N.C. Division of Pollution Prevention and Environmental Assistance

North Carolina Department of Environment and Natural Resources

Site Visit Report

Wooden Handle Manufacturer
Energy Conservation

Industrial Assessment Team

August 2005

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INTRODUCTION

In August 2005, a team from the N.C. Division of Pollution Prevention and Environmental Assistance conducted a free energy, water and waste assessment for a Wooden Handle Facility. This report has been condensed from the original to include opportunities related only to energy conservation.

LIGHTING

The plant has a wide variety of lighting needs. Several lighting fixtures are using energy saving florescent lamps. Other areas are taking advantage of day lighting through the doors. However, day lighting may not be feasible during cold winter days. The staff apparently makes good efforts to find more energy efficient lighting ideas. Below are several observations and items from the site visit that may or may not have already been addressed.

- Space lighting
  - Day lighting
    Day lighting is used in many locations, including offices and break areas. The consistent use of curtains and blinds in the offices when the sun is coming in can potentially save hundreds of kilowatts a day in air-conditioning costs. The DPPEA team was not told of any window management directive or program. If there is a formal program, it should have a regular feature to remind busy staff of how and why to keep the program fresh and saving costs.
  - Cleaning
    Dusting the reflective surfaces of light fixtures every few years can return 20 percent or even 35 percent of brightness to a room. This is especially true in sanding areas where sawdust traffic and dust can cause large amounts of coating on the lighting.

- Performance lighting
  - Information signs
    Potential need for display spot lighting in several machine areas was noticed. Energy saving compact florescent spot lamps could be used for maintaining brightness levels. Spot lighting where needed could increase productivity and reduce the need for the larger, more energy-using fixtures located many feet from the machine.
  - Timers, motion sensors and dimmers
    An excellent energy saving feature is the use of timers, motion sensors or dimmers in areas other than the machine floor. Areas such as storage rooms and back rooms could be turned off or dimmed automatically when not in use. The team did not ask about the timers or economic minimum amount of lighting needed for specific areas. Normally timers save electricity by turning off unused lighting instead of remaining on 24 hours per day.

- Behind the scene and support areas
  - Office lighting alternatives
    The offices and related areas appear to use a lot of overhead lighting. Studies have shown that in many office settings task lighting will have significant lighting savings, if used effectively. Day lighting and task lighting are two of the best “no cost” methods for saving wasted overhead lighting.
  - Employee controllable lighting

Employees have a lot of control over where lighting is used. Employees should be educated in the why and how of energy effective lighting and its uses. This could easily be done with posted fact sheets and charts.

- Emergency lights
  The DPPEA team did not have time to learn about the kinds of emergency lighting used by the plant. Some emergency lighting systems have a steady 24-hour a day flow of electricity to sense when it is needed. Some emergency lighting systems can use thousands of dollars a year in electricity, while others may only use a few hundred dollars a year. For example, a single old style exit sign with two incandescent bulbs may use up to $80 a year in electricity, but a new LED exit sign would only use about $3 a year. Your facility may wish to confirm if and/or how much electricity the emergency lighting system is using.
- Too much lighting
  It is very common to put too much lighting capacity for most office and non-machine areas of a facility. Other areas, like offices, mechanical rooms and employee spaces may have too much lighting for the intended use.

- Building and mechanical lighting
  - Exit signs
    The team did not evaluate the exit signs used by the plant. As an exit sign is on 24 hours a day, it is potentially a major electrical user for a building. Some older styles of exit sign, can cost as much as $200 a year to operate. The most energy efficient type of exit sign (less than $3 a year) uses LEDs as a light source.
  - Vending machines
    The DPPEA team discussed the energy used by vending machines and how other facilities have saved on their electric bills by turning off the vending machine lighting. Vending machine refrigeration and lighting are on when no one is at the plant. Energy efficient vending machine research is currently going on at NCSU. Many state and other private sector facilities use motion sensors vending machines with no decrease in service to achieve savings in electricity costs. Most machines can be retrofitted at the vendor's expense, if vending machine lighting is an issue.

