason is the stimulus, which argues for immediate action. There are many discussions currently ongoing about the number of energy efficiency jobs that have been lost during COVID-19.[93] In addition to bringing those jobs back, additional money for energy efficiency could be part of a green stimulus.[94] These jobs are distributed rather than concentrated geographically and spread across a wide variety of skill levels.[95] Suggestions have been made for specific programs at every level

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91. If we assume the 38.6 million households eligible for weatherization should be the focus of the $28 billion per year in energy efficiency spending, that equals to around $725/year/household.

92. *See* GOLD, GILLEO & BERG, *supra* note 44, at 30-31 (describing how "[c]arve-outs are most commonly used to support equity objectives . . . . Unless carve-outs are tied directly to performance incentives or other regulatory oversight mechanisms, they may be viewed as less important than the overall goal, with correspondingly less attention from program administrators."). Even in New York, only 20% of the energy efficiency funding is dedicated to low- and moderate-income programs. *Id.* at 32.

93. *See* Robert Walton, *Businesses, Lawmakers Urge $22B in Federal Clean Energy Investment as Sector Job Losses Top 600K,* UTILITYDIVE (June 3, 2020) https://www.utilitydive.com/news/businesses-lawmakers-urge-22b-in-federal-clean-energy-investment-as-secto/579102/ (noting that the clean energy industry has lost an estimated 600,000 jobs due to the pandemic); *see also* Laura Sherman, Energy Efficiency Has Been Hit Hard by COVID-19; Don't Question its Merits, UTILITYDIVE (May 20, 2020), https://www.utilitydive.com/news/energy-efficiency-has-been-hit-hard-by-covid-19-dont-question-its-merits/578231/ (noting that 70,000 energy efficiency workers filed unemployment claims in March 2020). Additionally, "at least 20 states have stopped retrofits under the federal low-income Weatherization Assistance Program . . . ." Robert Walton, *Energy Efficiency Efforts Are Shutting Down Due to COVID-19, Threatening Jobs and Savings*, UTILITYDIVE (Apr. 6, 2020), https://www.utilitydive.com/news/energy-efficiency-efforts-are-shutting-down-due-to-covid-19-threatening-jo/575496/.

94. THE ENERGY MIX, *Haley: Governments Need Long-term Investment to Get Green Stimulus Right* (Apr. 29, 2020), https://theenergymix.com/2020/04/29/haley-governments-need-long-term-investment-to-get-green-stimulus-right/ ("Governments that hope to recapture the gains and avoid the pitfalls of the last big round of economic stimulus more than a decade ago should double down on decarbonization and energy efficiency programs . . . .").

95. Mitchell Beer, *In Conversation: Energy Retrofits Can Drive Economic Recovery, but Financing and Logistics Are Key, Torrie says,* THE ENERGY MIX (May 3, 2020) https://theenergymix.com/2020/05/03/the-interview-energy-retrofits-can-drive-economic-recovery-but-financing-and-logistics-are-key-torrie-says/.

of government—federal,[96] state,[97] and there are even templates for what local officials could do.[98] However, the track record of utilities in a similar situation is not promising.[99] Therefore, for the stimulus funding to do the most potential good, none of the funding should be funneled through utilities. For all these reasons, energy efficiency programs should no longer be housed in investor-owned utilities.

III. BUILDINGS—AND WHY THEY MATTER

With generally increased focus on the top three sources of carbon emissions, cities and states are starting to look at the fourth largest source of carbon emissions: residential and commercial uses.[100] "More than 76% of all U.S. electricity use and more than 40% of all U.S. energy use and associated greenhouse gas (GHG) emissions are used to provide comfortable, well-lit, residential and commercial buildings—and to provide space conditioning and lighting for industrial buildings."[101]

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96. Dorothy Gambrell et al., *How to Grow Green*, BLOOMBERG GREEN (June 9, 2020, 5:00 AM), https://www.bloomberg.com/features/2020-green-stimulus-clean-energy-future/; *see also* Meredith Fowlie, *The Search for Good Green Stimulus*, ENERGY INSTITUTE BLOG (June 1, 2020), https://energyathaas.wordpress.com/2020/06/01/the-search-for-good-green-stimulus/.

97. *See, e.g.*, Hal Harvey, *Electrification Can Supercharge California's Post-COVID Economy*, FORBES (June. 17, 2020 07:10 AM), https://www.forbes.com/sites/energyinnovation/2020/06/17/electric-vehicles-and-building-electrification-can-supercharge-californias-post-covid-economy/#538b32e13265 (discussing how California could use electrification and energy efficiency among other mechanisms to both decrease economic damage from COVID-19 and help meet the state's 2030 climate and carbon goals).

98. Nick Henner, *These Seven Strategies Can Help Mayors Save Money and Revive Local Economies*, ACEEE (June 18, 2020), https://www.aceee.org/blog-post/2020/06/these-seven-strategies-can-help-mayors-save-money-and-revive-local-economies (listing energy efficiency in existing buildings, energy efficiency in new construction, and leveraging and maximizing utility energy efficiency offerings as three of seven strategies mayors should be focused on to revive local economies in the wake of COVID-19).

99. CHARLES A. GOLDMAN ET AL., ERNEST ORLANDO LAWRENCE BERKELEY NAT'L LAB., INTERACTIONS BETWEEN ENERGY EFFICIENCY PROGRAMS FUNDED UNDER THE RECOVERY ACT AND UTILITY CUSTOMER-FUNDED ENERGY EFFICIENCY PROGRAMS (2011), https://web.archive.org/web/20170811185920/https://emp.lbl.gov/sites/all/files/lbnl-4322e-app.pdf (demonstrating interactions between the American Recovery and Reinvestment Act spending and utility programs, with utilities wanting full credit for savings even when money came from another source).

100. This is also happening internationally; European Union member states "have set a goal for all new buildings to become nearly zero energy by the end of 2020." Maria Akerman et. al, *Lost in Building Design Practices: The Intertwining of Energy With the Multiple Goals of Home Building in Finland,* SCIENCEDIRECT (Mar. 2020), https://www.sciencedirect.com/science/article/abs/pii/S221462961930310X?via%3Dihub.

101. U.S. DEPARTMENT OF ENERGY, QUADRENNIAL TECHNOLOGY REVIEW AN ASSESSMENT OF ENERGY TECHNOLOGIES AND RESEARCH OPPORTUNITIES (Sept. 2015), https://www.energy.gov/sites/prod/files/2017/03/f34/qtr-2015-chapter5.pdf.

Residential and commercial uses occur where we live and work: in buildings. And buildings account for a large percentage of emissions because of the activities that take place within them. As one campaigner has noted: "There's no pathway to stabilizing the climate without phasing gas out of our homes and buildings. This is a must-do for the climate and a livable planet."[102]

In Chicago, the city estimates that buildings account for 72% of the city's greenhouse gas emissions.[103] Pittsburgh estimates that 80% of the city's emissions come from buildings.[104] In Boston, "buildings account for roughly 70% of the city's carbon emissions, and municipal buildings account for nearly 75% of emissions from local municipal operations."[105] New Jersey estimates that buildings account for 62% of the state's "total end-use energy consumption."[106]

Up until now, however, there generally hasn't been the same focus on reductions in emissions from the built environment as there has been from other sources of carbon emissions.[107] That is understandable, as other sectors have larger emissions. But it is changing,[108] as carbon-free paths

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102. Elizabeth Weise, *No More Fire in the Kitchen: Cities Are Banning Natural Gas in Homes to Save the Planet*, USA TODAY (Nov. 10, 2019), https://www.usatoday.com/story/news/2019/11/10/climate-change-solutions-more-cities-banning-natural-gas-homes/4008346002/ (quoting Rachel Golden of the Sierra Club).

103. Katie Pyzyk, *Chicago Buildings Saved $74M from Energy Benchmarking: Report*, SMART CITIES DIVE (Aug. 26, 2019), https://www.smartcitiesdive.com/news/chicago-implements-energy-rating-system-for-buildings/561611/ ("Chicago estimates buildings account for about 72% of the city's greenhouse gas emissions.").

104. Additionally, the mayor has introduced legislation that would require new or renovated city buildings to be net-zero energy efficient. Katie Pyzyk, *Pittsburgh Mayor Introduces Energy Efficiency Legislation*, SMART CITIES DIVE (Sep. 4, 2019), https://www.smartcitiesdive.com/news/pittsburgh-mayor-introduces-energy-efficiency-legislation/562145/.

105. Jason Plautz, *Boston to Require Carbon Neutral Design for New City Buildings*, SMART CITIES DIVE (Oct. 9, 2019), https://www.smartcitiesdive.com/news/boston-to-require-carbon-neutral-design-for-new-city-buildings/564624/.

106. Matthew Bandyk, *New Jersey Outlines Sweeping Plans to Achieve 100% Clean Energy by 2050*, UTILITY DIVE (Jan. 28, 2020), https://www.utilitydive.com/news/new-jersey-outlines-sweeping-plans-to-achieve-100-clean-energy-by-2050/571195/.

107. *See, e.g.*, Rachel Cooper, *World Green Building Council Publishes 'Advancing Net Zero' Report*, CLIMATE ACTION (May 30, 2019), http://www.climateaction.org/news/world-green-building-council-publishes-advancing-net-zero-report. *See also* Catherine Morehouse, *Renewable Gas or Electrification? Minnesota's High Stakes Experiment on Building Decarbonization*, UTILITY DIVE (Oct. 1, 2019), https://www.utilitydive.com/news/renewable-gas-or-electrification-minnesotas-high-stakes-experiment-on-bui/564065/.

108. It is also changing in the scholarly space. Professors Jim Rossi and Christopher Serkin have recently proposed two "energy exactions" which local governments could use to "create an incentive for developers to include technologies and building approaches that will minimize energy needs." Jim Rossi & Christopher Serkin, *Energy Exactions*, 104 CORNELL L. REV. 643, 647 (2019).

forward become clear in those sectors, and governments are determining that what they must do to achieve deep decarbonization is to electrify.[109] Observers noted that 2020 was expected to be "the year we all remember as the beginning of the end of gas."[110] The California Energy Commission came to the same conclusion when determining ways to cut building emissions over the next decade: "There is a growing consensus that building electrification is the most viable and predicable path to zero-emission buildings."[111] New Jersey is aspiring to "'electrify its state facilities . . . and accelerate the current statewide net zero carbon homes incentive programs for both new construction and existing homes.'"[112] Scholars have proposed model development codes for zero net energy buildings.[113] Electrification and energy efficiency must go hand-in-hand, and be implemented at the same time as a cleaner grid. Just electrifying will increase electricity load, whereas increasing energy efficiency at the same time that electrification is happening will enable the increased load to be served by renewable generation resources.

