ILLUME

Bringing Efficiency into Conversation with Public Health and the Economy

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The country's attention, actions, and spending are fully mobilized toward public health and the economy. Questions about how to protect our families, neighbors, and employees consume our thoughts as parents, caretakers, business owners, and policymakers. Our economic well-being is close behind as we see grassroots efforts to rally behind neighbors losing their jobs and local businesses shuttering their windows.

At ILLUME, we find ourselves asking:

Where does that leave climate and energy? How will our renewed focus on public health and our collective well-being shape how we think about energy programs and services?

In this memo, we focus on ways to weave (back) together health, energy, and the economy, and assess what metrics we have to draw these connections.

At ILLUME, we imagine this renewed focus on our collective well-being will shape the energy industry and may have the power to transform it **if we can draw a connection** between what people and policymakers care about in this moment and the benefits that energy solutions can provide. Yet talking about MWh savings, and even bill savings, may not seem very relevant to health, jobs, or budgets right now. Moreover, policymakers are singularly focused on a public health crisis, and may see energy as a secondary concern.

As we wade into discussions with customers, policymakers, and the general public, we can ask:

- Can energy programs and services solve the problems people are trying to solve during the COVID-19 pandemic?
- How can we draw a stronger connection between energy and evolving priorities (occupant health, public health, the economy and jobs)?
- What metrics can we use to draw the connection between occupant health, public health, jobs, and energy solutions?

How might we reconnect energy benefits and public health gains?

To understand how we might improve these benefits, it is worth stepping back and exploring the origins of energy efficiency. The US Environmental Protection Agency (EPA) passed the Clean Air Act in 1970, ushering in decades of policies, laws, investments, and initiatives aimed at curbing dirty energy production and consumption in the name of public health. We have experienced dramatic improvements in air quality across the country (though not uniformly) since the 1970s, preventing hundreds of thousands of early deaths, respiratory conditions and hospitalizations, and lost school and work days. While cost-benefit models today do tout benefits in terms of lifetime carbon and GHG emissions, these metrics aren't part of our day-to-day narrative. These metrics are not in our dashboards.

And while our singular focus on MWh, MW, and MMBtu may have taken our focus away from health metrics, MWh and MMBtu can be converted to results that the public and policymakers care about: climate impacts and bill savings. However, this link is not clear to the public. We have the ability to broaden the narrative to include meaningful, relevant results around occupant health and safety, public health, and jobs.

Occupant and Participant Benefits –
Health at home and work

Lower indoor air pollutants
Less moisture and mold
Reductions in asthma/ COPD symptoms
Fewer missed/sick days
Increased worker safety and productivity

Today's "Dashboard" Metrics –
What we use most often to speak with customers and regulators

MWh savings
MMBtu savings
Peak demand reductions
Installed MW capacity
Participant bill savings
Customer rate reductions

Public Benefits –
Expanding our story to connect energy with public health and the economy

Clean air
Point-source emissions reductions
Decreased respiratory illness and hospitalization
Fewer sick days
Decreased mortality
Direct green jobs
Indirect local jobs

Just as we argue that energy efficiency MWh savings benefit individuals as well as the general public, there is a strong narrative for the health benefits of energy efficiency at the micro (building) level and macro (public benefits) level. Thankfully, we already have (or can estimate) many of the "micro" benefits of energy efficiency and clean energy for residents and businesses—as well as the "macro" benefits to the public in terms of emissions reductions and green jobs:

- **Occupant health benefits:** Fewer medical/hospital visits, fewer sick days, lower absenteeism among occupants of participating facilities (homes and businesses).
- **Public health benefits:** Decreases in emissions from power generation, including criteria emissions like NOx and Sox, in addition to carbon and greenhouse gas (GHG) emissions. Lower levels of respiratory-related pollutants and risk. Less childhood asthma, and fewer respiratory hospitalizations and emergency room visits overall, and particularly in areas near generation facilities.
- **Employment and jobs:** Net increases in local jobs through direct employment in energy/climate/green jobs and indirect employment through the supply chain and local services.

Micro: Air quality, safety and health of people in buildings

Does EE address or change health outcomes?

- Health concerns and conditions of occupants
- Building air quality
- Moisture/humidity control
- Worker safety (lighting, ventilation)

Macro: Emissions from Generating Facilities

Does EE result in measurable decreases in criteria air pollutants?

- Measured/monitored point source pollutants and air quality changes (not just conversion factors from MWh savings)
- Geographic distribution of changes – What communities experience real changes

Programs/initiatives that can **prove public health benefits, occupant health benefits, or local employment outcomes** may be better positioned to receive public support and funding in the short-to-medium term. The energy industry provides these benefits and over the years there have been countless analyses and studies to quantify benefits on these terms, they just haven't been the focus of our narrative.