- Employee lighting habits
  - Turning off lights when not needed
    It was reported that most plant lighting is tuned off during after working hours. This is an excellent way of saving lamp life and energy costs. At three cents per KWh (off-peak rate schedule for many buildings) just two 40 watt tubes can cost as much as $14 a year to operate during non-working hours (16 hrs/day for 365 days/yr). It is also reported that staff are doing a better job of turning off lights that are not needed. Keeping up this good work will require regular management efforts.
  - Using less light
    It was noticed that several offices did not have desk lighting. More employee staff usage of energy efficient work surface/desk lighting can amount to a modest, but noticeable savings on the electric bill. This has worked well in office buildings where employees remember to turn off or reduce the overhead lighting while using desk lighting.
  - Using better light

In some cases using a better color lighting can use less watts than using a lot of lighting. The team noticed this mainly in the staff and mechanical areas. In many cases differences in lamp color can mean smaller more efficient lighting can be used to do work.

- Unseen lighting
  - Closets and long-time storage areas.
    The plant did not appear to have lots of closets and storage rooms with regular traffic. Some areas/mechanical rooms appeared as though they may not have had traffic in days. Some state facilities can have lights burning for months before the next person uses that closet or storage room. The team did not notice any likely closets or storage areas that would fit the above description.
  - Storage sheds
    The team did not visit the plant storage sheds. But some facilities have light(s) on in the shed that are either on timers, or could be left on by someone. Unless there is a specific purpose, the plant could be use an inexpensive timer to cut energy usage.
  - Loading areas
    Loading area lights are often very bright and expensive to run. It is not clear the plant has a policy or system to ensure if these large lights are turned off when not needed.
  - Occupancy sensors
    It is understood the plant was doing some occupancy sensor testing. There may be several areas in the plant that could save energy using sensors. Occupancy sensors for vending machine lighting and soda machine refrigeration are now available.

- Out buildings and facilities
  - Outbuilding lighting
    Several structures such as the pump house, the storage buildings and the covered pads may use lighting. Many of the light saving suggestions that will save energy for the main building will apply easily to these structures.

- Parking and Security Lighting in outdoor areas
  - Alternatives for parking lot lighting lamps
    The outside lighting of the buildings and parking lot was not closely examined. The bulbs used in many outside fixtures need to be checked for the possibility to use more efficient energy saving bulbs. If there is a great deal of area lighting, there is the possibility of turning off several fixtures, if adequate area lighting can be maintained.
  - Timers
    Timers on light fixtures can be used to prevent energy loss due to problems such as rouge lights on during daylight hours or short circuits that cause continuous electrical usage.
  - Sensors
    Over time, light sensors that tell parking lot or security lighting to come on will malfunction. It is not uncommon to see parking lot lights, in different grocery store or facility lots, on during the bright of day. The team did not ask how often the plant inspects any parking lot or area lighting.

- Future lighting
  - Wiring load

As lighting is changed at the plant, there is a potential for increasing the wiring load on lighting. As wiring approaches its max load it could impact brightness of lighting, and in some cases increase energy usage.

- Hidden extras
  New fixtures can have many extra energy users attached to them, such as ballasts, timers, sensors and so on. These extras must have their energy usage accounted for to truly compare cost savings from using new fixtures/lighting.

MOTORS AND ELECTRICITY SAVINGS

- Fan, pump and motor inventory
  - What an inventory will do
    It was expressed during the site visit that the plant did not have a complete inventory of all the fans, pumps and motors. It was discussed that a fan and motor inventory would help in building power calculation, repair scheduling and motor sizing needs analysis to save on future energy costs. This involves noting the nameplate information for each motor used in the plant.
  - Where to use an inventory to save energy
    One immediate use of a motor inventory is to confirm the needed size and load of different building circuits. Keeping the circuits from being at max or overloaded would save on motor efficiency, electric bill penalties and building cooling costs. Another use would be the calculations of motor curves from the collected information. This would help in determining the smallest size of motors needed when it came time to replace motors. Often when a motor goes down it impacts production. The difference between a 95 percent efficient large motor and a 98 percent large motor can be as much as $12,000 a year in electricity costs.

- Variable speed motors
  - Addressing the recognized problem
    Some motors may be too large for what they are being used for. As resources and staff time permit, the plant should study installing variable speed drives to reduce the electric loads created by the oversized motors.