Even people in Texas have started looking at what would happen if heating changed over from natural gas to electricity. "'If we do want to decarbonize, eventually we do have to move into [buildings]. It may not be the lowest-hanging fruit, but eventually we will have to get there.'"[114] The change would "save Texas households up to $452 annually on their utility bills, and flip the state from a summer-peaking to a winter-peaking

109. *See* Michael P. Vandenbergh & Jonathan M. Gilligan, *Forks in the Road*, DUKE ENV'T AND POL'Y F. (Mar. 26, 2020) (discussing how electrification of buildings is necessary for public and private policymakers).

110. Justin Gerdes, *2020 Looks Like the Breakout Year for Building Decarbonization in California*, GREEN TECH MEDIA (Aug. 23, 2019), https://www.greentechmedia.com/articles/read/2020-looks-like-the-breakout-year-for-building-decarbonization-in-californi. (quoting the California Energy Commission and Building Decarbonization Coalition Director Panama Bartholomy, respectively). This is also because California regulators have allowed the state's $1 billion annual energy efficiency budget to be used for building electrification efforts. *See* Robert Walton, *California opens $1B in Efficiency Funding to Electrification*, UTILITY DIVE (Aug. 2, 2019), https://www.utilitydive.com/news/california-opens-1b-in-efficiency-funding-to-electrification/560096/.

111. Phil McKenna, *Fearing for Its Future, a Big Utility Pushes 'Renewable Gas,' Urges Cities to Reject Electrification*, INSIDE CLIMATE NEWS (Nov. 13, 2019), https://insideclimatenews.org/news/13112019/biogas-climate-change-renewable-gas-marketing-socalgas-reject-electrification-california.

112. *Supra* note 106.

113. Brandon Hanson et al., *Zero Net Energy Buildings*, SUSTAINABLE DEVELOPMENT CODE, https://sustainablecitycode.org/brief/zero-net-energy-buildings-2/ (last visited Apr. 20, 2020).

114. Justin Gerdes, *A Texas-Sized Gas-for-Electricity Swap*, GREEN TECH MEDIA (Nov. 22, 2019), https://www.greentechmedia.com/articles/read/a-texas-sized-gas-for-electricity-swap (quoting Joshua Rhodes).

system."[115]

While it may seem like we have time to address our emissions from buildings—the residential and commercial sector is only the fourth largest economic sector by overall emissions, after all—we do not. Unlike the indirect emissions from electricity attributable to the residential and commercial sector which are trending down,[116] direct emissions have stayed constant for almost the last thirty years.[117] It will also take societal change, and "[n]ot only are these areas more diverse in their carbon output, they cut closer to the routines of ordinary Americans."[118] Those changes can be spurred at all levels of government.

IV. ACTION ON ENERGY EFFICIENCY

By one estimate, the adoption or strengthening of energy efficiency legislation improving both residential and commercial "buildings could save consumers $51 billion on energy bills through 2050."[119] In 2015, the federal government calculated that just switching appliances to ENERGY STAR® models would "reduce residential energy consumption 30%" and implementing best available technologies would reduce residential energy consumption 50% without any other changes like improved insulation.[120]

States will be the ones focused on taking action in this area, at least in

115. *Id.* However, "that winter peak would be 'nothing the grid couldn't evolve to handle.'" *Id.* "And because Texas' wind power generation is higher in winter, a winter peak would better match the expected higher load from all-electric heating to the availability of zero-carbon electricity." *Id.*

116. As would be expected, the electricity system moves toward decarbonization. This trend will continue as we put more carbon-free electricity onto the grid. Direct emissions are those created or controlled by a specific entity, household, or person. Indirect emissions are those related to but not specifically controlled by the entity, household, or person, such as the emissions created by electricity generation associated with the amount of electricity the entity, household or person uses. Indirect Emissions Explained in One Minute, ECOMETRICA (Sept. 18 2013), https://ecometrica.com/article/indirect-emissions-explained-in-one-minute (last visited Aug. 8, 2020).

117. *Sources of Greenhouse Gas Emissions*, ENV'T. PROT. AGENCY., https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions (last visited Jan. 12, 2020) (Commercial/Residential tab).

118. Mark K. Matthews, *Cutting Carbon in Homes: 'It is a head change for people'*, E&E NEWS (Nov. 15, 2019), https://www.eenews.net/climatewire/stories/1061551849. "'But it's a head change for people,' . . . Unlike the energy and transportation sectors—where the solutions are difficult but relatively straightforward—cutting carbon emissions at home and work is a complex equation."

119. Kristin Musulin, *ACEEE highlights 10 building energy performance standards to help meet climate goals*, UTILITYDIVE (June 24, 2020), https://www.utilitydive.com/news/10-examples-of-building-performance-standards-aceee/580379/.

120. *Supra* note 101. The figures have not been updated to account for recent technological improvements.

the short term, mainly due to a lack of leadership at the federal level. While the Federal Energy Regulatory Commission, which regulates interstate pipelines, might have been expected to address the climate change impacts of natural gas, they have not; in fact, the agency has taken action specifically not to address emissions impacts.[121] Additionally, the Trump Administration "instruct[ed] federal agencies to no longer take climate change into account" when performing required analyses under the National Environmental Policy Act (NEPA).[122] However, as states move from 100% clean electricity targets to economy-wide targets—which has already started happening—a focus on decarbonization around buildings will only become stronger.[123] This section discusses generally the larger energy efficiency initiatives occurring at various levels of government.

A. *Federal*

There has been perhaps the least recent action at the federal level. A limited tax credit was passed in 2005,[124] and has been sporadically extended for short periods of time since. A federal tax benefit for energy efficiency for existing residential buildings, new residential construction, and commercial buildings is currently available at least until December

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121. Jessica Bell, *Big changes may be ahead for natural gas pipelines, if FERC does its job*, UTILITY DIVE (Sept. 16, 2020), https://www.utilitydive.com/news/big-changes-may-be-ahead-for-natural-gas-pipelines-if-ferc-does-its-job/585182/ ("Current FERC commissioners disagree as to their responsibilities under the National Environmental Policy Act (NEPA) and the Natural Gas Act (NGA) to consider GHG emissions as they evaluate a proposed pipeline. The Republican majority does not consider the impacts of GHG emissions in their analysis, professing an inability to assess a project's contribution to climate change. The current lone Democrat, Commissioner Richard Glick, has called out his colleagues' illogic on this issue: 'The Commission is simultaneously stating that it cannot assess the significance of the Projects' impact on climate change, while concluding that all environmental impacts are acceptable to the public interest.'").

122. Juliet Eilperin, Josh Dawsey & Brady Dennis, *White House update of key environmental law would exclude climate change*, WASHINGTON POST (Jan. 3, 2020) https://www.washingtonpost.com/climate-environment/white-house-update-of-key-environmental-law-would-exclude-climate-change/2020/01/03/35491e10-2e89-11ea-9b60-817cc18cf173_story.html (noting the change is specifically "aimed at speeding approvals for pipelines, oil and gas leases," and other types of development).

123. *See* Julia Pyper, *Tracking Progress on 100% Clean Energy Targets*, GREENTECH MEDIA (Nov. 12, 2019), https://www.greentechmedia.com/articles/read/tracking-progress-on-100-clean-energy-targets (noting how 111 million Americans "live in a community that has committed to or has already achieved 100 percent clean electricity" and how the "binding nature" of the commitments is "noteworthy" and how "California and 44 cities have set even more challenging targets to also transition their entire transportation, heating and cooling sectors to 100 percent clean energy sources").

124. INTERNAL REVENUE SERVICE, FACT SHEET: HIGHLIGHTS OF THE ENERGY POLICY ACT OF 2005 FOR INDIVIDUALS (2006).

31, 2021.[125] For existing residential buildings, the maximum available tax credit is $500 per household over the lifetime of the program.[126] Builders can receive up to a $2,000 tax credit for newly-built energy efficient homes.[127] The commercial tax deduction is up to $1.80 per square foot "available to owners or designers" of buildings or systems that meet specific energy efficiency targets.[128]

In 2011, the United States Department of Energy started the Better Buildings Initiative, which "challenges" businesses and other organizations "to improve building energy efficiency by at least 20% over a decade."[129] While the program has "saved nearly 1.8 quadrillion Btu of energy and $11 billion" since its inception,[130] the main goal is the sharing of best practices rather than direct assistance.[131] The Weatherization Assistance Program, also coordinated through the Department of Energy, provides funds to the states to aid low-income families in making their homes more energy efficient.[132] But the program is woefully underfunded—"only about 2% of low-income households in the United

125. *Federal Income Tax Credits and Other Incentives for Energy Efficiency*, Energy Star https://www.energystar.gov/about/federal_tax_credits (last visited July 5, 2021).

126. The tax credit is 10% of the cost of the energy efficiency improvement—insulation, roofing, or windows, doors or skylights—up to $500. It can only be claimed for an existing primary residence, not new construction and not rental properties. *Equipment Tax Credits for Primary Residences,* ENERGY STAR, https://www.energystar.gov/about/federal_tax_credits/non_business_energy_property_tax_credits. (last visited July 5, 2021).

127. *Tax Credits for Home Builders*, ENERGY STAR, https://www.energystar.gov/about/federal_tax_credits/federal_tax_credit_archives/tax_credits_home_builders (last visited July 5, 2021). Interestingly, the criterion is a "50% energy savings for heating and cooling over the 2006 International Energy Conservation Code and supplements." *Id.* This is the case, despite the fact that the code has been updated multiple times since 2006, including in 2015. SEN, BIRD & BOTTGER, *supra* note 47.

128. *Tax Deductions for Commercial Buildings*, ENERGY STAR, https://www.energystar.gov/about/federal_tax_credits/federal_tax_credit_archive/tax_credits_commercial_buildings (last visited July 5, 2021). Partial deductions are also possible for improvements to building envelopes, lighting, or HVAC systems. *Id.*

129. Robert Walton, *DOE's Better Buildings initiative notches $11B in savings across 10 years*, UTILITYDIVE (June 12, 2020), https://www.utilitydive.com/news/does-better-buildings-initiative-notches-11b-in-savings-across-10-years/579712/.

130. *Learn about Better Buildings*, OFF. OF ENERGY EFFICIENCY & RENEWABLE ENERGY, https://www.energy.gov/eere/better-buildings (last visited Aug. 5, 2020).

131. *Id.* (touting "partner-tested and proven solutions") (last visited Aug. 5, 2020).

132. *Weatherization Assistance Program for Low-Income Persons*, BENEFITS.GOV, https://www.benefits.gov/benefit/580 (last visited Aug. 5, 2020). Since 1976, the Weatherization Assistance Program has served more than 7 million households, and provides weatherization to approximately 35,000 homes each year. U.S. DEPARTMENT OF ENERGY OFFICE OF ENERGY EFFICIENCY & RENEWABLE ENERGY, *Weatherization Assistance Program*, https://www.energy.gov/eere/wap/weatherization-assistance-program (last visited Aug. 5, 2020).

