



# SPOTLIGHT ON Maintenance

Summer 2002

OPFMA: P.O. Box 82077 • Columbus, Ohio 43202 • Phone: (614) 262-8620 or Toll free: (866) 263-8620 • Fax: (614) 262-8621 • office@opfma.org • www.opfma.org

## 2002 Conference and Trade Show Returns to Columbus

This November 20 and 21, the OPFMA Annual Conference and Trade Show returns to Columbus and the Airport Radisson Hotel. This year's event will continue OPFMA's tradition of high quality, including some hands on, workshop sessions and exhibitor displays and presentations. We're also planning some changes that should improve the overall efficiency of the event. Whether you are an administrator or staff, or specialize in building operation and maintenance, custodial work, or grounds, there will be plenty of useful information available directly from the experts.

Same rich content offered in less time means less of your valuable time away from your facility — and at a *reduced fee* if you register early!

As good as any conference is, in these cash and staff strapped times, we know it's hard to be away or send employees away from your site very long. So, we're offering an opportunity to attend six full 90-minute sessions, just as in past years, but over just one and a half rather than two and a half days. What's more, we're passing the

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## President's Message

By Bill Tucker

Membership! Many of us are members of a number of organizations, whether it is a service organization, a hobby interest, a sport's group or a professional group like the Ohio Public Facilities Maintenance Association. I would like to stress that any organization we may belong to needs members and members who contribute something to the organization, want to work toward improving the group's function, its membership and are in the group to receive a benefit from its teachings or the pleasure the group provides to the individual.

Of course, the networking benefit associated with all memberships is sometimes a "sleeper" advantage. I have had the experience of being on both sides of this benefit, having been able to help someone obtain leads to solve their dilemma and I have received help from my friends with my problem.

As a 14-year member in OPFMA, I have found that many regular

members are willing to help the organization. Some see opportunities to upgrade their skills by participating in certain committees or the Board. Numerous members have seen the benefits OPFMA offers and introduce associates to the organization.

We all know the other person in the organization who comes to a few meetings, does not participate in attending any of the offerings and then proceeds to criticize the association, drops out and eventually loses the benefits of the organization.

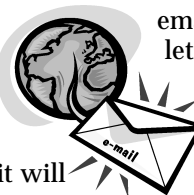
OPFMA has gone through many difficulties over the years, but remained a very strong organization because of the members who have stuck with the group and of the many vendors who support us through advertising and our conferences. I am thanking them and asking all of you in *this group* to remember the past pluses

*Continued on page 2...*

## Request for Email Addresses

OPFMA is moving into the "Internet age." We're developing a web site and are planning to move toward greater use of email to communicate with members. We believe it will enable us to provide you with more useful information more efficiently.

If you have an email address, please



email us at [office@opfma.org](mailto:office@opfma.org) and let us know. Tell us how regularly you use email and the web to communicate. Would you appreciate receiving the OPFMA newsletter and information about seminars and the conference by email? Would you prefer it to receiving information by regular mail?

## 2002 Members of the OPFMA Board of Trustees:

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Ohio Office of Energy Efficiency  
614/466-7429



## President's Message

...Continued from front page

OPFMA has provided you and fellow associates. Continue your membership, go out and contact that person in the facility's department in the next school district, the museum or library in your town or the one in your local park, and encourage him or her to join OPFMA.

In addition, if you would like to help plan any workshops you feel might benefit the members or want to help on the Conference, contact any of the board or call Sam Spofforth, our new manager in Columbus.

OPFMA is continuing to set up more advantages to belong to the group. Our newest and most exciting is the Building Operator Certificate Program, which we hope to present more on to you by the end of the summer. There are upcoming workshops and we will put on our conference again in Columbus this year. You can review the details in this newsletter.

I wish you all a very safe and productive summer. Borrowing a phrase from an organization, I belong to, "Don't just belong, participate."

## 2002 Conference and Trade Show

(Continued from front page)

savings in facility fees onto you. If you register at least a month in advance, the fee will be \$225. We're also combining the administrative and supervisory tracks into one to avoid overlap and duplication.

We will offer 18 workshops in all - from preventing and troubleshooting roof and other building envelope leaks, hands on power tool training, maintenance and managing liability for playground equipment, effective pest control strategies, small engine repair and maintenance, administering projects and handling contractors, and much more.

As in past years, the event will feature a trade show where you can examine the latest in products and services and interact directly with company representatives.

As in past years, OPFMA will present awards for Employee of the Year, Employee Honorable Mention, Facility of the Year, Facility Honorable Mention, and Distinguished Service Award. Please see the nomination form included later in this newsletter.

You should receive the registration brochure in the mail by late July or early August with all the details. In the mean time, feel free to call the Airport Radisson Hotel in Columbus at (614) 475-7551 if you need to arrange Wednesday night accommodations. Mention that you are attending the OPFMA conference to receive the \$99/night conference rate. The need for only a one-night stay over also will save you money.

To top it off, we're working to arrange dinner and entertainment on Wednesday evening following the last afternoon workshop.

