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Interactions between Energy Efficiency Programs Funded Under the Recovery Act and Utility Customer-Funded Energy Efficiency Programs

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Abstract

The American Reinvestment and Recovery Act (ARRA) provided billions of federal dollars to support investments in energy efficiency at the state and local level. This report examines how state energy offices (SEOs) chose to allocate their ARRA funds and how those programs interacted with existing utility customer-funded programs.

The research included interviews with more than 80 national experts, program administrators and representatives of state energy offices (SEOs) and regulatory commissions. The report summarizes program choices across 50 states, and then focuses on approaches taken in 12 case study states, highlighting issues relevant to policymakers, evaluators and program administrators. The authors find that in the 12 case study states coordination between SEOs and utility customer-funded administrators ranged from mere communication to full collaboration on statewide programs, and there were both benefits and barriers to coordinating. Some programs were able to venture into markets and territories not served by utility customer-funded programs (e.g., fuel-oil heated buildings), and some may ultimately be adopted by utility customer-funded programs. \$650 million for revolving loan programs could potentially finance \$200 million in projects annually for the next 20+ years. Reporting of savings attribution for projects that involve both funding sources has been a subject of debate.

The study examines these choices and interactions for insights into an emerging world of multiple program administrators. Some ARRA outcomes, including new partnerships and new programs, may persist beyond the ARRA period. The findings suggest the Recovery Act experience has clear implications for the future of U.S. energy efficiency.

Introduction

Since the spring of 2009, billions of federal dollars have been allocated to state and local governments as grants for energy efficiency and renewable energy projects and programs. The scale of this American Reinvestment and Recovery Act (ARRA) funding, focused on “shovel-ready” projects to create and retain jobs, is unprecedented. Thousands of newly funded players – cities, counties, states, and tribes – and thousands of programs and projects are entering the existing landscape of energy efficiency programs for the first time or expanding their reach. The nation’s experience base with energy efficiency is growing enormously, fed by federal dollars and driven by broader objectives than saving energy alone.

State and local officials made countless choices in developing portfolios of ARRA-funded energy efficiency programs and deciding how their programs would relate to existing efficiency programs funded by utility customers. Those choices are worth examining as bellwethers of a future where there may be

multiple program administrators and funding sources in many states. What are the opportunities and challenges of this new environment? What short- and long-term impacts will this large, infusion of funds have on utility customer-funded programs; for example, on infrastructure for delivering energy efficiency services or on customer willingness to invest in energy efficiency? To what extent has the attribution of energy savings been a critical issue, especially where administrators of utility customer-funded energy efficiency programs have performance or shareholder incentives? Do the new ARRA-funded energy efficiency programs provide insights on roles or activities that are particularly well-suited to state and local program administrators vs. administrators or implementers of utility customer-funded programs? The answers could have important implications for the future of U.S. energy efficiency.

Our research focuses on a selected set of ARRA-funded energy efficiency programs administered by SEOs: the State Energy Program (SEP) formula grants, the portion of Energy Efficiency and Conservation Block Grant (EECBG) formula funds administered directly by states, and the State Energy Efficient Appliance Rebate Program (SEEARP). Because these ARRA programs devote significant monies to energy efficiency and serve similar markets as utility customer-funded programs, there are frequent interactions between programs. We exclude the DOE low-income weatherization program, EECBG competitive funding (Better Buildings) and EECBG funding awarded directly to the over 2,200 cities, counties and tribes from our study to keep its scope manageable.

We summarize the energy efficiency program design and funding choices made by the 50 SEOs, 5 territories and the District of Columbia. We then focus on the specific choices made in 12 case study states.¹ These states were selected based on the level of utility customer program funding, diversity of program administrator models, and geographic diversity. Based on interviews with more than 80 energy efficiency actors² in those 12 states, we draw observations about states' strategies for use of Recovery Act funds. We examine interactions between ARRA programs and utility customer-funded energy efficiency programs in terms of program planning, program design and implementation, policy issues, and potential long-term impacts. We consider how the existing regulatory policy framework and energy efficiency programs in these 12 states may have impacted development of these selected ARRA programs. Finally, we summarize key trends and highlight issues that evaluators of these ARRA programs may want to examine in more depth in their process and impact evaluations.

