MONTGOMERY COUNTY, MD

A Case Study of Energy Efficient Purchasing Practices

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In Support of

THE ENVIRONMENTAL PROTECTION AGENCY'S ENERGY STAR PURCHASING INITIATIVE

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ABSTRACT

Montgomery County is Maryland's most populous and affluent jurisdiction. The County is located next to the nation's capital, Washington, D.C. It includes 495 square miles of land area with elevations ranging from 52 feet to 850 feet. The topography is rolling with small hills. The County was officially established in 1776 by colonists and was named after Richard Montgomery, a general in the colonial army.

Wise energy practices are a top priority within Montgomery County. This commitment is reflected in Montgomery County's energy policy, its community involvement, and in the day-to-day operations of its departments. No where is this commitment more obvious that in Montgomery County's Department of Facilities and Services (DFS).

This case study focuses specifically on the ways that DFS has incorporated energy efficiency practices into its procurement functions. As Paul Tseng, Chief, Facilities Engineering, explains, Montgomery County has developed a set of interlocking programs that make ensure that energy efficiency decisions are considered at every phase of a project's life beginning with new design through maintenance and research.

Procurement issues are also critical at every step along the way in building design, renovation, retrofit, system replacement, maintenance, training, and research. In Montgomery County, the Department of Facilities Services (DFS) has left the energy procurement decisions to their internal experts, rather than delegating these decisions to a procurement official.

This strategy has lead to a standardization of procurement decisions regarding various types of energy efficient equipment ranging from fluorescent lamps to insulation. It has also resulted in the development of an interagency committee mandated to work together in making decisions that include energy usage.

Montgomery County's Department of Facilities and Services (DFS) illustrates both the capabilities and opportunities that exist when municipal governments have the mission, the organizational structure, and the daring to make energy efficiency an organizational priority. This case study also shows that even the best organizations still have difficulties implementing good ideas and practices across divisional or agency boundaries.

In summary: Montgomery County illustrates strategies that municipal governments can use to reduce energy costs and conserve resources by considering energy efficient equipment at every step within the selection and procurement process.

EXECUTIVE SUMMARY

Wise energy practices are a top priority within Montgomery County. This commitment is reflected in Montgomery County's energy policy, its community involvement, and in the day-to-day operations of its departments. No where is this commitment more obvious that in Montgomery County's Department of Facilities and Services (DFS). This case study focuses specifically on the ways that DFS has incorporated energy efficiency practices into its procurement functions. This strategy can provide insights into ways that other municipal organizations can adopt a similar approach.

DFS also serves as a model within Montgomery County. The department continually strives to enhance and improve its operations regarding energy efficiency as well as improved operations regarding procurement practices. Therefore, the Consortium for Energy Efficiency (CEE) determined that conducting a case study of Montgomery County's Department of Facilities and Services would benefit municipal organizations throughout the United States.

DFS is responsible for the operation of 187 buildings. Its wide-ranging scope of responsibilities provides the DFS with an ongoing "laboratory" to test and improve resource conservation operations, including procurement functions.

Montgomery County has divided its operating functions, and hence its energy procurement decisions, into separate departments. This division has lead to a willingness for agencies within the county to cooperate, thus ensuring that the procurement decision is standardized. While not perfect in this concept, Montgomery County is far along the learning curve in terms of identifying, and standardizing, the procurement process for energy efficient equipment.

Montgomery County has developed a countywide resource conservation that describes energy use in buildings throughout the county. This plan provides local governments to achieve significant reductions and savings in energy use. Montgomery County provides a blue print for other municipal organizations to incorporate effective energy efficient practices and procedures.

> "**All municipal organizations have policy statements regarding energy efficiency. But, we have implementation and enforcement. Architects and engineers are shocked to see that we actually enforce the standards (for energy efficiency), and that we know more about it than they do."**

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Summary Findings

Montgomery County's Department of Facilities and Services (DFS) illustrates both the capabilities and opportunities that exist when municipal governments have the mission, the organizational structure, and the daring to make energy efficiency an organizational priority. This case study also shows that even the best organizations still have difficulties implementing good ideas and practices across divisional or agency boundaries.

Montgomery County illustrates strategies that municipal governments can use governments to reduce energy costs and conserve resources. In summary, Montgomery County's case study illustrates the following essential findings:

- **Energy Decisions Are Best Left to Energy Experts**

DFS has instituted a cost-effective procurement strategy that provides a seamless integration between identifying equipment needs and procuring equipment to meet those standards. Energy efficiency is considered at every step in the process. This type of approach only works when energy officials are the ones making the decisions.

In contrast, this process is not nearly as straightforward in other County departments, such as the Department of Public Works and Transportation. In that department, although energy experts make decisions, too often these decisions are ignored or overlooked by procurement officials.

For municipal organizations to be truly successful, they need to delegate the energy efficient purchase decisions to their internal experts. Alternatively, they need to hire at least one energy engineer who can provide this technical information as a resource for the municipal organization as a whole. The cost of this engineer's salary will be more than made up for in the reduced operating costs and maintenance needs.

- **Energy Experts Need Organizational Authority for Decisions**

Another reason that DFS has been so successful in implementing and enforcing its *Energy Design Guidelines* is that this department has been granted the authority for these decisions. Standards without enforcement are meaningless, even in organizations with the best intentions to save money. DFS also illustrates the vigilance that facilities and maintenance departments need to have throughout a project's life. As these engineers continually pointed out, efficiency needs to be monitored constantly.

- **Spread the Word**

Montgomery County has done an excellent job at encouraging communication between and among its agencies. While the impetus for starting its interagency energy task force (ICEUM) began with concerned citizens, it has been the professional county employees that have made this committee actually productive. Moreover, ICEUM provides a forum for sharing and exchanging good ideas regarding energy efficiency policies and procedures. Although it is not perfect, it does go a long way in fostering interagency cooperation rather than rivalry.

- **Recruit Procurement Officers**

The ICEUM members recognized the importance of involving procurement officers in energy efficiency decisions. This was a major reason for establishing the Inter-Agency Committee on Procurement. However, the procurement officials within Montgomery County have not embraced this inter-agency coordination as easily as ICEUM.

It took some time for ICEUM members to become comfortable with other agencies, and to develop a framework for communication and discussion. Therefore, it would be ideal if the ICEUM members could "adopt" the inter-agency procurement committee as a mentoring project. They should use this committee as a way to further explain the benefits of acquiring energy efficient equipment in terms that are understandable and relevant to procurement officials. EPA's Energy Star Purchasing Tool Kit may be an excellent resource in this mentoring process.

Recommendations for the ENERGY STAR Tool Kit

This case study of Montgomery County's DFS also led to several conclusions and recommendations regarding improving the effectiveness of ENERGY STAR'S Purchasing Tool Kit. These suggestions are summarized from a variety of respondents working in all levels of the County government. A separate addendum discusses proposed costs and benefits associated with implementing these recommendations.

- **Use Energy Design Guidelines as way to develop more technical specifications for energy managers, while simplifying the overall Tool Kit for procurement officials.**

As this case study illustrated, although the Tool Kit is an excellent resource for municipal governments, the challenge is finding the right audience. Within Montgomery County, there was a general perception among the respondents that this tool kit was too complicated and difficult for procurement officers to use on a regular basis. While the information was useful, it was not comprehensive enough to be of value to energy equipment specifiers, and it was too

advanced for novice energy buyers, such as those in the procurement department. It seemed that it was a book searching for the right reader to take advantage of its full value.

This sentiment reflects two findings: 1) Procurement officials may not be the "right" target audience for this type of Tool Kit; and 2) The right type of audience needs even more detailed information to gain from it.

One viable solution may be to develop separate modules, directed at specific functions within municipal organizations. This may include developing Tool Kit's with more detailed product information and specifications so as to be useful to those responsible for energy efficient equipment. It seems that the current approach of "one size fits all" will not be a practical solution in state and local municipal governments. Just as departments are divided up by function, so to are procurement officials.