Besides sending the conference registration brochure in the mail, we will keep you informed about featured speakers, vendors, and Wednesday night plans via email. Don't worry, you'll receive only a handful of messages, not a deluge. Please email us at [office@opfma.org](mailto:office@opfma.org) or call (866) 263-8620 and give us your email address if you would like these updates.

We look forward to seeing you November 20 in Columbus!

# Power Systems Analysis

**OPFMA Editor:** This article is part of a series of short pieces produced by the U.S. Department of Energy, Energy Efficiency and Renewable Energy Network.

An analysis of an electrical power system may uncover energy waste, fire hazards, and impending equipment failure. A well-executed analysis takes planning and lays the foundation for ongoing reliability-based maintenance

## Action Moment

The best time to initiate preventive maintenance on electrical systems is before failures occur. Problems may be hidden until failure occurs, especially if the system is not regularly maintained. In a new facility, maintenance should begin from the outset. For electrical systems, it is never too late to start a regular maintenance program.

## Technical Information

“Tune-ups” for electrical power systems yield both direct and indirect

efficiency improvements and increase the reliability of equipment. Direct improvements result from correcting leaks to ground and cutting resistive ( $I^2R$ ) losses in the distribution components. Indirect improvements result from improving efficiency of equipment previously operating with poor quality input power, such as three-phase motors operating with phase-to-phase voltage imbalances.

Establish a preventative maintenance program with good record keeping.

1. Document the system component and loads starting with the available drawings and other documentation. Update them to ‘as-built and keep them current.
2. Inspect components noting discoloration, deformation, damage or hot odors, noise, or vibration.
3. Manually operate all switches and disconnects on a monthly schedule to help eliminate any corrosion.
4. Conduct a regime of electrical tests designed to identify actual and potential problems. This may in-

clude contact condition assessment with a voltage drop survey, infrared thermography, power factor assessment, or voltage assessment to determine imbalances and deviations from target voltages.

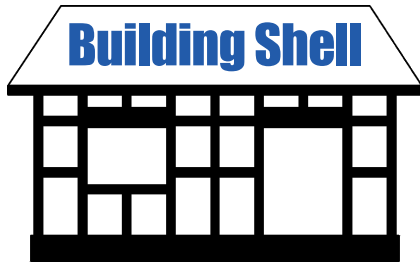
5. Consider a proactive maintenance program with the predictive elements discussed in Section 3.5.

When conducting electrical assessments, be aware of varying conditions. Power quality may change greatly at night or other times because of changes in loads.

Facility managers increasingly find that reliability-centered maintenance can save money, energy, and downtime. A lumber plywood facility in Oregon projected \$125,000 in potential savings by instituting an electrical system preventive maintenance program. Estimating true savings is difficult due to the uncertainty about when failures will occur, what equipment will be damaged, and how long problems will last.

System Problem	Common Causes	Possible Effects	Solutions
Voltage imbalances or difference between relative voltage levels among the three phases in all or part of a facility.	Improper transformer tap settings, one single-phase transformer on a polyphase system, single-phase loads not balanced among phases, poor connections, bad conductors, transformer grounds or faults.	More vibration, premature motor failure, energy waste. A 5% imbalance causes a 40% increase in motor losses.	Balance loads among phases.
Voltage deviations refer to voltages being too low or high.	Improper transformer settings, incorrect selection of motors, e.g., a 230/208 motor (which is actually 230 rated) on a 208 circuit.	Over-voltages in motors reduce efficiency, power factor and equipment life, and increase temperature.	Check and correct transformer settings, motor ratings and motor input voltages.
Poor connections may be in distribution or at connected loads.	Loose busbar connections, loose cable connections, corroded connections, poor crimps, loose or worn contactors, corrosion or dirt in disconnects.	Wastes energy, produces heat, causes failure at connections site, leads to voltage drops and voltage imbalances.	Use IR camera to locate hot spots and correct.
Undersized conductors	Facilities expanding beyond original designs, poor power factors.	Voltage drop and energy waste.	Reduce the load by conservation load scheduling.
Insulation Leakage	Degradation over time due to extreme temperatures, abrasion, moisture, chemicals, conductor insulation inappropriate for conditions.	May not cause breaker to trip, and may lead to ground or to another phase. Variable energy waste.	Replace conductors, insulators.
Low Power Factor	Inductive loads such as motors, transformers, and lighting ballasts; non-linear loads, such as most electronic loads.	Reduces current carrying-capacity of wiring, voltage regulation effectiveness and equipment life. May increase utility costs.	Add capacitors to counteract reactive loads.
Harmonics (non-sinusoidal voltage and/or current wave forms)	Office electronics, telephone PBXs, uninterruptible power supplies, variable frequency drives, high intensity discharge lighting, and electronic and core-coil ballasts.	Over-heating of neural conductors, motors, transformers, switch gear. Voltage drop, low power factors, reduced capacity.	Take care with equipment selection and isolate sensitive electronics from noisy circuits.

## Building Shell



**OPFMA Editor:** This article is part of a series of short pieces produced by the U.S. Department of Energy, Energy Efficiency and Renewable Energy Network.