Design choices and priorities of state energy offices for selected ARRA programs

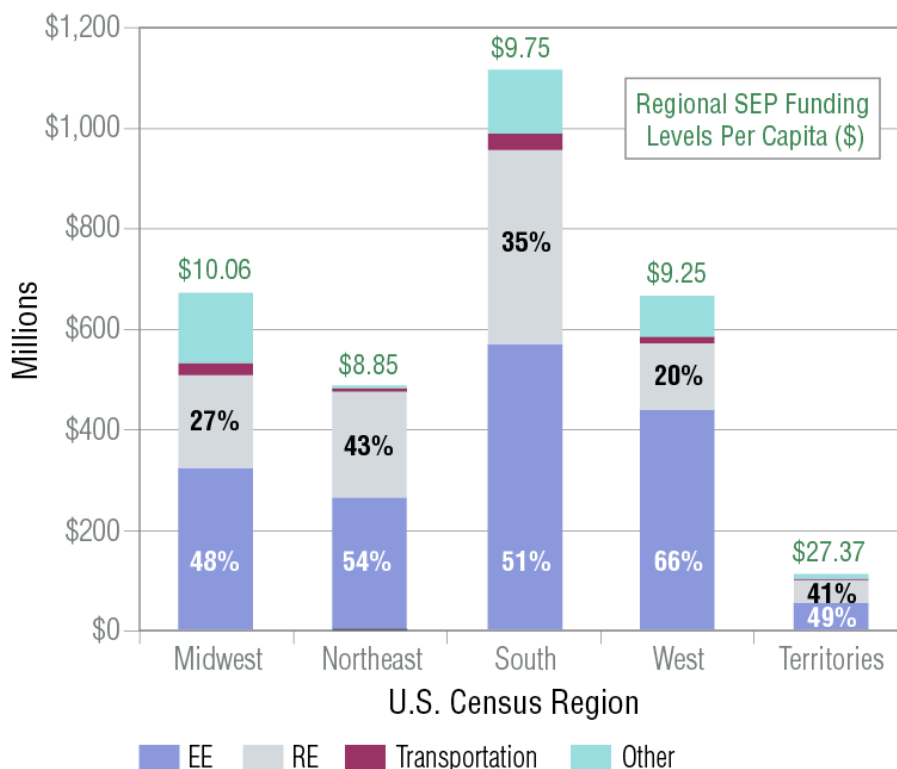
A multitude of factors figured in state decision making. Two powerful influences – federal legislative requirements and the Recovery Act's use-it-or-lose-it mandate – tended to drive grantees towards expedient choices of markets and instruments for investment. State energy offices were also confronted by unique economic and political circumstances that drove a diversity of approaches. Autonomy was a consideration. Through the Recovery Act, state energy offices could design and fund a broader menu of programs than their pre-ARRA budgets allowed and had an increased opportunity to translate state policy objectives into energy efficiency and renewable energy programs. Given these factors, states tended toward decisions that were more idiosyncratic than uniform. However, we were able to observe the following trends:

¹ The twelve case study states are California, Colorado, Florida, Hawaii, Maine, Massachusetts, Michigan, Minnesota, New York, North Carolina, Oregon and Wisconsin. Interactions and coordination between state energy offices and program administrators of utility funded energy efficiency programs is not really an issue in the ~15-20 states that do not offer significant utility customer-funded energy efficiency programs.

² Primary interviewees included commissioners and staff at state energy offices and regulatory commissions, program administrators, and energy efficiency industry experts.

- **Hedging risk and spreading the funds widely** – Most state energy offices (SEOs) opted for a diverse portfolio of programs and activities covering most or all market sectors, although a minority of SEOs invested all of their money in two or three programs that targeted one or two sectors.
- **Energy efficiency over renewable energy** – SEOs in the 50 states typically budgeted a larger share of their ARRA SEP grant funds to energy efficiency programs vs. renewable energy projects (50% vs. 31% respectively overall), and small portions to transportation and other programs), although allocations vary significantly by region. Western states allocated about 66% of SEP funds to energy efficiency programs and 20% on renewable energy projects (see Figure ES- 1). In contrast, southern states allocated about 51% to energy efficiency programs and 35% of their program funds to renewable energy projects.

