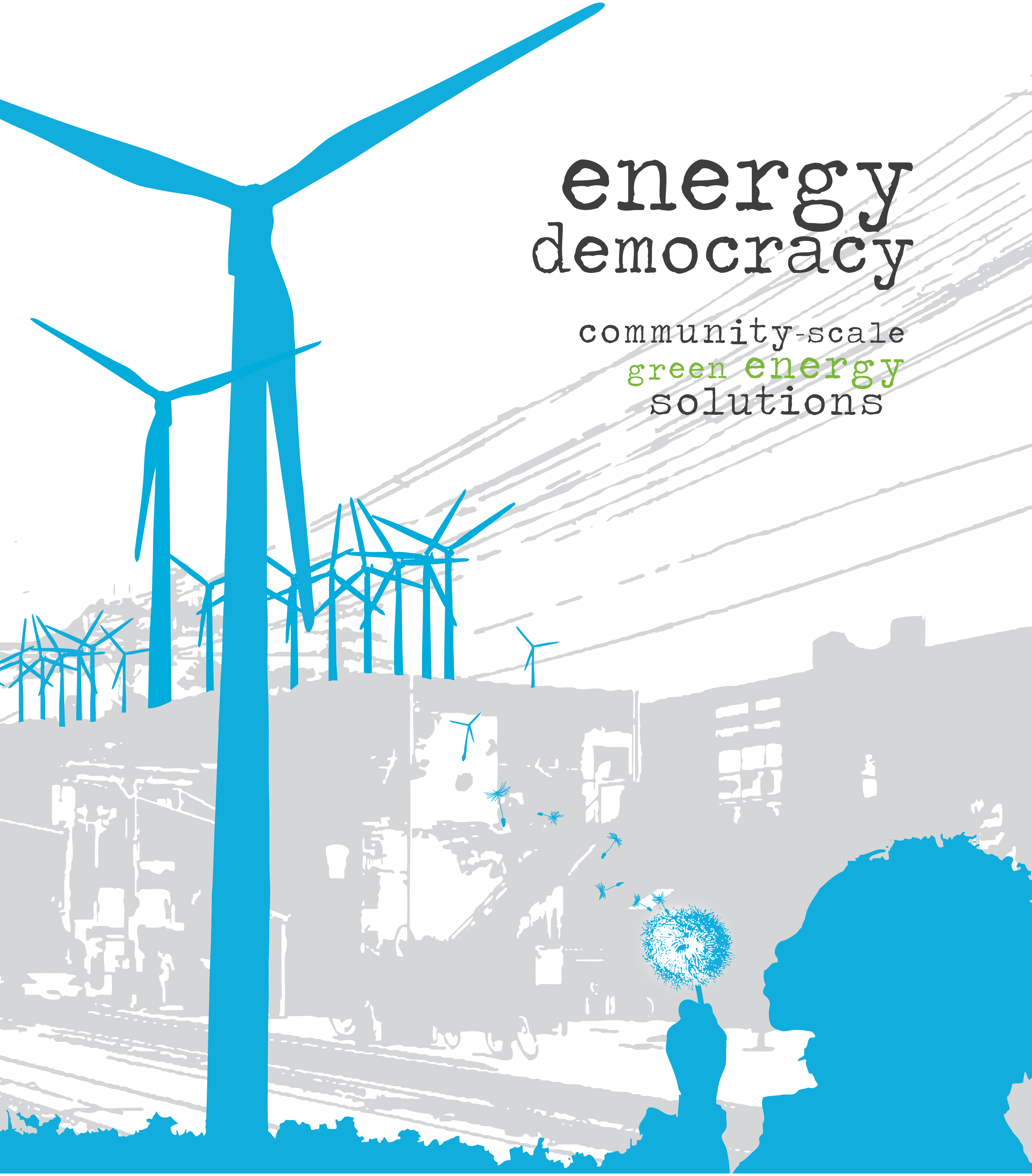

energy democracy

community-scale green energy solutions

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The Center for Social Inclusion (CSI) wishes to express our profound appreciation for the leadership and knowledge shared by participants in this project. They generously shared their time with CSI staff, demonstrating a keen desire to deepen the knowledge of the opportunities, assets, and practices shaping the involvement of communities of color in the green economy.

We are grateful to the Quixote Foundation for its financial support and for its long-term commitment to a racially just society on a healthy planet.

Amy McKnight Fazen and Kimberly James provided critical research and intellectual support to this white paper.

Leaders in energy, environmental justice, community finance, and community organizing have partnered with CSI, making up the advisory board for this endeavor. This brain trust has made a collaborative effort to create pathways to a racially just and sustainable America. We particularly acknowledge the contributions of Nellis Kennedy (Honor the Earth, Callaway, MN), Penn Loh (Alternatives for Community and Environment, Boston), Bruce Lincoln (Columbia University, New York), David Morris (Institute for Local Self-Reliance, Minneapolis) and John Sorensen (Neighborhood Natural Energy, Portland, OR) for the commitment, creativity, and insight they demonstrated through the course of this work.

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If the 34 million American households of color[1] resided in a single state, their household electricity demand would exceed that of all the residential, commercial, and industrial users in California, the state with the highest electricity demand in the country. Households of color demanded as much as 385 billion kilowatt hours of electricity in 2009.[2] Based on the most recent retail price data available, this translates to $41 billion in electricity buying power.[3] This buying power will likely climb for the foreseeable future. The number of households of color in the United States is projected to increase to 56 million by 2030 and reach an estimated 80 million by 2050.[4] Communities of color are clearly significant consumers of electricity. Could they be significant producers, too?

With worldwide demand for energy exploding, the race is on to make greater use of renewable energy. Wind, solar, geothermal, and bio-fuels offer clean and potentially inexhaustible supplies. Technology is advancing rapidly toward making these energy sources accessible and competitively priced.

Yet scholarship, policy, and market innovation have not explored community-generated renewable energy. Nor have we considered communities of color as part of our energy future. Now is the time to do so. This paper outlines an approach to Energy Democracy. The goal of Energy Democracy is to create community-owned or controlled renewable energy and invest that capacity with democratic principles that foster interdependence, conservation, wealth-building, political autonomy, and economic opportunity.

Small-scale, locally owned or controlled renewable energy projects can be structured to allow local investment, sweat equity, and a transparent process for setting fair prices.

Energy Democracy is a policy framework with the goal of transforming neglected and isolated communities—often poor, and often communities of color—into energy producers who contribute to the nation's overall capacity, add clean energy to the grid, enhance their economic and political ties across the region, and supply their own energy needs. Without intervention, communities of color risk missing a transformative opportunity for a meaningful role in America's changing energy economy. With people of color fast becoming half of the national population, this would be a loss for both communities of color and the nation.

This white paper explores the challenges and opportunities communities of color face as participants in a renewable energy economy. With the right ownership models, clear and supportive tax incentives and finance policy, reformed land use and zoning policies, and equitable access to the grid, emerging technology allows communities of color to establish themselves as power producers. This white paper is focused on community-owned, small-scale renewable generators in electricity markets.

Communities of color that become energy producers will transform their relationships with the larger regional economy, bringing improved infrastructure, increased wealth, and greater political interdependence between communities of color and their neighbors.

This potential requires informed leadership and innovative policy to become a reality. The following recommendations represent the first steps.

[1] U.S. Census Bureau, Population Division; U.S. Census Bureau, Current Population Survey, 2009 Annual Social and Economic Supplement.

[2] Author estimates based on data compiled in the U.S. Census Bureau, America's Families and Living Arrangements: 2009. People of color households include non-white Hispanic, African American alone, Asian alone, all remaining single races, and all race combinations. Retail energy prices obtained from Energy Information Administration's Electric Power Annual (2008). State level consumption data obtained from Energy Information Administration's Retail Sales by State by Sector (1990–2008).

[3] Based on national residential retail electricity price data 2007 by the Energy Information Administration.

[4] U.S. Census Bureau, Population Division; Projections of the Non-Hispanic White Alone Population by Age and Sex for the United States: 2010 to 2050 (NP2008-T14) and Projections of the Population by Age and Sex for the United States: 2010 to 2050 (NP2008-T12). Weighted average household size for non-white households calculated from Current Population Survey, 2009 Annual Social and Economic Supplement.

Priority Recommendations:

- **Make community renewable energy policy a federal priority**

Decision makers at all levels will respond to federal measures and incentives that signal the national importance of community renewable energy policy. These measures and incentives should be explicitly connected to national renewable energy goals. Agencies including the Federal Energy Regulatory Commission (FERC) and the Environmental Protection Agency (EPA) must direct public resources to appropriate projects,which, in turn, will draw private investment.

