

City Systems: Building Blocks for Achieving Sustainability and Creating Good Jobs

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The anatomy of a city is comprised of its systems – what keeps a city running, moving, and functioning, no matter what its size. Systems that move our trash, bring water to the tap, and keep our lights powered on are all engines for city life as well as economic growth. Yet, such systems, much like cities themselves, have reached a point of critical need. Paired with increasing strain on infrastructure resources and the need to make systems more sustainable is the harsh economic reality many states and cities are facing today. Despite some recent economic improvements, the Great Recession and its aftermath have taken a toll on localities, with budgets slashed and jobs for important services cut.

Yet, as the National League of Cities points out, today's fiscal constraints and local challenges also create room for innovation, and raise opportunities to do things differently.¹ This is particularly true as cities look for ways to recover and create jobs, green their communities, promote public health, and build the road for long-lasting sustainability. And there's no better place to start on this path than with a city's existing assets.

In this issue brief, we examine three different systems that underlie cities and keep them running: water, waste, and energy. Within each of these systems are opportunities for states and cities to modernize their local infrastructure, improve their communities, and ultimately create jobs. However, as we have argued in *Filling the Good Jobs Deficit: An Economic Recovery*

City Systems: Building Blocks for Achieving Sustainability and Creating Good Jobs

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Focusing on Fix-it-First

Agenda for Our States and Cities, it's not enough to settle for the creation of just *any* job; we must ensure that the jobs cities bring to communities and neighborhoods through fixing and greening their systems provide good-paying, family-supporting work.² By leveraging existing funds and resources, and creating sustainable pathways for private investment and worker partnerships, cities can create such opportunities for residents and secure the economic well-being of local communities.

In the wake of a prolonged period of depressing economic news, it's hopeful that cities are already engaged in this work. Despite budget cuts and constrained resources, local policymakers are developing innovative financing mechanisms to make improvements to stormwater management, forging strategies to promote recycling and related job training, and creating worker-utility partnerships to meet efficiency goals and create significant savings for localities. While the need for federal investment in infrastructure is critical, localities have begun to explore job creation measures that build upon resources already in place, creating models for other cities to replicate while promoting recovery and generating good-quality jobs.

Tapping into Water

The story of our nation's crumbling infrastructure is all too familiar to many Americans; we experience stifling traffic delays and read news stories about deteriorating bridges and roadways almost every day. Yet, infrastructure issues also exist in our systems that remain largely underground or hidden behind building walls – ones that are noticed more acutely when something goes wrong. Water is one such infrastructure system, and one that is failing to make the cut. In fact, the American Society for Civil Engineers gave US infrastructure related to drinking water and wastewater a D- in its 2009 *Report Card for America's Infrastructure* – the lowest grade received among over a dozen infrastructure categories.³ With much of today's water infrastructure built upon systems originating decades ago, communities across the country are relying upon infrastructure that has literally aged past its useful life.⁴

The American Society of Civil Engineers estimates that the current underinvestment in water infrastructure can wind up costing the US economy 700,000 jobs by 2020.

And, inaction is going to cost us, not only in terms of public health and environmental sustainability, but also in terms of the economy and jobs. Funding for water infrastructure has not kept up with population growth and demand: the American Society of Civil Engineers reports that maintaining water delivery and treatment infrastructure is significantly underfunded, and if kept on par with current spending trends, will experience an \$84.4 billion capital deficit by 2020. The resulting impact on water systems is projected to cost homes and businesses \$206 billion between 2011 and 2020, ultimately coming at the price of 700,000 US jobs by the end of this period.⁵

Proactive investments in water infrastructure will clearly pay off; such investments create more jobs per dollar than comparable investment in other types of infrastructure, including transportation or energy, and can create employment opportunities in small communities.⁶ Direct job creation will put workers in occupations such as cement masons, pipelayers, plumbers, welders, machinists, and engineers – trades that have been hard hit by the recession – back on the job. Since many of these occupations experience higher-than-average unionization rates, there is also opportunity for water infrastructure investment to build pathways to pre-apprenticeship and apprenticeship programs, particularly for groups that traditionally have lower employment rates in the trades, such as workers of color and women.⁷

Water infrastructure presents potential for local solutions and local jobs

US water systems are highly fragmented and decentralized, and profoundly local in nature. There are nearly 170,000 public drinking water systems nationwide, nearly 54,000 of which are community systems. Many of these systems are small; more than half of all public systems provide water for fewer than 500 people. The public wastewater system is much smaller in scale than the drinking water system, with nearly 15,000 treatment facilities and 20,000 pipe systems, and 98 percent of these systems are municipally-owned.⁸ As such, there is no single, one-size-fits-all solution to water infrastructure needs; rather, local factors will influence the particular reforms and policies needed to upgrade and maintain infrastructure and service,⁹ thus providing unique opportunities to tailor responses to infrastructure problems and leverage solutions for community-based jobs.

Green Infrastructure

One of the most innovative strategies in water systems is the use of green infrastructure, which mimics or restores processes found in nature. In regards to water, and in particular stormwater management, green infrastructure can include measures such as urban trees, green roofs, rain gardens (small areas of vegetation that capture stormwater), or permeable pavements. This type of water infrastructure development is not only more cost-effective than traditional gray stormwater infrastructure,¹⁰ but also results in improved livability for communities while mitigating the problems associated with traditional stormwater management, such as pollutants, flooding, and sewer system overflows.¹¹

And, as cities across the country are figuring out, green infrastructure can be financed in ways that will actually save ratepayers money in the long run. Philadelphia, for example, has recently launched an innovative stormwater management program known as *Green Cities, Clean Waters*. Like many cities, Philadelphia struggled to meet stormwater standards under the Clean Water Act with an aging infrastructure, and faced potential fines for recurring combined sewer outflows that spewed sewage, debris, and runoff into local waterways.¹²

According to NRDC, nearly 800 communities have Clean Water Act obligations, like those that spurred Green Cities, Clean Waters in Philadelphia, to better manage sewage overflows.

Addressing the problem through replacing and installing new gray infrastructure – such as new pipe systems and water storage tanks – would have cost the city roughly \$17 billion and placed a significant burden on ratepayers, whose water bills would have risen to a level deemed unacceptable in terms of affordability by the Environmental Protection Agency.¹⁴

Instead, *Green Cities, Clean Waters* will rely on low-impact development and green infrastructure strategies to address the city’s stormwater management problem. Roughly a third of the city will be redesigned to imitate the hydrologic characteristics of undeveloped land, replacing impervious surfaces with more efficient systems that both capture and reduce runoff. This approach is expected to solve 85 percent of the city’s stormwater infrastructure problem, and come at much more affordable cost of \$2 billion over the next 25 years.¹⁵ Notably, Philadelphia is pioneering the use of a

parcel-based billing system for this green infrastructure work, effectively bringing in private capital and building the cost into development. In essence, this strategy ensures that developers must manage a given amount of runoff on their properties by developing or rehabilitating properties to meet more stringent guidelines, shifting costs to developers and away from ratepayers. Not only does this help residents save money, it also comes with a high pay-back: the city estimates that every dollar invested will result in more than two dollars of benefits, resulting in the reduction of sewer outflows by eight billion gallons per year and employment of 250 people annually in green jobs.¹⁶

Case Study: Innovative Green Infrastructure Financing¹³

Parcel-Based Billing

Numerous cities have used parcel-based billing, an innovative financing approach currently used in Philadelphia as part of its *Green Cities, Clean Waters* program. Under this approach, property owners are charged stormwater management fees based on the amount of impervious surface they have on their property. Discounts or credits can be offered in exchange for implementing stormwater management measures, such as green infrastructure techniques, that will curb runoff. This funding structure helps create opportunities for private investment by property owners, who can use future savings, combined with other development and financing strategies, to invest in remediation. In Philadelphia, the Natural Resources Defense Council estimates that third-party private investments could reach \$376 million, spurring the creation of private-sector jobs related to remediation and stormwater management.

