

Wasting Our Lights In Vain:  
Recommendations for Energy Conservation  
by Municipal Agencies

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A Report of the Citizens Budget Commission  
December 2002



## Foreword

Founded in 1932, the Citizens Budget Commission (CBC) is a nonpartisan, nonprofit civic organization devoted to influencing constructive change in the finances and services of New York State and New York City governments. This report was prepared under the auspices of the CBC's Technology and Public Services Committee, which we co-chair. The other members of the Committee are: Paul F. Balsler, Marc H. Bell, Alan M. Berman, Mark Brossman, Lawrence B. Bittenwieser, Morton Egol, Kenneth D. Gibbs, Peter C. Hein, Brian T. Horey, Jerome E. Hyman, David B. Kelso, Barbara Shattuck Kohn, Hugh R. Lamle, James L. Lipscomb, Stanley Litow, William F. McCarthy, Frank J. McLoughlin, David I. Moskovitz, Steven M. Polan, Jules Polonetsky, Carol Raphael, Edward L. Sadowsky, Lee S. Saltzman, Larry A. Silverstein, Joan Steinberg, Robert W. Strickler, Robert V. Tishman, W. James Tozer, Jr., Ronald G. Weiner, Howard Wilson, and Eugene J. Keilin, ex-officio.

The Technology and Public Services Committee has a mandate to review the delivery of public services and recommend ways that these services can be delivered more efficiently and effectively. Since 1997 the Committee has emphasized the use of information technology to change the way government operates and improve the productivity of State and City agencies. In 1998 it issued its first report pursuing this theme, *Opportunities to Improve Municipal Revenue Collection by Using Information Technology*. That report identified ways that revenue collection could be simplified in order to save the City administrative costs, and provide even greater savings to private firms and households in reduced time required to file tax forms and other paperwork.

In 2000 the Committee released a review of the New York State Department of Correctional Services, *Making More Effective Use of New York State's Prisons*, which considered alternative sentencing policies as well as technological innovations in prison management. The annual savings from the recommendations in that report were estimated at nearly \$100 million.

Also in 2000 this Committee joined forces with the CBC's Budget Policy Committee to issue two reports focusing on the then-current round of collective bargaining between the City and its unions—*Using Collective Bargaining to Improve Public Education* and *The Citizens' Stakes in Collective Bargaining*. While examining a wide range of measures to improve productivity, these reports recommended bargaining strategies that would facilitate technological changes to make possible the Commission's goal of a smaller and better-paid municipal workforce.

As the City's fiscal situation deteriorated in 2001 and 2002, the need for a more efficiently managed municipal budget became more urgent. In response, the Committee embarked on a research plan to identify significant opportunities to increase productivity and efficiency in the City's operations.

This research plan has led to five projects in 2002 to assist the City to develop a plan to improve productivity in all City agencies. First, the Committee released a report outlining how better use of information technology and other changes could save the City \$200 million per year by streamlining the procurement process. That report, *No Small Change: Opportunities for Streamlining Procurement in New York City*, appears to have helped spawn a Mayoral procurement reform initiative in fiscal year 2003.

This report addresses another opportunity to reduce citywide non-personnel costs. The City does not take adequate advantage of opportunities to conserve energy. In the current budget climate, when the City faces an estimated \$6 billion budget gap, such opportunities should be pursued aggressively. In addition, a program that provides conservation incentives to agencies should be used as a model for economizing in other areas of the budget.

The remaining three projects on the Committee's agenda address reform of the City's special education programs, more efficient deployment of personnel in the Police Department, and extension of the workweek for civilian employees. These reports have been prepared in conjunction with a December 2002 conference organized by the Citizens Budget Commission to help the City of New York develop policies to balance its budget. The conference and related material were made possible by generous support from the Charles H. Revson Foundation, the Rockefeller Foundation, and the Nathan Cummings Foundation. The views expressed are solely the responsibility of the Commission.

Marcia Van Wagner, Deputy Research Director and Chief Economist, prepared this report. Charles Brecher, Director of Research, provided editorial assistance. Nikki Macdonald, Publications Coordinator, prepared the report for publication. An electronic version of the report is available on the CBC's website at [www.cbcny.org](http://www.cbcny.org).

The Commission thanks the following people, who reviewed drafts of this report, for their helpful comments: Neill Anderson, New York State Office of Mental Health; Jennifer Blum, City of New York, Office of Environmental Conservation; Kent Miller, City of Philadelphia; and Richard Miller and Scott Butler, New York City Economic Development Corporation. The New York City Office of Energy Conservation was helpful in providing data on the energy consumption of City agencies.

Bud H. Gibbs  
Frances Milberg

*December 2, 2002*

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## Executive Summary

The City of New York pays a big energy bill—about \$350 million for electricity and another \$150 million for fossil fuels in the last fiscal year. This report demonstrates that the City could save about \$47 million annually by more closely managing electricity and fossil fuel consumption and implementing an incentive program for agencies and facilities managers.