States receive much-needed weatherization services each year."[133] Criteria for eligibility, however, are determined by each participating state.[134] Under the 2008 stimulus program, $300 million was set aside for landlords to apply for as funding to replace older appliances with more efficient ones.[135] The program was not renewed.[136]

Certainly the most visible federal energy efficiency programs are the ones that deal with consumer appliances—energy efficiency standards and voluntary certification under the ENERGY STAR® label.[137] While the mandatory energy standards are mainly thought of for appliances,[138] like refrigerators and dryers, they are set at the federal level for a large number of household and commercial products in addition to appliances, including HVAC systems, lighting and more.[139] "As a result of these standards, American consumers saved $63 billion on their utility bills in 2015 alone . . . . Products covered by standards represent about 90% of home energy use, 60% of commercial building use, and 30% of industrial energy use."[140] Once a federal standard is adopted, any state-level

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133. Ariel Drehobl, *Weatherization Cuts Bills and Creates Jobs but Serves Only a Tiny Share of Low-Income Homes*, ACEEE (July 7, 2020), https://www.aceee.org/blog-post/2020/07/weatherization-cuts-bills-and-creates-jobs-serves-only-tiny-share-lowincome-homes (noting that the program helped 90,541 homes in 2018, compared with around 38.6 million households that are eligible for weatherization assistance through the program).

134. *Weatherization Assistance Program for Low-Income Persons*, BENEFITS.GOV https://www.benefits.gov/benefit/580 (last visited Apr. 3, 2021). While renters are not precluded from participating, renters "must get permission from [the] landlord before workers can begin work on the house." OFF. OF ENERGY EFFICIENCY & RENEWABLE ENERGY, *How to Apply for Weatherization Assistance*, https://www.energy.gov/eere/wap/how-apply-weatherization-assistance (last visited Apr. 3, 2021).

135. Dorothy Gambrell et al., *How to Grow Green*, BLOOMBERG GREEN (June 9, 2020, 5:00 AM), https://www.bloomberg.com/features/2020-green-stimulus-clean-energy-future/ (under item #17).

136. As will be discussed later in this Article, however, rental housing is a persistent challenge and needs to be addressed through energy efficiency programs. *See also* SEN, BIRD & BOTTGER, *supra* note 47 at 8.

137. Of course, one of the challenges for states or localities is that these standards preempt more strict action under state initiatives where for categories of products where they do exist.

138. Robert Walton, *14 states, advocacy groups sue DOE over failure to update 25 appliance efficiency standards*, UTILITYDIVE (Nov. 10, 2020), https://www.utilitydive.com/news/14-states-advocacy-groups-sue-doe-over-failure-to-update-25-appliance-effi/588693/ (noting that appliance standards are supposed to be updated and that states were suing the federal government given "updated standards could save $580 billion in energy costs and avoid over 2 billion metric tons of carbon dioxide emissions by 2050").

139. According to DOE, "minimum energy conservation standards" exist "for more than 60 categories of appliances and equipment." OFF. OF ENERGY EFFICIENCY & RENEWABLE ENERGY, U.S. DEP'T. OF ENERGY, *Appliance & Equipment Standards Program*, U.S. DEP'T. OF ENERGY, https://www.energy.gov/eere/buildings/appliance-and-equipment-standards-program.

140. OFF. OF ENERGY EFFICIENCY & RENEWABLE ENERGY, *Appliance & Equipment Standards Program*, U.S. DEP'T OF ENERGY, https://www.energy.gov/eere/buildings/appliance-

regulation of that category of goods is preempted.[141]

Unlike the mandatory Department of Energy (DOE) energy standards, ENERGY STAR® is a voluntary program operated jointly by DOE and the Environmental Protection Agency (EPA).[142] Along with promoting innovation, the program is designed to identify—and promote to consumers, leading to greater market awareness—"top-performing, cost-effective products" in any particular category.[143] The program estimates that it saved American consumers "$18 billion on utility bills" in 2010.[144]

Combined then, these two federal programs—mandatory energy conservation standards and voluntary ENERGY STAR® appliances—save consumers more than $80 billion annually. While there is far more that could be done at the federal level to aid the twin goals of electrification and energy efficiency, appliance standards dwarf in impact programs that are run by utilities.

B. *States*

Building codes continue to be a focus at the state level.[145] Currently, mandatory residential building standards have been adopted in forty states plus the District of Columbia.[146] However, in the vast majority of

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and-equipment-standards-program.

141. SEN, BIRD & BOTTGER, *supra* note 47 at 8. Manufacturers explicitly requested federal preemption so they would not be expected to meet a number of different state standards as state-level requirements proliferated. *Id.*

142. OFF. OF ENERGY EFFICIENCY & RENEWABLE ENERGY, *Energy Star®*, U.S. DEP'T. OF ENERGY, https://www.energy.gov/eere/buildings/energy-star (last visited Aug. 5, 2020).

143. *Id.*

144. *Id.* It does appear that this is the last year for which the government has reported this data. This is not to say that there are not issues with the Energy Star program. As was widely reported, a nonexistent gas-powered alarm clock was certified as energy efficient: Matt Novak, *A fake gas-powered alarm clock once got Energy Star certification*, GIZMODO (Nov. 14, 2014), https://gizmodo.com/a-fake-gas-powered-alarm-clock-once-got-energy-star-cer-1656128986.

145. Moses Riley, *Energy Code Trends: June 2020*, NE. ENERGY EFFICIENCY P'SHIP, https://neep.org/blog/energy-code-trends-june-2020, (last visited Apr. 3, 2021); *see also* Kristin Musulin, *ACEEE highlights 10 building energy performance standards to help meet climate goals*, UTILITYDIVE (June 24, 2020), https://www.utilitydive.com/news/10-examples-of-building-performance-standards-aceee/580379/; *see also* Kavya Balaraman, *'The Start of Something Big': California Crafts Pilot Program to Reduce Building Emissions*, UTILITYDIVE (June 16, 2020), https://www.utilitydive.com/news/the-start-of-something-big-california-crafts-pilot-program-to-reduce-bui/579864/ (discussing two pilot programs, one to incentivize low emission new homes and the other "focused on promoting cleaner heating equipment in both new and existing residential buildings").

146. SEN, BIRD & BOTTGER, *supra* note 47. Interestingly, only ten of those allow for localities to require more strict standards; the other thirty allow only the state-wide standards to be enforced. *Id.* This limits the amount of additional energy efficiency that a locality can require in those jurisdictions due to the preemptive effect of the state standards.

circumstances for non-public buildings, these only apply to new construction, not to renovations or remodels.[147] States also often do not adopt the most recent efficiency building code, or determine whether they are lagging behind in adoption.[148] While building codes that require less energy use can make a new home slightly more expensive, the savings for the homeowner over time is much more significant.[149]

Another trend is states adopting requirements for new homes to be able to install all electric appliances or solar panels, even if they are not initially equipped with electric appliances or rooftop solar.[150] It is much cheaper to do this when the home is initially built rather than coming back and retrofitting the home later.[151] Others are looking at requiring all electric new homes going forward.[152]

Homebuilders tend to be the largest group unified against stringent building codes or electrification requirements.[153] Recently, pressure from

147. *Id.* at 14. Interestingly, only ten of those allow for localities to require more strict standards; the other thirty allow only the state-wide standards to be enforced. *Id.* This can be very significant for states, like New Jersey, with older existing housing stock. In 2009, the average owner-occupied residential home was built around 1981; for rental units, it was in the 1950s. NE. ENERGY EFFICIENCY P'SHIP, INC., AN ENERGY EFFICIENCY STRATEGY FOR NEW JERSEY ACHIEVING THE 2020 MASTER PLAN GOALS 6 (2009), https://www.state.nj.us/emp/docs/pdf/041609NEEP.pdf. Additionally, states more frequently require public buildings to meet higher standards when being remodeled or renovated, as they recognize that it saves the state money to do that. SEN, BIRD & BOTTGER, *supra* note 47, at 17-18.

148. *Id.*

149. California determined that the new efficiency requirements would "on average provide net savings of $40 per month." *Id.* Additionally, by requiring all new construction to meet high minimum efficiency standards, it lessens energy burdens by mandating construction which will cost less to operate over time. In this way, mandating minimum energy codes promotes equity.

150. *See, e.g.*, California Energy Commission, CEC Approves First Local Energy Efficiency Standards That Go Beyond 2019 Statewide Requirements (Dec. 11, 2019), https://www.energy.ca.gov/news/2019-12/cec-approves-first-local-energy-efficiency-standards-go-beyond-2019-statewide (demonstrating California's focus in its 2019 standards on residential solar PV and insulation among other items).

151. Moses Riley, *supra* note 145.

152. California is looking at this, and Massachusetts has started a docket on decommissioning the natural gas system.

153. It would cost about $1,000 extra, on average, to make sure "at a minimum that a home's roof won't fly off or leak in a hurricane," but only around eight thousand houses met that standard over ten years. Bloomberg, *Hurricane-Proof Homes Exist—Why Isn't Anyone Buying Them?*, FORTUNE (June 20, 2018), https://fortune.com/2018/06/20/hurricane-proof-homes/. While updated building standards are released every three years, states like North Carolina only review and adopt changes every six years based on "a push from builders, who argue that new codes make houses more expensive"; on the other hand, "evidence shows that strong, well-enforced building codes reduce loss and facilitate recovery" from storms. Ari Natter, *N.C. may regret weakening its building codes in 2013*, NEW BERN SUN J. (Sept. 14, 2018), https://www.newbernsj.com/news/20180914/nc-may-regret-weakening-its-building-codes-in-2013; *see also* Henry Grabar, *How Homebuilders Made North Carolina Vulnerable to Florence*, SLATE (Sept. 13, 2018),

home builders scuttled energy efficiency building code updates in Kansas City.[154] Homebuilders lobbied against energy efficiency codes in the U.S. Senate and got them removed from a bill.[155] This pressure against efficiency is playing out in the International Code Council, with homebuilders appealing to stop requirements around electrification.

Some states are looking at ways to make existing building stock more energy efficient. For example, Washington has adopted a state-wide Building Energy Performance Standard.[156] However, much more around existing non-public buildings is happening at the local level rather than at the state level.

States are also looking to speed up the changeover from fossil fuels when that fossil fuel use occurs directly in the building.[157] New York is looking to "make heat pumps more economically viable" and provide incentives for customers to switch from fuel oil.[158] Maine, likewise, has a major incentive program to incent the installation of heat pumps.

In addition to building codes or standards, the main tool states have adopted is energy efficiency resource standards (EERS).[159] EERS "require utilities to achieve a certain percentage of energy savings based on the amount of electricity or natural gas sold in the state."[160] These can either be an annual target (e.g., a one percent annual reduction in electricity used) or a total reduction over a longer period of time (e.g., a

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https://slate.com/business/2018/09/florence-flood-north-carolina-storm-surge-buildings.html (showing how legislative changes made for homebuilders led to more damage).