The building shell can be considered the primary component of any facility since it is the protective skin that allows both a controlled environment and protection for the building occupants. Consisting of the building's skin, roof, windows, and doors, the shell controls the flow of energy between the interior and exterior of the building. Facility managers have limited ability to change most of these components on a routine basis. However windows and insulation are two factors that can be readily upgraded as a strategy in routine building improvements. Reducing outside air infiltration into the building by improving building tightness should be one of the strategies used to conserve energy.

### Action Moment

When reroofing or renovating spaces, be sure to determine if there is an opportunity to upgrade windows, doors, or insulation. Reducing infiltration may be possible during routine maintenance or when remodeling occurs.

### Windows

**Glazing systems** present an excellent opportunity for energy savings. The strategy will vary greatly as a function of the location of the facility. In hot climates, the primary strategy is to control thermal radiation by keeping solar energy from entering the interior space while allowing visible light through for daylighting. Solar screens that intercept solar radiation, or films that prevent infrared transmission while allowing good visibility, are useful for hot climates.

**In colder climates**, the focus shifts from keeping solar energy from entering the space to reducing the interior conduction of energy from the warm to a very cold exterior. Windows with two or three glazing layers that utilize

low-emissivity coatings will minimize conductive energy transmission. Filling the spaces between the glazing layers with an inert low-conductivity gas, such as argon, will further reduce heat flow.

**Fenestration can be a source of discomfort** when solar gain and glare impact at the work station or other occupant zones. Daylighting benefits will be negated if other factors force occupants to use blinds, for example, to control unpleasant impacts.

Facility managers should choose **appropriate window technology** that is cost-effective for the climatic conditions. For example, double-glazing may be inappropriate in South Florida where solar films are the technology of choice. However, double-glazing is cost effective for the middle and northern latitudes of the United States.

**In cold climates** make sure that the frame is designed to prevent condensation. Both the frame and sash should have thermal breaks.

### Walls and Roofs

**For buildings with a primary cooling load**, exterior finishes that have high reflectiveness and wall-shading devices reduce the solar radiation load, and consequently the HVAC load. Reflective finishes for the roof will

help reduce loads because the roof is exposed to sun loads for the entire operating day. Metal, concrete tile, concrete shingle, aluminum shingles, and single-ply roofing systems are all available in reflective colors at no additional cost.

**Wall shading** can significantly reduce thermal loads on the envelope through roof overhangs, sun shades, or a canopy of mature trees.

**Light-colored roofs** have a beneficial effect in areas where cooling is the predominant air-conditioning requirement.

**In new construction**, a well-designed building envelope can significantly reduce the need for space conditioning, resulting in both initial and operating cost savings for the HVAC systems.

### Insulation

**Insulation for most commercial buildings** is difficult to upgrade without expensive building modifications. Exterior finish insulation systems (EFISs) (insulation and exterior finish) can be added externally to some buildings to both increase the thermal resistance of the building shell and to improve the building's appearance.

**In cooling latitudes**, the addition of insulation has positive impacts on air conditioning to a point, and diminishing returns thereafter. Roofs and attics should receive priority attention for the addition of insulation, particularly during roof replacement.



## Awards of Excellence

Here's a unique opportunity to recognize outstanding people or projects in YOUR facility. Take a few minutes now to review the criteria and send your nominations to the OPFMA office not later than October 1, 2002.

# Ohio Public Facilities Maintenance Association 2002 Awards of Excellence



## NOMINATION FORM

### I. Award Category:

- **Award for Employee of the Year**

Name(s): \_\_\_\_\_ Title: \_\_\_\_\_

Facility: \_\_\_\_\_

Facility address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: ( ) \_\_\_\_\_ Fax: ( ) \_\_\_\_\_ E-mail: \_\_\_\_\_

Briefly explain why the above should be considered for an Award of Excellence.

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- **Award for Facility of the Year**

Facility name: \_\_\_\_\_ Contact person: \_\_\_\_\_

Facility address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: ( ) \_\_\_\_\_ Fax: ( ) \_\_\_\_\_ E-mail: \_\_\_\_\_

Briefly explain why the above listed facility should be considered for an Award of Excellence.

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### II. Submitted by:

Name(s): \_\_\_\_\_ Facility: \_\_\_\_\_

Facility: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: ( ) \_\_\_\_\_ Fax: ( ) \_\_\_\_\_ E-mail: \_\_\_\_\_

Please return form no later than October 1, 2002 to:  
OPFMA, P.O. Box 82077, Columbus, Ohio 43202 • Fax: (614) 262-8621, or email to [awards@opfma.org](mailto:awards@opfma.org).

