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**The Equities of Energy Efficiency  
Investments: Multi-Family Housing  
(Part 2 of 2)**

NOTE TO READERS

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**A Principled Environmental Justice Basis  
Exists in Law and Economics to Consider  
the Equities of Energy Efficiency  
Investments.**

A principled basis in law and economics for explicitly considering the equity of utility investments in multi-family energy efficiency can be found in "environmental justice" doctrine. Broadly speaking, "environmental justice" refers to ensuring a proportionate distribution of environmental benefits and environmental burdens amongst low-income and minority populations when compared to the benefits and burdens distributed to non-disadvantaged populations. Environmental justice has been described as:

The right to a safe, healthy, productive, and sustainable environment, where "environment" is considered in its totality to include the ecological, physical, social, political, aesthetic, and economic environment. Environmental justice addresses the disproportionate environmental risks borne by low-income communities and communities of color resulting from poor housing stock, poor nutrition, lack of access to healthcare, unemployment, underemployment, and employment in the most hazardous of jobs.

(Foy, 4). Environmental justice, however, involves more than preventing the disproportionate imposition of environmental risks, harms and burdens. It requires, also, a proportionate distribution of environmental benefits and amenities as well. Environmental benefits cannot be "reserved for the privileged few." (Loh, 3). With particular relevance from the perspective of im-

plementing energy efficiency programs, “green investment policy decisions cannot be solely synonymous with the adoption of green lifestyles by those who can afford them.” (Loh, 6).

With utility-funded usage-reduction programs, the line between avoiding the disproportionate imposition of adverse consequences and ensuring the proportionate distribution of environmental amenities often becomes blurred. In many instances, the “amenity” to be distributed is the avoidance of the harms generated by the consumption of home energy. Even while acknowledging this ambiguity, the two different aspects of environmental justice –(1) avoiding the disproportionate imposition of burdens; and (2) ensuring the proportionate sharing of amenities—are considered separately below.

#### **Avoiding the Disproportionate Imposition of Environmental Burdens.**

The impact of environmental pollution unquestionably falls disproportionately on disadvantaged communities. There is, for example, a disproportionate impact of hot weather on disadvantaged communities. As early as 1971, the U.S. Council on Environmental Quality (“CEQ”) found not only that a correlation existed between income and the risk of toxic exposure, but also that the lack of income impeded the ability of the urban poor to improve their environment. These populations, CEQ found, were “too poor to move.”

Poor and disadvantaged communities also have a higher risk of heat-related illness, asthma, and other respiratory diseases that are exacerbated by climate change and degraded air quality. Indeed, environmental justice communities have been shown to suffer the *most* harm from climate change.

Innumerable studies have found that low-income households, along with persons of color, are disproportionately exposed to pollution. (Lester). One of every four American children lives in an area that regularly exceeds federal ozone standards. Half the pediatric asthma population --two million children-- live in these areas. African American and Latino children, however, are three to five times more likely than White children to die from asthma. While nearly 70 percent of Hispanic, and more than 60 percent of African American children live in areas that exceed the federal ozone standard, only 50 percent of White children do. (Kaswan 2012, 11135 – 11136). Moreover:

- The relationship of these adverse health outcomes to energy consumption and its related pollution seems quite unmistakable. “In a study done in the Bronx by researchers at the New York University School of Medicine, it was found that on days when air pollution, particulate matter levels, nitrogen oxide levels, and sulfur dioxide levels were at their highest, the severity of asthma symptoms doubled among the studied individuals.” (Environmental Justice Brief, 10).
- Minorities disproportionately live in areas subjected to air pollution. More than 80 percent of Hispanics and 65 percent of African Americans live in 437 counties with substandard air quality, yet only 57 percent of Whites do. More than 68 percent of Blacks live within 30 miles of a coal-fired power plant –the distance within which the maximum effects of the smokestack plume are expected to occur-- while only 56 percent of Whites do. (Bullard 2008, 1, 2).

- Climate change threatens minorities with greater health risks attributable to heat waves. By the Year 2100, extreme heat waves that historically occurred once every 20 years are predicted to occur every other year. (Kaswan 2012, 11135). Blacks are twice as likely as Whites to die from a heat wave. (Congressional Black Caucus Foundation, 9).

