HOUSING AUTHORITY
of the City of Beaumont, Texas

REQUEST FOR PROPOSALS

RFP NO. 15-105

The Housing Authority of City of Beaumont (HACB) hereby requests proposals from qualified, professionals, organizations or entities with experience in the performance of Energy Audits to the HACB pursuant to the scope of work described in this RFP document. All audits must honor the standards and requirements of HUD in accordance with 24 CFR part 965, Subpart C for energy audits.

Prospective offerors desiring any explanation or interpretation of the solicitation must request it at least seven (7) days before the scheduled time for the Request for Proposals (RFP) due date. The request must be addressed to PAULA NICHOLAS, Purchasing Officer at the address stated below. Any information given to a prospective offeror concerning this RFP will be furnished promptly to all other prospective offerors as a written amendment / addendum to the RFP.

The proposal must be enclosed in a sealed envelope and labeled as follows:

PROPOSAL OFFERING TO CONDUCT AN ENERGY AUDIT &UTILITY ALLOWANCE STUDY FOR LOW RENT HOUSING AND SECTION 8 AND RECOMMEND ENERGY CONSERVATION AND COST REDUCTION MEASURES

NAME OF PROPOSER

REQUEST FOR PROPOSALS NO. 15-105

PROPOSAL DUE DATE AND TIME:
JUNE 12, 2015, 4:00 P.M. (local time)

PROPOSALS MUST BE ADDRESSED TO:

PAULA NICHOLAS
PURCHASING OFFICER
HOUSING AUTHORITY OF THE CITY OF BEAUMONT
1890 Laurel
BEAUMONT, TEXAS 77701

Proposals must reach the HACB no later than **4:00 p.m. (LOCAL TIME) on June 12, 2015**. Late submissions will not be considered for award of contract.

Proposals will be evaluated on the criteria stated in the RFP. Negotiations may be conducted with offerors who have a reasonable chance of being selected for the award. After evaluation of the proposal revisions, if any, the contract will be awarded to the responsible firm(s) whose qualifications; price and other factors considered are the most advantageous to the HACB. All information must be clear, concise and complete.

The HACB reserves the right to reject any and all proposals.

The HACB reserves the right to extend the contract of the successful proposer(s) depending on funding availability and contract performance.

5/14/2015

Date

Robert L. Reyna
Executive Director
Contracting Officer
Housing Authority of the City of Beaumont

PROPOSAL OFFERING TO CONDUCT AN ENERGY AUDIT AND RECOMMEND ENERGY CONSERVATION AND COST REDUCTION MEASURES

RFP NO. 15-105

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INTRODUCTION

1.1 Background

The Housing Authority of the City of Beaumont (HACB) hereby requests proposals from qualified professionals, service organizations or entities with experience in the performance of energy audits, utility allowance studies and recommending energy conservation, solid waste cost reduction measures, and commodity fuels procurement options that will result in cost savings to the HACB pursuant to the scope of work described in this RFP document. All audits must honor the standards and requirements of HUD in accordance with 24 CFR part 965.

1.2 Agency profile

The HACB is a non-profit public housing agency (PHA) subject to the Housing Authorities Law, codified in the Texas Local Government Code. HACB manages and operates 626 public housing units and 1,500 Section 8 rental assistance units that provide decent, safe, sanitary and affordable housing to low income families with funding from the U.S. Department of Housing and Urban Development (HUD). The property of the HACB is used for essential public and governmental purposes. The HACB and its property are exempt from all taxes, including sales tax on all its purchases of supplies and services.

The HACB enters into and executes contracts and other instruments that are necessary and convenient to the exercise of its powers. The HACB maintains contractual arrangements with HUD to manage and operate its low rent public housing program and administers the Section 8 Housing Assistance Payments Programs. The HACB programs are federally funded along with development grants and rental income.

The HACB is governed by a (5) five member Board of Commissioners appointed by the Mayor of the City of Beaumont. The Chief Executive Officer of the Agency, the Executive Director, is employed by the Board. HACB currently employs 58 regular full time employees.

SECTION II

2.0 SCOPE OF WORK

2.1 The selected proposer shall survey energy suppliers in Beaumont, Texas in order to obtain current utility rates and average consumption data and present utility allowances for the Section 8, Low Rent Public Housing, and all public housing dwelling units of the Beaumont Housing Authority. The scope of this study includes all calculations and preparations necessary to develop utility allowance estimates for each of the Section 8 and Low Rent Housing dwelling unit types in its current condition and under the current rate schedules.

2.2 The contractor shall undertake an investigation of potential energy conservation and/or cost reduction measures, their costs, savings estimates and paybacks for the Authority, which addresses the following:

2.2.1 Single Family Detached Homes
2.2.2 Duplexes
2.2.3 Townhouses
2.2.4 Garden Apartments
2.2.5 Multi-Family Apartment Complexes

2.3 GENERAL

2.3.1 Perform an in-depth field survey of all buildings (including a sufficient number of dwelling units), community spaces, administrative management offices, mechanical and electrical facilities. Estimate a minimum number of hours of meeting, plan reviews and site visits with PHA staff to assure complete understanding of past improvements.

2.3.2 Perform an Energy Audit for the purpose of complying with Federal Register 24 CFR, Part 965, Subpart C Energy Audits and Energy Conservation Measures. The Contractor shall, as stated in this section: …analyze all of the energy conservation measures, and the payback period of these measures that are pertinent to the type of buildings and equipment operated by the HACB [Authority]". The Contractor shall rank the energy and water conservation measures according to the provisions of 24 CFR 965.304.

2.3.3 The audit shall consider, but will not be limited to, energy conservation opportunities such as:

- ✓ Architectural: General project and building operation, envelope construction, etc.
- ✓ HVAC Systems: Central and individual space heating, air conditioning, piping, ventilation, distribution, equipment and controls, etc.
- ✓ Secondary Systems: Domestic hot water, central laundry facilities, plumbing fixtures, waste disposal, etc.
- ✓ Electrical Systems: Lighting, site lighting, electrical equipment, etc.

The Contractor may propose to use any simulation software or engineering analysis method, either commercially available, or developed in-house, provided that the Contractor presents evidence in the Audit, and the PHA accepts such evidence, that the simulation/analysis method meets the above general criteria. For example, in-house simulation software utilizing a spreadsheet/bin method of analysis would be acceptable for certain applications.