154. Karen Uhlenhuth, *On opposite ends of state, Missouri cities go different directions on building energy use*, ENERGY NEWS NETWORK (May 28, 2020), https://energynews.us/2020/05/28/midwest/on-opposite-ends-of-state-missouri-cities-go-different-directions-on-building-energy-use.

155. Dino Grandoni, *The Energy 202: How a Powerful Lobbying Group Got Stricter Energy Efficiency Codes Out of a Big Senate Energy Bill*, WASHINGTON POST (Mar. 4, 2020), https://www.washingtonpost.com/news/powerpost/paloma/the-energy-202/2020/03/04/the-energy-202-how-a-powerful-lobbying-group-got-stricter-energy-efficiency-codes-out-of-a-big-senate-energy-bill/5e5e9f1388e0fa101a73f33b.

156. Chris Teale, *St. Louis' building efficiency standards pave way for the Midwest*, UTILITYDIVE (May 12, 2020), https://www.utilitydive.com/news/st-louis-building-efficiency-standards-first-Midwest-city/577788/.

157. Reductions in fossil fuels used for electricity generation occur through separate proceedings.

158. Fei Wang, *Electrifying Space Heating Will Require a Herculean Effort*, GREENTECH MEDIA (May 12, 2020), https://www.greentechmedia.com/articles/read/electrifying-space-heating-will-require-a-herculean-effort.

159. GOLD, GILLEO & BERG, *supra* note 44.

160. *Energy Efficiency Resources Standards (EERS)*, NATIONAL CONFERENCE OF STATE LEGISLATURES, https://www.ncsl.org/research/energy/energy-efficiency-resource-standards-eers.aspx (last visited Aug. 5, 2020).

ten percent reduction between 2020 and 2025).[161] Currently in place in 28 states,[162] 24 run these programs through utilities; only Maine, Oregon, Vermont, and Wisconsin run independent programs.[163] "The median annual energy use reduction required for electric utilities is 1.25%, and the maximum is 2.94%."[164] How often the targets are updated is also variable; New Jersey recently set new standards—2.15% for electricity and 1.10% for gas, for most residential, commercial and industrial, and multifamily energy efficiency programs run by utilities.[165] According to one study, states with an EERS saved 1.2% of retail electricity, which was an additional 0.9% of retail electricity sales compared with those states that did not adopt an EERS.[166]

As with so many energy programs, state-level differences are significant and can impact the quality of the programs. For example, some set a cost cap for the amount of program costs that can be passed on to captive ratepayers during a given time period,[167] which can significantly limit the amount of energy efficiency work performed. Another alternative is for states is to "require that regulated utilities implement all cost-effective efficiency measures."[168] Other states mandate that utilities spend specific amounts on energy efficiency programs, but do not require that those expenditures produce a certain level of energy savings.[169] Which utilities are required to meet the mandate also vary by state.[170] "It is also important to note that EERS policies do not cover every utility in every state. Some states, especially those with statewide efficiency administrators, offer programs to all customers. But many limit energy savings goals to investor-owned utilities that are under the purview of

161. SEN, BIRD & BOTTGER, *supra* note 47, at 20.

162. *Energy Efficiency Resources Standards (EERS)*, *supra* note 160. *See also* State Energy Efficiency Resource Standards (EERS) AMERICAN COUNCIL FOR AN ENERGY-EFFICIENCY ECONOMY (May 2019) https://www.aceee.org/sites/default/files/state-eers-0519.pdf.

163. *Energy Efficiency Resources Standards (EERS)*, *supra* note 160.

164. SEN, BIRD & BOTTGER, *supra* note 47, at 28.

165. Robert Walton, *New Jersey Sets 'Top Tier' Energy Efficiency Goal, Targets More Than 2% Electricity Savings*, UTILITYDIVE (June 11, 2020), https://www.utilitydive.com/news/new-jersey-sets-top-tier-energy-efficiency-goal-targets-more-than-2-ele/579620/. The state will run programs for "Large Energy Users," CHP, and state and local government programs. *Id.*

166. *Energy Efficiency Resources Standards (EERS)*, *supra* note 160.

167. *Id.*

168. *Id.* Even when mandated, this obviously doesn't happen, as there is still far more energy efficiency which would be cost-effective that is not occurring in the at least seven states that have this language.

169. *Id.*

170. GOLD, GILLEO & BERG, *supra* note 44, at 7 ("The coverage of these policies also varies from state to state, as do regulatory guidelines on how utilities meet targets. Arizona's EERS, for example, covers only roughly 56% of the state's electricity sales . . .").

utility regulatory bodies."[171]

Financing also varies state by state. Most programs are funded either directly from the state or by a small surcharge on utility bills.[172] System benefits charges[173] and state proceeds from cap-and-trade programs like the Regional Greenhouse Gas Initiative (RGGI) are examples of ways that energy efficiency programs get financed. The costs of the programs, therefore, "are borne by the entire population, whether through utility bills or through taxes."[174] Utility bill surcharges especially can be potentially inequitable "in a state or region where a very large share of the population is low to moderate income."[175] As long as state funding comes from sources which are not regressive, that concern can be somewhat alleviated.

For the reasons discussed later, allowing programs which mandate utility spending without guaranteed customers savings is especially problematic.

C. *Localities*

Where some of the most comprehensive work has been happening is at the local level. Where not preempted from doing so, localities have been using building code requirements to require new construction to adopt more stringent energy efficiency measures, including cities like New York and Denver.[176]

New York passed the sweeping Climate Mobilization Act which will look to bring down existing buildings' energy use, specifically requiring large buildings—those larger than 25,000 square feet—to "cut climate emissions 40% by 2030 and more than 80% by 2050."[177] New York City has chosen nine city facilities to receive deep retrofits, with the goal of reducing energy use by at least 50% and making the city's own building stock more energy efficient.[178] St. Louis has adopted requirements for

171. *Id.* ("The percentage of sales covered by these policies ranges from 50% (Arkansas) to 100% or nearly 100% of sales (Hawaii, Maine, Michigan, Minnesota, New Hampshire, New York, Rhode Island, Vermont, and Wisconsin).").

172. SEN, BIRD & BOTTGER, *supra* note 47.

173. For example, in Massachusetts, the system benefits charge averages 32 cents/month. *Id.*

174. *Id.* at 44.

175. *Id.*

176. *Id.* at 17.

177. Chris Teale, *NYC Passes Sweeping 'Climate Mobilization Act'*, SMARTCITIESDIVE (Apr. 22, 2019), https://www.smartcitiesdive.com/news/new-york-city-climate-mobilization-act/553134/. In addition to energy use, green roofs are also required on certain buildings.

178. Jason Plautz, *NYC Picks 9 Buildings for 'Deep Energy Retrofits'*, SMARTCITIESDIVE (Oct. 2 2019), https://www.smartcitiesdive.com/news/nyc-picks-9-buildings-for-deep-energy-

existing buildings as well, requiring buildings 50,000 square feet or larger to meet specific performance requirements.[179] All buildings—municipal, commercial, institutional, and multi-family residential—are covered, and the standards are designed to be updated every four years.[180]

Other cities like Atlanta, Boston, and Denver have adopted less holistic requirements.[181] Boston, for example, "has updated the city's Climate Action Plan to require that all new city buildings have a carbon-neutral design, including for city-funded affordable housing to be zero net carbon."[182] Other cities, like Washington, D.C., have adopted efficient construction requirements for public buildings.[183] These do not include additional requirements for private development, however. California has allowed localities to adopt efficiency standards that are more stringent than the state-wide requirements.[184] Some cities require all-electric construction or provide incentives for developers to build it.[185]

Individual building owners and managers have also taken action, as they determined it could positively impact their bottom line. In 2009, the Empire State Building undertook extensive energy efficiency retrofits to

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retrofits/564152/. *See also* Chris Teale, *St. Louis' Building Efficiency Standards Pave Way for the Midwest*, UTILITYDIVE (May 12, 2020), https://www.utilitydive.com/news/st-louis-building-efficiency-standards-first-Midwest-city/577788/.

179. Teale, *supra* note 178 (noting that actions required to meet the performance standards may include upgrading HVAC units, ventilation, lighting, and elevators); s*ee also* Stephen Lee, *St. Louis Sets Efficiency Rules for New, Existing Buildings*, BLOOMBERG LAW (May 7, 2020), https://news.bloomberglaw.com/environment-and-energy/st-louis-enacts-efficiency-rules-for-new-and-existing-buildings.

180. St. Louis also has a solar-ready ordinance in place. Justin Gerdes, *St. Louis Adopts Midwest's First Building Performance Standard*, GREENTECH MEDIA (June 9, 2020), https://www.greentechmedia.com/articles/read/st-louis-adopts-midwests-first-building-performance-standard.

181. Kristin Musulin, *ACEEE Highlights 10 Building Energy Performance Standards to Help Meet Climate Goals*, UTILITYDIVE (June 24, 2020), https://www.utilitydive.com/news/10-examples-of-building-performance-standards-aceee/580379/.

182. Jason Plautz, *Boston to Require Carbon Neutral Design for New City Buildings*, SMART CITIES DIVE (Oct. 9, 2019), https://www.smartcitiesdive.com/news/boston-to-require-carbon-neutral-design-for-new-city-buildings/564624/.

183. Kathryne Cleary & Karen Palmer, *Energy Efficiency 101: The Basics of Improving Energy Efficiency, from How It Can Reduce Energy Use and Mitigate Climate Change to the Policies in Place to Encourage People to Invest in Energy-efficient Products*, RESOURCES FOR THE FUTURE (June 17, 2020), https://www.rff.org/publications/explainers/energy-efficiency-101/.

184. Press Release, California Energy Commission, CEC Approves First Local Energy Efficiency Standards That Go Beyond 2019 Statewide Requirements (Dec. 11, 2019) (https://www.energy.ca.gov/news/2019-12/cec-approves-first-local-energy-efficiency-standards-go-beyond-2019-statewide) (most of these were moves toward electrification).

185. Claire McKenna, Amar Shah & Mark Silberg, *It's Time to Incentivize Residential Heat Pumps*, ROCKY MOUNTAIN INSTITUTE (June 8, 2020), https://rmi.org/its-time-to-incentivize-residential-heat-pumps.

decrease carbon emissions, and over ten years has decreased emissions by 40% and lowered the electric bill by $4.4 million annually. The "retrofit project is well on its way to paying for itself more than twice over."[186]

V. THE NEW PARADIGM

A. *Why Shutting It All Down Is the Right Approach to Change*

Incremental changes aren't going to work—incrementalism assumes trust and ethical behavior. Tinkering at the edges will not bring to fruition the promise that energy efficiency programs have for aiding in our response to climate change. As the author has demonstrated in a previous paper, too many programs that currently exist are hold-overs, demonstrating previous understandings and priorities.[187] It will be much harder, politically and from a timing perspective, to go through all the programs that currently exist and make individual determinations.[188] There will be specific constituencies which will want certain programs to continue, regardless of how effective they are, or how aligned with state climate goals.[189] Additionally, the public process that should be used if any programs are to continue will enable disagreements about effectiveness and verification to potentially drag on.