At times, the nexus between pollution and disadvantaged communities can be quite direct. As part of New York’s preparation of its State Energy Plan pursuant to then-Governor Paterson’s Executive Order 2 (April 2008), the State Energy Board prepared its Environmental Justice Brief. The Environmental Justice Brief found that of the 102 combustion-based electric-generating facilities in New York, 64 were within one mile of a potential environmental-justice community; 53 were within one half-mile; and 30 were within such a community (Environmental Justice Brief, 14). These generators, the Brief reported, emit “tons of particulate matter, nitrogen oxide and other pollutants and are less efficient than combined cycle generators.” (Environmental Justice Brief, 2).

A similar review in California looked at eighteen planned or approved power plants (17 of which were peaking plants). Two-thirds of the California plants were located where fifty percent or more of the population within a six mile radius from the plant were people of color. Latinos were most disproportionately represented, followed by Blacks. (Ramo, 22). The short smoke stacks of back-up generators and peaking turbines means that pollution produced by those plants will be more local.

Even this discussion understates the exposure of disadvantaged communities to the harms associated with environmental pollution. The discussion does not generally extend to the harms (and synergistic impacts) associated with the *cumulative* exposure to many pollutants. In addition, most discussions are based on average exposure levels to a pollutant rather than on the levels by the most exposed populations. (Rechtschaffen 2003, 106).

Moreover, it is not merely “outdoor” climate-induced health effects that represent the harms to be avoided through usage reduction programs. Because Americans spend 67% of their time in their homes,<sup>1</sup> indoor air quality also affects health. Indoor air pollutants have been ranked as among the top five environmental risks to public health. Poor indoor air quality in the home has been linked to cancer, to asthma, and to carbon monoxide poisoning.<sup>2</sup> And, while outdoor air quality is subject to regulation under the Clean Air Act, indoor air quality is not.

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<sup>1</sup> Indeed, estimates are that Americans spend 90% of their time indoors (not necessarily in their own homes).

<sup>2</sup> The purpose of this paper is not to document the relationship between housing quality and adverse health outcomes. Those interested in the topic should explore the literature of “ecosocial epidemiology.” See generally, Fatemeh Shafiei, “Reducing Health Disparity through Healthy Housing,” in *Healthy and Safe Homes: Research, Practice and Policy*, (Rebecca Morley, et. al, eds. 2011). See also, Nancy Krieger, “Theories for Social Epidemiology in the 21<sup>st</sup> Century: An Ecosocial Perspective,” 30 *International J. Epidemiology* 673 (2001). For a discussion of the positive health impacts flowing from an improvement in housing quality, see generally, Thompson, Hilary, et al. (2009). “The Health Impacts of Housing Improvement: A Systematic Review of Intervention Studies from 1887 to 2007,” *American Journal of Public Health* 99(53): S681.

The confluence of the harms associated with outdoor air quality and those associated with indoor air quality cannot be ignored. One consistent piece of advice given to people on how to avoid the adverse impacts of poor outdoor air quality is to “remain indoors.”

This advice is based on the assumption that indoor air quality is superior to outdoor air quality.

But this means that people whose indoor air quality is compromised may be more susceptible to adverse health effects from indoor air than the population at large. Low-income people and African-Americans are much more likely to be exposed to, and therefore suffer the effects of poor indoor air quality than the general population. So the advice to stay indoors might be good for the majority of people but bad for a minority: the same minority that tends to suffer other disparate environmental impacts. This problem goes to the heart of why green affordable housing is a matter of environmental justice. (Foy, 44).

The failure to introduce equity considerations into energy usage reduction investments will cement existing inequities into place. Past actions and inactions regarding environmental justice communities have contributed to the present exposure of these communities to the harms of climate change. These inequities have ranged from issues relating to the siting of power plants, to the quality of housing, to the failure of education and employment to address the economic needs of environmental justice communities and their ability to obtain quality housing and implement cost-effective energy usage reduction measures. Current disproportionate exposure to the harms of climate change is a vestige of past inequitable treatment.