As a guide to the appropriateness and applicability, the simulation/analysis method must minimally allow for the following input and output parameters for each measure under consideration:

- ✓ Manufacturer's Rated Size of Equipment (kW, Mbtu, gallons, etc.)
- ✓ Manufacturer's Rated Efficiency of Equipment
- ✓ Estimated or Metered Annual Energy/Water Use of Measure
- ✓ Present Cost Per Unit of Energy/Water
- ✓ Post Retrofit Cost per Unit Estimate
- ✓ Calculated Non-Interactive Energy/Water Use and Cost Reduction
- ✓ Calculated Interactive Energy/Water Use and Cost Reduction
- ✓ Measure Simple Payback
- ✓ Combined Recommended Measure Simple Payback (Capital plus Quick Payback)

In addition, the Contractor must evaluate the following parameters, as applicable, for every measure under consideration, whether or not the selected simulation software incorporates them:

- ✓ Effect on Indoor Air Quality
- ✓ Age of Equipment
- ✓ Condition of Equipment

- ✓ Useful Life of Equipment
- ✓ Post Retrofit Annual Maintenance Cost Additions/Subtractions Estimate
- ✓ Post Retrofit Equipment Operation Requirements

For purposes of an energy performance contract, based on HUD 24 CFR Part 965 and 990.109 as cited above, the effect of net maintenance cost shall not be included in the primary illustration of simple payback, but shall be stated separately in supporting documentation.

The above parameters must be analyzed on an annual basis using the site's actual energy and water use profile, actual and current energy and water rates, and hourly heating and/or cooling degree day data for the period(s) analyzed. The Contractor must adjust the data for variations in occupancy and time-dependent variations of equipment use, such as weekend schedules and time-conrolled equipment. All heating, ventilation, cooling and domestic hot water equipment shall be simulated using capacities, rated efficiencies, and part-load performance data for the equipment as provided by the equipment manufacturer, unless the Contractor presents written evidence that some condition exists that warrants the use of a different value.

2.4. COMPREHENSIVENESS

At the initial level of inspection, the Contractor shall consider all possible energy and water saving and cost reduction measures given the building components and systems at the site(s). The attached Measure Table (Appendix C) is intended to serve as a guide to the Contractor. Other measures may be appropriate on a case-by-case basis. It is the responsibility of the Contractor to identify any other saving or cost reduction opportunities.

The Study shall include the Contractor's statement supporting the removal of any measure or measures from further consideration. Upon request of the PHA, the Contractor must provide all analytical documentation supporting such removal.

The report should rank all measures with 20-year paybacks or less, listed from quickest payback to longest. The Contractor, at the request of the PHA, shall include paybacks for capital improvement measures, such as replacement windows. The Contractor shall be required to analyze up to 10 capital improvement measures which have simple paybacks in excess of twenty years. All calculations and illustrations of "measure packages" shall include the interactive effect of the selected measures, if any. The engineering methodology upon which the interactive relationships are derived must be clearly stated and explained in the Study text.

The Contractor shall enter and inspect at least one of each apartment type in each building type at each development. For a development with multiple heating system models or models more than five years different in age at least one system type or vintage should be inspected. The Contractor shall inspect every development listed in this RFP.

The Contractor should identify any opportunity for bulk purchasing, quantity discounts, vendor rebate or discounts and utility specials (funding of fuel switch, subsidizing selected technologies).

If the Contractor encounters any perceived hazardous materials at the Site(s), which may interfere with the proposed Work, the Contractor shall note such perceived conditions in the Audit. The PHA shall be responsible for confirmation that such material is hazardous, proper removal and disposal or containment, as the case may be, of the hazardous materials to the extent necessary to allow the work to be done.

2.5 MINIMUM ENERGY EFFICIENCY FINANCING EVALUATIVE CRITERIA

The Contractor shall:

- Separately consider the feasibility of energy efficiency financing consistent with 24 CFR Part 965 and 990.109 (energy performance contracting) for specific developments and/or measures. In doing so, consider in addition to measures with paybacks of 20 years or less, the following criteria:

2.5.1 Scheduled heating/cooling/DHW/distribution system replacement. If the mechanical systems are due for replacement during the next five-seven years, this development deserves serious consideration, regardless of the estimated systems payback: many replacement systems have paybacks of 20-25 years, but are good candidates because savings from other measures at the development, or from quick payback measures (lighting, water, controls) at other developments, can amortize the debt service payments required;

2.5.2 Mechanical systems with high maintenance, operational costs. Regardless of age, some heating systems fail to perform as expected and require excessive maintenance costs to keep them running;

2.5.3 Necessary window replacements; again, regardless of the payback period, these sites may be good candidates for the reasons stated above;

2.5.4 Equipment measures scheduled for replacement in PHA's Five Year Comprehensive Grant Program (CGP) Plan;

2.5.5 Developments expected to remain under PHA management for at least the next decade;

2.5.6 Developments and measures with a rich savings stream supported by relatively low cost investments: these are good candidates because their savings can support more expensive, higher payback measures, as in 1-3 above;

2.5.7 Developments with central laundries: even if such a development is not otherwise a good candidate, the laundry room may be worth addressing, with others at additional developments, or on its own;

2.5.8 Developments with incinerators, especially those generating air emissions problems:the new public housing bill now includes waste management as an eligible activity for energy efficiency financing; and

2.5.9 Other criteria articulated by PHA personnel; contractor should initially interview Energy, Modernization and Maintenance Department managers to determine if there are other criteria to add to this list.

• Indicate which developments and measures are good candidates for energy efficiency financing, and estimate the capital improvement value of such a contract.

• Review and analyze the data resulting in the compilation of Operation and Maintenance Opportunities and viable Energy Conservation Opportunities ranked according to cost and effectiveness.

• Prepare cost/benefit analysis for recommended capital expenditures and make recommendations for operation and maintenance improvements not requiring a capital expenditure. Also, include analysis of installation costs, operating costs, payback period and energy conserved for each recommendation at each site.

• Investigate and recommend whether the purchase of gas and electric utilities through local utilities remains the more cost effective option to PHA; consider the feasibility and cost reduction potential of wellhead gas and purchases of electricity from power marketers. If feasible, provide an updated list of reputable vendors of both commodities, complete with contact names, addresses, telephone, and fax numbers.

• Investigate and recommend solid waste disposal options, which might reduce PHA costs, including source reduction, recycling, and alternative disposal contractors and contract terms. Recommend the more cost effective options to PHA.

• Perform a study, which includes all calculations and preparations necessary to develop the utility allowance estimates for each of the Section 8 unit types in its current condition and under the current rate schedules.

3.0 DELIVERABLES AND SCHEDULE

• The Contractor shall furnish the PHA with six (6) copies of a Survey and Draft Report and, upon completion of PHA review and comment on the draft report, furnish the PHA with six (6) copies of a Final Report in a format consistent with the "Audit Outline" presented in Appendix E.

Completion Schedule:

- ✓ Survey and Draft Report 30 days
- ✓ Final Report 10 days from receipt of draft comments from the PHA
- ✓ Total time for completion 40 days

4.0 PRICE

Provide fixed fee for entire scope plus hourly rates for each named professional if scope is later modified.

