U.C. Energy Task Force

ESTABLISHING A GREEN LIGHTS REVOLVING FUND

URBAN CONSORTIUM

Office of Energy Management
Finance and Administration Department
City of Houston, Texas

PUBLIC TECHNOLOGY, INC.

BACKGROUND AND ACKNOWLEDGMENTS

Public Technology, Inc. (PTI), is the non-profit technology organization of the National League of Cities (NLC), the National Association of Counties (NACo), and the International City/County Management Association (ICMA). PTI's mission is to bring technology to local governments. Through collective research and development efforts in its member jurisdictions, PTI creates and advances technology-based products, services, and enterprises for all cities and counties.

Four active task forces, each composed of members of PTI's Urban Consortium (UC)—which represents fifty of the nation's largest and most progressive cities and urban counties—drive PTI's research and commercialization efforts. One of these task forces is the Urban Consortium Energy Task Force (UCETF), which was established a quarter of a century ago to address critical energy needs of urban America.

About The Urban Consortium Energy Task Force

The UCETF is the nation's most extensive cooperative local government program to improve energy management and technology applications in local governments. Its membership is composed of local government officials from America's large urban centers. The four major goals established by UCETF members are to:

1. Act as the premier advocate group for local governments on energy technology;
2. Improve energy efficiency, reduce costs and develop revenue from local energy assets;
3. Address the overlap between energy and environmental policy issues; and
4. Act as the implementation arm for NLC and NACo policies.

Under an annual program sponsored by the U.S. Department of Energy (USDOE), the UCETF provides funding for a number of city and county projects that propose to meet these objectives. Projects selected for each year's program are organized in thematic units, such as Transportation, Sustainable Communities, Buildings, and Technology Transfer, to assure effective management and ongoing peer-to-peer exchanges. The results of these research projects are documented in reports such as this one, and made available for broad dissemination by PTI among other local governments.

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Finance and Administration Department
City of Houston

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CHAPTER ONE - OVERVIEW

ABSTRACT

The report details the experiences of the City of Houston in establishing a Green Lights Revolving Fund. It provides examples of key documents and guidelines which can be used in other jurisdictions to establish an internal revolving fund to provide continuing monies through recapture of cost savings for an ongoing program of energy improvements in governmental facilities. It provides guidelines on how to establish a continuing source of funds for governmental facility energy improvements.

The report provides background information on the ongoing energy improvement programs in the City of Houston, including its participation in the Environmental Protection Agency's Green Lights Program. It reviews the steps required to establish a Green Lights Revolving Fund, including the administrative, legal, budgetary, accounting, interdepartmental, mayoral, and governing body approvals and actions needed to create a self-sustaining revolving fund devoted to energy improvements.

The report also describes two funding sources in addition to the grant seed funds which were used to increase the initial funds available in the Green Lights Revolving Fund. It provides sample documents for modification and use in other jurisdictions that want to use similar funding sources. It reports the initial project submission and selection procedure and criteria, and provides a transferable project application kit based on the criteria specified. It also details a sample repayment memorandum of understanding between departments, which can be used in other governments.

Other transferable products provided in the report are sample energy audit summaries which were conducted by qualified, independent staff to determine the accuracy of the departmental project costs and savings payback calculations. Finally, the report identifies lessons learned in establishing the City of Houston's Green

Lights Revolving Fund which will be important to be aware of and take appropriate steps to remedy or avoid elsewhere in establishing a Green Lights Revolving Fund.

PROJECT PURPOSE

The purpose of this project is to document the startup, procedures, and guidelines for developing and implementing an internal revolving fund for energy conservation measures (particularly those identified through the Green Lights Program), which replenishes itself using performance contracting techniques like successful programs identified through previously funded Urban Consortium Energy Task Force projects (e.g. Phoenix, St. Louis County, Austin, and Washington).

The project provides written guidelines and sample documents for development of a sustainable revolving fund mechanism for energy conservation improvements in the context of public sector budgeting and accounting funds. It demonstrates how governments can utilize a private sector approach (reinvesting profits) and adapt a private sector mechanism (performance contracting) in combination with a typical public sector budgeting tool (dedicated revolving fund) to fund energy conservation measures on an on-going basis.

Several municipalities have used separate, dedicated funds for energy management projects to avoid direct competition for funds with higher priority governmental services (e.g., police or fire services). In most cases, the dedicated fund approach to energy management has been a short term solution to the long term issue of providing monies for energy conservation measures within a particular municipality, since most governments do not have recurring revenue to replenish the fund. The Green Lights Revolving Fund is predicated on performance contracting as a basis for fund replenishment, and thus it is an ongoing source of funds dedicated to energy improvements.

REPORT ORGANIZATION

This report on Establishing a Green Lights Revolving Fund is

organized into three other sections - two additional chapters and a series of appendices which contain guidelines and sample documents designed to be replicable, modifiable, and transferable to jurisdictions desiring to establish a Green Lights Revolving Fund.

Chapter two provides the background and rationale for this project and its support for the EPA Green Lights Program. It details how the City of Houston expanded the EPA Green Lights Program to accomplish much more than lighting upgrades. It also describes the previous experiences that the City of Houston has had in the area of innovative financing for energy conservation projects and energy performance contracting. The second chapter identifies the myriad of steps and key groups needed to approve and to establish a Green Lights Revolving Fund in the City of Houston.

The second chapter also reports the various initial funding sources used in the City's revolving fund, such as grant funds, utility rebates, fees for services provided by the Office of Energy Management staff, and sharing of savings from energy service company contracts. The chapter also presents the procedure and process developed to submit and select energy improvement projects for consideration for funding through the Green Lights Revolving Fund. It identifies how the criteria for selection of energy conservation projects was developed and what minimum return on investment is required to fund projects from the Green Lights Revolving Fund. As part of the project submission and selection process, the interdepartmental agreements that were developed in the City of Houston for 1) sharing the savings with the user Departments when the services of an Energy Service Company are used and 2) methods of replenishing the revolving fund when energy conservation projects are funded from the Green Lights Revolving Fund are detailed. This chapter also presents the independent energy audit reviews conducted as part of the selection process and the associated engineering calculations used in determining project payback.

Chapter three presents the conclusions drawn from this project which relate to the City of Houston and to other jurisdictions. The

third chapter presents the lessons learned in establishing a Green Lights Revolving Fund in Houston - what worked and what didn't work so well. It identifies several significant recommendations regarding the establishment of an internal revolving fund dedicated to funding on-going energy improvement projects. These include the need for a champion to steer this atypical approach through the maze of steps and key actors in order to establish such a program in a governmental setting, the need to involve all the key groups and actors as soon as possible to expedite creation of the fund, and the need to have a minimum amount of funds available as seed monies before starting to establish a Green Lights Revolving Fund.

The appendices are primarily designed as sample documents or guidelines for key steps in the process of establishing a Green Lights Revolving Fund. This is the portion of the report which will be of most interest to other jurisdictions, as it contains sample procedures, project selection criteria, project submission kits, and similar guides to assist in the creation of an internal revolving fund dedicated to energy improvements.

The appendices include a sample Green Lights Memorandum of Understanding (MOU) and Houston's interpretation and expansion of the Green Lights MOU through its own Executive Order. They also include documentation about how the Houston Green Lights Revolving Fund was established; how additional initial funding sources were incorporated into the Houston fund; documents supporting the Green Lights Fund project submission and selection procedure; the interdepartmental MOU detailing how the funds would be repaid, and how much monies would be repaid; the energy audit summaries used to evaluate projects for funding; and the project savings accounting form.

CHAPTER TWO - ESTABLISHING A GREEN LIGHTS REVOLVING FUND

BACKGROUND

The City of Houston owns and operates more than eleven hundred facilities with a combined size in excess of nine million square feet. These facilities are varied in use, and range from unmanned pump and lift stations to office buildings, airports, and convention centers. These City facilities are operated by eleven different departments, as specified below:

Department	# Facilities	Department	# Facilities
Aviation	97	Municipal Courts	1
Civic Center	8	Parks	162
Finance	2	Police	45
Fire	102	Public Works	
Health	30	(incl. Pub. Util.)	677
Library	38	Solid Waste	7

Houston's annual energy costs are seventy million dollars for electricity and four million dollars for natural gas.

There have been efforts to optimize the energy efficiency of all of the City's facilities in the past. City facility energy efficiency optimization began with the Federal Emergency Temperature Building Plan of 1978. The federal plan was allowed to be modified for the Houston region, because of the climate, and was named the Houston Emergency Temperature Building Restriction Plan. The City of Houston Office of Energy Conservation was created in order to enforce the plan citywide. After rescinding the ordinance in 1982, office staffing was reduced and the office was charged with monitoring and assisting operating departments in optimizing facilities energy consumption.

GREEN LIGHTS PROGRAM

The most recent effort to optimize energy usage in these facilities on a citywide basis is the City of Houston's commitment in the United States Environmental Protection Agency's (USEPA) Green Lights Program. Houston was the first large urban government to sign the

Memorandum of Understanding with the USEPA. A copy of Houston's Green Lights Memorandum of Understanding (MOU) is provided in Appendix A. As part of the MOU, the City of Houston has agreed to review the lighting efficiency in all of its facilities over the next five years and to implement those lighting upgrades which are cost effective and environmentally beneficial.

The City of Houston expanded the EPA Green Lights Program by Executive Order of the Mayor to not only include lighting, but all major energy consuming equipment and factors in the City's facilities. A copy of Houston's Green Lights Executive Order is shown in Appendix B.

Houston's Green Lights Program allows the different facility operating departments different options on conducting facility energy audits and on financing cost effective energy improvements identified through these energy audits. As work proceeded in the Green Lights Program in the various facility operating departments, the single most important obstacle to widespread adoption of energy efficient, cost effective improvements was the question, "Where do I get the funds to buy the equipment to make the improvements?".

The Green Lights Revolving Fund project was designed to provide an attractive answer to that question - an internal source of recurring monies to be devoted to energy improvements. The proposal to create a Green Lights Revolving Fund for energy improvements had its roots in previous City experiences with private sector performance contracting.

PRIVATE SECTOR PERFORMANCE CONTRACTING

In 1987, the City of Houston Library Department entered into an energy savings performance contract. This was one of the first energy performance contracts entered into in the State of Texas where all of the capital cost were to be paid by the contractor and recouped through savings. The installation of energy management systems, lighting retrofits, and building envelope renovations and modifications were made and resulted in significant reductions in

electric and natural gas utility costs in the range of 20% - 40%. The annual cost of electricity and natural gas was approximately \$1.3 million in 1987 and with savings guarantees from the energy service contractor, the annual energy cost for the Library Department would essentially be frozen for the five year period of the contract. In addition to the energy efficient and building improvements, the Library Department also received a full repair and replacement maintenance contract on their two large facilities located in the central complex and preventative maintenance in all of its thirty-six branch libraries.

In 1993, as part of Houston's Green Lights program, the Library Department renegotiated an energy performance contract with a similar scope of work as the first contract except for additional capital mechanical equipment, updated lighting, and additional maintenance services. The contractor was required to renovate, retrofit, and modify the City facilities to improve their energy efficiency and reduce energy consumption. The energy conservation measures the contractor included were replacing very inefficient water chillers; changing a constant volume air conditioning system to variable volume; replacing existing motors with energy efficient motors; cleaning the lenses of fluorescent lamp fixtures; removing lamps where not required; installing an energy management systems for the control of the air conditioning, lighting, and other miscellaneous measures included in the contract.