This strategy could build upon the hard work and effort that Montgomery County has already put into developing its *Energy Design Guidelines*. Using a similar type of format, the Energy Design Guidelines could be expanded to include detailed product information and specifications about a variety of other energy-related equipment ranging from residential appliances used in multifamily housing units to energy-efficient traffic lights.

Montgomery County's DFS has already demonstrated the expertise required to develop and deploy a complicated set of guidelines. By working closely with both the CEE project team and EPA for guidance, DFS could expand its guidelines to include all types of energy efficient equipment purchased within municipal governments. The end result would be a comprehensive software tool that can be adapted to meet the needs of virtually any municipal organization, regardless of its configuration or size. It would also mean that the energy efficiency decision-making process could be standardized and streamlined, resulting in increased savings and increased tracking capabilities.

- **Spread the Energy Efficiency Message more comprehensively within MC. There are pockets of energy efficiency excellence, but everyone can learn from it.**

This case study also illustrates that even within Montgomery County, there are departments and procurement officers who are still unaware of the value of purchasing energy efficient equipment. To truly succeed and promote this new resource, the EPA must consider sponsoring informational forums explaining the tool kit and its uses.

A first step would be to provide an introduction of this tool kit at upcoming meetings of both the ICEUM committee as well as the Inter-Agency Procurement Task Force Committee. This meeting would include a project "debriefing" as well as an introduction of the tool kit to those

organizations within the County, such as MCPS, who were not able to participate in this case study. It would also build upon the relationships already established within the County.

- **Bring procurement officials to the table. Educate them on the benefits of sampling procurement processes, better equipment reliability, and exceeding minimum codes (in other words ensuring compliance) rather than focusing exclusively on energy savings.**

As this case study illustrates, procurement officials are not the ultimate equipment purchasers. Nor should they be. Rather, they should be viewed as a resource along the way. However, they do not want or have the authority to actually influence the purchase decisions.

Moreover, procurement officer's chief concerns are not energy efficiency, but rather other issues such as first cost, product availability, and delivery times. Therefore, the Tool Kit needs to be revised to incorporate the energy efficiency benefits in terms that appeal to procurement officials. For procurement officers, the tool kit needs to contain a section up-front explaining why energy efficient equipment is important and relevant to procurement officials, not just from an environmental standpoint, but also as an effective way to save time and money.

- **Explore using ICEUM as a bulk purchasing organization.**

Another strategy to consider is approaching ICEUM as a bulk purchasing organization. This would build upon previous work conducted by CEE. Since ICEUM already represents the largest energy users in Montgomery County, and since these organizations are already working together, pursuing bulk purchasing contracts may be appealing. Moreover, Montgomery County prides itself on being innovative, and by developing this type of relationship it certainly would be establishing a new paradigm within County organizations.

In summary: Montgomery County illustrates strategies that municipal governments can use to reduce energy costs and conserve resources by considering energy efficient equipment at every step within the selection and procurement process.

I. INTRODUCTION

Montgomery County is Maryland's most populous and affluent jurisdiction. The County is located next to the nation's capital, Washington, D.C. It includes 495 square miles of land area with elevations ranging from 52 feet to 850 feet. The topography is rolling with small hills. The County was officially established in 1776 by colonists and was named after Richard Montgomery, a general in the colonial army.

Montgomery County functioned under the County Commission system until 1948, when voters adopted giving the County home rule and a council-manager form of government. In 1968, the voters approved a new charter providing for separate legislative and executive branches of government. Legislative power vested in an elected council and executive power in an elected county executive. Currently, the County Council is composed of nine members, four of whom are nominated and elected by voters from the entire County, and five who are elected by voters in each of the County's five districts. Elected county officials serve four-year terms.

Montgomery County Demographics
Population – 846,000
Geographic Area- 495 square miles
Number of Employees – 8000+
Number of Buildings 187
Annual Utility Costs-- $13,934,840
Average Electric Rates- .0713/KWH

A. *County Government Organization*

Montgomery County Government's mission is to provide for the peace, good government, health, safety, and welfare of the County in accordance with, and under authority of, the Constitution and laws of Maryland, and the Montgomery County Charter. Montgomery County Government provides: public laws and oversight through the County Council and the offices and boards of the Legislative Branch; the administration of judicial offices; and public programs, services, and infrastructure through the County Executive and departments, offices, boards, and commissions within the Executive Branch.

Montgomery County is comprised of the following divisions:

- **Montgomery County Government (MCG)**, which includes executive departments (e.g., Recreation, Public Works and Transportation) and offices (e.g., County Attorney), the

County Council's legislative offices and boards, the Circuit Court, and judicial offices;

- **Montgomery County Public Schools (MCPS)**, under the authority of the Board of Education (BOE);
- **Montgomery College (MC)**, the County's two-year community college, under the authority of its Board of Trustees;
- **Maryland-National Capital Park and Planning Commission (M-NCPPC)**, a bi-county agency which manages public parkland and provides land use planning, with administration shared with Prince George's County;
- **Washington Suburban Sanitary Commission (WSSC)**, a bi-county agency which provides water and sewer service to Montgomery and Prince George's Counties;
- **Housing Opportunities Commission (HOC)**, the County's public housing authority; and
- **Montgomery County Revenue Authority**, a public corporation for self-supporting enterprises of benefit to the County.

The County budget includes appropriations to participate in debt service and operating costs of the Washington Metropolitan Area Transit Authority (WMATA), which is overseen by the Washington Suburban Transit Commission (WSTC).

1. *Budget Cycle*

a. Fiscal Year

The 12-month period used to account for revenues and expenditures in Montgomery County commences on July 1 of each year and ends on June 30 of the following year.

b. Operating and Capital Budgets

The complete County Executive's Recommended Budget includes: the Capital Improvements Program (CIP), published on January 15 in even-numbered calendar years; the Capital Budget, published annually on January 15; and this document, the Public Services Program (PSP)/Operating Budget, published annually on March 15.

2. *Operating Budget Preparation and Executive Review*

Departments and agencies prepare budget requests within guidelines established by the Executive (for the departments) and by law (for other agencies of government). These are submitted on scheduled dates for analysis by the Office of Management and Budget (OMB) and are reviewed by the Executive during the period January-March. The review process culminates in final decisions and Executive recommendations in the

budget document submitted to the Council by March 15.

Table I-1
Montgomery County Budget Allocations
by Agency

County Agency	FY 98 (in millions)	FY 99 (in millions)	% Change
County Government	825.1	900.4	9.1
Montgomery County Public Schools	1,034.8	958.4	8.0
Montgomery College	98.3	110.4	12.3
Maryland National Capital Park & Planning Commission	67.5	70.6	4.6
Total	$2,123.7	$2138.8	34%

Montgomery County Government is responsible for providing general services to citizens. Therefore, the agency is organized functionally into departments, offices, boards, and commissions, which undertake all activities and operations of the government. The functions of the Montgomery County Government are:

- General Government
- Public Safety
- Public Works and Transportation
- Health and Human Services
- Culture and Recreation
- Community Development and Housing
- Environment
- Other County Functions
- Government Funds

Montgomery County receives funding from two sources: tax supported and non-tax supported special funds. Tax supported funds are financed through a countywide taxes or special tax rates assessed on a geographic area encompassing the users of the respective services. These funds are also supported by inter-governmental aid, user fees, and other

resources. Non-tax supported, or enterprise funds, are operations that are financed and operated in a manner similar to private enterprise. The cost of providing these functions is primarily recovered through user charges.

B. Rationale for Inclusion

Wise energy practices are a top priority within Montgomery County. This commitment is reflected in Montgomery County's energy policy, its community involvement, and in the day-to-day operations of its departments. No where is this commitment more obvious that in Montgomery County's Department of Facilities and Services (DFS). This case study focuses specifically on the ways that DFS has incorporated energy efficiency practices into its procurement functions. This strategy can provide insights into ways that other municipal organizations can adopt a similar approach.