5.0 PROPOSAL REQUIREMENTS

5.1 **General**

The following is a description of the minimum information, which must be supplied by proposers in their proposals. It is open to all proposers to give such supplementary facts or materials, which they consider, may be of assistance in the evaluation of the proposal submitted. The failure to provide the minimum information requested may result in a proposal being considered unacceptable.

5.2 A resume of the proposer, three (3) references, and examples of the proposer's previous or similar work product must be submitted with each proposal.

5.3 **Proof of Insurance**

Proposer shall furnish HACB with certificates of insurance showing that the following insurance is in force and will insure all operations under RFP NO. 15-105, and name HACB as an insured.

- **Workers' compensation** in accordance with the State of Texas rules and regulations.
- **General liability insurance** with a single limit for bodily injury of $1,000,000 per occurrence and property damage limit of no less than $1,000,000 per occurrence. The insurance may have a combined aggregate of coverage amounting to no less than $1,000,000. Such insurance shall protect Contractor against claims of bodily injury or death and property damage to others. The insurance shall cover the use of all equipment, hoists and vehicles used on the site(s) not covered by Contractor's automobile liability. If Contractor has a "claims made policy," then the following additional requirements apply: The policy must provide a "retroactive date" which must be on or before the execution date of the Agreement and the extended reporting period may not be less than five years following the completion date of the Agreement.
- **Automobile liability** on owned and non-owned motor vehicles used on the site(s) or in connection herewith for a combined single limit of bodily injury and property damage of not less than $1,000.000 per occurrence.

- All insurance shall be carried with companies that are financially responsible and admitted to do business in the State of Texas. Contractor shall not permit the insurance policies required to lapse during the period for which the Agreement is in effect. All certificates of insurance shall provide that no coverage may be cancelled or non-renewed by the insurance company until at least thirty-(30) day's prior written notice has been given to HACB.

5.4 Execution Plan

Proposers must supply a proposed project execution plan for delivery of services. This plan shall be updated, as necessary, in the event of contract award and maintained throughout the project as deemed necessary. This plan shall include but not be limited to the following:

- A general description of the services and timeframe that the proposer anticipates will be required to complete the project described in this RFP.

- Qualification of personnel assigned to perform contract.

- A detailed schedule of tasks and associated costs. The costs associated with each task should be itemized and based on the proposer's best estimate of the estimated number of hours which will be required to complete each task and an hourly rate or fee for each task. A total contract price must also be indicated, as well as a standard hourly rate for unidentified tasks.

5.5 Permits, Certificates, and Licenses

The proposer shall obtain and pay for all permits, certificates, and licenses required and necessary for the performance of the work specified herein, shall post all notices required by law, and shall comply with all laws, ordinances, and regulations bearing on the conduct of the work specified.

- **Tax Permit**

  If the proposer is a non-profit organization or a 501(C)(3), proof from the Internal Revenue must be included in the proposal.

5.6 Subcontractor Listing

If the proposer intends to use subcontractors in the performance of the work, the subcontractor name(s) and description of the work to be subcontracted must be provided with the proposal. The percentage of work to be performed by each is also to be listed.

5.7 Basis of Proposal

5.7.1 The successful proposer(s) will be expected to execute a standard professional service contract with the HACB.

5.7.2 Proposers are advised to check that all parts of this RFP package have been received. Proposers shall be responsible for informing themselves with respect to all conditions, which might in any way affect the cost or performance of any of the work. Failure to do so shall be at the sole risk of the proposer and no relief shall be given for errors or omissions by the proposer.

5.7.3 Proposals must be in U.S. dollars inclusive of all direct and indirect costs associated with the work such as, but not limited to, insurance, equipment, temporary facilities, supervision, profit, and overhead.

5.7.4 Partial or incomplete proposals will be unacceptable.

5.7.5 An authorized representative of the proposer must sign proposals.

5.8 Validity of Proposals

5.8.1 Proposals must be open and not subject to unilateral withdrawal or modification for ninety (90) days after the proposal due date.

5.8.2 Proposers are requested to submit proposals based on the exact requirements specified in this RFP; however, should proposers be unable to follow precisely such requirements, they must provide an explanation as to why they are unable to do so.

5.9 Contract Term

The term of the contract will be from the award date until April 30, 2010. HACB reserves the right to extend the contract for up to 12 months contingent on availability of funds and satisfaction of service(s) provided by vendor(s).

6.0 PROPOSAL EVALUATION CRITERIA

6.1 Selection of the successful proposer will be at the sole discretion of the HACB.
If a contract is awarded, it will be awarded to the responsible firm or individual whose qualifications; price and other factors are deemed most advantageous to the HACB. Additionally, the HACB shall have the right to reject any and all proposals at its discretion.

Specifically, proposals will be evaluated based on:

	Points
• Proposer's compliance with all specifications and/or other requirements contained in this RFP.	15
• Reasonableness of contract price.	25
• Proposer's experiences in performing similar work and record of performance.	25
• Proposer's financial capability and capacity.	10
• Proposer's execution plan for delivery of services.	25
Total Points	100

6.2 During proposal evaluation, the HACB reserves the right to call for supplementary information from proposers and to meet with all or any one of them to clarify points of uncertainty or ambiguity. Proposers agree to cooperate fully and promptly in providing such supplementary information or meeting requests.

6.3 All costs incurred in preparing and submitting proposals and in supplying supplementary information shall be borne by proposers. The HACB will not defray any costs incurred in connection therewith.

6.4 Proposals will be evaluated and ranked according to points received. The Top ranked proposers may be invited for an interview. Proposers should be prepared to discuss the

proposed scope of work, including availability of equipment and staffing, accounting and payment procedures, proposer's exceptions to RFP requirements, HACB exceptions to the proposer's proposal, schedules, qualification of subcontractors proposed for portions of the work, and such other items as are directly related to the proposal.

7.0 PROPOSAL PROCEDURE

7.1 Proposal Due Date/Time

Proposals are to be received by **4:00 p.m. (LOCAL TIME), June 12, 2015**. Proposers are solely responsible for ensuring that their proposals are actually received by the time and date stated. Receipt at the HACB after the due date and time specified will be cause for rejection.

7.2 Modifications or Withdrawals

Proposals may not be changed, modified, or withdrawn after the time and date specified for proposal submission. All requests to change, modify or withdraw a proposal prior to the proposal due date must be in writing and bear the same proposer name appearing on the proposal already submitted.

7.3 Proposal Submission

Proposers must submit three (3) copies of their proposals including similar work enclosed in a sealed envelope clearly marked as follows:

"TO BE OPENED BY ADDRESSEE ONLY"
PROPOSAL OFFERING TO CONDUCT AN ENERGY AUDIT & UTILITY ALLOWANCE STUDY FOR LOW RENT HOUSING & SECTION 8 AND RECOMMEND ENERGY CONSERVATION AND COST REDUCTION MEASURES
RFP NO. 15-105

and addressed to:

Paula Nicholas, Purchasing Officer
Housing Authority of the City of Beaumont
1890 Laurel
Beaumont, Texas 77701

8.0 CORRESPONDENCE

8.1 All proposers are hereby instructed to familiarize themselves with the work described herein in order that the Scope of Work as set out in Section II may be fulfilled.