This was a large project with several million dollars invested up front by the contractor who will reap a good profit from the project. This same project can be accomplished internally through a revolving fund such as the Green Lights Revolving Fund with a reduced cost to the facility operating department, such as the Library Department, with the profits or principal and interest from the capital invested replenishing the revolving fund. Similar private sector energy performance contracts in other jurisdictions (Austin, St. Louis County, San Francisco, Washington, HUD) were investigated in previous Energy Task Force projects or in the ini-

tial phase of this project.

ESTABLISHING A GREEN LIGHTS REVOLVING FUND IN HOUSTON

Based on previous experiences with private sector performance contracting (both in Houston and elsewhere); Houston's commitment to the EPA Green Lights Program for its 1100+ facilities; and the problem of finding funding for cost effective energy improvements identified through the Green Lights facility energy audits, Houston decided to establish a Green Lights Revolving Fund. The Green Lights Revolving Fund would consist of an internal, dedicated, self-replenishing funding source based on a performance contract approach for City energy improvements identified through the Green Lights audits.

The City applied for \$50,000 in Urban Consortium Energy Task Force grant funds as seed monies to establish Houston's Green Lights Revolving Fund. During the selection process, the amount of grant funding authorized was reduced to \$20,000. In retrospective, the City probably should not have accepted the UCETF grant funds at the reduced levels, because the minimal amount of funds caused a lack of interest (and timely response) by many key groups and actors in the City and because it resulted in a significant postponement of the creation of the Green Lights Fund while other initial funding sources were identified and incorporated in the initial seed funding of the Green lights Revolving Fund, as noted in subsequent sections.

The City did decide to accept the grant funds and Appendix C is the ordinance accepting these funds. During the lengthy process of establishing the Green Lights Revolving Fund, Energy Management staff were able to use the grant funds acceptance as the justification for establishing the Green Lights Revolving Fund in spite of some opposition from other City groups to the establishment of a dedicated, revolving fund for energy improvements as well as concerns with the minimal amount of the initial funding.

One of the first steps taken by City staff once the grant funding was approved was to identify all the key stakeholders associated with creation of an internal, dedicated revolving fund in the

City of Houston. These groups included the Budget Office, the Finance Director, the Controller's Office, the Legal Department, and the facility operating departments. With support from the facility operating departments and the Finance Director, the Energy Management staff became the champion of creating this fund in the City organization and taking the multitude of steps needed to establish such a fund.

Early in the fund establishment process, the concept and steps needed to complete the task were discussed with the various stakeholders, and their review and approval of the steps were obtained. Appendix D is an illustration of the steps identified and approved by the Controller's Office to create the revolving fund.

Notice that in the City of Houston's fund accounting systems, a special revenue fund was required to enable carry-over of revenues and expenditures from one fiscal year to another, which is a critical element in order to make effective use of performance contracting repayments (energy savings) to replenish the revolving fund over time. If the Green Lights Revolving Fund needed to be reauthorized each year and was limited to only those improvements that would be repaid in one year, the types of energy improvements which could be funded through this device would be severely limited.

As noted in Appendix D, another delay associated with establishment of the Green Lights Revolving Fund was the requirement that the grant funds be justified through salary reimbursement. Thus, Energy Management staff had to devote sufficient hours to the project to obtain the salary reimbursement from the grant prior to the use of the seed funds for project implementation. Salaries funded by the grant were paid out of and recorded in the General Fund through the regular payroll process. Travel expenditures were recorded in the grant fund in the regular manner through travel request and reimbursement payment vouchers. The City of Chicago was billed for the \$20,000 after all targeted personnel time had been expended toward the grant. The reimbursement received from the City

of Chicago was recorded in the grant fund. If the grant funds had been approved as seed funds instead of salary reimbursements, the Houston Green Lights Revolving Fund would have been established much sooner than it actually was created.

Unfortunately, the Energy staff did not contact all the appropriate City stakeholders early enough in the fund establishment process, and some of the stakeholders changed personnel or did not address the revolving fund issues due to the small amount of seed funding. As a result of these problems, the creation of the revolving fund became repetitive and lengthy.

A particular problem associated with not communicating with all the stakeholders in creating the Green Lights Revolving Fund was that the transfer of the funds from the grant fund to the revolving fund was not included in the City's annual budget and appropriations ordinances. Because not all the affected parties in the Budget Office and the Legal Department were aware of the efforts to create the revolving fund, the transfer between the grant and special revenue fund had to be revised several times before it was finally approved. Appendix E is a copy of the ordinance approving transfer of funds and establishment and appropriation of initial monies from the Green Lights Revolving Fund (Special Revenue Fund 229).

ADDITIONAL FUNDING SOURCES

As previously noted, the initial seed funds for the Green Lights Revolving Fund were from salary reimbursement from the Urban Consortium Energy Task Force Grant. The grant funds were then transferred to the Green Lights Revolving fund. Because of the limited amount of grant funds made available, coupled with the time required to perform the project tasks and obtain grant reimbursement and funds transfer before the revolving fund could be established, it was decided to explore additional initial funding options for the Green Lights Revolving Fund.

One source of additional funding was achieved through utility rebates through the local electric utility, Houston Lighting and

Power Company. Their Commercial Efficiency Improvement Program is offered to all of their customer electrical loads served under the two commercial rate tariffs (miscellaneous general service and large general service). The rebates had limitations of \$50,000 per facility and \$100,000 per customer paid on a reimbursement basis for reduction of peak kva through proven high efficiency technologies such as lighting upgrades, replacing electric motors, heating, ventilation, and air-conditioning (HVAC) upgrades, and structural improvements. Appendix F includes a program description of the rebate program and the City's request for the maximum allowable rebates.

Because of the relatively small amount of rebates available to City of Houston operating departments, to prevent unnecessary competition among facility operating departments, and to provide additional seed monies for the Green Lights Revolving Fund, the Office of Energy Management was designated the clearinghouse for all rebate applications and receiver of all funds from the rebate program. This was accomplished through a Houston Lighting and Power (HL&P) Commercial Efficiency Improvement Program (CEIP) Rebate Policy, which is also shown in Appendix F. The policy stated:

- 1) all rebates will be applied for through the Office of Energy Management,
- 2) if more than \$100,000 in rebates are requested in any given year, the Office of Energy Management will determine which applications for rebates are to be submitted,
- 3) all rebates will be shared on a 40% to the initiating department and 60% to the Green Lights Revolving Fund basis, and
- 4) the rebate share allotted to the Revolving Fund will be used to fund additional energy improvements on a competitive basis among facility operating departments.

The HL&P CEIP rebates to the City of Houston in the first year totaled \$60,769 through lighting and HVAC improvements from the Civic Center and Library Departments. Using the rebate sharing allocation procedure, the Green Lights Revolving Fund received \$36,461 from these rebates, with the two initiating departments receiving \$24,308. As a result of these additional funds, the seed funds available in Houston's Green Lights Revolving Fund totaled \$55,707.95 for the initial round of energy projects to be funded.

This rebate sharing procedure can be applied in any jurisdiction to increase dedicated revolving funds for additional energy improvements while encouraging facility operating departments to obtain rebates by sharing part of the rebates with them.

An additional funding source identified as potential money for a dedicated revolving fund for energy improvements is associated with private sector energy performance contracts. In these agreements, the contractor will generally guarantee only eighty-five percent of their projected savings, as a conservative business practice. The actual energy savings are typically ninety eight percent of the projected savings, and oftentimes are more than one hundred percent of projected savings.

The result is that while the budgeted energy costs are frozen at baseline costs for the duration of the contract (typically five to ten years), in actuality, the portion of the non-guaranteed savings (between 85% and 100% of projected savings) that occurs is available to the facility operating department for additional energy improvements or other purposes. Since oftentimes the actual savings exceed the projected savings (greater than 100%), it was decided to use these "excess savings" to fund other energy improvements city-wide. Appendix G details an interdepartmental memorandum of agreement (MOU) which allows all performance contract "excess savings" (above the projected savings) to the Green Lights Revolving Fund. Similar savings sharing agreements (either capturing "excess savings" or capturing all "non-guaranteed savings") can be implemented in other jurisdictions that use private sector performance contracts that want to create a dedicated internal revolving fund for additional energy improvements.

Additional funding sources for the Green Lights Revolving Fund will come from the interest from the original seed funding from the initial energy conservation projects that will be funded.

INTERDEPARTMENTAL AGREEMENTS

Before the initial project solicitation process for the Green Lights Revolving Fund, it was critical to develop a written guide of what requirements would be needed for the revolving fund to be effective, and how it would work. The various roles and responsibilities of the stakeholders needed to be defined in written, binding agreements.

Interdepartmental agreements (an internal memorandum of understanding) were developed for binding agreements between the facility operating department(s) and the Office of Energy Management for the Green Lights Revolving Fund. The interdepartmental MOU is essentially a performance contract funded through the Green Lights Revolving Fund. The purpose of the memorandum of understanding is to establish a multi-year agreement for funding viable energy conservation projects from the Green Lights Revolving Fund and guarantee a mechanism for replenishing the fund from avoided energy cost. Appendix H provides a sample interdepartmental repayment MOU. The MOU freezes the facility's budgeted energy costs for the duration of the agreement, and specifies the repayment will continue from energy savings until project costs and fund administrative costs are recovered.

The MOU specifies the additional fund administrative costs required to be repaid from energy savings in addition to the initial project costs. The fund administrative costs reflect the time and effort to establish the funding mechanism, to review and evaluate the energy projects or selection, and to maintain project cost savings monitoring records by Energy Management staff. The Office of Energy Management has responsibility for administering the Green Lights Revolving Fund, determining which projects to fund, establishing the base year for funded facilities to be upgraded, monitoring and verifying energy savings from any and all energy conservation measures funded, maintaining current financial records on audit and installation cost, and continually seeking ways to increase and maintain the revolving fund. The administrative costs are incorporated in the departmental repayment agreement primarily to provide a

mechanism for the revolving fund to increase future funds available for energy improvements.

The Office of Energy Management will establish a base year of energy use for facilities to be funded from the revolving fund for the purpose of determining savings achieved through the energy conservation measures. The established base year will be calculated for the current square footage and building use. If the building or facility is modified that would cause a ten percent change in energy consumption, the Office of Energy Management can deem it necessary to adjust the base year in order to reflect the true energy savings.

The facility operating department must agree to install or have installed under their supervision the energy conservation measures that will be specified on an schedule attached to the memorandum of understanding. They will also agree to make quarterly payments to the Green Lights Revolving Fund through the City of Houston's internal billing financial system. The facility operating department will repay the revolving fund the amount of the total project cost plus twenty-five percent over a specified time for fund replenishment and administrative fees.

PROJECT SOLICITATION AND SUBMISSION PROCEDURE

After development of the interdepartmental memorandum of understanding document, the initial requests for Green Lights Revolving Fund projects were solicited through interoffice correspondence from the Finance and Administration Department to directors of the facility operating departments. The memo stated that the Office of Energy Management has been charged with fund management responsibility and attached were the explanatory materials regarding the Green Lights Revolving Fund, which is a special revenue fund created as an internal energy improvement performance contract based revolving fund.

Included as attachments to the initial project solicitation memo were several key documents, as follows:

- 1) Green Lights Revolving Fund procedure
(Appendix I);

- 2) Green Lights Revolving Fund project selection criteria (Appendix J);
- 3) Project Application Kit (Appendix K); and
- 4) Sample interdepartmental repayment MOU (Appendix H).

Copies of each of these documents are being provided in the appendices to be used as transferable documents and prerequisites for other jurisdictions to use in establishing a similar internal revolving fund for energy improvements.