- Ventilation saved costs
  - Heat kills motors before their time
    It was noticed that some motors are in locations where their operating heat is not dissipated very well. This includes motors operating in rooms that are hot from other machines. Motor efficiency and motor life decreases as motor temperature rises during operation. As the heat rises above design operating temperatures the motor winding insulation begins to deteriorate. Cooler motors save electricity.
  - Dirt kills motors before their time
    It was noted that the many plant machine and mechanical areas are comparatively clean as a whole, especially for the other parts of the building. The team noticed very little if any dust buildup on motors and related equipment. It is simply noted that keeping dirt and dust from working their way down into motor openings will prolong the motor life and motor efficiency and reduce operating costs over the lifetime of each motor.

- Motor maintenance
    - Addressing motor maintenance
      The 9 basic rules of motor maintenance are:
      1. Supply the correct voltage,
      2. Never overload a motor.
      3. Provide thermal overload protection.
      4. Keep correct belt tension and alignment.
      5. Lubricate properly.
      6. Clean when needed.
      7. Check for bearing wear.
      8. Avoid excess vibration.
      9. Maintain commutator and brushes.

    - Eliminate voltage unbalance
      As stated above, motor overheating shortens the life of the motor winding insulation. One of the major causes of motor overheating is voltage unbalance. A standard formula for estimating this extra temperature rise is 2 x (% voltage unbalance)^2. The extra heat creates a problem for the motor life, in that over a year's time the motor winding insulation life is reduced by one half for each 10 degrees C increase in operating temperature. Common causes for a voltage unbalance can include:
        - Unevenly distributed single-phase loads on the same power system
        - An open circuit on the distribution system primary
        - A problem with operation of power factor connecting equipment
        - An unbalanced transformer bank with a three-phase that is too big for the bank
        - A single-phase ground fault that has gone unidentified

    - Replace V-belts with cogged or synchronous belt drives.
      Motors and pumps can loose as much as 10 percent in power and efficiency from a worn V-belt. The plant should, if possible, conduct a survey of belt driven motors and determine the cost effectiveness of replacing the V-belts systems with synchronous or cogged belts and sprockets. This should especially include the belt systems on the plant's compressors and small machines, where increased efficiency could save the most in heat generation and electricity.

- Chillers, cooling towers and motors
    - Water temperature control to save money
      It was not clear if there were any chillers or cooling towers at the plant. However, if there were, or are going to be this information may be helpful. As a rule of thumb every degree you do not have to cool down to means as much as 10 percent savings in chiller operating cost. It is given that chiller operating temperatures have to meet the need of the most demanding piece of equipment in a facility. However if the more demanding equipment were changed or improved to function at higher temperatures then the chiller could be set at higher water temperatures and save on electricity and cooling tower water costs. The potential saving from making the chiller do less work could significant over an annual period.
    - Alternatives to save water loss

If plant water creates calcium scale problems in the chiller and cooling, it makes a lot of blow-off water for the chiller and a lot more blow-down for the cooling tower. If calcium free waters could be used as make-up water for the chiller and cooling tower it would reduce the need for blow-off and blow-down. Some possible calcium free water sources are air conditioning condensate waters, compressor condensate waters and even reverse osmosis backwash waters. If they are appropriately used as replacement water for the chiller and cooling tower it would reduce the daily volumes of calcium laden water (from the city water or a well) needed for cooling tower blow-down or chiller blow-off.

COMPRESSED AIR

During the site visit, several items that impacted compressed air usage were noticed. Unfortunately, some items can only be addressed when the plant has time and resources. Several of these items are addressed below.

- How much compressed air is needed?
  - Charting air needs
    Charting the plant records of daily air use may afford opportunities to make compressed air production more efficient. Charting air production can also act as indicators for any changes in machine usage.
  - Tracking air production
    Tracking actual production of compressed air and ozone at the machine may afford a good comparison with actual ozone and compressed air uses in the plant. Comparing machine performance from month to month or comparing performance to the same month last year can be quick indicators of problems with the individual machines, before the problems are apparent in other ways.

- Heat adds more to the cost of air
  - Compressors make more heat than air
    A common rule of thumb sets compressor efficiency ranges at 30 percent to 40 percent. The rest of the energy used is turned into heat energy. It is generally the same with ozone generators and its compressors. If compressors or ozone generators need replacing, higher energy efficient models should be considered and sized just for the capacity needed for the job. Any extra capacities will be paid for in higher electric costs every minute the machine runs.
  - Heat builds up and forces more energy loss
    It appears the plant is making little efforts to remove heated air from the compressor room. It is understood that plans are being made to better vent the compressors. Better shading of the compressor shed behind the plant may help with indirect costs of having the compressors working harder in the summer heat. The right kind of shade could mean 10 to 20 degrees of heat savings on the hottest days.
  - Humidity adds to the work
    Humid air can add more work to an air compressor. The added water in the air slows the compressor process, thus reducing its efficiency. On the plus side, as humid air is compressed, lots of relatively clean water can be generated for use elsewhere by the plant if feasible.

