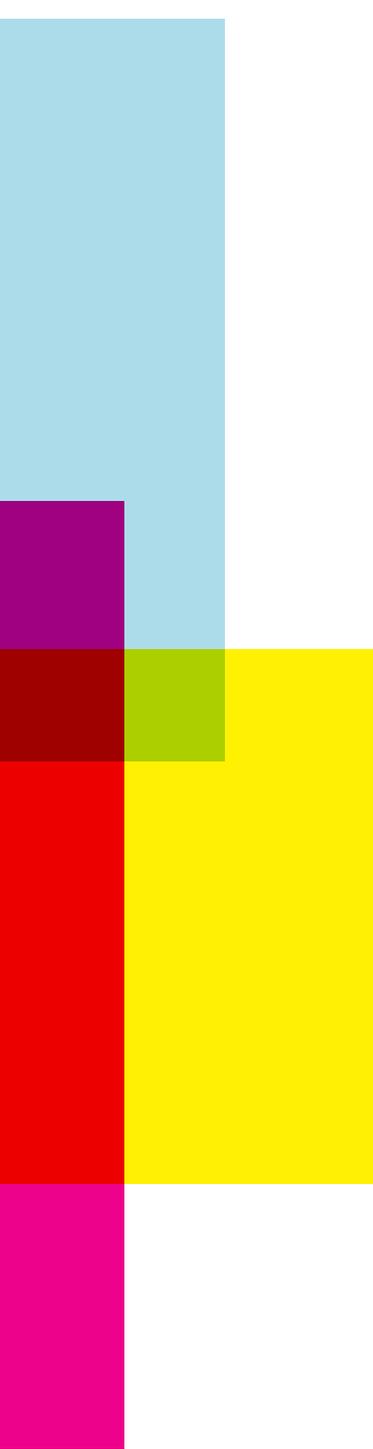




From Grid to
Human
Resilience:

*Lessons from
Public Health*



In the late 1990s, neighborhoods in the shadow of coal-fired power plants had higher than average rates of asthma, heart attacks, and strokes.

These neighborhoods were mostly comprised of low-income residents and people of color. In this context, an Environmental Protection Agency (EPA) working group studied the burden of increased exposure to hazardous waste and contaminants in vulnerable communities as a result of utility activities.¹ And while it was widely understood that low-income communities and communities of color faced disproportionate effects of energy generation, the EPA found, “a general lack of data on environmental health effects by race and income.” Since then, several research studies have pointed out that people with less than a high school education, or those who are unemployed or living in poverty, were more likely to be exposed to hazardous particulates.²

In a 2011 study of coal-fired power plants, the American Lung Association concluded that people, “who have low incomes or who are members of ethnic or racial minorities bear a disproportionate share of the effects of air pollution because they live closer to industrial facilities, including power plants, and high traffic areas.”³ People with cardiovascular disease, asthma, and other lung diseases faced increased risk from air pollutants—and adding insult to injury—these were blind spots in federal data.

Adopting a public health framework foregrounds equity, cuts across economic, social and environmental contexts, and requires that we operate under a goal of collective well-being.



In 2018, nearly two decades later, disadvantaged communities faced disproportionate environmental and health burdens as climate change unleashed the California wildfire season. The tragic loss of life, destruction of homes, businesses, and natural forests was accompanied by air quality indices (AQIs) of 200 or greater—classified as “very unhealthy” by the World Air Quality Index project.⁴

Energy infrastructure, both culprit and victim, was left vulnerable in the face of fires. 2019 was no different, as rolling blackouts ordered by Pacific Gas & Electric (PG&E) during the month of October disrupted lives as the utility cut power to approximately 700,000 homes and businesses.⁵ In a radio interview with San Francisco’s KQED during PG&E’s latest round of California blackouts, a homeowner who lost one home back in 1991 proudly showcased his two Tesla Powerwall batteries. His determination and resilience in the face of California’s mountainous tinderbox was striking, his voice stoic. *“I lived through one disaster, and so I know what a wildfire is like.”*⁶ His solar-plus-storage setup is both a badge of honor and a symbol of his resentment. But if DERs are the new residential high ground, then low-income families may have to face the view from below, with the lights off.