# Molds in Schools and Other Public Facilities:

**OPFMA Editor:** *In recent years concerns about exposure to molds within homes and buildings have increased sharply. Depending on the particular strain molds can cause significant health problems for all, particularly children. For facilities maintenance staff, it is becoming increasingly important to understand the causes of mold growth, differences in strains, and how to effectively remediate problems that may occur. Effective maintenance can prevent health problems that could lead to absenteeism or worse and save money.*

*The following includes excerpts from information found on the U.S. Environmental Protection Agency, Office of Air and Radiation, Indoor Environments Division web site. Please visit [www.epa.gov/iaq/molds](http://www.epa.gov/iaq/molds) for complete information.*

## Introduction

Concern about indoor exposure to mold has been increasing as the public becomes aware that exposure to mold can cause a variety of health effects and symptoms, including allergic reactions. This document presents guidelines for the remediation/cleanup of mold and moisture problems in schools and commercial buildings; these guidelines include measures designed to protect the health of building occupants and remediators. It has been designed primarily for building managers, custodians, and others who are responsible for commercial building and school maintenance. It should serve as a reference for potential mold and moisture remediators. Using this document, individuals with little or no experience with mold remediation should be able to make a reasonable judgment as to whether the situation can be handled in-house. It will help those in charge of maintenance to evaluate an in-house remediation plan or a remediation plan submitted by an outside contractor.<sup>1</sup> Contractors and other professionals who respond to mold and moisture situations in commercial buildings and schools may also want to refer to these guidelines.

Molds can be found almost anywhere; they can grow on virtually any organic substance, as long as moisture and oxygen are present. There are molds that can grow on wood, paper, carpet, foods, and insulation. When excessive moisture accumulates in buildings or on building materials, mold growth will often occur, particularly if the moisture problem remains undiscovered or unaddressed. It is impossible to eliminate all mold and mold spores in the indoor environment. However, mold growth can be controlled indoors by controlling moisture indoors.

Molds reproduce by making spores that usually cannot be seen without magnification. Mold spores waft

have resulted in buildings that are tightly sealed, but may lack adequate ventilation, potentially leading to moisture buildup. Building materials, such as drywall, may not allow moisture to escape easily. Moisture problems may include roof leaks, landscaping or gutters that direct water into or under the building, and unvented combustion appliances. Delayed maintenance or insufficient maintenance are also associated with moisture problems in schools and large buildings. Moisture problems in portable classrooms and other temporary structures have frequently been associated with mold problems.

When mold growth occurs in buildings, adverse health problems may be

***Molds gradually destroy the things they grow on. Prevent damage to building materials and furnishings, save money, and avoid potential health risks by controlling moisture and eliminating mold growth.***

through the indoor and outdoor air continually. When mold spores land on a damp spot indoors, they may begin growing and digesting whatever they are growing on in order to survive. Molds gradually destroy the things they grow on.

Many types of molds exist. All molds have the potential to cause health effects. Molds can produce allergens that can trigger allergic reactions or even asthma attacks in people allergic to mold. Others are known to produce potent toxins and/or irritants. Potential health concerns are an important reason to prevent mold growth and to remediate/clean up any existing indoor mold growth.

Since mold requires water to grow, it is important to prevent moisture problems in buildings. Moisture problems can have many causes, including uncontrolled humidity. Some moisture problems in buildings have been linked to changes in building construction practices during the 1970s, 80s, and 90s. Some of these changes

reported by some building occupants, particularly those with allergies or respiratory problems. Remediators should avoid exposing themselves and others to mold-laden dusts as they conduct their cleanup activities. Caution should be used to prevent mold and mold spores from being dispersed throughout the air where they can be inhaled by building occupants.

## Checklist for Mold Remediation

- Investigate and evaluate moisture and mold problems
- Assess size of moldy area (square feet)
- Consider the possibility of hidden mold
- Clean up small mold problems and fix moisture problems before they become large problems
- Select remediation manager for medium or large size mold problem
- Investigate areas associated with occupant complaints

# Health Concerns and Checklist for Remediation

- Identify source(s) or cause of water or moisture problem(s)
- Note type of water-damaged materials (wallboard, carpet, etc.)
- Check inside air ducts and air handling unit
- Throughout process, consult qualified professional if necessary or desired
- Communicate with building occupants at all stages of process, as appropriate
- Designate contact person for questions and comments about medium or large scale remediation as needed
- Plan remediation
- Adapt or modify remediation guidelines to fit your situation; use professional judgment
- Plan to dry wet, non-moldy materials within 48 hours to prevent mold growth (see Table 1 and text)
- Select cleanup methods for moldy items (see Table 2 and text)
- Select Personal Protection Equipment — protect remediators (see Table 2 and text)
- Select containment equipment - protect building occupants (see Table 2 and text)
- Select remediation personnel who have the experience and training needed to implement the remediation plan and use Personal Protection Equipment and containment as appropriate
- Remediate moisture and mold problems
- Fix moisture problem, implement repair plan and/or maintenance plan
- Dry wet, non-moldy materials within 48 hours to prevent mold growth
- Clean and dry moldy materials (see Table 2 and text)
- Discard moldy porous items that can't be cleaned (see Table 2 and text)

