



# ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY

## The ENERGY STAR Purchasing Initiative

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# **The ENERGY STAR<sup>®</sup> Purchasing Initiative**

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## **ABSTRACT**

Federal, state, and local governments could save at least \$139 million annually by reducing energy waste through the purchase and use of energy-efficient products. Reducing this waste would reduce annual greenhouse gas emissions by 4.1 million metric tons of carbon (MMTCs) by the year 2010; the equivalent of planting an area of trees the size of Yellowstone National Park. In addition, with \$50-70 billion in purchasing power for energy-related products, specifying energy efficiency could significantly shift the market for these products.

The Federal government recently launched the ENERGY STAR<sup>®</sup> Purchasing Initiative to channel the purchasing power of state and local governments -and its environmental impact- in the direction of energy-efficient products to capture significant environmental benefits and increase the demand in the marketplace. Part of this effort studied why governments don't currently procure the most efficient products, and attempted to identify the changes that would be necessary to allow many governments to do so. Some of the initial barriers to energy-efficient procurement that were found are:

- Lack of information about the availability of energy-efficient products;
- Split incentives, where the agency purchasing the products do not pay for the utility bills directly and, therefore, have little interest, or incentive, to save energy;
- Misinformation about the benefits of energy efficiency;
- Energy efficiency not seen as a value-added aspect of procurement;
- Budget constraints; and
- Lowest first-cost bias.

This paper will present the results of this study and describe the mechanisms that will be put into place to address each of these barriers.

## **INTRODUCTION**

The ENERGY STAR<sup>®</sup> Purchasing Initiative was designed to assist state and local governments with making best-value, cost-effective decisions about purchasing energy-efficient products. Through the identification of market barriers, development and distribution of materials and a toolkit designed to help address these barriers, implementation of focus groups to identify applicability and usefulness of these materials, communications efforts, and a customer-service approach, EPA and DOE in a partnership effort can help these organizations overcome existing barriers, regard energy-efficiency as an important policy measure, and save thousands of taxpayer dollars and tons of CO<sub>2</sub>.

State and local governments collectively spend over \$10 billion annually on energy bills, and an estimated \$50-\$70 billion annually on energy-related products.<sup>1</sup> If 50% of these governmental agencies purchased existing, energy-efficient products that are readily available in the marketplace, they could achieve a reduction of 21.6 billion kWh and 34 trillion Btu of gas and fuel oil annually by 2010.<sup>2</sup> This translates to 4.1 million metric tons of carbon (MMTC) reduction, with an overall potential for annual savings of \$107.2 million in energy costs.<sup>3</sup>

## **BACKGROUND**

The ENERGY STAR Procurement Challenge began as a call to action in 1997 to encourage state and local governments and corporations to commit to purchasing, or procuring, only energy-efficient products, and to include energy efficiency as a criteria or policy in their procurement practices. At the same time, the U.S. Environmental Protection Agency and the U.S. Department of Energy had launched a combined effort to expand the ENERGY STAR<sup>®</sup> labeling program. The ENERGY STAR Procurement Challenge was an extension of this partnership, which would reach a broader audience within the state and local government sector through the combined expertise and resources of the two Federal agencies.

The ENERGY STAR Procurement Challenge has, since this launch, taken a slightly different course of implementation. Initial discussions with state and local purchasers revealed a lack of interest to officially join another voluntary program. With EPA's Green Lights Program, ENERGY STAR Buildings Program, and the labeling programs, purchasers were confused as to the integration of these projects, and the need for an additional commitment.

This paper will discuss the program in its current form, the ENERGY STAR Purchasing Initiative.

## **GOALS**

This initiative encourages state and local governments to adopt energy efficiency into purchasing practices and policy, demonstrating the economic and environmental benefits of such actions. The primary goals of the ENERGY STAR Purchasing Initiative are to provide state and local governments with tools they need to increase their purchases of energy-efficient products, to provide access to information about energy-efficient purchasing, and to educate purchasers about the benefits of energy efficiency and the link between energy waste and air pollution. Channeling the purchasing power of state and local governments and other institutional buyers can stimulate a broader market movement toward energy efficiency.