“The structural roots of environmental inequities are very likely the same as those that produce other forms of racially disproportionate impacts. . . Certainly there is no reason to suppose that environmental protection is somehow immune from actions based on societal attitudes that, while widely condemned, are nevertheless prevalent.” (Lazarus, 807 – 08). There is, Lazarus continues:

[a] disturbing, yet somewhat irresistible thesis, that the distributional dimension of environmental protection policy likely suffers from the same inequities that persist generally in society. . . [T]he problems of distributional inequity may in fact be more pervasive in the environmental protection arena than they are in other areas of traditional concern to civil rights organizations, such as education, employment and housing. Indeed, it is the absence of that minority involvement so prevalent in the more classic areas of civil rights concerns that may render the distributional problem worse for environmental protection.

(Lazarus, 811 – 12). Environmental inequities in the exposure to pollution seem clearly to be rooted in the web of broader economic and social forces. (Foster, 791 - 92).

Despite the disproportionate exposure to harms, the cure can be as harmful as the disease when viewed through an environmental justice perspective. Existing economic responses to climate change impose a disproportionate cost on environmental justice communities. Every mechanism that internalizes the cost of climate change will impose a disproportionate economic impact on disadvantaged populations. According to the Congressional Budget Office:

[A] cap-and-trade policy that achieved a 15 percent reduction in carbon dioxide emissions would raise the costs of energy and energy-related products annually by an average of \$680 (in 2006 dollars) for the 20 percent of households with the lowest incomes. . . According to Congressional Budget Office estimates, the impact of those cost increases is the equivalent of a 3.3 percent reduction in the real (inflation-adjusted) after-tax income of the 20 percent of households with the lowest incomes. In contrast, the richest 20 percent of households. . . would experience the equivalent of a 1.8 percent reduction in real after-tax income, or about half as much.

(Environmental Justice Brief, 23). A failure to incorporate equity into multi-family energy usage reduction compounds these harms.

### **Ensuring the Proportionate Distribution of Environmental Amenities.**

Energy usage reduction programs can and should be viewed as an environmental amenity that should be equitably distributed, not merely as a response to environmental burdens. Usage reduction programs, in other words, are not merely a climate change mitigation strategy designed to reduce greenhouse gas (“GHG”) emissions. They are a climate change adaptation strategy as well.

The Intergovernmental Panel on Climate Change (“IPCC”), the leading international body established for the assessment of climate change, defines climate change “adaptation strategies” as initiatives designed to “enhance resilience or reduce vulnerability to observed or expected changes in climate.” (IPCC Fourth Assessment Report, Chapter 17). Created by the United Na-

tions Environmental Program (“UNEP”) and the World Meteorological Organization (“WMO”), IPCC states that adaptation involves “reducing risk and vulnerability, seeking opportunities and building the capacity,” of among other things, “communities [and] individuals. . . to cope with climate impacts, as well as mobilizing that capacity by implementing decisions and actions.” (IPCC Fifth Assessment Report, Chapter 14).

The environmental justice movement has long been concerned with the disproportionate lack of access to environmental amenities. One group, for example, references “outdoor apartheid and green access” in describing the unequal access to “high quality recreational opportunities.” (Foy, 3). In 2009, Seattle University law professor Clifford Rechtschaffen documented the disparate lack of access to transportation funding, as well as to parks and open space, by race and income. (Rechtschaffen, 58 - 64).<sup>3</sup>

It is not as though environmental laws and regulations have historically ignored distributional

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<sup>3</sup> “[I]n the United States, there is less empirical work documenting disparities in environmental benefits than there is empirical study documenting the inequitable distribution and cumulative impact of multiple environmental burdens. The fact that much less has been done with respect to environmental benefits is, perhaps, unsurprising. The distribution of parks, green space provision, and walkable sidewalks, along with access to coastal and water resources, to cite just four examples, are generally conceived of more as ‘land use’ than ‘environmental’ matters.” (Crawford, 911). Nonetheless, it is established jurisprudence that all communities have a right to equal municipal services, including parks and recreation lands. See generally, Paul Stanton Kibel, “The People Down the Hill: Parks Equity in San Francisco’s East Bay,” 1 Golden Gate U. Environmental L.J. 331 (2007); see also, National Acad. of Pub. Admin. (2003). “Addressing Community Concerns: How Environmental Justice Relates to Land Use Planning and Zoning.” U.S. Environmental Protection Agency: Washington D.C.

impacts completely. Seeking to advance the fair distribution of natural resources, homestead, mining, mineral leasing and reclamation laws have all historically included acreage limitations. More recently, the regulation of the transfer of water rights has taken into account distributional concerns, rather than always allowing the transfer of water to the highest and best use.