**Table 1: Water Damage – Cleanup and Mold Prevention**

Guidelines for Response to Clean Water Damage within 24 – 48 Hours to Prevent Mold Growth*	
Water-Damaged Material†	Actions
<b>Books and papers</b>	<ul style="list-style-type: none"> <li>• For non-valuable items, discard books and papers.</li> <li>• Photocopy valuable/important items, discard originals.</li> <li>• Freeze (in frost-free freezer or meat locker) or freeze-dry.</li> </ul>
<b>Carpet and backing – dry within 24-48 hours§</b>	<ul style="list-style-type: none"> <li>• Remove water with water extraction vacuum.</li> <li>• Reduce ambient humidity levels with dehumidifier.</li> <li>• Accelerate drying process with fans.</li> </ul>
<b>Ceiling tiles</b>	<ul style="list-style-type: none"> <li>• Discard and replace.</li> </ul>
<b>Cellulose insulation</b>	<ul style="list-style-type: none"> <li>• Discard and replace.</li> </ul>
<b>Concrete or cinder block surfaces</b>	<ul style="list-style-type: none"> <li>• Remove water with water extraction vacuum.</li> <li>• Accelerate drying process with dehumidifiers, fans, and/or heaters.</li> </ul>
<b>Fiberglass insulation</b>	<ul style="list-style-type: none"> <li>• Discard and replace.</li> </ul>
<b>Hard surface, porous flooring§</b> (Linoleum, ceramic tile, vinyl)	<ul style="list-style-type: none"> <li>• Vacuum or damp wipe with water and mild detergent and allow to dry; scrub if necessary.</li> <li>• Check to make sure underflooring is dry; dry underflooring if necessary.</li> </ul>
<b>Non-porous, hard surfaces</b> (Plastics, metals)	<ul style="list-style-type: none"> <li>• Vacuum or damp wipe with water and mild detergent and allow to dry; scrub if necessary.</li> </ul>
<b>Upholstered furniture</b>	<ul style="list-style-type: none"> <li>• Remove water with water extraction vacuum.</li> <li>• Accelerate drying process with dehumidifiers, fans, and/or heaters.</li> <li>• May be difficult to completely dry within 48 hours. If the piece is valuable, you may wish to consult a restoration/water damage professional who specializes in furniture.</li> </ul>
<b>Wallboard</b> (Drywall and gypsum board)	<ul style="list-style-type: none"> <li>• May be dried in place if there is no obvious swelling and the seams are intact. If not, remove, discard, and replace.</li> <li>• Ventilate the wall cavity, if possible.</li> </ul>
<b>Window drapes</b>	<ul style="list-style-type: none"> <li>• Follow laundering or cleaning instructions recommended by the manufacturer.</li> </ul>
<b>Wood surfaces</b>	<ul style="list-style-type: none"> <li>• Remove moisture immediately and use dehumidifiers, gentle heat, and fans for drying. (Use caution when applying heat to hardwood floors.)</li> <li>• Treated or finished wood surfaces may be cleaned with mild detergent and clean water and allowed to dry.</li> <li>• Wet paneling should be pried away from wall for drying.</li> </ul>

\* If mold growth has occurred or materials have been wet for more than 48 hours, consult Table 2 guidelines. Even if materials are dried within 48 hours, mold growth may have occurred. Items may be tested by professionals if there is doubt. Note that mold growth will not always occur after 48 hours; this is only a guideline.

These guidelines are for damage caused by clean water. If you know or suspect that the water source is contaminated with sewage, or chemical or biological pollutants, then Personal Protective Equipment and containment are required by OSHA. An experienced professional should be consulted if you and/or your remediators do not have expertise remediating in contaminated water situations. Do not use fans before determining that the water is clean or sanitary.

† If a particular item(s) has high monetary or sentimental value, you may wish to consult a restoration/water damage specialist.

§ The subfloor under the carpet or other flooring material must also be cleaned and dried. See the appropriate section of this table for recommended actions depending on the composition of the subfloor.

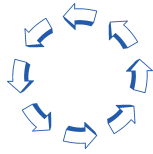
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**Table 2: Guidelines for Remediating Building Materials with Mold Growth Caused by Clean Water\***

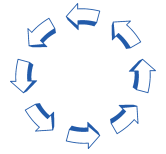
Material or Furnishing Affected	Cleanup Methods†	Personal Protective Equipment	Containment
<b>SMALL – Total Surface Area Affected Less Than 10 square feet (ft<sup>2</sup>)</b>			
Books and papers	3	Minimum N-95 respirator, gloves, and goggle	None required
Carpet and backing	1,3		
Concrete or cinder block	1,3		
Hard surface, porous flooring(linoleum, ceramic tile, vinyl)	1, 2, 3		
Non-porous, hard surfaces (plastics, metals)	1, 2, 3		
Upholstered furniture & drapes	1,3		
Wallboard (drywall and gypsu board)	3		
Wood surfaces	1, 2, 3		
<b>MEDIUM – Total Surface Area Affected Between 10 and 100 (ft<sup>2</sup>)</b>			
Books and papers	3	Limited or Full Use professional judgement, consider potential for remediator exposure and size of contaminated area	Limited Use professional judgement, consider potential for remediator/occupant exposure and size of contaminated area
Carpet and backing	1, 3, 4		
Concrete or cinder block	1, 3		
Hard surface, porous flooring(linoleum, ceramic tile, vinyl)	1, 2, 3		
Non-porous, hard surfaces (plastics, metals)	1, 2, 3		
Upholstered furniture & drapes	1, 3, 4		
Wallboard (drywall and gypsu board)	3, 4		
Wood surfaces	1, 2, 3		
<b>LARGE – Total Surface Area Affected Greater Than 100 (ft<sup>2</sup>) or Potential for Increased Occupant or Remediator Exposure During Remediation Estimated to be Significant</b>			
Books and papers	3	Full	Full
Carpet and backing	1, 3, 4	Use professional judgement, consider potential for remediator/occupant exposure and size of contaminated area	Use professional judgement, consider potential for remediator exposure and size of contaminated area
Concrete or cinder block	1, 3		
Hard surface, porous flooring(linoleum, ceramic tile, vinyl)	1, 2, 3, 4		
Non-porous, hard surfaces (plastics, metals)	1, 2, 3		
Upholstered furniture & drapes	1, 2, 4		
Wallboard (drywall and gypsu board)	3, 4		
Wood surfaces	1, 2, 3, 4		