As there is ample evidence that public processes can be co-opted by those who have the most at stake,[190] it is also expected that, should any review process provide the option for utilities to continue managing energy efficiency programs, utilities would be heavily invested and would

186. Sarah Kaplan, *If the Empire State Building Can Save Energy and Cut Carbon, So Can You*, THE PHILADELPHIA INQUIRER (June 20, 2020), https://www.inquirer.com/real-estate/energy-efficiency-carbon-footprint-empire-state-building-20200620.html.

187. *See* Heather Payne, *Pulling in Both Directions: How States Are Moving Toward Decarbonization While Continuing to Support Fossil Fuels*, 45 COLUM. J. ENV'T. L. 285 (2020).

188. While this should be done if no better solution is available, there is also some disagreement about-whether this would work at all. As Travis Kavulla, former president of the National Association of Regulatory Utility Commissioners has noted: "utility regulation is so obscure that it flies under the radar of the normal political process. Besides, in this weird corner of politics, it is unfortunately commonplace simply to pay off the utility in the hopes that doing so will yield a social benefit . . . ." Kavulla, *supra* note 71.

189. As noted, one of these constituencies would, of course, be the utilities themselves. Kenneth W. Costello, *Time to Revisit Utility Energy Efficiency Programs*, UtilityDive (May 13, 2020), https://www.utilitydive.com/news/time-to-revisit-utility-energy-efficiency-programs/577828/ (also noting that "[s]ince utilities may exhibit bias behavior in evaluating their own EE programs and reporting the results to their regulators, regulators should require independent analysis by a third party because of the incentives of utilities to overstate the cost-effectiveness of their programs").

190. *See* Heather Payne, *A Long Slog: What a Ten Year Hydroelectric Relicensing Process Demonstrates about Public Participation and Administrative Regulation Theories*, 53 IDAHO L. REV. 41 (2017).

work to ensure that is what happens. As has been recently made clear, utilities will pressure nonprofit partners to speak and support them in such regulatory proceedings, even if the utilities obtaining regulatory approval for a specific course of action may in fact hurt those very communities the nonprofits claim to support.[191] Given the outsize political influence that utilities—even in deregulated states—tend to muster, for these programs to be successful, they need to be fully removed from utility control, and immediately.[192] Newly released data indicates that the world has a 20% chance of a year with temperatures of more than 1.5 degrees C above pre-industrial temperatures between 2020 and 2024.[193] We, as a species and as a planet, don't have the time to dither—so we should not pretend that we do.

This is not to say that funding streams need to change. Customers are already used to the part of their bill that goes toward funding energy efficiency programs, if states have those. Revenue streams from other programs, like RGGI, can also continue.[194] But rather than utilities keeping that money and determining how successful programs are, funding will simply pass through them.

B. *Program Redesign*

Energy efficiency programs need to be redesigned. In addition to the challenges that will be needed to be fixed regardless of who might run the program such as eliminating restrictions on fuel switching,[195] this Article focuses on the need for energy efficiency program redesigns to solve four main issues that currently exist. First, programs must be updated to focus on electrification, as natural gas appliances being installed today have the potential to be in service after we will need to transition away from fossil

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191. Tom Perkins, *How Utility Companies Use Charitable Giving to Influence Policy*, HUFFPOST (July 6, 2020), https://www.huffpost.com/entry/utilities-charitable-giving-detroit-influence_n_5efe2da6c5b6ca97091b313b. *See also* Heather Payne, *The Natural Gas Paradox: Shutting Down A System Designed To Operate Forever*, 80 MD. L. REV. 101, 153-54 (2021).

192. *See* Introduction.

193. Associated Press, *UN Report Predicts the World Could Pass Dangerous Warming Threshold by 2024*, NEW YORK POST (July 9, 2020), https://nypost.com/2020/07/09/un-world-could-hit-1-5-degree-warming-threshold-by-2024/.

194. Scholars have also suggested more creative solutions to the funding conundrum, such as Property Assessed Clean Energy (PACE) or on-bill financing. *See* James M. Van Nostrand, *Legal Issues in Financing Energy Efficiency: Creative Solutions for Funding the Initial Capital Costs of Investments in Energy Efficiency Measures*, 2 Geo. Wash. J. Energy & Envtl. L. 1 (2011).

195. Mike Henchen & Sherri Billimoria, *States Are Falling Short on Building Decarbonization—Here's What Regulators Need to Do*, UTILITYDIVE (July 9, 2020), https://www.utilitydive.com/news/states-are-falling-short-on-building-decarbonization-heres-what-regulato/581261/.

fuels for household use, so incenting installation of natural gas appliances contributes to the stranded asset problem, whereas electrification is beneficial. Second, efficiency programs should be making use of widespread advanced metering infrastructure (AMI) data. Third, energy efficiency programs need to be much more tailored to make the transition away from natural gas as equitable as possible. Fourth, programs should be state-wide and run by a nonprofit or state agency.

1. *Focus on electricity.*

Some efficiency programs provide incentives for both electric and natural gas appliances.[196] While efficiency programs generally—those including efficiency incentives regardless of fuel type—can be useful for decreasing the use of natural gas and are cheaper than the cost of natural gas,[197] we must be focused on measures that will be necessary to shut down the natural gas distribution system and stop using fossil fuels altogether.[198] Given the long lives of household appliances, no money should be spent on perpetuating the use of natural gas appliances.[199] The life expectancy of a furnace is between sixteen and twenty years,[200] a

196. Payne, *supra* note 187.

197. Robert Walton, *Efficiency Significantly Cheaper Than Natural Gas, DOE Study Concludes*, UTILITYDIVE (June 1, 2020), https://www.utilitydive.com/news/efficiency-significantly-cheaper-than-natural-gas-doe-study-concludes/578926/.

198. *See* Heather Payne, *The Natural Gas Paradox: Shutting Down a System Designed to Operate Forever*, 80 MD. L. REV. (forthcoming 2021).

199. At least one group has suggested that the conflict between gas efficiency programs and electrification "can be resolved in three ways: (1) by conducting, at regular intervals, comprehensive potential studies that account for new technologies, regulations, and the interactions between energy efficiency and electrification; (2) by allowing for fuel substitution measures to be included in efficiency portfolios and clearly defining the rules for eligibility; and (3) by considering appropriate baselines and planning periods when setting energy savings goals." RACHEL GOLD, ANNIE GILLEO & WESTON BERG, NEXT-GENERATION ENERGY EFFICIENCY RESOURCE STANDARDS 22 (2019). I think this is incorrect. Technologies already exist to replace all household fossil fuel use with the potential exception of boilers. Fuel substitution should only be allowed for gas to electricity conversions, not the other way, as can currently happen. *See*, Payne, *supra* note 187 (Oklahoma cooking example). Additionally, we need to shut down the natural gas distribution system within the next 15 years. The planning horizon is already sufficiently short that we cannot be replacing current gas appliances with other gas appliances, and especially not wasting ratepayer money on those installations.

200. *When is it time to replace your oil or natural gas furnace?*, PETRO, https://www.petro.com/heating/is-it-time-for-a-new-furnace (last visited Jan. 12, 2020). Research in Europe has also demonstrated that lock-in of natural gas for heating can occur through path dependency, and that "policymakers aiming to decarbonise heating in gas dependent countries should seek to encourage increasing returns to adoption of low carbon heating technologies over an extended period of policy implementation" as "network infrastructure, technologies, markets and institutions coevolve" but that other EU countries have been successful in decarbonizing their heating sector. Robert Gross & Richard Hanna, *Path Dependency in Provision of Domestic Heating*,

stove is thirteen to fifteen years,[201] a dryer is ten to thirteen years,[202] and water heater is eight to twelve years.[203] Gas utilities spent more than $1.4 billion on gas efficiency programs in 2018.[204] Rather than perpetuate fossil fuel use, that money needs to be spent in other ways.

Therefore, along with specific targeting described below, the focus needs to be on electrification. The $1.4 billion saved 425 million therms in 2018.[205] The average gas furnace uses about 500 therms per year.[206] Converting from a gas furnace to an electric heat pump system costs, on average, about $7,000.[207] For that $1.4 billion, almost two hundred thousand households could be converted from gas to electric heat pump HVAC annually. While the immediate annual gas savings would not be as much—around 100 million therms rather than 425 million therms—the savings would be permanent, and would come with additional decarbonization and health benefits. This would be especially true if the electrification program was focused as described below.

2. *Use of AMI data.*

American residential ratepayers had already paid for the installation of more than 76 million smart meters by the end of 2018, with total installations over 86 million.[208] That number has been increasing on average about 13% a year.[209] The overall number of installed smart meters

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4 NATURE ENERGY 358 (2019). https://www.nature.com/articles/s41560-019-0383-5. Additionally, "5 to 8 million US buildings will add or replace heating equipment each year. Each one of these decisions may lock in fossil fuel use in buildings for decades . . . ." McKenna, Shah & Silberg, *supra* note 185.

201. Taryn Fiol, *The Life Expectancy of 7 Major Appliances*, H&R BLOCK (Oct 21, 2013), https://www.hrblock.com/tax-center/lifestyle/how-long-do-appliances-last/.

202. *Id.*

203. *When to Replace a Water Heater*, LOWES, https://www.lowes.com/n/how-to/when-to-replace-a-water-heater (last visited Jan. 12, 2020).

204. Walton, *supra* note 197.

205. *Id.*

206. Appliances Natural Gas Usage, OASIS ENERGY (Aug. 31, 2017), https://oasisenergy.com/appliances-natural-gas-usage/ (last visited Aug. 5, 2020).

207. How Much Does a Heat Pump Cost to Install?, MODERNIZE (Mar. 31, 2021), https://modernize.com/hvac/heating-repair-installation/heat-pump (last visited Aug. 5, 2020).

208. *How many smart meters are installed in the United States, and who has them?*, U.S. ENERGY INFO. ADMIN. (Oct. 22, 2019), https://www.eia.gov/tools/faqs/faq.php?id=108&t=3. For the purposes of this Article, I use the terms AMI (advanced metering infrastructure) and smart meter interchangeably.

