Democratizing Efficiency Delivery Through IT

Jeffrey S. Mekler
Engineering Systems Division
Massachusetts Institute of Technology

Harvey G. Michaels
Department of Urban Studies and Planning
Massachusetts Institute of Technology

Abstract: As states commit to more aggressive energy savings goals, traditional energy efficiency programs run by program administrators are increasingly being complemented by community-managed programs run by municipal governments, neighborhood organizations, and other private companies. While these new program models help to increase competitiveness and drive innovation in the energy efficiency marketplace, they are supported by unsustainable funding sources. As these funding sources disappear, community program planners will lose the financial support and technical assistance they need to design and deliver effective energy efficiency programs. In this paper, the authors suggest that program administrators can help sustain community-managed programs by providing financial and technical assistance and in return can use energy savings produced by community-managed programs to achieve energy savings targets. Within this framework, the authors argue that data-driven tools utilizing building-energy-usage data can help program administrators provide technical assistance to community program planners in a less human-resource intensive way. Building upon research at MIT, the authors argue that these tools can help identify energy efficiency savings potential, better inform efficiency programs' targeting and outreach strategies, and aid in the measurement and verification of energy savings. The authors then discuss the major barriers preventing the development of such systems and suggest strategies to overcome these barriers.

Executive Summary

In the last three years, state legislation and federal stimulus funding has sought to accelerate the nation's path towards a more energy efficient economy. These efforts have kickstarted a wave of residential, small business, and municipal energy efficiency programs managed by town governments and community organizations. Unlike traditional energy efficiency programs run by program administrators that target customers individually, these community-managed programs target whole communities. In so doing, community-managed programs can build upon existing social networks within a community and leverage social pressure and community spirit to increase participation rates, drive greater investment into energy efficient services, and help communities achieve broader community goals with the money saved through reduced energy bills. While these programs are still in the early stages of deployment, they show signs of long-term success – increased participation and retrofit rates, and reduced program expenditures per unit of energy saved. However, funding for many of these programs will expire in 2012 when the federal stimulus bill is expended.

Program administrators are well positioned to develop a franchising model that will sustain community-managed energy efficiency programs post-stimulus. In this model, program administrators would provide financial and technical support to assist municipal governments, neighborhood organizations, and other third party service providers in the planning, delivery, and evaluation of energy efficiency programs, and in return, program administrators could use the energy savings created within the franchised programs to meet energy efficiency reduction targets set by public utilities commissions, energy efficiency portfolio standards, or similar policy mechanisms.

To support the community franchise model and reduce the amount of overhead work and human resources a program administrator would have to devote to such a program, we suggest that program administrators should provide franchisees with an energy information platform based upon customer energy usage and building records that can help franchisees:

- **Discover Energy Efficiency Savings Opportunities:**
  Energy information systems can help efficiency program planners identify characteristics of buildings and building occupants that are correlated with inefficient energy usage. Using these insights, program planners can develop programs that target areas with the greatest potential net benefits.

- **Target the "Right" Program Offerings to the "Right" Customers:**
  Once the characteristics that drive inefficient energy usage are understood, energy information systems can help program managers connect customer subgroups with the program offerings that are right for them. This should reduce outreach and marketing

expenditures and increase program uptake.

- **Measure & Evaluate Program Performance:**
  Energy information systems can provide a standardized format for community program planners to evaluate program performance. These standardized EM&V measures will help community planners track and improve program offerings and ensure that program administrators receive attribution for energy savings created.

While the development of an energy information system raises a number of challenges, most notably surrounding customer privacy, we believe that the franchise model provides the necessary incentives for program administrators to manage tradeoffs across consumer privacy concerns and state and federal energy efficiency savings targets. Furthermore, as program administrators continue to roll out advanced metering infrastructure and smart meters, energy information systems can help demonstrate the social value of a smarter electric grid to customers and public utilities commissions.

By unlocking the power of data-driven analytics and market competition on energy efficiency markets, the community franchise model and its IT-based tools can help program administrators build upon the successes of both program administrator- and community-managed programs and accelerate the nation's path towards an energy efficient economy.

INTRODUCTION: Driving Investment in Energy Efficiency Markets

Global climate change, rising energy costs, and aspirations for energy independence have prompted state and federal governments and the private sector to develop strategies that will reduce energy waste in new and existing buildings. The potential benefits created through such efforts are substantial; a recent McKinsey study estimated that cost effective investments in energy efficiency could reduce U.S. energy consumption in 2020 by twenty-three percent from business-as-usual projections and create $1.2 trillion in direct energy savings (McKinsey, 2009). However, capturing these benefits will require the outlay of nearly $520 billion in capital investment over the next ten years in a market where investment has historically been small.