Worker-Utility Partnerships

In the face of scarce funding for water systems, many have advocated for the use of public-private partnerships to spur investment in infrastructure, wastewater management, and water recycling. Yet, cities can also engage in partnerships with other public entities to make these types of investments. These collaborations, called public-public partnerships (or PUPs), consist of partnerships among two or more organizations, including public utilities, non-governmental organizations, and labor unions. They have been used by local utilities and water service providers in numerous cities to increase efficiency, upgrade infrastructure, and create savings, all while promoting good workforce practices and local

economic development. In contrast to public-private partnerships, the goal of extracting profit is removed from PUPs, thus reshaping these partnerships around solidarity and mutually beneficial objectives.¹⁷

PUPs have taken different forms, including partnerships formed between two different city governments that pool resources in order to purchase needed infrastructure, or collaborations in which one city contracts with another for delivery of services. Notably, some city utilities have formed partnerships with their employees' labor union locals in an effort to generate utility savings and cost reductions. These collaborations generally rely on expertise to build more efficient outcomes related to water, including improved infrastructure and asset management, and are often formed with worker training programs incorporated into the process of meeting specified targets.¹⁸

Case Study: Utility-Worker Partnerships¹⁹

King County, Washington

In 2001, an innovative 10-year pilot PUP in King County, Washington, paired the county's wastewater treatment program with workers of SEIU Local 925, Teamsters Local 117, and the Technical Employees Association, resulting in a partnership that the King County Executive stated made utility employees "partners in business." The partnership, known as the Productivity Initiative Pilot Program, created cost reduction goals and savings targets for its operations, and eventually began experimenting with programs focused on capital projects and asset management as well. The initiative was characterized by gain sharing: employees received a portion of savings each year that savings and reduction targets were met. By the end of the program, in 2010, nearly \$84 million in savings were realized, saving ratepayers a significant sum; of that, \$4.4 million in payouts were returned to employees during 8 of the 10 years in which savings targets were met, with annual payouts averaging \$650 per employee, after taxes.

Smart Investment of Existing Public Funds

On a final note, states can better leverage existing funding in their clean water and drinking water state revolving funds (SRFs). SRFs operate in a similar manner to infrastructure banks: capitalized with over 80 percent federal funds (with the remainder matched by the states), SRFs provide low-interest loans to a variety of publicly-owned water infrastructure measures, and loan repayments are circled back into the fund for use with future projects.²⁰ Just one of numerous federal funding programs for water infrastructure, SRFs have been the largest source of funding to the states,²¹ but have also fallen victim to proposed spending cuts: the President's FY 2013 Budget proposed a 15 percent combined reduction to these two funds.²² Even so, states can use the funds they do have available more effectively; New York and Connecticut, for example, have shifted their SRF investment away from traditional low-yield savings accounts and short-term strategies to longer-term investments that yield higher rates and returns.²³

Water Works: Rebuilding Infrastructure, Creating Jobs, Greening the Environment

Green for All in partnership with the Economic Policy Institute and American Rivers
www.greenforall.org/resources/water-works

Replacing the Nation's Deteriorating Water Infrastructure While Maintaining Affordable Water Rates

AARP Public Policy Institute
www.dontwastela.org/wp-content/uploads/2011/01/DWLA_Report_Finalweb.pdf

Financing Stormwater Retrofits in Philadelphia and Beyond

Natural Resources Defense Council
www.nrdc.org/water/stormwater-financing.asp

Failure to Act: The Economic Impact of Current Investment Trends in Water and Wastewater Treatment Infrastructure

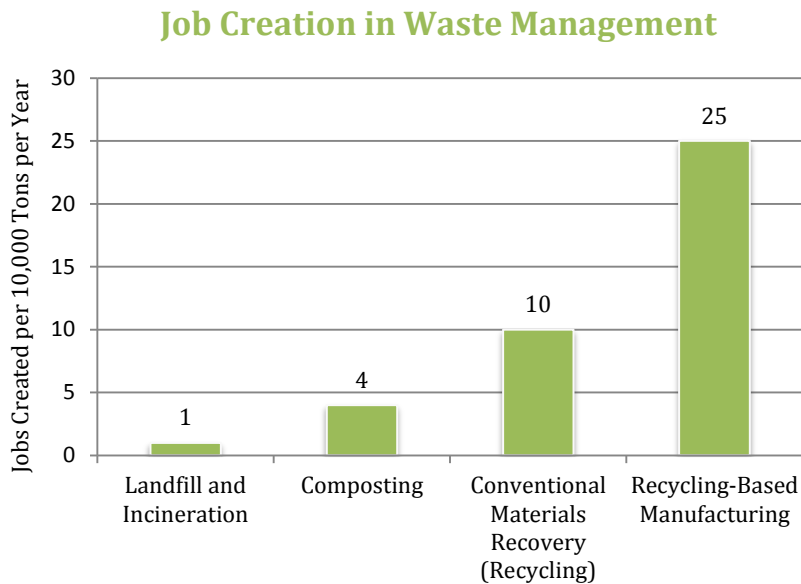
American Society of Civil Engineers
www.asce.org/Infrastructure/Failure-to-Act/Water-and-Wastewater/

Reclaiming Wasted Opportunity: City Trash Systems

The US is a huge producer of waste; the EPA estimates that in 2010, US residents generated about 4.43 pounds of waste per person *per day*, resulting in nearly 250 million tons of municipal waste. Only about a third of this waste was recycled in some form, such as through recycling or composting.²⁴ The majority of our trash - including not only municipal waste but also that resulting from other streams, such as construction and demolition work - winds up in traditionally-used waste management mechanisms such as landfills and incinerators, which contribute to polluted water, land, and air; in fact, landfills are the largest human-created source of methane gas, a toxic contributor to climate change with adverse public health effects.²⁵ Such negative effects of trash, however, are not limited to landfills; many cities are also plagued with air quality issues resulting from hundreds of trucks that haul trash and recyclables out of residential neighborhoods.

