

Developing an Evaluation Approach for Wisconsin's Public Benefits Renewable Energy Program

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Abstract

Sixteen states have established 20 funds to support “clean” generation sources, including renewables and sometimes other options such as fuel cells or microturbines. These programs were expected at one time to collect \$3.6 billion between 1998 and 2012. Because they differ widely in approach, funding, technologies covered, and the balance they set between resource acquisition and long-term market transformation, they constitute the most active current effort to experiment with new ways to develop energy technology markets. Wisconsin's Focus on Energy effort includes a Renewable Energy Program that targets customer-sited renewable energy uses. Our experience in developing an evaluation approach for the Wisconsin program suggests that professional evaluators have much to contribute to the development of state renewable energy programs, in particular by supporting program administrators in designing program logic with the same rigor now achieved by many mature energy efficiency programs. To do so, however, evaluators may need to “re-learn” how to convey their complex conceptual vocabulary to a community unfamiliar with it. They may also find that some evaluation tools (e.g., benefit-cost analysis) need to be readjusted to provide insight into renewable energy markets, and that full market transformation is a less plausible goal (or, at least, a far-off one) for many renewable energy technologies. However, as state budget deficits loom, rigorous evaluation could provide a valuable tool for policy makers seeking to trim program budgets with minimal harm to the public good.

Introduction: State Renewable Energy Funds as a New Evaluation Focus

In 1995, the Federal Energy Regulatory Commission undercut California's complex Biennial Resource Plan Update. To many observers, the move signaled the end of pressure on utilities to incorporate renewable energy in their resource plans. Within a few years, it was assumed, the market would provide – or ignore – renewable energy: if consumers wanted it, they would pay extra for it.

Those expectations were only partly accurate. In the late 1990s, when retail competition still seemed inevitable, many utilities did abandon renewables (as well as demand-side management) as soon as regulators allowed them to do so, on the grounds that such activities would encumber them in the coming competitive era. But many state governments proved unwilling – or, given stakeholder pressure, unable – to leave renewable energy completely to market forces. Instead, they set up ratepayer-funded, state-managed efforts to support “public benefits” which markets seemed unlikely to provide. These included energy efficiency programs, energy-related research and development, energy subsidies for low-income citizens, and, in many cases, renewable energy initiatives.

Although retail competition has grown less likely, 16 states so far have established 20 funds to support “clean” generation sources, including renewables, and sometimes other options such as fuel cells or microturbines. These programs were expected at one time to collect \$3.6 billion between 1998 and 2012, or an average of \$200 million per year. They differ widely in approach, funding, technologies covered, and the balance they set between resource acquisition and long-term market transformation. Indeed, state fund activity constitutes the most active current effort to experiment with new ways to develop energy technology markets (Gouchoe, Everette and Haynes 2002; Wiser et al. 2002).

It is not yet possible to ascertain the most successful approaches resulting from that experimentation. In part, this is because clean energy funds are only slowly incorporating rigorous, third-party evaluation processes of the sort developed for utility energy efficiency programs. In particular, the funds have not yet adopted a common vocabulary to discuss and evaluate market effects.

Based on our experience in building an evaluation approach for the renewable energy component of Wisconsin's "Focus on Energy" public benefits initiative, we believe that the evaluation community has a good deal to offer state clean energy funds. To some extent, however, the evaluation community will have to adjust to the needs of a slightly different context. Perhaps more important, evaluators will have to "remember" how to communicate with a new set of clients, stakeholders and program administrators unfamiliar with the evaluation endeavor.

Wisconsin's Public Benefits Approach to Renewable Energy

Preparing for a Statewide Renewable Energy Program

In 1998, Wisconsin began a pilot in 23 northeast counties to explore the capacity of the state government to administer the public interest programs traditionally run by utilities. The Public Service Commission of Wisconsin, the Department of Administration's (DOA) Division of Energy, and the Wisconsin Public Service Corporation collaborated in launching Wisconsin Focus on Energy ("Focus"), which included subprograms for residential, commercial and industrial energy efficiency and renewable energy, among other components. Subcontractors managed all Focus programs except for renewable energy, which was overseen by DOA's Division of Energy. One of us – Wichert – managed the renewable energy pilot in the state's Northeast, and is DOA's contract manager for the statewide effort.