209. Robert Walton, *Smart Meter Deployments Slow as Questions Emerge Over Cost Effectiveness, Saturation*, UTILITYDIVE (Nov. 28, 2018), https://www.utilitydive.com/news/smart-meter-deployments-slow-as-questions-emerge-over-cost-effectiveness-s/542941/.

is expected to reach 107 million by the end of 2020.[210] If the same trend continues around residential vs. all others, those would lead to an expectation of more than 94 million residential smart meters by the end of 2020. Analysts expect smart meter installations to continue, with forecasts of utilities spending an additional $3 billion to add another 24 million smart meters by 2025.[211] The expectation is that "[b]y 2025, more than four-fifths of U.S. utility customers will be equipped with smart meters, up from about two-thirds this year."[212]

Without a smart meter, a residential customer has a meter which does one thing and only one thing: it determines how much electricity has flowed from the distribution grid into the residence. On average, once a month, a meter reader will stop by, look at the current tally (which just increases, it isn't reset until it flips over, having used all available digits, like an old odometer), record that number, and the customer will receive a bill (often, weeks after the meter was read). This technology could be seen as even more antiquated that landline phone service, as at least with a landline, someone could try to call and determine whether your phone was disconnected. However, a non-smart meter doesn't even give that indication, leading to the utility requesting customers to contact *it* whenever they don't have service, such as after a storm.

Given our technology-laden society, even the idea of a smart meter may seem somewhat antiquated, like cell phones that predated the iPhone. But it is far better, and—as noted below—can be harnessed in ways that will make it much more helpful at solving energy inequality. Smart meters tally use in 15 or 60 minute increments—unlike the one month measure that was common before their introduction—and send that information back to the utility. They also have a "last gasp" feature, so that when the power goes out, they send a message back to the utility indicating that they are in an area without power, allowing a constant and accurate count of outages. Unlike an iPhone, however, smart meters do not tend to have good customer interfaces, and the information they produce can be difficult for even energy-savvy consumers to use.

Smart meter installations are recovered through the rate base. In other words, utilities recoup the cost of installation, the meters themselves, any

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210. Adam Cooper & Mike Shuster, *Electric Company Smart Meter Deployments: Foundation for a Smart Grid (2019 Update)*, THE EDISON FOUND. INST. FOR ELEC. INNOVATION 1 (Dec. 2019).

211. Jeff St. John, *Smart Meters Set for $30B Gusher of Investment Over Next 5 Years*, GREENTECH MEDIA (Mar. 9, 2020), https://www.greentechmedia.com/articles/read/wood-mackenzie-world-will-invest-30b-in-smart-meters-through-2025.

212. *Id.*

systems needed to collect and store the data, and any software needed to use the data. The entire system is paid for by customers—and, as part of a regulated business, the utility also receives a mandated profit in addition to its capital costs. Any operational expenses are passed through to ratepayers and are recovered by the utility as well. Therefore, the system has already been completely paid for by ratepayers.

In reality, smart meters have been a boon to utilities—but not customers—in multiple ways.[213] Utility capital spending has been increasing each year, and AMI systems are a big part of continuing utility profits.[214] Additionally, AMI systems have been of significant benefit to utility operations—for example, making it much easier to determine whose power is out after a storm, easing customer service functions around billing by giving customer service representatives detailed hour-by-hour usage information, and allowing for much more visibility into the operations of the distribution system.[215] While more visibility into the operation of the distribution system—like determining what the voltage at the very end of a distribution line is—is incredibly helpful to the utility, it is not much of a customer benefit.[216] Before, the utility had to operate

213. *See* Jeff St. John, *Why Most US Utilities Are Failing to Make the Most of Their Smart Meters*, GREENTECH MEDIA (Jan. 10, 2020), https://www.greentechmedia.com/articles/read/why-most-u-s-utilities-arent-making-the-most-of-their-smart-meters (discussing how utilities with AMI programs are "failing to deliver on efficiency and customer engagement targets").

214. *See* Heather Payne, *Private (Utility) Regulators*, 50 ENV'T. L. 999 (2021). *See also* Charlotte Cox & Jason Lehmann, *US Energy Utility Capex Undeterred by Coronavirus To Date, Slated To Reach $141B*, S&P GLOB. MKT. INTEL. (June 8, 2020), https://www.spglobal.com/marketintelligence/en/news-insights/research/us-energy-utility-capex-undeterred-by-coronavirus-to-date-slated-to-reach-141b ("Projected 2020 capital expenditures for the energy utilities universe currently stands at roughly $140.9 billion, well above 2019's $121.3 billion in capital investment.").

215. This allows utility workers to "be sent to the highest priority outage locations." Adam Cooper & Mike Shuster, *Electric Company Smart Meter Deployments: Foundation for a Smart Grid (2019 Update)*, THE EDISON FOUND., INST. FOR ELEC. INNOVATION 8-9 (Dec. 2019), https://www.edisonfoundation.net/-/media/Files/IEI/publications/IEI_Smart-Meter-Report_2019_FINAL.ashx. *See also* Jeff St. John, *Why Most US Utilities Are Failing to Make the Most of Their Smart Meters*, GREENTECH MEDIA (Jan. 10, 2020), https://www.greentechmedia.com/articles/read/why-most-u-s-utilities-arent-making-the-most-of-their-smart-meters (discussing benefits of smart meters to utilities).

216. *AMI in Review: Informing the Conversation*, ADVANCED GRID RSCH. OFF. OF ELEC., DEP'T OF ENERGY, AMI IN REVIEW: INFORMING THE CONVERSATION, 14 (2020), https://www.smartgrid.gov/documents/voe_series/voe-ami-in-review-informing-the-conversation (noting that "[w]here there were identified benefits, they were overwhelmingly dominated by operational benefits that, in many respects, were not directly visible to the customer. Of the more than 80 utilities where filings received a detailed analysis, only slightly more than half provided any quantified assessment of benefits. Of those identified benefits, more than 70% were operational benefits, most notably reduction in meter reading and service calls. The remaining 30% were attributed to capital benefits such as deferred investments or financial benefits such as recovery of bad debt or reduced theft."). *See also id.* at 19 ("AMI proposals are too often focused on a small

with a large enough margin that the voltage at the end of the distribution line would be sufficient for that last customer not to have a brown out; now, they can see the measurement off that customer's smart meter and adjust the flow accordingly. But, to the customer, the outcome is the same, either with or without the smart meter—they have sufficient electricity at the voltage needed.

When selling AMI to regulators—and, with that, requiring the cost to be paid for by captive ratepayers—utilities tend to focus on goods that will flow through to those customers, however, not the benefits that might accrue to the utility itself.[217] This makes sense: if the benefit is to utility operations, then the cost to ratepayers should be at least as much as the benefit received, and, therefore, cost neutral to the customer. Especially when some of the functionality of smart meters would be remote disconnects—a utility could shut off service without ever needing to visit the customer's location—and therefore harmful to customers,[218] justification is needed to demonstrate benefits.[219] These programs—as noted above—are incredibly expensive, adding billions to utility rate base, and utilities were unwilling to sign up for all those costs to be removed from operational inefficiencies in their budgets. So they had to obtain recovery for smart meter installations based on the benefits that would accrue to ratepayers, rather than the utility itself.[220]

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number of operational benefits that directly benefit the utility without an explicit connection to the benefits customers would receive . . . .").

217. *See, e.g.*, *FPL Meter Options*, FLORIDA POWER & LIGHT https://www.fpl.com/rates/meter-options.html (last visited Aug. 5, 2020).

218. ADVANCED GRID RSCH. OFF. OF ELEC., *supra* note 216, at 44. ("Advanced meters can include remote connect and disconnect capabilities. While this function can provide significant value to the utility and convenience to the customer, similar to new rate designs, it raised questions about how disadvantaged customers might be disproportionately affected. Since the utility no longer needs to roll a truck to connect or disconnect service . . . low-income customers may be harmed and that hard-won customer protections like cold and hot weather rules and last knock rules may be diminished or removed . . . .") (citations omitted).

219. Usman Khalid, *Ky. PSC Approves Duke Kentucky Smart Meter Deployment Program*, S&P GLOB. MKT. INTEL. (May 25, 2017, 6:38 PM), https://www.spglobal.com/marketintelligence/en/news-insights/trending/dn8izbnt_gyy_to_incjaw2.

220. This is not to say that every utility request to implement an AMI program is successful. Especially once it became clearer that customers were not realizing benefits from earlier installations and programs, regulators have denied utility requests for AMI programs. *See e.g.*, Robert Walton, *As Kentucky Regulators Reject Smart Meter Plans, Troubling Trend Continues for AMI*, UTILITYDIVE (Aug. 31, 2018), https://www.utilitydive.com/news/as-kentucky-regulators-reject-smart-meter-plans-troubling-trend-continues/531384/. However, many have been installed. Adam Cooper & Mike Shuster, *Electric Company Smart Meter Deployments: Foundation for a Smart Grid (2019 Update)*, THE EDISON FOUND. INST. FOR ELEC. INNOVATION (Dec. 2019), https://www.edisonfoundation.net/-/media/Files/IEI/publications/IEI_Smart-Meter-Report_2019_FINAL.ashx (listing projected smart meters installed by the end of 2020).

Program approvals based on the benefits that customers could expect are therefore, unsurprisingly, what public utility commissions have been given. The benefits to ratepayers have varied based on the specific utility's circumstances, but several justifications are common. First, smart meters could allow the utility to implement time-of-use (TOU) rates. TOU rates encourage utility customers to use electricity when it is plentiful (mid-day in California, for example, when solar PV is typically producing), and not use electricity at times of high use and relatively low generation (evenings in that same sunny California town, when the sun has set but everyone is still up rather than in bed). Smart meters enable TOU rates, which theoretically would enable the entire grid to operate more efficiently. However, TOU rate rollouts have been slow at best, potentially fraudulent at worst, and generally customers have been unwilling to voluntarily adopt them.[221]

Utilities also often cite as a benefit the ability of the customer to access the data to be more efficient themselves. However, these dashboards often provide little to no actionable data for the typical consumer.[222] Even with utilities providing "comparisons" based on usage to tell customers how they are doing in relation to their neighbors, this data is ineffective long-term to change behavior.[223]

The one benefit that smart meters do often enable for customers is the ability to install distributed energy resources (DER)—like rooftop solar. However, even with larger smart meter installations, these were often required for DER interconnections, with minimal cost to either the utility

221. This has led California to mandate TOU rates starting in 2020.

222. I say that for electricity smart meters, because I have yet to find an individual—including those focused on energy—who have been able to use their smart meter data to take actions which will significantly impact their monthly usage. Water AMI, however, is a completely different story. OWASA, the water and sewer utility in Orange County, North Carolina, implemented smart water meters for all customers. OWASA, MY ACCOUNT, https://www.owasa.org/my-account/ (last visited July 5, 2021) ("A small battery-powered communications device in your meter reads your water use and transmits the data to a low-powered radio signal at a nearby collector. The collector then transmits the meter reading to our office in Carrboro. This allows water use data to be more available to you and OWASA on a daily basis and eliminates the need for someone to drive to your home to read your meter."). The dashboard provided is easy to understand, useful, and proactively notifies customers when a leak may be occurring. These early warnings lead to both lower bills and less property damage. The electricity smart meter, installed by Duke at the same address, has brought absolutely no benefit.

