What You Don't Know May Hurt You: Lessons from Today's Large Customer Self-Direct Programs

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ABSTRACT

Self-direct and opt-out programs, which allow large energy-using customers to forgo paying into public benefit fund (PBF) programs and instead direct those funds toward internal energy efficiency projects, are growing in popularity around the country. Whether or not these programs serve the public good in the same manner as other PBF-funded energy efficiency programs is not clear at all.

The reason we cannot say whether self-direct programs do what we expect energy efficiency programs to do – namely, acquire energy efficiency in a manner that benefits the public – is because we do not know enough about self-direct programs and their impacts. Additionally, most self-direct programs rely on a dollar-for-dollar parity to determine that self-direct programs are in fact making efficiency investments that are equal to what would have been made had the companies remained in the existing PBF program. The metrics and unproven assumptions on which self-direct programs are evaluated and justified are neither robust nor well-vetted. This paper argues, based on interviews with actual self-direct program administrators, that a lack of data, a lack of substantial evaluation activity within self-direct programs and a focus on financial parity make it difficult to determine whether self-direct programs are a good policy choice. This paper concludes by recommending the types of data collection and evaluation activities that would be helpful for policymakers to better understand how and whether self-direct programs are working.

Background

Energy efficiency programs offer many benefits, but one of the greatest public benefits of efficiency is its low cost compared to new energy generation. A 2009 review of the cost of saved energy from 14 utility-administered electric energy efficiency programs found an average cost of saved energy across all sectors to be 2.5 cents per kWh. Such a low cost of saved energy puts energy efficiency as the lowest cost energy resource for a utility by a wide margin. Energy efficiency is consistently one-tenth to one-third the cost of new renewable and non-renewable energy generation resources (Friedrich et al. 2009, EIA 2011).

What Do We Want From Our Energy Efficiency Programs?

Due to energy efficiency's low cost and the speed with which it can be deployed, states and utilities have identified it as an important system resource and have identified the acquisition of cost-effective energy efficiency as critical to the future affordability and reliability of their energy resources (Kushler et al. 2009). Not all efficiency is created equal, however, and so cost-effectiveness tests and rigorous evaluation, measurement, and verification activities ensure that any funds dedicated to energy efficiency are being used as effectively as possible.

Ensuring that money spent on energy efficiency programming is being used efficiently and effectively is one of the hallmarks of the energy efficiency industry. A basic premise of all energy efficiency programs administered by utilities at the behest of a state regulatory or legislative body is that energy efficiency is a public benefit. It reduces emissions, reduces grid constraints, helps to keep consumer prices low, and generates jobs and economic development. Measuring and evaluating the true costs and benefits of energy efficiency programs and projects is critical to maximizing efficiency's public benefits and ensuring that money is not wasted that could otherwise be used to acquire efficiency.

Some types of energy efficiency programs aren't immediately as cost-effective as others, but do have long-term societal benefits. These include programs targeting areas such as single-family residences, low-income populations, research and development, and market transformation activities (Chittum and Elliott 2009, Lazar 2010). While such efficiency efforts are important for bringing down long-term energy costs and improving individual comfort, they aren't typically as cost-effective as commercial and industrial energy efficiency programs (Kushler et al. 2004). In these cases, the societal benefits of such programs are considered and the costs are mitigated by including more cost-effective efficiency programs in a utility's entire portfolio of energy efficiency programming.

The industrial sector in particular offers some of the most cost-effective efficiency savings available to any given utility (see Goldberg et al. 2009, Energy Trust of Oregon 2011, Kushler et al. 2004). Since maximizing energy efficiency in any sector benefits consumers in all sectors (due to reduced grid congestion and a reduction in needed spending on new generation resources), maximizing energy efficiency in the industrial sector helps improve the public benefit to all classes of customers, and at a lower cost than efficiency investments in those other sectors. As utilities and states develop their suites of efficiency programs, including highly cost-effective efforts such as those in the industrial sector helps programs in less cost-effective areas such as low-income housing remain in a state's efficiency portfolio.

