

**Appalachian Regional Commission**

**Request for Proposals**

**Planning and Financing Energy Efficient Infrastructure**

**Proposals due on or before September 8, 2009**

Appalachian Regional Commission, Suite 700  
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# **Appalachian Regional Commission - Request for Proposals**

## **Planning and Financing Energy Efficient Infrastructure**

**I. Overview:** The Appalachian Regional Commission (ARC) invites proposals from qualified researchers and consultants to conduct an analysis of the potential for municipalities and utilities to reduce costs by implementing conservation measures and energy efficient upgrades to existing public infrastructure and buildings, and in the process promote public health and economic development. This project would include creating or customizing a process and a set of tools that would assist with analyzing costs and benefits, planning, and financing energy efficient facilities.

The ARC is a federal-state partnership established in 1965 to promote social development and economic competitiveness of the Appalachian region. In 2006, ARC adopted an *Energy Blueprint* which assessed current state and national energy policies and strategies that would help to promote energy efficiency investments and renewable energy technologies, and in the process reduce household, business, and public sector energy bills and stimulate job creation. The *Blueprint* set forth these strategic goals for energy and economic development ([www.arc.gov/images/energy/index.html](http://www.arc.gov/images/energy/index.html)):

- Promote energy efficiency in Appalachia to enhance the Region's economic competitiveness.
- Increase the use of renewable energy resources to produce alternative transportation fuels, electricity, and heat.
- Support the development of conventional energy resources to produce alternative transportation fuels, electricity, and heat.

Since then, high energy costs and reduced budgets have underscored the importance of calculating the net benefits and payback periods for large scale municipal and county level infrastructure investments such as energy efficient wastewater treatment, drinking water systems, government buildings and schools, and other facilities. The American Recovery and Reinvestment Act took into consideration the advantages of these types of investments by stipulating that 20% of the water and wastewater ARRA funds distributed by the EPA's SRF program be reserved to try to support these types of projects.

This study would support this initiative by helping Appalachian communities develop relevant sub-regional benchmarks for rural areas, analyze the capital and operating cost differentials and payback period of energy efficient community-scale systems and buildings, and enable cost comparisons with conventional infrastructure. Given regional variations in climate, geography, degree days, electricity rates, and other variables, the study should develop controls and options for these and other cost factors that can be tailored to specific cases. In the case of building standards, the study should summarize established criteria for widely accepted green building standards, such as LEED certification.

This study would provide answers to these key questions:

- What are the costs and potential savings from energy-efficient improvements and upgrades to water and wastewater systems and other public facilities in Appalachia?
- What is the impact on Appalachian counties and the regional economy from cost savings and increased energy productivity resulting from energy efficiency upgrades and renewable energy?
- How many jobs could potentially be created from investments in energy efficiency that would yield sustainable net benefits over a specified payback period (say, 10 years)?

Other relevant questions include: What energy policies, programs, and targeted incentives would help bring about significant investments in energy efficient infrastructure? What programs have already been implemented in Appalachian states to promote a sustainable energy economy? How are they working?

## II. Scope of Work

Proposals should present a general outline of the research to be conducted, a work plan, and a schedule for reports and deliverables, and specifically address the following:

- Review and summarize relevant information from ARC’s prior studies related to energy efficiency (<http://www.arc.gov/images/energy/index.html>).
- Review and summarize existing literature addressing potential cost savings and job creation from energy efficient infrastructure upgrades. Summarize opportunities and barriers to realizing this potential, and identify ways that these barriers could be overcome.
- Describe specific case studies of energy efficiency best practices already in use for water and wastewater treatment plants, schools, and government buildings. Describe how costs and benefits were identified and measured. Identify the most effective approaches, mentioning ways that barriers and challenges were overcome.
- Review and summarize existing methods for benchmarking and comparing energy efficiency for water and wastewater treatment plants, buildings, and other facilities. Review interactive tutorials and tools that can be used by states and municipalities to perform energy audits, analyze costs and benefits of energy efficient upgrades to existing infrastructure and facilities, and quantify potential cost savings. For example, EPA/DOE’s [Portfolio Manager](#) is used by municipalities to track, manage, and benchmark energy and water usage and costs, and identify efficiency opportunities.
- Extrapolate from these elements to quantify the opportunity for energy efficiency gains for the region as a whole, and calculate the potential cost savings that would accrue to states, counties, and municipalities. For example, [Georgia conducted a study](#) that concluded that investments in energy efficiency could generate significant cost savings with short payback periods. If Georgia’s results were extrapolated to the Appalachian region, the potential for cost-effective infrastructure upgrades in the region would be on the order of \$2- \$4 billion. If the average payback period for these projects is 10 years, these projects would result in savings of \$200 to \$400 million dollars per year.
- Review and summarize pertinent information from these and other relevant reports and web sites:
  - U.S. EPA/DOE: [Energy Star Portfolio Manager](#)
  - UNC Environmental Finance Center: [Water and Sewer Needs and Capital Finance Strategies in Appalachia](#)
  - Georgia Environmental Facilities Authority: [Assessment of Energy Efficiency Potential in Georgia](#)
  - [New York State Energy Research and Development Authority](#): *Assessment of Energy Use by Municipal Water and Wastewater Sector; Energy Index Development for Benchmarking Water and Wastewater Utilities; Energy Efficiency in Municipal Wastewater Treatment Plants*
  - Pennsylvania Energy Resource Center: [Energy Efficiency Resources for Local Governments](#)
  - Water Research Foundation: [Energy Index Development for Benchmarking Water and Wastewater Utilities](#)
  - McKinsey and Company: [Unlocking Energy Efficiency in the U.S. Economy](#)
  - American Council for an Energy Efficient Economy: [Roadmap to Energy Efficiency in the Water and Wastewater Industry](#) and [Focusing on Energy Efficiency for the Drinking Water and Wastewater Industries](#)
- The study should develop cost-benefit models for a variety of energy efficiency options, including but not limited to:
  - repairing leaky water systems and reducing inflow and infiltration into sewer lines.

- separating sewage and stormwater runoff in combined systems so that only sewage is being treated, and diverting stormwater into collection and settlement ponds.
- replacing inefficient pumps, motors, and equipment, and relying on gravity flow if possible.
- using combined heat and power or geothermal energy for public facilities and buildings.
- Prioritize these energy savings opportunities based criteria such as cost-effectiveness, job creation potential, economic impacts, and reduction of fossil-fuel use.
- The study should provide examples of partnership, financing, and leverage opportunities that exist in the region, including the ARRA, Federal Energy Management Program, Department of Energy, EPA's Sustainable Infrastructure and State Revolving Fund programs, the Economic Development Administration, the Department of Agriculture, and relevant state and local programs.
- The study should select a few municipalities for case studies of selected best practices in energy efficiency, describing cost savings that were realized when public facilities, buildings, and/or infrastructure were retrofitted for energy efficiency and renewable energy (i.e., what does a LEED-certified community look like, what does it cost, and how much money will be saved?).
- Review and summarize existing studies that estimated energy efficiency savings and related employment gains under baseline and alternative policy scenarios, including direct and indirect jobs in the energy industry and related suppliers.
- Review and summarize existing studies of state programs in Appalachia that are implementing energy efficient infrastructure improvements and quantifying impacts. For example, Pennsylvania has a statewide Energy Efficiency (E2) network to provide coordinated efforts around energy audits and implementation of energy efficient and alternative energy solutions. The program is quantifying how much energy was saved, the economic benefit to the client, how many jobs were created or saved, and the economic impact on the Pennsylvania economy.
- Create an implementation plan for the region that would identify likely candidates to lead implementation, specify how to tap into existing incentives and subsidies, outline an effective approach for measuring and achieving results, and create pilot projects to test the forecasted savings. This component should also identify training needs for energy efficiency upgrades.

### **III. Deliverables**

The contract will require a preliminary draft and a final report with an executive summary that integrates and interprets key findings of the study, a series of thematic chapters, and a conclusion with recommendations for implementation of study findings. The report should be written for a non-technical audience and relate the narrative discussion to descriptive statistics, analyses, graphs and tables where appropriate. Technical details, data tables, and details regarding methodology should be presented in appendices. A printed copy of the final report suitable for reproduction and an electronic file copy must be submitted upon completion of the project (in MS Word and Adobe pdf file formats). These should be accompanied by an Excel workbook of all relevant data compiled during the study.

### **IV. Methodology**

The successful applicant will develop and describe a complete methodology and specify resources that will be required to conduct the analysis specified in the scope of work.

- Specification of resources and data sets appropriate for the analysis, including both public and proprietary data sources. Describe data availability and limitations over time and geographical dimensions.

- Discussion of the scope, advantages, and limitations of these resources for the purposes of this analysis, including issues related to geographical coverage and/or aggregation.
- Preliminary specification of the analytical framework, research methods, and statistical techniques to be used for the proposed analysis. Proposals should discuss the relative merits of various approaches, and outline the advantages and limitations of the selected approach.
- Preliminary design concept for developing or applying an analytical framework that communities can use to assess the cost and potential energy savings for investments in energy efficiency.
- A review of current energy policies, codes, and energy efficiency standards in the Appalachian region that have implications for energy costs and savings.
- Protocols for selecting and conducting case studies of representative policies and programs.
- Discussion of methods for specifying a business-as-usual scenario and alternative scenario(s) that would be technically and economically feasible, given a credible policy framework of incentives and public programs.