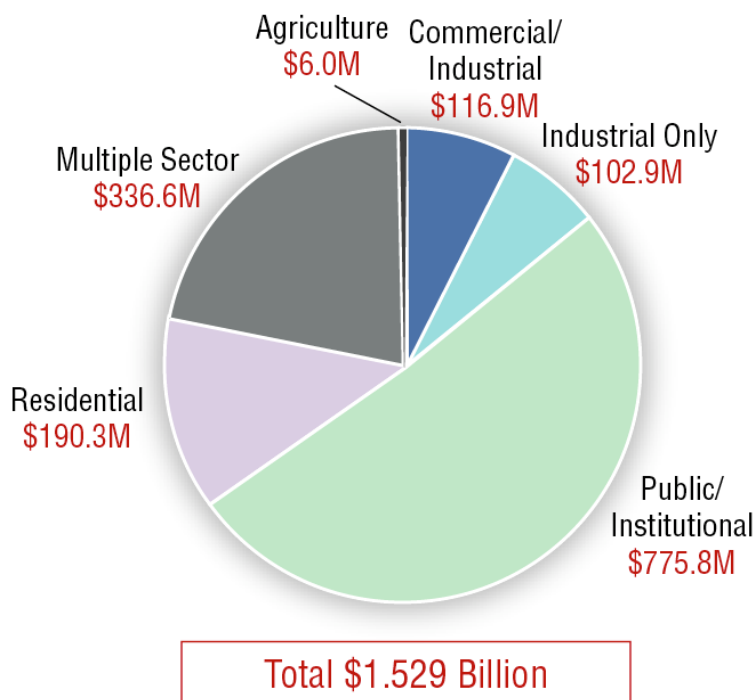
Figure ES- 1. ARRA State Energy Program budgets by region



- **Building efficiency** – More money went to building retrofits, including equipment installations (over \$1.5 billion of the nearly \$3.1 billion SEP grants, and most of the EECBG funds) than for any other purpose.
- **Public/Institutional Sector buildings** – In the SEP program, about \$776 million (or 50%) of the \$1.53 billion investment in energy efficiency in the buildings sector was allocated to programs specifically for the public/institutional sector – town halls, schools and colleges, jails, street lights, and other state and local government or public facilities. Historically, many SEOs have concentrated their efforts in public/institutional markets and that pattern continued in their choice of Recovery Act investments. Grant spending deadlines, the opportunity to generate long-term energy bill savings, and a backlog of energy efficiency projects in government buildings provided additional drivers for targeting this market segment. Public/institutional sector buildings were perceived to be “shovel-

ready” investments that reduce ongoing costs to taxpayers through utility bill savings (see Figure ES-2).

Figure ES-2. State Energy Program ARRA funding for buildings energy efficiency by market sector

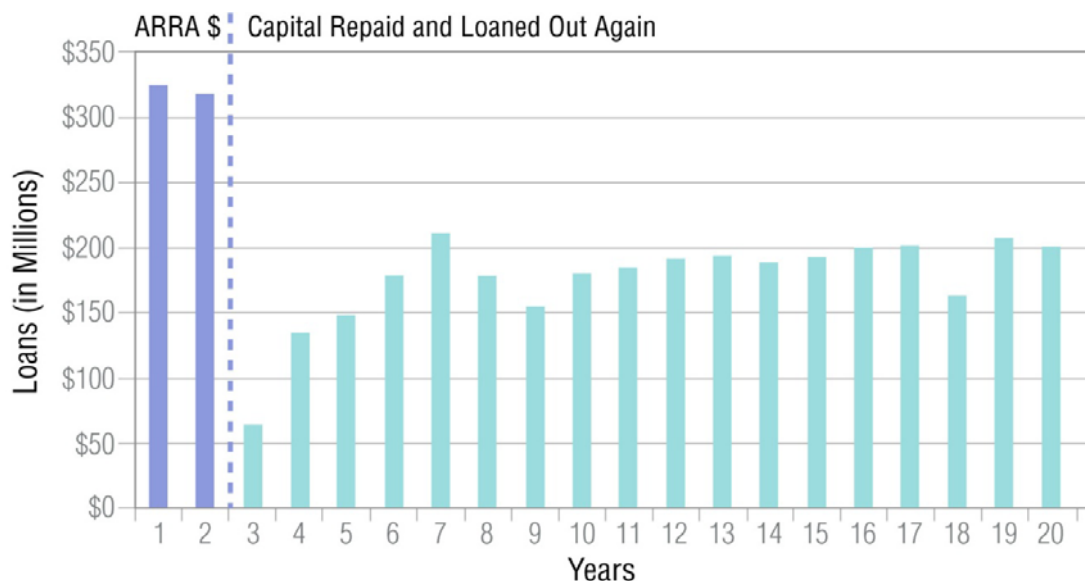


- **Less emphasis on residential markets** – SEOs allocated only about 6% of total SEP energy efficiency budgets to residential programs, including a few low-income programs (see Figure ES-2).³ In contrast, administrators of utility customer-funded energy efficiency programs budgeted about 30% of total 2009 funds for residential sector programs on average and another 15% for low-income residential programs (CEE 2009). Some observers cited uncertainty of the application of federal prevailing-wage requirements as one reason for modest investment in the residential sector.
- **Reinvigorating and retooling industry for a clean tech economy** – A number of states that lost significant manufacturing employment invested in revolving loan funds and grants targeted at manufacturers of energy efficiency or renewable energy products or components. These choices satisfied several objectives of the Recovery Act: retaining and creating jobs, and supporting the development of the “clean energy” sector of the economy.
- **Workforce training and development** – Eighteen states invested over \$54 million in workforce development and training for the energy efficiency services sector and renewable energy industry. This investment in workforce development and training may have some spillover benefits for utility customer-funded energy efficiency programs because many utility customer-funded programs cannot invest this level of funding into workforce training and development due to cost-effectiveness constraints.