In this moment, we must ask ourselves: Who is paying for the real cost of energy? What action is required to ready our most vulnerable communities for the future that lies ahead?

From Grid to Human Resilience

We often foreground grid resiliency in response to emergencies such as the California wildfires. And, we have to look beyond the generation and movement of kilowatt hours to understand the building blocks of resiliency. The threats of climate change demand that we think of resiliency as the daily act of preparing communities to withstand increasing threats to their well-being. As we work to identify a framework for resiliency in the energy sector, we need to broaden our view.

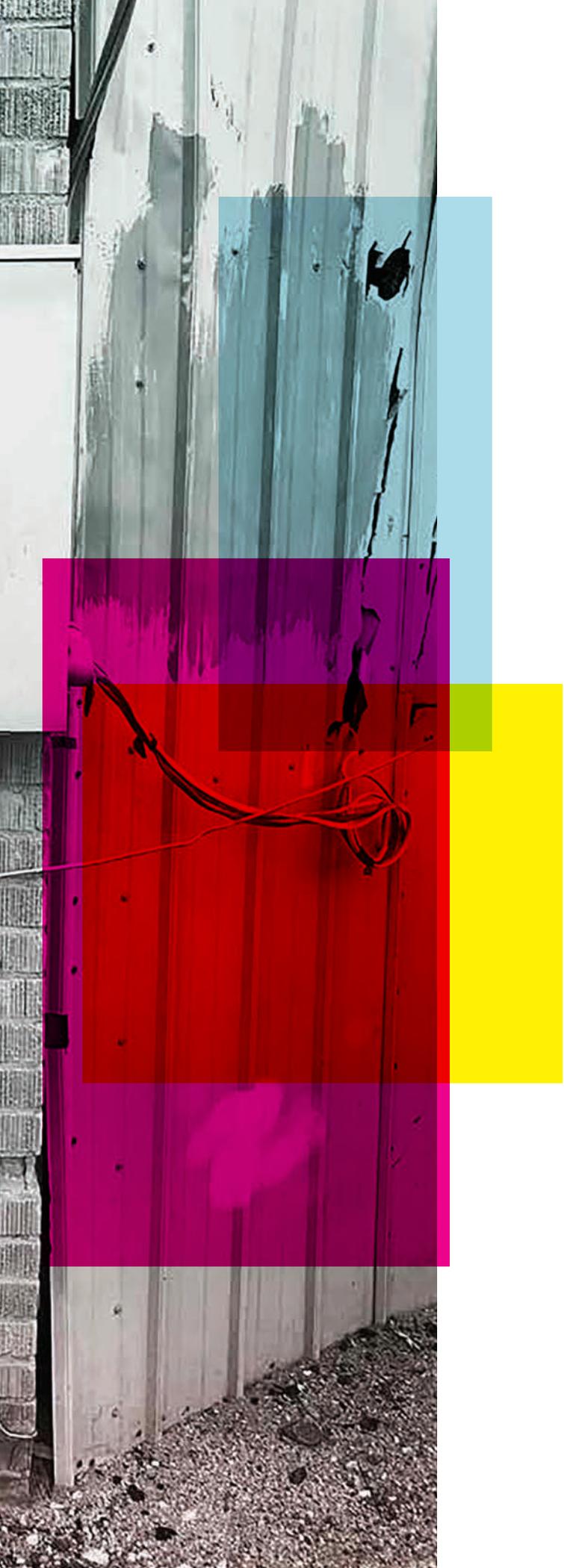
So how do we navigate this new normal? The field of public health may have some answers. The public health framework defines resiliency as, “processes and skills that result in good individual and community health outcomes, in spite of negative events, serious threats and hazards.”⁷ Public health also offers concepts that are useful for thinking around social challenges. For example, the idea of “herd immunity” emphasizes that the well-being and resiliency of any one person or community is only as secure as the whole. Through this broadened lens, we propose that resilience frameworks in energy should:

1. Underscore the ability of all communities to overcome threats
2. Emphasize the resiliency of people (and not just the technologies they rely on)
3. Focus on positive outcomes

Adopting a public health framework and way of thinking foregrounds equity, cuts across economic, social and environmental contexts, and requires that we operate under a goal of collective well-being.

