100345
8/24/10

MEMORANDUM

TO: Environmental Concerns Committee

THROUGH: Carl Goldsmith, Director of Public Works CG

FROM: David Gorman, Assistant Director of Public Works DG

SUBJECT: **Green Building Handbook and Text Amendments to §155.200**

DATE: March 3, 2010

Per request of the Committee Chair, Staff is providing you with the attached Green Building Handbook and information regarding proposed text amendments to the Village's Zoning Code §155.200. The proposed text amendments include comments made by the Plan Commission. Please review the materials for the meeting on August 24th and provide any comments for consideration of Staff and the Board of Trustees. Community Development staff will attend the meeting to answer questions. The Board is expected to vote on the amendments at their meeting on September 2nd.

CG/DG:dg H:\PW\Asst Director\Correspondence\Memos\ECC Green Handbook and Zoning Text Amendemnts.doc
attachments

Alternative Energy Structures: Proposed Text Amendments

Lombard Plan Commission

June 21, 2010

Solar Panels – Application Examples

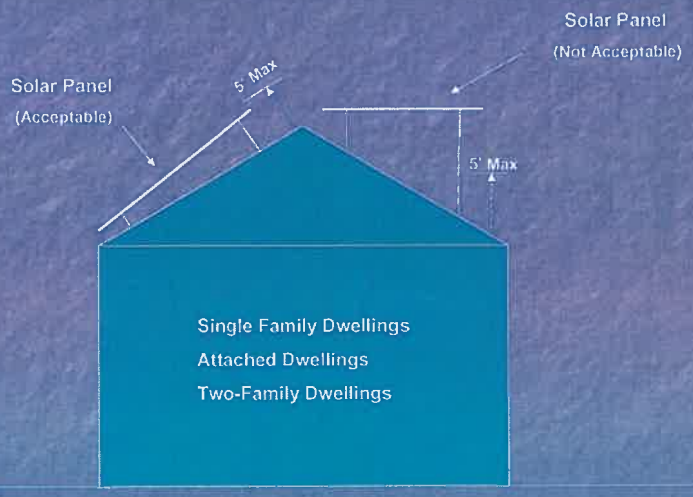
← **Residential Application**

(5' allowable pitch accommodates flat roofs)

Commercial Buildings
Industrial Buildings
Office Buildings
Multiple-Family Dwellings →

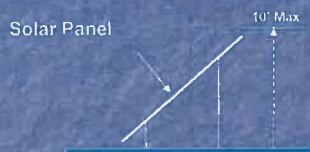
(10' allowable pitch accommodates flat roofs (as shown))

Solar Panels – Proposed Amendments



Single Family Dwellings
Attached Dwellings
Two-Family Dwellings

Solar Panels – Proposed Amendments



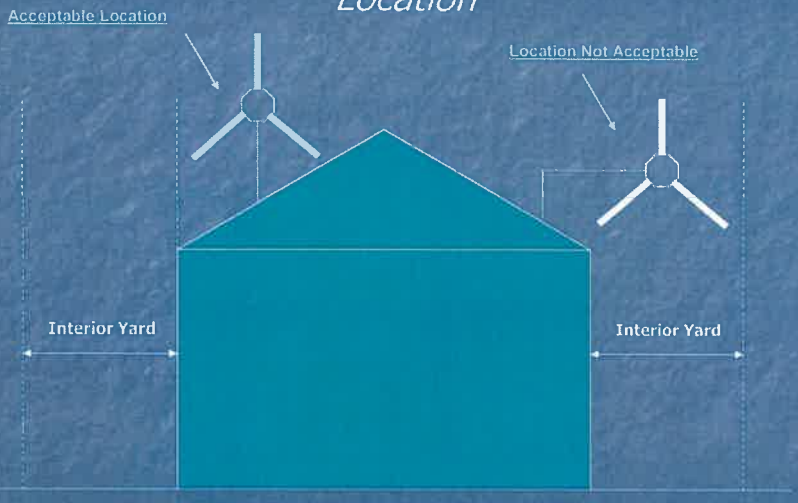
Commercial Buildings
Industrial Buildings
Office Buildings
Multiple-Family Dwellings