The Public Benefit Fund and the Industrial Sector

To encourage effective and beneficial energy efficiency programming across all sectors, states now routinely set efficiency goals and develop cost-recovery mechanisms to pay for increased efficiency projects and programs (Kushler 2006, Kushler et al. 2004). In the U.S., spending on energy efficiency rebounded from a low point in 1998 and has increased every year since (Molina et al. 2010). Today, most cost-recovery mechanisms rely on a small fee added to a customer's electric utility bill. The aggregate funds from the fee are pooled together and used to pay for programs that acquire the most cost-effective or otherwise beneficial efficiency across all sectors of the economy. The programs are either administered directly by electric utilities or by a separate entity charged with the effective administration of the collected funds.

These cost-recovery mechanisms are known by many names, including systems benefit charges and public benefit funds. In some cases, efficiency program costs are combined with other system costs (such as new generation) and the resultant new costs are reflected in updated rates for consumers. For the purposes of this paper, we'll refer to all of these types of efficiency program cost-recovery mechanisms collectively as public benefit fund (PBF) programs. Today 27 states have some sort of efficiency goal or mandate and 33 states have developed a PBF or similar cost-recovery mechanism to fund efficiency programming in their electric sector (Molina et al. 2010, ACEEE 2011).

The industrial sector has always played an integral part in PBF programs, and since the fees are typically based on a certain percentage of a customer's monthly bill (often 2–5%), energy-intensive industrial firms have long contributed substantially to overall PBF funding pools. They also use substantial amounts of PBF program resources, according to current industrial energy efficiency program managers (NorthWestern Energy 2010, Crossman 2011, Schepp 2011, Chittum et al. 2009). However, as noted in prior research, industrial firms around the country have complained at various times that they do not receive benefits equal to the amount of PBF funding they contribute (Chittum and Elliott 2009).

The Self-Direct Option

In response to assertions that large industrial energy users are ill-served by PBF programs, an increasing number of states allow such customers to "opt out" of the PBF program, with the expectation that the funds that would have gone toward the PBF pool will instead by directed toward energy efficiency investments by the companies themselves (Chittum and Elliott 2009). Based on the author's recent interviews with self-direct administrators, it appears that 24 of all U.S. states have some mechanism by which certain large companies may opt out of paying a state or utility's PBF charge – up from 15 just two years ago (Chittum and Elliott 2009).

Self-Direct Programs Today

There is a wide spectrum of programs that allow the largest energy consumers to choose not to pay into a PBF program. While some states allow customers to simply opt out of their local PBF program, others offer more structured options that help ensure that a company opting out of PBF programming will actually "self-direct" their funds back into energy efficiency investments. Table 1 displays the various designs of opt-out/self-direct programs as they are found around the U.S.[1] While there are not actually four distinct self-direct program types, Table 1 describes four major points along the continuum that can be identified as in use today.

Table 1: Opt-out/Self-Direct Program Continuum

	Program Type	Payment of PBF	Measurement and Verification of Savings	How Funds Are Used for Internal Efficiency Projects	Follow-Up After Several Years	Examples
Opt-Out	Opt-Out	None	None	PBF not paid, so firm uses retained cash as desired, not necessarily for energy efficiency	None	NC, ID, ME
Self-Direct	Less Structured Self-Direct	None	Minimal; typically self-reported	PBF not paid, so firm uses retained cash to pay for reported efficiency investments	Minimal	MN, AZ
	More Structured, Low Oversight	Fully paid on bill	Minimal; typically self-reported	Customer can earn back rate credit or project rebate	Minimal	MT, MI
	More Structured, High Oversight	Fully paid on bill	Robust; similar to PBF programs	Customer's PBF funds set into personal escrow account to pay for projects / rate credit on bill	Minimal to Substantial	WA, CO, OR, VT

Table source and notes (Elliott and Chittum 2009, Young 2011, Crossman 2011, Helmers 2011, Landers and Montgomery 2010, Edwards 2011, Schutt 2011, Walker 2011)

Self-direct programs are found around the country and look very different from state to state. It's important to note that strictly "opt out" programs, which have no administration whatsoever, are not actually programs per se. They are laws or regulations particular to each state that simply allow large industrial firms to avoid paying the local PBF. Whether or not firms ever actually invest in energy efficiency is never explored nor explicitly assumed, and no agency or utility is responsible for confirming investments. Customers satisfying a certain size minimum typically ask to opt out and are allowed to do so. "Self-direct" programs, on the other hand, do assume that customers not paying the PBF will instead direct those funds into energy efficiency projects. The degree to which the self-direct program monitors and measures such investments varies widely.