- **Support Feed-in-Tariffs**

The Federal Energy Regulatory Commission and the state utility commissions must work together to support Feed-in-Tariffs (FiT). To stimulate renewable energy generation and consumption, FiT requires utilities to purchase electricity from renewable electricity system owners at long-term, fixed rates established by utilities and/or regulatory commissions. The program can pay producers higher than market rates to put their renewable energy on the grid based on factors such as the technology used or how much of the project is locally owned. FiTs are widely used around the world and are emerging in states (Vermont, Washington, and California) and cities (Gainesville, FL, and Sacramento, CA) across the country. Federal leadership is essential to support state and municipal incentives to ensure that FiT programs reach community-scale projects. As suggested by the National Renewable Energy Laboratory (NREL), FERC should conduct an administrative inquiry and rulemaking process to create clear guidelines for states to set prices that utilities pay to producers under a FiT program. Congress should amend the Public Utility Regulatory Policy Act (PURPA) and the Federal Power Act (FPA) to remove or reduce existing statutory constraints to state-level FiT.

- **Create legal structures to facilitate community energy production**

Green jobs and equity ownership are mutually reinforcing building blocks of political and economic power. The Evergreen Initiative in Cleveland is an example of how community hiring initiatives, green jobs, and equity ownership can successfully come together. No single structure is a magic bullet. However, states must accommodate legal structures with simple, transparent rules and incentives for owner/employees to own more as they work. Legal structures must also allow for a range of investors to participate in community-scale ventures without burdensome regulations.

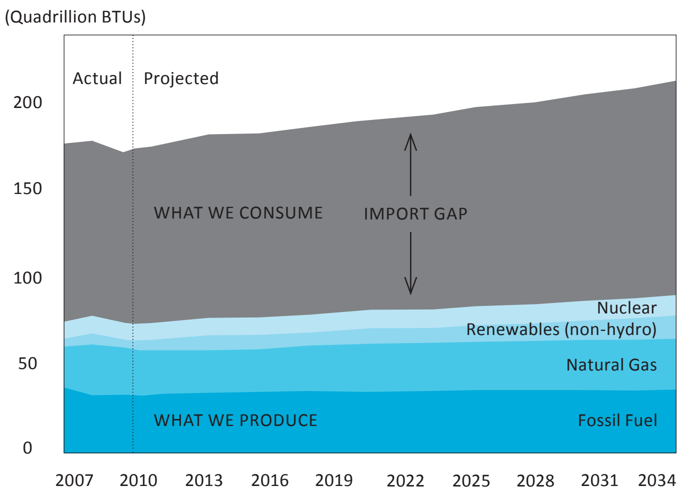
- **Prioritize community renewable energy policy in land use decisions**

The Federal Interagency Partnership for Sustainable Communities must support equitable Energy Improvement Districts (EID). Congress approved $150 million in FY 2010 for HUD as part of the interagency effort to support regional planning grants and capital funds to implement the plans. HUD and partner agencies should give priority status for funding to Energy Improvement Districts that develop community-scale renewable facilities, use municipal funds to pay for the construction of locally sited power grids, rely on participatory planning processes, adopt inclusive zoning, and set social and economic equity goals.

Leaders and experts around the world have been raising a clarion call—environmental stability and the global economy are imperiled by the world's exponential growth in energy consumption and dependence on fossil fuels.

Energy Supply and Demand Overview

Source: Annual Energy Outlook 2010 Energy Information Administration



World energy consumption is projected to increase 37% by 2030.[5] This outpaces projected global population growth by nearly 20%. In the United States, for every one percent increase in population, national electricity demand increases two percent. It is not surprising then that the gap between domestic production and consumption is expected to widen over the next two decades (see Figure). How we satisfy electricity demand and become more energy efficient will have deep cultural, environmental, economic, and social implications.

We need solutions as innovative as the problems are complex. According to the Intergovernmental Panel on Climate Change, the planet is increasingly exposed to a host of adverse conditions due to the rise in temperature associated with fossil fuel emissions—from increased human mortality to the loss of biodiversity, from increasing food scarcity to more intense and frequent extreme weather.

Around the world, the race is on to make greater use of renewable energy. Wind, solar, geothermal, and biofuels offer cleaner alternatives to fossil fuels and potentially inexhaustible supplies of energy. Technology is advancing rapidly toward making energy derived from renewable sources accessible and competitive.

Now is the time for Energy Democracy. Its goal is to create community-owned or controlled renewable energy and to invest that capacity with democratic principles that foster interdependence, conservation, wealth-building, political autonomy, and economic opportunity.

Small-scale, locally owned or controlled renewable energy projects can be structured to allow local investment, sweat equity, and a transparent process for setting fair prices. This vision of Energy Democracy has the power to transform neglected and isolated communities, often poor, often communities of color, into energy generators able to

[5] International Forecast Data, Energy Information Administration.

add power to the grid, meet the energy needs of their own communities, enhance political and economic ties with neighboring communities, and contribute to the nation's capacity to independently produce clean, sustainable energy for all of our needs.

Without intervention, communities of color risk missing a transformative opportunity for a meaningful role in America's changing energy economy. With people of color fast becoming half of the national population, this is unacceptable.

Right now, renewable sources represent 7% of the world's supply of energy, but they are projected to be the fastest-growing source of world electricity generation, supplying 21% of the world's electricity by 2030.

According to David Morris, Vice President of the Institute for Local Self Reliance, "Now is the time to be involved in renewable energy, because it is a several-hundred-billion dollar industry with enormous federal and state incentives, growing 10-40% a year." [6]

One critical technological breakthrough is in electricity distribution. Until recently, electricity has reached American homes and businesses primarily from large centralized facilities. But renewable energy technology is changing that paradigm. Today, "distributed generation" is on the rise. Instead of one centralized electricity generator, small operators can supply local demand.

Small power producers are making money today from renewable energy by generating electricity and selling that power through a transmission grid to connected businesses and households. The technology is at hand for a community-owned or controlled energy project to do the same. Revenues from community-produced energy can be reinvested into the community and build the local, regional, and national economy.

This white paper explores how an Energy Democracy policy framework can enable communities of color, in particular, to own or control small-scale renewable energy facilities.

"Small-scale" refers to generation capacity of 30 megawatts or less if you go by the FERC Small Power Designated Facility definition. However, nearly four out of ten electricity generating facilities have generation capacities of five megawatts or less. What matters in determining the scale of community generation is the process. A community renewable energy generating facility's scale should be decided by stakeholders and shareholders and be informed by rigorous study of the economic, human, and environmental impacts. Because many configurations are possible for a community-scale facility, we do not prescribe what capacity or form these facilities should take; that will vary with differing local conditions. Plus, what makes sense today may soon be outpaced by technological advances. Fundamentally, however, a community renewable energy facility is as much a process that preserves community control as it is an actual facility creating energy.

Community renewables occupy a place in a community because wind turbines, solar panels, and other renewable energy technologies require a physical location. It is a process because of the complex relationship shared among households, organizations, institutions, and government that is required even before a kilowatt hour of energy is produced.

A community renewable facility as a process must involve the community from the earliest stages. This includes education because many communities, regardless of income, are not prepared to be energy producers. A coordinated process brings together stakeholders to envision what is possible and map paths to success.

[6] Morris, David. Personal interview, 12 December 2009.

What are some of the possibilities? A community-scale facility might be a network of rooftop solar panels on homes, schools, and other community institutions generating electricity for members and selling the excess to the utility company. It could be a partnership between communities able to assemble land for a wind farm and those better positioned to contribute other assets, such as money and engineering expertise.

Whatever the form, communities of color have a strategic opportunity to embrace the renewable energy revolution. With bold ideas and supportive policies, communities of color can build capacity to produce local renewable power and contribute to a more democratic energy economy. These investments offer the opportunity to build wealth in their communities and help America transition away from non-renewable and expensive fossil fuel.

This white paper provides an overview of the conditions communities of color face as the energy market transforms and new opportunities emerge. It offers an introduction to small-scale production and a distributed-generation framework which can support equitable participation in renewable energy generation. It includes case studies of community renewable energy projects. And it concludes with recommendations for an explicit community renewable energy policy that supports communities of color as producers in America's energy future.

COMMUNITIES OF COLOR AND ENERGY

If the 34 million American households of color resided in a single state, their household electricity demand would exceed that of all the residential, commercial, and industrial users in California, the state with the highest electricity demand in the country. Households of color demanded as much as 385 billion kilowatt hours of electricity in 2009. Based on the most recent retail price data available, this translates to $41 billion in electricity buying power by households of color. This buying power should climb for the foreseeable future. The number of households of color in the United States is projected to increase to 56 million by 2030 and reach an estimated 80 million by 2050.[7] This simple analysis illustrates the broad and growing significance of communities of color in domestic energy policy and markets. Yet scholarship, policy development, and market innovation have not explored community renewable generation or participation by communities of color as part of our energy future.