In many states, utility program administrators (PAs) have led the efforts to increase public and private investment in energy efficiency markets. Leveraging ratepayer funds to provide customer incentives and support program planning and administrative (PP&A) costs, program administrators have made measurable gains penetrating energy efficiency markets with programs offering a range of services, from simple lighting replacement to full building weatherization. For example, Massachusetts, which is nationally recognized for its energy efficiency policies and energy efficiency programs (American Council for an Energy Efficiency Economy, 2010), is on track to achieve 1.4 percent and 1.15 percent annual reductions from business-as-usual projections in electricity and natural gas consumption, respectively, by 2012 (MA Dept. of Public Utilities, 2011). However, progress to date, even in progressive states like Massachusetts, is insufficient to capture the 2.35 percent annualized savings potential identified in the McKinsey report[1].

Community-managed energy efficiency programs may play a key role in capturing a greater portion of the U.S. energy efficiency savings potential. Unlike traditional energy efficiency that target customers individually, these community-managed programs target whole communities. This allows community-managed programs to build incrementally upon existing social networks and leverage social pressures and community spirit to increase participation rates, drive greater investment into efficiency products and services, and help communities achieve community-wide goals beyond energy efficiency. These traits make community-managed programs particularly effective at penetrating the hard-to-reach residential and small-business sectors. Community-managed programs received major financial support through the American Recovery and Reinvestment Act (ARRA), which disbursed $3.2 billion in Energy Efficiency Community Block Grants for municipalities (Department of Energy, 2011). ARRA provided over $500 million in direct funding for 41 community-managed energy efficiency programs (Department of Energy, 2011). In addition, state policies, such as the Massachusetts Green Communities Act, have established a legal foundation for such programs. In Massachusetts, 53

[1] Annualized savings calculated based on 23% reduction in 2020 and assuming constant annualized savings over 11 years (2009 – 2020). i.e. $(1 - 0.23) = (1 - r)^{11yrs}$ g r = 2.35%

municipal governments have committed to reduce energy usage in municipally owned buildings by 20 percent over the next five years (MA Executive Office of Energy and Environmental Affairs, 2011).

Unfortunately, most of the funding allocated for community-managed programs has been spent[2], and community program planners will soon find themselves without the network of financial support and technical assistance that they depend upon to design and deliver energy efficiency programs.

Overview of Research:

Over the last year, researchers in the Energy Efficiency Strategy Project at the Massachusetts Institute of Technology have investigated strategies to support community-managed programs in a sustainable and scalable manner. In this paper, the authors posit that a franchise-style partnership between program administrators and community program planners would be mutually beneficial for both parties. Drawing upon case studies and personal interviews, this paper examines how information systems, which combine and analyze data about building energy performance, can help program administrators support community-managed programs and improve program outcomes. The paper also assesses major challenges associated with developing and deploying these information systems and suggests strategies to overcome these challenges.

Partnering with Communities: An Opportunity for PAs

As states commit to more aggressive energy savings targets, program administrators will need to devise strategies to accelerate private investment in energy efficiency markets. The programs of tomorrow will need to achieve greater breadth, in terms of program participation and retrofit rates, and greater depth, in terms of energy savings per household, all while reducing levels of public subsidy. To achieve these ends, there is a growing need for fresh thinking and innovative program models.

Reducing barriers to entry in efficiency markets is one way that program administrators can help drive innovation in efficiency markets. Economists have long recognized that market innovation often correlates with market structure. In markets composed of highly competitive producers, rates of innovation are high; while in markets with little to no competition, innovation is slow to progress. Efficiency service markets have historically fallen into the latter category, since programs are often developed by a single producer: the program administrator. Increasing

[2] For example, Energy Efficiency Community Block Grants will be fully disbursed by 2012.

market participation in efficiency markets is not an easy task. Entry in these markets is difficult because programs are costly to develop and require broad expertise in building technology, program management, and marketing. Program administrators have a long history developing such programs and have access to ratepayer funds, which are highly regulated by state public utilities commissions (PUCs). These factors make it very difficult for other parties to participate in efficiency markets. The recent round of ARRA funding temporarily reduced barriers to entry into efficiency markets for municipal governments and neighborhood organizations. The diversity of community-managed programs developed with these funds gives one of sense of the potential for market competition to drive innovation[3].