DFS also serves as a model within Montgomery County. The department continually strives to enhance and improve its operations regarding energy efficiency as well as improved operations regarding procurement practices. Therefore, the Consortium for Energy Efficiency (CEE) determined that conducting a case study of Montgomery County's Department of Facilities and Services would benefit municipal organizations throughout the United States.

DFS is responsible for the operation of 187 buildings ranging from government offices to police stations, recreational facilities, swim centers, maintenance shops and warehouses. This wide-ranging scope of responsibilities provides the DFS with an ongoing "laboratory" to test and improve resource conservation operations, including procurement functions.

II. ORGANIZATIONAL CHARACTERISTICS

Montgomery County has divided its operating functions, and hence its energy procurement decisions, into separate departments. This division has lead to a willingness for agencies within the county to cooperate, thus ensuring that the procurement decision is standardized. While not perfect in this concept, Montgomery County is far along the learning curve in terms of identifying, and standardizing, the procurement process for energy efficient equipment.

Montgomery County has developed a countywide resource conservation plan that describes energy use in buildings throughout the county. This plan provides local governments to achieve significant reductions and savings in energy use. Montgomery County's Resource Conservation Plan provides a blue print for other municipal organizations to incorporate effective energy efficient practices and procedures.

As Paul Tseng, Chief, Facilities Engineering, explains, Montgomery County has developed a set of interlocking programs that make ensure that energy efficiency decisions are considered at every phase of a project's life beginning with new design through maintenance and research.

Procurement issues are also critical at every step along the way in building design, renovation, retrofit, system replacement, maintenance, training, and research. In Montgomery County, the Department of Facilities Services (DFS) has left the energy procurement decisions to their internal experts, rather than delegating these decisions to a procurement official.

This strategy has lead to a standardization of procurement decisions regarding various types of energy efficient equipment ranging from fluorescent lamps to insulation. It has also resulted in the development of an interagency committee mandated to work together in making decisions that include energy usage.

This evolution has not been easy. Rather, there have been numerous organizational changes and department restructuring as the County looked for ways to develop the best energy team. Nor it is perfect. As this case study illustrates, some departments and divisions have done a better job of incorporating these strategies into their procurement functions than others incorporate.

A. Organizational Structure

The first step in implementing energy efficiency policies is to create the right organizational framework. Even Mr. Tseng recognizes that DFS' unique organizational structure allows the department to manage decisions regarding energy efficiency, including procurement, effectively.

Mr. Tseng explains that most municipal organizations do not have a well-designed organizational structure. “Energy happens when there is accountability, ---a clear, coordinated line of authority... In DFS, there is a clear line of communication and coordinated activities; accountability- key to energy efficiency.”

Mr. Tseng adds, “the benefit is that we are well positioned in our organization correctly. Many municipal/institutional organizations have facility management, construction, design, and maintenance in separate departments, with no clear line of authority. The plant operations, facilities planning, and don’t know what the design construction school facility planning, Department long-range planning.”

“This is the structure for MCPS—the maintenance and operations departments keep building running while the design and construction departments are a totally different group, interested only in meeting deadline,” Mr. Tseng explained.

1. *Roles and Responsibilities*

Nine full-time DFS staff members work in the Engineering and Energy Division of DFS. The following organizational chart diagrams the DFS’s current organizational structure.

The DFS had a major reorganization in the department in the 1980s, as part of its reinventing government initiative. The reorganization created a more autonomous division with clear lines of authority for building practices. This new organizational structure allowed DFS to become even more innovative.

As part of this reconfiguration, energy planners were hired in 1986. These energy planners were given the mandate to develop and enforce energy budgets. The County approached energy conservation in a pragmatic way—just as the County needs to inform its citizens about the ways it is spending tax dollars; the County also established energy budgets to monitor the ways that energy was being consumed at all levels within the County government. These energy budgets had to meet the same levels of accountability as other county expenditures.

Energy managers, such as Ronald Balon, Senior Energy Engineer, and Don Scheuerman, Roofing Engineer, are responsible for establishing the standard required in County buildings. By setting the standards, they actually are responsible for specifying the equipment that should be used to meet these standards. While it took some time for these changes to become effective, ultimately, energy conservation decisions became an “automatic” process that transcended traditional roles and responsibilities.

Recently, DFS has become even more autonomous. Mr. Tseng's responsibilities have increased to virtually every *other aspect* of the department, including automation, procurement, contracting as well as energy management.

Insert DFS Org Chart

The increased responsibility occurred after a County downsizing which removed a layer of management responsibility.

These changes created an even greater impact on energy efficiency. Ron Balon and Ed Walters are responsible for establishing and enforcing energy efficiency standards for new and existing buildings from initial design to building commissioning and operations.

Under the new organizational structure, energy planners make energy-related decisions, while contracting is left to procurement officials. After a project has been contracted, the individual project manager than handles the daily contract issues that may arise.

"Each and every single project is accountable regarding energy efficiency," according to Mr. Tseng. "I rely on Ron Balon to be the watchdog for every project on the energy side… Ron is involved in reviewing the submittals from contractors, if it deviates from the original RFP specifications ... Ed Walters is on the construction side and Ron is involved in the design phase. You have to make sure that the building is built properly. A commercial energy program can specify energy efficiency correctly, and then is not properly installed. You need to follow through. It is a continuous process of oversight and accountability."

2. *Procurement Functions*

Montgomery County, like many municipal organizations, purchases a multitude of goods and services ranging from the mundane, like coffeepots, to the highly specialized like roofs for fire stations. In nearly every instance, and most likely in those circumstances that affect the use of energy over time, energy efficiency is an important consideration that has been carefully included.

The county's procurement department is divided into various sections; each designed to support a specific agency or type of purchase. For example, one buyer specializes in the new construction purchasing contracts, while another specializes in the procurement of recycling materials, such as paper.

3. *Energy Efficiency and Renewable Energy Considerations in Purchasing Process*

Montgomery County's procurement office has in place a series of office automation contracts that were set up four years ago. The County issued "blanket contracts" for a variety of office purchases such as computers and copiers. At the time, the County was aware of the ENERGY STAR Program. In its contracts, it required that all purchases met

ENERGY STAR guidelines.

However, the procurement officials were not exactly certain what that compliance meant. Moreover, while the procurement officials included ENERGY STAR criteria into the procurement language, they were not aware of the various levels of energy efficiency performance. As one procurement official said, "We were aware of the issues that covered procurement. We did the basics, but we haven't modified or updated that language in our RFPs in four years."

This is an excellent example of the intercounty "disconnect" that sometimes exists between the energy-oriented departments, such as DFS, and the procurement office. However, other parts of the County's organization have linked the relationship between energy efficiency and cost savings. One example is the evolution of energy-oriented thinking within the maintenance departments.

As Mr. Tseng observed, "Maintenance people are involved in energy efficiency because that requires lower maintenance needs. The equipment is better built and more reliable."

DFS has also used procurement strategies as a way to reduce inventory size. During the past few years, DFS has eliminated the number of different energy efficient lamps used in County buildings from 130 to 18. In the beginning, the different sizes and types of lamp were "unmanageable" in terms of storage, supplies, and procurement.

Next, DFS is working on standardizing the filters used in the County's HVAC systems. Mr. Tseng explains that they want to have in place about a dozen filters to simplify maintenance and streamline product buying.

B. Energy Conservation Orientation

Montgomery County's Facility and Services Division (DFS) differs from other municipal organizations in its approach to energy conservation issues. During the past decade, Montgomery County (MC) has delegated energy management and purchase decisions to energy experts, rather than procurement officials. This change in direction was a response to a community action group that started in the early 70s. The increased concern in energy conservation began as a reaction to the oil crisis. This lead to the adoption of a County Council resolution that lead to a formalized process for adopting energy guidelines, methodologies, and practices to promote and employ wise energy practices.