Trend analysis shows all households are spending more on electricity. The chart on the next page shows that households in communities of color are devoting a greater share of the utility bill[8] to electricity. Households may experience price shocks due to changes they do not control, such as how their electricity is produced (coal versus natural gas) and the volatility of market prices.

Households of color spend at least 30% more for energy than white households do.[9] Additional analysis reveals that African Americans spent $1,439 annually ($120 per month) on their electric bills, and that electricity accounted for nearly 40% of the total utility bill in 2008. This was equivalent to the highest dollar amount and share in a decade. Hispanic or Latino consumers experience the second highest cost burden. They spent $1,305 ($109 per month), and electricity accounted for nearly 37% of the total utility bill. Asian consumers spent $1,229 ($97 per month), and electricity accounted for 34% of the total utility bill, up four percentage points from 2003, the first year data became available.

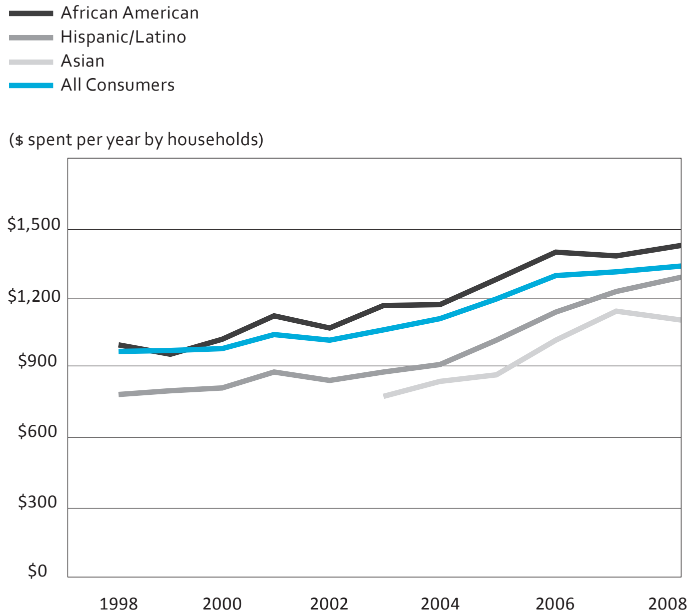
[7] U.S. Census Bureau, Population Division; Projections of the Non-Hispanic White Alone Population by Age and Sex for the United States: 2010 to 2050 (NP2008-T14) and Projections of the Population by Age and Sex for the United States: 2010 to 2050 (NP2008-T12). Weighted average household size for non-white households calculated from Current Population Survey, 2009 Annual Social and Economic Supplement.

[8] Utilities, fuels, and public services category of the Consumer Expenditure survey may include expenses incurred for natural gas, electricity, fuel oil and other fuels, telephone services, water, and other public services.

[9] American Coalition for Clean Coal Electricity study found that households earning less than $50,000 (51% of all households) spend 24% of average after-tax income on energy. Households earning between $10,000 and $30,000 could spend as much as 26% of average after-tax income on energy. For African American families average after-tax income in 2008 was $35,949; for Latinos, $38,252; and for white households, $54,125. The average spending on energy was $6,200 in 2008.

Estimated Electricity Expense by Race/Ethnicity

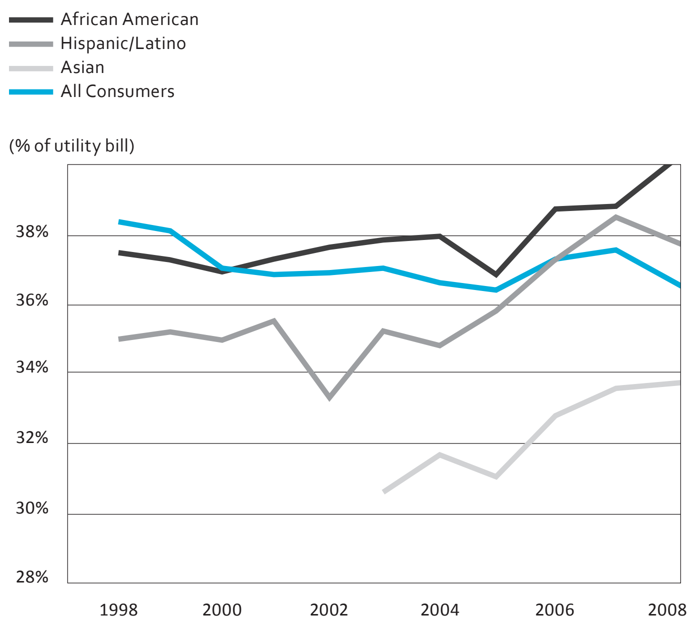
Source: Bureau of Labor Statistics, Consumer Expenditure Survey



Occupying older, less energy efficient homes and using older, less energy efficient appliances contributes to households of color spending a greater share of more limited incomes on energy. In addition, while bearing the heaviest burden of energy costs, communities of color have the least access to tools for energy conservation. For example, the lack of broadband access in communities of color immediately eliminates access to tools such as smart meters, further reducing the ability to control energy prices.

Electricity Expense as Percent of Utility Bill

Source: Author estimates; Bureau of Labor Statistics, Consumer Expenditure Survey



Households should not have to choose whether to pay rent, plug in the refrigerator, or see the doctor. Households of color, who more often face stark economic choices, need dynamic solutions that reduce the cost of residential electricity and leverage the potential of community-scale power generation as a pathway out of chronic economic stagnation, environmental degradation, and social isolation.

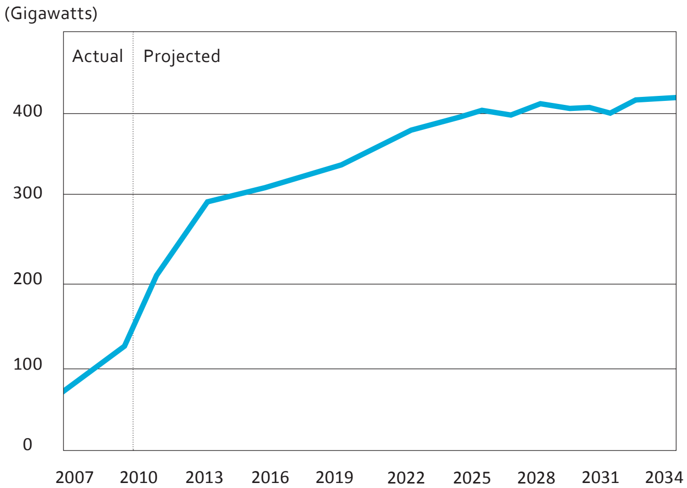
RENEWABLES

Supply forecasts for electricity generation suggest a new national energy trajectory, with steady increases in renewable generation.[10]

Projected Renewable Capacity Growth

(excludes conventional hydropower)

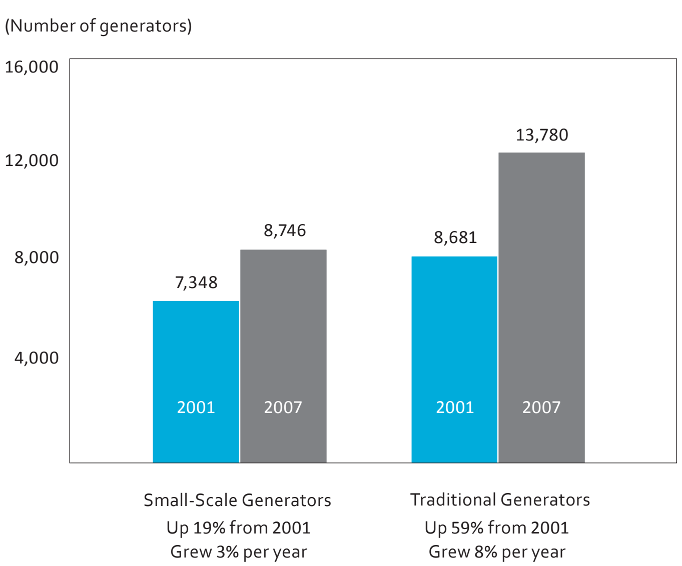
Source: Annual Energy Outlook 2010 Energy Information Administration



This year, U.S. renewable energy capacity is expected to reach 156 gigawatts of electricity (not including hydro-power). According to the Energy Information Administration, renewable electricity generation will account for more than 8% of the U.S. total supply of electricity over the next 20 years, up from 2.5% in 2007. The cost to generate clean electricity favors renewable generation. When factoring in all the costs to acquire and operate a facility, several renewable sources cost near or below the cost of burning fossil fuels for electricity alone. The renewable energy market is attracting new entrants at a brisk pace. This includes utilities and non-utility generators of all sizes which provide power to the current grid system.[11]

Comparing Electricity Generator Growth by Type

Source: Form 860/1, Energy Information Administration



[10] Data released by the Energy Information Administration (AEO2010 preliminary release) indicates that renewable energy will represent an estimated 22% of total energy consumed in the United States by 2035. This is up from 2010 levels of 8%.

