

GRANT FUNDING AVAILABLE FOR POLLUTION PREVENTION AND ENERGY AUDITS

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Recently, the state Department of Environmental Protection (DEP) reactivated the [Pollution Prevention and Energy Efficiency \(P2E2\) Site Assessment Grant Program](#) to help companies and organizations perform energy and pollution prevention audits for any industry with a state air, water or wastewater permit or a commercial processing facility with the same permits employing less than 100 employees. The current grant round is available until June 30, 2005. All P2E2 grant applications must be approved by this date in order to obtain grant funding.

The Program provides a tool for managers, owners and operators of these businesses to reduce operating costs at their respective facilities. Operating costs are reduced by decreasing chemical use, reducing utility bills and by optimizing operations of the facility including the water and sludge waste streams. DEP is administering this program under the Office of Energy and Technology Development.

BRINJAC Engineering has been performing energy audits for more than 40 years and most recently, has submitted, and approved more than eight P2/E2 Site Assessments, including their grant reimbursements, that meet the guidelines of the existing grant program administered by DEP. The clientele includes seven wastewater treatment plants and one commercial food processing industry. The average savings for the P2E2 opportunities recommended, which have been implemented by clients, is more than \$3,500 annually with a range of \$500 to \$12,000 annually. Program costs are typically paid off in less than 1.5 years based on this average amount of savings.

Here's some background on the benefits of a P2E2 site assessment to businesses and organizations and how you may qualify for funding for the assessment from DEP.

BACKGROUND

Small businesses continue to experience the ever increasing competition of the market place while having to maintain quality, production and well trained staff. One component of this competition is an ever-increasing demand on bottom line product costs due to the increasing costs of raw materials, labor, utilities and commodities such as electricity, fuel, clean water and adequate wastewater treatment. This demand, heightened by the respective tightening of rules, regulations, and compliance issues, continues to cause owners of small businesses with the need to control costs.

Unfortunately, one method of short-term cost control is to minimize labor and reduce maintenance budgets for facilities. This method often sacrifices the long-term quality and performance of a business or industry for immediate needs. This may have disastrous consequences, as the competitive nature of the market place can quickly displace an industry which no longer produces the a quality product or the same quality product as efficiently. In addition, business and industry owners may not be able to pay

for unforeseen emergencies that may have been falsely labeled as a long-term improvement. This is particularly true when compliance is an issue, as fines for violations of federal and state code during equipment failures or labor shortages may be levied by the appropriate regulatory agency.

Another method of controlling costs is to examine an existing system, evaluating and maximizing the use potential of the existing system while outlining a long-term plan for upgrade and or replacement. As a good portion of businesses and industries focus on less than two to three year paybacks for any capital expenditure and rarely rely on borrowing for larger, much needed improvements, this article suggests a possible solution to support examination of both of these issues.

One method of assisting small business owners with this issue: These systems are assessed for energy usage, pollution generation (or reduction), and optimum use through the administration of a local site assessment. Incorporated in this assessment are recommendations for the most cost-effective use of a system along with a projected outlook for repair, replacement and or upgrade based on a variety of factors.

The facility owner/manager has experienced a sometimes-alarming trend that is almost guaranteed to continue: increasing energy and chemical costs and raw material costs along with increasing energy use at the facility. As equipment and facility ages, operation and maintenance expenses increase. The increase on operation expenses often has a negative impact on production, end user costs and management decisions. Unfortunately, in some cases, the production of the end product may suffer by reduced staff operation time or by not performing the much-needed facility improvement to the point that it is difficult to maintain high quality. Maintenance budgets are cut at the expense of both equipment performance and product quality and sometimes employee safety.

Energy costs for industries typically constitute approximately 10 to 25 percent or more of the total annual operating costs. Next to labor, energy costs currently rank as the number one issue for industries and business primarily because these are costs which can be controlled. These costs continue to escalate, largely due to increased fuel and energy costs, equipment wear, supply and delivery cost, and taxes. For example, a food processing facility will consume approximately 70% of total energy costs for process equipment and or HVAC. Depending on the technology used at an industry, process equipment, then HVAC and then lighting consume, almost in equal parts, the largest amount of energy. As energy costs are tied directly to the product cost and quality, managers and owners must continually look for ways to maintain or improve the bottom line. In addition, managers and owners must consider the ever-increasing age of the facility with production and quality and personnel performance and determine a long-range plan for expansion, equipment upgrades and replacement.

SITE ASSESSMENT GRANTS

Until recently, energy costs for small businesses and industries could be studied by having a professional engineer come in and perform an energy audit, but the costs were generally expensive. The primary objective of these P2E2 Site Assessments is to evaluate the entire operation of any commercial production facility (Energy, process equipment,

waste production and process methods), and recommend ways to save costs and improve process efficiency through effective waste reduction and energy savings. This includes identifying opportunities to reduce electrical energy consumption and or minimize waste production while planning to improve and/or replace existing problematic equipment and/or processes. However, the difference is that the P2E2 Site Assessment grant program provide grants up to 80% of the total cost of the site assessment which includes both the basics of an energy audit (not a complete energy audit) and a pollution reduction assessment. While more of an overview for the facility, these assessments generally result in more opportunities for “real” savings in bottom line costs than an energy audit.