Because of the limited seed funds available in the Green Lights Revolving Fund, the initial solicitation of projects specified that projects to be funded should be small scale (\$5,000 to \$25,000) and which would have relatively short payback periods (1 to 2 years). The criteria also emphasized short installation periods and measurable energy savings. With a larger amount of funding, alternate criteria could be used to select among competing departmental energy improvement projects.

PROJECT SELECTION

The City of Houston facility operating departments submitted energy improvement projects in response to the initial solicitation for Green Lights Revolving Fund projects. In some cases, Energy Management staff worked with departments to define the types of projects most likely to be funded through this program or to refine their project submissions.

Energy Management staff reviewed the project submissions, attachments, and associated interdepartmental repayment MOUs. Energy Management staff conducted independent energy audits of the proposed projects to determine the reliability and accuracy of the project costs, estimated energy savings, baseline energy costs, and payback periods. Appendix L includes summaries of the energy projects selected for initial funding with the Green Lights Revolving Fund. It is important that independent verification of the accuracy of the departmental project information be completed, if the project selection is to be a fiscally sound process. This independent verification increases the likelihood that the projects selected will be

able to repay the funds advanced on time.

Note that the two projects selected for funding were lighting upgrades, with relatively short payback periods. It is important to emphasize that the only savings which can be counted through this funding mechanism are electrical and natural gas cost avoidances, since they are the only source of budgeted funds from which savings can be accessed and transferred to the Revolving Fund. Maintenance savings and labor savings cannot be captured through this mechanism, although these savings may be present as a result of the energy improvements. If these savings occur, they will be captured in the facility operating department's budget, and are not available for replenishment of the Green Lights Revolving Fund.

PROJECT MONITORING AND SAVINGS ACCOUNTING

The two initial energy improvement projects selected for funding from the Green Lights Revolving Fund were lighting upgrades in a Tennis Center and a Solid Waste Department regional service center. The award letters have been transmitted and the departments are in the process of procuring the specified improvements.

Because the initial Green Lights Revolving funding was so limited, the projects were scaled back so that only the materials are being funded from the Green Lights Fund, with the labor costs absorbed by the facility operating department budgets. Installation of the approved energy improvements will be completed in the next two months, and the energy savings will start.

Energy Management staff have established the baseline energy costs at each affected facility, and have developed an energy savings accounting form to be used to document the actual savings from the baseline energy costs. The project savings accounting form will also be used to determine when the initial projects costs plus the administrative fund costs have been recovered, and the fund has been replenished. Appendix M is a sample of the project savings accounting form, which can be used in any jurisdiction to insure the actual energy savings are returned to the revolving fund.

CHAPTER 3 - LESSONS LEARNED

The City of Houston has established a Green Lights Revolving Fund, which has provided partial funding (materials only) for selected departmental energy improvement projects. It is planned that the energy savings associated with the selected projects will repay not only the initial project costs, but also a twenty five percent fund administrative fee within the next twenty four months. At that time, additional energy improvement projects will be solicited from facility operating departments and funded through the Green Lights Revolving Fund.

The City of Houston learned several lessons in establishing its Green Lights Revolving Fund. It is important that other jurisdictions considering the establishment of an internal revolving fund dedicated to funding energy improvement projects be aware of the issues and problems encountered in establishing the Houston Green Lights Revolving Fund, and respond appropriately.

CAUTIONS BASED ON HOUSTON'S EXPERIENCE

One of the lessons learned from the Houston Green Lights Fund is the amount of time and level of effort required to establish an internal, dedicated revolving fund. Since establishing a dedicated internal revolving fund is not typical for governmental units, it requires significant effort to explain and convince the various affected groups of the desirability of the course of actions. To identify all the key affected groups and steps is lengthy and time consuming, but essential to successfully establishing such a funding mechanism. It is useful to have a "champion" within the organization advocating the creation of this atypical funding mechanism, with the time to respond to all the questions and objections from affected groups as to why to go out of the routine procedures to establish this funding mechanism. It is also critical to have support from the facility operating departments and from top management (in the case

of Houston, the Finance Director).

It is also critical that all affected groups be informed of all the steps needed to create the revolving fund in a timely manner. Because not all groups were contacted in a timely manner in Houston, several steps had to be repeated and the time required to establish the fund was lengthened. The longer it takes to establish the fund, the more likely that key personnel changes in affected groups or other external actions (budget shortfalls, elections, etc.) will affect the ability to establish this atypical governmental funding mechanism.

Another important lesson learned from the Houston project is the importance of having sufficient seed funds from multiple sources to warrant the time and effort required to establish an internal, dedicated revolving fund. In retrospective, the City should not have accepted the limited amount of grant funds provided even though the grant requirements were used several times with recalcitrant City groups as justification for establishing the revolving fund, because it caused several months delay before the fund could be established while other funding sources were acquired.

It is important to have multiple recurring funding sources for the revolving funds when these funding sources can be identified and directed to the revolving fund. The use of utility rebate sharing and the creation of performance contract "excess savings" sharing were excellent, although limited additional funding sources for the revolving fund.

Even with the additional funds from utility rebates, and the potential funds from "excess savings" from performance contracts, the Houston Green Lights seed funding was so small that only partial funding (materials only) for two small scale departmental energy improvement projects was available for the initial solicitation process. This means additional project solicitations will be delayed until the existing project loans are repaid, which impacts the selection criteria for project selection to emphasize short-term payback projects. As additional funds are identified and made avail-

able to the energy revolving fund, other projects (and other selection criteria) can be accommodated.

A final caution regarding the establishment of an internal revolving fund. If the fund is to replenish itself, it is important that projects be selected with firm and documentable energy savings. Initially relatively "safe" projects, i.e., projects with a strong probability of achieving the specified repayment in the specified time, need to be funded to demonstrate the viability of the revolving fund and staff savings projections. If the initial projects do not achieve the projected savings, the fund will be depleted, with the result being yet another one time fund dedicated to energy projects, but no continuing source of monies for these purposes.

SUCSESSES FROM HOUSTON'S EXPERIENCE

The biggest success from Houston's experience is an existing, ongoing internal revolving fund dedicated to energy improvements, with all procedures and documentation completed to continue it at any level of funding. Although the initial funding was small, as the fund "revolves", the fund administrative fee will increase the amount of funds available for reprogramming into future energy improvements, with all savings recaptured by the City rather than shared with a private contractor.

Because the initial projects selected were "safe" projects (e.g., lighting upgrades), the probability of the fund "revolving" to achieve the projected energy savings in the specified time is excellent. Once the fund has replenished its initial funding, not only will additional projects be funded (through the "revolved" funds), the likelihood of additional non-revolving funding sources increases, so that even more energy improvements can be implemented.

Several transferable guidelines and documents were developed from the Houston Green Lights Revolving Fund project, which can be modified for use elsewhere, or used "as is". In particular, the Green Lights Executive Order can be used as a model document for

expanding the scope of the EPA Green Lights program to accommodate all energy improvements. The rebate sharing and performance contract "excess savings" sharing procedures can be adopted elsewhere with little modifications, and can provide on-going funding sources for the revolving fund.

Perhaps the most useful documents to emerge from the Houston Green Lights Revolving Fund project are the interdepartmental repayment memorandum of understanding (the "internal performance contract"), the project selection criteria, the project application kit, and the project savings accounting form. All of these documents can be utilized in other jurisdictions basically unchanged from the versions included in the Appendices.

By using these documents and guidelines, other jurisdictions will have a head start in establishing their own internal revolving fund dedicated to energy improvement projects and ultimately have a continuing source of funding for these projects.

APPENDIX A

GREEN LIGHTS MEMORANDUM OF UNDERSTANDING

Revisions to this Memorandum of Understanding will not be accepted.

**Memorandum of Understanding Between
The United States Environmental Protection Agency
and
The City of Houston, Texas**

I. General Information and Shared Commitments

A. **Agreement.** This is a voluntary agreement between the U.S. Environmental Protection Agency (EPA) and the City of Houston, Texas. This memorandum sets forth the responsibilities and agreements between EPA and the City of Houston, Texas to make the City of Houston, Texas a City Partner in EPA's Green Lights Program ("Green Lights City Partner").

B. **Commitment.** Both parties acknowledge a shared commitment to the promotion, and continuing development, of energy-efficient lighting. Both parties recognize that widespread use of energy-efficient lighting designs and technologies can reduce the emissions of many pollutants. Both parties further recognize that energy-efficient lighting can enhance national energy security and improve the nation's economic competitiveness. Green Lights City Partner is committed to promoting the environmental protection benefits of energy-efficient lighting, and sees the EPA Green Lights Program as a valuable opportunity to achieve that goal.

Revisions to this Memorandum of Understanding will not be accepted.
CITY PARTNER MOU

II. Green Lights City Partner's Role

A. **Liaison.** Green Lights City Partner agrees to appoint a responsible representative of the city as liaison with EPA for the Green Lights Program, and to notify EPA within two weeks of any change in liaison responsibility. The designated liaison officer is:

Primary Liaison

Name: Dewayne Huckabay

Title: Division Manager

Address: Office of Energy Management
P.O. Box 1562

City, State, Zip: Houston, Texas, 77251-1562

Telephone Number: 713-658-4517

Telefax Number: 713-658-4458

B. **Recruitment of Corporate Partners.** Green Lights City Partner agrees to attempt to recruit Green Lights Partners from major corporations headquartered in its city. In its recruiting efforts, Green Lights City Partner agrees, at a minimum, to consider:

1. distributing EPA-supplied and other promotional materials;
2. using EPA-supplied visual aids as part of presentations to prospective Green Lights Partners;
3. using the Green Lights Program logo where Green Lights City Partner

Revisions to this Memorandum of Understanding will not be accepted.
CITY PARTNER MOU

and EPA jointly deem it appropriate, and concur in writing to that effect;

4. involving the Mayor and other high level officials in directly recruiting major corporations headquartered in the city;
5. proposing any legislation needed to assure legal obstacles to full effectiveness of Green Lights be removed.

Green Lights City Partner further agrees to promptly inform EPA of interest expressed by prospective Green Lights Partners in its jurisdiction to allow further contact by EPA.

C. **Public Awareness.** Green Lights City Partner agrees to work with EPA to bolster general public awareness of the environmental and economic benefits of energy-efficient lighting and of the Green Lights Program. Green Lights City Partner agrees to inform its employees of the opportunities to utilize energy-efficient lighting, and to encourage them to use energy-efficient design practices and technologies. Green Lights City Partner further agrees to establish and annually conduct a "Green Lights Awareness Week" within twelve months of signing this Memorandum of Understanding to educate corporations, non-profit institutions, and the citizens and students of the city about the benefits of energy efficient lighting (Unless City Partner is located in a state which has joined the Green Lights State Partner program, in which case City Partner agrees to work with State Partner to develop and execute "Green Lights Awareness Week"). Green Lights City Partner agrees to consider including some or all of the following types of activities during

**Revisions to this Memorandum of Understanding will not be accepted.
CITY PARTNER MOU**

"Green Lights Awareness Week" and/or at other times:

- 1) an awards program for the most energy-saving, cost-effective upgrades in schools, hospitals, universities, and corporations headquartered in the city;
- 2) distribution of informational flyers/pamphlets to city schools and city employees;
- 3) a media event in the mayor's energy efficient lighting-equipped office; and
- 4) a mayoral proclamation in support of Green Lights principles.