8.2 Requests for additional information related to this RFP should be made in writing and directed to the HACB Purchasing Officer at least seven (7) days before the RFP due date. This will allow issuance of any necessary addendum to the RFP.

8.3 An addendum may be issued prior to the opening of proposals for the purpose of changing or clarifying the intent of this RFP. All addenda shall be binding in the same way as if originally written in this RFP.

8.4 Any interpretation affecting all proposers made prior to the proposal due date will be issued in the form of an addendum. The HACB will not be bound by or responsible for any other explanations or interpretations of this RFP package other than those given in writing as set forth in this

paragraph. Oral instructions, interpretations, or representations will not be binding upon the HACB or HACB representatives.

8.5 Subcontractor(s), vendors and others who have been requested by the proposer to assist in preparing a proposal shall obtain necessary information from the proposer. They shall not directly contact the HACB or HACB representatives for this information.

8.6 ***Proposals will not be publicly opened and read***.

8.7 Contracts for these programs and services may be awarded to one or more proposers whose proposals were judged to be the most advantageous to the Housing Authority of the City of Beaumont. ***In the event services are initiated prior to the processing of a fully executed contract, such services would be provided without guarantee of compensation.***

9.0 PERTINENT FEDERAL REGULATIONS WITH REGARD TO NONDISCRIMINATION AND EQUAL OPPORTUNITY

The requirements of Title VIII of the Civil Rights Act of 1968 and Title VI of the Civil Rights Act of 1964, relating to prohibitions against discrimination in housing and the benefits of federally funded programs because of race, color, religion, sex or national origin must be met by the proposer.

The proposer must adhere to federal regulations prohibiting discrimination on the basis of age under the Age Discrimination Act of 1975, and prohibit discrimination against handicapped individuals under Section 504 of the Rehabilitation Act of 1973 and the Americans With Disabilities Act of 1989.

The requirements of Executive Order 11246, relating to equal employment opportunity in connection with federally funded programs must be met by the proposer.

The proposer must also meet the requirements of Section 3 of the Housing and Urban Development Act of 1968, relating to the training and employment of individuals, and contracting for business opportunities in metropolitan areas in which federally funded programs are being operated.

The proposer must meet the requirements of Executive Orders 11625, 12432, and 12138 relating to the use of minority and women's business enterprises in connection with federally funded programs.

RFP EVALUATION FORM
RFP NO. 15-105

PROPOSAL OFFERING TO PERFORM ENERGY AUDITS FOR THE HOUSING AUTHORITY OF THE CITY OF BEAUMONT

DATE: _____ Person Evaluating: _____

FIRM TO EVALUATE : _____

****

SCORE	**Points Awarded**	**Maximum Points**
1. Proposer's compliance with all specifications and/or requirements contained in this RFP.	_____	15
2. Reasonableness of contract price.	_____	25
3. Proposer's experience in performing similar work and record of performance.	_____	25
8. Proposer's financial capability and capacity.	_____	10
5. Proposer's execution plan for delivery of services.	_____	25
TOTAL SCORE	_____	**100**

REMARKS:

_____

_____

_____

_____

APPENDIX A

ENGINEERING METHODOLOGY EXAMPLES

The following individual measure analysis protocols are intended to serve as illustrative examples of the analytical thoroughness expected of the Contractor in evaluating all appropriate measures. Please note that these examples do not include possible interactivity with other existing or recommended equipment or systems. It is not our intention to predict the many possible interactions, but the Contractor shall identify and analyze all possible interactive effects on a case-by-case basis.

Example #1 -- Lighting Fixture Replacement/Retrofit

Original Condition Parameters (Inputs):

For Energy Savings calculations:

- Location
- Fixture Type
- Number of Fixtures
- Number of Non-Operating Fixtures
- W per Fixture (including ballast, if present)
- Control device - wall switch, permanently on at breaker panel
- Annual Operating Hours

Retrofit Conditions:
Same parameters as above.

Testing Procedures:
If the Contractor and PHA cannot reach agreement regarding the estimated annual operating hours of fixture(s) (particularly in apartments), the Contractor may be required to install light-loggers. These are light-sensitive devices that accumulate hours of operation and can be adjusted to various light sensitivities. The loggers shall be installed on a statistically valid sample of the lighting fixtures in question for a period of time that includes all possible changes in schedule. The results of such testing will be the basis for the estimated annual operating hours. The parties shall negotiate the cost of such testing at the time of the request.

Energy Saving Calculation:

(Existing Annual Hours of Operation x W Per Fixture x Number of Fixtures) / 1,000
Minus
(Retrofit Annual Hours of Operation x W Per Fixture x Number of Fixtures) / 1,000
= Annual kWh Saved

Simple Payback Calculation:
Estimated Installation/Retrofit Cost / Annual kWh Saved x Marginal Cost / kWh
In most cases, Marginal Cost / kWh shall be based on the actual utility rate billed for the meter/account recording the lighting fixture use. If a rate change is necessitated by the energy and/or kW use reductions resulting from the implemented measures and/or if the PHA coincidentally purchases electricity on a commodity basis, an adjustment of the marginal kWh cost may be necessary to determine the actual simple payback. Additionally, the Contractor shall calculate the simple payback including the net effect on annual maintenance costs resulting from the lighting fixture retrofit. To calculate this payback, the Contractor shall take the following parameters into account:

- Average life of existing bulbs
- Cost of existing bulbs

- Average life of retrofit bulbs
- Cost of retrofit/new bulbs
- Staff time to replace each existing bulb
- Staff time to replace each retrofit/new bulb

The net increase/decrease in maintenance costs shall be added to the result of the denominator of the above simple payback equation to determine the combined simple payback. For purposes of an energy performance contract, based on HUD 24 CFR Part 965 and 990.109 as cited below, the effect of net maintenance cost shall not be included in the primary illustration of simple payback, but shall be stated separately in supporting documentation.
Under no conditions shall the Contractor analyze or propose the installation of a fixture or group of fixtures that individually or in combination do not adequately illuminate the space as defined by applicable electrical, health and safety codes. Where one code supersedes another regarding illumination levels, the more stringent code shall apply. In determining code compliance, the Contractor shall allow for degradation of illumination levels of bulbs and/or fixtures over time as published by the manufacturer(s).
The Contractor shall report any ballast(s) that may contain PCB's to the PHA. The Audit Contractor shall assume that the installation contract will include arrangements for the proper disposal of all ballasts to be removed as part of the scope of work and include the cost of coordination and proper disposal in the installation cost estimate.