Two agencies share responsibility for energy management in the City. The Office of Energy Conservation (OEC) in the Department of Citywide Administrative Services (DCAS) purchases energy, develops the City's energy budget and tracks usage, and develops and implements energy efficiency investments for City agencies. The Energy Department of the New York City Economic Development Corporation advises the City on energy policy, including energy purchases, develops long-term energy strategies, and administers the energy portion of economic development programs.

The City buys its electricity from the New York Power Authority (NYPA), a State agency, under a contract initiated in 1995. The prices paid by the City to NYPA are generally lower than those prevalent in the competitive market. NYPA also provides the City \$15 million per year in low interest loans for energy efficiency investments and performs turnkey energy efficiency construction services. The City has used \$90 million from this program and another \$52 million of its own for projects saving \$13 million annually in energy costs.

## Lessons From Other Jurisdictions

Other local jurisdictions across the country have been highly successful in implementing programs to reduce energy consumption and save money. Examples are the cities of Portland, Phoenix, Seattle, Chicago, and Austin and the Philadelphia School District. New York State's Office of Mental Health also uses an instructive model.

Through OEC and the NYPA contract, the City of New York has two basic elements in common with jurisdictions with highly regarded energy conservation programs. The first is a reliable source of funding dedicated to energy efficiency capital improvements. The second is a mechanism for holding agencies accountable for energy usage.

However, the other jurisdictions are more effective in motivating agencies to conserve, and, as a result, in achieving cost savings. Behind their success are three factors—a high level of commitment by political leaders and municipal managers, incentives to departments and individuals, and consistent tracking and reporting.

The successful programs have strong support from elected leaders. In Seattle, for example, a mayoral directive in 2001 requiring municipal departments to reduce energy consumption 10 percent provided the leadership for a campaign to change the behavior of

municipal employees. In 24 buildings where electricity usage averaged over 38 million kilowatt-hours in the years prior to the directive, usage declined 12 percent in 2001.

Incentives are important in reinforcing political commitment. For example, a gubernatorial directive requiring agencies to save 20 percent on energy costs over ten years led in 1990 to a program at the New York State Office of Mental Health that has reduced energy usage 37 percent per square foot to date. In this program, financial incentives are awarded to facilities that meet usage targets, which are determined using normalized weather data and other controls. Recognition awards are granted to individuals as well. In the case of the Philadelphia School District, the incentive program is considered key to its success because it increased confidence in the District's ability to sustain the program.

The final ingredient for successful management is measurement and reporting. Phoenix reports on energy usage in the City Manager's Executive Report, which is a document similar in character to the Mayor's Management Report in New York City. Portland publishes a pamphlet summarizing energy usage as part of its "Energy Challenge" initiative. These documents allows agencies to compare their usage trends, create a vehicle for setting targets, and inform the public about the success of municipal conservation efforts.

## Recommendations

The City of New York can build on its current effort to establish a more successful program by following three recommendations.

### **1. Responsibility for energy conservation in City agencies should be centralized within the Office of the Mayor.**

Energy conservation policy and oversight should be consolidated in the Mayor's Office, perhaps within the Office of Operations or the Office of Management and Budget. The new energy conservation unit should increase efforts to assist and educate agencies in their conservation practices, to develop proactive and strategic efficiency upgrade programs, to develop or expand training programs for facilities managers, and to analyze energy usage data. The new unit should negotiate savings targets with City agencies and make those targets a part of each agency's programs to reduce spending, currently mandated by the Mayor as part of citywide financial planning.

### **2. Agencies and individuals should be offered incentives to conserve energy.**

City agencies should be rewarded for saving on energy costs. They could be allowed to keep a percentage of savings achieved through conservation efforts, or, alternatively, be rewarded for reaching usage targets.

Individuals should be recognized for notable conservation achievements. A citywide employee recognition program should reward individual City employees, such as facilities managers, for

exemplary contributions to energy conservation. The profile of an awards ceremony should be high (dinner at Gracie Mansion, for example) so that employees take it seriously.

### **3. The annual volume of energy conservation upgrades should be doubled.**

There are opportunities to do at least as much additional upgrading as the City already has done. A top priority should be to expand aggressively installation of “real-time” metering. Such systems can be connected to the Internet for monitoring by facilities managers.

The City should thoroughly research and review alternatives to NYPA financing for energy efficiency capital upgrades, including an evaluation of the true cost-savings of NYPA-run projects. City officials should examine carefully the arrangements created in other jurisdictions that allow “revolving loan” funding for projects, and determine the procedures that would be necessary to create such a financing mechanism in New York City.