As the support for community-managed programs subsides, program administrators have an opportunity to support municipal governments and community organizations interested in developing energy efficiency programs. For program administrators, the diversity and creativity of community-managed programs can help lead to breakthrough new program strategies in the residential and small business sectors. In addition, the small scale of most community-managed programs, which often target a single neighborhood or town, make them suitable as high-risk, high-reward pilot programs.

The relationship between program administrators and community planners can be conceptualized as a franchise-style relationship, diagrammed below in Figure 1. Program administrators would provide community planners with financial support and technical assistance to aid the development and deployment of their energy efficiency programs. In return, program administrators could aggregate the energy savings from community-managed programs to meet energy reduction requirements set by the PUC, energy efficiency resource standards, or other policy mechanisms.

[3] For a sample of programs, see:
http://www1.eere.energy.gov/buildings/betterbuildings/grant_recipients.html

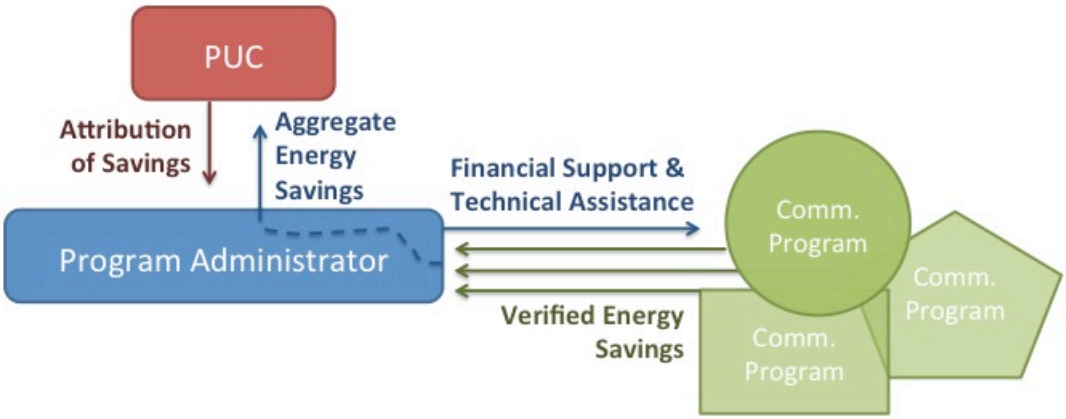

Figure 1: Transactions in the Franchising Model

Moving towards a model where program administrators partner with community program planners marks a major shift in the role of program administrators in the residential and small business sectors. In this paradigm, program administrators would no longer act as a market producer, but would rather be responsible for opening up efficiency markets to competition among market players, such as municipal governments and neighborhood organizations.

Because the franchise approach would allow community governments, neighborhood organizations, and other third parties to tap into ratepayer funding and receive technical support to administer effective energy efficiency programs, the authors believe the franchising model would reduce barriers to entry in the energy efficiency marketplace and increase market competition. These market forces should drive franchisees to develop new, innovative program strategies, reducing program planning and administrative costs and increasing total energy savings.

This paper specifically examines the opportunities for program administrators to provide franchisees with data-driven program planning, delivery, and valuation tools. Program administrators in the franchise model will need to provide technical assistance to a number of franchisees, whom will have varying levels of experience developing energy efficiency programs. Cultivating these relationships will be time-consuming, and many program administrators simply do not have the staff to support the technical needs of each franchisee. In cases where franchisees have different occupational backgrounds than program administrators' technical support staff – e.g. when a volunteer sustainability committee in a local town is acting as the community program manager – language and intellectual barriers may further impede effective communication and collaboration. In addition, program administrators need to ensure that program-created energy savings are verified in a way that is accepted by public utility commissions. Ensuring that every franchisee is adequately prepared to design, implement, and

evaluate programs is critical if program administrators want attribution for energy savings created to meet quotas.

Data-driven tools can reduce the amount of human resources program administrators will need to allocate to franchisees for technical assistance and can also provide a standardized mechanism to perform evaluation, measurement, and verification (EM&V). While these issues will be discussed at greater depth in later sections, it suffices to say that a number of data-driven tools already exist with these capabilities. Appendix A highlights several existing data-driven tools and resources that provide technical support and/or EM&V functions.

