

Statement of Work

**Energy Conservation Feasibility Study
Under the American Recovery and Reinvestment Act of 2009**

1. Background:

- A. PROJECT TITLE: **ARRA Energy Conservation Feasibility Study NARA**
- B. BUILDINGS: **One Building with a Total Gross Square Feet of 142,307**

<u>Name</u>	<u>Location/State</u>	<u>Yr Built</u>	<u>Bldg #</u>	<u>GSF</u>
1. NARA (Fredrick C. Murphy Federal Records Center)	Waltham, MA	1966	MA0136	142,307

C. KEY CONTACTS:

Linda Byrne **CO** **617-565-7308 (O) / 617-565-7147 (F)**
Linda.byrne@gsa.gov

Don Fuccillo **COTR** **617-565-8877 (O) /617-565-5967 (F)**
Donald.fuccillo@gsa.gov

- 1.1. This Statement of Work is a detailed feasibility study focused on building systems affecting energy use and indoor environment, including shell infiltration and heat loss. The building systems to be evaluated are limited to the following:
 - 1.1.1. Advanced Metering Strategy
 - 1.1.2. BAS
 - 1.1.3. Replacement of existing pneumatic Heating, Ventilating and Air Conditioning (HVAC) controls with direct digital controls (DDC)
 - 1.1.4. Lighting (Parking Lot, and Exterior Perimeter)
 - 1.1.5. Exterior Doors
 - 1.1.6. Evaluate The Steam Boilers & Evaluate All Of the Roof Top Units
 - 1.1.7. Evaluate feasibility of Solar Wall on South Wall
 - 1.1.8. Replacement of RTU-1

2. Requirements:

- 2.1. The Contractor shall provide engineering expertise to conduct planning, evaluation, analysis, calculations, recommendations, and report writing services for the General Services Administration. The Contractor shall provide all information required in the ATTACHMENT 5.2 - ARRA Energy Conservation Feasibility Study Report Format. A maximum of 2 site visits will be allowed for this feasibility study.
- 2.2. The Contractor shall attend a post-award conference call to review the statement of work, make tentative arrangements for the on-site start-up meetings, discuss security clearances, and discuss other logistics of the contract. *The contractor shall submit meeting minutes documenting this deliverable.*

- 2.3. The Contractor shall collect and review the latest existing documentation, including sources such as record drawings (specifically the mechanical and fan rooms), building operating plans, shop drawings, operations and maintenance manuals, control sequences, energy audits, utility rate structure, utility bill records, facility condition assessments, computerized maintenance management system information, equipment lists, etc. Building orientation, general location and visual characteristics and a master list of ECMs and typical known operational issues shall form the basis of the final report.
- 2.4. The Contractor will gather and submit the building for Energy Star Rating consideration. If the building meets the eligibility requirements the Contractor will submit the application for the Energy Star Label.
- 2.5. The Contractor shall prepare a written report documenting suggested equipment or system upgrades providing sufficient detail to understand estimated cost, efficiency implications, estimated savings, life cycle cost analysis and simple payback, and savings to investment ratios for the recommendations. The Contractor shall use the GSA provided spreadsheet for compilation of critical energy conservation measure information. Photographs of all critical conditions and areas for recommended improvement shall be provided in the Report. The Contractor shall indicate the extent to which each recommendation will improve energy efficiency, indoor air quality/occupant comfort, or operations and maintenance.
- 2.6. The Contractor shall identify any utility incentives applicable to the project.
- 3. Communication, Meetings and Site Visits:
 - 3.1. Provide a weekly status reports via e-mail to each individual identified by the GSA.
 - 3.2. Participate in a weekly conference call to discuss the status and pertinent issues of the projects under this Contract.
 - 3.3. The Contractor shall conduct interviews with the Property Manager, Operations Manager, and O&M Contractor to ascertain current operating conditions, maintenance issues, comfort issues, etc., and hold a conversation with the GSA controls contractor if necessary. The Contractor shall document inspections and interviews conducted and information sources utilized for inclusion in the Report (by name and date).
- 4. Submission Requirements

The period of performance shall be **4 Weeks** from post award conference. GSA will provide comments on all draft deliverables within 7 calendar days of receipt.

The following deliverables shall be provided by the contractor:

Deliverables	Due Date
Energy Star Reporting Requirements	3 weeks after NTP
Draft Energy Conservation Feasibility Report	3 Weeks After NTP
Final Energy Conservation Feasibility Report	4 Weeks After NTP



Draft reports shall be delivered by e-mail to GSA individuals to be identified.

Final Report shall be furnished in hard copy (4 copies) and on CD (2 copies) to the GSA CO. Each Report shall be 8-1/2 x 11", 12 pitch, single spacing, and hard copies shall be double-sided and electronic files shall be submitted in PDF and in a readable/editable format (MS Word).