Example #2 -- Water Closet Replacement
Original Condition Parameters (Inputs):
For Water Saving Calculations:

- Average water pressure
- Gallons per flush
- Estimate of number of flushes per day per water closet

Retrofit Conditions:

- New average or per floor water pressure
- Gallons per flush
- Flushes per day per water closet- same as original condition
- Apartment vacancy rate by apartment type (elderly, family, # of Bedrooms, etc.)

Testing Procedures:
If the Contractor and PHA cannot reach agreement regarding the estimated gallons per flush, the Contractor may be required to measure the gallons per flush of five (5) percent of existing water closets, taking into account variations in water pressure at various site locations. The devise used must be capable of measuring the water draw during the flush cycle, not just the volume of water contained in the bowl and tank (for gravity flush models). The average gallons per flush derived by such testing shall become the basis for determining water consumption savings. The parties shall negotiate the cost of such testing at the time of the request. The Contractor may use manufacturer's gallons per flush ratings for the proposed water closet replacement, provided that the water pressure is within the limits under which the manufacturer(s) tested the product.
Water Saving Calculation:
Per water closet type:

Existing Gallons / Flush x # of Flushes / Day x 365 x # of water closets of type
Minus
New Gallons / Flush x # of Flushes / Day x 365 x # of water closets per type
= Annual water savings in gallons

Savings Sensitivity Analysis - The Contractor shall compare the total estimated water savings to the actual metered water use for the apartments receiving the water closets. Unless unusual conditions exist, the percent water savings should not be greater than 45% of the original total use. If greater than this value, the Contractor shall document to the satisfaction of the PHA, the unusual conditions which led to the estimate.
Simple Payback Calculation:
Estimated Installation/Retrofit Cost / Annual Water Units Saved x Marginal Cost / Water Unit
The Contractor shall consider the following cost factors in calculating the Estimated Installation Cost:

- Number of water closets of each type
- Color
- Bowl Shape
- Handicap Model
- Floor/Wall Mount
- Floor/Wall Outlet
- Replace shut off valves (stops)
- Replace wax rings/flanges
- Flange type
- Footprint vs. Replacement model
- Finish floor type and condition
- Rough-in distance

In most cases, Marginal Cost / Water Unit shall be based on the actual utility rate billed for the meter/account recording the water closet use. If a rate change is necessitated by the water use reductions resulting from the implemented an adjustment of the marginal unit cost may be necessary to determine the actual simple payback. Marginal units should be expressed in the units shown on the utility company bill, generally either 1,000 gallons or hundreds of cubic feet (ccf's).

Example #3 -- Variable Frequency Drive Installation - Domestic Water Pressurization Pumps

Original Condition Parameters (Inputs):

For energy (kWh) and power (kW) Savings:

- Measured kW profile over 1 week (7 day) period
- Measured kWh profile over 1 week (7 day) period
- # of occupants served by pump station
- Manufacturer's rated horsepower (HP) at various flow rates
- Estimate of annual run time at various flow rates

Retrofit Conditions:

Same as above.

Testing Procedures:

The Contractor shall install a recording Watt-meter (Dranetz, or equal) and measure and record pump kW and kWh by time-of-use periods for one week. The Contractor will average the data to establish a pre-installation 24-hour load profile. Post-installation use will be established in the same manner, adjusted for any change in the number of residents.

Energy Saving Calculation:

The Contractor will estimate the annual kW and kWh savings by estimating the average annual run time under predicted variable load (HP) conditions. Actual energy and power savings shall be determined by the following formula, after post-installation testing is complete:

For kWh:

Pre kWh/day x 365 days/year
Minus
Post kWh/day x 365 days/year x (# of Pre Resident / # of Post Residents)

For kW:

Pre On-Peak kWh / Pre On-Peak Hours
Minus

Post On-Peak kWh / Post On-Peak Hours x (# of Pre Resident / # of Post Residents)

Simple Payback Calculation:

Estimated Installation/Retrofit Cost
Divided by
(Annual kWh Saved x Marginal Cost / kWh) + The Sum of (Monthly Peak kW Saved x Monthly Billed Cost /kW)

In most cases, Marginal Cost / kWh shall be based on the actual utility rate billed for the meter/account recording the pump electricity use. For time-of-use rates, the Contractor will calculate a weighted average marginal cost based on kWh savings per time period. If a rate change is necessitated by the energy and/or kW use reductions resulting from the implemented measures and/or if the PHA coincidentally purchases electricity on a commodity basis, an adjustment of the marginal kWh cost may be necessary to determine the actual simple payback.

Example #4 -- High Efficiency Natural Gas Domestic Hot Water Maker

Original Condition Parameters (Inputs):

- Entry Water Temperature (modeled monthly)
- Combustion Efficiency of Appliance
- Number of Residents served by system
- Storage Temperature
- Delivery Temperature
- Estimated Gallons per Resident per Day
- Estimated Stand-By Losses of System as a percent of Available Btu's

Retrofit Conditions:

Same as above.

Testing Procedures:

The Contractor shall use standard testing equipment to measure the combustion efficiency of the domestic hot water appliance.

Energy Saving Calculation:

For Therm savings:

When gas use for domestic hot water is metered with other uses:

The Annual Base Use shall be the Sum of Monthly:

(Average Outlet Temp. - Average Entry Temp.) x # of Residents x Gallons/Resident x Days/Month x 8.33 Pounds/Gallon
Divided by
100,000 Btu's/therm x Existing Appliance Efficiency x (1- % Standby Loss)

The Annual Therm Savings shall be calculated by substituting the new appliance efficiency and standby loss percentage in the above formula and subtracting the result from the Annual Base Use. If necessary, adjustments must be made for changes in the number of residents.

Simple Payback Calculation:

Estimated Installation/Retrofit Cost / Annual Therms x Marginal Cost / Therm

In most cases, Marginal Cost / Therm shall be based on the actual utility rate billed for the meter/account recording the appliance use. If a rate change is necessitated by the energy use reductions resulting from the implemented measures and/or if the PHA coincidentally purchases natural gas on a commodity basis, an adjustment of the marginal therm cost may be necessary to determine the actual simple payback.

Additionally, the Contractor shall calculate the simple payback including the net effect on annual maintenance costs resulting from the new equipment. To calculate this payback, the Contractor shall take the following parameters into account:

Change in Annual Cost of Service Contract, if any
Change in Annual Cost of Preventative Maintenance

The net increase/decrease in maintenance costs shall be added to the result of the denominator of the above simple payback equation to determine the combined simple payback. For purposes of an energy performance contract, based on HUD 24 CFR Part 965 and 990.109 as cited in Section III, B, the effect of net maintenance cost shall not be included in the primary illustration of simple payback, but shall be stated separately in supporting documentation.