While the dirty effects of trash have clear implications for our planet and well-being, they also affect jobs. Whereas jobs in landfills are few and focused on maintaining massive piles of trash, recycling creates numerous direct and indirect jobs, as many as ten times more per ton of waste than traditional landfill programs. Taking recycling further – by breaking down products and remanufacturing them into new ones, for instance – creates even more jobs and can fundamentally transform supply chains, ultimately leading the way to more sustainable products and waste management.²⁶ These greening practices can lead to significant job creation: a recent study found that diverting 75 percent of municipal trash and construction and demolition waste away from landfills could create over 2.3 million direct jobs in 2030 – over 1.1 million more than if current diversion trends remained consistent.²⁷ Recycling jobs also can

reach groups of workers who may have faced barriers in accessing formal education or work-related credentials: over half of jobs in recycling and reuse require a high school diploma or less.²⁸



Source: Institute for Local Self-Reliance, www.ilsr.org

At the same time, however, serious concerns remain about the quality of waste management and recycling work. In many non-unionized recycling sorting facilities, jobs are characterized by low wages, dangerous working conditions, and little or no worker protections. In Los Angeles, for example, payrolls at recycling sorting facilities show annual wages of roughly \$28,000 – compared to about \$44,000 per year in the city’s landfills. Removing managerial positions from the equation means that the wages of most recycling sorters in Los Angeles would likely fall below self-sufficiency standards in the city.²⁹ Waste management jobs are also dangerous: refuse and recyclable material collectors have the seventh highest fatal work injury rate among all occupations nationally,³⁰ and often must handle hazardous material with little training in how to do so safely. While the job creation potential of greening waste management holds promise for many local areas, cities must also clearly take steps to ensure that transforming these systems does not result in the creation of low-road jobs that compromise standards for workers and the economic well-being of communities.

Case Study: Achieving Good Jobs and High Diversion Rates³¹

San Francisco, California

Among cities, San Francisco is the leader in diverting solid waste from landfills through its mandatory recycling and composting ordinances. San Francisco also stands out because of its high job standards in its recycling industry. The city has a single provider for hauling and waste services: Recology, a San Francisco-based employee-owned firm that currently operates in California, Oregon, and Nevada. The company provides full benefits and good wages to workers: facility workers earn \$20-\$29 per hour, and truck drivers make \$50,000 or more annually. Both facilities and trucks are designed to minimize workplace injuries and repetitive physical stress for workers, who also undergo Occupational Safety and Health Administration (OSHA) job safety training.

The company has also invested in the neighborhood where one of its sorting facilities is located. Residents of Bayview Hunters Point, a predominantly low-income community of color in the southeastern corner of the city, have grappled with a long history of environmental injustice and economic underdevelopment. At its facility, Recology promotes good jobs and environmentally sustainable business practices that aim to reverse these trends. The company hires locally, employing and training residents from the facility's three surrounding zip codes, and promotes public health by using trucks that run on biodiesel to avoid polluting neighborhood air.

Local strategies can bolster the greening of waste management systems

Generating Demand: Pay As You Throw and Zero Waste Targets

One tried-and-true policy to create demand for recycling services is Pay As You Throw (PAYT), a variable rate program model that requires residents to pay for the amount of trash they dispose of – much in the same way that households pay for utilities - as opposed to paying a fixed rate per household for waste services. Thousands of communities have implemented PAYT programs, often with various pricing schemes that can also be adapted to set appropriate rates for low-income households. The benefits of PAYT are two-fold: such programs can help cities reign in savings on trash disposal by giving residents control over how much they spend, and they allow for a more equitable pricing mechanism, preventing those who throw away less from subsidizing those who dispose of more waste. PAYT also generate revenue for cities - programs are often structured with both a flat and per-unit fee - that can help offset increasing waste disposal costs.

PAYT programs can result in substantial improvements to a community's diversion rates and increase recycling by up to 27 percent.³² When paired with other green waste management policies, PAYT can have an even greater impact on waste diversion, and can drive spending on community waste to greener systems. In Brewer, Maine, for example – a city with a population of under 10,000 – city officials paired a zero-sort recycling policy with a PAYT program in order to provide incentives for recycling and diverting

trash. Together, these programs have quadrupled the amount of recycling in the city and reduced household trash disposal by half.³³

Programs such as PAYT can also be used to achieve regulatory goals that divert trash from landfills and promote recycling and reuse. Diversion targets are central to regulatory approaches, including zero-waste targets and mandates for recycling and composting. San Francisco is a model city in this regard. In 2002, the city set goals of achieving 75 percent waste diversion by 2010 and zero waste (complete diversion) by 2020. In order to achieve these benchmarks, the city passed a 2006 ordinance mandating the recycling of construction and demolition debris, banning such waste from landfills and requiring that materials be sent to facilities that could process and repurpose a minimum of 65 percent of waste. The city also passed mandatory recycling and composting for residential and commercial buildings in 2009, requiring the sorting of waste into recyclables, compostables, and trash, and requiring that property owners maintain and pay for waste service. These ordinances resulted in significant achievements: the city currently diverts 78 percent of its solid waste from landfills and incinerators.³⁴

The US EPA advocates for Pay-As-You-Throw programs, citing environmental benefits to communities, economic sustainability, and equity among ratepayers as improvements over traditional, fixed-rate waste services.

Source:

www.epa.gov/epawaste/consERVE/tools/payt/index.htm

Reforming Waste Services

San Francisco's model policies have been possible, in part, because of its strong relationship with its single contracted waste service provider, Recology, and the company's deep commitment to increasing recycling and reuse. Not all cities have waste and recycling systems with such a centralized structure. In many cases, city leaders' goals for greening systems and creating good jobs can be thwarted by large and fragmented waste services. This is especially true when a city's waste services are delivered through an open system, or one that is characterized by numerous haulers competing for permits. The city of Los Angeles, for example, delivers waste services through a combination of a permit system as well as a municipally-run system; under its open market, which serves commercial, large residential and construction sites, over 125 haulers are authorized to collect waste and recyclables. As the Los Angeles Alliance for a New Economy has documented, the city's open market does not call for meaningful oversight by government agencies, resulting in inconsistent rates for consumers, inefficient service that increases pollution and wear and tear on city streets, and little room for setting standards and ensuring compliance in the industry.³⁵

To address these issues, *Don't Waste L.A.*, a city-wide coalition of community, labor, environmental, and faith organizations, is advocating for a plan for a franchise system that would replace the permit process in the open market. Under this structure, a handful of private haulers would compete for franchise partnerships with the city, thus enabling Los Angeles to set service standards and provide performance incentives while also working to ensure that residents pay fair rates for recycling and waste disposal.

Franchising also allows for better oversight, tracking, and enforcement of standards, and will build more efficient services by allowing a relatively smaller group of haulers to develop economies of scale. Recognizing the size of the city, the proposal calls for an 11-zone franchise system, and recently won approval of the Board of Public

Works and is currently being considered by the City Council.³⁶ Coupled with demand-side policies—Los Angeles is also striving to become a zero-waste city by 2030³⁷ - revamping the waste system in this way can meet sustainability goals and produce an estimated 5,000 new green jobs in recycling, refurbishing, and remanufacturing waste.³⁸ The system works: dozens of cities in California have transitioned their waste services to a franchise system with the intent of meeting these goals.³⁹

Making Los Angeles a zero-waste city by 2030 would add 5,000 jobs in recycling, refurbishing, and remanufacturing waste.

Resources

More Jobs, Less Pollution: Growing the Recycling Economy in the U.S.