- Leaks are often the biggest energy cost

- Commonly the majority of compressed airline leaks are silent and cannot be felt
  Airline leaks can develop slowly over time, so staff will not notice all the extra times the compressors are turning on for the same air use in the facility. An inexpensive sound gun ($30 and up) can be used to trace airlines and find the "silent leaks." Looking for leaks on a periodic basis (once or twice a year) could result in significant energy savings.
- Employee use of compressed air
  Employee education can make a big difference in how much compressed air employees determine they need in projects and research. Employees should also be instructed on appropriate uses of compressed air. Wasted air and increased electrical expenses result from employees using compressed air as a broom to clean work areas.

- Pressure is a big drain on compressors
  - Electricity use drops geometrically for each pound of pressure reduced
    The energy needed to compress air decreases around 0.5 percent for each additional psi decrease in discharge pressure. If the plant could reduce compressor air pressure to the minimum required by the system, or what is safe for production, it would save a lot in energy costs.
  - Install a looped piping system
    If the plant has the opportunity it could install a looped piping system for compressed air uses. A looped piping system would balance compressed air pressure throughout the plant. The compressed air end uses would be served from both directions, allowing line losses at different points balancing out the two paths. Air compressor pressure can usually be reduced with a balanced system.
  - Installing larger pipes can help
    Lager pipes reduce the pressure loss in the distribution lines and provide additional surge capacity to control pressure fluctuations. Both these effects save on reducing pressure, and therefore reduce energy consumption.

HEATING VENTILATION AND COOLING

Many energy-using systems inside and outside of the building contribute to the cooling and heating needs. This section covers several systems and practices with an impact on heating and cooling of the buildings.

- Mechanical rooms and heat
  - Compressor waste energy makes heat
    As discussed in the previous sections, compressor waste energy makes heat. Expanding hot air makes it harder for the compressors to compress the same machine "design" volumes of air. This unnecessary excess heat also forces the ventilation and cooling energy costs to rise.
  - Motors work harder in the heat as well
    A motor's useful life can be cut in half if it has to operate regularly in heat just 10 degrees above its design operating temperatures.

- Building ventilation
  - Outside air savings

During the site visit it was pointed out that the plant uses outside air for ventilation when conditions were favorable, i.e. opening the big doors. This makes it possible to save ventilation costs during favorable days, without impacting the other areas of the plant. Specific written instructions and continued staff vigilance on when to use outside air can result in energy savings.

- Air handler and filter maintenance for the three building heaters
  Maintenance of the coils and filters in the air handlers of the plant building is the backbone to saving HVAC operating costs.

- Heat from lighting
  - Lights give off heat
    There may be areas in the plant offices where the lighting is giving off enough heat to influence the air conditioning. Some of the high intensity lighting used by the plant can gives off thousands of BTUs a day that must cooled. Many of these lights are necessary and the plant would be hard put to find adequate substitutes. However, it was noticed during the site visit that some ordinary incandescent bulbs were being used, which could be replaced by a cooler substitute. Replacing these regularly used, few dozen incandescent bulbs could save a few hundred dollars per season in cooling costs.

- Thermostats vs. people and what they do to HVAC control
  - Are thermostats in a safe location?
    In the plant areas it was noticed how thermostats could be impacted by the equipment located close by.
  - Are thermostats calibrated?
    With all the constant changes and dirty controls a thermostat could begin to slip in its calibration. Thermostat controls are built to need calibration on a periodic basis.
  - Are thermostats working against each other?
    It is been found to be common in state and private sector buildings that thermostats can be accidentally tricked into working against each other. Airflow from one thermostat controlled area tells another thermostat that its area is too cold. Then warm air in that area spills back to the first thermostat saying it needs more air, creating a vicious cycle.
  - Sawdust creates problems for filters
    Sawdust and regular dust clog air returns and filters. The clogs shorten filter life and work fan motors harder creating extra costs. Putting in extra filters to stop clogging before they get into the air return may save enough on efficiency to justify the costs.