³ This finding is applicable to the selected ARRA programs that are the focus of this paper - SEP, SEEARP and EECBG funds administered directly by state energy offices. The overall portfolio of ARRA programs provided significant funding for residential energy efficiency (e.g., local programs of EECBG entitled communities) and significant additional funding (\$5 billion) for the low-income weatherization program. A comprehensive examination of residential efficiency programs across all ARRA energy grants was beyond the scope of this study.

- Financing programs: leverage, longevity and flexibility** – Thirty-five states have established revolving loan funds (RLFs) with approximately \$650 million in ARRA funds. About 37% of these funds are targeted toward public buildings and 41% to commercial/industrial markets. About 7% of the funds are targeted to residential energy upgrades, including multi-family buildings. Many of these revolving loan fund programs offer ample opportunity for coordination with utility customer-funded programs, filling a financing need that utilities and third party administrators have been wary of shouldering themselves. We created a cash flow model to analyze the potential long-term impacts of RLFs and conducted various sensitivity analyses. For our base case results, we found that SEOs that administer and manage RLFs could be able to finance \$150-200 million per year of energy efficiency projects over the next 20 years (see Figure ES-3).

Figure ES-3. Annual loans issued by Revolving Loan Funds over 20 years: Base case assumptions



Innovation and experimentation among the states

The Recovery Act provided an opportunity for state and local governments to try new approaches, markets and territories unexplored or underserved by administrators of utility customer-funded energy efficiency programs due to various considerations and constraints (e.g., regulatory guidelines, cost-effectiveness tests, risk to shareholders). Examples of innovative program efforts that are being implemented by SEOs include multi-fuel programs that fund improvements to the building envelope in oil-heated buildings (e.g., MA, MI, ME), consumer behavior feedback experiments (e.g., HI); loan loss reserve funds, and transit-centric planning (e.g., HI, ME) (see Table ES-1).

Several state energy offices also targeted efficiency programs toward underserved markets and geographic regions – non-profit institutions (e.g., NY, NC), agricultural customers (e.g., FL, ME, OR), and small towns and rural areas that had little or no efficiency programs (e.g., CO, CA). A number of states formed partnerships with cities and counties that had not run efficiency programs before (e.g., CA, NY, WI), dramatically increasing the number of EE program actors. Should these pilots prove successful, they may warrant consideration for utility customer-funded support or adoption by municipal utilities and/or rural electric cooperatives. While the success of these efforts remains to be seen, state and local governments may prove valuable for testing new program concepts in selected target markets that could later be supported by utility customer-funded programs.

Table ES-1. Examples of innovative SEP activities in the 12 case study states

New Sectors	New Geographic Areas	New Program Actors ⁴	New Technologies & Policies
<ul style="list-style-type: none"> • HI (hospitality) • NY, NC (nonprofits) 	<ul style="list-style-type: none"> • CO, CA (rural areas) • HI (non-IOU territory) 	<ul style="list-style-type: none"> • CA (regional entities, counties) • MI (local governments) • MN (cities, local government authority) • NC (local nonprofits) • NY(cities) • WI (small towns) 	<ul style="list-style-type: none"> • HI (deep seawater air conditioning) • ME, MA, MI (multi-fuel retrofits) • NY (reprogramming utility software for on-bill financing) • HI, ME (transit-centric planning)

Interaction and coordination among program administrators

State energy offices also had to weigh choices regarding program autonomy vs. opportunities to leverage resources by working with administrators of utility customer-funded energy efficiency programs. Those decisions turned on many factors: the size and history of utility customer-funded programs, institutional capacity of SEOs, the type of entity that administers utility customer-funded energy efficiency programs (e.g., utility, state agency, nonprofit or for-profit firm), and historic relationships among agencies. In practice, many SEOs developed some programs unilaterally, while other SEOs coordinated program development with administrators of utility customer-funded energy efficiency programs, regulatory commissions, and other stakeholders.