Small Scale Wind Energy Systems

Horizontal Axis Turbine

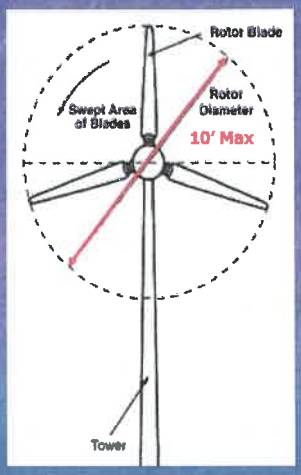
Vertical Axis Turbine

Roof Mounted Small Scale Wind Energy Systems - *Location*



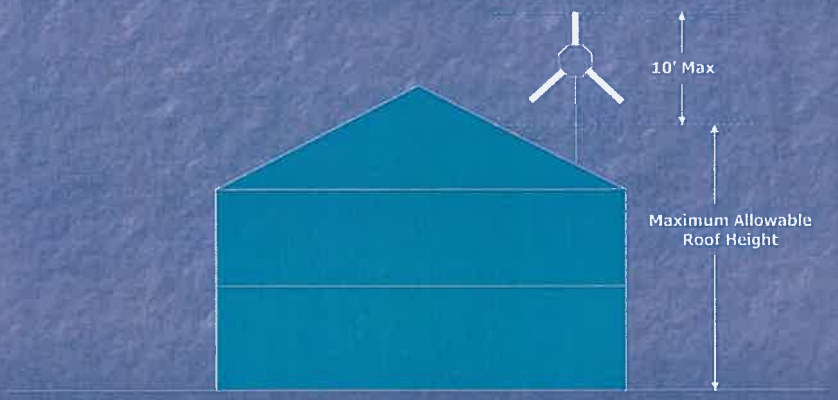
(The same regulations apply to all required yards)

Roof Mounted Small Scale Wind Energy Systems – *Size*



Rotor Diameter

Roof Mounted Small Scale Wind Energy Systems – *Height*



Roof Mounted Small Scale Wind Energy Systems – *Sound*

Proposed:

Residential:

55 dBA *Daytime*

45 dBA *Nighttime*

Nonresidential (all sides):

60 dBA *Anytime*

Industrial (all sides):

65 dBA *Anytime*

Equivalents (City of Naperville)

Sound Environment	Typical Sound Pressure Levels Generated (dBA)
Threshold of hearing	0 dBA
Broadcast studio	20 dBA
Library	30 dBA
Quiet office	40 dBA
Light auto traffic (100 feet)	50 dBA
Air-conditioning unit (20 feet)	60 dBA
Freeway traffic	70 dBA
Vacuum cleaner (5 feet)	80 dBA
Passing car at 10 feet	90 dBA
Passing bus or truck at 10 feet	100 dBA
Passing subway train at 10 feet	110 dBA
Nightclub with band playing	120 dBA
Jet takeoff (200 feet)	130 dBA
Air-raid siren	140 dBA

GREEN BUILDING HANDBOOK

VILLAGE OF LOMBARD ✻ DEPARTMENT OF COMMUNITY DEVELOPMENT

6/22/2010

Dear Residents/Builders,

The Village of Lombard is committed to preserving energy, the natural environment and other vital resources. As a result, the Department of Community Development has created a handbook that serves as an informational guide to the public. Through the education of recent building, stormwater and site design trends, the Green Building Handbook is also intended to promote current green practices.

Whether you are constructing a new single-family home, experiencing flooding problems on your property or considering alternative energy solutions; the Green Building Handbook will provide detailed information pertaining to Lombard incentive programs, stormwater remediation, energy-efficient home options and recent updates to the Energy Code and Zoning Ordinance.

Please note that all information contained in this document is intended to be informative in nature and are subject to change without notice. All items discussed are still subject to all applicable Village Codes.

Sincerely,

Department of Community Development
255 E. Wilson Ave
Lombard, IL 60148
(630) 620-5749

GREEN BUILDING

VILLAGE OF LOMBARD ◇ DEPARTMENT OF COMMUNITY DEVELOPMENT

In This Section:

- ☼ What is (a) Green Building?
- ☼ Why Build Green?
- ☼ LEED

WHAT IS (A) GREEN BUILDING?