D. Regulatory Reform. To the extent allowable by law and consistent with other policies, Green Lights City Partner agrees to work with EPA to remove any unjustified regulatory, administrative and other barriers to the widespread adoption of energy-efficient lighting, and to promote additional mechanisms and incentives (in conjunction with any existing city economic/energy office programs or independently) that will encourage the widespread adoption of energy-efficient lighting and increase the competitiveness of energy efficient corporations. Green Lights City Partner agrees that its regulatory agencies will work with EPA to support changes that prevent utility revenue erosion and permit utilities to earn profits from energy efficiency programs, such as Green Lights.

E. Leadership in Energy-Efficient Lighting. To set an example for the Green Lights Partners and the public, Green Lights City Partner agrees to conduct lighting surveys

Revisions to this Memorandum of Understanding will not be accepted.
CITY PARTNER MOU

on all city facilities, consider a full set of lighting upgrade options that can reduce energy use, and choose the set of options that maximizes energy savings, but only to the extent that the set is profitable and does not compromise lighting quality. Due to the relatively low risk involved in installing energy-efficient products and the tangible, but difficult to measure, benefits of enhanced quality, profitability will be defined as those projects, which, in combination, maximize energy savings while providing an annualized internal rate of return that is at least equivalent to the prime interest rate plus six percentage points.

1) **Facilities Upgrade.** Green Lights City Partner agrees to complete upgrades at 90% of the square footage of its facilities for which upgrades are appropriate according to the provisions of paragraph II.E within five years of signing this agreement. In the case of space which is leased under an agreement which expires more than five years after the date this agreement enters into force, the leased space will be upgraded unless the landlord refuses to cooperate, in which case Green Lights City Partner will provide EPA with an opportunity to seek the landlord's cooperation through an EPA presentation on the benefits of the Green Lights program.

2) **Documentation of Improvements.** Green Lights City Partner agrees to annually document the energy efficiency improvements it makes during the term of this agreement to help demonstrate the benefits of this program and

Revisions to this Memorandum of Understanding will not be accepted.
CITY PARTNER MOU

to increase corporate participation in the Green Lights Program.

3) New Facilities. Green Lights City Partner agrees to design all new facilities in compliance with applicable codes and regulations, and further to at least meet (and attempt to exceed) the most current lighting energy standards, defined as:

a. ASHRAE/IES 90.1-1989 until January 1, 1993.

b. Between January 1, 1993 and December 31, 1994, the building energy guidelines of the U.S. Department of Energy or any new IES lighting energy standard (if one has been issued) or ASHRAE/IES 90.1-1989 if no new IES standard has been issued.

c. Following January 1, 1995, any post-1989 IES lighting energy standard (if one has been issued), or the building energy guidelines of the U.S. Department of Energy, or another post-1989 building energy standard more stringent than ASHRAE/IES 90.1-1989 that has been created via an industry/professional/public consensus process.

4) Re-survey. Green Lights City Partner agrees to re-survey facilities and re-analyze options at each facility no later than five years after completing an upgrade at that facility, or five years after determining that an upgrade was not appropriate according to the criteria set forth in paragraph II.E. Green

Revisions to this Memorandum of Understanding will not be accepted.
CITY PARTNER MOU

Lights City Partner agrees to implement profitable options that then exist within five years of the re-survey.

III. EPA's Role

A. Liaison. EPA agrees to designate a single liaison point for the Green Lights Program, and to notify Green Lights City Partners within two weeks of any change in liaison responsibilities:

Green Lights Program Manager
U.S. Environmental Protection Agency
Global Change Division (ANR-445)
401 M Street, SW
Washington, DC 20460
(202) 382-4992
(202) 475-7010 telefax

B. Promotional Efforts. EPA agrees to provide informational materials to assist the Green Lights City Partner in its efforts to promote the use of high quality energy-efficient lighting, including:

1. publications (brochures, newsletters, etc.) which explain the environmental benefits of energy-efficient lighting and the Green Lights

Revisions to this Memorandum of Understanding will not be accepted.
CITY PARTNER MOU

- Program;
2. slide presentation (with a script) for the same purpose;
 3. video;
 4. information on eligibility criteria for participation in the program as a Green Lights Partner;
 5. an EPA application form that prospective Green Lights Partners may use to obtain information about membership in the Green Lights Program;
 6. blank copies of the Green Lights Partner Memorandum of Understanding; and
 7. the Green Lights logo to identify the Green Lights City Partner as a participant in the program, that the Green Lights City Partner may use on its letterhead, business cards, literature binders, and on other materials, subject to mutual agreement. City Partner and EPA must agree in writing on use of EPA logo on literature developed by the city. EPA reserves all rights to the logo and authority over who may use the logo and for what purposes, beyond those uses allowable under the various EPA-approved Green Lights memoranda of understanding.

EPA further agrees, to the extent possible, to work with City Partner in the planning and execution of Green Lights public recognition and awareness events.

Revisions to this Memorandum of Understanding will not be accepted.
CITY PARTNER MOU

C. Technical Support. EPA agrees to give each Green Lights City Partner various products and tools, including guidebooks and a PC-based Decision Support System that EPA is developing to help Partners conduct lighting surveys, complete options analyses, and choose the most energy-efficient and profitable upgrade lighting packages. EPA also agrees to develop workshops, training courses, and evaluations of upgrades useful for executing the Green Lights program.

D. Market Enhancement. EPA agrees to help enhance the functioning of the lighting market, and to help assure quality control for the energy-efficient lighting industry, by:

1. helping to establish a lighting product information program;
2. assisting the energy-efficient lighting industry in establishment of education and certification mechanisms for suppliers of services, including auditing, design and installation;
3. establishing Green Lights Manufacturer Ally and Green Lights Electric Utility Ally programs for companies which agree to uphold certain principles in support of the Green Lights program.

E. Manufacturer's Assessment. EPA agrees to work with members of the lighting community to analyze the expected near- and medium-term stimulation of demand for energy-efficient lighting products caused by the Green Lights Program, utility rebate

Revisions to this Memorandum of Understanding will not be accepted.
CITY PARTNER MOU

programs, state and federal government relighting programs, etc., and to inform Green Lights City Partners of any results from this activity. EPA also agrees to work to assess the lighting industry's plans for expanding production capacity to meet expected demand, but only to the extent that proprietary information is not jeopardized.

F. **Regulatory Reform.** EPA, to the extent allowable by law and consistent with other policies, agrees to work to remove unjustified regulatory, administrative and other barriers to the widespread adoption of energy-efficient lighting, and to work to promote additional mechanisms and incentives that will encourage the widespread adoption of energy-efficient lighting. EPA agrees to work with regulatory agencies to support changes that prevent revenue erosion and permit utilities to earn profits from the Green Lights Program.

IV. Criteria and Standards

A. **Good Faith.** Each party agrees to assume good faith as a general principle for the Green Lights program.

B. **Dispute Resolution.** Both parties agree to informally notify each other if any problems arise and to work together to provide maximum public confidence in the program. Either party can terminate this agreement at any time with no notice or penalties and both will then cease to publicize Green Lights City Partner's participation in Green Lights.

Revisions to this Memorandum of Understanding will not be accepted.
CITY PARTNER MOU

C. Termination Costs. Each party shall pay its own termination costs out of its own funds. In no event shall either party be liable for the direct termination costs of the other party or said other party's expenses caused by or related to the termination.

D. Legal Restrictions. EPA's commitments will be subject to any legal restrictions that may apply.

E. Public Information. EPA agrees that information provided by Green Lights Partner to EPA will be treated pursuant to EPA's public information regulations under 40 Code of Federal Regulations, Part Two.

APPENDIX B

HOUSTON GREEN LIGHTS EXECUTIVE ORDER

SUBJECT GREEN LIGHTS PROGRAM	E. O. No. 1-17
	Effective Date 05-15-92

1. AUTHORITY

- 1.1 Memorandum of Understanding between the City of Houston and the United States Environmental Protection Agency.

2. PURPOSE

- 2.1 The Green Lights Program will prevent air pollution, reduce electricity bills, increase competitiveness, enhance national energy security, and provide leadership and increase public awareness of energy efficient lighting impacts.

3. OBJECTIVES

- 3.1 To promote energy efficient lighting through various public information and awareness activities and recruitment of corporate partners.
- 3.2 To encourage the widespread adoption of energy efficient lighting and increase the competitiveness of energy efficient corporations through removal of unjustified regulatory barriers.
- 3.3 To survey all City-owned and leased facilities for energy efficient lighting opportunities within five years.
- 3.4 To implement cost effective energy efficient lighting upgrades in 90% of City facilities within five years.
- 3.5 To document energy efficient improvements made through the Green Lights Program.
- 3.6 To design all new facilities in accordance with the most current lighting standards.

4. DEFINITIONS

- 4.1 ASHRAE/IES 90.1-1989 - the most current lighting standards or successor standards adopted by the Illuminating Engineering Society of North America.
- 4.2 Cost effective - an annualized internal rate of return that is at least equivalent to the prime interest rate plus six percentage points.

- 4.3 Facilities Operating Departments - City departments responsible for maintaining and operating City-owned and leased facilities.
- 4.4 The Green Lights Program - a voluntary agreement between the City of Houston and the United States Environmental Protection Agency to survey all facilities and implement cost effective, energy efficient lighting upgrades within five years.
- 4.5 Memorandum of Understanding - the official agreement signed by the Mayor and the United States Environmental Protection Agency specifying roles and responsibilities of each party as part of the Green Lights Program. A copy of the Memorandum of Understanding is included as an Appendix.

5. SCOPE

All City of Houston owned and leased facilities must be surveyed for energy efficient lighting applications within five years. All departments with operating responsibilities for City facilities must survey and implement cost effective, energy efficient lighting upgrades. All new City facilities must comply with the most current lighting energy standards.

6. RESPONSIBILITIES

- 6.1 The Mayor's Office has responsibility for recruitment of corporate partners and public awareness activities, as required by the Green Lights Memorandum of Understanding.
- 6.2 The Office of Energy Management of the Department of Finance and Administration is the Primary Liaison for the Green Lights Program. It has responsibility to provide Citywide leadership for energy efficient upgrades, to coordinate departmental compliance and workplans, to coordinate training and external resource assistance, to compile the facilities reports from the operating departments required by the program and transmit them to the United States Environmental Protection Agency, to assist operating departments in surveying facilities and implementing justified energy efficient lighting, and to be the primary source of information for the United States Environmental Protection Agency.
- 6.3 The Capital Projects Department has responsibility to ensure that new facilities comply with the most current lighting standards.
- 6.4 Facilities operating departments have responsibility to designate a departmental Green Lights contact person, to develop a workplan for their Green Lights activities, to survey their facilities within five years, to implement cost effective, energy efficient lighting upgrades, and to complete quarterly facilities status reports as required by the Memorandum of Understanding.