We found numerous examples of coordination among SEO and utility customer program administrators. State energy offices offered multiple programs and states therefore could engage in multiple forms of coordination. Coordination between ARRA- and utility customer-program administrators offered potential benefits:

- **Leverage** – Joint or co-designed programs can draw in other funding, expertise, experience, and delivery infrastructure, and such programs can produce mutually reinforcing messages that move consumers to more efficient choices;
- **Minimize confusion among customers and vendors** – Both types of program administrators can influence program targeting, design and implementation issues such as setting incentive levels, messaging and branding to avoid or mitigate market disruption and consumer confusion;
- **Division of labor** – Different administrators and fund sources can serve complementary purposes and scope, suited to their skills and objectives; and
- **Longevity** – Joint programs can have a broader support base than either taxpayer or utility customer programs on their own and may persist beyond the end of the Recovery Act funds.

⁴ Most states had new program actors; these are just a few examples.

The spectrum of coordination across case study states

Our 12 case study states reflected a full range of coordination. Coordination approaches ranged from communications among program administrators during the initial design of ARRA-funded programs to complementary programs that would enhance, extend or expand existing utility customer-funded programs to full collaboration on program design. Several SEOs formally consulted with utility customer program administrators – affording an opportunity for exchanging information and learning and then independently developed programs that targeted similar market segments with other incentive opportunities. Examples include:

- The Florida SEO completed its own \$15 million residential HVAC program with consultation and input from utility program managers.
- In Colorado, the SEO consulted with utility program administrators, identified places where existing modest rebates could be augmented to boost the market, and developed an independent residential appliance rebate program under SEP in which customers could combine both ARRA and utility rebates. The program implemented a rebate cap and adjusted the ARRA portion to account for varying utility rebate levels across the state so that even with combined incentives, customers would still be required to pay a certain portion of the cost.
- In Wisconsin, the state Office of Energy Independence (the SEO) wanted to invest in clean energy for business, particularly to gear more of the state’s manufacturing base toward a clean economy. Focus on Energy, the third-party administrator of efficiency programs for most of the state, has a robust industrial efficiency program, but economic development and the size of projects contemplated by the SEO were beyond Focus’s charter. The Office of Energy Independence put nearly all of its SEP money into revolving loan funds for industry, administered by a state economic development agency.

Most energy offices in our 12 case study states created one or more complementary programs and tools for enabling, extending or expanding the market reach of utility customer-funded programs. These interactions occurred in two ways – with and without formal coordination.

- The Michigan SEO did not formally coordinate with utility customer-funded program administrators but created complementary “fuel-neutral” programs that included improvements in the efficiency of oil furnaces or thermal measures for oil-heated buildings. These improvements are beyond the reach of the existing utility customer-funded programs because state regulators have adopted policies that preclude electricity and natural gas consumers from paying for energy efficiency programs that produce energy savings in oil-heated buildings.
- In Colorado, the SEO launched a statewide marketing effort called “Recharge Colorado” that was a “one-stop shop” website for residents and businesses to learn about both ARRA- and utility customer-funded rebates, other incentives, contractors, and other energy efficiency information. If tools such as Colorado’s web portal prove useful to utility customer program administrators, those tools may provide benefit beyond the Recovery Act performance period.
- In North Carolina, the SEO formally coordinated with utilities and developed programs that reach into market segments not previously covered by existing utility energy efficiency programs (e.g., new construction of multifamily and manufactured housing).

A few states – California, Hawaii, Maine, Massachusetts, and Minnesota – provide examples of full collaboration among program administrators (or state regulators). Full collaboration is marked by

comingling or coordination on the utilization of funding, coordination on program design and implementation and development of a unified program, often with a single name or brand.

- In Minnesota's Trillion BTU program, the SEO delegated ARRA money to a port authority with more experience in economic development for a revolving loan fund targeting the commercial and industrial sectors. The state's largest utility is adding rebates and engineering assistance for participants. The combined effort is intended to offset nearly all upfront costs for industrial energy efficiency projects.
- In Hawaii, the third-party administrator of ratepayer-funded programs has a solar hot-water heater program that is very popular but expensive on a cost-per-kilowatt hour basis. The SEO delegated ARRA funds to the third party utility customer program administrators to assume the rebate costs under ARRA and buy down interest rates so that initial system cost to participants is very low.
- The Massachusetts SEO is establishing a new, ARRA-seeded loan-loss reserve fund. Utilities in Massachusetts are supplying program dollars to buy down interest rates on the loans to 0% and supplying rebates to reduce the principal offered to participants. Implementation contractors that work under the utility program are promoting the new loan program.
- In California, the California Energy Commission (CEC), the California Public Utilities Commission (CPUC) and the investor-owned utilities committed to a single statewide, multi-agency, multi-sector retrofit program that targeted residential customers. State policy was one driver in California as the CPUC Long-Term Strategic plan calls for ambitious transformations of the energy efficiency marketplace and a large scale, comprehensive and unified retrofit program is seen as key to achieving those goals. The CEC and several cities and counties had Recovery Act money and ideas for financing, but they had limited incentives and infrastructure for implementation. The local governments wanted utility partners with access to rebate delivery and processing and knowledge of energy use in their territories. The utilities saw an opportunity to outsource some outreach and workforce development functions to state and local government but wanted to receive credit for the energy savings attributable to their efforts. .