In mid-eighties, the County government became actively involved in setting policy and

mandating efficient design in buildings. In 1985, Montgomery County officials founded the Engineering and Energy Division within the Division of Facilities and Services to develop and implement all energy conservation initiatives for County-owned buildings.

As Mr. Tseng explained, "All municipal organizations have policy statements regarding energy efficiency. However, we have implementation and enforcement. Architects and engineers are shocked to see that we actually enforce the standards (for energy efficiency), and that we know more about it than they do."

1. Citizen Involvement

In 1978, the County also established an Energy Conservation Advisory Committee to guide its energy efficiency initiatives when the County hired its first energy manager. This committee consists of 15 citizens appointed by the County Executive. Citizens are appointed based upon their interest and expertise in energy-related issues. The Committee helps to develop a comprehensive energy and air quality policy, establishes environmentally sound practices that incorporate transportation, land use development, and building energy use. Specifically, Committee members help develop policies promoting and implementing energy efficiency awareness throughout the County. The Committee's name changed to the Energy Conservation and Air Quality Advisory Committee in 1995.

2. Agency Involvement

The County also established the Interagency Committee for Energy and Utility Management (ICEUM) in 1980s concurrently with the Energy Conservation Advisory Committee (ECAC). ICEUM was formed as a response to the energy crisis. Besides energy controlling energy costs, the County Council also wanted to standardize the energy budgets used by different agencies.

Each County agency was using a different rate for calculating energy costs specifically electric costs. Some agencies were using eight cents/kWh while others were using five cents/kWh. These discrepancies created too much variability within each agency's projected energy usage.

Both the County Council and the Citizens Advisory Committee were also concerned about the rising energy costs in even new buildings. For example, the Library in Gaithersburg was using energy at a high rate. Although the building was new, it was a real "energy hog," according to Ron Balon. This building illustrated that there was no

current energy plan for new buildings. The designers did not know how or where to begin the process of incorporating energy efficiency into the building.

a. ICEUM

Establishing ICEUM was considered an efficient way to deal with these budgetary headaches. ICEUM ensured that all agencies would use the same rates in their budget forecasts, allowing for a more realistic approach to projecting energy costs. Now, ICEUM agencies coordinate their budget activities every year, and serve as an advisor to the County Council on energy-related decisions.

This concern regarding energy usage in buildings created the impetus for ICEUM to establish policies and procedures directing individual agency's energy budgets. In the beginning, ICEUM relied heavily on recognized building codes and standards, such as ASHRAE 90.1.

Now, DFS has an engineering group comprised of three energy engineers. A large part of their job is setting standards and providing detailed standards for buildings. These experts specify standards for energy efficiency and determine the types of systems that will be purchased and installed. In this way, the critical element of the procurement process, the specifying, has been left to the experts rather than to staff not fully trained in energy analysis. As Ron Balon observed, "If you control the specifications, then you control the economics."

This process of setting standards, enforcing them, and reviewing them becomes automatic over time. It also trains staff in other department's ways to look at energy conservation activities on a *proactive* rather than a *reactive* basis.

Although these divisions coordinate energy initiatives, each has a distinct and separate resource energy conservation plan. Each year, these annual plans are prepared by the agencies to identify energy costs and conservation goals. The following table summarizes each agency's energy costs according to the Resource Conservation Plan prepared for FY 98.

Table II-2

Agency	Energy Costs (in millions)
Department of Facilities & Services	$4.696
MCPS	$18.029
Montgomery College	$2.240

M-NCCP	$2.861
WSSC	$13.994
Dept of Fleet Svcs	$6.290
Department of Street Lighting	$1.750
Total	$49.860

Table II-3
How Utilities Budget by
Energy Source
(in Millions of Dollars)

Fuel Source	Total Spent
Electric	$40.958
Natural Gas	$4.159
Fuel Oil	$1.058
Water & Sewer	$2.954
Propane	$.147
Other	.584
Total	$49.860

The Department of Environmental Protection (DEP) serves as chair of ICEUM because it provides a "neutral corner." This department does not have a budgetary interest in the issues, but does provide energy expertise.

"DEP is on the policy side. It does not make energy conservation decisions, but it does provide staff support on issues such as electric utility restructuring, identifying conservation efficiency opportunities for the County, and providing a source of contact for utilities," explained Mary Beth Whitehead, energy planner for the DEP.

The development of ICEUM was also the catalyst for hiring energy managers within these departments. These energy managers participate in the ICEUM Committee meetings, and also serve as technical support for other County divisions that may not have the funds or needs for a full-time energy manager.

ICEUM member agencies pursue building energy efficiency in both new construction and building renovations. While dollars budgeted for utility expenditures continue to grow, these increases are lower than anticipated due to energy conservation improvements. Even though agencies are spending significantly more on automation equipment and increased square footage, they have been able to maintain a less than 1- percent increase in utility operating

budgets.

"ICEUM agencies copy each other's good work." Mr. Tseng added. The agencies reference energy design lighting strategies, and procurement guidelines, but ultimately each agency is autonomous in making purchasing decisions. ICEUM is good for sharing technical information and lessons learned."

Establishing ICEUM also lead to the development of Montgomery County's *Energy Design Guidelines,* discussed in the next section.

b. Interagency Procurement Policy Committee

ICEUM members, led by the Division of Facilities and Services of the Department of Public Works and Transportation (DFS/DPW&T) developed an "Energy Efficiency Procurement Policy" which closely tracks a similar federal effort. ICEUM met with the Interagency Procurement Coordinating Committee. This meeting led to an agreement to pursue the recommended purchasing practices to the extent practicable. ICEUM will maintain a list of items, provided and updated by the Federal Energy Management Program (FEMP), which are in the top 25% of energy efficiency for all similar programs or that are at least 10% more efficient than the minimum federal standard, including those that meet EPA's Energy Star standards.

ICEUM continued efforts begun in FY97 to promote the purchase of energy efficient equipment whenever possible including ENERGY STAR office products such as computers and copy machines. ICEUM met with a representative of the US EPA to discuss with the latest guidance on energy efficient purchasing and ways in which the County can implement this initiative.

However, this energy efficient procurement committee has not been very active. As one respondent said, the County, as a whole, was "not terribly active in pursuing all of the opportunities. We did try to take the FEMP challenge for the county to adopt, but procurement officers not want to write reports. We encourage procurement to purchase energy efficiency equipment- but that is up to specifying agency."

Other County representatives interviewed indicated a similar lack of interest or willingness within the procurement departments to take an active role in pursuing energy efficiency procurement initiatives. This may be that buyers for

these departments have little need to learn about energy efficiency, given the high level of expertise already available internally. As one respondent said, "Procurement officers don't need to know about energy efficiency."

3. *Profile of Previous Energy-related Purchases*

The DFS is responsible for implementing both capital improvements and retrofit/renovation projects. However, these activities and their related purchasing practices do not "operate in a vacuum," according to the DFS staff. For example, the same type of lighting equipment used in new buildings is also specified for purchase in retrofit situations on an on-going basis.

DFS's goals for energy conservation includes EPA Green Lights program to make all cost-effective lighting upgrades in 90% of its facilities by FY98. In addition, DFS plans to conduct systematic ENERGY STAR upgrades to existing buildings including thermal envelope repairs, direct digital control of HVAC functions, and space temperature settings.

a. New Building Design

DFS developed a comprehensive, integrated design guidelines for new buildings constructed by the county/ The Energy Design Guidelines are enforced through systematic design reviews at critical design phases. Analysis to date indicates a 40% reduction in new building energy use with no net increase in construction costs.

b. Capital Improvement Purchases

The strategy used for capital improvements is similar to that used for operating purchases, simply because the county takes a 'holistic" approach to energy purchases. Rather than compartmentalizing it by agencies or groups or even functions, the County has set up a "top-down" approach to energy equipment purchases.