7. PROCEDURE

- 7.1 The City and the United States Environmental Protection Agency will conduct an orientation meeting for all affected departmental personnel to explain the goals and objectives of the Green Lights program, to indicate the requirements of the Green Lights program and to identify sources of assistance for departmental responsibilities.
- 7.2 The Office of Energy Management will compile Citywide information on the Green Lights Program from the departmental information and will transmit the Citywide quarterly reports to the United States Environmental Protection Agency.
- 7.3 Facility operating departments will develop a workplan indicating how and when their facilities will be surveyed, and with what resources. The proposed workplans will be reviewed and approved by the Office of Energy Management and compiled into a Citywide facilities workplan.
- 7.4 Each facilities operating department will identify its affected facilities, will conduct surveys of its facilities in accordance with the Green Lights requirements, and will document the results of these surveys. Surveys can be conducted with City staff, utilities staff, consultants, Green Lights Allies, Green Lights Endorsers, or other energy service providers. The results of the surveys will be communicated to the Office of Energy Management for review.
- 7.5 Cost effective energy efficient lighting upgrades for surveyed facilities will be implemented by the departments using departmental operating or bond funds, utility rebates, low interest loans, performance contracts, or other funding sources. Departments will be allowed to use funds from their utilities operating accounts for capital and equipment purchases required to implement the lighting upgrades if the initial costs can be recovered in the same budget year. If the initial cost of the lighting upgrade cannot be recovered in the same budget year, multi-year funding sources such as bond funds, low interest loans and performance contracts are required.
- 7.6 Each facility operating department will complete quarterly facilities reports and transmit them to the Office of Energy Management for consolidation and transmission to the United States Environmental Protection Agency.
- 7.7 The Capital Projects Department will review all designs for new facilities to insure that the most current energy lighting standards are being used in all new facilities. It will report the results of its design review activities on a quarterly basis to the Office of Energy Management.

- 7.8 The Mayor's Office will coordinate all public awareness and public information activities for the Green Lights program and will report on its activities on a quarterly basis.

APPENDIX C

HOUSTON GRANT ORDINANCE

136

Controller's Office

To the Honorable Mayor and City Council of the City of Houston:

I hereby certify, with respect to the money required for the contracts, agreements, obligations or expenditures contemplated by the ordinance set out below that:

- () Funds have been encumbered out of funds previously appropriated for such purposes.
- () Funds have been certified and designated to be appropriated by separate ordinance to be approved prior to the approval of the ordinance set out below.
- () Funds will be available out of current or general revenue prior to the maturity of any such obligation.
- () No pecuniary obligation is to be incurred as a result of approving the ordinance set out below.
- (X) OTHER ACCEPTANCE OF GRANT FUNDS

DATE: SEPTEMBER 10, 1992 City Controller of the City of Houston

FUND REF: — AMOUNT: \$20,000.00 ENCUMB. NO.: —

CJB 5/10/92

AA 9/11/92

City of Houston Ordinance No. 92-1270

AN ORDINANCE APPROVING AND AUTHORIZING ACCEPTANCE OF AN ENERGY TECHNOLOGY GRANT FROM THE URBAN CONSORTIUM ENERGY TASK FORCE OF THE U.S. DEPARTMENT OF ENERGY, AND A CONTRACT BETWEEN THE CITY OF CHICAGO AND THE CITY OF HOUSTON TO DEVELOP A PROJECT ENTITLED, "GREEN LIGHTS AUDIT PARTNERSHIP REVOLVING FUND"; MAKING VARIOUS FINDINGS AND PROVISIONS RELATING TO THE SUBJECT; AND DECLARING AN EMERGENCY.

* * * * *

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF HOUSTON:

Section 1. The City Council hereby approves and authorizes the contracts, agreements or other undertakings described in the title of this ordinance, in substantially the form as shown in the documents which is attached hereto and incorporated herein by this reference. The Mayor is hereby authorized to execute such documents and all related documents on behalf of the City of Houston. The City Secretary is hereby authorized to attest to all such signatures and to affix the seal of the City to all such documents.

Section 2. There exists a public emergency requiring that this Ordinance be passed finally on the date of its introduction as requested in writing by the Mayor; therefore, this Ordinance shall be passed finally on such date and shall take effect immediately upon its passage and approval by the Mayor; however, in the event that the Mayor fails to sign this ordinance within five days after its passage and adoption, it shall take effect in accordance with Article VI, Section 6, Houston City Charter.

PASSED AND ADOPTED this 23rd day of September, 19 92.

APPROVED this _____ day of _____, 19____.

Mayor of the City of Houston

Pursuant to Article VI, Section 6, Houston City Charter, the effective date of the foregoing Ordinance is _____.

[Signature]
City Secretary

(Prepared by Legal Dept. [Signature])
(HMG/NJG/njg 09/03/92) Assistant City Attorney
(Requested by Richard Lewis, Acting Director, Department of Finance and Administration)
(L.D. File No. 34-92142-01)
Form132a-M
NJG618

AYE	NO	
✓		MAYOR LANIER
••••	••••	COUNCIL MEMBERS
✓		HUEY
✓		McGOWEN
ABSENT OUT OF THE CITY		RYAN
✓		CALLOWAY
✓		MANCUSO
ABSENT ON BUSINESS		GOODNER
ABSENT ILL		HARTUNG
✓		GORCZYNSKI
✓		REYES
✓		SAENZ
✓		TINSLEY
✓		GREENWOOD
✓		LEE
✓		ROBINSON
CAPTION	ADOPTED	

CAPTION FURNISHED BY CLERK COURT
-VIEW
DATE: SEP 29 1992

SUBJECT: Approval of the Urban Consortium Energy Task Force grant & City of Chicago contract for the Green Lights Revolving Fund		Category #	Page 1 of _____	Agenda Item #
FROM (Department or other point of origin): Finance and Administration Department		Origination Date	Agenda Date	
DIRECTOR'S SIGNATURE:		Council District affected: All		
For additional information contact: Phone: Dewayne Huckabay 658-4517		Date and Identification of prior authorizing Council action:		
RECOMMENDATION: (Summary) City Council approval of an ordinance accepting the grant of \$20,000 from the Urban Consortium Energy Task Force and approving a contract with the City of Chicago for the Green Lights Audit Partnership Revolving Fund Proposal submitted by Finance and Administration, Office of Energy Management.				
Amount and Source of Funding: \$20,000 grant from the Urban Consortium Energy Task Force and United States Department of Energy.				
SPECIFIC EXPLANATION: The Urban Consortium Energy Task Force has selected a project proposed by the City of Houston to receive a \$20,000 grant as part of its annual urban government energy technology program for the period November, 1992 thru December, 1993. The Urban Consortium Energy Task Force is funded through a cooperative agreement with the United States Department of Energy which is administered by contracts with the City of Chicago as the Urban Consortium Energy Task Force business office. The proposed Green Lights Audit Partnership Revolving Fund research by the City of Houston is to use the grant funds to provide seed monies to establish an internal revolving fund for energy conservation measures, particular those identified through the EPA Green Lights Program. Other funds such as utility rebates will be added to the revolving fund after its initial creation with these grant funds. This project would be based on the Green Lights Program workplan and energy audits, which are currently being developed for all City facilities. It would provide a source of recurring funding for identified energy/environmental improvements in buildings and City facilities.				
REQUIRED AUTHORIZATION				
F&A Budget:	Chief Administrative Officer:		Other Authorization:	

Date	Subject: Approval of the Urban Consortium Energy Task Force grant & City of Chicago contract for the Green Lights Revolving Fund	Originator's Initials	Page of
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The project would use the private sector concept of performance contracting (shared savings) to replenish the initial investment over time. The expertise of private sector performance contractors will be used to assist in creating the fund, its payback mechanisms and criteria for evaluating projects for funding.

Council approval of the grant and associated fund is requested.

APPENDIX D

REVOLVING FUND STEPS

CITY OF HOUSTON

INTER OFFICE CORRESPONDENCE

TO Dewayne Huckabay
Division Manager
Finance & Administration

FROM Claude Hill, Director
Operations & Control Division

DATE March 10, 1993

SUBJECT Green Lights Audit Partnership
Revolving Fund

On January 7, 1993, we met with you and Felix Johnson to discuss the \$20,000 Energy Technology Grant from the City of Chicago and the proposed Green Light Revolving Fund. During our meeting, we agreed to provide the necessary procedures pertaining to the required accounting transactions. Below are procedures required to establish and operate the Green Light Revolving Fund:

1. Establish Special Revenue Fund (Revolving Fund).
 - * Special Revenue Fund #229 has been established for the Green Light Revolving Fund.
2. Establish Special Revenue Fund budget.
 - * Coordinate the preparation of the budget documents for the Revolving Fund directly with the Finance & Administration Budget Division.
3. Establish the \$20,000 Energy Technology Grant.
 - * Prepare Appropriation (AA), Expense Budget (EB), and Federal Aid Master (FM) documents to establish the budget for the \$20,000 Energy Technology Grant in grant fund #136.
4. Record salary expenditures (\$17,000) in the General Fund.
 - * Salaries are paid out of and recorded in the General Fund through the regular payroll process (i.e. time sheets and payroll checks).
5. Record travel expenditures (\$3,000) in the grant fund.
 - * Travel expenditures are recorded in the grant fund in the regular manner (i.e. travel requests and reimbursement payment vouchers).
6. Bill City of Chicago for the grant related expenditures.
 - * Prepare the required reports and requests for funds and submit to the City of Chicago for the reimbursement of grant costs.
7. Record the cash received from the City of Chicago in the grant fund.
 - * Prepare a cash receipt document (CR). Code the CR to fund #136, revenue source #6930 02, and the appropriate reporting category. The applicable reporting category will be established at the time that the FM is prepared.

8. Bill the grant for the \$17,000 in salary costs.

- * Prepare an Intra-governmental Payment Voucher (IV). Use the revolving fund (#229) as the seller and the grant fund (#136) as the buyer.

Thank you for allowing us to participate in the discussion phases of the operations surrounding the Energy Technology Grant. Should you require any additional information or assistance in implementing the procedures, please do not hesitate to contact Ann Hatch of our Office at 247-3223 or Gilbert Garcia at 247-1163.

Claude Hill

cc: George Greanias, City Controller
Roger Contreras
Janice Davis
Gilbert Garcia
Ann Hatch

APPENDIX E

REVOLVING FUND ORDINANCE

Controller's Office

To the Honorable Mayor and City Council of the City of Houston:

In accordance with Article II, Section 19a of the Charter of the City of Houston, I do hereby certify that the money required for the expenditure or expenditures specified in Section 1 of the Ordinance set out below is in the treasury, in the fund or funds specified below, and is not appropriated for any other purposes.

Date: _____, 19 _____ City Controller of the City of Houston
136165/9364 19246.95

FUND REF.: 241651 AMOUNT: 60769.00 ENCUMB.NO.:

City of Houston Ordinance No. 94-169

AN ORDINANCE APPROPRIATING THE SUM OF \$19,246.95 OUT OF GRANT FUND NO. 136; TRANSFERRING THE SUM TO SPECIAL REVENUE FUND NO. 229; AND APPROPRIATING \$80,015.95 OUT OF SPECIAL REVENUE FUND NO. 229 TO BE USED TO PAY FOR ENERGY CONSERVATION PROJECTS THROUGHOUT THE CITY; MAKING VARIOUS OTHER FINDINGS AND DECLARING AN EMERGENCY.

* * * *

WHEREAS, the City Controller has heretofore certified to the Mayor and City Council that the money required for the expenditure set out in this Ordinance is in the treasury in the fund or funds specified and is not appropriated for any other purpose, and the Mayor has heretofore requested in writing that this Ordinance be passed finally on the date of its introduction, NOW, THEREFORE,

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF HOUSTON:

Section 1. The City Council hereby adopts the findings set out in the preamble hereof and hereby appropriates the sum of money set out in the title of this Ordinance, out of the funds set out in such title for the purpose set out in such title.

Section 2. There exists a public emergency requiring that this Ordinance be passed finally on the date of its introduction as requested in writing by the Mayor; therefore, this Ordinance shall be passed finally on such date and shall take effect immediately upon its passage and approval by the Mayor; however, in the event that the Mayor fails to sign this Ordinance within five days after its passage and adoption, it shall take effect in accordance with Article VI, Section 6, Houston City Charter.