The distributional impacts arising from the access to, and pricing of, urban mass transit on disadvantaged communities is another example of environmental justice taking account of the distributional impacts of services viewed as environmental amenities. (Robison, 903, 912-916; Bullard 2004, 1188 - 1191). As with energy usage reduction, mass transit is not only a pollution control mechanism, but is also a strategy that is inextricably tied to the quality of life of low-income and minority communities.

### **Socio-Economics and the “Capacity to Cope”**

Climate change adaptation strategies present a particularly difficult problem for disadvantaged communities lacking sufficient financial and social resources to pursue such strategies. These resources are encapsulated into the community’s “capacity to cope.” (Kaswan 2012, 11125 – 26).

The capacity to cope is a function of such factors as a community’s financial and social resources, access to health care, and geographic mobility. In other words, the extent of adverse consequences is not only a function of geographic location and physical attributes, but of socioeconomic conditions. . .Vulnerable populations will be at much greater risk from climate change unless climate change adaptation policies grapple with the underlying socioeconomic inequities that exacerbate their vulnerabil-

ity. Decreasing social vulnerability requires adaptation measures that both reduce the underlying sensitivity to harm and enhance the impacted communities resilience to harm after it has occurred.

(Kaswan 2012, 11127). In this context, green affordable housing should be viewed as an environmental amenity. The largest carbon emissions reductions accrue from efficiency enhancements, not curtailment activities. Low-income households may well be able to participate in some curtailment activities –turning off lights is the classic example—but lack the ability to upgrade to more fuel-efficient cars, purchase newer (and more efficient) home appliances, or rent better quality (and more efficient) housing.

Disadvantaged and minority communities have the least ability to engage in usage reduction strategies in the absence of external assistance. These communities can only pursue strategies to reduce energy consumption through sacrifice. To gain something, members of a disadvantaged community must give up something, and that “something” is generally an essential life-requirement (e.g., food, housing, medicine). Utility investments in energy usage reduction measures increase the ability of these communities to respond to climate change, whether through mitigation or adaptation.

Energy efficiency improves the resilience of environmental justice communities. (Korey, 15). These communities have the least ability to respond to climate change, to protect themselves, and/or to avoid the consequences of climate change. In a related fashion, environmental justice communities have the least resilience –a term often used in the literature— to reduce their vulnerability. There is “no place to hide.” For example, as discussed above, indoor air quality

can be as dangerous as outdoor air quality. For example, indoor housing temperatures (without air-conditioning) can be as deadly as extreme heat outdoors. It is more prudent to develop adaptation plans / capabilities to avoid the harm than it is to attempt to repair the harms after they arise.

In sum, taking equity into consideration in the pursuit of utility investments in multi-family energy efficiency is needed whether such investments are viewed as a mitigation strategy or viewed as an adaptation strategy. Whether usage reduction is viewed as a means of *preventing* the inequitable distribution of environmental burdens, or as a means of *ensuring* the equitable distribution of environmental amenities, environmental justice principles support an explicit consideration of the equities of utility investment in usage reduction programs.

### **Recognizing the Unequal Matching of Cause and Effect.**

An unequal “cause and effect” exists regarding climate change and its distributional impacts. Environmental justice communities make the least contribution toward climate change and yet are harmed the most. Despite the disproportionate adverse impacts on environmental justice communities resulting from pollution, low-income people, and persons of color, contribute disproportionately less to the prevalence of that air pollution. For example, the average African-American household emits 20 percent fewer greenhouse gases than its White counterpart. (Congressional Black Caucus Foundation, 9; Lynn, 20).

Despite their unequal contribution toward environmental despoliation, more wealthy households tend to demand a cleaner place to live and

have the resources and political influence to pursue a clean environment. As a result, the communities contributing the least end-up living in the most polluted areas.

Not only is wealth implicated in consumption of resources, which is usually directly linked to environmental degradation like pollution, but also the wealthier the people the more they demand a clean environment in which to live.

[Moreover], [t]he richer a cohort is in society, the more it is able to insulate itself from being affected by or observing environmental degradation. A corollary to insulation from adverse environmental effect is the ability of richer people to create healthier environments in which to live, including healthier homes. The perverse consequence is that, on a per capita basis, the people who cause the least amount of pollution experience the worst environment in which to live.