While there are a number of ways to define a green building, for the purposes of this handbook, the term refers to a structure that is designed, constructed and/or operated in a way that minimizes the environmental impact on its surroundings. At a minimum, green buildings usually include: reduced energy and water consumption; minimization of toxic materials (thereby improving indoor air quality); and increased use of recycled materials.

Multiple green design and construction strategies are employed in green buildings. The following are a sample of such strategies:

1. Maximizing daylight to reduce the need for overhead lights.
2. Incorporating energy-efficient lighting and motion sensors.
3. Using light colored roofing or roofing with vegetation.
4. Minimizing stormwater runoff and reusing captured water on-site.
5. Applying water conservation measures such as low-flow plumbing fixtures.
6. Utilizing non-toxic materials free of Volatile Organic Compounds (VOC).
7. Purchasing sustainably-harvested wood products.
8. Including locally produced materials that reduce energy associated with transportation.
9. Developing construction management plans to reduce construction related waste.
10. Generating energy on-site with clean and/or renewable power such as solar, wind or combined heat and power.

WHY BUILD GREEN?

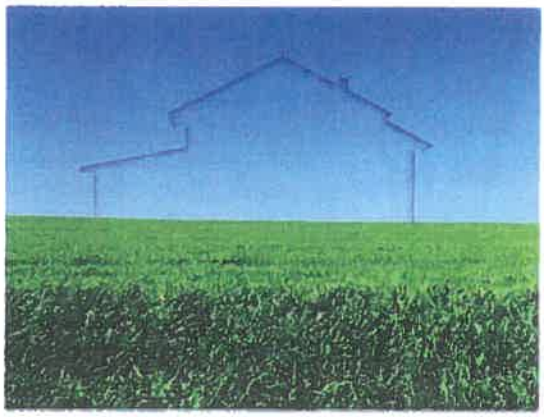
There are benefits that could be considered by any development project.

The U.S. Environmental Protection Agency defines the benefits of building green in three major categories:

- **Environmental Benefits:** Green buildings conserve natural resources, protect ecosystems, improve air and water quality, and decrease waste.

- **Economic Benefits:** Green buildings reduce capital and operating costs, increase property values, and boost worker productivity.

- **Health and Community Benefits:** Green buildings improve the health, wellbeing, and quality of life for occupants as well as the surrounding community. The community also benefits from a reduction in pressures on the local infrastructure and service delivery systems.



LEED

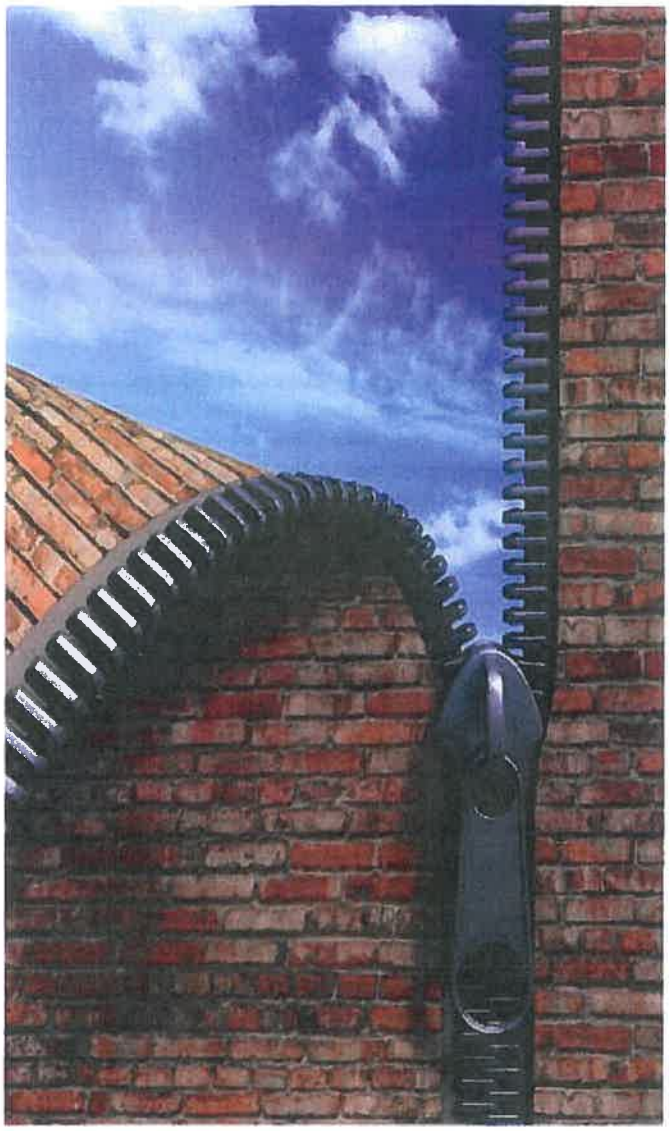
Leadership in Energy and Environmental Design (LEED) is an internationally recognized green building certification system, providing third-party verification that a building or community was designed and built using strategies aimed at improving performance across all the metrics that matter most: energy savings, water efficiency, CO_2 emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts.