In late 1999, the Wisconsin legislature approved a statewide version of Focus, requiring all in-state investor-owned utilities (IOUs) to transfer their energy efficiency and renewable energy responsibilities to DOA by the end of 2002. (Municipal and cooperative utilities can opt in or create their own programs.) The legislation mandates programs for consumer-sited power production that:

- Educate consumers about renewable energy;
- Encourage customer applications of renewable energy; and
- Encourage research technology transfers of renewable energy.¹

Rather than including this renewable electricity program as a small part of the residential or business energy efficiency efforts, DOA staff designated a separate contractor to run it, to ensure that renewables have their own administrative advocate within Focus.

In August 2000, the Public Service Commission of Wisconsin (PSC) identified \$45.8 million of utility conservation expenses as public benefits funds. In January 2001, the PSC ordered utilities to transfer funds rising progressively to this amount annually to DOA both during and after a three-year transition period. Focus will receive an additional \$16.4 million per year from a new public benefits fee first collected in November of 2000, for a total energy efficiency and renewable energy public benefits fund of \$62.3 million annually. Focus is currently funded for three years, and will then be reassessed.

The 1999 legislation requires that the Renewable Energy Program receive at least 4.5% of the entire public benefit fund, or about \$7.8 million over the first three years. Perhaps unfortunately, by requiring that the renewables program promote on-site electric power, the legislation neglected thermal renewables (e.g., solar or biomass heating). To remedy this gap, DOA staff directed the residential and

¹ By comparison, the residential and business energy efficiency programs must reduce demand for electricity and natural gas.

business efficiency programs to devote 4% of their budgets to promoting thermal renewables, equivalent to some \$6 million over the first three contract years (see **Table 1**).²

Table 1. Anticipated Budget for Focus Renewable Energy Activities (in million dollars)

Contract Year	Renewable electricity	Thermal renewable energy
One (July '01 – June '02)	2.6	1.0
Two (July '02 – June '03)	2.4	2.0
Three (July '03 – June '04)	2.8	3.0
TOTAL	7.8	6.0

The Wisconsin Renewable Energy Network's Approach

The DOA's final plan, adopted in November 2000, required that the Renewable Energy, Residential and Business Programs be administered by a non-profit entity. To run the Renewable Energy Program, DOA selected the Wisconsin Renewable Energy Network (WREN), a consortium of organizations that came together for the purpose of bidding.³ WREN represents much of Wisconsin's institutional infrastructure for renewable energy development. WREN hired a director in October of 2001, signed an administrative contract in November, and rolled out its program in March 2002.

WREN bases its program on the following hypothesis: that renewable energy markets face a multitude of similar barriers that can be addressed simultaneously, such that individual program activities will have synergistic effects in multiple markets. As a result, WREN's Renewable Energy Program includes a comparatively large number of distinct activities. **Table 2**, synopsized from WREN's Year-Two contract with DOA, identifies specific program outputs.

Table 2. Contracted Year-Two Program Output Categories for Focus Renewable Energy Program

Task	Program Outputs Categories
Financing Programs	Demonstration Grants, Feasibility Study Grants, Business & Marketing Grants Low-Interest Loans Cash-Back Rewards Equipment Grants for Non-Profit Organizations
Renewable Energy Information Clearinghouse	Informational materials Newsletter Call-center inquiries Email lists
Low-Income Programs	Work with DOA to define activities
Marketing	Marketing plan Program allies plan

² One analysis puts the Wisconsin renewable energy effort at 90 cents per capita of state population per year, less than most other state funds. This includes the funds spent on renewables by all Focus programs (Bolinger et al. 2001, table 1).