(Foy, 12; Been, 1). Based on this information, an integration of the burden and benefit analysis provides a strong environmental justice foundation for ensuring the equitable distribution of usage reduction investments to low- and moderate-income communities. These communities are likely to suffer the most, but contribute the least, to the creation of global warming. Their disproportionate exposure to harm, frequently referred to as “social vulnerability” in the literature, arises because of factors such as where these vulnerable populations live and what limits exist on their income. (Lynn, 8, 13).

The need to equitably distribute multi-family energy usage reduction investments can be soundly grounded in environmental justice principles. There is a clear mismatch between the

cause and effect of environmental harms. While disadvantaged communities contribute the least to air pollution emissions, they are disproportionately burdened by the harms of those emissions. Moreover, a failure to equitably distribute energy efficiency investments disproportionately denies disadvantaged communities access to the ability to cope with these harms. Without equity in investment, the ability to adapt is limited to those who can afford to do so.

### **Eight Important Concepts to Understand.**

Eight important concepts have been introduced above which support the application of equity principles to any analysis of the distribution of utility usage reduction measures. These concepts include:

1. Environmental justice community: An environmental justice community is a community that by reason of racial/ethnic and/or socio-economic status is disproportionately exposed to environmental harms or disproportionately denied access to environmental amenities.
2. Equity school of thought: Equity considerations in pollution control, and other environmental strategies, account for the spacial and demographic distribution of the harms that are imposed (or allowed) and the benefits that are available. The “equity” school of thought stands in contrast to the “efficiency” school of thought, which posits that the exclusive purpose of pollution control, or the provision of environmental benefits, is to maximize the aggregate amount irrespective of how that amount is distributed.
3. Environmental amenity: An environmental amenity involves the distribution or provision of an environmental benefit rather than the reduction of an environmental harm. The provision of parks and open spaces is considered to be an environmental amenity. Similarly, the provision of energy efficiency investments is an environmental amenity, given its objective of improving health, safety and affordability, as well as increasing the capacity of a community to cope with climate change.
4. Climate change mitigation: Climate change mitigation involves efforts to reduce the short- and long-term causes and effects of climate change. Utility investments in energy reduction strategies are a climate change mitigation strategy in that they reduce overall greenhouse gas emissions.
5. Climate change adaptation: Climate change adaptation accepts the reality of climate change. Adaptation initiatives have been defined as those efforts designed to “enhance resilience or reduce vulnerability to observed or expected changes in climate.” Energy usage reduction investments are a climate change adaptation strategy.
6. Social vulnerability: Social vulnerability refers to current vestiges of past discrimination, as well as socio-economic inequities, that exacerbate the vulnerability of communities to climate change. Decreasing social vulnerability requires adaptation measures that both reduce the underlying sensitivity to harm and enhance the impacted communities resili-

ence to harm after it has occurred. Energy usage reduction investments reduce a community's social vulnerability.

7. Community resilience: The resilience of a community refers to a community's capacity to cope with climate change. The capacity to cope is a function of factors such as a community's financial and social resources, access to health care, and geographic mobility. Energy usage reduction investments help improve the resilience of a community to respond to the physical and financial adverse effects of climate change.
8. Mismatch of cause and effect: The mismatch which is frequently referenced is based on the fact that while disadvantaged communities contribute the least to air pollution emissions, they are disproportionately burdened by the harms of those emissions. For example, on a per capita basis, the people who cause the least amount of pollution experience the worst environment in which to live

### Summary.

It is one thing to assert, as a political statement, that the equities of energy efficiency investments should be considered. It is quite another to *define* what "equity" means and to present a mechanism for *measuring* the equities of efficiency investments. For a methodology to do precisely that, one should read the following FSC report:

Colton (2015). "The Equity of Efficiency: Distributing Utility Usage Reduction Dollars for Affordable Multi-Family Housing."

The full report has the complete list of bibliographical references cited above.

Fisher, Sheehan and Colton, Public Finance and General Economics (FSC) provides economic, financial and regulatory consulting. The areas in which FSC has worked include energy law and economics, fair housing, affordable housing development, local planning and zoning, energy efficiency planning, community economic development, poverty and telecommunications policy, regulatory economics, and public welfare policy.