Developed by the U.S. Green Building Council (USGBC), LEED provides building owners and operators a concise framework for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions.

LEED is flexible enough to apply to all building types – commercial as well as residential. It works throughout the building lifecycle – design and construction, operations and maintenance, tenant fit out, and significant retrofit. And LEED for Neighborhood Development extends the benefits of LEED beyond the building footprint into the neighborhood it serves.

Architects, real estate professionals, facility managers, engineers, interior designers, landscape architects, construction managers, lenders and government officials all use LEED to help transform the built environment to sustainability. State and local governments across the country are adopting LEED for public-owned and public-funded buildings; there are LEED initiatives in federal agencies, including the Departments of Defense, Agriculture, Energy, and State; and LEED projects are in countries worldwide, including Canada, Brazil, Mexico and India.

While the Village of Lombard has not formally adopted the LEED system, interested parties are encouraged to contact the U.S. Green Building Council—Chicago Chapter for more information on the certification process. Please visit the Chicago Chapter's web site at http://www.usgbc-chicago.org/.



ENERGY-EFFICIENT HOME OPTIONS

VILLAGE OF LOMBARD ◇ DEPARTMENT OF COMMUNITY DEVELOPMENT

In This Section:

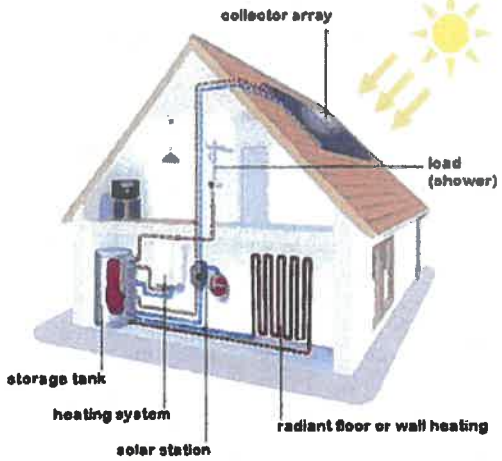
- ☼ Solar Energy
- ☼ Geothermal Heating & Cooling
- ☼ Wind Energy

SOLAR ENERGY

Very often there is confusion about the various methods used to harness the sun's abundant and clean energy. Energy from the sun can be categorized in two ways: (1) in the form of heat (or thermal energy), and (2) in the form of light energy. Examples of these solar technologies can already be seen on residential structures and properties throughout the Village of Lombard.