Tellus Institute

www.bluegreenalliance.org/news/publications/more-jobs-less-pollution

Don't Waste L.A.: A Path to Green Jobs, Clean Air and Recycling for All

Los Angeles Alliance for a New Economy

www.dontwastela.org/wp-content/uploads/2011/01/DWLA_Report_Finalweb.pdf

Also: www.DontWasteLA.org

Recycling Works!: A Jobs, Energy and Climate Solution

<http://www.recyclingworkscampaign.org/>

Harnessing Energy and Power

Much like the situation for water infrastructure, investment in upgrading and modernizing energy systems has not kept up with the increase in demand for power generation, transmission, and distribution, particularly over the last three decades. As a result, many systems throughout the country are overburdened, with outages and disturbances in power choking parts of the grid and costing the economy and consumers alike. According to the American Society of Civil Engineers, underinvestment of \$29.5 billion from 2009 to 2014 has caused electrical systems to fare only slightly better than water infrastructure, receiving a below-average grade of a D+ on the ASCE's *2009 Report Card for America's Infrastructure*.⁴⁰ And, just like inefficiencies in water and waste, outdated electric systems adversely affect the environment and our economy. The electric power industry emitted nearly 2.4 billion metric tons of carbon dioxide in 2010⁴¹ - the equivalent of greenhouse gas emissions from over 468 million cars.⁴² Multiple lines of research have shown that the climate change resulting from such pollution, if left unchecked, will actually cause net loss in jobs and productivity over the long run.⁴³

Unfortunately, it's not just electrical systems themselves that need upgrading in order to truly put ourselves on the path to a clean energy economy. This involves a broad-based agenda – one that includes not only smart grids, but also smart buildings and alternative, renewable energy sources.⁴⁴ While significant national investment is needed to bring the country's energy infrastructure up to par, cities and municipalities can spur investment in their own systems, create markets for more sustainable energy sources, and save consumers money, all while creating jobs.

Local strategies can create markets for efficiency measures and improve existing systems

Smartening Up Grids

Many cities can start the process of modernizing their electrical infrastructure through measures that transition systems to a smart grid. A smart grid more efficiently manages energy by basing energy production, storage and use on behavior and consumption patterns, tying together an electric grid, communications network, and the necessary infrastructure to manage electricity flow.

Through such upgrades, smart grid technology can provide information to users, notifying them of power generation problems or increases in prices, thus allowing consumers to reduce energy use and save money.⁴⁵ In relatively recent years, cities such as Austin, Texas have developed smart grid demonstration projects that are quickly expanding, equipping homes with smart meters that track energy use and give consumers real-time information about energy use and prices.⁴⁶ By some estimates, consumers could reduce their electric bills by 10 percent or more through smart technologies, resulting in savings for ratepayers as well as curbing energy use and emissions.⁴⁷ And, these investments will create jobs; for every \$1 million in output, smart grids are estimated to a total of 12.5 direct, indirect, and induced jobs.⁴⁸

According to the Political Economy Research Institute, every \$1 million in output from smart grids will create a total of 12.5 jobs.

Case Study: Modernizing the Electrical Grid While Developing the Workforce⁴⁹

Chicago, Illinois

In early 2012, Illinois' public utility, ComEd, announced a \$2.6 billion electric system modernization project, brought online through the passage of the Energy Infrastructure Modernization Act by the Illinois General Assembly. Half of the available funding will be spent on upgrading state's electrical system infrastructure (including substations, equipment, cables, and utility poles), while remaining funds will go toward digital upgrades that include smart grid technology, such as smart meters for consumers.

Chicago Mayor Rahm Emanuel announced that the project - \$1.1 billion of which will directly benefit the city - will create 2,400 jobs in Chicago, with over 1,000 jobs in construction. The efforts will also create jobs in information technology, engineering, manufacturing, and equipment distribution, among others. About 350-400 jobs are expected to be created this year alone.

As part of the package, ComEd will partner with organized labor in building a new training facility in the southwest side of Chicago. About 70 students are expected to be hired for part-time community outreach work regarding energy efficiency through a youth employment program developed in conjunction with a number of community organizations. Additionally, the package includes financing for a venture fund that will support emerging energy-related initiatives from a variety of partners, including governments, schools, community groups, and businesses.

Although in the end backed by organized labor, environmental organizations, and business groups such as the Chamber of Commerce, the legislation also came under fire by various public interest and advocacy groups concerned about rate hikes, which will finance part of the package. Some have argued that Chicago residents pay relatively low electric bills, and that expected increases - reportedly starting at \$3 per month - will be recouped through consumer savings, which ComEd reports will be \$2.8 billion over 20 years. Others, however, including Illinois' Governor, have criticized rate hikes as being especially burdensome at a time when the economy is still struggling and are skeptical of the streamlined rate-setting process that resulted.

Energy Monitoring and Disclosure Ordinances

Communities can develop more efficient energy systems, and guide future efficiency policy, through energy audits and disclosure ordinances. These generally require property owners to set benchmark performance standards, and measure and report energy use. Through this type of data collection, cities can monitor their progress towards efficiency goals and use resulting information to guide future efficiency policies.⁵⁰ These types of policies can also create jobs: when energy data is disclosed and collected, energy performance itself gains market value, as usage and cost efficiency are sought out and favored by property buyers or renters. This, in turn, spurs investment in efficiency upgrades, such as building retrofits, which creates jobs while lowering emissions and saving ratepayers money.⁵¹

In 2010, the city of Seattle, Washington passed a Building Energy Benchmarking and Reporting Ordinance, with the goal of achieving a 20 percent reduction in electricity consumption through buildings by 2020. Seattle’s measure requires large commercial and multifamily residential buildings to benchmark, measure, and disclose their energy usage. The city estimates that 150 new green jobs will be created through building retrofit work as result of the ordinance.⁵² Other cities, such as Austin, San Francisco, and New York have implemented similar ordinances.⁵³

Seattle’s Energy Disclosure Ordinance is expected to create 150 new green jobs in energy efficiency and retrofit work.

Cities can also do their part to promote alternative, renewable energy sources

In addition to measures that will increase the efficiency of their electrical systems, cities can also take action to support the development of alternative, renewable energy, such as wind or solar power. These strategies are important in that they not only encourage and develop more sustainable energy sources that reduce pollution and oil dependence, but they also contribute to the growth of related manufacturing and clean tech jobs. As we discussed in *Filling the Good Jobs Deficit*, cities with existing manufacturing bases – such as Cleveland, Ohio – are exploring ways to develop new energy sources and build good jobs.⁵⁴ At the same time, communities across the country can create demand for renewable sources, green their electric system, and spur job growth in related sectors. In Cincinnati, Ohio, for example, voters granted the city authority to negotiate aggregated energy rates for businesses and residents late last year, and the city has begun to explore funneling this demand toward purchasing 100 percent renewable energy through renewable energy credits – potentially becoming the largest U.S. city to be powered completely with green energy sources.⁵⁵

Community Aggregation Measures

PUPs, mentioned previously in the context of water systems, are also useful in improving energy systems; one way this can be achieved is through pooled resources for energy purchasing. In the case of energy, cities and states are doing just this through aggregated purchasing arrangements for renewable energy, which allows them to negotiate lower rates by purchasing higher volumes. Numerous cities have already entered into such partnerships to support demand for renewable energy, lower emissions from electricity, and generate savings for consumers.