Resiliency indicators. When it comes to health, communities lack resiliency if certain groups disproportionately bear the burdens of climate change. If for example, some communities suffer more when there are power outages or suffer from asthma or heat-related illnesses.⁸ The burden on low-income and communities of color has been heavy, and the long-awaited benefits from the shift to renewable energy have been slow to arrive.

Research already shows that rooftop solar is primarily concentrated in higher income households. And though low-to-moderate income households represent 43% of the U.S. population (and the next likely wave of rooftop solar expansion), it is unclear what proportion of these households live in buildings suitable for solar.⁹ Even in progressive California, a leader in renewable energy, a peer-reviewed analysis of distributed solar shows that solar adoption rates in the state’s most disadvantaged communities are more than eight times lower than in the state’s most privileged communities.¹⁰ This imbalance highlights why renewable and energy efficiency initiatives need to be designed with all populations in mind, or else risk furthering adaptation inequality. On the upside, utilities and program administrators have a far reach. Whether in customers’ homes, at their places of work, or in their social environments, utilities have the ability to impact customers on a scale that few other industries can. Utilities are uniquely positioned to take action on issues at the intersection of energy, health, and resiliency.



ILLUME has compiled a few notable examples of resilience initiatives where our industry is doing more to take individual and community health measures into account.

The California Energy Commission has developed a set of indicators related to clean energy access, investment, and resilience in the state's low-income and disadvantaged communities.¹¹ To arrive at the list, the commission combed through research that exposed concerns such as: High levels of asthma-related emergency room visits in San Joaquin Valley, electricity bills greater than \$300 in more than 140 low-income Census tracts in Southern California Edison's service territory, as well as the winter energy burden for low-income communities in Northern California who rely on high-cost heating fuels.

The Maryland Energy Administration put in place a \$5 million program to support community resiliency hubs to provide basic services in an emergency (e.g., heating and cooling, refrigeration for medicines and milk for nursing mothers, and charging for small devices like phones); these will be powered by solar and battery storage.¹²

The Los Angeles Department of Water and Power

(LADWP) has developed 15 equity metrics to address, among many needs, those of customers with economic and environmental vulnerabilities such as communities with limited access to tree shade, which increases the urban heat island effect. LADWP caught our eye because of transparency and reporting measures that ask the utility to account for its outreach strategies, and call out issues that get in the way of program implementation (e.g., “some customers cannot afford to front the initial cost of EV charger installations”).¹³

The Resilient Power Project is a joint initiative of the Clean Energy Group and Meridian Institute, focused on building resources in affordable housing, low-income and disadvantaged communities. The Project aims to deploy solar and storage to, “help power essential services during extended power outages and to reduce the economic burden of energy costs in vulnerable communities.”¹⁴

San Francisco’s Solar-Plus-Storage for Resiliency Project

is an effort to integrate solar and energy storage into the City’s emergency response plans. In addition to exploring the feasibility of solar plus storage installations throughout the city, the project developed resources and tools for other municipalities nationwide to do the same.¹⁵

The effects of climate change threaten our health, energy infrastructure, communities, and families like never before. The energy industry has shifted markedly in the past decade, grappling with the limits of vertically-integrated utilities, the reduction of energy-efficiency savings revenue recovery options, and rapidly evolving competition. However, the utility industry does have assets that no other business can claim: ubiquity of service and communities that require it. Now is the time to double down on efforts to support resiliency and equity within our communities as moral and business imperatives.

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