Thermal

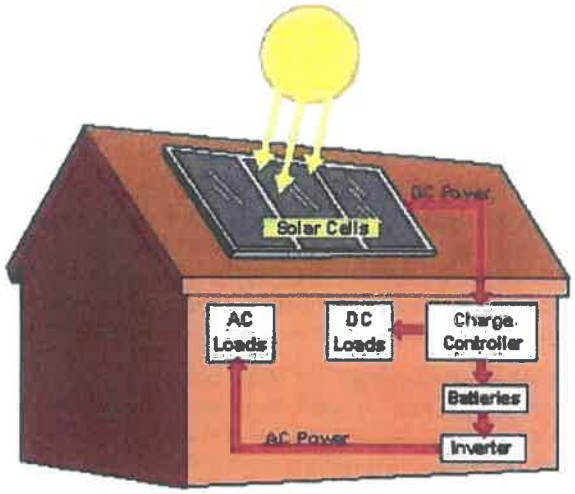
Solar thermal technologies use the sun's heat energy to heat substances (such as water or air) for applications such as space heating, pool heating and water heating for homes and businesses.



Solar Heating System

Light Energy

The sun's heat can also be used to produce electricity on a large utility-scale by converting the sun's heat energy into mechanical energy. Photovoltaics (PV) is a technology often confused with solar thermal and is in fact what many people mean when they refer to solar energy. Photovoltaics (photo=light, voltaics=electricity) is a semiconductor-based technology (similar to the microchip) which converts light energy directly into an electric current that can either be used immediately or stored, such as in a battery, for later use.

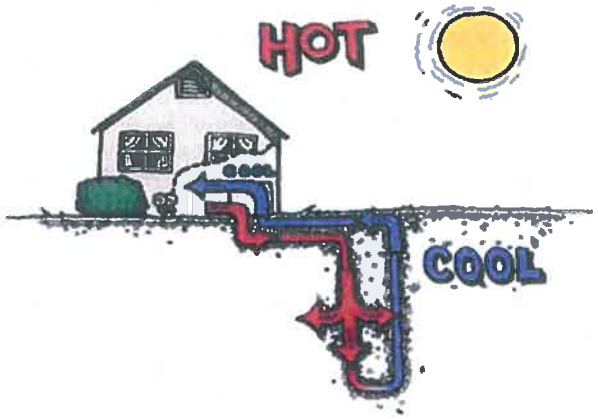


Solar Energy System

GEOTHERMAL HEATING & COOLING

The application of geothermal heating/cooling, also known as ground source heat pumps, has been named "the most energy-efficient and environmentally sensitive of all space conditioning systems", by the Environmental Protection Agency. The system's basic concept takes advantage of the earth's constant temperature, approximately 55 degrees, to heat and cool a building. By tapping this steady flow of heat from the earth in the winter, and displacing heat in the earth in the summer, a geothermal heat pump can save homeowners 40 to 70 percent in heating costs and 30 to 50 percent in cooling costs compared to conventional systems.

Geothermal heat pumps are much more efficient than air source heat pumps because earth temperatures are much more uniform through the year than air temperatures. Not only are earth temperatures more constant, but also the range of temperatures in ground water is rather small in the United States, varying from upper 40's to upper 70's nationwide.