Prior research on self-direct programs found that while some programs are very structured and work diligently to verify that self-directed funds are actually spent on cost-effective energy efficiency, most programs were lacking in structure, oversight, or both (Chittum and Elliott 2009). Two years later that variety still exists, though some of the newer self-direct programs, such as those found in Michigan, Colorado and Ohio, feature more structure and oversight than many of their earlier siblings. As each state has developed its own self-direct program, a wide variety of self-direct structures has emerged around the country. Figure 1 displays which kind of self-direct program can be found in each U.S. state.

Figure 1: Self-Direct Program Options in the United States

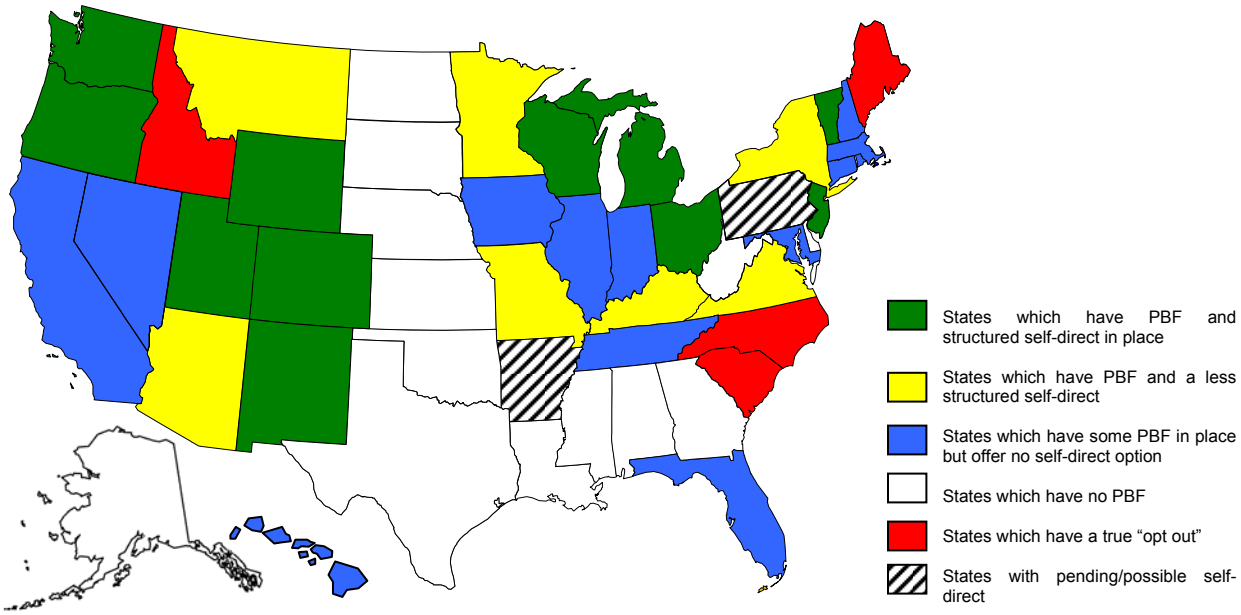

Figure source: (Chittum and Elliott 2009, Crossman 2011, Edwards 2011, Goetze 2011, Helmers 2011, Landers 2011, Landers and Montgomery 2010, Mich. Comp. Laws 2011, Schepp 2011, Schutt 2011, Timmerman 2011, Walker 2011, Welch and Fraser 2011, Whitehead 2011, Williamson 2011, Xcel Energy 2011, Young 2011.

What Do Self-Direct Programs Actually Do?