³ WREN originally included the Wisconsin Energy Conservation Corporation (the team's administrative lead), the Midwest Renewable Energy Association, RENEW Wisconsin, the Energy Center of Wisconsin, L&S Technical Associates, MSB Energy Associates, and the Wisconsin Center for Environmental Education. Later, the Wisconsin Technical College System and University of Wisconsin-Extension joined the WREN team.

Task	Program Outputs Categories
Market Assessment	Market research plan Technical college curriculum
Technology R&D	Develop and issue RFP
Institutional Barriers	Organize and participate in stakeholder activities
Co-Funding Opportunities	No specific outputs
Renewable Credit Trading Program	Collaborate in developing and implementing a program
Customer Service Standards	Develop and implement customer service standards
Education and Training	Library program Renewable Energy & Sustainable Living Fair Scholarships for MREA workshops Expand MREA workshops Training on renewables for residential energy efficiency auditors Training on residential energy efficiency for residential renewable energy auditors K – 12 Energy Education Program College student opportunities PV installer certification Wind installer certification Tour of solar homes Association of renewable energy businesses Scholarships for business training and development RE education for youth Focus cross-training on renewables Promotional meetings.

Table 3, from WREN’s Year Two contract, outlines energy and related goals sought by the Program.

Table 3. Contracted Year-Two Impacts for Focus Renewable Energy Program

Energy Impact Goal⁴		Lifetime Benefit⁵	Program Costs⁶	Net Benefits	B/C Ratio
1,132 kW	5,166,449 kWh	\$4,310,225	\$3,968,769	\$341,486	1.09

Evaluation of the Renewable Energy Program

PA Government Services is the lead evaluator of Focus on Energy. To evaluate the Renewable Energy Program, PA selected Primen in October of 2001. In December of 2002, Serchuk Associates assumed Primen’s role. One of us – Serchuk – has led the effort at both Primen and Serchuk Associates,

⁴ Based on mutually acceptable assumptions per technology unit installed, which may include adjustments for net effects such as changes in net-to-gross ratio, operating conditions of equipment, or reliability of installation.

⁵ Based on mutually acceptable assumptions of avoided customer costs, lifetimes of technology and real discount rates.

⁶ Based on all ongoing administrative and program delivery costs incurred by Administrator during the 2002-03 contract year. One-time start-up costs such as infrastructure development and training are not included in calculating contract net benefits, but are included in calculating the overall cost-effectiveness of Focus on Energy.

designing and managing the evaluation, overseeing the analysis and reporting the results. KEMA-Xenergy, another member of PA’s team, handles the field research pertaining to the evaluation of the Program. The budget for evaluation of the Renewable Energy Program has been approximately \$150,000 per contract year, on average about 5.8% of the program budget.⁷

The evaluation comprises four areas: program processes, energy impacts, market effects, and tracking and database management. In addition, the Evaluation Team reviews and comments on the Administrator’s program plans, and provides input on the Renewable Energy Program for crosscutting aspects of the Focus evaluation, such as analysis of non-energy benefits. **Table 4** lays out major tasks that the Renewable Energy Evaluation Team has undertaken or planned in Years One and Two.

Table 4. Overview of Major Year One and Two Evaluation Tasks

Evaluation Task	Timing	Field Research	Purpose
<i>Strategic Evaluation Plan</i>	Complete 4/2/02	None	Describes broad evaluation approach, key evaluation functions and issues
<i>Detailed Evaluation Plan (Year One & Two)</i>	Complete 10/23/02	None	Identifies primary research tasks, budget and timeline
<i>Fast-Track Structural and Process Evaluation</i>	Complete 10/21/02	12 in-depth interviews of DOA and Program staff; 5 of trade allies, and 8 of program participants and non-participants	Verify that the Program is designed to address factors perceived by respondents as hampering Wisconsin RE markets; provide early feedback on effectiveness of program processes
Review of Administrator’s program logic and Year Two plan	Complete during Spring and Summer of 2002	None	Assist in design of coherent program and identification of measurable metrics
Input on Administrator’s market research plan, and collaboration if appropriate	Ongoing	None	Seek economies from combining market and evaluation research; avoid respondent fatigue; help establish baseline for evaluation of market effects
<i>Treatment of Customer-sited Renewables by State Clean Energy Programs</i>	Complete 1/30/03	Secondary literature review; interviews of 8 fund managers	Compare Wisconsin approach to that of selected states; compare success of other approaches; glean relevant lessons
Input on Renewable Energy Program for lead Focus evaluator’s <i>Quarterly Impact Reports</i>	Ongoing	Analysis of Program’s tracking database; review of tools and methods for estimating energy impacts	Verify credibility of Program’s gross (i.e., unadjusted) impact estimates
Input on Renewable Program for Focus-wide analysis of non-energy benefits	Ongoing	None	Supply insight into relevant non-energy benefits of renewables other than those shared with energy efficiency.