\* Use professional judgment to determine prudent levels of Personal Protective Equipment and containment for each situation, particularly as the remediation site size increases and the potential for exposure and health effects rises. Assess the need for increased Personal Protective Equipment, if, during the remediation, more extensive contamination is encountered than was expected. Consult Table 1 if materials have been wet for less than 48 hours, and mold growth is not apparent. These guidelines are for damage caused by clean water. If you know or suspect that the water source is contaminated with sewage, or chemical or biological pollutants, then the Occupational Safety and Health Administration (OSHA) requires PPE and containment. An experienced professional should be consulted if you and/or your remediators do not have expertise in remediating contaminated water situations.

† Select method most appropriate to situation. Since molds gradually destroy the things they grow on, if mold growth is not addressed promptly, some items may be damaged such that cleaning will not restore their original appearance. If mold growth is heavy and items are valuable or important, you may wish to consult a restoration/water damage/remediation expert. Please note that these are guidelines; other cleaning methods may be preferred by some professionals.



# The Ohio Energy Efficiency Revolving Loan Fund



## Cleanup Methods

- **Method 1:** Wet vacuum (in the case of porous materials, some mold spores/fragments will remain in the material but will not grow if the material is completely dried). Steam cleaning may be an alternative for carpets and some upholstered furniture.
- **Method 2:** Damp-wipe surfaces with plain water or with water and detergent solution (except wood — use wood floor cleaner); scrub as needed.
- **Method 3:** High-efficiency particulate air (HEPA) vacuum after the material has been thoroughly dried. Dispose of the contents of the HEPA vacuum in well-sealed plastic bags.
- **Method 4:** Discard — remove water-damaged materials and seal in plastic bags while inside of containment, if present. Dispose of as normal waste. HEPA vacuum area after it is dried.

## Personal Protective Equipment (PPE)

- **Minimum:** Gloves, N-95 respirator, goggles/eye protection
- **Limited:** Gloves, N-95 respirator or half-face respirator with HEPA filter, disposable overalls, goggles/eye protection
- **Full:** Gloves, disposable full body clothing, head gear, foot coverings, full-face respirator with HEPA filter

## Containment

- **Limited:** Use polyethylene sheeting ceiling to floor around affected area with a slit entry and covering flap; maintain area under negative pressure with HEPA filtered fan unit. Block supply and return air vents within containment area.
- **Full:** Use two layers of fire-retardant polyethylene sheeting with one airlock chamber. Maintain area under negative pressure with HEPA filtered fan exhausted outside of building. Block supply and return air vents within containment area.

Table developed from literature and remediation documents including *Bioaerosols: Assessment and Control* (American Conference of Governmental Industrial Hygienists, 1999) and *IICRC S500, Standard and Reference Guide for Professional Water Damage Restoration*, (Institute of Inspection, Cleaning and Restoration, 1999); see *Resources List* for more information

**OPFMA Editor:** *The following is an edited version of material excerpted from the Ohio Department of Development, Office of Energy Efficiency web site. Many members may not be aware that public facilities in Ohio are eligible to receive low interest loans for energy efficiency and renewable energy projects. These projects can save a significant amount of money. In some cases the payoff period is relatively short. The availability of loan funds makes the up front investment affordable.*

The Ohio Energy Efficiency Revolving Loan Fund is a loan fund established to provide an incentive for Ohioans to proceed with energy efficiency and renewable energy projects. It reduces the interest rate on standard bank loans for those qualifying Ohio residents and businesses that borrow money to implement an energy efficiency or renewables energy project.

The Energy Efficiency Revolving Loan Fund (the “Energy Loan Fund”) is designed to provide financial incentives through interest rate reduction for investments in energy saving products, technologies or services that will:

conserve energy;  
increase the use of renewable energy technologies; and/or reduce energy consumption and costs for Ohio residents and businesses.

### 2. Is it new?

Yes, it is a new program. The Energy Loan Fund was established by the Ohio General Assembly under the 1999 electric restructuring act (Senate Bill 3) in Sections 4928.61 - 4928.63 of the Ohio Revised Code.