## **RESEARCH**

### **UNDERSTAND THE MARKET**

The first step in establishing a Purchasing Initiative was to understand the market – who purchases products, how they are purchased, and what are the areas of implementation in which an energy efficiency message would be well received and would lead to potential change in policy or practice? Procurement, or institutional purchasing, has always been seen as extremely complex. In fact, there

are many facets of purchasing, and no two organizations perform quite the same. Furthermore, in understanding who actually makes purchasing and energy decisions, the universe of potential players is broadened to include:

- User agency department heads and planning staff
- Capital planning and construction officials/project managers
- Finance and budget officials
- Public works/facilities maintenance officials
- City managers/county executives/state comptrollers
- City/county councils, state legislatures
- Mayors and governors

## **DIFFERENT METHODS OF PURCHASING**

The most important distinction to be made among various government purchasing activities is between what can be loosely defined as direct and indirect purchasing.

**Direct Purchasing.** Nearly every government, from the state to the local level, has a department or division known as "central purchasing," typically within the Department of General Services or Administrative Services. A considerable proportion, but not necessarily a majority, of that entity's purchasing activity is conducted by that department, and often times this activity is termed "procurement."

Purchases above a certain dollar amount – typically \$10K, \$15K, or \$25K, depending on the size of the jurisdiction, by any user agency or agency subject to the authority of central purchasing, are accomplished through central purchasing. A purchase request for the item(s) is prepared by the user agency and routed to central purchasing, which is charged with obtaining the desired item in accordance with proper procedures and at the best price/value combination.

However, much of an organization's direct purchasing activity is accomplished outside the purview of central purchasing. User agencies have delegated purchasing authority below a certain dollar amount to individuals, bankcard holders, or separate departments. Whole departments or even branches of government are often exempt from the domain of central purchasing, such as those dealing with capital construction, public works and transportation, parks, schools, and legislative and judicial branches.

**Indirect Purchasing.** Indirect purchasing refers to the numerous other ways of contracting by which government acquires various products and equipment, including:

- New building construction,
- System repair, upgrade, and maintenance contracts;
- Equipment leasing (e.g. copiers);
- Energy savings performance contracts; and
- Outsourcing of operations (e.g. kitchen operations).

With indirect purchasing methods, someone other than a government employee chooses the

particular model of equipment, or designs and specifies the system installed under the contract.

**Indirect Purchasing - Maintenance/Facilities management.** Many purchasing decisions are actually made in building and facilities management departments and occur routinely in system management or upgrade projects. These are often accomplished through contracts with commercial vendors or service providers, which may or may not require approval or even review by central purchasing. The equipment provided under such contracts is often left to the discretion and/or expertise of the contractor; specifying a particular model of equipment or a level of efficiency can often only be done if it is expressly included in the original solicitation (Invitation for Bids or Request for Proposals), at the beginning of the contracting process.

**Indirect Purchasing - Capital Planning and Construction.** New buildings and facilities are usually obtained through a long, complex chain of contracts, beginning with the design/architect and engineering phases (the "A & E" contract). The general construction contract is then offered, through a formal Invitation for Bids, and a general contractor is selected who will, in turn, invite bids and obtain contractors for numerous sub-contracts to provide different components and systems for the entire facility. Thus, in large construction projects, the ability to specify particular models of products and equipment is extremely limited.

The degree to which energy efficiency is included in the design, and is then fully implemented in its construction, is a function of the diligence of the government's project officers in ensuring that each contract and each subcontract includes the energy-efficiency criteria, and that the equipment selected and actually installed pursuant to those contracts meets those criteria.

In general, the larger the amount of money being spent, the more formal the purchasing procedure - ranging from one telephone price quote to at least three written detailed bids submitted in response to an advertised, clearly specified Invitation for Bids (ITB) or Request for Proposals (RFP).

The value placed on energy efficiency in the procurement of energy-using products depends entirely on whether or not that criteria is included in the specification in the initial ITB or RFP. Bids and Proposals are evaluated according to two principal criteria: responsiveness (attention to every aspect of the bid/proposal specifications), and responsibility (ability of the vendor to meet the terms of the contract offered pursuant to the bid).