EQUIPMENT AND ENERGY USING MACHINES

The plant has a wide variety of equipment and energy-using machines scattered all over the building. It is common to overlook the energy costs of several small individual machines directly or indirectly adding to the electric bill.

- Office energy using equipment
  - Office computers, copiers, printers and systems
    Nearly all office energy machines have energy saving modes and automatic turn offs. Unfortunately these modes and turnoff systems can be overlooked over time. A computer monitor left on over night and on weekends will use around $34 a year in electricity, but if it were turned off at night and on weekends and the save modes were

activated the same monitor would cost only $7 a year to operate. Automatic save/turn off modes for printers and copiers (including desktop individual models) would be a noticeable savings for the plant's energy bill.

- Areas with concentrated machinery
  It was noticed during the site visit that the plant office had areas where office machines were concentrated. It is not known if the wiring for those areas was specifically designed to handle larger electrical loads. In situations where wiring is not strong enough to handle several machines at once, it can cause machines to operate at decreased power, shortening the machine life and increasing electricity costs. The receptacles could be tested to see if the building wiring is being overloaded in those concentrated machine areas.
- Personal heaters
  The average personal office heater will burn one or more KWh per hour. This means nearly $200 a heating season for each space heater. The need for a personal space heater indicates the HVAC distribution may need adjusting. ***SAFETY ISSUE:*** *Receptacles should be verified for overloading due to the use of supplemental heating in office spaces.*
- Coffee makers and cooking elements
  Coffee makers and cooking elements/hot plates at the plant have added benefits to the employees. Employees will need to be consistent in turning off the coffee makers and any cooking devices after hours. Leaving heating devices on unnecessarily can add up in energy costs to several hundred dollars per year for each device.

- Vending machines
  - Lighting in vending machines
    It was noticed the plant had the vending machines with lights. Turning off these lights and adding signs indicating how energy costs were being saved will lower energy bills without hurting the vendor's business. A fact sheet showing the statistics and example monetary savings was provided to the plant, in support of this effective energy saving move.
  - Refrigeration and cooling vending machine costs
    The biggest vending machine energy costs are in the vending machine refrigeration systems. Is the cost worth keeping drink cans cold overnight? Finding an effective means to turn off vending machine refrigeration systems over night, using timers or motion sensors can reduce overall energy demands. See vending machine proximity devices below.
  - Vending machine proximity devices for energy saving
    A rapidly growing sector of the vending machine market is the use of proximity or motion sensor kits on vending machines. The pug in sensor will shut the machine down overnight and other times if nobody comes within range for several hours.

- Communications
  - Radio batteries
    It was not made clear what the plant does with its radio batteries. Rechargeable radio batteries can be recycled, often for free. Programs exist where the plant could collect and mail spent rechargeable batteries. To throw away rechargeable batteries in the landfill would be in violation of state regulations on hazardous waste. The useful life of radio batteries can usually be extended if they are stored only completely charged. For

some rechargeable batteries leaving them in the charger after full charge may cause over heating and shorten the life of the batteries.

- Electronics: the other recyclable
  Like any large office setting, the plant offices and other areas can produce a number of old computers and outdated office machines. Recycling unusable office computers and machines can save landfill fees and keep large amounts of toxic metals out of the environment. Many of the computer monitors noticed during the energy walk-through typically have as much as eight pounds of lead in the glass screens alone, and have recoverable amounts of gold, silver and other industrial metals in the electronics.

- Hidden energy

  - Sensors
    Systems that are used for sensing people or monitoring equipment also use energy. Any of these systems at the plant should be periodically calibrated. Effective calibration helps maintain the system to use energy more efficiently.
  - Monitors
    The average computer monitor with no energy miser or auto shutdown system can use $34 of electricity a year for an 8-hour shift. With sleep mode engaged and being shut down over night and on weekends should average only $7 per year to operate.
  - Properly sized wiring and circuit breakers
    Improperly sized wiring can cause a drain on power to a machine and thus reduce energy efficiency. As displays and machines are changed consideration should be made to see if the wiring is of sufficient size for the new electrical loads.