Generally, today's self-direct programs offer large energy customers, usually industrial facilities, the option of not paying or earning a refund of the PBF charges they would have paid absent the self-direct program. Large commercial and institutional customers are increasingly allowed to participate in self-direct programs as well. Self-direct programs provide some sort of administrative services, though it may be limited to simply processing basic paperwork and issuing reimbursement checks.

While some self-direct programs, such the one administered by Rocky Mountain Power, are fully administered and managed by the incumbent utility, others, such as the one available to large customers in Oregon, are administered and vetted by an entity wholly separate from the standard industrial energy efficiency program (Helmers 2011, Crossman 2011). Similarly, some self-direct programs offer supplemental technical assistance, as in Washington with Puget Sound Energy, while other self-direct programs, such as those in Montana with NorthWestern Energy, must access internal or third-party technical assistance and conduct internal measurement and verification activities exclusively (Landers and Montgomery 2010, Edwards 2011).

With such a varied landscape of self-direct programs, generalizations are difficult to make. But some characteristics of self-direct programs are troubling for those interested in maximizing cost-effective efficiency across all sectors, and are common among almost all self-direct programs.

The Self-Direct Problem

Self-Direct Assumptions

On the surface, developing self-direct programs can seem like a benign policy decision. Whether PBF funds are spent by utilities or by companies themselves might seem like an insignificant detail to lawmakers and regulators. However, self-direct programs are largely predicated on some assumptions that have not been proven to be true in any sort of academic, peer-reviewed research. These include:

- Large energy consumers are more capable of acquiring cost-effective efficiency than standard PBF-funded energy efficiency programs;
- PBF-funded industrial energy efficiency programs are not adequately or fairly serving the large industrial and commercial sectors; and
- Large industrial customers will do all cost-effective energy efficiency anyway, so making them pay a PBF is a "penalty" (Chittum and Elliott 2009, Schwartz 2011, Crossman 2011).

Some of the most robust refutations of these assertions can be found in self-direct programs themselves. In Wisconsin, where large customers can develop self-direct plans and put their PBF funds into a special dedicated escrow account, not a single customer has taken advantage of the program. According to the administrators of the state's traditional PBF industrial energy efficiency programs, once customers realize how much work they have to do to move the projects forward themselves and how valuable their local energy efficiency program's technical assistance and incentives are (in this case, provided by Focus on Energy), they determine that remaining in the PBF program is a smarter business move (Schepp 2011, Schutt 2011). In Utah, where customers can earn back a credit on their PBF payments if they prove they've done all cost-effective energy efficiency, not a single customer has requested such a payment (Helmers 2011). And in Oregon, three of the five largest companies that decided to self-direct their PBF funds have decided to return to the Energy Trust of Oregon's offerings and pay the requisite PBF charges (Crossman 2011).

While the above examples in no way prove that traditional PBF programs are "better" than self-direct programs, they do illustrate that some of the critical assumptions that underlie the development of self-direct programs may not be true. Certainly such examples at least highlight the need for greater research in this area.

Unanswered Questions and Uncollected Data

The great problem with self-direct programs is that there are many unanswered questions about their impact, and very little data collected on them. In the case of true "opt out" programs, there is absolutely no data collection to measure what kinds of investments are made, and what amount of energy savings is achieved by the firms that opt out. In the case of the less structured self-direct programs, minimal oversight is conducted, and energy investments and savings are, if reported at all, entirely self-reported and verified by the companies themselves. In the case of more structured programs, only a handful fall into the "high oversight" category as noted in

Table 1. The rest often also self-report their savings and investments and sometimes only report estimated savings prior to actual project commissioning.

Whether or not self-direct programs are maximizing cost-effective efficiency has not been answered, and cannot be answered with current data. Three program administrators interviewed for this paper believed that their self-direct programs were as cost-effective or more cost-effective than the traditional PBF efficiency programs their customers would otherwise use, though two of them noted that they did not have all the data needed to support such a claim. The rest of the program administrators interviewed did not have enough information to address the question of cost-effectiveness beyond a general sense of their programs' economics. Only a few self-direct programs – notably some found in Colorado, Wisconsin, Washington, Utah, and Wyoming – require that some sort of cost-effectiveness test be met (Chittum and Elliott 2009, Schutt 2011, Helmers 2011, Landers and Montgomery 2010). The rest do not require such assessments and as such cannot claim that self-direct projects are cost-effective ones. The data just does not exist and/or is not routinely collected.