These kinds of collaborations appear to offer clear divisions of labor and investments based on competencies, capacities, and self interest. For utility customer-funded program administrators, outsourcing less cost-effective program elements and receiving credit for energy savings were key attractions in participating in coordinated joint Recovery Act and utility customer-funded programs. Likewise, the state and local grantees drew upon the expertise, delivery networks, and access to customer energy use data held by utility program administrators in order to establish partnerships and coordinated programs.

Challenges

In some instances in the 12 case study states, coordination between utility customer and ARRA energy efficiency programs did not make sense. Recovery Act initiatives targeting economic development or job creation were not always a good fit for utility-customer funded programs that were driven by savings targets or market transformation policy objectives. In some cases, existing program administrators saw more risks than benefits from new ARRA-funded programs. Among those potential downsides was uncertainty about statutory federal requirements tied to the Recovery Act money. ARRA-funded projects had to offer prevailing wages (Davis Bacon Act), pass environmental (NEPA) and historic preservation reviews, and feature U.S.-made goods and services to the greatest extent practicable. Utility programs in some states typically do not operate under all of these requirements.

A few of the challenges we observed include:

- **Funding fluctuations do not support long-term market transformation** – Program administrators and contractors indicated that a lack of continuity in program offerings and incentive levels undermines market confidence, orderly program uptake and entry of private investment. Some utility customer program administrators saw the burst of federal funding in state or local hands as an uncontrolled new influence on markets that those administrators had cultivated. The New York Energy Research and Development Authority (NYSERDA), combining the functions of state energy office and utility customer program administrator, decided the ARRA appliance funds would impair efforts at market transformation and sequestered those rebates from utility customer-funded programs. Customers had to choose between utility customer- and ARRA-funded rebates; NYSERDA and utilities kept running lists as insurance against customer double dipping.
- **Strain of time and capacity limits** – Tight deadlines and historic funding levels required unprecedented ramp-up from state and federal program administrators. A number of respondents indicated that the lack of comprehensive guidance at the program’s inception compelled some states and localities to change course after DOE issued updated guidance documents on various issues that arose during implementation. This meant that some states faced delays in finalizing their program designs, executing contracts and completing other activities as quickly as they had planned.
- **Statutory requirements limited coordination** – After passage of ARRA, a number of SEOs indicated that they had initial discussions with utility program administrators about coordination of program design and delivery. However, some utilities were reluctant to fully integrate program offerings when they became aware that use of ARRA funds would mean that these “integrated” programs would be subject to meeting statutory requirements included in the ARRA. Thus, some utilities determined that fully coordinated and integrated program delivery was not in the best interest of the success of their own programs.
- **Varying program goals** – Some SEOs designed their programs primarily to job creation and economic stimulus objectives of the Recovery Act, which in some cases was not aligned with longer term market transformation and energy savings objectives of utility customer-funded programs. For example, with appliance rebates, most case study states set rebate levels for a quick hit in the market rather than a steady incremental enhancement to appliance sales. In the short term, that approach may have saved jobs and, anecdotally, kept some retailers in business. However, retailers in Wisconsin, New York and Hawaii reported a sag in sales before the ARRA-funded rebates were offered, apparently in anticipation of the rebates. The extent to which these rebate cycles may have affected existing appliance efficiency programs or resulted in additional net savings is an issue outside the scope of this report and may be taken up by program evaluators in the future.
- **Savings attribution and reporting of impacts** – The attribution and claiming of savings from projects that utilize both Recovery Act funds and rebates from utility customer-funded programs has been a subject of intense negotiations in several states. States have taken varying approaches on this issue (see Table ES-2). Attribution is a critical issue for administrators of utility customer-funded programs with performance incentives or in states that have adopted Energy Efficiency Resource Standards with savings targets. Joint OMB/DOE guidance advises grant recipients to report the “full estimated impact” of ARRA-funded programs, including the impact of “leveraged” resources that, absent the ARRA investment, would not have been part of a program. Many states are reporting the full savings associated with joint programs. Some plan on reporting net energy savings; other states are reporting gross savings. Some utility customer program administrators engaged in ARRA-funded programs are taking full credit for savings from those programs; some are taking proportional credit (see Table ES-2).