⁷ The activities of the Focus Residential and Business Programs to promote thermal renewable energy will be evaluated as part of the respective evaluations of those programs, with separate budgets. Thus far, this three-part approach to evaluating Focus’ renewable energy activities has been inconvenient, but it seems the best response to the somewhat unwieldy program structure that it mirrors.

Evaluation Task	Timing	Field Research	Purpose
<i>Mid-Year Updates on Program Structure, Processes and Activities</i>	DRAFT submitted 3/17/03	In-depth interviews of 10 DOA and program staff; document review; analysis of tracking database	Revisit concerns raised in <i>Fast-track</i> analysis; gather data on progress toward meeting activity-related operational goals in Year Two contract
Input into Administrator's Year Three planning	Winter and Spring 2003	None	Assist in design of coherent program and identification of metrics; confirm that Administrator's action plan addresses evaluation findings and recommendations
As-yet unnamed year-end report	Spring 2003	In-depth interviews of 10 trade allies; CATI survey of 70 program participants, non-participants by rejection, drop-outs, and pipeline participants; engineering review of selected projects	Assess early market effects in 3 key technology areas; process update on selected issues; develop free-ridership and spillover adjustment factors to produce net-to-gross impact data for future Focus-wide <i>Quarterly Impact Reports</i>
<i>Detailed Evaluation Plan (Year Three)</i>	Spring or Summer 2003	None	Lay out specific Year Three research tasks, budget and timeline

Representative Evaluation Findings and Issues

The following sections describe some key findings and issues arising from evaluation of the Renewable Energy Program. All of the points covered represent significant aspects of the evaluation. However, they are not meant to convey the full range of evaluation findings.

Energy impacts. The Renewable Energy Program is comparatively young, and its energy impacts so far are small. Based on data through January 17, 2003, the Evaluation Team has verified impacts from 11 installed projects (all photovoltaic). As a group, they represent 17.85 installed kilowatts (kW) of total rated capacity, and estimated gross annual electricity generation of 24,167 kilowatt-hours (kWh).

Looking forward, the Renewable Energy Program's tracking database records 57 projects that will generate electric power. If all those projects come on line, the gross energy impact will be almost 20 million kWh annually, and peak rated capacity will be almost 3,000 kW. For comparison, the kWh figure is almost four times the program's Year Two contractual goal (**see Table 3**).

Our analysis suggests some caveats to that optimistic note. The projects' projected impacts are highly concentrated in a few installations. Of 57 projects expected to generate power, seven account for 97% of the program's gross projected impact: six anaerobic digesters at dairies, and a hydroelectric project. Should any of them stall, the percentage reduction in the program's impact would be significant. Four of the seven currently lack signed contracts, as do many of the smaller projects.

In addition, the data noted above are unadjusted for free-ridership and spillover. We are not sure what to expect with respect to free-ridership. The Program typically supports only a modest portion of a renewable energy project – for instance, up to \$50,000 for an anaerobic digester, which may cost several hundred thousand dollars. However, Program staff report that many participants attribute their decision to install the technology wholly to Focus co-funding, and the Administrator hopes ultimately to receive credit for all or most of the gross reported energy impacts. At the moment, then, free ridership remains

an open question. In contrast, we hypothesize that spillover effects may be low: due to the high capital cost of renewable energy technologies, we do not expect to find large numbers of installations that do not receive Focus funding but which nevertheless occurred as a result of Focus efforts. Of course, this also remains a question for research. We project the gross-to-net analysis for late spring of 2003, depending on the pace of project installation.