[11] Our grid "system" is currently divided among more than 300 transmission owners and more than 100 balancing authorities. The grid includes some 164,000 miles of high-voltage transmission lines.

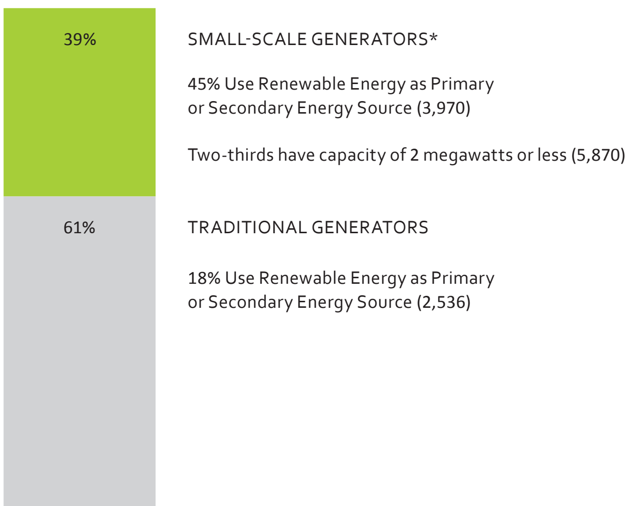
SMALL-SCALE GENERATORS

This white paper is especially interested in the state of small-scale renewable generators in electricity markets. Community-scale generation is small-scale and it is especially important to understand this category from a market, technology, and policy perspective.

Our analysis finds that small scale generators more readily offer clean power to consumers than traditional generators. 45% (3,970) of all small small scale generators use renewable energy as a primary or a secondary source. In contrast, only 18% (2,536) of traditional generators can make such a claim.

Electricity Generators 2007 Snapshot

Source: Form 860/1, Energy Information Administration



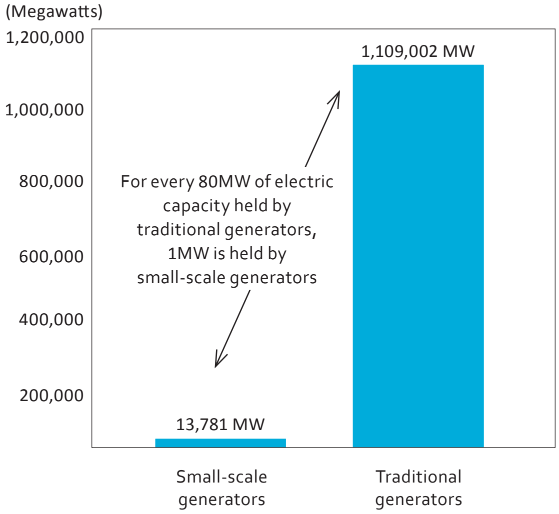
* Small-Scale Generators are five megawatts or less in nameplate capacity. (Nameplate capacity is the maximum rated output of a generator under specific conditions designated by the manufacturer. Generator nameplate capacity is usually indicated in units of kilovolt-amperes (kVA) and in kilowatts (kW) on a nameplate physically attached to the generator.)

Small-scale generators are numerous, but their generation capacity is disproportionately low relative to their grid access. Nearly 40% of all generators have capacity of five megawatts or less, and two out of three of these are really small—with capacities not exceeding two megawatts. Altogether, small-scale generators have the capacity to produce a mere 13 gigawatts of electricity compared to 1,109 GW by traditional generators. Still, at capacities of this size, community-based facilities could become reliable renewable energy producers, particularly to the residential sector. And small scale generators, as a group, could play a significant role in increased renewable energy consumption.

What enables community renewable generation, particularly in communities of color? We examine consumption patterns, the cost of electricity, and who is paying for it. And we explain the enormous potential for savings, social equity, and environmental quality made possible by a dstributed-generation approach.

Nameplate Capacity (2007)

Source: Form 860/1, Energy Information Administration

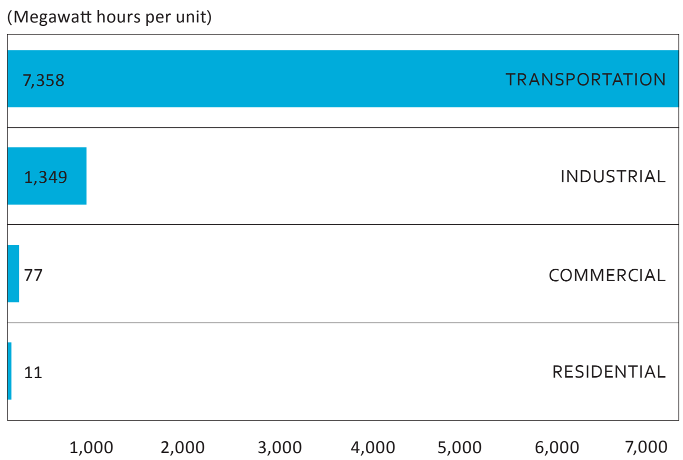


* Small-scale generators are five megawatts or less in nameplate capacity. (Nameplate capacity is the maximum-rated output of a generator under specific conditions designated by the manufacturer. Generator nameplate capacity is usually indicated in units of kilovolt-amperes (kVA) and in kilowatts (kW) on a nameplate physically attached to the generator.)

CONSUMPTION & PRICING

Electricity Consumption by Sector 2003–2007

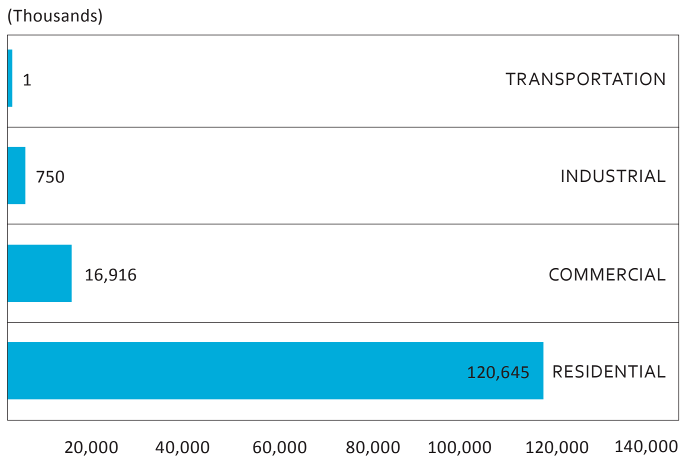
Source: Form 860/1, Energy Information Administration



The five-year average of energy consumption by customer group shows that households, on a per unit basis, use the least power. U.S. households typically consume 11,000 kilowatt hours per household and commercial consumers on average used 77 megawatts. Industrial consumers on average used 1,349 megawatts of power, and consumers in the transportation sector used 7,358 megawatts.

Annual Electricity Purchasers by Sector 2003–2007 (avg)

Source: Form 860/1, Energy Information Administration

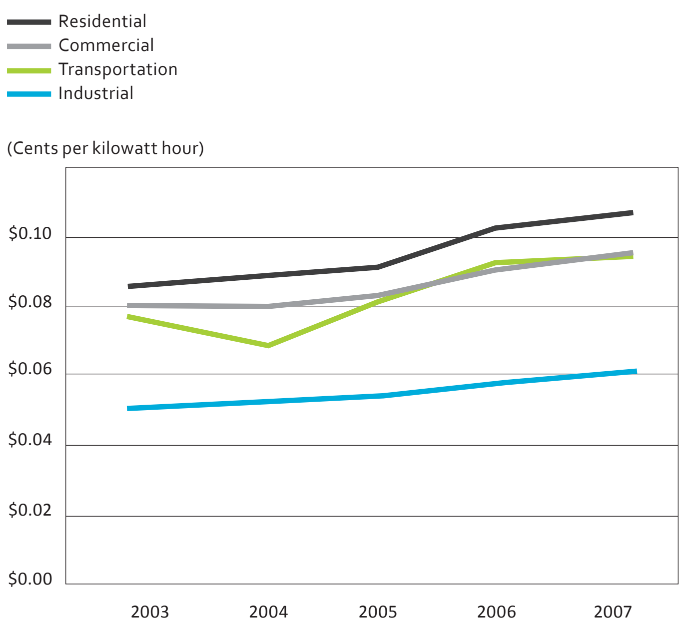


Households comprise the largest number of consumers of electricity. Recent statistics reveal that more than 120 million customers rely on the grid to power their homes. The commercial sector represents almost 17 million customers, followed by the industrial and transportation sectors; 750,000 customers and about 1,000 customers, respectively.