223. I also note here that the information given can be incorrect, from the author's personal experience. I was in the fortunate situation of having a reading month that exactly matched the calendar month. Interestingly, the data provided about "my house's usage" by Duke Energy for a particular month in the energy efficiency comparison did not actually match my electric bill. When I called to inquire about the difference, I was told that the comparison information was hypothetical and not drawn from my actual monthly electricity data. I requested that Duke stop mailing me information that had no basis in reality.

or the hosting customer. Amazingly, some utilities are even attempting to remove this potential customer-facing benefit.[224]

Outside all of the operational data and indecipherable customer-facing portals, however, is data. Data that has already paid for through the rate base. Data that since it *has* already been paid for, should be able to be used by groups other than the utilities themselves. The author has written previously about how public utility commissions and legislatures need to make explicit that utility customers own their smart meter data.[225] This is becoming even more critical as smart meter installations become more common and as utilities attempt to exert their monopolistic control over this data.[226]

Legislatures and public utility commissions still have the ability to clarify that that data is owned by the customer, not the utility—and also decree the circumstances under which the utility must promptly provide that data. A reformulated, non-utility-driven energy efficiency program, as described below, should be given unlimited, identifiable, and instantaneously updated smart meter data at no cost. After all, ratepayers have paid for the data—they should be able to benefit from its use without paying the monopoly utility additional funds.

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224. In its 2020 rate case, Kentucky Power is proposing to roll out smart meters across its entire service territory. It would rate base these costs. *2020 Regulatory Activity*, KENTUCKY POWER, https://web.archive.org/web/20200803084834/https://www.kentuckypower.com/account/bills/rates/ (last visited Aug. 5, 2020) ("Significant customer benefits exist within Kentucky Power's base rate case. The Grid Modernization Rider proposes Advanced Metering Infrastructure be installed throughout the service territory. Over the last decade, AMI has become the industry standard for metering due to the continued advancement of technology and wireless communication. AMI meters are now widely considered an integral, essential and required component of the electric grid in order to provide reliable and cost-efficient service to all customers."). However, in the same rate case, it is putting forth a proposal that would gut any customer benefit from installing rooftop solar. A customer would have to use all electricity generated by their solar system between the hours of 8 am and 6 pm on the same day or be paid less than four cents per kWh for the exported electricity. Docket 2020-00174, Kentucky Public Service Commission, Section II (Filing Requirements) Exhibit D at 132, https://psc.ky.gov/PSC_WebNet/ViewCaseFilings.aspx?Case=2020-00174; *see also* Autumn Proudlove (@autumnproudlove), TWITTER (June 30, 2020, 6:40 AM), https://twitter.com/autumnproudlove/status/1277960192815247360. Retail rate of electricity—what they would pay to use any electricity they did not generate between 8 am and 6 pm and everything they used between 6 pm and 8 am, assuming no solar generation during this time—is about twelve cents per kWh (kilowatt hour). *PSC Brings Rate Relief to Kentucky Power Co. Customers*, THE LANE REPORT (Jan. 18, 2018), https://www.lanereport.com/85986/2018/01/psc-brings-rate-relief-to-kentucky-power-co-customers/.

225. *See* Heather Payne, *Sharing Negawatts: Property Law, Electricity Data and Facilitating the Energy Sharing Economy*, 123 PENN ST. L. REV. 355 (2019).

226. *See, e.g.*, @misson_data, TWITTER (July 3, 2020, 5:24 pm), https://twitter.com/mission_data/status/1279209461182156800 (Tweet of document which reads, "Moreover, the fact that the Utility owns customer data on behalf of ratepayers does not affect its ownership rights.").

3. *Focus.*

The importance of having detailed, identifiable smart meter information available is to provide something which many energy efficiency programs currently do not: focus and targeting. As noted, supporting energy efficiency programs (as long as you're not a utility that hasn't convinced your regulator to allow decoupling) is easy.[227] One issue is *additionality*: there is scant evidence that much of the funding for energy efficiency actually changes behavior or leads to different purchases, or purchases that wouldn't have happened at all but for the efficiency program. The programs often with the most "love" from the public—$50 rebates and the like for purchasing a slightly more efficient washing machine or hot water heater—are also the most expensive to administer.

Regulators—and utilities—need to be honest: the programs that we have, for the most part, do not aid those who are most in need of that assistance which energy efficiency programs purport to offer.[228] While some states require specific low-income efficiency programs, these are often done as add-ons; they are not the central focus.[229] This is especially problematic as the energy burden in the United States is not evenly borne.[230] As one researcher analyzing energy costs found, "Black respondents were about 50% more likely to report having reduced or foregone basic necessities at least one month in the last year in order to

227. *See* Tom Johnson, *BPU Proposal Looks to Prompt Utilities to Get Customers to Use Less Energy*, NJ SPOTLIGHT NEWS (Mar. 25, 2020), https://www.njspotlight.com/2020/03/bpu-proposal-looks-to-prompt-utilities-to-get-customers-to-use-less-energy (discussing how regulators need to incent utilities to invest in energy efficiency).

228. *See, e.g.*, BEN STACEY & TONY REAMES, URBAN ENERGY JUSTICE LAB, UNIV. OF MICH., SOCIAL EQUITY IN STATE ENERGY POLICY: INDICATOR'S FOR MICHIGAN'S ENERGY EFFICIENCY PROGRAMS (2017), https://assets.ctfassets.net/ntcn17ss1ow9/64aWq4MgVXhtHRkAnYDGXL/54154aba566798d6e7059be213f01fce/equity-in-energy-efficiency-investment-and-savings-report-2017.pdf ("There is a $73.4 million gap in utility investment levels between equitable (E3B) and actual low-income program investments . . . . On average, utilities invested 3 times less on Low-Income (electric) programs per capita . . . . Low-income consumers overall received 10 times less home energy savings (electric) and 3.4 times less home energy savings (gas) when compared to high-income consumers. The greatest difference found, by utility, was 22 times higher.").

229. Demonstrating how much needs to change, one energy efficiency group even had to make the point that states should "require utilities to set aside funds for low-income energy efficiency." SEN, BIRD & BOTTGER, *supra* note 47.

230. Kristi E. Swartz, *How Electricity Deepens the South's Racial Divide*, E&E News (Aug. 6, 2020) https://www.eenews.net/stories/1063689727 ("Nationwide protests over racial injustice in recent weeks are stirring a fight against a deep-rooted energy gap in U.S. households: People of color pay disproportionately high electricity bills. Nowhere is the divide perhaps more obvious than the South, where the housing stock is old, summer heat is intense, building codes are weak and 40% of residents qualify for low-income energy assistance.").

afford their energy bill, were about 40% more likely to report having kept the home at an unhealthy temperature at least one month in the last year in order to afford their energy bill, and were about twice as likely to have received a disconnect notice due to inability to pay a bill at least one month in the last year."[231]

Energy efficiency funds will always be limited. "Currently, even the best energy efficiency programs serve less than 2% of customers each year. Large portions of a utility's customers, in particular renters, customers without strong credit, and low-income households, are often locked out of energy efficiency programs."[232] We will never have enough funds to pay everyone to undertake the energy efficiency improvements that should occur. But targeted building electrification and energy efficiency programs can help with the socioeconomic and racial disparities that exist, easing energy burdens.[233] 67% of low-income households face a high energy burden.[234] Climate change disproportionately impacts minorities,[235] minorities live in disproportionately high numbers near fracking wells used to obtain for natural gas,[236] and "Black households pay more for energy than white households."[237] The study accounted for differences in income, household size, and city-specific factors, and the gap varies. There is no gap in energy expenditures between rich white and rich Black households; the gap is most pronounced for poor households.[238] Black-owned businesses

231. EVA LYUBICH, ENERGY INST. AT HAAS, THE RACE GAP IN RESIDENTIAL ENERGY EXPENDITURES 5 (2020), https://haas.berkeley.edu/wp-content/uploads/WP306.pdf.

232. SEN, BIRD & BOTTGER, *supra* note 47.

233. Sue Coakley, *Building Decarbonization Can Address Racial Injustices*, NE. ENERGY EFFICIENCY P'SHIPS (June 26, 2020), https://neep.org/blog/building-decarbonization-can-address-racial-injustices.

234. Katie Pyzyk, *67% of Low-Income Households Face High Energy Burden: AEEE*, UTILITYDIVE (Sept. 11, 2020), https://www.utilitydive.com/news/67-of-low-income-households-face-high-energy-burden-aceee/585003/.

235. *See, e.g.*, Christopher Flavelle, *Climate Change Tied to Pregnancy Risks, Affecting Black Mothers Most*, N.Y. TIMES (June 18, 2020), https://www.nytimes.com/2020/06/18/climate/climate-change-pregnancy-study.html (showing climate change is tied to pregnancy risks including premature births, stillbirths, and low birth weights and Black mothers were at highest risk).

236. Klara Zwickl, *The Demographics of Fracking: A Special Analysis for Four U.S. States*, 161 ECOLOGICAL ECON. 202 (2019), https://www.sciencedirect.com/science/article/abs/pii/S092180091830661X?via%3Dihub.

237. Rachel Frazin, *Black Households Pay More for Energy Than White Households: Analysis*, THE HILL (June 23, 2020), https://thehill.com/policy/energy-environment/504138-black-households-pay-more-for-energy-than-white-households-analysis (analyzing both renters and homeowners between the years of 2010 and 2017 and linking part of the disparity to differences in energy efficiency investments).

238. Maximilian Auffhammer, *Consuming Energy While Black*, ENERGY INST. AT HAAS

also are limited in their access to the capital necessary to make energy efficiency improvements.[239]

Targeted electrification and energy efficiency can help with these issues. It is estimated that energy efficiency could reduce costs for these households "by as much as 25%."[240] Rather than continue to spend limited energy efficiency funds where they can do less overall societal good, the presumption should be that all energy efficiency funds are being targeted to those with a higher energy burden, and only with specific justification toward other state climate goals should programs deviate from that presumption.[241]

Importantly, the smart meter data could be matched with other data sources that states and municipalities have access to—and that combined data set could be used to target the households which could benefit the most. This could ensure that—at least to start—the improvements in electrification would be additional, and the largest societal benefit would be accrued.

This isn't to imply that no targeting currently occurs. EmPower New York, for example, provides services to "homeowners and renters whose household income is below 60 percent of the state median income."[242] Massachusetts provides rebates for HVAC purchases on a sliding scale based on income.[243] Illinois' Future Energy Jobs Act mandated spending for low-income energy efficiency of more than $25 million annually.[244] Minnesota and Ohio also mandate low-income programs.[245] Other programs are showing targeted benefits—"national affordable housing

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(June 22, 2020), https://energyathaas.wordpress.com/2020/06/22/consuming-energy-while-black/. ("[showing] that Black respondents reported more drafty homes (+13%), lower ownership of highly efficient, Energy Star Appliances (-7%), and lower usage of energy efficiency rebates (-3%).").