Example #5 -- Refrigerator Replacement
Original Condition Parameters (Inputs):

- Watt rating
- Annual operating hours

Retrofit Conditions:
Same as above.
Testing Procedures:
If the Contractor and PHA cannot reach agreement regarding the estimated annual refrigerator operating hours, the Contractor may be required to install run-time meters on a statistically valid sample of the refrigerators in question for a period of time that includes all possible changes in schedule of use (door openings, etc.) but, in no case, fewer than two days. The statistical sample shall take into account variations is equipment age, condition, location and apartment occupancy type. The Contractor must make reasonable adjustments to the resulting data to account for any likely seasonal changes in ambient air temperature and humidity not present during the available test period. The results of such testing will be the basis for the estimated annual operating hours.
Energy Saving Calculation:
For kWh:

Existing Watts x Annual Operating Hours / 1,000
Minus
Replacement/New Watts x Annual Operating Hours / 1,000
= Annual kWh Saved

Simple Payback Calculation:
Estimated Installation Cost / Annual kWh Saved x Marginal Cost / kWh
The Contractor shall consider the following cost factors in calculating the Estimated Installation Cost:

- Quantity/Truckload Purchase Prices
- Residual Value of Existing Refrigerators

In most cases, Marginal Cost / kWh shall be based on the actual utility rate billed for the meter/account recording the appliance use. If a rate change is necessitated by the energy and/or kW use reductions resulting from the implemented measures and/or if the PHA coincidentally purchases electricity on a commodity basis, an adjustment of the marginal kWh cost may be necessary to determine the actual simple payback.

Example #6 -- Conversion of Clothes Dryers from Electric to Gas
Original Condition Parameters (Inputs):

- Number of Occupied Apartments Served by Dryers
- Estimate of loads per week per apartment
- kWh per dryer load

Retrofit Conditions:

- Number of Occupied Apartments Served by Dryers
- Estimate of loads per week per apartment
- Therms per dryer load

Testing Procedures:
If the Contractor and PHA cannot reach agreement regarding the estimated annual dryer loads, the Contractor may be required to install run-time meters on a statistically valid sample of the dryers in question for a period of time that includes all possible changes in schedule of use (weekends, etc.) The results of such testing will be the basis for the estimated annual dryer loads. The parties shall negotiate the cost of such testing at the time of the request. Alternatively, if the drying equipment is rented a review of the vendor's annual cash receipts should yield the number of annual loads. If the resulting new gas use is combined with a meter serving other uses, the post retrofit gas use may either be calculated based on the manufacturer's gas input rating and the estimated or tested annual dryer loads. If agreement cannot be reached, the Contractor may be required to test and record gas burner "on-time."
Energy Saving Calculation: Not Applicable. This is a Cost Reduction Opportunity.
Simple Payback Calculation:

Estimated Installation Cost
Divided by
Pre Annual kWh x Marginal Cost / kWh - Post Annual Therms x Marginal Cost /Therm

The Contractor shall consider the following cost factors in calculating the Estimated Installation Cost:

- Dryer venting requirements necessary to meet local codes
- Size and length of gas piping necessary from meter location to dryer location
- Gas utility charges to set meter, if any
- Necessary rewiring of laundry to accommodate new dryers and/or venting equipment
- Changes in lease costs (if equipment leased from vendor)

In most cases, Marginal Costs shall be based on the actual utility rate billed for the meter/account recording the dryer use. If a rate change is necessitated by the energy use reductions or increases resulting from the implemented measures and/or if the PHA coincidentally purchases electricity and/or gas on a commodity basis, an adjustment of the marginal cost may be necessary to determine the actual simple payback.

APPENDIX B

SIMULATION SOFTWARE MANUFACTURER'S CONTACT INFORMATION

BLAST (Building Loads Analysis and System Thermodynamics)

Building Systems Laboratory
University of Illinois
1206 West Green Street
Urbana, Illinois 61801
(217) 333-3977
fax (217) 244-6534

DOE-2

Fred Winkelmann
Lawrence Berkeley National Laboratory
Mail Stop 90-3147
1 Cyclotron Road
Berkeley, California 94720
(510) 486-5711
fax (510) 486-4089

EZDOE

Elite Software
P.O. Drawer 1194
Bryan, Texas 77806
(409) 846-2340
fax (409) 846-4367

HAP v.4.0 (Hourly Analysis Program)

Carrier Corporation
Software Systems
TR-1, Room 250
P.O. Box 4808
Syracuse, New York 13221
(315) 432-6838
fax (315) 432-6844

TRACE 600 (Trane Air Conditioning Economics)

Trane C.D.S. Support Center
Trane Company
3600 Pammel Creek Road
Building 17-1
La Crosse, Wisconsin 54601-7599
(608) 787-3926
fax (608) 787-3005

VisualDOE

Eley Associates
142 Minna Street
San Francisco, California 94105
(415) 957-1977
fax (415) 957-1381

APPENDIX C

MEASURE TABLE

1. BUILDINGS

Building Envelope (measures reducing conduction, infiltration losses)

Windows - replacement, storm, weatherstripping, permanent window-mount A/C sleeves

Roof - replacement w/ new flat roof and insulation system, additional insulation in attic areas

Exterior walls - exterior or interior insulation, weatherproofing, A/C sleeves

Entrance Doors - entrance door upgrades to air locks, replace curtain window walls around building entrances

Apartment doors - replace patio/balcony doors, weatherstripping of patio/balcony doors

Mechanical Systems

Space heating system component replacement - boiler, heat pump

Steam:

New modular boilers

Burner replacement

Hot Water:

New condensing boilers

Modular boilers/burners

Space heating system controls upgrade - boiler control, apartment controls

Steam:

Time cycle controller such as Heat-Timer EPU

Averaging thermostatic control

Sequencer/stager for modular system

Outdoor high temperature limit

Radiator zone valves - non-electric

Temperature limited thermostat

Programmable thermostat

Condensate leaks

Steam traps

Hot Water:

Reset ratio control

Sequencer/stager for modular system

Outdoor high temperature limit

Radiator zone valves - electric, non-electric

Temperature limited thermostat

Programmable thermostat

EMS systems

Fuel conversion of space heating appliances - electric to gas-fired (usually requires entire distribution changeout), oil

to gas (may be isolated to boiler room), district steam to building-based gas- or oil-fired

boilers (consider construction type and boiler room location in estimating cost-effectiveness).