## **Fiscal Implications**

A 10 percent reduction in electricity usage is achievable in the first year of an aggressive energy conservation program. The City's electricity costs are expected to increase only modestly, by less than 1.5 percent per year from fiscal year 2003 to fiscal year 2006. A usage reduction of 10 percent in fiscal year 2004 would save \$36 million.

To accomplish the conservation goals outlined in the recommendations, 10 percent of the savings, or \$3.6 million, should be used to establish an expanded energy office and provide a pool for incentives to agencies and facilities. This would permit a doubling in the size of the energy staff (OEC staff combined with the EDC Energy Department staff dedicated to policy now number 12) and provide about \$2 million for agency and individual incentives. The net savings would then be about \$32 million annually.

An incentive-based program that improves training for facilities managers can also result in significant savings on fossil fuel costs as heating equipment is better maintained. Such savings would be in addition to savings on electricity and could be significant. If the City reduced fossil fuel costs by 10 percent, another \$15 million in savings could be achieved in fiscal year 2004, bringing the total to \$47 million.



## Introduction

The City of New York faces an unprecedented budget gap of more than \$6 billion in the coming fiscal year. It is closing the current fiscal year gap largely by borrowing more than \$2 billion, canceling planned new services and other devices. These avenues are exhausted. The City now must rely on better management to contain costs if it is to minimize service cuts or tax increases that undermine New York's competitiveness.

Productivity improvements can reduce costs without sacrificing services. These improvements can be achieved in every component of the City's budget. By far the largest category is wages and salaries, which total over \$16 billion. (See Table 1.) In previous reports, the Citizens Budget Commission (CBC) has recommended relevant money-saving strategies such as increasing civilianization in the Police Department, having teachers spend more time in the classroom, and eliminating unnecessary overtime in the Fire Department.<sup>1</sup>

Fringe benefits account for over \$5 billion. The CBC has recommended that these costs be reduced by requiring City employees and retirees to pay some portion of the premium for health benefits.<sup>2</sup> Employee co-payments for premiums are the norm for public and private sector employees.

The nearly \$4.7 billion in social services expenses consist primarily of payments to the State for the City's mandated share of the Medicaid program and cash assistance under the joint State and federal welfare programs. While the City has some administrative discretion, costs for these programs are determined largely by State legislation and rules. The CBC has suggested ways that strategies of competition and capitated payments can create incentives to reduce these costs while maintaining benefits for those in need.<sup>3</sup>

Debt service payments of nearly \$3 billion are a product of previous capital investments. The CBC has argued that capital dollars could be more wisely spent by better using existing facilities through approaches such as year-round schooling. In addition, policies that would reduce indebtedness by using surpluses generated in good economic times for pay-as-you-go capital have not been embraced by the City and have led to a higher overall level of indebtedness than would otherwise be the case.

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<sup>1</sup> Citizens Budget Commission, *The Citizens' Stakes in Collective Bargaining: Recommendations for the Current Negotiations with the Municipal Employee Unions* (NY: Citizens Budget Commission, December 13, 2000); and, *Using Collective Bargaining to Improve Public Education: Recommendations for the 2000 Negotiations With the United Federation of Teachers* (NY: Citizens Budget Commission, August 31, 2000).

<sup>2</sup> Citizens Budget Commission, *Modernizing the Municipal Employee Health Insurance Program* (NY: Citizens Budget Commission, April 1995).

<sup>3</sup> Citizens Budget Commission, *Budget 2000: Social Services Spending* (NY: Citizens Budget Commission, December 1996).

Procurement cuts across many components of the budget, including contractual services, supplies and materials, and property and equipment. The City spends about \$8 billion to purchase these diverse goods and services. The CBC recently made recommendations for reducing procurement costs by about \$200 million per year by streamlining procedures and making better use of technology.<sup>4</sup>

**Table 1**  
**City of New York**  
**Components of the City Budget**

<b>Budget Category</b>	<b>Fiscal Year 2001</b>
<b>Personal Services</b>	<b>\$ 21,182,523,844</b>
Wages and salaries	16,126,860,046
Fringe benefits	5,055,663,798
<b>Other Than Personal Services</b>	<b>\$ 19,328,683,655</b>
Contractual services	6,056,681,916
Social services	4,658,460,611
Medical assistance	2,615,960,550
Other	2,042,500,061
Transfers for debt service	2,954,053,405
Fixed and misc charges	2,892,010,348
Other services and charges	1,525,053,774
Heat, light, and power	460,860,080
Other	1,064,193,694
Supplies and materials	862,608,690
Property and equipment	379,814,911
<b>Total</b>	<b>\$ 40,511,207,499</b>

Source: City of New York, Office of the Comptroller, *Comprehensive Annual Financial Report of the Comptroller for the Fiscal Year Ended June 2001*, October 31, 2001.