### 3. Who can apply for the Energy Loan Fund?

Any Ohio resident or small business that is a customer of one of the participating electric utilities and is considering securing a bank loan to pay for

energy-related improvements or additions to their home or business should apply.

The following categories of applicants are expected to apply:

- residential customers;
- purchasers of renewable energy systems;
- low-income housing developers;
- small commercial and industrial businesses;
- local governments;
- educational institutions;
- nonprofit entities; and
- agricultural customers.

### 4. Who operates the Energy Loan Fund?

The Office of Energy Efficiency (OEE) operates it. OEE is part of the Ohio Department of Development’s Community Development Division.

### 5. How is it paid for?

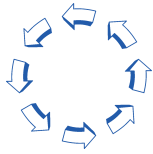
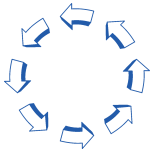
The Energy Loan Fund is financed through a rider (or fee) on the electric bills of the customers of the five investor-owned electric utilities in Ohio:

- AEP (Columbus Southern Power and Ohio Power);
- Cinergy (Cincinnati Gas and Electric);
- First Energy (Cleveland Electric Illuminating, Ohio Edison and Toledo Edison);
- Dayton Power and Light; and
- Monongahela Power.

Collections began on January 1, 2001. The typical residential customer is expected to pay about 9 cents per month as a contribution to the Energy Loan Fund.

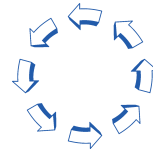
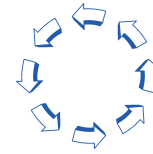
The utilities will remit the funds collected from their customers to the Ohio Department of Development on a quarterly basis. By 2011, the fund is expected to reach \$100 million. At that point, the riders will be eliminated.

*Continued on page 10...*



# The Ohio Energy Efficiency Revolving Loan Fund

Continued from page 9...



## 6. Can all Ohioans apply to the Energy Loan Fund?

At this time, customers of the municipal utilities and rural electric cooperatives are not paying a rider on their electric bills toward funding the Energy Loan Fund. Therefore, Ohio residents and companies served by munies and co-ops can not qualify for this program at this time.

## 7. How will the Energy Loan Fund promote energy efficiency?

For those Ohio companies, businesses, schools, institutions and residents who are considering becoming more energy efficient or using renewable energy, the Energy Loan Fund offers an incentive. Instead of paying the full interest rate offered by their bank, on projects that qualify under the program guidelines, they can borrow the money at a rate as low as half the standard bank interest rate.

## 8. What Energy Loan Fund programs will be available?

The Office of Energy Efficiency is developing the guidelines, procedures and documentation to implement targeted programs for the Energy Loan Fund. Three general programs have been planned.

*Business & Institutional Loans*  
(energy efficiency for buildings, equipment and processes)  
Anticipated Availability:  
First Quarter, 2002

*Residential Loans*

*Double Saving Loans for Energy Home Improvements*  
(focusing on ENERGY STAR® products/standards and residential renewable energy)  
Anticipated Availability:  
First Quarter, 2002

*Rental Housing Linked Deposit Program*  
(open to developers of low-income

rental housing tax credit projects as part of the Ohio Housing Finance Agency's "Housing Credit Allocation Plan")  
Anticipated Availability:  
First Quarter, 2002

*Renewable Energy Loans*  
(for use of renewable power by residential, business and institutional customers)  
Anticipated Availability:  
First Quarter, 2002

## 9. Tell me more about the Double Saving Loan for residential customers.

Qualified residential borrowers will enjoy "double savings" when participating in the Energy Loan Fund. First, they benefit from up to a 50 percent reduction in the interest rate on their bank loan. Second, the implementation of their project is likely to save them money on their monthly energy bills.

An eligible borrower under the Double Saving Loan program:

- is improving the energy efficiency of a one to three family residential building;
- is a permanent resident of State of Ohio;
- implements the project within the State of Ohio; and
- is a customer of a participating Ohio electric utility.

The interest rate reduction is available on bank loans from a minimum of \$1,000 up to a maximum for \$20,000 for a term of up to 8 years. The Energy Loan Fund's actual participation is at 50 percent of these loan amounts.

Eligible projects include the energy efficiency related costs for:

- A. Home Improvements/Weatherization - Approval of the loan will require either a HERO (Home Energy Rater of Ohio) rating or specifications and installation by

a contractor trained in the OEE "Whole House Energy Performance Workshop."

- B. Most ENERGY STAR® Products and Equipment

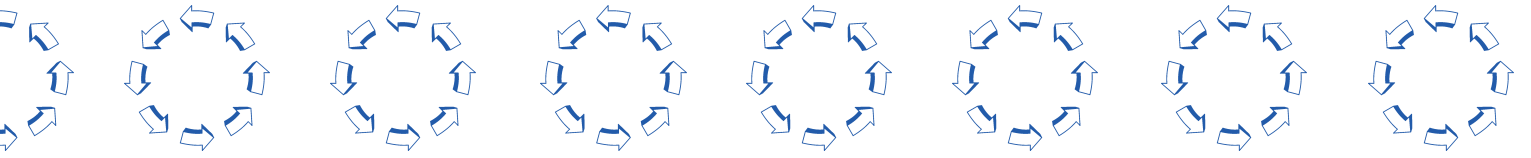
## 10. Tell me more about the Business & Institutional Loans.