The residential sector is the largest block of electricity consumers (36%) and consumes the least energy on a per megawatt basis. What does this translate to in terms of the retail price of electricity?

Retail Electricity Price by Sector 2003–2007

Source: Form 860/1, Energy Information Administration

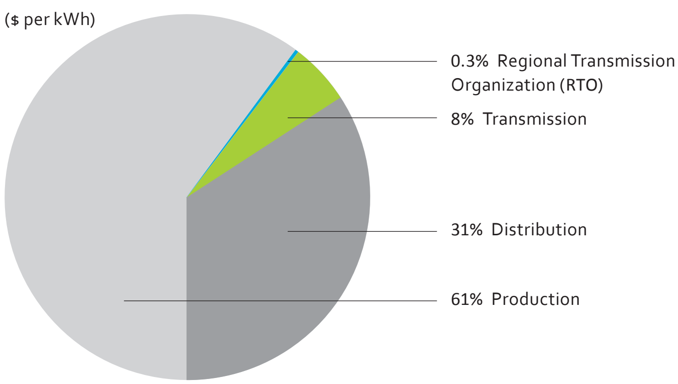


Households pay more.[12] The industrial sector gets lower prices by using substations that accept cheaper high-voltage power from power producers. Households, not equipped to take high-voltage, require more expensive, lower-voltage power. As a result, households pay a premium over both the commercial and industrial sectors per kilowatt hour. But it doesn't have to be that way. Households generating their own power, or who are connected to a community-owned operation, will claim the profits that would otherwise go to big utility companies. A conventional co-op electricity producer realized about 8.8% in profit in 2007. To get a sense of the potential, imagine all households of color connected to community-owned electricity producers. The profits would reach about $3.6 billion, which could be used to reduce utility bills or be invested in underfunded infrastructure, support for entrepreneurs, and necessary social programs.

Several factors influence price that do not vary with the amount of energy consumed. Electricity prices are driven by structural forces, such as the market and regulatory environment.

Nationwide Average Electric Bill By Component

Source: FERC Staff Report on Cost Ranges for the Development and Operation of a Day One Regional Transmission Organization Docket No. PL04-16-000 page 25 Figure 5 Average Retail Bill Impact: Nationwide (% of Total $/kWh) October 2004



The figure illustrates how the amount everyday households spend on electricity is a result of how we generate electricity. This includes, among other factors, the type of fuel. All this can be changed through policy and entrepreneurship, providing economic and environmental benefits. Coupling a new model of generating electricity and greater energy efficiency only amplifies the aforementioned economic and environmental benefits.

Today, the availability of green energy far outpaces its accessibility, according to industry sources. Ibis World, a leading market research firm, estimates that half of all electricity customers (50%) now have the option to purchase renewable energy.[13] But only one-half of one percent (0.5%) of households consume renewable energy.[14] The report speculates that cost, lack of education, and too few incentives may explain why more households do not adopt renewable energy. If these reasons are accurate, it is reasonable to assume that of the half-percent of consumers adopting renewables, communities of color make up a relatively small proportion.

[12] See Bureau of Labor Statistics for a detailed discussion of how Consumer Expenditure Survey data is used to estimate electricity expenditures by the household, commercial, and industrial sectors.

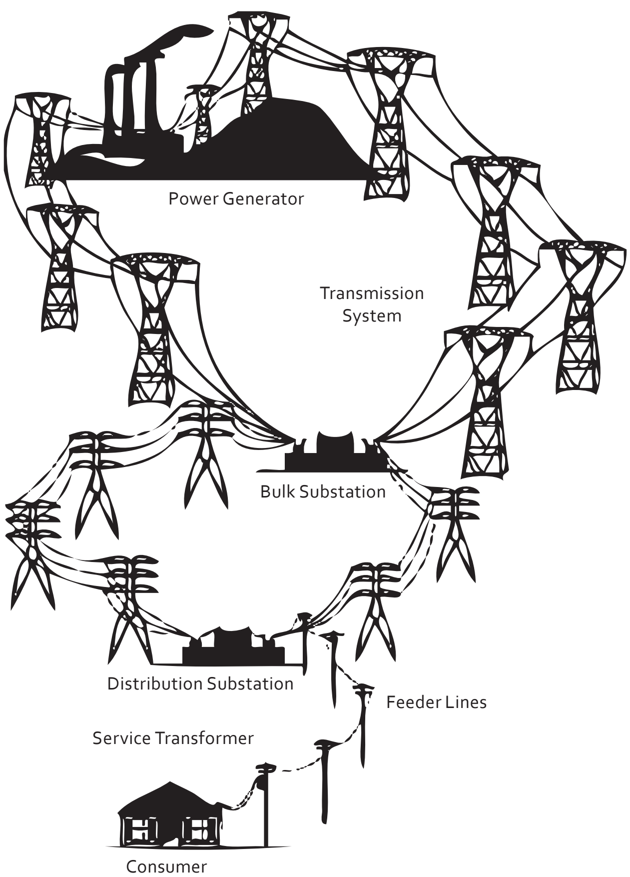
[13] Households can purchase renewable energy the way they purchase non-renewable electricity (from a utility, for example), or as an offset to their current energy demand using renewable energy certificates, or REC.

[14] Renewable generation industry report.

D I S T R I B U T E D G E N E R A T I O N

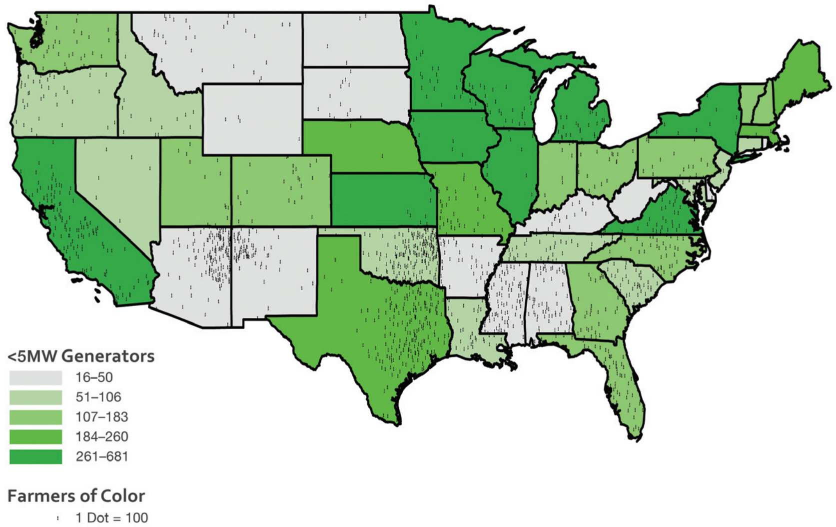
Today's energy supply flows in one direction, from central power stations to distribution facilities and then to consumers.

Electric Power Generation Today

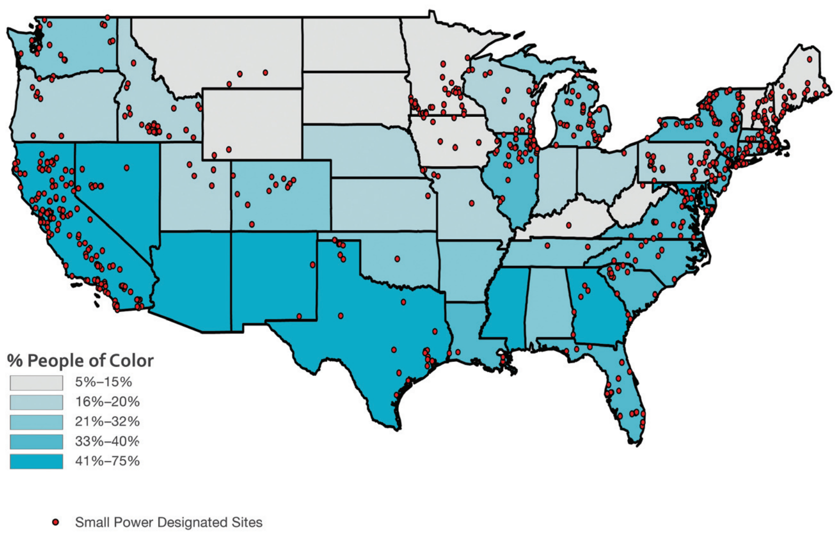


While a substantial proportion of electricity generators are small power generators, most of our electricity comes from large and highly centralized energy generation facilities running primarily on fossil fuels.