Table ES-2. Approaches to crediting utility customer-funded energy efficiency programs with energy savings for projects incorporating both ARRA and utility customer (UC) funding in 12 case study states

Full credit of savings to UC administrator	Proportional credit of savings to UC administrator	Strict separation of ARRA & UC program savings	Unresolved
CA, FL, MA, MI, MN*, NC	HI, ME, WI**	NY	CO, OR

- The Minnesota Office of Energy Security (OES), which reviews and approves the utilities’ cost-effectiveness filings and savings claims, indicated that it is taking a program-specific approach to attribution of savings. For example, the OES allows the utility to count all of the savings for measures installed in the ARRA residential rebate program in cases where a utility rebate is also leveraged.
- **Focus on Energy (Focus), the third-party program administrator in WI, received all energy savings credit for appliances that it provided rebates for and still considered cost effective, but no savings credit for appliance rebates not already offered. For the other programs, several factors went into determining whether Focus or the SEO received savings credit.

Conclusions and recommendations

The unique nature of the Recovery Act – a large infusion of funds with tight deadlines and objectives beyond energy efficiency – limits extrapolation of the ARRA experience to the future. Yet the experience provides some insights for state policymakers, regulators, and program administrators on strategies and approaches that may work in a future regulatory and market environment with more diverse energy efficiency funding sources and program actors. Diversification of energy efficiency funding already was under way before ARRA. Some states were utilizing regional cap-and-trade allowance revenues and payments from ISO/RTO forward capacity markets to supplement funds from utility customers. However, the regional cap-and-trade and forward capacity market payments are modest relative to the historic levels of Recovery Act funds.⁵ In states with significant utility customer-funded programs, the ARRA grants represent a significant impact; where utility energy efficiency programs are nascent, the Recovery Act has provided substantial startup funding for statewide energy efficiency efforts.

Our case study states illustrate approaches that were utilized by SEOs in designing and implementing ARRA-funded programs and provide insights on pitfalls to avoid and ways that an expanded universe of players might orchestrate and coordinate their roles and responsibilities. The Recovery Act grants have enabled program administrators to begin exploring divisions of labor based on natural niches and test new roles that could work to maximize the impact of their respective funds and benefit taxpayers and utility customers. In light of these early findings, we make several recommendations for current and future programs and suggest areas of further inquiry for those entities that will be conducting formal evaluations of ARRA energy efficiency programs:

- **Tracking and sharing the impacts of revolving loan funds** – Most revolving loan funds programs will last well beyond the ARRA performance period. It is important for DOE (and states) to track and monitor the impact of these funds over time (10-15 years). Dissemination of data about default rates, program administration costs, and effective interest rates will be useful in evaluating program impacts and informing program administrators and financial institutions for future financing programs. Going forward, DOE should also consider providing technical assistance to SEOs that want to modify their

⁵ Our interviews with the 12 states did not include discussion of coordination with funding sources other than utility customer-funded programs.

RLF terms or target markets in order to focus on under-served markets that most need project finance for energy efficiency projects (e.g., small business sector).

- **Assisting state energy offices in retargeting revolving loan funds** – Going forward, DOE should also consider providing technical assistance to state energy offices that want to modify their revolving loan fund terms or target markets in order to focus on under-served markets that most need project finance for energy efficiency projects (e.g., residential home energy improvements, small business).
- **Continuing funding for innovation in EE program design** – ARRA-funded SEP programs have been able to try new approaches to EE program design and implementation, at least partially because they are not constrained by some requirements faced by administrators of utility customer-funded energy efficiency programs (e.g., cost-effectiveness screening tests). In our interviews, state regulators and utility customer program administrators were enthusiastic about some of the creative programs the state energy offices were trying. There is a need for funding and support after ARRA funds are expended to continue exploring innovative program design and delivery approaches that may at first may not meet constraints faced by utility customer-funded programs. State energy offices and other regional partnerships may be able to fill this niche as testbeds for new programs, workforce development and market transformation initiatives.
- **Coordination guidance** – Several state energy office and utility or third-party program administrator interviewees recommended that federal funds come with a coordination requirement. ARRA program evaluators might examine the pros and cons of explicit guidelines for state energy offices to formally consult and/or obtain input from utility customer program administrators and state public utility commissions if SEOs design and offer federally-funded energy efficiency programs in the future.
- **Grant issuance and administration** – The tight deadlines for Recovery Act grants tested every level of government and limited the opportunities for coordination among state and local governments and utility customer-funded administrators. The design of future federally-funded energy efficiency programs should take into account the challenges involved in ramping up programs and allow sufficient time for DOE grant managers to establish necessary program guidance documents. However, guidance for the statutory regulations is now fairly well developed and should consume significantly less time in the implementation of future programs.
- **Energy codes updates and compliance efforts** – State governors that received Recovery Act energy grants had some obligation to ensure that their state would take action to implement the latest residential and commercial energy codes, with 90% compliance, by 2017. However, based upon our review, it appears that about 18 states budgeted a small share of their SEP funds on code development and enforcement and training.⁶ Most of the funds are being spent in states that already tend to keep their codes up to date. Of the 18 states that either do not have building energy codes or whose codes are significantly outdated, only six are spending SEP dollars on code advancement.⁷ Because these states were the primary targets of the code requirement, evaluators may want to assess whether the level of investment and effort in states historically slow to update their codes is consistent with meeting the Recovery Act’s energy codes requirement.
- **Attribution and reporting of savings and assessment of program impacts** – Some of the 12 case study states had not settled on exactly how to attribute savings where projects combined utility