This report examines the potential savings in another component of the City's budget: energy, especially electricity. Although the City has pursued energy-saving investments such as installing high-efficiency lighting, it has not focused on behavioral changes that could decrease usage and yield immediate savings. Lack of vigilance in maintenance of building systems, inadequate monitoring of usage of lights and the panoply of plugged-in technology wastes millions of dollars annually. This situation can be rectified quickly with changes in management methods and the creation of appropriate incentives.

Other jurisdictions have successfully achieved savings through changes in behavior, but doing so required committed management and a means to reward people for their accomplishments. This report demonstrates that the City could save 10 percent of its electricity bill, or \$32 million annually, by better managing energy consumption and implementing an incentive program for agencies and facilities managers. As much as \$15 million in additional savings may be achieved on fossil fuels.

Although the sums involved in this initiative are small compared to a \$5 billion budget gap, an incentive program could be a model for similar approaches in other areas of the budget. This approach to budgeting and management is followed successfully in some other jurisdictions. For example, Fairfax County, Virginia, developed the Close Management Initiative program to create incentives for reducing the county's operating costs.

Moreover, energy savings can be achieved quickly. Otherwise, "in delay, we waste our lights in vain, like lamps by day."<sup>5</sup>

<sup>4</sup> Citizens Budget Commission, *No Small Change: Opportunities for Streamlining Procurement in New York City* (NY: Citizens Budget Commission, February 11, 2002).

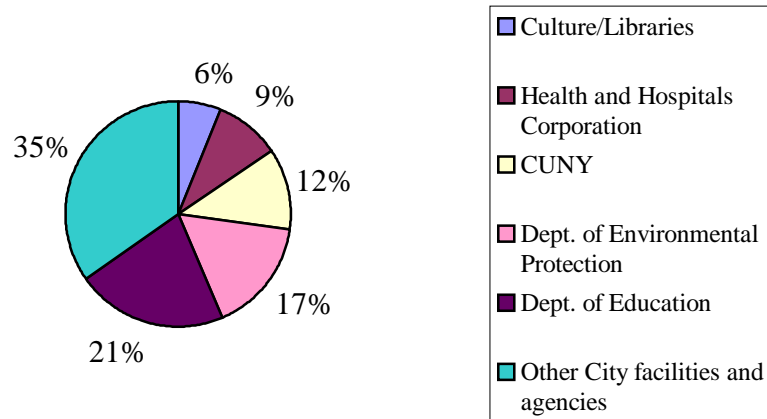
<sup>5</sup> William Shakespeare, *Romeo and Juliet*, Act 1, Scene 4.

## Overview Of Energy Usage By The City

The City of New York spent \$433 million on heat, light, and power in fiscal year 2002. Of this, about \$345 million was spent on electricity, reflecting usage of just over 4 billion kilowatt-hours by City facilities and agencies. The Department of Education consumes about one-fifth of the total. (See Figure 1.) The Department of Citywide Administrative Services purchases the electricity for the agencies and allocates the cost to them. If agencies use less than their budgeted energy amount, the savings accrue to the citywide general fund.

**Figure 1**  
**City of New York Electricity Consumption**  
**Fiscal Year 2002**

(Total consumption = 4.008 billion kilowatt-hours)



Source: City of New York Department of Citywide Administrative Services, Office of Energy Conservation.

Responsibility for energy management in the City is divided between two agencies. The Office of Energy Conservation (OEC) in the Department of Citywide Administrative Services (DCAS) has three primary responsibilities: purchasing energy used by City agencies, the Health and Hospitals Corporation, City University of New York, and the Board of Education; developing the City's energy budget and tracking usage; and developing and implementing energy efficiency investments for City agencies.<sup>6</sup> The Energy Department of the New York City Economic Development Corporation advises the City on energy policy issues, including energy purchases, develops long-term energy strategies, and administers the energy portion of economic development programs.<sup>7</sup> This structure is in part a result of provisions of the City Charter, which

<sup>6</sup> Testimony of Dr. Chet Advani, Director, Office of Energy Conservation, Division of Facilities Management and Construction, Department of Citywide Administrative Services, before the New York City Council Committee on Environmental Protection, July 23, 2002.

<sup>7</sup> Testimony of Richard B. Miller, Senior Vice President, Energy Department, New York City Economic Development Corporation, before the New York City Council Committee on Environmental Protection, July 23, 2002.

stipulate DCAS's role as purchaser of energy and charges the Department of Business Services (of which EDC is a creature) with the planning and policy role.<sup>8</sup> DCAS was charged with the additional responsibility of directing energy conservation policies by Mayoral Directive 89-1.

The OEC can save the City money in all of its activities: by purchasing energy at a low cost; by managing a capital investment program that installs energy efficient light, heat, and air conditioning equipment; and by working with agencies to reduce their energy consumption. The OEC's activities in each of these areas are summarized below.