In the following sections, the authors suggest that data-driven, information technologies (IT) are a critical resource to enable energy efficiency and support the partnerships between program administrators and

Emerging Approaches to IT-Enabled Energy Efficiency

Electricity and gas usage data has historically served one purpose: to allow for accurate customer billing. Recently, however, energy usage data is being leveraged to provide insight into energy usage patterns and buildings' energy performance. A number of companies have emerged with products designed to increase consumers' awareness about energy consumption in their homes and offices.

> **Opower** and **Efficiency2.0** are developing data-driven systems that turn the confusing data on monthly utility bills into easy-to-understand, actionable information for residential and small-business customers (Opower, 2011; Efficiency2.0, 2011). By combining customer-billing data with a mix of public and proprietary data about customers and their buildings, these companies are able to compare the energy usage of customers with similar buildings and lifestyles. They use this information to help customers understand how their energy usage compares to similar customers and make recommendations about how customers can better manage their energy usage. Studies have found that tools produce a 3 percent average reduction in energy usage among participating customers (Navigant Consulting, 2011).

Other companies help large customers, such as commercial building management firms, make sense of energy data in order to prioritize investments in building infrastructure.

> **Peregrine Energy Group** has developed a web-based software tool called *Peregrine Focus* (formerly Mass EnergyInsight) for state and municipal governments that tracks energy usage across a portfolio of buildings (Peregrine Energy Group, 2011).

The tool lets building managers track the historical energy usage of individual buildings to identify deviations from typical building performance, which could be due to broken or malfunctioning building systems. The tool also allows building managers to compare the energy intensity of all buildings in order to identify which buildings are the least energy efficient. This can help state and municipal governments prioritize building retrofits.

Retroficiency uses energy data and analytics to helps commercial real estate managers make quick and informed financial decisions about building upgrades (Retroficiency, 2011). Using inferential algorithms, a small amount of information about a buildings features, and energy data, Retroficiency can quickly determine the costs and benefits of various building retrofit measures. Using this tool, Retroficiency helps customers develop investment strategies based upon their needs. For example, the tool could identify a portfolio of measures to reduce energy usage by a certain amount or the tool could be used to select measures with the shortest payback period.

What makes these new approaches novel and effective is the way in which raw uninformative data – expressed in units of kilowatt-hours (kWh) and British thermal units (BTU) – is turned into informative and actionable insights for customers. All of these approaches rely on contextualizing energy-usage data with other forms of data that facilitate inter-temporal and social comparisons.

The current rollout of advanced metering infrastructure (AMI)[4], which makes it possible to measure energy consumption on much smaller timescales than current monthly bills, will increase the capacity of data-driven tools to help consumers understand their energy consumption and identify opportunities for energy savings. For example, by comparing hourly gas consumption with weather patterns, it may be possible to identify buildings with an inadequate amount of insulation.

Leveraging IT in Energy Efficiency Programs

While data-driven IT tools are increasingly being used to help customers better understand their energy usage patterns, the same data generally has been under-utilized in energy efficiency programs. These tools have the potential to help program managers answer critical questions, such as:

- Where are the greatest opportunities for energy savings in a community?
- What building and occupant factors drive wasteful energy usage?
- What are the costs and benefits of various building retrofit strategies?

[4] There are currently 20 million smart meters installed in the U.S. and this number is expected to increase to 50 million units by 2020.

- How much energy did a given program save?

Academic work by (Donnelly & Sklarsky, 2010) at the Massachusetts Institute of Technology identified several ways IT-based tools that leverage energy usage data can be used to inform energy efficiency programs. (Donnelly & Sklarsky, 2010) suggested that energy data should be combined with other data sources such as building assessor/tax records and demographic data to create energy information systems. By contextualizing energy usage data within a broader framework of factors, an energy information system would help program planners:

- **Discover Energy Efficiency Savings Opportunities:**
  Energy information systems could help efficiency program planners identify characteristics of buildings and building occupants that are correlated with inefficient energy usage. These insights could help program planners develop programs to address relevant problems and estimate energy savings potential for various programs.

- **Target the "Right" Program Offerings to the "Right" Customers:**
  Once the characteristics that drive inefficient energy usage are understood, program managers will be able to market specific programs to different customer groups. This should reduce outreach and marketing expenditures and human resource requirements because programs will only be marketed to suitable customers. For example, an energy information system may select a portfolio of weatherization programs for a homeowner, and target lower-hanging fruit, such as lighting replacements and air sealing, for renters.