PASSED AND ADOPTED this 16th day of February 1994.
APPROVED this _____ day of _____, 19____.

Mayor of the City of Houston

Pursuant to Article VI, Section 6, Houston City Charter, the effective date of the foregoing Ordinance is _____.

C. Russell
City Secretary

(Prepared by Legal Dept.
(JSW:WHU:02/07/94)
(Requested by Director, Finance & Administration)
(L.D. File No. _____)

J. Wiginton
Assistant City Attorney

A:\WHUOR904

10. Mayor via City Council
Request to transfer funds and appropriate funds for Green
Lights Revolving Fund (Special Revenue Fund #229).

Category
1

Page
1 of 2

Agenda Item
#

FROM (Department or other point of origin):
Finance & Administration

Origination Date
2/10/94

Agenda Date

DIRECTOR'S SIGNATURE:

Council District affected:

All

For additional information contact:

Dewayne Huckabay

Phone:

658-4517

Date and identification of prior authorizing
Council action:
#92-1270 (9/23/92)

RECOMMENDATION: (Summary)

Adopt ordinance to transfer funds from grant fund #136 (USDOE) and appropriate funds from the Green Lights Revolving Fund (Special Revenue Fund #229) in accord with ordinance #92-1270, that accepted grant funds to establish a Green Lights fund.

**Amount and
Source of Funding:**

\$19,246.95 from Department of Energy grant (Fund 136)
\$80,015.95 \$60,769.00 from Houston Lighting & Power rebates (Fund 229)

SPECIFIC EXPLANATION:

On September 23, 1992, Council accepted a grant from the Urban Consortium Energy Task Force (and the Department of Energy) to establish a Green Lights Revolving Fund to finance energy conservation measures from future energy savings. The grant funds were deposited in Fund 136.

The City has also received \$60,769.00 rebates for specific energy conservation improvements in the Civic Center and Library Departments from the Houston Lighting and Power (HL&P) Commercial Efficiency Improvement Program (CEIP). The funds and future rebates are being deposited in Fund 229, the Green Lights Revolving Fund.

The Green Lights Revolving Fund will use the specified revenues to fund supplies, materials, and capital equipment associated with defined energy conservation projects. There are two pending department energy conversation projects which would utilize all the initial funds available in the Revolving Fund.

Council approval is requested to transfer \$19,246.95 from the USDOE grant (Fund 136) into the Green Lights Revolving Fund (Special Revenue Fund #229) and appropriate the \$80,015.95 for selected departmental energy conservation projects.

REQUIRED AUTHORIZATION

F&A Budget:

Chief Administrative Officer:

Other Authorization:

APPENDIX F

REBATES AND REBATE SHARING PROCEDURE

Houston Lighting & Power Company
COMMERCIAL EFFICIENCY IMPROVEMENT PROGRAM

Program Description

HL&P's Commercial customers can achieve substantial energy savings for their businesses by participating in HL&P's Commercial Efficiency Improvement Program (C.E.I.P.). Business owners and managers can enjoy lower energy costs while reducing capital expenses for new energy-efficient equipment. Design and contracting professionals can add value to their service by planning and installing efficient, higher-value systems and equipment. The program has long-term benefits for our customers and community as well. By encouraging energy efficiency, we can reduce demand for electricity and defer the need for additional generating capacity which helps keep future electricity rates more stable.

The C.E.I.P. is available to all customer electrical loads served under the Miscellaneous General Service (MGS) and Large General Service (LGS) rate schedules. The program addresses specific electrical energy use concerns of our commercial customers by offering energy audits and incentives for improvements in energy efficiency or shifting electrical demand to off-peak hours.

Energy Audits are performed at the request of the customer. The audit provides an opportunity for commercial customers to review their energy consumption and identify methods or practices to improve energy efficiency and conserve energy. The audit consists of an on-site visit by an HL&P representative followed by a general discussion of the customer's end-use electrical consumption. Opportunities identified in the discussion may allow the customer to take advantage of HL&P's incentive programs.

Incentives are offered on a number of proven, high efficiency technologies which include lighting, electric motors, air conditioning and structural improvements. The program also provides for customized methods of improving energy efficiency and for shifting load to off-peak hours. Under the Custom Measures Option, HL&P will consider options for reducing electrical demand that do not fall into one of the above categories. For options involving improvements in energy efficiency, the rebate amount is dependent upon the permanent KW reduction achieved between 1:00 p.m. and 8 p.m., Monday through Friday from May through October. Incentives for shifting demand are based on the permanent KW demand shifted from system on-peak hours to off-peak hours. System on-peak hours are defined as 1:00 p.m. to 8:00 p.m., Monday through Friday from May through October.

The Commercial Efficiency Improvement Program is designed to encourage the commercial customers to use electrical energy wisely and provide incentives for selecting the energy efficient equipment that makes the most sense for today's business environment.

CITY OF HOUSTON

Finance & Administration Department

Post Office Box 1562 Houston, Texas 77251-1562 713/247-2144

Bob Lanier, Mayor

CITY COUNCIL MEMBERS: Helen Huey Ernest McGowan, Sr. Vince Ryan Alfred J. Calloway Frank O. Mancuso John G. Goodner Christin Hartung
Dale M. Gorczynski Ben T. Reyes Grace Guzman Saenz Eleanor Tinsley Jim Greenwood Sheila Jackson Lee Judson W. Robinson, III CITY CONTROLLER: George Greanias

Albert E. Haines
Chief Administrative Officer

April 13, 1992

Mr. Thomas M. Sobey
Manager, Conservation and Load Management
Houston Lighting and Power Company
P. O. Box 1700
Houston, Texas 77251

Dear Mr. Sobey:

I am interested in assuring the City of Houston will be able to take maximum advantage of participating in Houston Lighting and Power's Commercial Efficiency Improvement Program, (CEIP) which officially began last week. The City of Houston has well over 1100 facilities and is one of HL & P's largest single customers.

I understand the commercial efficiency improvement rebates are limited to \$50,000 per facility and \$100,000 per customer per year, paid on a reimbursement basis. I also understand a limited amount of funds have been set aside for this program, which is currently operating on a "first come, first served" approach.

The City is initiating a five year Green Lights Program with the USEPA which will easily use the maximum annual customer allotment. Given the ongoing large customer relationship between Houston Lighting and Power and the City of Houston, I would request \$100,000 be set aside from the budgeted CEIP program funds over each of the next five years as a pool of funds for City of Houston applications for these rebates. There would be no difference for City applications for CEIP rebates than for any other HL & P customer. Applications for specific, CEIP allowed energy efficiency improvement rebates would be made and approved on an individual City facility basis. The only difference would be that a \$100,000 customer maximum rebate amount would be set aside for only City facility applications. This set aside would allow a more efficient basis for City facility rebate applications, rather than the current "first come, first served" approach.

Given the demand for these rebates and the limited funds available, I am requesting your earliest consideration of this request to establish a multi-year pool of CEIP funds for City of Houston facilities applications.

Sincerely,

Albert E. Haines

Chief Administrative Officer

AEH:mc

FINANCE & ADMINISTRATION

SUBJECT <div style="text-align: center;">HL&P CEIP REBATE POLICY</div>		No. <div style="text-align: center;">Effective Date 10/1/93</div>	
Issue Date:	Revision Date:	Revision No:	

1. PURPOSE
 - 1.1 To establish the City policy regarding application for and sharing of rebates from the Houston Lighting and Power (HL&P) Commercial Efficiency Improvement Program (CEIP).
2. SCOPE
 - 2.1 This policy applies to all City of Houston departments.
3. POLICY
 - 3.1 The City shall apply for all HL&P CEIP rebates for which it is eligible, up to the maximum customer limit of \$100,000 per year.
 - 3.2 All HL&P CEIP rebates will be applied for through the Office of Energy Management, Department of Finance and Administration. If more than \$100,000 in rebates are requested by departments, the Office of Energy Management will determine which applications for rebates are submitted.
 - 3.3 All HL&P CEIP rebates will be shared between the initiating department(s) and the Green Lights Revolving Fund.
 - 3.4 The initiating department(s) will receive forty percent of the total approved HL&P CEIP rebates.
 - 3.5 The Green Lights Revolving Fund will receive sixty percent of the total approved HL&P CEIP rebates.
 - 3.6 The rebates allocated to the Green Lights Revolving Fund will be used to fund additional energy improvements in facility operating departments on a competitive basis.
4. PROCEDURE
 - 4.1 Facility operating departments will identify potential energy improvements eligible for HL&P CEIP rebates and submit these applications to the Office of Energy Management.
 - 4.2 The Office of Energy Management will verify the eligibility of the application for HL&P CEIP rebates, and establish a priority level, if necessary.
 - 4.3 The Office of Energy Management will submit the HL&P CEIP rebate application to HL&P, monitor the status of the rebate application through the rebate process, and coordinate timely completion of required steps.
 - 4.4 HL&P will transmit the rebate checks to the Office of Energy Management, which will allocate the rebate amounts, and transfer the appropriate funds to the departments and the Green Lights Revolving Fund.
 - 4.5 The Office of Energy Management will periodically solicit departmental proposals for additional energy improvement projects to be funded through the Green Lights Revolving Fund.

Approved	Date Approved	Page <div style="text-align: right;">of</div>
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APPENDIX G

PERFORMANCE CONTRACT EXCESS SAVINGS PROCEDURE

MEMORANDUM OF UNDERSTANDING BETWEEN
THE FINANCE & ADMINISTRATION DEPARTMENT'S
OFFICE OF ENERGY MANAGEMENT and
_____(DEPARTMENT NAME)_____

I. PURPOSE

The purpose of this Memorandum of Understanding is to establish an agreement between the Finance & Administration Department's Office of Energy Management and the _____(DEPARTMENT NAME)_____ to designate any excess savings from the performance contract No. _____from vendor _____ to the Green Lights Revolving Fund.

II. Definitions

Performance Contract - Contractor provides energy conservation services, analyses, and improvements and is paid by the energy savings incurred as a result of implementing energy conservation measures recommended by contractor.

Contract Period- Period of time specified in the contract which contractor will perform services and receive payment of services from the energy savings incurred.

Annual Projected Savings- 100% of contractor estimated savings resulting from implementation of energy conservation measures.

Annual Guaranteed Savings- a varying percentage of savings resulting from implementing the specified energy improvements, stated in the contract.

Excess Savings- savings over 100% of annual projected savings during the contract period.

III. Agreement

The _____(DEPARTMENT NAME)_____ agrees to allocate any excess savings throughout the contract period of the specified performance contract to the Green Lights Revolving Fund (Special Revenue Fund 229) unless otherwise specified in the contract. These funds will be utilized to fund other energy conservation projects as described in the Green Lights Revolving Fund Procedure.

Project contract period specified is _____ years.

Concurred By:

_____(DEPARTMENT NAME)_____

Office of Energy Management
Finance & Administration

Title: _____

Title: _____

Date: _____

Date: _____

Approved: _____
Director, Finance & Administration

APPENDIX H

INTERDEPARTMENTAL REPAYMENT MEMORANDUM OF UNDERSTANDING

**MEMORANDUM OF UNDERSTANDING BETWEEN
THE FINANCE & ADMINISTRATION DEPARTMENT'S
OFFICE OF ENERGY MANAGEMENT
and
CITY OF HOUSTON
DEPARTMENT**

I. PURPOSE

The purpose of this Memorandum of Understanding is to establish an agreement for funding viable energy conservation projects from an internal City revolving fund designated solely for that purpose. To guarantee a mechanism to replenish the fund from avoided energy cost (savings) plus associated cost for maintaining the fund.