Environmental consultants, service providers or others with experience conducting pollution prevention, energy efficiency or environmental assessments can also be hired to perform these assessments. To assist companies in finding a qualified assessor, DEP maintains and distributes a list of assessors who have successfully completed a site assessment-training workshop designed specifically to support the program. DEP does not certify these assessors however, and applicants are not required to select an assessor from this list.

Most industries and business could not afford to put out this money without some guarantee on a return. Grants under the Pollution Prevention (P2) / Energy Efficiency (E2) Site Assessment Grant Program will be used to fund 80 percent of the total cost of a P2E2 Site Assessment, up to a maximum of \$5,000 for Pennsylvania small businesses with 100 or fewer employees. For DEP Permit holders, a facility manager can expect 80 percent of the total cost of up to a maximum of \$15,000 for any organization holding a three of the following permits: DEP permit, a Philadelphia Air Management Services Permit, or an air quality permit from the Allegheny County Health Department.

This grant program is offered by the state to any qualified small business in the state of Pennsylvania. DEP allows only one grant per EIN, assessment must be at the facility site. The P2E2 Application Process requires an Assessor (either DEP certified site assessor or professional engineer (PE) or a certified energy manager (CEM)) to submit a signed proposal for a facility to perform the P2E2 along with a P2E2 application to DEP for the grant. DEP will approve/disapprove the application within 30 days. Grant applications must be approved by the DEP before the June 30, 2005 deadline this year.

Once a P2E2 application is approved, the site assessment is then completed. A Site Assessment Report and Invoice are then submitted to DEP for approval. The grant is issued within 30 days following report approval. A one-year, follow-up report to DEP on P2E2 recommendations, which were implemented at the facility, is required. The facility manager is not obligated to implement any P2E2 recommendations.

BRINJAC Engineering has been performing energy audits for more than 40 years and most recently, has submitted, and approved more than eight P2/E2 Site Assessments, including grant reimbursements, that meet the guidelines of the existing grant program administered by DEP under Act 190 of 1996. The clientele includes seven wastewater treatment plants and one commercial food processing industry. The average savings for the P2E2 opportunities recommended, which have been implemented by clients, is more than \$3,500 with a range of \$500 to \$12,000 annually.

THE ASSESSMENT PROCESS

During the initial site visit, the site assessor will generally exchange information with the owner and operators about the energy using systems at the plant and discuss plant operations, physical layout, and projected outlook for future use. Information on the utility bills, blueprints, and O&M manuals will be reviewed and a thorough analysis of the treatment process, all motor-driven equipment and the control building lighting and HVAC will be performed to allow a more thorough understanding of the trends of the treatment plant's operation. Interviews with plant maintenance staff and management staff to focus the P2E2 as well as obtaining additional information is also part of the site visit.

The P2E2 report evaluates every energy-using process and provides recommendations for energy-saving opportunities for process equipment, HVAC, motors and lights which impacts the product quality and or the environment at the facility. Where possible, the site assessor analyzes opportunities to utilize wasted or excess energy sources to supplement existing sources. In addition, the site assessor recommends cost-savings opportunities which follow standard operations and maintenance (O&M) practices for energy management to be utilized in the existing O&M plan for the plant.

The report requirements are comprehensive and include all buildings, processes and equipment for the facility. The report examines the environmental impacts for all processes, procedures, wastes and energy uses at the facility. The report also makes recommendations and proposes solutions for each recommendation. The implementation costs presented are based on construction and lifecycle costs to calculate simple payback based on avoided or actual cost savings. Finally, each recommendation includes a financial savings estimated including the cost savings (annual average).

The site assessor can review a draft of the report with the facility operator/manager to ensure that the report meets the intent of the manager and the goals and objectives of the owner. It is important to understand that these plans can be used as long-range facility planning documents for small businesses while examining the pollution prevention and energy saving opportunities that exist at a facility.

The report objectives include giving clients decision-making information -- identifying the P2E2 opportunities as viable solutions (construction estimates and lifecycle costs), and providing simple payback periods for each opportunity. The report also provides DEP with sufficient information to support recommendations, environmental benefits and cost savings.

Energy costs for most fuels have reached high's with future increases possible. Prior to the current high energy cost market, most industrial and commercial entities could list energy as one of their top three operating costs concerns. Today, energy and fuel costs are the top concern for most businesses. Finding ways to reduce energy costs, find alternatives energy sources, reduce peak loads for businesses and other cost reducing measures are critical to reducing operating costs.

The following data shows the general energy distribution for a small industrial business:

Why is P2E2 Worthwhile: Typical Overall Annual Operational Cost Distribution :

- Labor – 30-40%
- Energy – 10-25%
- Raw Material - 15%-25%
- Other – 10-45%

Why is P2E2 Worthwhile: Typical Overall Energy Distribution :

- HVAC Buildings – 25%
- Diesel Fuel – 12-15%
- Gasoline – 8-15%
- Lighting Building – 28%
- Process Equipment – 32%
- Process Ventilation – 10%

Energy costs are now the number one issue for any small business with regard to operating costs because these costs show the greatest potential for bottom line savings through programs such as an energy audit or site assessments such as the P2E2 grant program.