1. Energy Usage and Savings

DFS does an outstanding job in both tracking energy consumption as well as identifying energy savings opportunities. DFS's energy conservation goals for FY 1999 were as follows:

- Achieve a 40 percent reduction in total energy consumption for all new buildings and major renovations through comprehensive *Energy Design Guidelines;*
- Meet EPA Green Lights Program goal to make all cost-effective lighting upgrades in 90 percent of facilities by FY 98;
- Install energy management control of HVAC operation in all existing buildings over 10,000 square feet that are not in 24 operation;
- Perform systematic Energy Star upgrades to major existing buildings, to include thermal envelope repairs, and direct digital control (DDC) of HVAC functions and space temperature settings.

a. Utility Rebates

DFS participates in utility incentive programs for the installation of energy-efficient equipment. The County has made full use of PEPCO incentives for lighting retrofits, chiller replacements, and new building efficiency improvements. Washington Gas Light also pays incentives for high-efficiency boilers and gas equipment. DFS's participation in rebates generated the following:

- Operating revenues—DFS received $700,000 in grants and $1,000,000 in utility rebates

- DFS's energy program has produced more than $900,000 in cost-avoidance in the Utility Budget.

- DFS earned $1 million in utility rebates through FY 97

b. Cost Savings

Lighting consumes about 40% of the energy used in DFS facilities. DFS has instituted a major program of improving fluorescent fixtures throughout County facilities. The major thrust has been to retrofit all fixtures with electronic, high quality T8 lamps while improving lighting quality. Other measures taken include correcting lighting levels, replacing incandescent fixtures with compact fluorescent fixtures, and replacing all EXIT signs with LED types. The total cost for this activity has been $1.75 million over six years. Lighting upgrades will be completed in FY 1999.

DFS predicts that $580,000 is cost avoidance from energy efficiency measures in FY 98. The lighting retrofit program expected to reduce energy use by 60 to 80%; PEPCo rebates returned $900,000 to the county—savings in energy costs provide a program

payback within approximately 1.5 years.

In FY 98, MCPS improved energy efficiency by 35%. MCPS anticipates a 1% decrease in costs, despite a 4% increase in electricity rates

c. *Equipment Payback*

DFS also calculates savings of energy efficiency purchases, to determine its total cost. By changing lighting fixtures, DFS has recouped major savings with an average payback of 1.5 years. Through participation in the ENERGY STAR UPGRADE PROGRAM and ENERGY STAR SHOWCASE BUILDING PROGRAM, DFS achieved a 40% reduction in energy consumption.

III. DETAILED ANALYSIS OF ENERGY PRODUCT PURCHASING PROCESSES/PRACTICES

When the DFS was reorganizing, it took that opportunity to analyze the organization's desired result. Its major goal was to reduce energy costs. This goal was achieved through a careful evaluation of each step within the department that involved energy. This also included the procurement function, specifically as it relates to equipment specification and selection.

This is not a new concept in organizations. In fact, this theory of Total Quality Management (TQM) has been a widely accepted method for streamlining organizations and creating more accountable management. But it is a bit surprising to learn the degree to which this theory has succeeded.

A. Equipment/ Energy Efficiency Selection Process

Using TQM, Montgomery County staff analyzed the desired end-result and then worked backwards, incorporating every component and every process into their system. It used to take a staff of nine people to review any new building designs. This process was streamlined by having a parallel review process, resulting in comprehensive reviews that can be completed with only two or three iterations.

DFS's strategy is to describe all of the energy efficiency specifications before the project has even begun. This definition, in turn, drives the entire process. As Ron Balon pointed out, "Everything (in a building) affects the energy. We used to neglect the envelope. Now, the guidelines include that. We have established performance criteria."

Incorporating the *Energy Design Guidelines* into a project takes about six months. After the guidelines have been included, then the project, whether it involves a building or retrofit, has

to receive levels of approval indicated in a sign off sheet.

But this simplification was not easy. In the beginning, Ron Balon said there "was a big disconnect" in understanding and responsibilities among the construction, design, and maintenance staff.

The process is similar for construction projects. The County tries to manage the construction process, to make sure that installed equipment meet the County's *Energy Design Guidelines.*

1. *Energy Design Guidelines*

The Energy Design Guidelines are a mandatory set of building designs standards for new construction and renovation projects. Its goal is to implement energy efficient equipment design in new and renovated buildings. The Guidelines are a comprehensive set of technical and procedural standards that exceed traditional code requirements. The Guidelines came about after it was discovered that retrofitted buildings were more energy efficient that new buildings. The Energy Advisory Committee lobbied for an update in existing building code legislation. In 1986, DFS developed the Energy Design Guidelines.

The Guidelines provide specific information on standard equipment, design methods, and criteria for new construction and renovation projects. It also addresses solutions for correcting energy-related problems in local buildings and recommendations on high efficiency performance and standards for lighting, indoor air quality, and architectural creativity. The Guidelines direct general requirements for all buildings in the following categories: HVAC design, lighting design, energy management systems, building envelope, and ventilation shafts. A detailed energy analysis is required for any County-owned building of 10,000 square feet or larger. Each building must comply with the energy budget and life-cycle cost specifications. All buildings must include high efficiency HVAC equipment, basic daylighting design, double pane low-e glazed windows with non-metal frames, and T8-lamp/electronic ballasts.

The true measure of the Guidelines' effectiveness is not in its technical expertise, but rather in its ability to save money. Since the implementation of the *Energy Design Guidelines*, the County has realized a 40 percent reduction in new building energy use, with no net increase in construction costs. In an era of rising labor and material costs, this is truly remarkable.

a. Creating a Template

The *Energy Design Guidelines* were funded, in part, with a grant from The Urban Consortium's Energy Efficiency Task Force, a subcommittee of Public Technologies Inc. This funding was to ensure that a technological transfer would take place within local government organizations.

It took DFS two years to complete the CD-ROM. Not surprising, DFS has received national recognition for the development of its Energy Design Guidelines.

b. True Technology Transfer

With this funding, DFS was able to transfer the *Energy Design Guidelines* into a CD-ROM format, thus begin able to capture and display volumes of information in a relatively straight-forward manner. The Guidelines now consist of a comprehensive database that allows energy planners to complete forms specifying a variety of equipment with relative ease. The designer can select from a variety of premium efficiency manners, using a menu-driven format. The database contains descriptions of energy efficient equipment, manufacturers lists, specifications and designs from technical sheets, and related information.

DFS staff also received a grant to share this approach with other counties throughout Maryland. The Maryland Energy Association relied on DFS staff to conduct regional workshops and educate state agencies and county engineers about the ways they can incorporate the Energy Design Guidelines into their own organizations. These sessions now occur twice annually at state functions.
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2. Procurement's Role in DFS

a. Simpler Process

The net effect for procurement is that by having DFS's energy experts specify equipment, their job becomes much easier. Procurement officials supporting the DFS, they need to focus only on the contractual elements of the procurement process, rather than the technical or specifications. This also standardizes the process, because it means that vendors or manufacturers promoting energy efficient construction practices will have a formalized and organized way to bid and respond on these projects.

As Mr. Tseng from DFS explained, "Specifications for maintenance folks becomes overwhelming. Our job is to screen the market, review the specifications; and tell

the people in procurement/maintenance what we want; it gives them a perspective."

Once the final package has been put together, then DFS sends it to the procurement office. This bid package is then subcontracted as required to meet price guidelines. Essentially, procurement takes over from there. However, there is no need for procurement officials to consider energy efficiency equipment options, since the energy efficient components have already been specified and agreed to internally, in accordance with County policy.

b. Standardizes Vendor Requirements

DFS also considers codes for energy maintenance issues, and incorporates life cycle costing into its analysis. The advantage of this standardized approach means that the County buildings have identical lamping fixtures installed, leading to more competitive pricing, volume discounts, and significant energy savings.