Proposals can recommend other methodological approaches as needed. In keeping with the overall budget constraint for this project, proposals may present trade-offs among tasks as long as the research design can ensure the accomplishment of the main research objectives of the project.

## **V. Proposal Submission, Evaluation, Cost and Timing**

The Commission anticipates that the level of effort required for this project will be large scale (\$150k to \$249k). The contract will be a FIRM FIXED-PRICE CONTRACT. The Commission anticipates that the work will take 12 months to complete all phases of the project.

An original and three copies of the proposal must be submitted to the Regional Planning and Research Division, Appalachian Regional Commission, 1666 Connecticut Avenue, NW, Suite 700, Washington, D.C., 20009-1068, on or before **September 8, 2009**. Questions about this proposal should be directed to David Carrier, Senior Economist, [dcarrier@arc.gov](mailto:dcarrier@arc.gov).

All proposals will be evaluated based on the following criteria:

- Qualifications, relevant prior experience, and demonstrated knowledge of existing research on energy workforce issues, energy efficiency, and regional economic development; and the ability to synthesize and interpret research findings in a credible and useful manner.
- Complete, clearly articulated, logical study design and technically competent methodology.
- A credible management proposal for staffing and completing the project in a timely fashion.
- Cost effectiveness of the proposed project design.

## **VI. Outline of Technical Proposal Contents**

**A. Technical Proposal** Narrative should not exceed 10 pages, not including the accompanying resumes and organizational background materials.

*Project Work Plan and Milestones:* Please provide a brief abstract of the proposal by summarizing the background, objectives, proposed methodology, and expected outputs and results of the research. The proposal should describe the phases into which the proposed work can be logically divided and performed. A schedule of milestones and deadlines should be specified for the completion of various work elements, including information collection, interviews, surveys, analyses, quarterly progress reports, preliminary drafts for review, and final draft reports.

The proposal should identify the points and tasks in this research project that will require participation by the Commission and ARC staff. Further, the statement should identify specific information needs according to sources, procedures, and individual tasks of the research that may need to be supplied by the Commission. Finally, the proposal should identify any difficulties that may be encountered in this project and propose practical and sound solutions to these problems.

Personnel performing the work must be described in this section in terms of numbers of people and their professional classification (e.g., project director, web-designer, analyst, program designer, etc.). Brief resumes of the education and relevant experience of the principal investigator, co-investigator, and other key personnel are required. The selected contractor will be required to furnish the services of those identified in the proposal as key personnel. Any change in key personnel is subject to approval by ARC.

## **B. Management Proposal**

The resource capability and program management for planning and performing the work will be considered in the proposal selection process.

- *Business Management Organization and Personnel:* Furnish a brief narrative description of the organization that will perform the proposed work effort, and the authority responsible for controlling resources and personnel.
- *Staffing Plan* A staffing plan is required that describes the contractor's proposed staff distribution to accomplish this work. The staffing plan should present a chart that partitions the time commitment of each professional staff member to the project's tasks and schedule. In addition, the proposal should include a detailed description of activities for key project-related personnel and anticipated deliverables. Finally, the proposal should identify the relationship of key project personnel to the contracting organization, including consultants.
- *Relevant Prior Experience* The proposal must describe the qualifications and experience of the organization and the personnel to be assigned to the project. Information should include direct experience with the specific subject-matter area and organizations, addresses, contact persons, and telephone numbers for such references.
- *Contract Agreement Requirements* This section of the proposal should contain any special requirements that the contractor wants to have included in the contract.

## **C. Cost Proposal**

Each proposal submitted must contain all cost information, including direct labor costs consistent with the staffing plan, labor overhead costs, travel, estimated cost of any subcontracts, other direct costs (such as those for creating or maintaining databases), university overhead, total costs, overhead, and contract fees or profit. ARC policy on allowable indirect overhead costs for university-based research is to permit universities to charge the same rates charged to their own state agencies. The contractor should include estimated expenses for presenting study findings at a one-day meeting at the ARC offices in Washington, D.C. This activity will be over and above routine meetings with ARC staff during the course of the project.

The contract awarded for this research project will be a FIRM FIXED-PRICE CONTRACT, with payments on a quarterly schedule. The contract terms shall remain firm during the project and shall include all charges that may be incurred in fulfilling the terms of the contract.