In Oak Park, Illinois, for example, small businesses and residents bundled their electric accounts in seeking new bids for energy, and in doing so found that the cost differential of including renewable energy in their portfolio was minimal. Oak Park’s Village Board agreed to a two-year contract, starting in 2012, of 100-percent green-sourced energy for the municipality, for which the city will receive renewable energy credits – saving customers about 25 percent in their utility bills.⁵⁶ Similarly, in the Washington DC metro area, a coalition of labor, community, religious, and low-income housing organizations has recently organized to purchase electricity from a single, Maryland-based provider. Initiated last year with about a

dozen organizations – that realized savings of 15 percent on their power bills – the coalition has expanded to 119 members, a majority of which have elected to purchase 100 percent renewable energy through wind power providers.⁵⁷

CLEAN Programs

In the U.S., Clean Local Energy Accessible Now (CLEAN) programs are an innovative - if relatively underused - way for cities to make their energy systems more efficient through renewable energy. CLEAN programs (also known as feed-in tariffs) create local markets for renewable energy by having utilities purchase renewable energy from a provider for a fixed rate over an extended period of time. For example, policymakers and advocates that push for CLEAN contracts can work with their municipal utility to purchase wind or solar power directly from a supplier over a 20-year period, in the process setting prices over the term of the contract. In this way, clean energy providers have a guaranteed market and reduced long-term risk, and barriers to scaling up – such as high upfront costs and financing – are reduced. The utility’s purchase is then rolled into its rate base; in this way, CLEAN programs rely on private investment to meet upfront costs, and the increased use of renewable energy reduces utility bills for customers over the long-run.⁵⁸

In March 2009, Gainesville, Florida became the first city in the US to enact a comprehensive CLEAN program. Most notably, Gainesville’s program focused on promoting and developing solar power, and did so with tremendous results: the city’s solar photovoltaic capacity has increased 20-fold since that time. The initial impact on consumers was minimal – ratepayers saw utility bill increases that averaged less than \$1.00 - and the city reported that the cumulative investment from ratepayers amounted to \$5 million in private funds, with that amount growing in the future. This investment, according to the city, created about 260 jobs as its solar capacity was ramped up and necessary infrastructure constructed.⁵⁹

The city of Gainesville, Florida, expects that its CLEAN program will reduce its natural gas use by half and result in over one-fifth of its electric power coming from renewable sources by 2013. In the process of building renewable capacity, the CLEAN program also created 260 jobs.

Renewable Energy Standards

Renewable energy standards are one of the most important policy options to drive job creation in renewable energy. These policies require that a certain portion of an energy provider’s portfolio come from renewable sources. States often set these targets; 29 states and the District of Columbia currently have renewable energy standards in place. Some, such as California, have particularly aggressive renewable standards, requiring that within the next decade as much as one-third of all energy must come from alternative, renewable sources.⁶⁰

Yet cities can also strengthen these standards, and set their own, higher targets. In 2004, 78 percent of voters in Columbia, Missouri, for example, approved a measure adopting a local renewable portfolio

standard for the municipality, setting a 15 percent renewable standard for electricity by 2022.⁶¹ At the time, the state had voluntary renewable standards in place, which were changed to adopt similar (mandatory) standards as Columbia's in 2008.⁶²

Effectively Leveraging State Public Benefit Funds

It's worth noting that just as public funds for state clean water and drinking water can be more effectively leveraged to improve infrastructure and create jobs, clean energy funds within states can also be used to promote more robust economic development in the clean economy. These are a type of public benefit fund, often financed through a surcharge on ratepayers' utility bills, which are in place in over 20 states. Clean energy funds have generated \$2.7 billion – and leveraged another \$9.7 billion in federal and private funds – for renewable energy development over the last ten years. States such as Massachusetts have specifically leveraged these funds in order to create jobs; the Massachusetts Clean Energy Center estimates that its direct investment in growing clean energy companies will create or retain nearly 450 jobs throughout the state.⁶³

Over half the states do not have public benefit funds in place for clean energy; establishing such a fund, which can vary in its structure, is a key place to start. States that do have these funds in place can more effectively leverage them to promote sustainable economic growth, as documented by the Project on State and Metropolitan Innovation at Brookings in its recent report, *Leveraging State Clean Energy Funds for Economic Development*. By partnering with economic development agencies and community development organizations, for example, states can direct their funds away from project-specific financing and instead promote the growth of clean energy sectors, thus promoting jobs and workforce training.⁶⁴

Resources

Local Sustainability: A Menu of Options for Greening Communities

Policy Matters Ohio

www.policymattersohio.org/wp-content/uploads/2011/12/Menu-of-Policy-Options-FINAL.pdf

Community Power: Decentralized Renewable Energy in California

Local Clean Energy Alliance

www.localcleanenergy.org/files/Community_Power_Publication_Online-3.pdf

Leveraging State Clean Energy Funds for Economic Development

Brookings-Rockefeller Project on State and Metropolitan Innovation

www.brookings.edu/papers/2012/0111_states_energy_funds.aspx

Conclusion: Focusing on Fix-it-First

For many cities, the road to recovering jobs and rebuilding economies affected by the Great Recession is expected to be a long one. According to the US Conference of Mayors, by the end of 2011, less than one-tenth of over 360 metropolitan areas throughout the country recovered the jobs they lost during the

recession; it's expected that 20 percent of US metropolitan areas will take at least five years to recover lost jobs.⁶⁵ Yet, by focusing on "fix-it-first" policies, cities have found ways – and are continuing to develop new ones - to leverage existing infrastructure for more efficient, sustainable outcomes. These policies can take a myriad of forms in water, waste, and energy systems, but all can jump-start job creation by prioritizing the assets a city already has. By finding innovative ways to make short-term investments in these systems, cities can not only improve the long-term health of its built environment and make neighborhoods more livable, but also create good-paying, career-ladder jobs that will remain in the local economy for good, laying the foundation for a more productive, sustainable economy in years to come.

ENDNOTES

¹ Malakoff, Lara. "The State of the Cities in 2012." National League of Cities. March 12, 2012. Website:

<http://www.nlc.org/news-center/nations-cities-weekly/articles/2012/march/nlc-analyzes-state-of-the-cities-speeches>

² Christman, Anastasia and Christine Riordan. "Filling the Good Jobs Deficit: An Economic Recovery Agenda for Our States and Cities." National Employment Law Project, October 2011. Available online: http://www.nelp.org/page/-/Job_Creation/Filling_Good_Jobs_Deficit_Recovery_Agenda.pdf?nocdn=1

³ "Report Card for America's Infrastructure, 2009 Grades." American Society of Civil Engineers, 2009. Available online: http://www.infrastructurereportcard.org/sites/default/files/RC2009_full_report.pdf

⁴ "Charting New Waters Convening Report: Financing Sustainable Water Infrastructure." American Rivers, Ceres, and the Johnson Foundation at Wingspread, January 2012. Available online: http://www.johnsonfdn.org/sites/default/files/reports_publications/WaterInfrastructure.pdf

⁵ "Failure to Act: The Economic Impact of Current Investment Trends in Water and Wastewater Treatment Infrastructure." American Society of Civil Engineers, December 15, 2011. Available online: http://www.asce.org/uploadedFiles/Infrastructure/Failure_to_Act/ASCE%20WATER%20REPORT%20FINAL.pdf

⁶ Heintz, James, Robert Pollin, and Heidi Garrett-Peltier. "How Infrastructure Investments Support the U.S. Economy: Employment, Productivity and Growth." Political Economy Research Institute at the University of Massachusetts, Amherst and the Alliance for American Manufacturing, January 2009. Available online: http://www.americanmanufacturing.net/files/peri_aam_finaljan16_new.pdf

⁷ Gordon, Emily, Jeremy Hays, Ethan Pollack, Daniel Sanchez, and Jason Walsh. "Water Works: Rebuilding Infrastructure, Creating Jobs, Greening the Environment." Green for All in partnership with the Economic Policy Institute, American Rivers, and Pacific Institute, 2011. Available online: <http://greenforall.org.s3.amazonaws.com/pdf/Water-Works.pdf>

⁸ American Society of Civil Engineers, at note 3.