⁶ Sixteen states budgeted a total of \$17M of their SEP funds on code development, enforcement and training; two states (New Mexico and North Carolina) are spending an undetermined amount on building energy codes as part of their portfolio of programs, but separate budgets are not available.

⁷ It is important to note that states also received about \$9 million in additional ARRA funding for code adoption, training and compliance through program initiatives funded by DOE’s Building Technologies Program. For example, twenty-four states received a total of \$7.3 million for the Adoption, Training and Compliance Solicitation, 5 states received funding for compliance pilots (\$750,000 total) and 15 states received equal portions of \$1 million for BCAP’s Compliance Assessments.

customer funds and Recovery Act funds. Evaluators may wish to examine whether more refined state and utility reporting guidance will produce consistent measures of energy savings. Among our 12 case study states, it does not appear that any state regulatory commission decided to increase savings goals for their program administrators to account for the potential boost from Recovery Act funds. Seven of our case study states allowed the utility customer-funded programs to claim all savings from projects that combined ARRA and utility customer funds. As a result, in some cases savings goals may be met more easily than anticipated. State regulators might examine the extent to which progress toward EERS compliance has been accelerated by federal taxpayer dollars.

- **Knowledge preservation** – Capacity, lessons learned and practical know-how are being developed quickly at the state and local level. Knowledge and relationships arising from Recovery Act programs are at risk of being lost as staff and contractors are reassigned or laid off at the end of the performance period. Government agencies and utility program administrators should look for ways to preserve new capacity and knowledge.⁸
- **Resource-efficient loading order** – On-site renewable energy systems can be significantly more costly than most energy efficiency measures. In utility customer-funded programs, a few states (e.g., CA) have adopted a “loading order” that encourages customers to implement cost-effective efficiency measures prior to installing renewable energy systems as a condition of providing incentives for renewable energy projects. They have decided that optimizing customer loads first and then sizing renewable systems delivers the most value for public dollars. Evaluators may want to examine implementation practices among those states that offered incentives to implement both onsite renewable energy and energy efficiency projects and highlight “best practices” on the design of combined renewable energy/energy efficiency programs in the future.

The ARRA-funded efficiency programs are too young to speculate on program outcomes or quantify the value that coordination may offer over more independent approaches. However, the Recovery Act set in motion exploration nationwide with new markets, actors, and approaches, including new divisions of labor and additional resources for delivering energy savings. These activities generated new partnerships and perhaps a broader constituency for energy efficiency among governments, businesses, residents, utilities and others. The ARRA experience to date underscores the difficulties and potential benefits of a larger, more complex effort at saving energy nationwide. Many issues relating to application of existing and new statutory guidance have been resolved, opening up additional opportunities for administrators to offer fully coordinated and integrated programs in the future. This experience also suggests that the various recipients of ARRA funds (e.g. states, counties, cities) may have natural niches and roles to play in areas where utility customer energy efficiency program administrators have been constrained or reticent, such as workforce development, financing, and serving markets and end-uses not covered by utility customer programs. Some of the solutions that are emerging now will likely not continue past the Recovery Act performance period; however many may persist as important new elements to shape the future of U.S. energy efficiency initiatives.

The full report and technical appendix with the 12 case studies are available from the Lawrence Berkeley National Lab Publications page at the following links:

- Full report <http://eetd.lbl.gov/EA/EMP/reports/lbnl-4322e.pdf>;
- Technical Appendix <http://eetd.lbl.gov/EA/EMP/reports/lbnl-4322e-app.pdf>.

⁸ Institutionalizing knowledge obtained by SEO staff in designing ARRA-funded programs can be preserved (even in event of staff turnover) by creating program procedures manuals and documenting and disseminating program results.

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