The key to this process has been the idea to control costs at the front end, before the bid or proposal has even been developed. As Ron Balon observed, "Energy efficiency requires more thinking, not more money." The County believes that if DFS controls building design, retrofit, and maintenance, then it will be able to control all of the factors driving costs.

The *Energy Design Guidelines* result in significantly reducing the types and amounts of equipment required to meet DFS's needs. Instead of buying multiple lamps, the County can purchase fewer lamps and receive volume discounts. In addition, this strategy leads to reductions in inventory, excess inventory, and storage issues. By buying only a few types of lamps, then this makes it easier for maintenance as well as procurement to standardize the entire lighting purchase process.

c. *Saves Money*

Montgomery County is also very aggressive in finding funding to meet its energy savings. For example, the County retrofitted all of its buildings to comply with EPA's Green Lights program.

This strategy also allows the County to purchase only a few types of lamps and ballasts. They can buy large quantities of compact fluorescent laps at $1.55 per

lamp rather than the retail price of more than $3.00. In essence, the County is making procurement decisions without involving procurement. By the time procurement gets the contract, the department has a very specialized set of criteria to respond to, resulting in savings of up to 85% of list price.

3. DFS's Influence on Procurement Processes

Developing the County's *Energy Design Guidelines* benefits DFS as well as procurement. The guidelines ensure that energy efficiency standards are incorporated, while simplifying the entire procurement screening process. Now, a designer can specify the most energy efficient lighting products for a specific application knowing that this specification will actually be executed.

For the procurement officials, the guidelines have already identified the most appropriate products to meet a specific needs, as well as vendors and manufacturers supplying this product. Instead of having to become familiar with highly specialized technologies, such as lighting or HVAC, procurement can focus its resources on executing appropriate contracts.

This combination of activities ensures that the County will specify, order, and install the most appropriate energy efficient applications, while maintaining fair and open competition.

Montgomery County has tried to share this approach with other municipal organizations. In a series of lectures sponsored by the Maryland Energy Association, the County put together a Summary Sheet outlining the process for organizations to follow in replicating

4. DFS's Influence on Other County Organizations

DFS is not the only County organization with a commitment to controlling energy costs. For example, the National Parks Commission recently finished installing a new utility/energy accounting software system (Faser 2000). This software makes its easier for the department to monitor energy usage through utility bill analysis.

The Commission also has a building retrofit program that includes retrofitting buildings with energy efficient lighting, doors, windows, and insulation, along with HVAC upgrades . M-NCPCC also has a strong commitment to recycling including establishing contracts for recycling paper, cans, plastic, gas, and bottles. Its program includes using

recycled materials such as fence posts, park benches, carpeting, and trash cans.

Mike Whitcomb, energy manager for Montgomery College, indicated that the College has taken aggressive steps to incorporate energy efficient equipment into its buildings. These activities include upgrading building envelope design, HVAC, lighting, and energy control systems. The College has also installed technologies including: high efficiency ammonia chillers, thermal storage, variable speed fan cooling towers, and pulse combustion boilers as way to reduce energy consumption.

However, it has not always been so. It took several years before the maintenance and procurement officials understood the benefits of installing energy efficient equipment. At first, maintenance was resistant. But that barrier has slowly been broken down as the maintenance department observed that energy efficient equipment actually reduced maintenance requirements.

Now, Mr. Whitcomb adds, that the maintenance department is often the first one to recognize a need for energy efficient installations, and notifies the energy management department accordingly.

The procurement department has made similar attitude shifts. As Mr. Whitcomb explained, in the beginning, he had to spend a lot of time explaining the rationale for purchasing specific types of lighting. Now that has changed. As he explains, "The maintenance and facilities department are responsible for purchasing lighting and ballasts. Over the years, I would tell them what they need to requisition, and what the specs are. Now, we are buying high efficiency T-8's that are environmentally friendly to save on the recycling bill. We are buying low watt, environmentally friendly lights, because that is what the facilities guys thought was the best."

However, this conversion from reluctant to active energy champions took some time and organizational assistance. As Mr. Tseng pointed out earlier, the biggest changes took place when the energy management department was given authority to make maintenance decisions. Unless energy managers actually have some decision-making authority, it is difficult.

A key to this success was to convince the maintenance staff of the benefits, as well as solicit feedback from them. The Energy Management Department also coordinates these activities with the procurement group and try to buy energy efficient equipment.

Mr. Whitcomb said that while "some things slip through that are not energy efficient, that is only about 2 percent of all purchases." The real key to this level of success,

according to Mr. Whitcomb is to "that the procurement people need to be educated and tuned in to ask for energy efficient equipment."

But not every department can report the successes experienced by the College and DFS. Some officials, who spoke on the condition of anonymity felt that the gains experienced in these agencies had not spread elsewhere in the County. Despite some department attempts to purchase energy efficient equipment, too often these officials said that procurement is more of an obstacle than an aid in procuring new items, regardless of their energy efficiency impacts.

One big obstacle was procurement's risk-adverse attitude, especially as it relates to new technologies. Procurement officials seem unwilling or unable to understand the difference between contracts for pilot or trials of new equipment from the request for a widespread implementation of a new technology.

An official in the Transportation Department described ongoing battles that take place within his department and procurement office over the need to buy just a few products for test runs. The transportation department routinely tests equipment on various sections of its roads, ranging from pavement to traffic lighting. An essential component is to test various products and grades of materials from various vendors. Despite the fact that the same procurement officials have worked with the Department for years, there is still heavy barriers and obstacles to testing products. He summed up his frustration with this statement, "It seems that procurement's job is not to let us procure anything."

Stories of obstinance are reported from other quarters too. An official within the Environmental Department explained that procurement officials often don't understand or appreciate the technical skills required by their vendors. Once,. the department was forced to send out bids to firms that were obviously not qualified to perform the tasks because the most appropriate firms were not on the county's bidder lists. Rather than updating the bidders list or creating a new one, the procurement department mandated that the bid be sent out knowingly to unqualified firms.

Also, sometimes their strict adherence to the "low bid" concept actually gets in the way of the proper enforcement of other codes and regulations. For example the county was forced to select a low bid for a specialized laboratory services even thought that firm's location made it impossible to meet other legal requirements.

Sometimes procurement officials do not seem to understand their role in the process. Rather than seeing themselves as facilitators, they want to be the gatekeepers. but they

don't have the experience or understanding of the specific issues to be effective in that role. Procurement generates a mixed reaction within the county agencies as well. Responses are largely based upon personal experience, and the willingness of the agency to work with and educate the procurement officer.

Furthermore, low-bid constraints often rule out the most common sense or sensible options, and the procurement folks need to learn the difference between first cost and low-cost.

5. DFS's awards and honors

DFS has received three national awards for its Energy Design Guidelines from Public Technology Inc., National Association of Counties, and from the Urban Consortium. DFS has received numerous honors and awards for its outstanding commitment to energy conservation and innovation. It was named one of the "Ten Best Energy programs in the U.S. by the Results Center of the Center for Renewable Energy and Sustainable Technology (CREST). According to the Results Center, "Montgomery County's Resource Conservation Program is one of North America's leading energy service programs and stands as a powerful model for the future."

B. Financing Strategies

To date, Montgomery County has self-financed its energy efficiency activities through normal capital and operating budgets. The County has an annual budget of approximately $40 million. In addition, energy efficiency has been a subset of expenditures paid through other budgets, such as Building Renovations, Planned Life-Cycle Asset Replacement (PLAR) Roofing Improvement, and HVC Electrical Replacement Program, all part of the County's Capital Improvement Plan.

DFS also enforces its Building Design Standards as a way to control energy costs, and lower expenditures. DFS continues to refine and apply its comprehensive *Energy Design Guidelines* to all construction projects. At any time, DFS tracks 15 to 20 capital projects totaling between $100 to $140 million dollars. This close tracking has led to cost-avoidance for the County utility budget of more than $38,000 annually.

By installing Energy Management and Control Systems in 45 County-owned buildings, leading to energy management controls for more than 2 million square feet has led to savings of $380,000 annually.