How can we demonstrate the link between energy and public health?

In the short-term, we have many of models and conversion factors to estimate air quality, health, and employment benefits based on energy efficiency actions and measures. That's a great place to start—highlighting those metrics and benefits on scorecards, annual reports, etc., could begin to shift the narrative and tighten the connection between energy, heath, and the economy.

Additionally, there may be opportunities to gather baseline measurements and identify data sources for direct measurement:

- **Criteria air pollution and GHG emissions from power plants:** What monitoring data and localized measurements are available to understand changes in hazardous pollutants over time?
- **Public health metrics:** What agencies can provide public health metrics like childhood asthma or hospitalization rates? How can we determine if changes in energy generation are associated with reductions in negative public health outcomes?
- **Indoor environmental conditions:** What are baseline measurements of indoor pollutants like excessive moisture/humidity, mold, VOCs, carbon monoxide, NOx, radon, etc.? What are levels after energy projects?
- **Occupant health outcomes:** What are the baseline health conditions of residential customers and employees before energy efficiency projects? What about sick days and absenteeism? Can we ask about occupant health metrics before and after projects to gauge impact?
- **Employment:** How are program administrators tracking direct and indirect employment, from implementation contractors to trade allies, contractors and installers interacting directly with customers, and distributors/suppliers? What economic impact models are stakeholders in each state using, and can program administrators provide inputs and/or support those modeling efforts?

One gap or challenge in the metrics we use is the use and reliance on general **conversion factors** to estimate some metrics based on inputs like MWh savings and peak demand savings. We've been reporting carbon and emissions benefits using adjustment factors and formulas, but not necessarily **measuring or truing up estimates** with criteria air pollution around and near generating facilities. ***Are clean energy and energy efficiency efforts having the benefits we've modeled?*** We will be challenged to use air quality and emissions monitoring data—real measurements—to prove there are overall changes and local/regional changes.

Distributive Justice: *Are we serving the most vulnerable?*

Knowing overall impacts, even if directly measured, may not say enough about where and for whom the benefits are accruing. Long before COVID-19, policymakers have asked for proof that investments in clean and renewable energy are benefiting **communities, people, and businesses that are most vulnerable.** Vulnerability has many dimensions, such as (a) exposure and hazards (local air quality and nearby pollution sources) or (b) demographic, cultural, or linguistic factors that increase risk for health conditions, (c) demographic or geographic factors that lead to high energy burden or housing risks, or (d) being historically-underserved or hard-to-reach by energy efficiency and clean energy efforts.

Calls for **distributive justice** are growing. Before COVID-19, several states had already signed and advanced climate legislation with requirements for environmental justice, equity, and serving disadvantaged communities. These distributional outcomes cannot be ascertained through summary statistics like an overall participation rate or overall carbon reductions, or conversation factors based on averages. Some distributional questions our industry may have to address include:

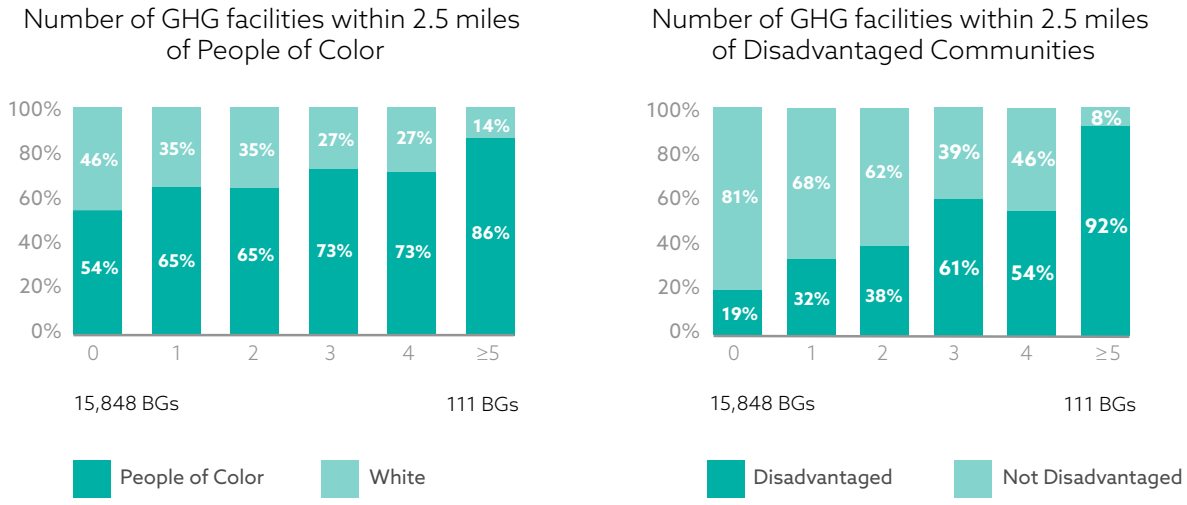
- Are disadvantaged communities and those most vulnerable getting their fair share of the benefits of energy efficiency at the **micro level:** In their homes and businesses? Are they receiving services and investments at similar and greater rates?
- Are disadvantaged communities and those most vulnerable getting their fair share of benefits at the **macro level:** Criteria air pollution and GHG emissions reductions in their neighborhoods? Are the overall reductions in emissions that utilities and program administrators claim for their portfolio actually translating to real changes in disadvantaged and environmental justice communities?
- Are the employment and economic benefits of green jobs happening locally? Are they staying in-state, and ideally in disadvantaged communities or among workers adversely affected by other macroeconomic shifts?