- **Measure & Evaluate Program Performance:**
  Determining whether a program is achieving its goals can help program managers respond to unanticipated factors leading to underperformance. Furthermore, in states where program administrators are subject to energy savings targets, quantifying energy savings is necessary for program administrators to get attribution of credit for those savings. Energy information systems may be especially useful in community-managed programs, where community governments and organizations seldom have the expertise to conform to data reporting requirements.

Example of an Energy Information System

Figure 2: EnergyView – Example of an Energy Information System
(Kolter & Ferreira Jr., 2011)

Kolter & Ferreira Jr. (2011) demonstrated the concepts described by Donnelly & Sklarsky (2010). Using monthly electricity and natural gas billing data and tax assessor records, Kolter & Ferreira Jr. developed a mathematical regression to identify building features that were correlated with energy usage. Regressing on just nine building features[5] provided in tax assessor records, Kolter & Ferriera Jr. could explain nearly 75 percent of the variance in building energy usage across a sample of 6,499 buildings in Cambridge, MA. The remaining variance, they suggest, could be due to differences between occupants' behavioral consumption habits.

Using their framework, Kolter and Ferreira developed EnergyView, a map-based energy information tool shown in Figure 2. Like the work by Opower and Efficiency2.0, the tool compares the energy usage of statistically similar buildings. Buildings in green consume less energy than similar homes, and buildings in red consume more.

[5] Building features (in order of importance): *Assessed Building Value*, *# of Electric Meters*, *Property Class* (condominium, single-family, multi-family, retail store, office building, etc.), *Living Area* (sq. footage), *# of Gas Meters*, *Heat Fuel* (gas, oil, or electric), *Building Style*, *Heat Type* (forced air, hot water, electric radiant, etc.), *Central AC* (installed or not installed)

While the tool was developed to encourage individual consumers to compare their energy usage to similar homes and homes in their neighborhood, the tool could also be used in a planning context. With some modest aggregation of the data, it would be very easy to identify inefficient building traits and wasteful consumer behavior. These insights could provide community program planners with technical guidance when they are designing and marketing their energy efficiency programs. Once buildings and occupants are characterized by building and occupant traits, a number of other features can be built into information systems. For example, given some information about the cost of different energy efficiency measures, a program planner could estimate the costs and benefits of a building retrofit program and identify groups of customers that are most suitable to participate in such a program.

Kolter & Ferreira Jr. highlight the rich potential for energy, building, and occupant data to be used as a technical resource by energy efficiency program planners. Before such a system can see widespread use, however, the challenges accessing energy data and the inherent privacy risks putting that data into the public domain need to be considered. In the following section, some of the major challenges of data access and privacy are discussed.

Challenges of Implementing an Energy Information System

Energy information systems have not seen widespread use in program planning due to a number of barriers associated with accessing energy usage data and making effective use of that data. In this section, the major challenges preventing widespread use of energy information systems are discussed and strategies to address these challenges are examined.

Consumer Privacy Concerns

The intentional or inadvertent misuse of energy data could have deleterious impacts on consumers. For example, thieves could use energy data to determine when buildings are most likely to be unoccupied, and disclosure of business corporations' energy usage could reveal information about proprietary products under development. These concerns have led to a number of reports highlighting the need to protect consumer privacy and energy usage data (Office of the Information and Privacy Commissioner of Ontario, 2009; National Institute of Standards and Technology, 2010). While the threat of data misuse is legitimate, the potential for damage must be weighed against the benefits of disclosing data discussed in the previous section. Often, the benefits of data disclosure can be preserved while maintaining reasonable protections on consumer privacy.

Community-managed energy efficiency programs generally target residential, small-business, and municipal buildings. For this class of customers, privacy concerns can be managed through several approaches, such as:

- **Aggregation across Customers**
  When data is disclosed in an aggregated form, individual customers' consumption habits are erased from the dataset. For example, if energy data were reported on a block level, all buildings on that block would be represented by the block-average energy usage. An individual home on that block with above average energy usage would be indistinguishable from other homes.