5. ATTACHMENTS

- 5.1. Building Information Sheets with Building Equipment Inventory Sheets
- 5.2. ARRA Energy Conservation Feasibility Study Report Format
- 5.3. ARRA –Data Capture Template
- 5.4. EUI

Attachment 5.1

BUILDING INFORMATION SHEET

Building Number: MA0136ZZ

Building Name: Frederick C. Murphy Federal Center

Building Address: 380 Trapelo Road; Waltham MA

Construction Date: 1966

GSF: 142,307

Building Use: Office / Archival Storage

BUILDING DESCRIPTION: The Fredrick C. Murphy Federal Records Center (Murphy, aka NARA) is a single story, steel frame building containing 138,216 rsf on 11.9 acres in Waltham, MA

SYSTEMS DESCRIPTIONS: Include equipment type, number and any recent upgrades.

1) Chilled Water System: (Chillers, Pumping (primary/secondary or constant volume) Cooling Towers)

- Cooling Tower, Marley, Model 4862 Stainless Steel
- Refrigeration Machine, Reciprocating, Carrier, 60 Tons, 4 compressors
- Refrigeration Machine Screw Compressor McQuay Model 210 C, 200 Tons, R22

2) Heating Water System: (Boilers, Pumping (primary/secondary or constant volume)

- Boiler Gas Dual Fuel, 3600MBH
- Gas Boiler 400 MBH
- Pump Centrifugal Hot Water circulating pump ¾ HP (13)

3) Air Handlers: (Constant Volume, VAV, Dual Duct, Etc)

- 4 Air handlers (1 in each Penthouse) w/ automatic mixing box, pneumatic.

4) Perimeter Heating Systems: (Fan Coils, VAV with Reheat, Fin tube)

- Fin tube

5) Miscellaneous A/C Systems: (Data Centers, Computer Room Units, A/C over 5 tons)

- Package Unit, Trane 50 Ton
- Package Unit Trane 15 Ton

- Package Unit York 5 Ton (3)

6) Building Automation Systems (BAS):

- HVAC, Johnson Metasys Controls, 134 points

7) Specialty Systems: (Such as Exhaust Recover, Water Side Free Cooling, Air Side Economizers)

- 375KW DC Standard test Conditions (STC) Building Intergraded Photovoltaic (BIPV) system covering approximately 143, 000 square feet estimated to provide an annual production of 433,798 kWh of electrical power to the facility.

CONTACT INFORMATION:

Technical Contact

Dale Cameron, O&M onsite contractor (Northern Management Services)

Attachment 5.2

Format of Final Report

This attachment shows the format to be used by the Contractor for the Retro-Commissioning Study. As a minimum the following should be included:

1. Title Page – The first page of the report inside the front cover shall be a title page which shall include the following information:

General Services Administration

Name and number of building

Address of building

Photo of the exterior of the building sized to fit this single page format

Contractor Name

Company

Address

Phone #, Fax #, E-Mail Address

Site Contacts

Building Manager

O & M

Control Systems

Building Square Footage

Type of Building.

Date and Cost of Audit (total cost and cost/gsf)

2. Executive Summary – A brief summary of the overall report including brief facility description and list of ECMS.
3. Energy Evaluation – Table where estimates of individual energy and water use volumes using data provided by GSA. A table which shows current overall building consumption in commodity units, MBtu, utility cost per year and cost/GSF – before and after implementation of recommended ECMs and resulting savings – for water and each fuel type.
4. Savings Summary – A summary table of all ECMs. The table should identify the conservation measure and include annual savings (in dollars, energy units - MBtu and commodity units - Gal, kWh, or therms), implementation cost, Simple Payback Period, and Savings-to-investment Ratio (SIR) for each ECM. Note: MBtu = one million Btu. If ECM includes a repair, then a photo of the damaged or malfunctioning component(s) should be included in this section. Attached to this section should be a summary of estimated positive or negative interactions between ECMs.

5. Detailed Building Description:
 - a. Facility background including building systems and uses including facility name, address, and discussion of type and scope of operations performed at the facility
 - b. Building descriptions – type, use, occupancy, GSF, conditioned area, building dimensions, orientation, age, window area, construction type, and overall condition.
 - d. Description of mechanical systems and equipment. In particular, identify the method of controlling primary and secondary pumping and staging of chillers (such as sequences maintain secondary chiller water set point, or chillers stage based on secondary chilled water return). This same analysis shall be performed for the boiler systems.
 - e. Description of lighting systems.
 - f. Building current annual energy utilization index (EUI) in MBtu/ksf and cost/gsf and Energy Star rating.

6. Energy Conservation Measures
 - a. Each ECM must be titled descriptively and provide detailed descriptions of energy saving improvements identified. This includes “sketches” or diagrams, when appropriate.
 - b. Summaries and lists of all results and calculations including annual energy or water savings, pre and post retrofit consumption estimates, annual cost savings, maintenance cost impact, implementation cost.
 - c. Input and output results of life-cycle cost analysis (BLCC) software including the savings-to-investment ratio (SIR) and simple payback along with a list of assumptions used in each calculation.
 - d. Breakdown of estimated timetables and costs (including design, construction, management, and inspection costs) of implementation.

APPENDICES

1. List of utility incentives
2. Energy Star documentation.
3. Other pertinent information and data, as appropriate.