Implementation of the *Energy Design Guidelines* falls under Building Renovations, which has

an annual budget of $10 million. PLAR has designated funding of $1 million per year for equipment that has reached its known life. DFS energy staff assists in equipment selection to ensure that energy efficient models are specified. Under Montgomery County's roof repair program, with an annual budget of $1 million, all roof installation is being upgraded during building re-roofing. The HVAC Electrical Equipment Replacement Program replaces existing HVAC equipment with new, premium efficient equipment, with an .

Montgomery County received outside funding for its efficiency programs. Since 1987, the County has been awarded a number of federal, state, and utility grants for specific projects such as developing the Energy Design Guidelines, new facilities, and energy efficiency design center, and specific, energy-related studies.

Montgomery County has also received grants from The Urban Consortium Energy Task Forced. This organization comprised of local government representatives, has awarded Montgomery County more than $464,000 in grants to support the Energy Design Guidelines, new construction, CFC Management and lighting, and energy management control system retrofits. It has also received grants from the State of Maryland Energy Administration, Oil Overcharge Funds, and Potomac Edison, for a total of $619,000 in outside funding.

Additional CIP funding has been leveraged with state, federal. and utility grants and rebates to create a positive cash flow for the County for a number of years.

IV. Evaluation of Energy Star Purchasing Toolkit

As part of this project, several procurement officials were also interviewed regarding their assessment of the Energy Star Purchasing Toolkit. These officials were acquainted with the procurement processes used within Montgomery County. A summary of their roles and responsibilities within Montgomery County is listed in the following table.

Respondent	Title	Responsibilities
Beatrice Tigner	Director of Procurement, Montgomery County	Oversees all aspects of general procurement office
Ed Stockdale	Procurement Officer	Buys materials related to capital improvements
Mike Thomas	Procurement Officer	Buys paper and paper-related products. In charge of recycling procurement program.
Carol Darr	Director of Procurement, Montgomery College	Directs procurement activities for Montgomery College
John Rafferty	Procurement Officer	In charge of purchasing computers, and related peripherals
Mary Whitehead	Energy Planner	Assists MC in developing appropriate energy conservation and energy efficiency policy

A. Overall Reaction

Several County employees in various positions relating to energy and/or procurement provided an assessment of the new EPA Energy Star Purchasing Tool Kit. The comments and overall assessment of the Tool Kit were broken down into two categories: responses from procurement officers and administrative personnel; and evaluations from energy-oriented personnel responsible for implementing energy decisions.

While the procurement and administrative personnel viewed the Tool Kit as resource filled with "excellent information," they were not too sure how often they would refer it in the normal course of their duties. As one procurement officer explains, new contracts are redone on cyclical basis, with perhaps as much as three or four years elapsing between contracts.

However, these procurement officers appeared eager and willing to share the information within their department. One County buyer said that he would share the Tool Kit with his

director, and encourage the rest of the agency to be made aware of this new resource. However, upon following up with the Director later, there still appeared to be some level of confusion regarding the overall purpose and intent of the Tool Kit for procurement officials at municipal levels.

However, the response from one energy manager summed it up best. “The tool kit has excellent information, but, my immediate response is that I doubt the procurement officials would use it... My reaction is that it is too complicated for the procurement folks.”

Another respondent added, “Procurement people won’t have the time or interest to really understand the tool kit’s information or how it is going to be used.”

While this tool kit may be viewed as a technical resource, since the procurement departments are not the specifying agency for equipment, it may have little relevance to them. Another County official added, “In reality, procurement staff are generalists. They are processors, not experts in technology, energy, telecommunications, or IT. Procurement staff are meant to be generalists. Their role is to enforce the integrity of the procurement process, to make sure it was a fair and open procurement process.”

The tool kit also contained “a lot of information for them to digest,” as one respondent said. It was far more comprehensive than anything else these procurement officers had seen, providing information far beyond their usual areas of interest. For example, a procurement buyer specializing in computers indicated that the tool kit would provide “information useful for writing the overall specifications.”

Montgomery County procurement officials also seemed willing to try to incorporate the information contained within this tool kit into their revised specifications. For example, John Rafferty indicated that he would use this tool kit in the upcoming modifications for a computer bid he was putting together. Montgomery County will be ordering computers monthly, and he feels the tool kit’s section on computers will be especially helpful.

Procurement officials also like the three-ring binder format, since it makes the tool kit more accessible to a variety of buyers. They also believed that updates provided as they become available posted on the web site would be the most useful strategy.

Several County respondents indicated a degree of skepticism regarding the viability of using this tool kit as it is currently written. These officials provide some suggestions for improving the tool kit’s discussed next.

B. **Suggestions for Improvement**

Although the tool kit was viewed as a good resource, several officials who deal closely with procurement officials came up with several suggestions to make it even more effective in encouraging the purchase of energy efficient equipment. These suggestions include:

- **Provide more detailed specifications**

Several County officials who deal with energy decisions, rather than procurement matters, believed that the tool kit needed to provide more technical and precise information. As Mr. Tseng explained, "The tool kit needs be even more detailed. It needs more specifics, such as exact technical specifications that can be inserted directly into the document." Mr. Tseng, and others, were careful to note that the current "model procurement language" was not sufficient to meet the County's own purchasing and energy compliance.

Rather, the specifications would have to be constructed in a way to provide the technical information required energy managers to evaluate and compare operating performance of various equipment configurations. In short, these specifications would have to be as comprehensive as the *Energy Design Guidelines* developed for Montgomery County.

Another recommendation was to have the EPA ask manufacturers to produce very precise specifications regarding their products. Then, these specifications can be inserted directly into the bid document.

This official added that the tool kit's model procurement language does not address the actual procurement process.

- **Develop Segment-Specific Tool Kits**

Another suggestion for improving the Tool Kit included targeting the appropriate audience. As one County official said, "EPA needs to identify whom the Tool Kit is written for, who is the target audience. In its current format, it seems targeted primarily to energy professionals."

This County official observed, "The tool kit assumes a fair degree of training in energy efficiency. It is not designed for novices. It is designed for an energy manager who knows about this stuff."

Rather, County officials recommended subdividing the Tool Kit into market specific groupings that would contain the descriptions of energy efficient equipment most applicable to those organizations. For example, there should be one Tool Kit for housing authorities that

includes the appliance and residential heating and cooling sections. Another Tool Kit should be developed just for state and local energy engineers that includes building and construction materials. A third Tool Kit can focus on the specific areas of interest to procurement officials, such as commodity purchases like copiers, scanners, computers, and facsimile machines.

As this Tool Kit section provides the Tool Kit has 5 sections on residential equipment appropriate for Multifamily Housing Authorities; another tool kit should be developed specifically for Housing Authority officials.

- **Re-evaluate Product Categories**

The County officials also did not believe that all of the various product categories were appropriate for municipal procurement officials. For example, procurement buyers are rarely involved in issuing bids for low horse-power motors. Due their small price tags, these motors are generally purchased by individual departments and rarely involving a formal bid process. So this section did not appear to be particularly relevant.

The County officials also indicated that there was a lack of emphasis on the commercial applications. One engineer said, "The Tool Kit has too much residential stuff and not enough commercial stuff included. There is not enough information for lighting, boilers, and non-residential HVAC systems. The commercial section is a very shallow section."

To improve these applications, the Tool Kit should contain sections on chillers, boilers, roofing materials, insulation, envelope measures, and other commercial-oriented applications.

- **Provide Tool Kit in Multiple Formats**

The County officials also recommended that the Purchasing Tool Kit be made available in a variety of formats to provide the maximum benefit. The three-ringed binders were viewed as a good starting point, because it helped to familiarize the procurement officers with the overall scope of the information available. It also served as an excellent starting point for gathering information.

The County respondents also believed that the Tool Kit should be put on the web site and updated, as new information becomes available. The web site would also be an excellent way to provide links to manufacturers and vendors currently providing Energy Star-compliant equipment.