Renewable energy capacity and communities of color
Source: EPA, USDA Farm Census ('07), FERC, EIA, ESRI, Inc.



Renewable energy capacity and communities of color
Source: EPA, USDA Farm Census ('07), FERC, EIA, ESRI, Inc.



Changes in technology, consumer preferences, and recent regulation are changing energy distribution. Distributed generation is a dynamic alternative for energy generation. Instead of one large centralized system for the production and transmission of electricity, energy generation occurs near the point of use, and excess capacity (unused electricity) can be sold back to the grid. Small operations, even individual households, can generate and sell energy. This approach to harnessing and distributing energy from many small energy sources is fueling new market opportunities and enhanced competitiveness.[15]

[15] European Union, Energy Research.

Under a framework of distributed generation, locally owned and controlled renewable energy production would be positioned to take advantage of the dynamic changes in the energy sector. This type of enterprise allows communities to meet local demand, sell excess power back to the grid, support a supply chain of clean energy, develop sustaining infrastructure, and create investment opportunities bringing long-term economic viability. The energy interdependence associated with distributed generation makes possible a host of potential benefits for whole regions. For example, a shorter travel distance from supplier to consumer means greater efficiency and savings. The way we generate electricity accounts for as much as 61% of a household's electricity bill. Shorter distances alone would produce an estimated 30% savings.[16]

Distributed generation requires fewer large centralized plants to provide energy and reduces the number of expensive high-voltage lines constructed. Fewer and shorter lines means less electricity lost in transmission and more land freed up for conservation and other uses.

The right technology is on the horizon or already available. According to recently published research, when accounting for the total cost of ownership and legislation penalizing excessive carbon emission, renewable sources are often more cost effective to own and control than their fossil fuel burning counterparts.

Distributed generation provides new roles for communities to preserve and increase social equity, environmental quality, energy independence, and wealth.

Distributed generation is a compelling model for America's energy future. Communities of color that take advantage of distributed generation to transition from energy consumers to energy producers will transform their relationships with the larger regional economy, bringing structural changes, savings, wealth, resiliency, and greater political interdependence between communities of color and their neighbors.

While the potential is enormous for communities of color to benefit from directly producing renewable energy, many obstacles stand in the way. The technology to create electricity or transportation fuel exists. What is lacking are equitable policies, access to credit, and legal structures that support ownership models that empower communities, particularly communities of color, to participate in our collective energy future. To be effective, reforms and innovations must impact all stages of energy production.

Today the institutional hurdles are much greater than the technological hurdles for communities to generate and distribute energy. Community renewable policy solutions require support from all levels of government and recognition of the need for comprehensive solutions to achieve equitable outcomes. If we are serious about clean, reliable, and affordable energy we must think across the boundaries of affordable housing, access to high quality broadband, environmental protection, land use planning, securities, and taxation policy.

Solutions that address specific conditions are critical. We have identified four factors that limit the participation of communities of color in the generation of renewable energy: (1) ownership and control, (2) dearth of financial tools, (3) information and education, and (4) transmission and distribution. Each of these areas requires specific policies to allow communities in general, and communities of color in particular, meaningful access to energy saving and wealth building opportunities.

OWNERSHIP & CONTROL

As David Morris, the Vice President of the Institute for Local Self-Reliance, says, "The principal obstacles to a community-based system are a lack of capital, management know-how, and the cost of aggregating investors and owners."[17] In addition, land use restrictions, zoning, and regulations could play a direct role in enabling or inhibiting community-scale energy generation.

Whatever form a community facility takes, it will require a certain amount of property where solar, wind, and other renewable technologies can be installed. In this respect, communities of color often are at a disadvantage because of low land and homeownership rates.

Individuals and organizations need ways to invest in community renewable energy that do not require home ownership and that allow both passive investment, like buying shares, and active investment, like generating power on your roof or being an owner-employee. For those with limited cash but the capacity to contribute sweat equity (contributions of time and effort in exchange for ownership), few alternatives allow them to participate in equity offerings. Communities of color need ownership models that are not restricted to those with up-front capital.

No single existing legal structure provides the perfect match that balances community control and ownership with the need for funding. For instance, not-for-profits and cooperatives have limited ability to access capital from the federal government, institutional investors, foundations, individuals, and alternative investors (e.g., venture capital, hedge funds). Communities need improvements to, or creation of, ownership structures that allow greater ways to add equity from a diversity of investors with different risk preferences. These legal structures should put as much community and external capital to work as possible, while preserving community control and stakeholder accountability.

[17] Morris, David. Personal interview, 12 December 2009.

SHALLOW DEPTH OF FINANCIAL TOOLS

The web of renewable-energy tax incentives, diverse technologies, and numerous service suppliers is staggering—and growing. Identifying an optimal mix of subsidies and suppliers to meet the needs of a variety of investors is cumbersome. For communities, the lack of standardized purchasing power agreements and business development talent limits their ability to compete. What's more, public incentives are not to scale for community-level generation projects and are often altogether absent at the state and local levels. The flow of capital tends to serve centralized, institutional-scale renewable energy projects.

No matter which source of renewable energy we examine, initial capital expenditures for renewable energy technology and distribution tend to be higher than for conventional sources. This high up-front cost is a hurdle to Energy Democracy even for well-funded communities. Although there are immediate environmental and economic benefits to harnessing renewable energy at the community level, the return on investment is often long and materials and installation expenses high. For instance, to install solar photovoltaic technology, the average installed cost for a residential system is $7.6 per watt[18] or an average installed cost of $11,400 for a 1.5 kW system. Some renewable projects estimate that it could take 17 to 25 years to recoup the initial investment.[19]

The lack of tools or coordination to help communities harness their renewable energy generating capacity has race and class implications. For instance, our primary approach to subsidizing households for using renewable generation or energy efficiency is tax credits. According to IRS data, these credits seem to be missing the majority of low- and moderate-income households. Of the four million 2007 federal tax returns that claimed a residential energy credit, 3.1 million (78%) were from households making at least $75,000.[20] Low-wealth and low-income households and not-for-profits need additional pathways to renewable generation that directly offset the costs of acquiring land, technology, and other capital assets that tax credits do not cover. Policymakers must look beyond rooftop-to-rooftop approaches and create the financial tools necessary to develop renewable energy at the community scale.

INFORMATION ACCESS & EDUCATION

Before communities can exercise ownership and control of energy production, they need access to information and education. Penn Loh, the former Executive Director of Alternatives for Community and Environment, suggests, "We understand the value in controlling land and political power, but don't have a good understanding of what it means to control energy supply." Communities of color, like most communities, need to learn the relationship shared by community political power and renewable energy in economic and environmental terms.

Communities need accessible information and education about the environment, technologies, practices, and policies that will help them develop renewable energy. Fortunately, federal, state, local, and private entities are making more information available about renewable energy, and it's increasing daily. But communities still lack tools to interpret information from multiple platforms to answer critical questions like "How much renewable capacity could be generated from X number of vacant lots and X number of roofs per year in my neighborhood?" This problem is systemic, and it limits broader participation. For example, information on available technologies is not always

[18] Lawrence Berkeley National Laboratory; "Tracking the Sun: The Installed Cost of Photovoltaics in the U.S. from 1998–2007," February 2009.

[19] Simon, Stephanie. "Producers—Seeds for Change: Rural electric co-ops have lagged behind other utilities in shifting to alternative energy; That's starting to change." *Wall Street Journal*, September 8, 2009.

[20] Internal Revenue Service, SOI.

reliable or complete. A recent study by Deloitte & Touche Tomahatsu finds "existing data on geothermal resources in the U.S. and specifically across western states" to be "disjointed, haphazard or unavailable."[21]

Communities need Internet-based tools with local applicability to help answer questions like the one above. These tools can educate communities about energy consumption, which can stimulate greater energy efficiency. How much money is exported out of a community because of this consumption, and what return would the community get on spending if it turned to renewable alternatives? John Sorenson, founder of Neighborhood Natural Energy in Portland, OR, leads an effort to create community-owned utilities to supply heat and cooling neighborhood by neighborhood. Sorenson says that community knowledge-building is critical or else "[community] involvement turns out to be a double-edged sword in some people's minds. Some folks would just rather pay someone else to solve their perceived problems. Because of that, education becomes an important component."[22] Constituencies in communities of color cannot afford to leave it up to someone else or go it alone. The hurdles are too high to scale alone and the benefits of renewable energy actually *increase* with greater participation.