Distributed Generation

Cogeneration/Combined Cycle Gas

Insulation

Heating

Domestic hot water

A/C chiller

Pipe

Electrical Motors

Replace heating system circulating pump(s) with smaller capacity pump(s), replace water pressure booster station pump and/or staging/sequencing controls

Air Conditioning

Wall mount

Window mount

Chiller

Cooling tower

Domestic Hot Water System

Controls upgrade

Demand-based temperature setback

Condensing gas-fired heater

Modular boilers or modulating burner

Sequencing/staging control

Insulation - piping, storage tank

Replace storage tank (calculate payback if existing storage tank is in poor condition and requires replacement)

Ventilation

Replace major components - convert make-up air systems to gas or oil

Replace supply fans with more appropriate sized-fans

Convert belt-driven fans to direct drive fans

Replace fan-motors with high efficiency motors

Replace fan-motors with variable speed

Replace/repair of duct dampers, timers or duty cycling on fan-motors

Retrofit make-up air/exhaust fans with air-to-air heat exchangers

Lighting

Replace incandescent light fixtures with fluorescent fixtures that employ T8 or compact fluorescent lamps and electronic ballasts

Replace halogen torchieres with fluorescent torchieres in apartments

Retrofit existing fluorescent fixtures with T8 or compact fluorescent lamps and electronic ballasts

Replace mercury vapor or incandescent exterior lighting with metal halide or high pressure sodium fixtures

Install photocontrols on light fixtures, exterior mainly but also on fixtures found in interior spaces with an abundance of natural daylight

Install occupancy sensors on light fixtures

Waste Disposal

Renegotiate/rebid private waste disposal contracts

Renegotiate private waste disposal costs if recycling program is initiated

Recycle aluminum, paper, glass and/or plastics

Build new or rebuild existing incinerator and/or trash compactors

Household Appliances

Replace owner-furnished Refrigerator

Replace owner-furnished clothes washers with horizontal-axis washers

Convert electric clothes dryers to gas dryers

Water

Low-flow showerheads

Low-flow aerators

Low-volume water closets

Water Closet retrofit kits

Leak repair/faucet replacement

Water pressure reduction

Horizontal axis clothes washers

2. TOWNHOUSE AND GARDEN STYLE BUILDINGS

Building Envelope (measures reducing conduction, infiltration losses)

Windows - replacement, storm, weatherstripping

Roof - additional insulation in attic areas

Exterior walls - exterior or interior insulation, weatherproofing, A/C sleeves

Entrance Doors - weatherstrip

Apartment doors - replace patio/balcony doors, weatherstripping of patio/balcony doors

Mechanical Systems

Space heating system component replacement - boiler, heat pump

Warm Air:

Replace with high efficiency gas furnaces

Convert individual electric heat and DHW to individual or central high e gas

Convert master meter to individual utility or owner meters

Hot Water:

Replace with high efficiency boilers

Convert central electric to central high e gas or individual high e gas

Convert individual electric heat and DHW to individual or central high e gas

Convert master meter to individual utility or owner meters

Space heating system controls upgrade - boiler control, apartment controls

Warm Air:

Install boiler reset controls

Thermostats (limiting and setback)

Hot Water:

Install boiler reset controls

Zone valves (electric and non-electric)

Thermostats (limiting and setback)

Insulation

Wall

Attic

Floor

Perimeter

Pipe

Duct

Air Conditioning

Wall

Window

Coil and condenser for each apartment with warm air furnace

Domestic Hot Water System

Condensing gas-fired heater

Modular boilers or modulating burner

Sequencing/staging control

Insulation - piping, storage tank

Replace storage tank (calculate payback if existing storage tank is in poor condition and requires replacement)

Ventilation

Rooftop exhaust timers

Lighting

Replace incandescent light fixtures with fluorescent fixtures that employ T8 or compact fluorescent lamps and electronic ballasts

Replace halogen torchieres with fluorescent torchieres in apartments

Replace mercury vapor or incandescent exterior lighting with metal halide or high pressure sodium fixtures

Install photocontrols on light fixtures, exterior mainly but also on fixtures found in interior spaces with an abundance of natural daylight

Waste Disposal

Renegotiate/rebid private waste disposal contracts

Renegotiate private waste disposal costs if recycling program is initiated

Recycle aluminum, paper, glass and/or plastics

Build new or rebuild existing incinerator and/or trash compactors

Household Appliances

Replace owner-furnished Refrigerator

Replace owner-furnished clothes washers with horizontal-axis washers

Convert electric clothes dryers to gas dryers

Water

Low-flow showerheads

Low-flow aerators

Low-volume water closets

Water closet retrofit kits

Leak repair/faucet replacement

APPENDIX D

EXISTING CONDITIONS AND AVAILABLE DATA

A. EXISTING CONDITIONS

The Contractor shall, at a minimum, document the following existing conditions listed in Appendix D at each site listed in this RFP. The Contractor shall determine the existing conditions by a combination of site inspection, review of as-built drawings and specifications (if available), and any written statements as to existing site conditions that may be provided by the PHA to the Contractor. Existing conditions, which are based solely on the verbal statements of management or maintenance personnel, shall be so noted by the Contractor in the Study text. If requested by the PHA in Section III. B., the Contractor shall provide a full equipment inventory as described in Appendix F.

Documents available to the Contractor to complete the following tasks shall include as built drawings, utility use histories in summary form and/or copies of original bills, proposed and previously implemented energy related modernization plans and previously completed energy audits and surveys.

B. AVAILABLE DATA (provided by the PHA)

Drawings of existing facilities (if available).

Reasonable escorted access to facilities and apartments.

Utility use histories and account numbers

C. General Information

Site Name:

Street Address:

Total Number of Buildings:

Total # of units:

Building Type(s) - Low-/high-rise, garden, walk-up, townhouse, flats:

At the time of the Study and (if different) during energy and water use base period analyzed:

Number of occupied units

Average number of occupants per unit

% of elderly-occupied units

% of family-occupied units

% other-occupied units (student, working couple, etc.)

Meter Information:

Electricity centrally/individually metered/paid:

Number of master meters

Meter serial numbers

Approximate Locations

Gas centrally/individually metered/paid:

Number of master meters

Meter serial numbers

Approximate Locations

Water centrally/individually metered/paid:

Number of master meters

Meter serial numbers

Approximate Locations

The Building Envelope

1. Structure

of floors:

Typical ceiling heights: apartments, hallways, utility rooms

Roof composition, pitched/flat, venting:

Floors: Composition (Poured concrete, precast, flexicore [hollow], etc.)

Exterior walls composition (structural and insulation):

Basements or crawl spaces:

2. Windows and Doors

Draft complaints:

Windows:

Configuration(s):

Frame type (material composition):

Single/double glazed:

Spacing:

Thermal Break:

Coating/fill:

W-strip condition:

Operating force:

Approx. size of most common openings (living room, kitchen, master bed, bed)

Interior storms:

Doors:

Front:

Solid/hollow/insulated, glazing:

W-strip type, condition:

Threshold type, condition:

Rear:

Solid/hollow/insulated, glazing:

W-strip type, condition:

Threshold type, condition:

Sliders:

Size (approx.)

W-strip type, condition

Threshold type, condition

Available space underneath threshold if any (photo)

Heating and Domestic Hot Water

Existing equipment:

Make and model

Input/output

How controlled ?