One official believed that providing the Tool Kit in a CD-ROM format with a searchable database would be the most helpful to energy engineers within the County. This format stores

a variety of detailed information, including technical brochures. Moreover, information can be easily searched and retrieved. This official indicated that a CD ROM version would be the most effective way to provide information to the energy specifiers within particular departments. However, this format is not necessary for procurement officials.

V. CONCLUSIONS AND RECOMMENDATIONS

Montgomery County's Department of Facilities and Services (DFS) illustrates both the capabilities and opportunities that exist when municipal governments have the mission, the organizational structure, and the daring to make energy efficiency an organizational priority. This case study also shows that even the best organizations still have difficulties implementing good ideas and practices across divisional or agency boundaries.

In short, Montgomery County illustrates strategies that municipal governments can use governments to reduce energy costs and conserve resources. In summary, Montgomery County's case study illustrates the following essential findings:

- **Energy Decisions Are Best Left to Energy Experts**

DFS has instituted a cost-effective procurement strategy that provides a seamless integration between identifying equipment needs and procuring equipment to meet those standards. Energy efficiency is considered at every step in the process. This type of approach only works when energy officials are the ones making the decisions.

In contrast, this process is not nearly as straightforward in other County departments, such as the Department of Public Works and Transportation. In that department, although energy experts make decisions, too often they are ignored or overlooked by procurement officials.

For municipal organizations to be truly successful, they need to delegate the energy efficient purchase decisions to their internal experts. Alternatively, they need to hire at least one energy engineer who can provide this technical information as a resource for the municipal organization as a whole. The cost of this engineer's salary will be more than made up for in the reduced operating costs and maintenance needs.

- **Energy Experts Need Organizational Authority for Decisions**

Another reason that DFS has been so successful in implementing and enforcing *its Energy Design Guidelines* is because it has the *authority* to make decisions. Standards without enforcement are meaningless, even in organizations with the best intentions to save money. DFS also illustrates the vigilance that facilities and maintenance departments need to have throughout a project's life. As these engineers continually pointed out, efficiency needs to be monitored constantly.

- **Spread the Word**

Montgomery County is also doing an excellent job at encouraging communication between and among its agencies. While the impetus for starting ICEUM began with concerned citizens, it has been the professional city employees that have made this committee actually productive. Moreover, ICEUM provides a forum for sharing and exchanging good ideas regarding energy efficiency policies and procedures. Although it is not perfect, it does go a long way in fostering inter-agency cooperation rather than rivalry.

- **Recruit Procurement Officers**

The ICEUM members recognized the importance of involving procurement officers in energy efficiency decisions. This was a major reason for establishing the Inter-Agency Committee on Procurement. However, the procurement officials within Montgomery County have not embraced this inter-agency coordination as easily as ICEUM.

It took a while for ICEUM members to become comfortable with other agencies, and to develop a framework for communication and discussion. Therefore, it would be ideal if the ICEUM members could "adopt" the inter-agency procurement committee as a mentoring project. They should use this committee as a way to further explain the benefits of acquiring energy efficient equipment in terms that are understandable and relevant to procurement officials. EPA's ENERGY STAR Purchasing Tool Kit may be an excellent resource in this mentoring process.

Recommendations for the Energy Star Tool Kit

This case study of Montgomery County's DFS also lead to several conclusions and recommendations regarding improving the effectiveness of Energy Star's Purchasing Tool Kit. These suggestions are summarized from a variety of respondents working in all levels of the County government.

- **Use Energy Design Guidelines as way to develop more technical specifications for energy managers, while simplifying the overall Tool Kit for procurement officials.**

As this case study illustrated, although the Tool Kit is an excellent resource for municipal governments, the challenge is finding the right audience. Within Montgomery County, both inside and outside of the DFS, there was a general perception among the respondents that this tool kit was far more complicated and difficult for procurement officers to use on a regular basis. While the information was useful, it was not comprehensive enough to be of value to energy equipment specifiers, and it was too advanced for novice energy buyers, such as those in the procurement department. It seemed that it was a book searching for the right reader to

take advantage of its full value.

This sentiment reflects two findings: 1) Procurement officials may not be the "right" target audience for this type of Tool Kit; and 2) The right type of audience needs even more detailed information to really gain from it.

One viable solution may be to develop separate components, or modules, of EPA's Tool Kit, directed at specific functions within municipal organizations. This may include developing Tool Kit's with more detailed product information and specifications so as to be useful to those responsible for energy efficient equipment. It seems that the current approach of "one size fits all" will not be a practical solution in state and local municipal governments. Just as departments are divided up by function, so to are procurement officials. Hence, it seems logical that this type of Tool Kit should also be divided into sections most suited to specific needs. By dividing up the Tool Kit into segment-specific characteristics, it also provides an opportunity to provide even more detailed product specifications.

This strategy could build upon the hard work and effort that Montgomery County has already put into developing its *Energy Design Guidelines*. Using a similar type of format, the *Energy Design Guidelines* could be expanded to include detailed product information and specifications about a variety of other energy-related equipment ranging from residential appliances used in multifamily housing units to energy-efficient traffic lights.

Montgomery County's DFS has already demonstrated the expertise required to develop and deploy a complicated set of guidelines. By working closely with both the CEE project team and EPA for guidance, DFS could expand its guidelines to include all types of energy efficient equipment purchased within municipal governments. The end result would be a comprehensive software tool that can be adapted to meet the needs of virtually any municipal organization, regardless of its configuration or size. It would also mean that the energy efficiency decision-making process could be standardized and streamlined, resulting in increased savings and increased tracking capabilities.

- **Bring procurement officials to the table. Educate them on the benefits of sampling procurement processes, better equipment reliability, and exceeding minimum codes (in other words ensuring compliance) rather than focusing exclusively on energy savings.**

As this case study illustrates, procurement officials are not the ultimate equipment purchasers. Nor should they be. Rather, they should be viewed as a resource along the way. However, they do not want or have the authority to actually influence the purchase decisions.

Moreover, procurement officer's chief concerns are not energy efficiency, but rather other issues such as first cost, product availability, and delivery times. Therefore, the Tool Kit needs to be revised to incorporate the energy efficiency benefits in terms that appeal to procurement officials. While energy efficiency is an important message, it may not be relevant to procurement officers who are busy trying to meet contract deadlines and expedited contracts.

It is sad but true. Not everyone knows or even cares about the benefits of energy efficient purchasing. Therefore, the message has to be tailored to the audience. In this case, the tool kit needs to contain a section up-front explaining why energy efficient equipment is important and relevant to procurement officials, not just from an environmental standpoint, but also as an effective way to save time and money.

- **Explore using ICEUM as a bulk purchasing organization.**

Another strategy to consider is approaching ICEUM as a bulk purchasing organization. This activity would build upon previous work conducted by CEE. Since ICEUM already represents the largest energy users in Montgomery County, and since these organizations are already working together, pursuing bulk purchasing contracts may be appealing. Moreover, Montgomery County prides itself on being innovative, and by developing this type of relationship it certainly would be establishing a new paradigm within County organizations.

APPENDICES

County Government Utility Expenditures

Buildings	$5,113.500
Street/Traffic Lights	$5,409,250
DPW&T Special Funds	$468,300
Recreation Fund	$1,043,600
Health & Human Services	$132,000
Urban Districts	$10,900
Parking Lot Districts	$1,154,060
Liquor Control	$432,230
Solid Waste	$171,000
Total County	$13,934,840

Energy Use by Utility Type

Electricity	87.6 Percent
Natural Gas	6 percent
Water and Sewer	5.9 percent
Fuel oil	.5 percent

Private Employers	Major Federal Employers
Marriott International	Public Health Services
Adventist Health Care	Food & Drug Administration
Giant Foods	NOAA
Lockheed Martin	National Institute of Standards & Technology
Hughes Network Services	
Hechts	