Based on our experience so far, we believe that impact evaluation for renewable energy programs, as traditionally defined, may be less complicated than it has been for many energy efficiency evaluations, as it is easier to measure energy produced (e.g., with a meter) than energy saved, the calculation of which can be complex and based on behavioral assumptions. For instance, the energy impact of most renewable energy activities will not depend strongly on recurring purchasing behavior. To increase the probability that a given installation will perform as expected, we have recommended that the Program Administrator consider program design measures employed by other state renewable energy programs such as requiring commissioning for large projects, or tying part of the financial incentive (currently paid up front in the Wisconsin program) to energy production over time. While not trivial, we consider these issues more straightforward than the corresponding ones concerning typical efficiency programs.

Modeling program logic. The DOA has asked all Focus program administrators to develop a matrix of sequenced results that they hope to achieve, and to include this matrix in their contracts. In the case of the Renewable Energy Program, DOA has suggested that the Year Two matrix include only operational (i.e., participant) effects, while reserving market (i.e., non-participant) effects for subsequent years.

The Evaluation Team believes that the Renewable Energy Program Administrator has not yet exploited the full potential of the logic modeling process in its program planning. For instance, a recent draft report (not yet approved by DOA or revised in light of Administrator feedback) suggests that the size of the incentive pool seems to have been determined without reference to the program's market preparation goals, and without consideration of what size incentive pool might be required to produce a given market effect (Michelman, DeJuliis & Serchuk 2003).

In general, we support the use of a logic modeling process to specify sought-after market effects and to ensure the existence of a plausible "success scenario" for the program. But based on our experience, we suspect that renewable energy public benefit programs – especially those that depend for delivery on existing field organizations – may initially struggle to adopt the complex vocabulary of program logic developed over the years by the energy efficiency community. Likewise, evaluators and agency staff will be required to phrase their requests for conceptual rigor in an understandable way.

Program breadth. The Program Administrator, DOA staff and the Evaluation Team have actively discussed the appropriate scope for the Program. As it stands, the Program is designed to attack a number of barriers and to act in several technology markets simultaneously; some activities are not expected to boost renewable energy installations or achieve market effects in the course of the program's current three-year funding window. This broad approach builds off the Focus renewable energy pilot, and indeed several of the pilot's areas of endeavor have been excised from the statewide program discussed here, presumably in part because the evaluators of the pilot made that recommendation. However, as **Table 2** illustrates, the statewide program remains comprehensive.

The evaluation team analyzed the situation in its 2002 *Strategic Evaluation Plan*:

One can imagine at least two rationales for [taking a broad approach]. One, the "experiment perspective," might contend that we know very little about how to apply market transformation concepts to the renewables industries (i.e., in contrast to the energy efficiency industries), and that the renewables sector is

likely to behave quite differently. In this perspective, our current lack of knowledge justifies a multi-pronged approach to renewable energy market transformation, so as to learn which activities have the greatest impact on markets. That is, multiple programs [that is, activities] represent an experiment, which, combined with careful evaluation, will allow eventual pruning and targeting of the most effective activities.

In contrast, one might take the “multiple failure perspective,” arguing that renewable energy market transformation requires multiple, simultaneous activities simply because the value chains for these products are so flawed. That is, in this perspective multiple activities do not represent a set of experiments but an analytic whole.

The Renewable Energy Administrator seems to endorse elements of both the “experiment perspective” and the “multiple failure perspective,” with somewhat more emphasis on the latter. It is our sense that the Administrator intends to use the evaluation to cull out less successful elements of their program in the out years of this contract, but that has not yet been described as a formal goal (Serchuk 2002).