II. RESPONSIBILITIES

The Office of Energy Management of the Department of Finance and Administration, hereunder referred as to "OEM", has primary management responsibility for the Green Lights Revolving Fund for Energy Conservation, establishing the base year for facilities to be upgraded, monitoring and verifying energy savings from any and all energy conservation measures funded, maintain current financial records on audit and installation cost, continually seek sources for funding the revolving fund, and determination from procedure on which projects to fund.

The facilities operating departments, hereunder referred to as "Buyer", have the responsibility to help identify fundable energy conservation projects through their departmental contact.

III. BASE YEAR

The OEM will establish a base year of energy use for the purpose of determining energy cost savings for the buyer's facility in agreement with the buyer. At a minimum, twenty-four (24) months (Schedule-A) of energy consumption with adjusted degree day data will be used in calculating the facilities base year.

IV. ADJUSTMENTS TO BASE YEAR

The established base year energy consumption will be calculated for the square footage and building use at the time of this agreement. If the facility is modified or building use changed that would cause a ten (10) percent change in energy consumption, the OEM may deem it necessary to adjust the base year in order to reflect the real energy savings. The buyer must notify the OEM

MEMORANDUM OF UNDERSTANDING BETWEEN
THE FINANCE & ADMINISTRATION DEPARTMENT'S
OFFICE OF ENERGY MANAGEMENT
and
CITY OF HOUSTON
DEPARTMENT

before any major facility modifications or alteration of equipment installed under this agreement.

V. INSTALLATION

Buyer agrees to install or have installed under buyer's supervision equipment that is specified on schedule B.

VI. SAVINGS GUARANTEE

This agreement guarantees that the cost of the entire project (equipment and labor) will be recouped from the avoided electricity and natural gas cost. If the savings do not occur, the Buyer is released from all financial responsibility for the project described in this agreement.

VII. PAYMENTS

A. As payment for the equipment, Buyer hereby agrees that payments will be made quarterly to the Green Lights Revolving Fund through Intra-Government Vouchering by the OEM from appropriation 3000, expense objects 30500 and 30505 with documentation forwarded to the Buyer.

B. Buyer shall make all efforts to insure appropriation of the funds to the above referenced expense objects equal to or greater to the current fiscal year appropriation until project cost plus twenty-five (25) percent have been satisfied.

VIII. PRICE

The amount to be repaid to the Green Lights Revolving Fund is \$ _____ for the equipment listed on Schedule B and installation of that equipment, plus twenty-five (25) percent of that sum \$ _____ for a grand total of \$ _____.

MEMORANDUM OF UNDERSTANDING BETWEEN
THE FINANCE & ADMINISTRATION DEPARTMENT'S
OFFICE OF ENERGY MANAGEMENT
and
CITY OF HOUSTON
DEPARTMENT

IX. OPERATION and MAINTENANCE

Buyer agrees to operate and maintain the equipment listed in Schedule B in a manner that the manufacturer has recommended and in accordance with this agreement for the purpose of reducing energy consumption or demand.

BUYER: DEPARTMENT NAME
DIVISION NAME

SELLER: OFFICE OF ENERGY MANAGEMENT
ADMINISTRATIVE SERVICES DIV.

By: _____

By: _____

Title: _____

Title: _____

Date: _____

Date: _____

and
SPECIFIED CITY OF HOUSTON
DEPARTMENT

DATE: _____

DEPARTMENT: _____

DIVISION: _____

FACILITY ADDRESS _____

HL&P ACCOUNT # _____ ENTEX ACCOUNT # _____

ESTIMATED ENERGY CONSUMPTION AFTER UPGRADES

[illegible]

APPENDIX I

PROJECT SOLICITATION PROCEDURE

PROPOSED GREEN LIGHTS REVOLVING FUND PROCEDURE

- I. DEPARTMENT SUBMITS ENERGY CONSERVATION PROJECT APPLICATION FOR REVOLVING FUND DURING SOLICITATION PERIOD. ELIGIBLE PROJECTS RANGE FROM \$5,000 TO \$25,000 IN COST, WITH PAY-BACK EXCEEDING 12 MONTHS.
- II. ENERGY MANAGEMENT SELECTS ENERGY CONSERVATION PROJECTS BASED UPON SPECIFIED CRITERIA AND INITIATES APPROVAL PROCEDURE.
- III. DEPARTMENT AGREES TO REPAY REVOLVING FUND FROM UTILITY ACCOUNT SAVINGS UNTIL INITIAL INVESTMENT PLUS COSTS ARE RECOVERED (125% OF INITIAL FUNDING). IF NO UTILITY SAVINGS OCCUR, NO REPAYMENTS WILL BE MADE. REPAYMENTS WILL REQUIRE MULTI-YEAR AGREEMENTS.
- IV. DEPARTMENTAL REPAYMENT AGREEMENT AND SELECTED ENERGY CONSERVATION PROJECT ARE SUBMITTED AND APPROVED BY CITY COUNCIL, WITH LEVEL PROJECT ASSOCIATED UTILITY FUNDING BUDGETED UNTIL REPAYMENT IS COMPLETE.
- V. APPROVED PROJECT IS INSTALLED AND COMPLETED.
- VI. GREEN LIGHTS REVOLVING FUND (SPECIAL REVENUE FUND 229) ADVANCES AGREED UPON FUNDING AMOUNT TO DEPARTMENT FOR COMPETITIVELY SELECTED AND APPROVED, SPECIFIED ENERGY CONSERVATION MEASURES, UPON COMPLETION AND INSTALLATION OF PROJECT MEASURES.
- VI. ENERGY MANAGEMENT CONTINUES TO PAY DEPARTMENT UTILITY BILLS MONTHLY, WITH SAVINGS FROM PROJECT IMPLEMENTATION TRANSFERRED TO REVOLVING FUND UNTIL REPAYMENT IS COMPLETE.

APPENDIX J

PROJECT SELECTION CRITERIA

CITY OF HOUSTON GREEN LIGHTS AUDIT PARTNERSHIP REVOLVING FUND PROPOSED PROJECT SELECTION CRITERIA

CRITERIA	EVALUATION RANKINGS				WEIGHTING
ENERGY SAVINGS (PAYBACK)	LESS THAN 9 MONTHS	LESS THAN 12 MONTHS	LESS THAN 18 MONTHS	LESS THAN 24 MONTHS	30 %
DEPARTMENTAL/ OTHER CONTRIBUTE	75% COST	50% COST	25% COST	NONE	15 %
EQUIPMENT LIFE EXPECTENCY	MORE THAN 2 X PAYBACK	2 TIMES PAYBACK	1.5 TIMES PAYBACK	EQUALS PAYBACK	15 %
EASE IN MEASURE RESULTS	DIRECT REDUCE KVA AND KW	REDUCED OPER. HOURS	INDIRECT (BILLS)	CALCULATIONS	10 %
INSTALLATION SUPERVISION	DEPARTMENT PERSONNEL	SUPERVISOR	ENERGY MGMT. PERSONNEL	PROFESS./ CONTRACT	7.5 %
INSTALLATION SCHEDULE	LESS THAN 30 DAYS	31 - 60 DAYS	61 - 90 DAYS	MORE THAN 90 DAYS	7.5 %
MAINTENANCE (AFTER INSTALL.)	NONE	ONCE A YEAR OR LESS	QUARTERLY	MONTHLY OR MORE OFTEN	5 %
BUILDING ENVIRON AFFECTS	IMPROVE TEMP/ LIGHTING	NO AFFECT TEMP/LIGHT	REDUCE COMFORT. + LIGHT W. SAV	REDUCE COMFORT. LGH W/O SAV.	5 %
BUILDING OPS AFFECTS	IMPROVE OPS	NO AFFECT OPERATIONS	TOO COMPLICATE PERSONNEL	REQUIRES CONTRACT	5 %

APPENDIX K

PROJECT APPLICATION KIT

PROJECT APPLICATION FOR
THE GREEN LIGHTS REVOLVING FUND
FOR ENERGY MANAGEMENT

DEPARTMENT _____ DIVISION _____
DEPARTMENT # _____ ORG # _____ FUND # _____
SUBMITTED BY _____ PHONE # _____
APPROVED BY _____

I. Give a brief description of the project that you are
applying for.

PROJECT APPLICATION FOR
THE GREEN LIGHTS REVOLVING FUND
FOR ENERGY MANAGEMENT

II. What is the total project installed cost (equipment and labor) and list your sources for cost estimation.

III. List the amount of project funding to be funded from the Green Lights Revolving Fund (75%, 50%) and sources of funding for the balance.

IV. Who will install the project?

V. Who will supervise the installation? (i.e. department personnel, supervisor, Energy Management personnel, professional contractor, etc.)

VI. How long will it take to install the project? (i.e. less than 30 days, 31-60 days, etc.)

PROJECT APPLICATION FOR
THE GREEN LIGHTS REVOLVING FUND
FOR ENERGY MANAGEMENT

VII. What are the estimated annual energy savings of the project and how were the savings derived.

VIII. How will the savings be measured?

IX. List any additional savings associated with the project and methods used to derive the savings.

X. What is the life expectancy of the equipment to be installed? What is the basis of this information?

XI. What will be the frequency of the maintenance required for the equipment installed? What is the basis of this information?

PROJECT APPLICATION FOR
THE GREEN LIGHTS REVOLVING FUND
FOR ENERGY MANAGEMENT

XII. What effects will the project have on the facility's environment? What is the basis of this information?

XIII. What effect will the project have on the facility's operations? What is the basis of this information?

XIV. Please list any additional relevant factors regarding the project that you feel should be listed.

APPENDIX L

PROJECT AUDIT SUMMARIES

ENERGY AUDIT REPORT
Executive Summary

Department: Solid Waste
S. Post Oak

Division: Collections

Facility: Southwest Service Center

Date of Audit: September 30, 1993

Audit Expense: 60 hrs. = \$1,800

Current Facility's Energy Usage:

Electricity = 570,816 KWH Annually

Current Facility's Energy Cost:

Electricity = \$38,123 Annually

Proposed Energy Conservation Measures: (See Attached Report for Details)

1. Upgrade existing F40,T12 fluorescent lighting in the facility.
2. Replace high wattage incandescent lamps with quad tube compact fluorescent.
3. Occupancy/Heat sensors to be installed in dormitory and lounge areas.

Environmental Benefits From Upgrade:

Pollutants	Emissions Prevented
CO2	77188.5 lbs./year
SO2	658.0 lbs./year
NOx	283.6 lbs./year

Total Project Cost	\$11,594
Energy Cost Savings	\$ 4,301
Simple Payback	2.7 yrs.

SOLID WASTE
SOUTHWEST SERVICE CENTER
S. POST OAK RD.

Upgrade Equipment

Type	Count	Unit Cost	Material Cost	Estimated Installation Cost
Flourescent Ballast	178	\$33	\$5,874	\$2,670
Full Size Flourescent Lamps	486	\$5	\$2,430	\$1,000
Compact Flourescen Lamps	31	\$35	\$1,085	\$200
Occupancy Sensors	49	\$45	\$2,205	\$2,940
TOTAL		\$118	\$11,594	\$6,810

Total Install Cost= \$11,594

KILO	
Lighting Watt Reductions	44,020
Occupancy Sensor Watt Reductions	7,439
TOTAL LIGHTING WATT REDUCTION	51,459 KWH/yr.

Air Conditioning Savings
(Lighting Reductions x 0.75/x0.33)
 38,594 x 0.33
 12,736 KWH/yr.