- Janitorial
  - Floor cleaning equipment
    Some equipment systems use more power than others. Is the cleaning staff able to use the most energy efficient equipment? Cleaning can take several hours a day so cleaners potentially will be using many dollars of electricity a year.
  - Trash collecting
    Are employees able and/or instructed to recycle trash such as cardboard and office paper not placed in recycling by plant staff?

    It was not noted how much paper and other items are recycled in the plant. Every time a dumpster is “pulled” or emptied it costs not only the approximately $30 per ton in landfill fees, but also each “pull” represents nearly $100 in transport fees. If the plant dumpster is “pulled” more than once every two weeks it may be worth investigating an expansion of the recycling program to save costs.

WATER USE

Many plant energy savings projects are related to water use. The items addressed below are offered as support for opportunities discussed during the site visit.

- Fishing for leaks
  - Charting meter readings to track water use
    The water and sewer utility bills for should be charted. It showed a predictable pattern for water into and out of the building. Having a running chart and comparing it or just

comparing the current month with the same month of the previous year are very effective and no cost monitoring methods.

- Track water needs estimated vs. actual
  It is not clear how the plant tracks individual water needs. Clearly keeping an accurate track on the water needs could result in huge savings.
- Water losses from vending machines, ice machines and refrigeration
  It appears the plant has several vending machines, possibly an ice machine and refrigeration machine being used in the snack bar area. It was not clear what kind of cooling systems the vending machines have. Some vending machines use a flow of water to remove heat from the refrigeration cycle system. There are ice-making machines that commonly use a flow of water to cool the refrigeration coils. And, many refrigerators use a flow of water to remove heat form the system. The site visit did not evaluate how the different refrigeration machines at the plant are using water. It is possible for a vendor to be using a machine that has a continuous stream of water flowing through.

- Cleaning with water
  It was not clear if various plant water hoses have water saving-type nozzles. Several industries are able to save noticeable amounts of cleaning water over time by using inexpensive water saving-nozzles, without loosing productivity or cleaning pressure. The same water saving-nozzles can be used for inside applications.

- General water use savings if applicable
  - Boiler water control
    Boiler feed water and blow down are major water users in many facilities. The team did not evaluate the water use for any plant boiler. Feed water can be preheated and de-aerated to save energy and internal corrosion. Is the boiler blow down heat recovered for preheating or the water recovered for reuse? Obviously if a cooling tower and chiller are having problems with calcium buildup, then without feed water pretreatment a boiler could suffer the same calcium buildup and lose efficiency. Calcium buildup on the boiler tubes can increase operating costs by using extra fuel to achieve the same levels of heat transfer through the boiler tubes.
  - Water pressure
    Most facilities that are able to reduce water pressure can save large amounts of water and on pumping costs. A project to add a water pressure enhancement pump should help reduce costs. The plant may have selected areas where reducing water pressure even more can save measurable amounts of water. These selected areas such as restrooms and water fountains are minor compared to mechanical systems, but could add up water savings in a very short time to be worth the effort.
  - Aerators
    Properly selected aerator nozzles used on water discharge points such as restroom faucets and water hoses (both inside and outside), can save thousands of gallons a month.
  - Vehicle washing
    It is a necessity for facilities to wash down vehicles to keep from having maintenance problems. It was not clear if the vehicle washing takes the additional precaution of keeping wash down water from getting into the storm water drains. The best opportunity is to wash on the grass so the water soaks in keeping it from the drains.

LANDSCAPING

Many facilities have energy issues involving landscaping. Below is a brief list of items that may cost any plant energy and money. It is certain the plant staffers are well aware of many or all of them:

- Tractors, lawn mowers and other small engines are now subject to EPA regulations on emissions. It was shown in studies over the last 20 years that a large percentage of air pollution has come from small inefficient motors, like lawn mowers and powered air blowers. More efficient and cheaper to run small motor equipment is now coming onto the market.
- Idling diesel trucks are becoming a health issue. Diesel engines are stronger and get better gas mileage but emit serious particulates. These diesel particulates are starting to be shown in studies as harmful to children's developing respiratory systems. The plant may need to address idling trucks in the parking lot in the foreseeable future.

CONCLUSION

During this site visit it was observed that several energy opportunities could be implemented through enforceable policies, such as buying only energy efficient or Energy Star equipment when replacing equipment and employees turning things off when not needed. Our division will be happy to discuss any questions regarding this report. Please review the DPPEA Web site www.p2pays.org for online information and resources.