The principal constraint on the specifications contained in a solicitation is that they not be "restrictive." That is, they cannot, either by design or in actuality, preclude sufficient competition among vendors to ensure the government is getting the best value. However, adequate competition exists even if the manufacturer and model desired is included in a solicitation (often done in equipment replacement) if just three different vendors compete to offer that item.

Most states maintain in-state preferences for all but the most "close to home" products (e.g. Maine has preference for in-state-produced paper). If present, preference usually applies to the vendor of the product, not the manufacturer (e.g. local vendor could provide foreign-made copier). The nature of contracts, the time for developing specifications, and the duration vary widely according to the product in question. Annual is the most common.

## IDENTIFY BARRIERS TO ENERGY-EFFICIENT PURCHASING

Procurement policy and authority within a state, county, or local jurisdiction is established in broad terms in statute, and further defined in implementing regulations. While often times energy-efficient purchasing language is included in policy documents or recommendations, other factors supercede this initiative, and lack of energy efficiency criteria in purchasing policy becomes the result of one or more purchasing barriers.

For instance, the National Association of State Purchasing Officials (NASPO), a coalition of state purchasers and procurement officers representing all U.S. states and territories, recommends that procurement statutes include the following provisions that pertain to energy-efficient procurement.<sup>4</sup> They should:

- authorize and encourage the use of energy consumption and other life cycle cost factors as evaluation criteria in solicitations;
- require the procurement of energy-efficient lighting fixtures and bulbs; and
- require the inclusion of ownership cost in addition to acquisition price, when appropriate, as a factor in bid or proposal evaluation and encourage documented life cycle costing.

NASPO also recommends that the “central procurement office conduct training programs for client agencies to encourage user acceptance of...energy-efficient goods and equipment...”

However, survey research conducted by the New York State Energy Office (NYSEO) in 1994<sup>5</sup> found that many states operate under some type of directive to purchase high-efficiency equipment, but only a few used energy-efficiency criteria in specifying products. The three primary obstacles cited by survey respondents were 1) lack of data, 2) lack of staff to research energy performance, and 3) the high (first) cost of high-efficiency products.

Additional barriers to energy-efficient purchasing have been identified as follows:

***Barrier 1: Lack of tools:*** A lack of readily available “how-to” instructions accounts for much of the business- as-usual purchasing. Most state and local government officials are also highly constrained by time; they don't usually have the time or the energy to seek and analyze new information and then defend a novel course of action to their colleagues and superiors.

***Barrier 2: Risk Aversion:*** The purchasing process is strictly governed by rules, established procedures and defined decision criteria, and has a number of perceived risks -- of violating the rules, of wasting government money, of appearing to improperly favor one vendor or product over another. Because the system is so regulation-driven, many participants are reluctant to depart from "standard practice," or from that with which they are familiar, unless they have been expressly charged or empowered to do so. The more money being spent, or the more visible the purchasing activity, the more this is true.

***Barrier 3: First cost bias:*** Purchasers are given the directive to procure items with the lowest purchase price tag, typically due to annual budgetary constraints.

***Barrier 4: Life cycle cost analysis requirement:*** The concept of life-cycle costing is well established and understood in state and local governments. Requirements to analyze the cost of a product over

its lifetime often times includes analyses of environmental and cost factors in the production of materials and packaging, as well as for the final product itself. The application of this concept to individual product specification decisions, however, appears to be rare. Primarily, a lack of technical and economic data and a verified, straightforward tool for making LCC calculations leads to its non-implementation.

***Barrier 5: Lack of interest/policy:*** Often times, it takes either a high-level official to initiate a policy for energy-efficient purchasing, or a champion who identifies the opportunities, undertakes the initiative to promote the concept, and quantifies the economic and environmental benefits for these same high-level officials. Without either of these two methods in place, chances for policy change are small.

***Barrier 6: Split incentives:*** The specifier/purchaser of a particular piece of energy-using equipment and the payer of the energy bills for its use may sometimes be different. The degree to which split incentives are present can vary according to several factors, including organizational design, physical location, property status, etc. It is even possible to have a triple-split incentive: a trichotomy of interests among the designer and builder of a building, the owner of the building, and the tenant agency. A “reverse incentive” can be seen in some instances. Several university purchasers are provided annual energy budgets. When they are able to demonstrate a reduction in energy consumption, and a subsequent reduction in energy bills, their next annual budget is reduced by that increment. Rather than rewarding the university with the additional savings and allowing them to spend the funds on other necessary items, they are penalized with lower operating budgets.