 64,195 KWH/yr.
 \$4,301

**ENERGY AUDIT REPORT
EXECUTIVE SUMMARY**

DEPARTMENT : Parks & Recreation

**DIVISION : Facilities
Operations**

**FACILITY : Southwest Tennis Center
9506 S. Gessner . Houston**

DATE OF AUDIT : September 19, 1993

AUDIT EXPENSES: 48 HOURS \$ 1,440

CURRENT FACILITY'S ENERGY USE :

ELECTRICITY = 431,232 kwh per year

ELECTRICITY = \$ 54,434 per year

PROPOSED ENERGY CONSERVATION MEASURES (See energy audit report for details):

- 1. Upgrade the indoor lamps: F40 T12 lamps to F32 T8 and incandescent lamps to compact fluorescent.**
- 2. Upgrade the outdoor lamps and fixtures:
(398x1500 watt quartz to 115x1000 watt metal halide).**
- 3. Install occupancy sensors in the restrooms.**

ESTIMATED PROJECT INSTALLATION COST :

MATERIAL= \$ 42,782.85 LABOR= \$ 36,720 TOTAL= \$ 79,502.85

PROPOSED LIGHTING UPGRADES' ENERGY REDUCTIONS and SAVINGS :

ELECTRICITY = 301,097 kwh Annually

ELECTRICITY = \$ 37,999 Annually

**SIMPLE PAYBACK (LABOR and MATERIAL) approximately 2.0 Years
SIMPLE PAYBACK (REVOLVING FUND) approximately 1.5 Years**

POLLUTION PREVENTED :

<u>Pollutant</u>	<u>Emissions Prevented</u>	
CO2	451,646	pounds per year
SO2	3,824	pounds per year
NOX	1,656	pounds per year

**ENERGY AUDIT REPORT
EXECUTIVE SUMMARY**

DEPARTMENT : Parks & Recreation

**DIVISION : Facilities
Operations**

**FACILITY : Southwest Tennis Center
9506 S. Gessner . Houston**

<u>TYPE</u>	<u>COUNT</u>	<u>ACTUAL MATERIALS and EQUIPMENT COSTS</u>	<u>SUB-TOTAL</u>	<u>ESTIMATED * INSTALLATION LABOR</u>
M e t a l Halide	115	\$ 227.03	\$ 26,109	\$ 23,400
Fluorescent Lamps	54	\$ 5	\$ 270	\$ 110
Fluorescent Ballasts	22	\$ 33	\$ 726	\$ 330
C o m p a c t Fluorescent Lamps	36	\$ 35	\$ 1260	\$ 280
Other ** Materials	-	-	14,417.85	\$ 12,600
		T O T A L	42,782.85	\$ 36,720

* The installation will be carried out by Parks & Recreation personnel.

** Refer to "Bid Request Form" of Parks & Recreation dated 3-3-94.

TOTAL UPGRADE COSTS

\$ 42,782.85 + \$ 36,720 = \$ 79,502.85

APPENDIX M

PROJECT SAVINGS ACCOUNTING FORM

											CUMULATIVE	
											FUNDS	
		ADJUSTMENTS			ADJUSTMENTS		ANNUAL	MONTHLY		MONTHL	MONTHLY	RETURNED
		TO	BILLED	TO	ON-PEAK	BILL	MONTHLY	MONTHL	MONTHLY	TO		
MONTH	BILLING PERIOD	KWH	KWH	KVA	KVA	KVA	AMOUNT	SAVINGS	SAVINGS	SAVINGS	GL FUND	
04-94	3/15-4/13	40,184	0	130	0		\$2,660	1288	14	\$317	\$317	
05-94	4/14-5/14	43,897	0	130	0		\$2,678	1031	0	\$296	\$613	

REPORT AND INFORMATION SOURCES

Additional copies of this "*Establishing a Green Lights Revolving Fund*" from the Energy Management, Finance and Administration, are available from:

PTI Publications Center
Tel: 301/490-2188
Fax: 301/604-0158

For additional information on the process and the results of the work described in this report or for information on the overall energy management programs in the City of Houston, please contact:

Dewayne Huckabay
Director
Energy Management, Finance and Administration
500 Jefferson, Suite 1800
Houston, TX 77002
(713) 658-4517

Order No: DG/93-303

SUSTAINABLE COMMUNITIES

AUSTIN, TX - Sustainable Systems Rating Program

The city of Austin, long a pioneer in sustainable research planning and practice, developed a sustainability rating system that can be used as a marketing tool to encourage high levels of resource conservation, appropriate usage, and economic development through residential building.

91-302. \$15.00

PTI - How to Save Thousands - Even Millions of Dollars Through Energy Efficiency (Video)

Looking for ways to save energy and money? This Urban Consortium Energy Task Force Video shows several cost-conscious and earth-minded methods to do so. Examples include how Phoenix saved \$32 million through retrofitting and how New York City built a natural-gas-powered fleet to comply with the Clean Air Act.

92-402 FREE!

SAN DIEGO, SAN FRANCISCO, CA, & PORTLAND, OR - Sustainable Energy for Local Governments

With scarce resources and environmental concerns mounting, how can local governments move toward a sustainable system? This practical workbook identifies key components of sustainable energy.

Call Conservation and Renewable Energy Inquiry and Referral Services (CAREIRS) at 1-800/523-2929 for a copy.

SEATTLE, WA - Coordination of Energy and Air Quality

Learn how Seattle City Light (SCL) worked with industry to reduce air pollution emissions with positive economic effect. The study conducted during 1991 and 1992 resulted in a working relationship between two agencies (Seattle City Light and the Puget Sound Air Pollution Control Agency) with the same objective - to improve air quality and reduce energy consumption. Read about some of the difficulties encountered and lessons learned by SCL in accomplishing energy conservation among residential and commercial customers.

92-318. \$20.00

TUCSON, AZ - Tucson Solar Village—Project Management

The City of Tucson's 820-acre Solar Village project seeks to provide a sustainable community for up to six thousand residents, using solar energy to reduce energy needs by 75%, water conservation methods to reduce usage by 65% per capita, and recycling programs to reduce landfill solid waste.

91-304. \$12.00

TUCSON, AZ - Local Government Involvement in Long Term Resources Planning for Community Energy Services

Tucson has also developed a program to coordinate government research, utility, and business energy saving efforts. Results show that by taking a state-wide perspective on resource planning, additional savings and environmental benefits can be achieved through conservation and demand management.

91-313. \$20.00

ALSO AVAILABLE:

ST. LOUIS, MO - A Case Study in the Pursuit of Urban Energy Efficiency
89-315. \$15.00

ECONOMIC DEVELOPMENT

CHICAGO, IL - Implementation of Alternative Technologies through the Assessment of Energy Markets
89-301. \$14.00

MEMPHIS, TN - Economic Development through Energy Technology Transfer: Strategies for Local Governments
87-312. \$15.00

PTI - The Hidden Link: Energy and Economic Development Phase II: Marketing and Financing Strategies for Community Energy Projects
87-310. \$15.00

SAN FRANCISCO, CA - Energy Planning for Economic Development
88-309. \$18.00

BUDGETS AND PURCHASING

SEATTLE, WA - Integrating Energy Efficiency into Municipal Purchasing Decisions: Computerizing Procurement Choices
88-319. \$15.00

BUILDINGS

AUSTIN, TX - Sustainable Building Sourcebook

Building professionals obtain guidance through this technical support document for Austin's Green Builder Program, aimed at changing conventional building practices.

92-311. \$18.00

MONTGOMERY COUNTY, MD - Energy Efficient Building design: A Transfer Guide for Local Governments

A proven "how to" guide for local governments and the private sector on the implementation of energy efficient construction programs.

91-317. \$7.50

SAN FRANCISCO, CA - Energy Management Action Plan

The City/County of San Francisco has developed a methodology for local government energy

ABOUT THESE PUBLICATIONS

These publications were produced through research conducted by the Urban Consortium Energy-Task Force (UCETF) of Public

Technology, Inc. Many of the research projects were funded through a grant from the U.S. Department of Energy.

The task force was established to address critical energy needs of urban America. The UCETF acts as a laboratory to develop and test solutions and share the resulting products or management approaches with the wider audience of both large and small local governments, states, and local authorities around the world.

UCETF membership includes elected officials, management, and technical professionals from urban cities and counties. It links through the Urban Consortium and PTI to national organizations, such as the National Association of State Energy Officials (NASEO), the National League of Cities, the National Association of Counties, and the International City/County Management Association to ensure the widespread exchange of information and technology.

For more information about the Urban Consortium Energy Task Force (UCETF) or these guidebooks, contact Jack Werner, PTI Business Director, at 202/626-2421.

offices to use in designing Energy Management Action Plans (EMAP). The guide walks readers through the process of creating an EMAP: identifying barriers; researching a setting for the project; and generating ideas to remove specific barriers. Help create more effective facilities in your jurisdiction via a holistic methodology.

92-310. \$20.00

ALSO AVAILABLE:

MEMPHIS, TN - Upgrade Energy Building Standards and Develop Rating System for Existing Low-Income Housing
92-306 \$20.00

NEW ORLEANS, LA - *Low- and Moderate-Income Residential Energy Conservation*
89-321. \$15.00

SAN JOSE, CA - *Energy Master Planning: Innovative Design and Energy Analysis for New Commercial Construction*
92-311. \$18.00

ST. LOUIS, MO - *Reducing Electricity Demand through Energy-Related Efficient Construction*
89-306. \$15.00

WASHINGTON, DC - *Energy Efficiency in Public Housing*
90-314. \$15.00

COOLING AND HEATING

CHICAGO, IL - *Central Station DHC (District Heating/Cooling) Feasibility*
This report explains how district energy systems can reduce the high cost associated with electricity prices for multi-use real estate.

90-304. \$18.00

PHOENIX, AZ - *HVAC Equipment Replacement for Best Size and Efficiency: A Technology Transfer Report*

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A study supported by DOE, public officials and energy companies has been conducted by the Coalition of Northeast Governors (CONEG) Policy Research Center, Inc. The findings conclude that information and refueling are two critical needs if fleet managers are to operate alternative fuel vehicles. The study surveyed fleet operators in Northeast states. This report provides useful quantitative information for decision makers to make preliminary assessments of potential market demand for the development of refueling infrastructure to serve alternative fuel vehicles.

Copies of the report are available from CONEG at (202)624-8450 for \$50 for the two volume set, \$20 for Volume I and \$40 for Volume II.

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A feasibility study with additional focus on refueling infrastructure.

90-320 \$22.00

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Promote compressed natural gas vehicle use in your municipality's fleet. In this report, based on the City of Long Beach's experience, market barriers as well as an econometric model for the implementation of a CNG infrastructure are addressed. This transferable model may help your municipality effectively address issues associated with the implementation of such an infrastructure.

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- Improve Energy Efficiency
- Create Sustainable Communities
- Enable Practical Energy Management
- Reduce Pollution
- Save Money

The Urban Consortium Energy Task Force of Public Technology, Inc. is chaired by Mike Lindberg, Commissioner, City of Portland, Oregon.

Task Force Members: Albuquerque, NM; Austin, TX; Chicago, IL; Columbus, OH; Denver, CO; Hennepin County, MN; Houston, TX; Memphis, TN; Metro-Dade County, FL; Montgomery County, MD; Orange County, FL; Philadelphia, PA; Phoenix, AZ; Norfolk, VA; San Diego, CA; San Francisco, CA; San Jose, CA; Seattle, WA; Washington, DC.

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