How can we "localize" metrics in terms of where they fall geographically and who benefits?

The answer has a few parts. First, defining the most vulnerable people and communities. Many states and federal agencies are working on this or have frameworks in place, including California EnviroScreen 3.0, the EPA Environmental Justice Screen, and New York's 2019 climate bill that calls for a statewide definition of disadvantaged communities to name a few. The Massachusetts Program Administrators, Energy Trust of Oregon, and CenterPoint Energy (with the City of Minneapolis) have taken initiative to develop their own definitions and screening criteria to begin to assess whether the benefits of their services are equitably distributed.

WHAT WE LEARN FROM LOOKING AT THE DISTRIBUTION OF BENEFITS MAY NOT BE WHAT WE WANT TO SEE AND MAY REQUIRE CHANGE.

- An EPA study on the environmental justice implications of the Clean Power Plan, found that health burdens from polluting facilities and environment communities are higher in communities of color and low-income communities.[1] Based on where they live, African-Americans face a 54% higher health burden that then general population, and those living under the poverty line face a 35% higher burden.
- An analysis of GHG and co-pollutant emissions in California before and after the cap-and-trade program did not show emission reductions in environmental justice communities.[2] Facilities that are regulated by cap-and-trade are disproportionately located in disadvantaged communities. Moreover, the majority of regulated facilities (52%) reported higher annual local GHG since the start of cap-and-trade. "Neighborhoods that experienced increases in annual average GHG and co-pollutant emissions from regulated facilities nearby after trading began had higher proportions of people of color and poor, less educated, and linguistically isolated residents, compared to neighborhoods that experienced decreases in GHGs." As the advocacy group NY Renews reports, "this underlines the need to connect emission reduction efforts with direct benefits for those already most burdened by cumulative environmental and economic burdens."



Source: Cushing et al. (2018)

[1] Mikati I et al. Disparities in Distribution of Particulate Matter Emission Sources by Race and Poverty Status. American Journal of Public Health 2018; e1–e6. DOI: https://doi.org/10.2105/AJPH.2017.304297.

[2] Cushing L, Blaustein-Rejto D, Wander M, Pastor M, Sadd J, Zhu A, et al. (2018) Carbon trading, co-pollutants, and environmental equity: Evidence from California's cap-and-trade program (2011–2015). PLoS Med 15(7): e1002604. https://doi.org/10.1371/journal.pmed.1002604.

When estimating benefits to disadvantaged and environmental justice communities, program administrators may be asked to demonstrate proportional or greater-than-proportional benefits, and in some states, **measure achieved emissions reductions from the source**. As Cushing et al conclude, "Future regulatory efforts should systematically track trends in hazardous co-pollutant emissions associated with GHG emissions from stationary- and transportation-related sources and assess how they impact socioeconomically disadvantaged populations."

While program administrators may not have currently have the measurements or models to do this, we are hopeful that utility and interagency efforts and working groups like Climate Justice Working Group forming in New York State will be able to collaborate to use and repurpose data collected for public health and environmental research to assess where energy-related benefits are falling.

With respect to economic benefits, similarly, there are many existing models and tools used for economic development analysis and policy, and many utilities and program administrators are already estimating job and workforce development benefits.

BROADER METRICS FOR A BROADER AUDIENCE

Like many in the energy industry, we believe that clean energy and energy efficiency can address numerous issues that people and businesses face today. They may not be at the core or center of the solution, but the benefits are real and continuing energy and climate action can and should build resilience for future shocks. If we can measure and communicate them well, we can serve more people. If we don't weave these connections back together, there may be a risk of losing public support and funding. Aligning our tools and metrics with what policymakers know and trust, or even open data sharing to allow other agencies to model the benefits of energy efficiency, could help bring a broader audience into the energy efficiency narrative and draw a connection between climate, energy, health, and economy that we can all believe in.