Motor horsepower (1 HP or greater circulators or blowers)

Average air temperature in common areas and apartments:

How common area and apartment air temperatures are controlled

Heating system distribution type and condition (air and/or water leaks, fin, filter, damper condition)

Appliance/boiler Venting configuration and condition:

Domestic hot water recirculation system present? Condition? How controlled?

Pipe Insulation

Age, Type, Condition,

Lineal feet of uninsulated pipe by type (hydronic heating, steam heating, cooling, domestic hot water), size and ambient air location.

Ductwork

Age, Type, Condition,

Lineal feet of uninsulated duct by type (heating, cooling) , size, and ambient air location.

Ventilation

Make-up air?

Heat source:

In service?

On Timer/Schedule?

Motor horsepower

Bathroom vents forced/induced/none:

On Timer/Schedule?

Motor horsepower

Damper type and condition

Range hoods forced/induced/recirculating/none:

Air Conditioning

Central/Window/Wall Sleeve

Electric, Gas , Heat Pump, Ground Source, etc.

Efficiency rating

Who owns?

Who pays? (add to rent?)

110V or 220V?

If window or wall sleeve, how many installed and in use last summer?

If central, age, condition and description of system components.

Lighting and Appliance Electrical Loads

Are apartment uses on master or individual electric meters?

Lighting

Interior:

Common Areas:

Fixture and Bulb Type:

By Location, Approx. quantity per area, building, or floor

Ballast Type

Approx. operating schedule

Number of Non-Operating Fixtures

Every other off/disconnected/on emergency generator?

Control Device - wall switch, permanently on

Apartment:

Fixture and Bulb Type:

By Location

Ballast Type

Approx. on time per day

Who purchases replacement bulbs?

Who installs replacement bulbs?

Exterior:

Pole Type/Height

Bulb Type

Quantities

Photo/Sensor

Appliances:

Range - electric or gas

Refrigerator

Make and Model of most common types

Approx. quantity of each type

Age of most common types

Quantities

Frost Free/Manual

Elevators

Horsepower of motors

Condition of motors and controllers

Laundry and Cooking Facilities

Gas/electric ranges: quantity, age and condition. Who owns?

Laundry Location(s)

Electric or Gas Dryers and Washers

Front or Top Load Washers

Quantities

Who owns? / Leased from who?

Plumbing Fixtures

Street water pressure as read from meter location

Is water pumped to upper floors or to holding tank at or near top of building?

Incoming street pressure

Pressure downstream from pumping station?

Is pressure dependent pump controller installed and operational?

Pump horsepower and operating schedule.

Water Closet Model:

Gravity flush or Flushometer type:

Approx. gallons per flush

Are water-conserving flush devices installed? If yes, what type. When installed. Condition.

Rough-in:

Rim height:

Floor/wall mount:

Floor/wall outlet:

Round or Elongated Bowl

Color of bowl/tank

Shut-off valves present at each toiler? Condition?

Floor composition/condition at water closet location

Total number of water closets at site. Number per apartment per number of bedrooms.

Showerhead capacity label, if any (info may be in site maintenance shop):

Bath aerator capacity label, if any:

Kitchen aerator capacity label, if any:

APPENDIX E

AUDIT OUTLINE

ENERGY PERFORMANCE CONTRACT ENERGY AUDIT

for the

Housing Authority of the City of Beaumont

1890 Laurel

Beaumont, TX 77701

by

[CONTRACTOR]

[DATE]

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Appendix A -- Measure Calculations
Appendix B -- Rate Analyses Summaries
Appendix C -- Preliminary Cash Flow Projections
Appendix D -- Equipment Inventory (Optional)

PREFACE

PART I - OVERVIEW OF ACTIVITIES AND FINDINGS

A. GOALS AND OBJECTIVES

The goals of the Energy Audit for this Performance Contract are:

B. AUDIT ACTIVITIES

1. **Base Line Development**

2. **Base Rate Analyses & Related Recommendations**

   Natural Gas
   Electricity
   Water

3. **Measure Analyses and Recommendations**

4. **Term of the Project and Financing Strategy**

TABLE 1: Gas Base Summary
TABLE 2: Electric Base Summary
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C. OVERVIEW OF RECOMMENDATIONS

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PART II - DEVELOPMENT REPORT

A. DESCRIPTION OF EXISTING CONDITIONS

1. **General Information**
2. **Metering Information**
3. **Building Envelope**
4. **Building Systems**

   a. **Space Heating**
   b. **Domestic Water Service & Systems**
   c. **Ventilation**
   d. **Air Conditioning**
   e. **Lighting and Appliances**
   f. **Laundry and Cooking**
   g. **Plumbing Fixtures**

B. HISTORY OF ENERGY USAGE

1. **Description of Base Usage**

a. Natural Gas Use
Gas End Uses:
Gas Base Line:

b. Electricity Use
Electric End Uses:
Electricity Base Line:

c. Water Use
Water End Uses:
Water Base Line:

d. GAS BASE LINE
GAS BASE DATA AND BASE YEAR GRAPHS
ELECTRICITY BASE LINE
ELECTRICITY BASE DATA AND BASE YEAR GRAPHS
WATER BASE LINE
WATER BASE DATA AND BASE YEAR GRAPHS

D. MEASURE RECOMMENDATIONS

1. Description of Measures/Calculation Methodology

The table included at the last page of this Individual Development Report entitled **"Summary of Recommendations"** illustrates the simple paybacks calculated for various recommended measures.

PART III: ENERGY EFFICIENCY FINANCING (Energy Performance Contracting)

A. FINANCING OPTIONS

1. **Sources of Financing**
2. **Utility Rates -Floor and/or Ceiling**
3. **Savings Guarantee Provisions**
4. **Owner Cost Share**
5. **Direct Procurement of Utilities/Utility Incentives**
6. **Preliminary Cash Flow Projections (Table)**

B. TENTATIVE SCHEDULE OF TASKS FOR FINANCING AND IMPLEMENTATION

Month

Week 1:	× _____
	× _____
Weeks 2-3	× _____

Week 4	× _____ × _____

Month

Weeks 1-2:	× _____ × _____

APPENDIX F

Optional Equipment Inventory

Scope of Work

While conducting the Energy Audit the Contractor shall gather the following information about the equipment and systems inspected (e.g., any equipment present at the site(s) which is listed on the attached Measure Table), whether or not the equipment and/or system is recommended for replacement:

- Location, serial number, and quantity of each by manufacturer, model number, capacity, date of installation and physical condition.
- Metering equipment meter number, manufacturer, model number, building, location, type, multipliers, and area(s) served.

The above data shall be presented by the Contractor to the PHA both in written and electronic form, using software compatible with the PHA's computer database/spreadsheet software. This data can then be used by the PHA to develop a standardized building equipment database that functions as the foundation for a comprehensive development management (CDM) program that will be useful for a PHA's internal equipment inventories and for reporting to HUD.