In 2010**, CNT Energy**, a foundation-funded organization promoting regional energy planning, energy efficient buildings, and smart grid services, launched the *Municipal Energy Profile Project* (McKibbin & Loewen, 2011). The project was conceived to better inform municipalities about their energy usage patterns, and CNT Energy produced a report for each municipality in the Chicago metropolitan area documenting energy usage aggregated by sector (e.g. residential, commercial and industrial). While the report content is fairly simple – providing cumulative and per capita energy usage metrics – the data is presented alongside county-wide averages. This juxtaposition helps municipal governments contextualize the information in the report in order to understand whether their municipality has above or below average energy usage.

In 2011, CNT Energy concluded a similar project in Kane County, Illinois where they worked with county representatives to develop a regional energy plan (CNT Energy, 2011). CNT Energy entered into agreements with the utilities serving Kane County in order to access electric and gas consumption data for all customers in the region. Using this data, CNT Energy's data analysts developed info graphics like the one shown in Figure 3 to help regional planners understand the distribution of energy usage patterns in the region.Figure 3 The data presented in Figure 3, average monthly electricity usage for residential customers, is aggregated at the census block group level, ensuring that reported data is averaged across at least 100 customers (McKibbin & Loewen, 2011). At this level of aggreagtion, so information about individual consumers usage patterns is erased.

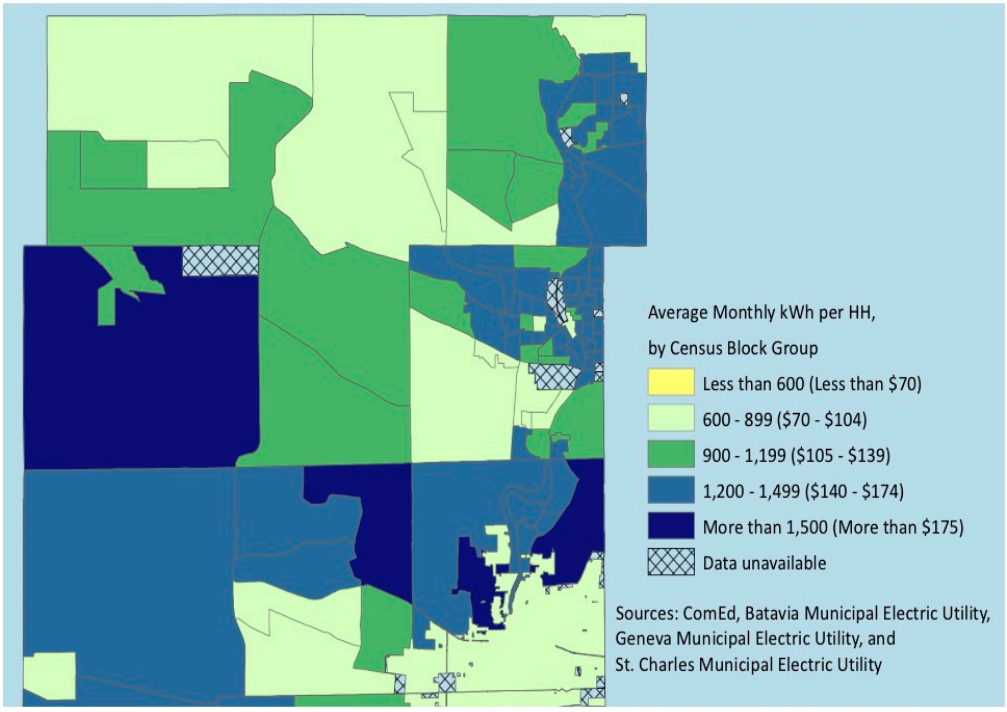

Figure 3: Kane County Energy Plan (CNT Energy, 2011)

While aggregation mitigates many consumer privacy concerns, it also dilutes the value of the data. For example, the Municipal Energy Profile Project can help inform municipal planners about how their municipality's energy usage compares to surrounding towns', but it does little to help planners identify problems or program strategies to address those problems. For these kinds of analyses, the Kane County Energy Plan approach, which aggregates at the census block group, may be more effective.

While approaches to incorporate energy data into planning will always involve managing tradeoffs between privacy risks and planning value, some of the value in the data can be recovered through more intelligent aggregation schemes. For example, data can be aggregated by building age as well as neighborhood block. This provides additional insights into the relationship between building age and energy usage without sacrificing customers' rights to privacy.

- **Reporting Lags**

  Concerns about the intentional misuse of energy data can be mitigated through reporting lags, which prevent new data from being released for a certain period of time. Reporting lags are common in regulatory environments. For example, customers'

energy usage could be released six months after it was recorded. The data would still give program planners a sense of the energy savings potential, but the concerns about intentional misuse of the data by thieves would be mitigated.