Some of the most cost-effective industrial efficiency measures are found at the largest industrial facilities – the very facilities that most often choose to self-direct (Crossman 2011). The opportunity costs of allowing those companies to "go it alone" in a self-direct program are not considered. Though some facilities may make well considered efficiency investments when they opt out or self-direct, they also might not. The customers eligible for opt-out and self-direct programs are the largest energy users in any given service territory and represent substantial loads and PBF funding streams. For instance, in Montana, nearly one-third of all PBF funds are self-directed, used internally by large companies in the NorthWestern Energy territory. Nearly one-third of Montana's PBF funds, then, are not subject to the kind of scrutiny we rely on to know that our efficiency funds are being spent wisely (NorthWestern Energy 2010). Additionally, in instances where self-directors can use some or all of the existing PBF programs in conjunction with the self-direct one, there are no evaluations that determine whether such a construct serves to encourage efficiency better than the PBF or self-direct programs alone.

Similarly, whether or not societal benefits are maximized by self-direct programs cannot be answered. Since energy efficiency benefits all sectors of the economy, everyone stands to lose if industrial energy efficiency is not maximized to the extent it could be. Whether self-direct programs acquire the same amount of energy savings that would have been otherwise acquired via PBF-funded efficiency programs is not assessed by any of the programs or regulators interviewed for this paper.

The Fairness Issue

Regardless of the lack of data, the question of whether self-direct programs are fair to other customer classes has also not been answered. Large industrial companies that are allowed to self-direct are the only class of electricity customers that have the option to choose *not* to pay for what is essentially a system-wide resource. This is especially true in the case of "opt out" programs, where customers may pay nothing toward energy efficiency and acquire no new efficiency without penalty. Customers in any other class who believe they have "maxed out" their efficiency are not able to elect to not pay their PBF as self-directors are. They continue to pay into the PBF because efficiency is the cheapest resource available to the system and it

benefits all users to maximize efficiency first. By paying for efficiency, even if it is not in their own homes, workplaces, or schools, all customers help ensure that the available efficiency resources are maximized system-wide.

Industrial firms have argued that PBF charges are not fair to them as individual customers because PBF-funded programs do not provide services and benefits equal to what they are being charged. However, in the aggregate there is typically more spent on efficiency programming in the commercial and industrial sectors than those sectors contribute via PBF charges (Chittum and Elliott 2009). In part the higher spending levels in industrial and commercial sectors reflect the fact that efficiency in these sectors is more cost-effective. Residential customers pay PBF funds that in some cases go towards acquiring efficiency in other sectors, because they stand to benefit. Since everyone enjoys the benefits of increased efficiency, it is only fair that everyone pay for it. Opt-out and self-direct programs with little oversight allow large industrial firms to benefit from increased system efficiency acquired in other sectors without paying for it or installing it themselves.

The stakes in this game are quite high, and the above unanswered questions are critical. They are the kinds of questions we ask of our traditional PBF-funded efficiency programs so that we may be sure that the benefits of increased efficiency are maximized and fairly shared.

The Emphasis on Financial Parity

Finally, the fundamental problem of self-direct programs, as seen by this author, is the emphasis on financial parity. Nearly all of the self-direct programs in the U.S. use a dollar-for-dollar approach to diverting PBF funds to self-directed efficiency programs. That is, if a company previously spent $50,000 on PBF funds annually, under a self-direct program they would have $50,000 (give or take a program's administrative costs and other discounts) to spend on internal energy efficiency projects. Whether or not that $50,000 yields the same amount of energy savings that it would have had it been spent as part of a PBF program is of minimal importance or never considered at all. This emphasis on parity is true in most of the self-direct and opt-out programs investigated for this paper, with a few notable exceptions: The Eugene Water and Electric Board, the Michigan program, Xcel Energy's Colorado program, the Vermont Self-Managed Energy Efficiency Program (SMEEP), and the Minnesota program. These programs require customers to either set specific energy savings goals or provide payments based solely on saved kWh or reduced kW (Welch and Fraser 2011, Xcel Energy 2011, Mich. Comp. Laws 2011, Chittum and Elliott 2009, Goetze 2011).