**Low-cost energy purchases.** In 1995 the City extended its existing supplier relationship with the New York Power Authority (NYPA) by executing a contract with a term of ten years. NYPA is a State-controlled public benefit corporation that provides low-cost power to government agencies, private utilities and private enterprises that receive economic development incentives. The NYPA contract is now an indefinite, or "evergreen" contract, which ends three years after either the City or NYPA requests termination. Prices paid by the City to NYPA are generally lower than those available in the competitive market. Savings stem from regulatory decisions that allow the City to pay lower rates to NYPA for transmission and delivery of electricity over Consolidated Edison's lines, inexpensive energy generated by the Indian Point 3 nuclear plant, the exemption of NYPA from City property tax and the utility gross receipts tax, and NYPA's lower cost of capital resulting from issuance of tax-exempt bonds. The cost advantage may diminish. NYPA sold Indian Point 3 to Entergy Corporation, and an agreement allowing NYPA to purchase the plant's output terminates at the end of 2004. It is not clear how much cost advantage NYPA would have if the City competitively bid out its electricity, because such bidding has never taken place for all of the City's load.<sup>9</sup>

**Capital investment program.** Negotiation over the power contract led NYPA to agree to provide the City with \$15 million per year in low interest rate loans (current interest charges are about 2.6 percent) and to perform turnkey energy efficiency construction services over ten years. Under this program, named ENCORE, OEC identifies priority projects for NYPA to pursue. NYPA implements the projects and is repaid by the City according to an agreed-upon schedule reflecting the payback period of the project, which must be ten years or less. NYPA receives a fee for its turnkey services of 12.5 percent of project costs.

Projects undertaken under this agreement include high-efficiency lighting projects that replace existing fluorescent fixtures with electronic ballasts, installation of high-efficiency chillers for air conditioning systems, and fuel cells that generate electricity from organic processes at wastewater treatment plants. Since 1997 the City has used \$90 million in ENCORE funds (and another \$52 million of its own funds) for projects saving \$13 million per year in energy costs.<sup>10</sup>

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<sup>8</sup> Section 825 (DCAS) and Section 1301 (DBS), *New York City Charter, As Amended Through November 2001*, City of New York, July 2002.

<sup>9</sup> The City has complained that it cannot effectively bid out its electricity needs because NYPA has a right of first refusal under the 1995 contract.

<sup>10</sup> Testimony of Dr. Chet Advani, *op. cit.* NYPA finances "incremental" costs, or the cost differential between standard and energy efficient equipment in new construction projects. For projects such as lighting upgrades, NYPA funds the entire project.

**Reducing consumption.** OEC manages agency energy consumption through its Energy Cost Control System. In addition to tracking usage and issuing conservation guidelines that include temperature limits and air conditioning start and stop dates, OEC alerts agencies to excessive usage. Agencies that exceed usage standards determined by OEC are notified and asked to account for increased usage. However, OEC has no authority to penalize or reward agencies for their energy usage patterns.

## Learning From Other Jurisdictions

New York City's energy management practices have two basic elements in common with those of other jurisdictions with highly regarded energy conservation programs. The first is a reliable source of funding dedicated to energy efficiency capital improvements. In New York City, this is accomplished through the agreement with NYPA. The second is a mechanism for holding agencies accountable for energy usage. The City addresses this through monitoring by the OEC. However, some other jurisdictions are more effective in motivating agencies to conserve, and, as a result, in achieving cost savings.

## Financing Energy Conservation

New York's access to funds for energy-efficient capital upgrades through ENCORE terminates in 2007. Further access to NYPA financing depends on negotiation of a new electricity procurement contract. Given this uncertainty, it is worthwhile to review mechanisms that other jurisdictions have devised for financing energy efficient capital upgrades.

Like New York City, some jurisdictions use third-party financing. Third-party financing can be obtained through lease-purchase agreements, utilities, or energy service companies (ESCOs). ESCOs typically perform turnkey energy conservation services for a jurisdiction, and are compensated according to options that split the benefits of potential savings stemming from projects—and the risks that such savings may not be achieved—between the two parties.<sup>11</sup>

NYPA is both an ESCO and a utility. Because it is a government authority, its debt is tax-exempt, lowering its costs of funds. Its nonprofit status allows it to charge lower fees for services than do for-profit ESCOs. NYPA is also exempt from the Wicks Law, which requires local governments to issue separate contracts for different phases of a project, leading to higher costs.<sup>12</sup>

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<sup>11</sup> Dan Goldberger, "Investing in Energy Efficiency: Financing Strategies for Municipalities," Climate.org, <<http://www.climate.org/programs/cities/sec1.html>>, a collaborative effort of the Climate Institute, International Council for Local Environmental Initiatives, and Public Technology, Inc.

<sup>12</sup> In Seattle, where private ESCOs are used to conduct efficiency upgrades, state law exempts ESCOs from public works contracting laws because "it was recognized that they needed to have direct responsibility for equipment selection, subcontractors, and construction oversight." (City of Seattle, Office of Sustainability and Environment, "Report on Municipal Conservation: Response to the City Council's Statement of Legislative Intent," July 2002), p. 2.