The program offers interest rate reductions of up to 50 percent through loan participation with private lenders or through linked deposits.

Eligible business and institutional projects include the energy efficiency related costs for:

- A. New Construction (costs for going above model energy codes) additions to existing facilities, or on brownfields and grayfields only
- B. Rehabilitation
  - building shells
  - mechanical systems
  - appliances
- C. Equipment/Systems (purchase and installation)
- D. Examples of eligible projects:
  - combined heat and power systems
  - power factor correction
  - system thermal insulation
  - building envelope insulation
  - lighting systems
  - fuel source conversion to renewable heat recovery and
  - automatic control systems and modifications.

The Energy Loan Fund participation is limited to 50 percent participation of the loan. The Energy Loan Fund will participate at a minimum of \$5,000 and a maximum of \$250,000. The term can be up to eight years. When the term of the bank loan is greater than eight years, the Energy Loan Fund will purchase a certificate of deposit at zero percent interest and will link this deposit to the borrower's



bank loan for either an interest rate reduction over a period of five years or an interest rate savings over the life of the bank loan.

Some of the energy efficiency performance standards that must be met to secure a loan include the following:

- equipment and installations should meet the Energy Star® standard where such standard applies
- 5 years (or less) simple payback period is required
- expected life of measures or project must be longer than the payback period
- project results in 15 percent more energy efficient than existing conditions

### **11. Tell me more about the Renewable Energy Loans.**

The Renewable Energy Loan program promotes investment in energy efficient products, technologies or services that use clean, renewable energy resources. Eligible projects include but are not limited to the purchase and installation of:

- solar energy (photovoltaic cells)
- wind energy (wind turbines)
- bio-mass/bio-energy (from plants and trees or landfill methane)
- hydropower (from flowing water or existing dams) and fuel cells.

For residential renewable energy projects, the Energy Loan Fund participation is limited to a minimum of \$500 and a maximum of \$25,000. For business and institutional renewable energy projects, the Energy Loan Fund participation is limited to a minimum of \$5,000 and a maximum of \$500,000. Depending on the type of loan, the

term is either for up to 5 years or to 8 years.

### **12. Why provide loans for renewable energy as part of the Energy Efficiency Revolving Loan Fund?**

The Energy Loan Fund is set up to help Ohioans reduce energy consumption and effectively manage their energy use. Support of renewable energy makes sense for several reasons:

- there is more volatility in the supply and price of non-renewable fossil fuels than with renewable fuels;
- the use of fossil fuels creates some environmental and health concerns;
- fossil fuels are non-renewable and eventually will run out, whereas renewable fuel sources are constantly replenished; and using renewable fuels make sense today due to improved technologies and more affordable costs.

### **13. How can I apply?**

When the programs open, borrowers will apply to the private lender for the loan and apply to OEE for "Energy Efficiency Project" approval. When the Energy Efficiency Project forms are ready, they will be available through the lender or through OEE.

### **14. Which banks are participating?**

There are 261 financial institutions in the State of Ohio that are authorized by the Treasurer of State to participate in the Energy Loan Fund. However, not all eligible lenders will choose to participate. OEE is in process of enrolling lenders in the program at this time. A list of participating lenders will be posted at this web site.

Any bankers that have not enrolled but would like to do so should contact the Energy Loan Fund administrator as indicated below.

### **15. What are some of the benefits of the Energy Loan Fund?**

The borrower enjoys up to a 50 percent reduction in bank interest rate, saves on monthly utility bills and makes his/her investment in energy efficiency or renewables more affordable.

The State of Ohio fulfills its goals of helping Ohioans reduce their energy use and promoting a diverse and robust supply of energy resources.

### **16. How can I get more information?**

For information about Double Saving Loans for Energy Home Improvements, contact Dan Flynn at (614) 466-4007 or [dflynn@odod.state.oh.us](mailto:dflynn@odod.state.oh.us).

For information about Business and Institutional loans or about Rental Housing Linked Deposits, contact Carolyn Seward at (614) 466-4053 or [cseward@odod.state.oh.us](mailto:cseward@odod.state.oh.us).

For information about Renewable Energy loans for your home, contact Dan Flynn at (614) 466-4007 or [dflynn@odod.state.oh.us](mailto:dflynn@odod.state.oh.us).

For all other renewable energy loans, contact Carolyn Seward at (614) 466-4053 or [cseward@odod.state.oh.us](mailto:cseward@odod.state.oh.us).

Lenders who would like to enroll in the program should contact the Energy Loan Fund administrator, Judy Jones at (614) 466-8139 or [jsjones@odod.state.oh.us](mailto:jsjones@odod.state.oh.us).

***For more information please visit the ODOD, Energy Efficiency Web Site at [www.odod.state.oh.us/cdd/oee](http://www.odod.state.oh.us/cdd/oee).***

**Ohio Public Facilities Maintenance Association**

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