Previous research on self-direct programs had identified well-structured programs with high oversight as preferable self-direct programs, to be viewed favorably as another type of creative custom program offering for large energy users companies (Chittum and Elliott 2009). Recent research and interviews with today's self-direct program administrators has highlighted, however, that just having a well-structured program with good evaluation, measurement, and verification does not necessarily yield energy savings equivalent to what would have been achieved via a PBF-funded efficiency program. If energy efficiency programs exist in order to maximize the public good that is energy efficiency, then self-direct programs ought to be designed in a manner that clearly maximizes, measures, and evaluates energy efficiency savings instead of just spending alone.

Self-direct programs can indeed yield savings equivalent to what would have been acquired had the company not opted out (Welch and Fraser 2011). However, since so few self-

direct programs currently employ requirements that look beyond parity, and since so few self-direct programs compare savings to what "PBF business as usual" results might have been, it is impossible to determine whether self-direct programs are doing an acceptable job of acquiring energy savings equivalent to a PBF-funded efficiency program. Asking for dollar-for-dollar parity is likely easier to administer than asking for equivalent energy savings, but it obscures the true impact of self-direct programs.

The Self-Direct Solution

Self-direct program administrators interviewed for this paper routinely noted that self-direct programs successfully offer large energy users the flexibility they need to make substantial energy efficiency projects happen. Indeed, multiple self-direct programs work on two, three, and four-year timelines, allowing customers to work large efficiency investments into manufacturing plant upgrades, scheduled building improvements and other opportune times.

As noted before, only within opt-out and self-direct programs do particular customer classes enjoy the perk of not paying their PBF charges. Being allowed into a self-direct program is a privilege, and for that privilege customers should be held accountable for their share of a system's efficiency savings, just like any other efficiency program. The industrial and large commercial sectors in particular offer highly cost-effective efficiency savings, and self-direct programs can play an integral role in ensuring that such savings are acquired cost-effectively.

Two programs in particular appear to offer good examples of how self-direct programs can reliably yield cost-effective energy efficiency savings in a manner that benefits all energy consumers. Michigan's Self-Directed Energy Optimization Program and the Eugene Water and Electric Board's Conservation Rate Credit Program feature several mutual characteristics that are commendable. These include:

- A requirement for specific and explicit energy savings goals for each participating customer;
- Multi-year program windows that allow customers great flexibility in satisfying their energy savings goals;
- A significant "stick" to complement the program's "carrot" – the option of not paying any PBF funds – in the form of required payback of PBF charges in proportion to a customer's shortfall from their energy savings goals; and
- A clear structure for measuring, verifying, and evaluating claimed energy savings, overseen by the incumbent utility (Welch 2010, Welch and Fraser 2011, Mich. Comp. Laws 2011).

The third characteristic – the "stick" – is an important tool for encouraging self-directors to use all of their self-direct funds and take on more projects than they may have otherwise. There is evidence that such sticks are effective in producing more energy savings. Puget Sound Energy in Washington, which administers another commendable self-direct program, found that once customers were notified that the deadline for using up their dedicated self-direct funds was nearing (after which time they would lose the funds), projects went "like gangbusters," and the trend has repeated through multiple program cycles (Landers and Montgomery 2010).

Other ways that some self-direct programs aim to maximize the efficiency savings acquired is by not allowing past investments to count towards future savings or spending goals.

Programs that allow so-called "grandfathering" of older project savings can, in some cases, reduce the efficiency impacts of the program. It's also a preferential treatment of one customer class that does not serve any known useful purpose other than to satisfy the large energy-using customers.

With every year, more information about the impact and role of opt-out and self-direct programs in acquiring beneficial efficiency is available. We do not know as much about most of these programs as we do traditional PBF-funded efficiency programs, but we can state using anecdotal evidence and common sense that several self-direct programs display the kind of characteristics that might be necessary to determine that self-direct programs are in fact beneficial and are achieving satisfactory energy savings.