In some cases, the City's agreement with NYPA compares favorably on cost to other jurisdictions that contract with private, for-profit ESCOs. In other cases, however, NYPA may not provide a cost advantage. In the City's Department of Transportation, a stoplight LED replacement project was less expensive when let through a standard competitive sealed bid contract, because of lower construction contingency and supervision costs.<sup>13</sup>

In addition to third-party financing, other options include financing appropriated from the general fund or borrowing with general obligation bonds. Some jurisdictions have used these tools to develop programs that are similar to revolving loan funds and therefore self-sustaining.<sup>14</sup> Most of these programs were initially established with money borrowed in capital markets.

The City of Phoenix developed an energy conservation program built on initial seed money combined with savings accrued through past conservation efforts. Early projects focused on low-cost lighting upgrade projects. With the savings from these projects, Phoenix reached its program cap (initially \$500,000) within two years.<sup>15</sup> Since 1984, savings stemming from efficiency upgrades have been shared between a fund set up for that purpose (currently capped at \$750,000) and the city's general fund. Over a 12-year period, gross savings totaled over \$30 million.<sup>16</sup> The current energy budget is about \$42 million. Of the overall savings, about 20 percent has been cumulatively reinvested in energy projects.

Similar programs have been established in Seattle, Chicago, Austin, and elsewhere, although they vary in how the funding is established and sustained. In Seattle, funds for a Municipal Conservation Fund have been appropriated annually. In Austin, a \$3 million loan was initially obtained from a State of Texas revolving loan program. That enabled the City to establish its own "revolving loan" program based on shared savings with departments, which are responsible for their own energy bills. Departments allocate 50 percent to 80 percent of their annual energy savings to the loan fund.<sup>17</sup>

In Portland, Oregon, investment of bond sale proceeds in efficiency upgrades has been overseen by the Office of Sustainable Development. Staffing for the office comes from a 1 percent surcharge on bureau energy budgets. These staff members provide audits, technical, and design assistance, assist in arranging loans, educate employees, and provide usage reports. Savings have been captured by departments. As in New York, the capital funds will eventually be used up and local officials will have to find new funding sources to continue the upgrade program.

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<sup>13</sup> Telephone conversation with Alan Borak, New York City Department of Transportation, September 10, 2002.

<sup>14</sup> These arrangements are not true revolving loan funds since accounting rules make such funds difficult for local governments to establish. They therefore often rely on agreements among local city managers, elected officials, and department heads.

<sup>15</sup> City of Phoenix, Public Technology Inc., Urban Consortium Energy Task Force, *Establishing a Revolving Fund for Energy Efficiency in Local Government*, Report Number 97/96-307 (DC: Public Technology, Inc., undated).

<sup>16</sup> *Ibid.*, page 32.

<sup>17</sup> E-mail correspondence, July 31, 2002, and telephone interview, August 20, 2002, with Fred Yebra, Manager, Austin Energy Commercial Energy Management Services.

In some cases, funding for a self-sustaining program was established solely with the use of low or no-cost initiatives. In the 1980s, the Philadelphia School District developed a program based on “bootstrap” financing. Initial savings for the program derived from changes in behavior and attitudes rather than efficiency upgrades. These changes in behavior included “timely repair of broken windows and leaky faucets, shutting boilers down early in the afternoon..., ensuring lights and doors are closed when areas are not in use, and operating and maintaining kitchen equipment efficiently.”<sup>18</sup> The program reduced energy usage nearly 11 percent in its first year. Subsequent savings from the program have been divided among the schools, the District’s general fund, and reinvestment in energy efficiency.<sup>19</sup>

## Beyond Funding: Motivating People to Conserve Energy

Reliable funding is not the only ingredient for a successful program. The other key factors are a high level of commitment by political leaders and municipal managers, incentives to departments and individuals, and consistent tracking and reporting.

Leadership and political commitment are widely cited by program managers and energy consultants as crucial to a successful program. The programs have strong political support, for example, in Phoenix and Portland. In both cases, financing mechanisms (the reinvestment mechanism in Phoenix and the funding stream of the Office of Sustainable Development in Portland) were created by the respective city councils, which then have a stake in the survival and success of the programs. Because the programs save money and help achieve other goals such as reaching federal or state air quality standards, mayors and city managers in these cities have also been firmly behind them. This commitment filters down to agency heads.