THE RESULTS

A summary of the P2E2 opportunities which *BRINJAC* has performed are presented below in several examples involving a food processing facility and wastewater treatment plants (WWTP) including paybacks for recommended opportunities:

Food Processing Facility, Greencastle, PA Franklin County (Produce Processing and Cold Storage)

- *Install Pump Station and Screening System - \$125,000/\$10,000 (12.5 years)
- Convert Single Phase to Three Phase for All Facility Power - \$40,000/\$6,000 (6.6 yrs)
- Upgrade All T-12 UV Lights with T-8 UV Lights - \$28/\$22 (1.2 years per bulb replaced)
- LED Replacement for Exit Signs - \$25/\$21 (1.01 years)
- Reuse of Process Water for Cleanup \$20,000/\$9,600 (2 years)

WWTP, Pocono Area (2.5 MGD Schrieber System)

- VFD Installation Raw Pumps - \$190,000 installed, \$8,000/year energy savings, no payback
- Electric Bill: Review of demand charges - \$4,500/year energy savings (Immediate)*
- Eliminate Post Aeration - \$7,400/year energy savings (Immediate)*
- Utility Water System Upgrade - \$30,000 cost installed, \$3,600/year energy savings (8.25 yrs)
- Thermostats for Heating - \$725 cost installed, \$1,277/year energy savings (0.5 yrs)*

- Change Disinfection System - \$231,000 cost installed, \$7,200/year chemical savings (Safety, no payback)
- Sludge Management - \$1.4 Million cost installed, \$75,000/year disposal and polymer use savings (18 years)
- * Implemented P2E2 recommendation

WWTP, Northumberland County (1.125 MGD CMAS)

- Reduce Number of Digesters Online - \$26,663/year energy savings per year (Immediate)*
- Replace Blower Motors - \$17,120 cost, \$2,140/year energy savings (8.0 yrs)
- Insulate Press building - \$4,050 cost, \$315/year energy savings (12.8 yrs)
- Change Mixers out To Diffusers - \$75,317 cost, \$2,783/year energy savings (27 yrs)
- Clarifier Modifications - \$15,500 cost installed, no savings (No payback)
- * Implemented P2E2 recommendation

WWTP, York County (0.570 MGD Trickling Filter)

- *Replace Raw Sewage Pumps - \$4,760 cost per pump installed, \$980/year energy savings (4.9 yrs)*
- Upgrade Aerobic Digester System - \$60,000 cost installed, \$4,200/year energy savings (14.2 yrs)
- Replace Blower Motors - \$2000 cost per motor installed, \$168/year energy savings (11.9 yrs)
- *Biological Larvicide's - \$3,100 cost installed (NA) (Safety)*
- *Bioaugmentation for Polymer - \$2,500 cost per year application, \$10,000/year chemical elimination savings (0.2 yrs)*
- *New Level Sensor - \$1,500 (NA) (Maintenance)*
- *Upgrade Chlorine System - \$4,500 cost installed, \$800/year chemical reduction savings (5.6 yrs)*

 * Indicates those P2E2 recommendations that were implemented by clients.

As can be seen from the information above, the site assessment report can be used for strategic planning as well as reducing operation and maintenance costs. Some clients desire to address specific engineering strategies during the study and these are worked into the overall site assessment and study.

It is critical that business hire a certified and qualified site assessor. Some site assessors are more familiar with electrical and HVAC systems, some with lighting, some with motors, some with air compressors, some with food processing, some with water treatment and some with wastewater treatment. Therefore, selection of the proper site assessor is critical to the objectives of the client for the P2E2 study. It is recommended that anyone interested in this type of study by a consultant request copies of previous reports completed to review as part of the selection process. In this manner, the client can see the type of work that the site assessor will deliver.

Program monies for the fiscal year 2004 (Available until June 30,2005) for the P2E2 program are in place as confirmed with discussions with state program

representatives. The program provides a wealth of information for an outlay of only 20 percent of the total cost of the site assessment, depending on the scope and size.

For grant program information, visit the [Site Assessment Grant Program webpage](#). A listing of firms providing assessments and environmental services is available through the *Pa Environment Digest's* [Professional Services Directory](#).

BRINJAC Engineering, one of Pennsylvania's largest and premier engineering firms, provides experienced energy site assessments as well as overall P2E2 site assessments for small businesses.

BRINJAC is currently offering P2E2 Site Assessment services that meet the guidelines administered by DEP. To request information regarding seminars and/or P2E2 Site Assessment services, contact Stephen Zeller at (717) 233-4502.

Engineering a better future since 1955, BRINJAC Engineering provides a variety of engineering services across the state through its fully staffed offices in Harrisburg, Philadelphia, Lehigh Valley and Williamsport. BRINJAC Engineering is a DEP certified site assessor and has many engineer P.E. Certified Energy Managers (CEMs) on staff, and more than 20 LEED certified professionals capable of providing P2E2 site assessment needs.

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