With the right program characteristics, the right data collection, and the right data evaluation, it is quite possible that self-direct programs can play an important and effective role in acquiring cost-effective efficiency from a wide variety of large energy consumers.

Conclusion

As energy efficiency benefits everyone, and the acquisition of efficiency resources reduces costs and environmental harm, it is imperative that the immense amount of savings available to customers typically classified as "large energy consumers" be achieved. Self-direct and opt-out programs are growing in popularity as ways to achieve these savings in large consumers. However, the structure of these programs varies widely and only a handful of them have robust enough structures to ensure that they are achieving the energy savings that they would have otherwise achieved had they remained within a PBF program. As noted in earlier research on self-direct programs, it is likely that self-direct programs are the best ways to acquire efficiency in certain firms in certain circumstances (Chittum and Elliott 2009). However, it is also likely that PBF programs are better at maximizing cost-effective energy efficiency in other situations. We just do not know.

The assumptions on which self-direct programs are based are at best not proven and at worst not correct. Self-direct programs may indeed be an effective way to acquire energy savings from the largest customers, but they also may not be. From a policy perspective, it is alarming that self-direct programs have become such popular policies around the country, because the data to support their existence simply does not exist.

Several important metrics could be collected and calculated to better understand what self-direct programs do. These include:

- Calculations of cost of saved energy in self-direct projects;
- Calculations of cost-effectiveness of self-direct projects;
- Comparisons of energy savings of similar companies operating within self-direct and PBF-funded programs; and
- Measuring of actual energy savings in self-direct projects as opposed to simply tracking number of dollars invested.

As energy efficiency continues to be identified as a priority energy resource by policymakers and regulators, we remain unsure of whether self-direct programs are helping us effectively acquire that resource. We do not know whether individual firms nor society at large are better served by offering self-direct options. We also do not know the optimal design of a

self-direct program, because even some of the most effective self-direct programs do not collect certain data or conduct the kinds of evaluations that might be needed to identify best practices. As we further refine and expand existing energy efficiency goals around the country, it is imperative that we better understand how self-direct programs work now and how they can be improved in the future.

References

[ACEEE] American Council for an Energy-Efficient Economy. 2011. State Energy Efficiency Policy Database. Accessed April – May 2011. http://aceee.org/sector/state-policy. Washington, DC: American Council for an Energy-Efficient Economy.

Chittum, Anna and Neal Elliott. 2009. "Implementing Industrial Self-Direct Options: Who Is Making It Work?" In *Proceedings of the 2009 ACEEE Summer Study on Energy Efficiency in Industry*. http://www.aceee.org/sites/default/files/publications/proceedings/SS09_Panel4_Paper07.pdf. Washington, DC: American Council for an Energy-Efficient Economy.

Chittum, Anna, R. Neal Elliott and Nate Kaufman. 2009. *Industrial Energy Efficiency Programs: Identifying Today's Leaders and Tomorrow's Needs*. Report IE091. http://aceee.org/research-report/ie091. Washington, DC: American Council for an Energy-Efficient Economy.

Crossman, Kim (Energy Trust of Oregon). 2011. Personal communication. February 25.

Edwards, Rick (NorthWestern Energy). 2011. Personal communication. April 15.

[EIA] Energy Information Administration. 2011. *Levelized Cost of New Generation Resources in the Annual Energy Outlook 2011.* Accessed March 16. http://www.eia.gov/forecasts/aeo/electricity_generation.html. Washington, DC: Energy Information Administration.

Energy Trust of Oregon. 2011. *Energy Trust of Oregon 2010 Annual Report*. April 15. http://energytrust.org/library/reports/2010-Annual-Report-OPUC.pdf

Friedrich, Katherine, Maggie Eldridge, Dan York, Patti Witte and Marty Kushler. 2009. *Saving Energy Cost-Effectively: A National Review of the Cost of Energy Saved Through Utility-Sector Energy Efficiency Programs*. Report U092. http://www.aceee.org/sites/default/files/publications/researchreports/U092.pdf. Washington, DC: American Council for an Energy-Efficient Economy.