⁹ Johnson Foundation, at note 4.

¹⁰ “Gray infrastructure” typically refers to traditional infrastructure systems such as derived from pavement or concrete, pipes, gutters and sewers, and other mechanical systems.

¹¹ “Why Green Infrastructure?” Environmental Protection Agency, 2012. Website: http://water.epa.gov/infrastructure/greeninfrastructure/gi_why.cfm#WaterQuality

¹² Berg, Stu, Melissa Muroff, and Jane Winkel. “Green Infrastructure and the Future of Philadelphia.” Roofmeadows, November 29, 2011. Available online: <http://roofmeadow.wordpress.com/2011/11/29/green-infrastructure-and-the-future-of-philadelphia/>

¹³ Valderamma, Alisa, Larry Levine, Starla Yeh, and Eron Bloomgarden. “Financing Stormwater Retrofits in Philadelphia and Beyond.” Natural Resources Defense Council, February 2012. Available online: <http://www.nrdc.org/water/files/StormwaterFinancing-report.pdf>

¹⁴ “Low Impact, Green Solutions Fix Older City Water Infrastructures.” Temple University, as published on newswise.com. November 18, 2011. Available online: <http://www.newswise.com/articles/low-impact-green-solutions-fix-older-city-water-infrastructures>

“Green Cities, Clean Waters: The City of Philadelphia’s Program for Combined Sewer Outflow Control.” City of Philadelphia Water Department, June 1, 2011. Available online: http://www.phillywatersheds.org/doc/GCCW_AmendedJune2011_LOWRES-web.pdf

¹⁵ Temple University, at note 14

¹⁶ Temple University and City of Philadelphia, at note 14

¹⁷ Hall, David, Emanuele Lobina, Violeta Corral, Olivier Hoedeman, Philip Terhorst, Martin Pigeon, Satoko Kishimoto. “Public-Public Partnerships (PUPs) in Water.” Public Services International Research Unit, Transnational Institute and Public Services International, March 2009. Available online: <http://www.psiu.org/reports/2009-03-W-PUPS.doc>

“Water Solutions: Public-Public Partnerships in Water.” Our Water Commons, 2012. Website: <http://ourwatercommons.org/water-solutions/case-11-public-public-partnerships-water>

¹⁸ “Public-Public Partnerships: An Alternative Model to Leverage the Capacity of Municipal Water Utilities.” Food & Water Watch and the ILR School Global Labor Institute at Cornell University, January 2012. Available online: <http://documents.foodandwaterwatch.org/doc/PublicPublicPartnerships.pdf>

¹⁹ Sources for *Utility-Worker Partnerships: King County, Washington*

“Wastewater ratepayers save big through 10-year productivity program.” King County Natural Resources and Parks Department: Press Release, July 6, 2011. Available online: <http://www.kingcounty.gov/environment/dnrp/newsroom/newsreleases/2011/july/0706WTD-Ratepayers.aspx>

“Productivity Initiative Program Library” and “Productivity Initiative” webpage. King County Wastewater Treatment Department. Website: <http://www.kingcounty.gov/environment/wtd/About/Finances/PI/Library.aspx#CompReports>

“Executive Sims, employees and unions unveil innovative new program to “Do Business Differently.” King County News Release: February 21, 2001. Available online: <http://your.kingcounty.gov/exec/news/2001/022101.htm>

Beach, Allyne, and Linda Kaboolian. “Working Better Together: A Practical Guide for Union Leaders, Elected Officials and Managers to Improve Public Services.” Working for America Institute, John F. Kennedy School of Government at Harvard University, and Public Sector Labor Management Committee: 2005. Available online: http://www.hks.harvard.edu/fs/lkaboolian/publications/Working_Better_Together.pdf

See also: Food & Water Watch, at note 18.

²⁰ “How the Clean Water State Revolving Fund Works.” Environmental Protection Agency, Accessed February 2012. Website: http://water.epa.gov/grants_funding/cwsrf/basics.cfm

-
- ²¹ Walters, Neal. "Insight on the Issues: Replacing the Nation's Deteriorating Water Infrastructure While Maintaining Affordable Water Rates." AARP Public Policy Institute, November 2011. Available online: <http://www.aarp.org/money/budgeting-saving/info-11-2011/Replacing-the-Nations-Deteriorating-Water-Infrastructure-While-Maintaining-Affordable-Water-Rates.html>
- ²² "Staff Analysis of President Barack Obama's FY 2013 Budget Request." US Conference of Mayors, February 14, 2012. Available online: <http://usmayors.org/budget/media/fy13-uscm-analysis.pdf>
- ²³ Cooper, Donna and Jordan Eizenga. "Let It Flow: Innovative Investment Strategies Can Increase Money for Safe and Clean Water." Center for American Progress, August 2, 2011. Available online: http://www.americanprogress.org/issues/2011/08/let_it_flow.html
- "SRF Investment Function: Current Status and Prospects for Enhancing SRF Sustainability." Environmental Financial Advisory Board, January 2011. Available online: <http://nepis.epa.gov/Adobe/PDF/P100DPVL.PDF>
- ²⁴ "Municipal Solid Waste (MSW) in the United States: Facts and Figures (2010)." US Environmental Protection Agency, 2011. Website: <http://www.epa.gov/osw/nonhaz/municipal/msw99.htm>
- ²⁵ "Landfills." Global Alliance for Incinerator Alternatives, 2012. Website: <http://www.no-burn.org/section.php?id=86>
- ²⁶ "Recycling Means Business." Institute for Local Self Reliance, Waste to Wealth Website, accessed February 2012: <http://www.ilsr.org/recycling/recyclingmeansbusiness.html>
- Green Leigh, Nancy. "Job Creation in the R³ Industry." Presentation at the Big Ideas for Job Creation Conference at the Institute for Research on Labor and Employment at the University of California at Berkeley, June 16, 2011. Available online: http://www.irl.berkeley.edu/research/jobcreation/Leigh_2011.ppt
- ²⁷ Goldstein, James, Christi Electric, and Jeff Morris. "More Jobs, Less Pollution: Growing the Recycling Economy in the U.S." Tellus Institute with Sound Resource Management, 2011. Available online: http://docs.nrdc.org/globalwarming/files/glo_11111401a.pdf
- ²⁸ Muro, Mark, Jonathan Rothwell, and Devashree Saha with Battelle Technology Partnership Practice. "Sizing the Clean Economy: A National and Regional Green Jobs Assessment." The Metropolitan Policy Program at the Brookings Institution, 2011. Available online: http://www.brookings.edu/~media/Files/Programs/Metro/clean_economy/0713_clean_economy.pdf
- ²⁹ Bornstein, Sabrina. "Don't Waste L.A.: A Path to Green Jobs, Clean Air and Recycling for All." Los Angeles Alliance for a New Economy, January 2011. Available online: http://www.dontwastela.org/wp-content/uploads/2011/01/DWLA_Report_Finalweb.pdf
- ³⁰ The fatal injury rate for refuse and recyclable material collectors in 2010 was 29.8 per 100,000 full-time equivalent workers. Source: National Census of Fatal Occupational Injuries in 2010, Bureau of Labor Statistics, August 25, 2011. <http://www.bls.gov/news.release/pdf/cfoi.pdf>
- ³¹ *Sources for Achieving Good Jobs and High Diversion Rates: San Francisco, California:*
- Ojea, Pauli. Green Jobs Associate Coordinator, San Francisco Department of the Environment. "Reclaiming Good Jobs in Recycling" presentation at the Blue Green Alliance Good Jobs Green Jobs Regional Conference: Los Angeles, California, March 15, 2012.
- Recology website, 2012: <http://www.recology.com/index.htm>
- ³² "Pay-As-You-Throw Basics for Municipalities." Massachusetts Department of Environmental Protection. Website, accessed March 2012: <http://www.mass.gov/dep/recycle/reduce/paytmuni.htm>
- ³³ Ricker, Nok-Noi. "Brewer kicks off pay-as-you-throw trash program Jan.3." Bangor Daily News, December 12, 2010. <http://bangordailynews.com/2010/12/12/news/bangor/brewer-kicks-off-payasyouthrow-trash-program-jan-3/>
- Ricker, Nok-Noi. "Thanks to new zero-sort program, recycling quadruples in Brewer." Bangor Daily News, February 14, 2011. <http://bangordailynews.com/2011/02/14/news/thanks-to-new-zero-sort-program-recycling-quadruples-in-brewer/>
- "Zero Sort Recycling" and "Pay As You Throw." City of Brewer, Maine Website, Accessed March 2012:

<http://www.brewerme.org/>

³⁴ “Our City’s Programs: Zero Waste - Mandatory Recycling and Composting and Construction and Demolition Debris Recycling.” San Francisco Department of the Environment, Website Accessed 2012:

http://www.sfenvironment.org/our_programs/overview.html?ssi=3

³⁵ San Francisco Department of the Environment, at note 34

³⁶ “New plan for collecting L.A.’s trash advances.” *Los Angeles Times* Local, February 13, 2012.

<http://latimesblogs.latimes.com/lanow/2012/02/los-angeles-trash-recycling.html>

³⁷ “Counting Down to Zero Waste Plan.” City of Los Angeles Department of Public Works, Website Accessed 2012.

<http://www.zerowaste.lacity.org/home/index.html>

³⁸ “Solid Waste Integrated Resources Plan: Policy, Program, and Facility Plan Summary.” City of Los Angeles Department of Public Works, May 30, 2009. Available online:

<http://www.zerowaste.lacity.org/pdf/2010/2009May30SWIRPMayConferencePamphlet.pdf>

³⁹ City of Los Angeles, at note 38

⁴⁰ “Report Card for America’s Infrastructure: Energy.” American Society of Civil Engineers, 2009. Available online:

www.infrastructurereportcard.org/fact-sheet/energy

⁴¹ “State Ranking: Carbon Dioxide Emissions by the Electric Power Industry (metric tons), 2010.” U.S. Energy Information Administration, Website, accessed March 2012: <http://www.eia.gov/state/state-energy-rankings.cfm?keyid=86&orderid=1>

⁴² Calculated using the U.S. Environmental Protection Agency “Greenhouse Gas Equivalencies Calculator, Updated May 2011.” Website: <http://www.epa.gov/cleanenergy/energy-resources/calculator.html#results>

⁴³ “Rebuilding Green: The American Recovery and Reinvestment Act and the Green Economy.” The Blue Green Alliance and Economic Policy Institute, February 2011. Available online:

<http://www.bluegreenalliance.org/news/publications/document/BGA-EPI-Report-vFINAL-MEDIA.pdf>

⁴⁴ Podesta, John. “How Smart Grids Fit Into the Clean Energy Challenge: Remarks as Delivered at the 2nd Annual GridWise Global Forum.” Center for American Progress, November 14, 2011. Available online:

http://www.americanprogress.org/issues/2011/11/podesta_gridwise.html

⁴⁵ “What is a Smart Grid?” Austin Energy Smart Grid Program, City of Austin. Accessed March 2012. Webpage:

<http://www.austinenergy.com/about%20us/company%20profile/smartGrid/index.htm>

“New Energy for Cities.” The Apollo Alliance, 2006. Available through Policy Matters Ohio:

http://www.policymattersohio.org/wp-content/uploads/2011/10/new_energy_for_cities.pdf

⁴⁶ Pecan Street Inc., website: <http://www.pecanstreet.org/> See also, City of Austin, at note 45

⁴⁷ Ramsey, Rey and Fred Krupp. “What America Gains by Greening the Grid.” Huffington Post, April 5, 2011.

http://www.huffingtonpost.com/rey-ramsey/what-america-gains-by-greening-the-grid_b_844623.html

⁴⁸ Pollin, Robert, James Heintz, and Heidi Garrett-Peltier. “The Economic Benefits of Investing in Clean Energy.” Department of Economics and Political Economy Research Institute at the University of Massachusetts, Amherst, June 2009. http://www.peri.umass.edu/fileadmin/pdf/other_publication_types/green_economics/economic_benefits/economic_benefits.PDF

⁴⁹ *Sources for Case Study: Modernizing the Grid while Developing the Workforce*

“Labor applauds job creation from ComEd Smart Grid Infrastructure Investment.” Chicago Federation of Labor, January 4, 2012. Available online: <http://www.chicagolabor.org/news/press-releases/labor-applauds-job-creation-from-comed-smart-grid-infrastructure-investment>

“Mayor Emanuel and ComEd Announce 2,400 Jobs will be Created through \$1.1 Billion Infrastructure Investment.” City of Chicago, Mayor’s Press Office (January 4, 2012).

http://www.cityofchicago.org/city/en/depts/mayor/press_room/press_releases/2012/january/mayor_emanuel_andcomedannounce2400jobswillbecreatedthrough11bill.html and
<http://www.cityofchicago.org/content/dam/city/depts/mayor/Press%20Room/Press%20Releases/2012/January/1.4.12ComEd.pdf>

Darin, Jack. "The Smart Grid: A Better Forecast for Reliable Power and Clean Energy Jobs." Huffington Post, August 18, 2011. <http://www.huffingtonpost.com/jack-darin/the-smart-grid-a-better-f b 928378.html>

Darin, Jack. "Getting the Smart Grid Right." Huffington Post, May 17, 2011. <http://www.huffingtonpost.com/jack-darin/getting-the-smart-grid-ri b 860553.html>

"Illinois political battle over smart grid ends with an override." Greenbang Smart Technology Network, October 27, 2011. <http://www.greenbang.com/illinois-political-battle-over-smart-grid-ends-with-an-override 20529.html>

"Governor Quinn Statement on Trailer Bill to Rate Hike Legislation." Illinois Government News Network, October 24, 2011. <http://www.illinois.gov/PressReleases/ShowPressRelease.cfm?SubjectID=2&RecNum=9815%27>