The evaluation team’s principle concern about breadth relates to the level of available resources. Partly to investigate different program design options, the Evaluation Team compared the Focus approach to eight other public benefit funds that support customer-sited renewables (Serchuk & McKee 2003). As a result of that research, the Evaluation Team suggested that:

The Wisconsin program appears to sit at the high end of the range among states examined in terms of variety and number of activities, while the level of funding is at the low end of the range examined. Several other states also enjoy longer explicit funding commitments.

- *The combination of breadth and modest resources suggests that the program is potentially at risk of producing a large number of meritorious activities, which nevertheless, because they are scattered or small in scale, prove incapable of producing lasting positive change in Wisconsin renewable energy markets.*
- *The relatively ambitious scope of the program combined with the small program staff suggests that the program could potentially risk administrative overload (Serchuk 2003).*

This issue remains a topic of discussion among the Program Administrator, DOA and the Evaluation Team. As a partial response, in March of 2002 the DOA asked the Administrator to specify three technology markets to be named in the Administrator’s Year Two contract. Currently, these include anaerobic digesters at dairy farms with 300+ head of cattle, small rural wind turbines 1 – 20 kW in capacity, and photovoltaics for existing homes. Although the original intent was to use these markets merely as gauges of program success, as time has gone on there have been indications that the Program Administrator may be inclined to key the program’s general market preparation activities more tightly to the three markets. This remains undetermined as of yet, however, and, as noted, there remain several program activities that probably cannot be related to specific effects or resource acquisitions in the three markets identified in the contract.

Benefit-cost analysis: As part of its evaluation of the Focus program, the PA team has developed a crosscutting approach to benefit-cost (B/C) analysis. (For space limitations, we will not delve into the methodology here.) Recent draft reports note that the Renewable Energy Program shows a negative B/C ratio, primarily due to the high cost to customers of PV systems even after receiving Focus funding (e.g., Focus Evaluation Team 2003). In response, the Renewable Energy Administrator has noted that there appears to be demand for PV technology notwithstanding the cost, and has suggested that the B/C analysis, taken out of context, might provide insufficient guidance concerning which technologies should be promoted by Focus. The Administrator also notes that the legislation directs the public benefit program to give priority “to the sectors of energy conservation or efficiency markets that are least competitive at promoting environmental protection, electric system reliability, or rural economic development.” At the time of writing, this issue is under discussion (as is the draft report in which the preliminary B/C finding appeared), and the B/C analysis may change as the evaluation team develops a better sense of the value of the non-energy benefits of renewable energy technologies. While the outcomes, if any, of those discussions remain uncertain, the issue underscores the markedly different role of cost in renewable energy and most energy efficiency markets.

Some Implications for Future Evaluations of Renewable Energy Programs

The evaluation has been underway for almost a year and a half. It remains somewhat immature, however. As noted, the Evaluation Team has only begun to move beyond the process and tracking functions into investigation of market effects and assessment of net impacts. Nevertheless, we offer a few insights that may assist in the design and evaluation of other programs:

- **Market transformation may be an inappropriate goal.** Following the practice of energy efficiency programs, Wisconsin’s Renewable Energy Program initially identified market transformation (along with resource acquisition) as a primary goal. We are cautious about endorsing such language, and indeed the Administrator has since recharacterized this goal in terms of “market preparation” or other phrases. Simply put, it is not clear that any program can plausibly hope to “transform” the market for most renewable energy technologies, given their current cost disadvantage compared to conventional sources. Indeed, some renewable energy technologies may always require some level of public support. We believe that evaluators can usefully manage expectations of program stakeholders in this respect.
- **Many key market processes don’t concern energy.** Energy users make many efficiency-related decisions for non-energy reasons – e.g., comfort or improving industrial processes. Likewise, our sense is that few customers opt to install a renewable energy system solely for its energy-producing capacity. Rather, they may be driven by a need for a waste management solution (e.g., dairy farmers considering an anaerobic digester) or an environmental commitment (e.g., homeowners considering photovoltaics). To some extent, this is a hypothesis that future evaluation research and program experience may confirm. At any rate, however, we believe that evaluators must be equipped to understand market drivers beyond the realm of energy.
- **Evaluators can contribute by supporting program design.** The team of organizations administering the Focus Renewable Energy Program brings to its work extensive field experience in identifying and addressing market barriers. In our estimation, the team has less experience in “big picture” program design, although they are acquiring that experience rapidly. In particular, it has been a challenge for the team to specify a sequenced, causal set of changes in attitudes, behaviors and practices that they wish to bring about in specific technology markets, as required by the DOA’s logic modeling process.