239. Kathiann M. Kowalski, *Funding Challenges Limit Minority-Owned Businesses' Access to Energy Efficiency*, ENERGY NEWS NETWORK (Jan. 4, 2021), https://energynews.us/2021/01/04/national/funding-challenges-limit-minority-owned-businesses-access-to-energy-efficiency/.

240. RACHEL GOLD, ANNIE GILLEO & WESTON BERG, AM. COUNCIL FOR AN ENERGY EFFICIENT ECON., NEXT-GENERATION ENERGY EFFICIENCY RESOURCE STANDARDS 1 (2019), https://www.aceee.org/sites/default/files/publications/researchreports/u1905.pdf.

241. Those other programs should be subject to strict annual measurement and verification targets, and ceased automatically if those targets are not met. For a discussion of transaction costs which are limiting business use of energy efficiency, see Mark Shahinian, *Setting Free the Dancing Bear: A Practitioner's View of How to Break Open Energy Efficiency*, UTILITYDIVE (July 20, 2020), https://www.utilitydive.com/news/setting-free-the-dancing-bear-a-practitioners-view-of-how-to-break-open-e/581862/.

242. SEN, BIRD & BOTTGER, *supra* note 47.

243. *Id.*

244. *Id.*

245. *Id.*

nonprofit Mercy Housing announced it has achieved energy savings of 24% since 2013"—but specifically by looking for opportunities that did not require capital for implementation.[246] Ameren, a utility serving Illinois and Missouri, is looking at a small pilot that would target 1,000 households for energy retrofits, starting in 2022.[247] DTE, the utility serving Detroit, is doubling their previous low-income efficiency program and now has "a goal of providing service to at least 500 customers" annually.[248] California mandates a certain percentage of efficiency dollars go to programs focused on low- and moderate-income households.

This paper argues, however, that these programs can no longer be an add-on to the direct-to-consumer or more popular rebate programs. These targeted programs must be the energy efficiency program—with other programs only being restarted after the needs in this group are met. Continuing the piecemeal, uncoordinated approach that has existed up until this point is no longer sufficient (if it ever was) to drive the scale of change needed.

This targeting could also be used to decrease overall bills for all customers by reducing the need for utility upgrades. By starting their work at low income households that are also in locations where additional capital may be needed if load continued to increase, the funds used could actually decrease load by making homes more efficient, thereby negating the need for capital upgrades paid for by all ratepayers. Mapping is currently being developed in places like California for solar developers and others to understand how much loading currently exists on distribution circuits and therefore where they will need to pay for upgrades if more solar is added in those locations. This mapping could similarly help with prioritization of low-income efficiency objectives, with the goal of reducing utilization of circuits which are almost at capacity.

4. *State design and administration.*

In order to obtain all these benefits, these programs must be

246. Robert Walton, *Buildings Initiative Notches $11B in Savings Across 10 Years*, UTILITYDIVE (June 12, 2020).

247. *Missouri Utility to Test On-Bill Payments for Fund Home Energy Retrofits*, THE ENERGY MIX (June 7, 2020), https://theenergymix.com/2020/06/07/missouri-utility-to-test-on-bill-payments-for-fund-home-energy-retrofits/.

248. Robert Walton, *DTE Readies 'Troubled Customer Pilot' to Nearly Double Efficiency Help for Detroit At-Risk Customers*, UTILITYDIVE (Mar. 11, 2020), https://www.utilitydive.com/news/dte-readies-troubled-customer-pilot-to-nearly-double-efficiency-help-for/573843/.

administered at the state level. This has several benefits to the current framework of each set of utilities obtaining approval and running programs that only exist within their own territory. First of all, this would allow for harmonization—standard messaging and communication plus avoiding duplication.[249] More importantly, looking at the needs of citizens state-wide—rather than by utility service territory—will ensure that those who can benefit the most in the entire state is where the funds go, rather than those who know to apply for them in a specific utility territory.[250] This is not to say that a completely new funding stream would need to be set up; indeed, it would still be possible for funds to be collected the same way as they are today, but then administered by a separate body.

Some states already have this structure, providing other states with models to emulate and build upon. As noted above, four states currently operate their energy efficiency programs exclusively outside utility control and do so with a statewide focus: Maine, Vermont, Oregon, and Wisconsin. In Maine and Vermont, the programs are administered by a nonprofit,[251] aptly named Efficiency Maine and Efficiency Vermont. The Energy Trust of Oregon is a not for profit public benefits corporation. Wisconsin has a third-party administrator of energy efficiency programs, Focus on Energy. To maintain accountability and transparency, the organizations are regulated by their state public utility commissions.[252] At this time, specific programs for low-income households are one of any number of programs offered.[253]

Utilities, as mentioned above, put only 62% of the money spent on energy efficiency toward programs and spend 38% on administration. Efficiency Maine, in its latest annual report, lists administration as less than 8% of its costs; almost 87% of its annual budget is spent directly on programs.[254] The extra 25% of budget going directly into programs just

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249. AN ENERGY EFFICIENCY STRATEGY FOR NEW JERSEY ACHIEVING THE 2020 MASTER PLAN GOALS, NE. ENERGY EFFICIENCY P'SHIPS, INC. 6 (2009), https://www.state.nj.us/emp/docs/pdf/041609NEEP.pdf. (noting that "[i]t is highly unlikely that a patchwork of programs implemented by individual agencies and utilities" could achieve ambitious energy efficiency targets "even with a well intentioned effort at coordination.").

250. Kavya Balaraman, *California Plans for Future of Gas System Amid 'Patchwork' of Electrification Policies*, UTILITYDIVE (June 9, 2020), https://www.utilitydive.com/news/california-plans-for-future-of-gas-system-amid-patchwork-of-electrificati/578550/ (noting how California is struggling to determine how to deal with individual gas bans at the local level).

251. SEN, BIRD & BOTTGER, *supra* note 47.

252. There certainly could be some debate about whether regulation by a state PUC is sufficiently transparent to ensure accountability. *See* Heather Payne, *Private (Utility) Regulators*, 50 ENV'T. L. 999 (2021).

253. SEN, BIRD & BOTTGER, *supra* note 47.

254. FY2019 Annual Report, Efficiency Maine 8 (Nov. 2019),

by bringing these programs up to that split of administration/program funding would be a significant benefit.

Another option would be for an entirely new agency to be created at the state level to administer these programs. This would both signify the importance of the endeavor and also acknowledge that energy efficiency programs, as outlined in this proposal, do not sit easily within the public utility commission nor within a state's environmental regulator. Either way, a single administrator for the entire state will streamline administration and reduce system costs.[255] All states should set up some type of independent organization and remove the operation of energy efficiency programs from utilities.

C. *What the Redesign Could Accomplish*

Redesigning energy efficiency programs on this proposed model—focused on electrification, statewide, not run by the utility, using AMI data paired with other data sources to target funds—has the potential to completely reshape efficiency programs. Redesigning them in this way could make the programs more effective, more coherent, and faster at driving equitable decarbonization.

A redesign could be especially important at this particular point in time. The jobs needed to work in energy efficiency require skills, but one of the first items for the new state-wide entity might be to determine which groups would be most in need for the jobs that would be provided by electrification and energy efficiency programs given recent layoffs and begin a training program targeting those segments of the unemployed. This could further build equity, as "[t]hese will not just be short-term stimulus jobs that lose relevance after the current crisis. On the contrary, jobs in energy efficiency will continue to grow in demand and relevance. Currently, there are not enough people with the skills required for clean energy transitions."[256]

This additional societal benefit—skills training with long-term, stable job potential—will not occur if energy efficiency programs remain under

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https://www.efficiencymaine.com/docs/FY19-Annual-Report_final.pdf.

255. This is especially true as utility programs average 38% on administrative, marketing and other costs. *Utility Energy Efficiency Spending and Savings Declined in 2018*, U.S. ENERGY INFO. ADMIN. (Feb. 27, 2020), https://www.eia.gov/todayinenergy/detail.php?id=42975. Streamlining and using other available data sets to more specifically target individuals most in need would allow for the over $10.6 billion used in 2018 on administrative activities to actually provide energy efficiency activities.

256. Matthew Farmer, *IEA Commission Announces Key Energy Efficiency Action Findings*, POWER TECH. (June 23, 2020), https://www.power-technology.com/news/iea-energy-efficiency-commission-findings-transition-points/.

utility control. This is especially true as utilities have demonstrated unwillingness to coordinate with governments when economic stimulus funds have been provided for energy efficiency programs in the past.[257]

Over time, this proposed redesign could also have larger public and ratepayer benefits. In addition to providing information around where programs should be targeted to reduce utility capital spend as noted above, circuit reductions around both overall and peak use would provide a benefit. It could also be used to target where other DER technologies would be most helpful to the grid as a whole.

VI. CONCLUSION

We know what we need to do to slow climate change, to lessen energy injustice and to lower the pollution burden in communities.[258] We must electrify, and we must target our energy efficiency spending in ways that will truly be additional and focused on those with the highest energy burdens.

A year ago, I would have recommended incremental changes to take us one step closer to the world that we need to get to, working within the established system, perhaps not as fast as some would have liked, but slowly moving forward. That is no longer enough and has ceased to be an option. One of the points of this paper is we no longer have time for incremental change.

When I first started writing this paper, it was a continuation of my five-year exploration of how the energy transition is progressing and the role utilities can play and how we can accelerate the process. In previous papers, I have explored the rate case process and regulatory capture, the stakeholder process, transparency, and how regulators could use tools available to them, the role of data, and this paper was going to be an continuation of that work looking at energy efficiency.

Over the past few months, in the time of COVID-19 and unprecedented social change, utilities have not only proven every point that I have been making, they have directly co-opted the stakeholder process through bribery, played the regulatory game and, when it looked

257. GOLDMAN ET AL., *supra* note 99.

258. Indeed, we have known since 2009 or earlier that some of these actions need to be taken. *See, e.g.*, NE. ENERGY EFFICIENCY P'SHIPS, *supra* note 249, at 4 (recognizing that to meet climate goals in 2020, "New Jersey must improve the energy performance of 60% of all New Jersey homes and buildings by 30% relative to projected energy use in 2020. It must also increase the efficiency of the majority of homes and buildings built, remodeled or renovated by at least 35% above today's building energy code requirements." The energy efficiency programs listed, which would have touched 1.7 million homes in the state, were not implemented.).

as if they might not win this time around, fell back on outright corruption. That corruption and intimidation was, in large part, to keep fossil fuels within our electricity generation and our homes and businesses.

Those examples of blatant outright corruption within the utility industry have not only heightened the urgency but brings us to a point where the conversation we need to have is not around incremental change but rather how we need to start analyzing what utilities do and whether those tasks are appropriate for them or whether, for certain parts and programs, we need to start over. We can start the change with the way we run energy efficiency programs in most of the country. Regulators, utilities, and, yes, politicians, should know that their actions around these programs and other energy decisions will receive more scrutiny because of the scandals that have occurred.

In this period of unprecedented social change, are we going to let this stand, or are we going to stand up?