"AFL-CIO to Lawmakers: Grid Modernization All About Jobs." Smart Energy Illinois, October 24, 2011 <http://www.smartenergyil.com/update/afl-cio-lawmakers-grid-modernization-all-about-jobs>

Wernau, Julie. "Electrical workers rally around ComEd bill." Chicago Tribune: Business, October 25, 2011 <http://articles.chicagotribune.com/2011-10-25/business/chi-electrical-workers-rally-around-comed-bill-20111025 1 smart-grid-comed-electrical-workers>

Yerak, Becky. "ComEd's smart-grid plan to create more than 2,400 jobs." Chicago Tribune: Business, January 4, 2012. <http://articles.chicagotribune.com/2012-01-04/business/chi-comeds-smartgrid-plan-to-create-nearly-1000-jobs-in-chicago-20120104 1 smart-grid-plan-comed-workers-power-grid>

Yerak, Becky. "ComEd's switch to smart grid will create about 2,400 jobs for Chicago, officials say." Chicago Tribune: Business, January 5, 2012. <http://articles.chicagotribune.com/2012-01-05/business/ct-biz-0105-comed-20120105 1 smart-grid-comed-workers-smart-meters>

⁵⁰ "Seattle Energy Benchmarking and Disclosure: Overview." City of Seattle, Office of Sustainability and Environment. Website: <http://www.seattle.gov/dpd/GreenBuilding/OurProgram/EnergyBenchmarkingDisclosure/Overview/>

⁵¹ Dunsky, Philippe, Jeff Lindberg, Emine Piyale-Shepard, Richard Faesy, and Ed Schmidt. "Valuing Building Energy Efficiency through Disclosure and Upgrade Policies: A Roadmap for the Northeast U.S." Dunsky Energy Consulting and Northeast Energy Efficiency Partnerships, November 2009. Available online: http://neep.org/uploads/policy/NEEP_BER_Report_12.14.09.pdf

For more on building retrofit measures specifically, see Christman and Riordan, at note 2.

⁵² City of Seattle, Ordinance Number 123226, February 4, 2010. Available online: <http://clerk.ci.seattle.wa.us/~scripts/nph-brs.exe?s1=&s3=116731&s4=&s2=&s5=&Sect4=AND&l=20&Sect2=THESON&Sect3=PLURON&Sect5=CBORY&Sect6=HITOF&d=ORDF&p=1&u=%2F~public%2Fcbory.htm&r=1&f=G>

City of Seattle, at note 50

⁵³ "About the Energy Conservation Audit and Disclosure (ECAD) Ordinance." City of Austin, Accessed March 2012. <http://www.austinenergy.com/about%20us/environmental%20initiatives/ordinance/index.htm>

"Existing Commercial Buildings Energy Performance Ordinance." City of San Francisco, San Francisco Department of the Environment. Website: http://www.sfenvironment.org/our_programs/interests.html?ssi=6&ti=14&ii=208

"The New York City Greener, Greater Buildings Plan, PlaNYC" City of New York, PlaNYC. <http://www.nyc.gov/html/planyc2030/html/about/ggbbp.shtml>

⁵⁴ See Christman and Riordan, at note 2.

Cleveland, Ohio, for example, has developed an offshore wind project on the Lake Erie shoreline with the intent of reducing carbon emissions from power plants in the Great Lakes region while also creating jobs for displaced

manufacturing workers. The project involves a wide range of stakeholders who have engaged in a process centered on transparency, environmental sustainability, and maximizing economic growth. For more information, see: “A Fresh(water) Look at Economic Renewal and Job Creation,” Center for American Progress, 2011. Webpage: http://www.americanprogress.org/issues/2011/07/freshwater_wind.html.

⁵⁵ “Cincinnati could be completely powered by renewables this year.” The Green Energy Blog, February 26, 2012. <http://thegreenenergyblog.com/uncategorized/cincinnati-completely-powered-renewables-year>

McCartney, Hannah. “A Greener Cincinnati? Energy Aggregation Explained.” CityBeat Cincinnati, February 8, 2012. <http://www.citybeat.com/cincinnati/blog-2912-a-greener-cincinnati-energy-aggregation-explained.html>

⁵⁶ “Community Choice – Aggregation: Oak Park opts for all-green electricity and big savings on rates.” City of Oak Park, October 18, 2011. Website: <http://www.oak-park.us/aggregation/>

Lotus, Jean. “Oak Park seals green deal on electric; Consumers save money under renewable energy pact.” Oak Park.com, October 18, 2011. http://www.oakpark.com/News/Articles/10-18-2011/Oak_Park_seals_green_deal_on_electric

⁵⁷ “Maryland firm chosen to by D.C. groups pooling to buy power.” Associated Press, available through CBS Baltimore, March 21, 2012. Online: <http://baltimore.cbslocal.com/2012/03/21/md-firm-chosen-by-d-c-groups-pooling-to-buy-power/>

⁵⁸ Caperton, Richard, Bracken Hendricks, John Lauer, and Courtney Hight. “CLEAN Contracts: Making Clean Local Energy Accessible Now.” Center for American Progress, Groundswell, and Energy Action Coalition, January 2011. Available online: http://www.americanprogress.org/issues/2011/01/pdf/clean_contracts.pdf

“Introduction to CLEAN Programs.” Clean Coalition, accessed 2012. Webpage: <http://www.clean-coalition.org/introduction-to-clean-programs/>.

⁵⁹ “CLEAN Program Brief: Gainesville.” Clean Coalition, June 30, 2011. Available online: http://www.clean-coalition.org/storage/documents/Gainesville-Brief%20JF_16%2030%20Jun%202011-1.pdf

“Example CLEAN Programs: Gainesville, Florida.” Clean Coalition, Accessed March 2012. Webpage: <http://www.clean-coalition.org/example-clean-programs/>

Woodrum, Amanda. “Local Sustainability: A Menu of Policy Options for Greening Communities.” Policy Matters Ohio, Sustainability Communities Brief: December 2011. Available online: <http://www.clean-coalition.org/example-clean-programs/>

See also, as cited in Woodrum: “A Policymaker’s Guide to Feed-in Tariff Policy Design.” National Renewable Energy Laboratory, July 2010. Available online: <http://www.nrel.gov/docs/fy10osti/44849.pdf>

⁶⁰ “Database of State Incentives for Renewables and Efficiency (RPS Data Spreadsheet).” North Carolina Solar Center, Interstate Renewable Energy Council, and U.S. Department of Energy Office of Energy Efficiency and Renewable Energy. September 2011. <http://www.dsireusa.org/rpsdata/>

⁶¹ Ibid at note 60: http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=MO04R&re=1&ee=0

⁶² Ibid at note 60: http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=MO08R

⁶³ Milford, Lewis, Mark Muro, Jessica Morey, Devashree Saha, and Mark Sinclair. “Leveraging State Clean Energy Funds for Economic Development.” Project for State and Metropolitan Innovation at the Brookings Institution, January 2012. Available online: http://www.brookings.edu/papers/2012/0111_states_energy_funds.aspx

⁶⁴ Ibid, at note 63

⁶⁵ “U.S. Metro Economies: 2012 Employment Forecast and the Impact of Exports.” Prepared by HIS Global Insight for the United States Conference of Mayors and the Council for the New American City, January 2012. Available online: http://www.usmayors.org/pressreleases/uploads/2012/MetroEconomiesReport_011812.pdf