In Seattle, political leadership first established a municipal infrastructure for addressing energy conservation through the establishment of an Office of Sustainability and Environment and a Municipal Conservation Fund. Conservation was made a clear priority. However, these structural mechanisms for achieving conservation still did not address the behavior of individual employees. In 2001, in response to a drought-induced energy shortage, a mayoral directive was issued to municipal departments to reduce energy consumption immediately by 10 percent. While Seattle is not able to track usage for all of its facilities, in 24 buildings where electricity usage averaged over 38 million kilowatt-hours in the years prior to the directive, usage declined 12 percent in 2001.<sup>20</sup>

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<sup>18</sup> Barry Fogarty, Dan Goldberger, and Stuart Baird, “Philadelphia School District: Save Energy Campaign,” Climate.org, <[http://www.climate.org/programs/cities/sec3/Philadelphia\\_SchoolDist.html](http://www.climate.org/programs/cities/sec3/Philadelphia_SchoolDist.html)>, a collaborative effort of the Climate Institute, International Council for Local Environmental Initiatives, and Public Technology, Inc.

<sup>19</sup> Barry Fogarty, et al., Ibid.

<sup>20</sup> City of Seattle, Office of Sustainability and Environment, “Report on Municipal Conservation: Response to the City Council’s Statement of Legislative Intent,” July 2002.

One energy management consultant who oversaw a reduction in energy usage of 20 percent over two years at Ford Motor Company noted that the success of conservation programs depends on management to provide the necessary motivation. At Ford, the issue was broached at “every meeting.” Statistics on energy usage per vehicle produced were published and used to evaluate plant managers, driving home the importance of achieving energy savings.<sup>21</sup>

Incentives are important in reinforcing political commitment, and they can help achieve considerable savings without large initial capital investments. For example, a gubernatorial directive requiring agencies to save 20 percent on energy costs over ten years led in 1990 to a pilot program by the New York State Office of Mental Health (OMH). An intensive troubleshooting exercise relying on changes in maintenance and operations procedures resulted in immediate savings of 20 percent to 30 percent at selected OMH facilities.<sup>22</sup> The program established subsequently has made good use of incentives, and has led to energy usage reductions of 37 percent per square foot to date. In this program, financial incentives are awarded to facilities that meet usage targets, which are determined using normalized weather data and other controls. Recognition awards are granted to individuals as well. The size of financial awards varies, and recognition awards are non-monetary, but employees nonetheless take the incentives seriously because the agency’s leadership does.

Other energy managers interviewed reiterate the value of incentives in achieving conservation. For example, the former Ford energy manager stated that “leadership and incentives are the main things” underlying successful programs.<sup>23</sup>

In the case of the Philadelphia School District, the incentive program is considered key to its success because it increased confidence in the District’s ability to sustain the program.

The District had over the years been prevented from fulfilling commitments regarding salary increases, staffing levels, and other incentive-based programs...due to almost continuous budget cutting.... The Campaign’s ability to deliver was made clear however when at an official reception at the end of the first year authorities distributed checks to those schools that had achieved energy savings (one school alone earned an incentive payment of \$120,000). The Campaign has continued to honor its commitments and build upon its successes, and this has resulted in widespread participation in the program throughout the District.<sup>24</sup>

The final ingredient for successful management is measurement and reporting. The successful programs cited above all have measuring and reporting standards. Phoenix reports on energy usage in the City Manager’s Executive Report, a document similar to the Mayor’s

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<sup>21</sup> Telephone interview with Pradeep Mehra, Mehra Energy Consulting, LLC, August 16, 2002.

<sup>22</sup> Telephone interview with Neill Anderson, P.E., Director of Engineering and Energy Services, New York State Office of Mental Health, August 6, 2002.

<sup>23</sup> Mehra, *op. cit.*

<sup>24</sup> Barry Fogarty, et al., *op. cit.* p. 5.

Management Report in New York City. Portland publishes a pamphlet summarizing energy usage as part of its “Energy Challenge” initiative. The analysis included in these documents allows agencies to compare their usage trends, creates a vehicle for setting targets, and informs the public about the success of municipal conservation efforts. Without such data, managers cannot be expected to control energy consumption as closely as they should. Copies of these reports appear in the appendix to this report.

## Recommendations

The City of New York has the basic elements of a successful energy conservation program, but can achieve far greater savings in the short and the long run. The following recommendations are the means to do so.

### **1. Responsibility for energy conservation in City agencies should be centralized within the Office of the Mayor.**

Energy conservation implementation, policy and oversight should be consolidated in the Mayor’s office, perhaps within the Office of Operations or the Office of Management and Budget. The current office has a low profile and little authority to lead agencies in energy conservation practices or to create penalties for agencies that waste energy.

The energy conservation unit should increase efforts to assist and educate agencies in their conservation practices, to develop proactive and strategic efficiency upgrade programs, to develop or expand training programs for facilities managers, and to analyze energy usage data. The new unit should negotiate savings targets with City agencies and make those targets a part of each agency’s program to reduce spending, currently mandated by the Mayor as part of citywide financial planning.