To some extent, the design of the Renewable Energy Program, which allows for heuristic learning, can accommodate the maturation of the Administrator with respect to program design. However, we have also found that the Renewable Energy Evaluation Team has been able to add modest value to the Program through serving as an informal consultant on issues of program design and logic. Indeed, at times, the evaluators have had to tread carefully to avoid the temptation to meddle in issues of program design, and we have occasionally perceived that such meddling might be welcomed.

In general, we expect that as public benefit programs supporting renewable energy mature, administering teams will become adept at identifying the market effects that they wish to achieve. Until then, state agencies and program delivery organizations may turn to the evaluation community for that expertise, and evaluators may be called on to play a more active role in program design than they do customarily. In response, evaluators will have to think carefully about how to delineate the limits of their professional role.

Looking Forward for State Public Benefit Funds

As discussed above, we believe that the evaluation community has a great deal to offer state clean energy funds. We also believe that these programs represent a growing market for evaluation services. While some programs will remain too small to justify formal evaluations, others – for instance, New York, California, Massachusetts and Oregon – are both large enough and sophisticated enough to require evaluation, and several of these already have planned a strong evaluation program.

It also remains possible that some group of states might agree to coordinate their efforts. For instance, they might agree to drive down prices through joint wholesale purchases of renewable energy equipment, to require common equipment standards, or to promulgate standardized financial incentives. Some state fund managers have considered the possibility of such coordinated action, for example through the auspices of the Clean Energy States Alliance.⁸ Such an effort would raise the stakes for evaluation, making buy-in to a clear vocabulary and rational approach even more valuable.

On the other hand, economic conditions could short-circuit the funds' potential, and the value to professional evaluators of the funds as a potential market. The National Conference of State Legislatures reckons that U.S. states will face a collective budget deficit of at least \$68.5 billion in fiscal 2004, which for most begins in July of 2003. (In fact, the collective deficit will likely be much larger, as a third of the states had insufficient information available to allow NCSL to project their shortfall.) Only New Mexico, Arkansas and Wyoming expect to balance their books in FY 2004 (NCSL 2003).

In several cases, cash-strapped governors and legislatures have tapped these ratepayer-funded programs to supply revenue for their inadequate general funds. To cite two examples:

- **Massachusetts** Governor Mitt Romney has approved the withdrawal of \$17 million from the state's Renewable Energy Trust (Broehl 2003). The slowness of the Massachusetts fund in disbursing the \$150 million collected since 1998 has made it particularly vulnerable.
- In **Connecticut**, Governor John Rowland has proposed redirecting all money collected for the state's quasi-public Clean Energy Fund and its Energy Conservation and Load Management Fund into the general fund, essentially eliminating them (Broehl 2003).

Not all such attempts will succeed. Using ratepayer money as a substitute for taxpayer money will prove controversial if not illegal. However, it is clear that many public benefits funds are in jeopardy, and that their long-term promise may be less than clean energy advocates had hoped. An conscientious

⁸ Established by the non-profit Clean Energy Group; see <http://www.cleanenergyfunds.org>.

evaluation process could prove useful in helping policy makers understand how to prune public benefit programs with minimal damage to the public good.

On balance, we do expect these funds to continue as a key avenue for renewable energy development throughout the coming decade, although we also expect some to be cropped and others eliminated in the mounting state budget crisis. We look forward to the participation in this field of professional evaluators to deliver credible assessments of program success, and a method for refining program design and processes.

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