- **Opt-Out Mechanisms**
  Opt-out mechanisms give customers the option to remove their energy usage data from the pool of data being analyzed. These mechanisms are commonly used in utility program offerings when customers are automatically enrolled into a program.

> **EnergyIT**, a company based in Gainesville, Florida, began developing Gainesville-Green.com in 2008 in order to help building tenants make informed decisions when selecting a residence (EnergyIT, 2011). Using a map interface like EnergyView (see Figure 2), historical electricity, gas, and water usage data for individual homes can be viewed and downloaded. The energy- and water-usage data for buildings is publically available because Gainesville is serviced by a regionally-owned utility.
>
> While the intent of the website is to inform consumers, full public disclosure of individual home usage habits presents serious personal privacy issues. To address these concerns, EnergyIT implemented an opt-out mechanism to allow customers to take their homes data off the website.

The downside to opt-out mechanisms is the expense required to implement these procedures. To allow customers to opt-out, utilities need to add bill stuffers to utility bills, set up a website to allow customers to opt-out, and tailor data collection protocols to skip customers who opt-out. All of these mechanisms consume a utility's time as well as its human and capital resources. Furthermore, in communities where multiple utilities provide electricity and heating fuel to customers, the process must be repeated for all utilities.

Misalignment of Public and Utility Incentives

The second challenge of implementing an energy information system is utilities' hesitance to disclose energy usage data they fear that misuse of the data could lead to public relations nightmares with damaging effects on shareholder values. Furthermore, utilities get little to no benefit from disclosing energy usage data because they cannot attribute the act of disclosure directly to energy savings created. To change this paradigm, utilities need stronger incentives to disclose data, greater assurances that data will be managed securely in order to protect their customers and shareholders, and greater assurances that disclosure actually improves program outcomes.

A franchise model, like the one discussed earlier, is one strategy to better align public and utility incentives. In a franchise model, program administrators, who in most states are within the utilities or act on behalf of utilities, are put in positions where they must weigh potential damages of disclosure against the potential benefits that energy information systems can create. Because program administrators can attribute franchisee-created energy savings toward their own energy savings targets, disclosure in the form of an energy information system functions as an investment that enhances franchisees' ability to create energy savings. Program administrators also would have control over the format in which data is disclosed and thus retain control over the management of privacy and public relations concerns.

The barriers preventing disclosure of energy data and its utilization in energy efficiency programs are legitimate and substantial. Nevertheless, these barriers can be adequately addressed without sacrificing the value of the energy data obtained *or* the individual concerns of utilities and their customers. Above, the authors suggested several strategies to address these barriers. There are undoubtedly other approaches that could also be leveraged to preserve the benefits of disclosure and mitigate potential for damage.

Energy Information Systems and the Franchise Model

Energy information systems are a key element of the franchise model because they increase the frequency and quality of transactions between program administrators and program planners. For program administrators, such systems hedge some of the risk that accompanies a program model where administrators outsource program development and delivery. This is because such systems can provide technical assistance and to diverse community-managed programs without substantially increasing administrator's technical support staffs. In addition, information systems can streamline program EM&V by utilizing credible and standardized validation methods. Program planners, such as municipal governments and neighborhood organizations, also benefit from information systems because they help planners focus on program design and delivery and automate many of the more technical tasks, such as data analysis and EM&V, that create barriers to entry in efficiency markets.

If program administrators adopted a franchising model, the authors believe administrators are well positioned to develop[6] and disseminate energy information systems to franchisees. In most states, program administrators are members of electric and gas utilities; they have access to energy usage data and are also liable for misuse of that data. Therefore, the authors believe that administrators are in a unique position to thoughtfully consider and manage the tradeoffs across consumer privacy and program planning.

[6] In some cases, it may be more advantageous for program administrators to outsource the development of such tools to data analytics firms.

This paper has investigated just one aspect of the franchise model: technical assistance provided by program administrators. Future research will need to address other, equally important questions about the franchise model. For example, program administrators will need to decide who can participate as franchisees and how financial assistance will be distributed to franchisees.

By unlocking the power of data-driven analytics and market competition on energy efficiency markets, a franchise model can make significant progress towards the estimated 23 percent reduction in energy usage achieved through cost-effective energy efficiency measures and build upon the successes of program administrator- and community-managed programs.

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