## **TOOLS AND STRATEGIES NEEDED TO OVERCOME BARRIERS TO ENERGY-EFFICIENT PURCHASING**

Research conducted by the Energy Efficiency Procurement Collaborative through in-depth telephone discussions (by random selection) of 150 state, county, and municipal purchasing officers cited that the following resources are needed by most jurisdictions to initiate energy-efficient purchasing practices:

- A source for general energy-efficient procurement information
- Simplified life cycle costing models
- A comprehensive, easy-to-use manual or “Toolkit” on energy-efficient purchasing practices
- Similar, specific case studies demonstrating energy-efficient purchasing success
- Training for buyers and using agencies
- Energy-efficient product listings and product ratings.

This information initiated the development of a “State and Local Toolkit” for purchasers, procurement officials, energy officers, and government employees. A collaborative effort of EPA, DOE, the Federal Energy Management Program (FEMP), EEPCC, and Lawrence Berkeley National Laboratory (LBNL), this toolkit is intended as a “one-stop-shopping” guide, providing necessary information and materials to overcome defined and identified barriers.

***Addressing Barrier 1: Lack of tools:*** The primary objective of the ENERGY STAR<sup>®</sup> Purchasing Toolkit is to give purchasers the tools they need to make informed decisions about procuring energy-efficient products. By providing concise, comprehensive information in one source, this



toolkit helps purchasers answer questions of how to specify energy-efficient products, where to find them, and how to figure cost-benefit analyses. The research conducted by EEPC and NYSERDA conclude that state and local government officials have requested a single source of information to reduce research time, analysis time, spec-development time, and employee education time. Four major sections of this toolkit address these needs. They include drop-in procurement language for bids, a source reference for product listings, life cycle cost analyses, and communications tools for public recognition.

***Addressing Barrier 2: Risk Aversion:*** Often times, an aversion to risk results merely from a lack of information, or a perception that a change requires a reduction in quality or performance. Research, information, and education can help overcome low risk tolerance. The technology of the future is actually what is currently available in the marketplace, and it is misperceptions that these technologies are beyond reach that need to be approached. Restricted competition, increased difficulty in finding products that meet energy efficiency specifications, and higher initial costs are additional misperceptions that are addressed by the information provided in the toolkit.

A simple example is the computer industry. Even five years ago, low power modes, or “sleep features” existed only in laptops. The ENERGY STAR Program worked with manufacturers of computers to include the laptop technology in personal computers, thereby allowing a desktop computer to “power down” when inactive and save energy. Five years later, the success of this feature has resulted in a complete shift in the market. It is difficult to find a desktop model today that does not include the low power mode. Not only is the technology widely available, but the issue of limiting competition by including energy efficiency as a criteria is non-existent.

The toolkit provides answers to the questions about restricted competition, finding products, energy efficiency specifications, and costs that can persuade policy makers and purchasers to consider alternative methods of procuring goods. Users are directed towards lists of models that meet energy efficiency guidelines, they are shown that 90-95% of a particular industry’s manufacturers provide these efficient products, and they are given drop-in specification language to alleviate any confusion of writing an RFP.

***Addressing Barrier 3: First cost bias:*** Demonstrated savings and cost comparison information can address this bias. A template is provided that allows purchasers to tailor a real-life example of a major purchase and compare the first costs of energy-efficient versus non-energy efficient products. Often times, there is no added initial cost to the energy-efficient product, allowing for easier justification of the purchase.

***Addressing Barrier 4: Life cycle cost analysis requirement:*** An increasingly large number of jurisdictions, from the federal government to the smallest local government, require life cycle cost analyses on major purchases. In many instances, this calculation includes the cost and environmental impact of the raw materials through the use and disposal of a product. For the purposes of energy efficiency, the ENERGY STAR toolkit provides a life cycle cost analysis tool for the actual use of a product. This calculation takes into account purchase price, energy consumption, maintenance costs, replacement of lamps, etc., provides input for fuel cost, discount rate, etc., and converts savings into pollution prevention. This analysis can be tailored for a jurisdiction’s

upcoming or intended purchase(s) to demonstrate the impact and benefits, both economically and environmentally, of energy-efficient products.