Goetze, Karl (Efficiency Vermont). 2011. Personal communication. May 24.

Goldberg, Miriam L., J. Ryan Barry, Brian Dunn and Matt Pettit. 2009. *Business Programs: Incremental Cost Study*. http://www.focusonenergy.com/files/Document_Management_System/Evaluation/bpincrementalcoststudyfinal_evaluationreport.pdf. Public Service Commission of Wisconsin.

Helmers, Chris (Rocky Mountain Power). 2011. Personal communication. April 1.

Kushler, Martin. 2006. "The Basics: A Quick Introduction to Energy Efficiency Resource Standards." Presentation made to the National Association of Regulatory Utility Commissioners' Energy Efficiency as a Resource Workshop. September 27. http://www.narucmeetings.org/Presentations/Kushler.pdf

Kushler, Martin, Dan York and Patti Witte. 2004. *Five Years In: An Examination of the First Half-Decade of Public Benefits Energy Efficiency Policies*. Report U041. http://www.aceee.org/sites/default/files/publications/researchreports/u041.pdf. Washington, DC: American Council for an Energy-Efficient Economy.

———. 2009. *Meeting Aggressive New State Goals for Utility-Sector Energy Efficiency: Examining Key Factors Associated with High Savings*. Report U091. http://www.aceee.org/sites/default/files/publications/researchreports/U091.pdf. Washington, DC: American Council for an Energy-Efficient Economy.

Landers, David and Dave Montgomery. 2010. "Large Power User Self-Directed Electricity Conservation Program." Presentation to Efficiency Connections Northwest workshop. December 1. Puget Sound Energy.

Landers, David (Puget Sound Energy). 2011. Personal communication. May 24.

Lazar, Jim. 2010. *Industry Customer Participation in Utility Energy Efficiency Programs and Decoupling: Skepticism, Barriers, and Constructive Approaches*. Webinar presentation to Dept. of Energy. April 14. http://www.raponline.org/docs/rap_lazar_industrycustomerparticipationinutilee_doewebinar_2010_04_14.pdf. Regulatory Assistance Project.

Mich. Comp. Laws. 2011. *Self-Directed Energy Optimization Plan - Mich. Comp. Laws Section 460.1093*. http://law.onecle.com/michigan/460-public-utilities/mcl-460-1093.html. Accessed May 10.

Molina, Maggie, Max Neubauer, Michael Sciortino, Seth Nowak, Shruti Vaidyanathan, Nate Kaufman and Anna Chittum. 2010. *The 2010 State Energy Efficiency Scorecard*. October 2010. Report E107. http://www.aceee.org/sites/default/files/publications/researchreports/e107.pdf. Washington, DC: American Council for an Energy-Efficient Economy.

NorthWestern Energy. 2010. *Universal System Benefits Activities 2009 Annual Report*. March. http://www.northwesternenergy.com/documents/E+Programs/E+USBDORReport-09.pdf.

Schepp, Craig (Wisconsin Focus on Energy). 2011. Personal communication. March 16.

Schutt, Preston (Wisconsin Public Service Commission). 2011. Personal communication. April 13.

Schwartz, Jerry (American Forest and Paper Association). 2011. Personal communication. February 18.

Timmerman, Calvin (Maryland Public Service Commission). 2011. Personal communication. March 28.

Walker, Dave (Michigan Public Service Commission). 2011. Personal communication. May 23.

Welch, Bill. 2010. *EWEB Conservation Rate Credit Program.* Presentation to Efficiency Connections Northwest workshop. December 1. Eugene Water and Electric Board.

Welch, Bill and Alan Fraser (Eugene Water and Electric Board). 2011. Personal communication. March 24.

Whitehead, Leanne (Tennessee Valley Authority). 2011. Personal communication. April 1.

Williamson, Ray (Arizona Corporation Commission). Personal communication. March 28, 2011.

Xcel Energy. *Self-Direct Custom Efficiency*. http://www.xcelenergy.com/Save_Money_&_Energy/For_Your_Business/Customized_Solutions/Self_Direct_-_CO. Accessed May 7, 2011.

Young, Deb (NorthWestern Energy). Personal communication. March 28, 2011.