Energy usage data should be more widely reported and used as a management tool. Specifically, the Mayor’s Management Report and Citywide Accountability Program Statistics (CAPSTAT) should be used as vehicles for energy management through reporting on usage by department. While the Portland Energy Use Summary is a good model, New York City’s reporting should include measures of energy use by square foot and by type of facility.

An expanded role for the energy conservation unit will require more funding. This can be obtained from savings achieved from expanded OEC programs. City officials should consider emulating the Portland model, where agencies fund the staff of the conservation office based on their energy usage.

**2. Agencies and individuals should be offered incentives to conserve energy.**

City agencies should be rewarded for saving energy. They could be allowed to keep a percentage of savings achieved through conservation efforts, or, alternatively, be rewarded for reaching usage targets. The shared savings approach has been recommended by the New York City Council and is followed in other jurisdictions, such as Austin, Texas.<sup>25</sup> Rewarding facilities and staff for achieving targets is a significant element of the NYS OMH program. While there is no perfect way to establish energy usage baselines against which to judge and reward agency conservation, jurisdictions that reward agencies use established engineering methodologies that could be applied by the City. The responsible leaders of agencies that show unwarranted and excessive increases in usage should be subject to penalties by the Mayor's office.

Individuals should be recognized for notable conservation achievements. A citywide employee recognition program should reward individual employees, such as facilities managers, for exemplary contributions to energy conservation. The profile of an awards ceremony should be high (dinner at Gracie Mansion, for example) so that employees take it seriously.

**3. The annual volume of energy conservation upgrades should be doubled.**

City officials believe that there are opportunities to do at least as much additional upgrading as the City already has done.<sup>26</sup> The sooner this is accomplished, the sooner the City can benefit from savings.

A high priority should be to expand aggressively installation of "real-time" metering. Such systems can be connected to the Internet for monitoring by facilities managers. This would permit real time monitoring of use by the responsible managers and facilitate their conservation efforts.

The City should thoroughly research and review alternatives to NYPA financing for energy efficiency capital upgrades, including an evaluation of the cost-savings of NYPA-run projects. City officials should examine carefully the arrangements created in other jurisdictions that allow "revolving loan" funding for projects, and determine the procedures that would be necessary to create such a financing mechanism in New York City.

The City should begin to implement these recommendations in the current fiscal year, since it is difficult to change people's behavior instantly. The Department of Education, with its 1,200 schools, might be a good place to begin an intensive effort to reduce energy usage. An energy conservation training and education program for facilities managers, staff, and even students should be developed and put in place promptly.

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<sup>25</sup> New York City Council, "Saving Power, Saving Money: An Energy Efficiency Plan for New York City," July 2002.

<sup>26</sup> Meeting with OEC staff, City Hall, September 10, 2002.

## Fiscal Implications

Because use of electricity-consuming products—such as computers and other equipment that contributes to “plug load”—is rising, many energy managers think of energy conservation as producing “avoided costs” rather than absolute savings. In New York City electricity costs are expected to increase modestly, by less than 1.5 percent per year from fiscal year 2003 to fiscal year 2006.<sup>27</sup> All else constant, a usage reduction of 10 percent in fiscal year 2004 would save \$36 million from the projected baseline.

The experience of other jurisdictions and the opinions of energy conservation experts interviewed for this report suggest that a 10 percent reduction in electricity usage is achievable in the first year of an aggressive energy conservation program such as outlined above.

To help accomplish the conservation goals outlined above, 10 percent of these savings, or \$3.6 million, should be used to establish an expanded energy office and provide a pool for incentives to agencies and facilities. This would provide sufficient funds to double the size of the energy staff (OEC staff combined with the EDC Energy Department staff dedicated to policy now number about 12 people) leaving about \$2 million for incentives. The net savings (or cost avoidance) to the City would then be about \$32 million in fiscal year 2004, with growth likely thereafter.

Such savings can be achieved through measures that include, but are not limited to: ensuring that the “sleep” function on computers, faxes, and photocopying machine are set to the defaults; instilling in employees the habit of turning off office lights when the office will be unoccupied for 15 minutes or more; and using high-efficiency compact fluorescent task lights instead of overhead lights at desks. In addition, significant savings can be achieved through improved facilities operations and maintenance procedures.

An incentive-based program that improves training for facilities managers can also result in significant savings on fossil fuel costs as heating equipment is better maintained. Such cost savings would come in addition to savings on electricity and could be significant. For example, in the Philadelphia School District, fossil fuel savings accounted for a significant portion of the cost reduction. If the City reduced fossil fuel costs by 10 percent, another \$15 million in savings (or cost avoidance) could be achieved in fiscal year 2004.

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<sup>27</sup> New York City Office of Management and Budget, *Fiscal Year 2003 Executive Budget: Message of the Mayor* (NY: OMB, May, 2002), p. 257. A large 20 percent increase projected for fiscal year 2003 stems from much lower-than-expected energy use during fiscal year 2002 because of unusually warm weather.