In other instances, life cycle cost analysis is not a requirement. However, a demonstration of the “double price tag” concept may warrant the justification for energy efficiency. The idea behind this concept is that there are two price tags. The first price tag constitutes the cost of the item, or what a purchaser pays to receive the product. A second price tag includes the cost of operating the equipment over the course of a lifetime. When the price tags are added together, and the energy-efficient product is compared to the non-efficient model, it is easy to demonstrate the sensibility of the efficient product purchase.

***Addressing Barriers 5 and 6: Lack of interest/policy and Split incentives:*** Policy makers and administrators are typically driven to action by the demonstration of proven benefits, often economically-based. The information and tools provided in the toolkit allow any individual to calculate the benefits of energy efficiency, identify simple steps to achieve the demonstrated benefits, and assemble a persuasive presentation to encourage a policy shift.

## **IMPLEMENTATION**

The toolkit is an extremely pivotal item in increasing demand of energy-efficient products by state and local governments. Instituting mechanisms for getting this information into the hands of the decision-makers and stakeholders at the policy and procurement level is crucial. Five methods of distribution have been identified:

**Peer Review:** Several state and local governments have shown initial interest in using the materials included in the toolkit. These 24 organizations will be provided with a final copy of the mock-up toolkit and, over a period of three months, gauge its applicability, relevance, and ease of use. One-on-one telephone discussions will help to evaluate this information, and all recommendations will be included in a subsequent draft.

**Focus groups:** The Energy Efficiency Procurement Collaborative (EEPC) will conduct targeted focus group discussions about the toolkit. The EEPC expects to conduct three small focus group meetings in various parts of the country. Participants will include representatives from state and local purchasing, energy, environmental, and elected offices. A small group setting and guided discussions will reveal pertinent information about the usefulness of the materials included in the toolkit.

**Web site:** After initial feedback has been provided, the toolkit will be formatted for the World Wide Web, residing at the ENERGY STAR<sup>®</sup> homepage. Web technology will allow users to privately access and review information, perform on-screen life cycle cost analysis which can be tailored through user input, and find needed source listings and other information through established hotlinks.

**Associations:** State and local government associations are eager to provide information to their members. Many associations such as the International Cities for Local Environmental Initiatives (ICLEI) and the National Associations of Counties (NACo) provide information and tools to their members, and they are constantly searching for useful materials. The ENERGY STAR Purchasing Initiative, through the State and Local Toolkit, can provide these associations with materials that they can recommend to their members. The associations can also request feedback from the members, which can be provided for refinement and re-drafting of the toolkit.

**ENERGY STAR<sup>®</sup> Buildings Partners:** The EPA's ENERGY STAR Buildings Program takes a "whole building" approach to energy efficiency, encouraging a five-stage upgrade process. The ENERGY STAR Purchasing Toolkit acts as a complement to Stage 3, or Load Reduction, providing a "how to" tool for all Buildings Partners to use for their energy-efficient purchasing practices. ENERGY STAR Buildings technical assistance staff will provide a toolkit to each of their clients, work with them to identify potential opportunities, and assist them in implementing procurements and policy directives.

## MEASURES OF SUCCESS

Most governments issue RFPs on a rotating basis, replacing existing products with new ones on a schedule over a period of several years. A state may use the toolkit, but its purchases, and therefore their savings, may occur over even a decade. However, the true success of this project will be demonstrated in the increased demand for energy-efficient products by state and local governments. Already we've seen several state and local governments, as well as federal governments and corporate institutions, initially requesting ENERGY STAR -compliant products, realizing the benefits and savings, and incorporating this requirement into subsequent RFPs. Examples include the U.S. Postal Service who, in 1997 awarded a two-year bid for 15,000 exit signs with the ENERGY STAR label. Within the first year they had surpassed the requisite number of signs, with orders from the individual post offices of over 35,000 signs. Savings of over \$400,000 in energy costs alone prompted the USPS to include ENERGY STAR in future bids for energy-efficient products. Another example is the Commonwealth of Massachusetts who, after realizing that issuing a bid for ENERGY STAR-compliant computers and monitors did not limit competition, and in fact allowed them to specify a preferred brand as well, decided to consider energy efficiency, and ENERGY STAR in particular, in future bids for energy-consuming products.