Communities need to know the crossover benefits of community energy efficiency and generation activities to address some of the most intractable issues, such as poverty and job creation. For instance, community renewable energy revenue can be leveraged to build and own community broadband infrastructure. The energy generated can power the broadband infrastructure at a reduced cost, in an environmentally friendly way, and increase access to broadband while providing job training opportunities.

TRANSMISSION & DISTRIBUTION

The grid system does not favor small-scale electricity production. Land use issues, questions around grid parity, and the enormous expense to connect to the current grid give pause to all but well-funded commercial or industrial interests. For example, getting power to the grid can cost as much as $1.5 million prior to transmitting a single watt of electricity for sale on today's infrastructure.[23] According to the Department of Energy (DOE), the average cost of building new power lines to reach the transmission grid could be $100,000 or more per mile, depending on factors such as the size of the project, terrain, and the transmission line rating. While this cost may be significantly lower in dollar terms for small-scale power generators, the barriers are still high. Communities need access to the current grid and to our future grid to be much more cost efficient and equitable. Rule-making and legislative entities concerned with energy should distinguish community-scale production from large-scale centralized generation and facilitate low-cost connectivity that results in the high levels of reliability we have come to expect.

[21] Deloitte Development LLC. Geothermal Risk Mitigation Strategies Report, September 2008.

[22] Sorenson, John. Personal Interview, 1 December 2009.

[23] Author estimates average cost based on Form 861 data from the Energy Information Administration. Cost for grid enhancements needed to accommodate power deliveries ($127,665) and cost incurred for the direct physical interconnection ($1,317,619).

VILLAGE ENERGY (GRAMEEN SHAKTI)

SCALABLE, GRIDLESS SOLAR ENERGY INCLUSION (BANGLADESH)

Grameen Shakti (Village Energy), a sister company of the Grameen Bank, has installed nearly 200,000 solar home systems across Bangladesh and has plans to install one million more by 2015.[24] Its approach is to build entrepreneurship in low skill/low income communities while broadening adoption of renewable energy. Their work has earned the organization the Zayed Future Energy Prize of $1.5 million.

Grameen Shakti uses solar energy to power everything from mobile phones to sewing machines through a combination of microcredit funding and workforce training. It has flexible payment options, which increases the breadth of household participation and opportunities for female entrepreneurs to learn a green trade while earning higher wages.[25]

Grameen Shakti provided training to 2,500 women technicians (with a goal of training 100,000), who market and install the solar panels and provide free monthly checkups when they collect installment payments. As part of the service, Grameen Shakti offers a post-warranty annual maintenance service.

Beyond solar panels, Grameen Shakti's other program in operation promotes cleaner, renewable, and more efficient energy use. It has installed around 6,000 bio-gas plants, which convert cow and chicken dung into gas for cooking, lighting, and fertilizer. It plans to expand the program in a financially sustainable manner through a similar credit mechanism as that financing the solar panels. The bio-gas plants are often integrated with poultry farms, which receive the dual benefit of disposing of waste byproducts and meeting local energy demand. Other animal farms are supplementing income by selling their waste.

UNITED POWER

THE FIRST SOLAR FARM COOPERATIVE (BRIGHTON, COLORADO)

Like most electric cooperatives, United Power was not under any government pressure to increase renewable energy generation. In fact, cooperatives have no direct access to federal tax credits to be involved in green energy. Yet this has not deterred co-ops nationwide from boosting their renewable capacity by 65% last year, according to the National Rural Electric Cooperative Association.[26]

Taking an innovative approach, United Power recently established the first solar farm cooperative, which is open to "renters, office-park tenants, homeowners with heavily shaded roofs—even customers outside the United Power service area who might want to invest in green energy and donate the power their panels generate to a local charity."[27]

For a price of $1,050 per solar panel, an investor gets a 25-year lease on a photovoltaic panel set up on United Power's land. The co-op takes care of installation, insurance, and maintenance. Investors can visit their panels anytime and track their energy output online. Each month, they get credit on their bill for that amount. Investors keep their panels, and credits, even if they move. (If they move out of United Power's service area, they can donate the credits to a local charity and earn a tax deduction.) A single panel generates about $3 to $4 a month of electricity; depending on rate increases, it might take 17 to 25 years to recoup the investment, but investors have the satisfaction of contributing to improving the environment.[28]

[24] Financial Times Climate Challenge Innovation examples.

[25] Payment options are: (1) customer pays 15% of the total price down payment, and the remaining 85% is paid within 36 months with a 6% flat rate service charge (2) Customer pays 25% down payment, and the remaining 75% is paid within 24 months with a 4% flat rate service charge, (3) Customer pays 10% down payment, and the remaining 90% is paid with 42 weekly checks, with no service charge.

[26] Excluding hydropower.

[27] Simon, Stephanie. "Producers—Seeds for Change: Rural electric co-ops have lagged behind other utilities in shifting to alternative energy", *Wall Street Journal*, September 8 2009.

[28] Ibid.

ONTARIO GREEN ENERGY COMMUNITIES
(ONTARIO, CANADA)

"Green power entrepreneurialism"has arrived in Ontario.[29] The province recently adopted the Green Power Act with the aim of reducing the hurdles for "communities in Ontario, including farmers, co-ops and non-profit organizations to bring green energy projects to life."[30] The Act created a platform for community-scale power generation through broad and inclusive policies supported by technology to "enable us all to be energy conservers and generators and not just consumers."[31] The Act empowers municipalities, communities, and households in the province to meet those objectives through several new programs aimed at early stage and ongoing support. The financial centerpiece of these programs is a Feed-in-Tariff (FiT). To stimulate renewable energy generation and consumption, FiT requires utilities to purchase electricity from renewable electricity system owners at long-term, fixed rates established by utilities and/or regulatory commissions.[32] FiTs pay producers higher than market rates to put their renewable energy on the grid, based on factors such as the technology used or how much of the project is locally owned. This could be as much as eighty cents per kilowatt hour, or six times what a household would pay to buy the same amount of electricity in the United States.[33]

The FiT alone is not what makes the Act significant for communities, because generating renewable energy and selling electricity on the grid is an extensive and expensive proposition. The Act goes further by addressing the needs of the chronically underserved. The Act provides funding for community facility creation, particularly for indigenous people of the First Nations, and the Community Energy Partnerships Program, which provides early stage financial assistance to partnerships of residents, charities, non-profits, and co-operatives, as well as members of the First Nations.

Community-based projects are said to carry significant initial risk and often have limited resources. The Community Energy Partnerships Program increases the likelihood of success by absorbing critical up-front cost through a graduated incentive structure based on the percentage of local ownership.[34] For example, a project with 50% or more community ownership would receive an add-on of up to a full one-cent on top of FiT tariff rates. Eligible "soft" costs under the program include site control and site survey studies, resource assessment studies, and environmental and engineering studies.

The Municipal Renewable Energy Program of the Act provides municipalities with the financial resources to build and preserve vital public infrastructure, traffic management, and emergency management costs[35] to bring renewable energy projects to life that cannot be passed along to project developers. The legislation authorizes municipalities to bring renewable energy to the grid, up to 10MW, without having to create another legal entity.

[29] Story, Jane. "Green Energy Act empowers communities," Entrepreneur.com, June 2009.

[30] Ontario Ministry of Energy and Infrastructure.

[31] Story, Jane. "Green Energy Act Empowers Communities," Entrepreneur.com, June 2009.

[32] Kubert, Charles and Sinclair, Mark. Distributed Renewable Energy Finance and Policy Toolkit. Clean Energy States Toolkit. December 2009.

[33] Hamilton, Tyler. "Green Power to the People." Green Energy Act Alliance, 2009.

[34] Ontario Ministry of Energy and Infrastructure.

[35] Ibid.

EVERGREEN INITIATIVE

OWNING OUR JOBS (CLEVELAND, OHIO)

A recent report asks, "If green jobs are good, isn't a green job you own even better?"[36] In Cleveland, Ohio, a new green employment and ownership model is answering this question in the affirmative. Starting in 2007, the Evergreen Initiative has launched a LEED-certified commercial-scale laundry that is employee-owned and promises to expand the benefits of the green economy to communities of color.

The Glennville neighborhood is an example of the effects of chronic disconnection from the economic functions of the region: a poverty rate exceeding 30%, thousands of homes stripped and abandoned, dwindling population base, and rising foreclosures—before the recession. In order for the Initiative to be successful it had to leverage its major assets: people and proximity to the local high-growth economic cluster.