In order to determine the success of this program, the following measures are to be considered:

1. Number of toolkits disseminated. The request for toolkits, either by associations for their members, ENERGY STAR Buildings Program staff for their partners, or by phone calls to the ENERGY STAR Hotline should provide an indication of the need for the information being provided. Due to government restrictions, requesting data on number of products being purchased and, therefore, the influence on market transformation, cannot be gathered.
2. Case studies developed for 5 purchasers that demonstrate success in overcoming each of the market barriers identified in this paper. These case studies will represent at least five of the six pre-determined market barriers to energy-efficient purchasing and will outline steps taken to

address these barriers and overcome them. They will be included in the toolkit as a learning tool for other state and local governments facing similar barriers. In addition, an informal “share your success story” section will be added to the toolkit and the website to share results and provide contact information for further discussions.

3. Attendance at focus groups. Relevant feedback by interested stakeholders will allow for gauging the accuracy of the information presented, as well as the usefulness of the material to successfully overcome market barriers to purchasing. A larger attendance at focus groups indicates that this project has generated interest in the intended market, and that key purchasers and other stakeholders are eager to review the toolkit and provide input.
4. Website hits. The website on which the toolkit will be posted will be configured so that detailed information about visitors to the site can be gathered. A voluntary input area will place visitors in one of several categories which will allow for a better understanding of the actual audience. A quarterly calculation and detailed reports on specific site hits, download activity, and originators will provide an idea of the interest generated by these materials and profiles of material users.

## CONCLUSIONS

State and local governments are eager to reduce taxpayer dollars, through energy bills, maintenance bills, and purchasing costs. Energy-efficient purchasing is an easy, cost-effective method of accomplishing the simple goal of reducing energy consumption and improving air quality through reduction in burning of fossil fuels. State and local governments, and other institutional purchasers, have identified barriers to the procurement of energy-efficient products, the least of which is willingness to act. These organizations need easy-to-use, basic information about what’s available and “how to do it.” The ENERGY STAR<sup>®</sup> Purchasing Initiative will assist these organizations by providing the tools necessary to overcome these barriers.

## REFERENCES

<sup>1</sup> The estimate of potential savings in 2010 for energy, operating costs, and greenhouse gas (CO<sub>2</sub>) emissions was made using published Energy Information Administration (EIA) reported data on total energy use, by fuel, for state and local government facilities. These include non-residential buildings (offices, schools, hospitals, etc.), and the 3.4 million public housing units operated by local housing authorities. Estimated shares of energy by end-use and fuel type were taken from the EIA's model for the Annual Energy Outlook and assumed to be the same for government and non-government buildings of the same general type. The percent efficiency improvement for each end-use was estimated, where possible, based on the actual improvement between a "baseline" new product and an ENERGY STAR<sup>®</sup> labeled product specification. The fraction of today's stock that would normally be replaced as of 2010 based on typical product lifetimes in each category was estimated.

Note that these estimates, while they assume an aggressive program effort that reaches half of all energy-related purchasing by states and local governments by 2010 (12 years), may be conservative in several respects. There is no assumption of accelerated replacement of existing equipment (only normal replacement at end of service life), although programs such as Green Lights and ENERGY STAR® Buildings also encourage early retrofits of energy-using equipment, where economical. There is no assumption of any future technology or manufacturing improvements that may increase efficiencies and/or lower costs for energy-using products; it is assumed that the margin between today's typical new purchase (often based on lowest first-cost) and the level of equipment efficiency recommended by the ENERGY STAR® Purchasing program will remain the same.

<sup>2</sup> This assumes a modest decline in today's energy prices due to retail competition in energy markets.

<sup>3</sup> Based on \$.06 kWh for state and local government utility rates.

<sup>4</sup> "State & Local Government Purchasing Principles and Practices," NASPO, 5<sup>th</sup> edition, 1997.

<sup>5</sup> New York State Energy Office, 1994.