Glennville is located close to University Circle, a cluster of institutions generating an estimated $3 billion of annual demand for its goods and services. These institutions are long-lived and diverse, ranging from government to healthcare to philanthropy. Leaders of University Circle institutions who wanted to impact civic life in Cleveland formed the Greater University Circle initiative (GUC) and agreed to a three-to-five-year window to stimulate $1.5 billion in institutional developments.[37]

One investment was in the Evergreen Initiative. The partners brought in financial resources and relationships and committed to Evergreen's vision of building the capacity of residents through workforce training and employee ownership. Together, the GUC and over 290 additional stakeholders were responsible for the launch of the LEED-certified Evergreen Cooperative Laundry, located on East 105th Street, north of St. Clair Avenue, in 2009. The Cleveland Foundation invested $3 million in a revolving loan fund, and the City of Cleveland provided an additional $2 to $3 million of funding.

All equity in the cooperative is owned by the cooperative's fifty employees. Their equity contribution is built using a cumulative structure—as employees work, their share of the business grows. After the six month probation period, owner-employees earn $10.50 per hour, 50 cents of which is applied to the purchase of equity. After three years employees would earn $3,000 in equity; after seven years their equity stake expands to $65,000. Evergreen Laundry owners' wages are higher than local wages and include health care benefits.

The Evergreen Initiative is building new clusters of cooperatives based on this model. Ohio Cooperative Solar is positioned to apply this model to the installation of solar energy panels on the roofs of GUC partners and across the city. OCS will lease rooftops, install solar panel arrays, and sell the electricity back to owners of the rooftops. To expand this model even further, the Initiative has created a cooperative investment fund to invest in other cooperatives. The Evergreen Laundry has committed to return 10% of its pre-tax profits to the fund, providing additional return opportunities for its owners.

[36] Alperovitz, Gar; Howard, Ted; Dubb, Steve. "Cleveland's Worker-Owned Boom." *Yes*, June 5, 2009.

[37] The group is comprised of The Cleveland Clinic, The Veterans Affairs Medical Center, University Circle, Inc., Neighborhood Progress, Inc., the George Gund Foundation, The Kent H. Smith Charitable Trust, Charter One Bank, the Greater Regional Transit Authority, and the City of Cleveland.

ENERGY IMPROVEMENT DISTRICTS
(STAMFORD, CONNECTICUT)

As communities become increasingly responsible for shaping their futures, the responsibilities shared between municipal agencies and communities are going to change. Stamford's Energy Improvement Districts serve as both a model and an opportunity for communities to consider the direct relationship between land use and renewable energy, especially in urban areas. Similar energy district efforts have recently become law in Vermont, enabling the creation of Clean Energy Assessment Districts.[38] Admittedly, Stamford's EID ordinance grew out of a desire to be less exposed to grid failures that would disrupt the local banking economy, home to multinational firms such as UBS. However, the need to reduce costs, increase reliability, and provide capital to pay for the construction and development of small-scale, locally sited power grids is applicable to all communities.[39]

The Stamford ordinance follows a state law allowing municipalities to set up EIDs and giving them the authority to issue bonds to pay for the "establishment of an independent electrical grid with its own power plants."[40] The Stamford ordinance, in particular, provides "property owners the means to create alternative energy systems including distributive generation, combined heat and power, and renewable energy systems and to do so in partnership with other properties...."[41]

Although the focus of the Stamford EIDs is on reliability, it provides a concrete basis for a framework that supports equity, broad and flexible participation, decision-making, accountability, and ownership including communities of color.

A community EID could pay back municipal bonds (like the Stamford EID) through purchasing agreements with customers. A community EID provides the opportunity to revisit local planning activities using a sustainability frame. By taking a participatory approach to planning, EID legislation and zoning could lead to "energy plans" developed through a process to benefit the built and social environment, too. Such a participatory EID must consider:

- Clear articulation of how different groups can voluntarily opt in or out of an EID,
- Visibility and siting standards that limit the negative impact of future developments on existing generation capacity,
- Reducing the public health risk or environmental risk of land or buildings resulting from electricity generation or distribution.
- Incentives that make state or local dollars available for required pre-construction development expenses associated with community-scale generating facilities within an EID,
- Monitoring structures and reporting requirements that incorporate social equity benchmarks along with conventional efficiency and generation benchmarks,
- Legislation that establishes a minimum amount of incentives that must be distributed to under-resourced communities and a cap on the amount of resources flowing to existing higher-opportunity areas.

[38] Vermont Natural Resources Council.

[39] *Bond Buyer*, July 23, 2007.

[40] *New Haven Register*, January 4, 2008.

[41] City of Stamford, CT.

FOR THE FEDERAL GOVERNMENT

- Make community renewable energy policy a federal priority. Decision makers at all levels will respond to federal measures and incentives that signal the national importance of community renewable energy policy. These measures and incentives should be explicitly connected to national renewable energy goals. Agencies including the Federal Energy Regulatory Commission (FERC) and the Environmental Protection Agency (EPA) must direct public resources to appropriate projects which, in turn, will draw private investment.

- As suggested by the National Renewable Energy Laboratory (NREL), the Federal Energy Regulatory Commission (FERC) should conduct an administrative inquiry and rulemaking process (including fact-finding) to create clear guidelines for states to set prices for Feed-in-Tariffs. As part of this process, FERC should consider how to ensure equitable access to the grid for small-scale facilities. The current first-come-first-served policy stifles community participation by placing small-scale generators in direct competition with industrial-scale generators.

- Congress should amend the Public Utility Regulatory Policy Act (PURPA) and the Federal Power Act (FPA) as recommended by NREL in such a way that reduces the constraints imposed by current federal law[42] on the creation of Feed-in-Tariffs. This recommended legislative process should include provisions to monitor energy generation and consumption down to the neighborhood level.

- Municipal, state, and federal agencies such as the Environmental Protection Agency (EPA), Energy Information Administration (EIA), Federal Energy Regulatory Commission (FERC), Department of Housing and Urban Development (HUD), Department of Energy (DOE), Bureau of Land Management (BLM), and other related agencies and programs should coordinate data releases that can be integrated easily and used to evaluate renewable generation capacity by communities.

- Interagency partnerships must coordinate grants, loans, and loan guarantees to support technical and policy innovations that provide under-resourced communities with capacity to attract equitable and sustainable private sector renewable energy investment. These partnerships should use funds to bring community-scale technology to commercialization faster. They should result in policies that support institutionalizing sustainable energy planning at the neighborhood level.

- The National Telecommunications Information Administration (NTIA) and the Rural Utilities Service (RUS) should create a Capacity Building Fund to help under-resourced communities compete for federal broadband funding. This fund would help communities develop the fundraising, grant writing, financial management, legal, accounting, and other capacities necessary to access and leverage federal dollars.

- Congress and the Internal Revenue Service (IRS) should provide education and greater tax-status certainty for organizations seeking to invest mission and program related funds in community renewable generation projects.

[42] "Renewable Energy Prices in State-Level Feed-in-Tariffs: Federal Law Constraints and Possible Solutions." National Renewable Energy Laboratory. January 2010.

FOR STATE, LOCAL & REGIONAL GOVERNMENTS

- Develop zoning ordinances and legislation enabling the use of Energy Improvement Districts.

- Provide incentives to communities that utilize a participatory planning process for equitable and reliable community energy generation.

- Conduct studies to assess and plan for the cost of connecting community-scale power production to the grid system. Findings should be transparent, verifiable, and free to all.

- Facilitate state-level Feed-in-Tarriff (FiT) programs, with a clear pathway for community-scale renewable energy prrojects.

- Develop policies, similar to the Green Power Act in Ontario, that prioritize underserved communities and support the engagement of residents, non-profit organizations, and co-operatives in small-scale energy generation projects. These include offering graduated incentives, in addition to standard FiT rates, based on the percentage of local ownership, and providing capital to support early stage risks and "soft" costs such as site surveys, environmental and engineering studies, and resource assessment.

FOR COMMUNITY BUILDING ORGANIZATIONS & SOCIAL ENTREPRENEURS

- Support the development of legal structures that allow workers to own more as they work and allow multiple types of investors.

- Community-scale producers can participate in a FiT today, yet states have been sluggish to develop them. Advocacy is needed to engage FERC and state utility commissions in developing FiTs that facilitate small-scale energy generation.

The Center for Social Inclusion works to unite public policy research and grassroots advocacy to transform structural inequality and exclusion into fairness and inclusion for all. We work with community groups and national organizations to develop policy ideas, foster effective leadership, and develop communications tools for an opportunity-rich world in which we all will thrive.

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