Geothermal Cooling

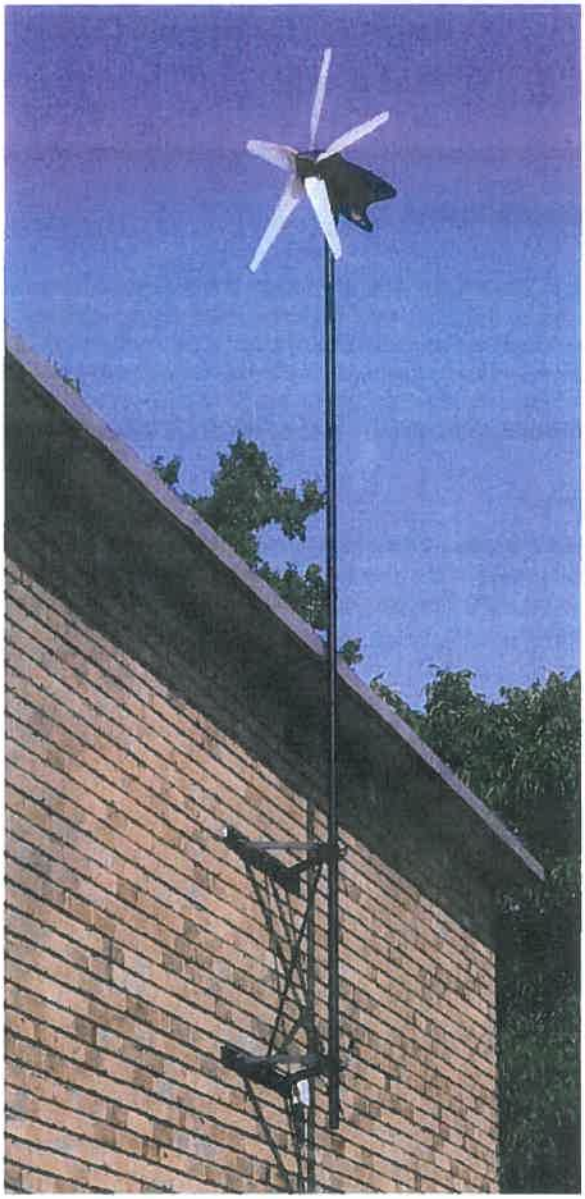
WIND ENERGY

Wind is a form of solar energy. Winds are caused by the uneven heating of the atmosphere by the sun, the irregularities of the earth's surface, and rotation of the earth. Wind flow patterns are modified by the earth's terrain, bodies of water, and vegetative cover. This wind flow, or motion energy, when "harvested" by modern wind turbines, can be used to generate electricity.

The terms "wind energy" or "wind power" describe the process by which the wind is used to generate mechanical power or electricity. Wind turbines turn in the moving air and power an electric generator that supplies an electric current.

Simply stated, a wind turbine is the opposite of a fan. Instead of using electricity to make wind, like a fan, wind turbines use wind to make electricity. The wind turns the blades, which spin a shaft, which connects to a generator and makes electricity.

Wind energy is a free, renewable resource, so no matter how much is used today, there will still be the same supply in the future. Wind energy is also a source of clean, non-polluting, electricity. Unlike conventional power plants, wind plants emit no air pollutants or greenhouse gases.

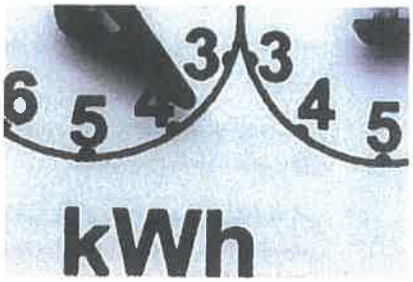


ENERGY CODE UPDATES

VILLAGE OF LOMBARD ☼ DEPARTMENT OF COMMUNITY DEVELOPMENT

In This Section:

- ☼ 2009 International Energy Conservation Code
- ☼ Code Highlights



2009 INTERNATIONAL ENERGY CONSERVATION CODE

The International Energy Conservation Code (IECC) is designed to help protect the environment and reduce energy consumption. By following an energy conservation code, property owners can reduce air pollution, moderate energy demand and stabilize energy costs and electric, oil, and gas supplies.

The efficient gains of the 2009 code set a new baseline for IECC-compliant homes and buildings, and while, there will be regional variability and uncertainty in the technology penetration, preliminary estimates from U.S. Department of Energy suggest the 2009 IECC will be at least 18 percent and possibly even 22 percent more energy efficient than the 2006 IECC.

CODE HIGHLIGHTS

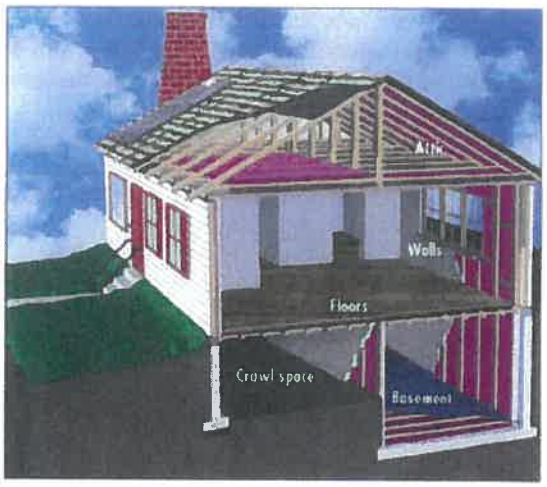
The 2009 Energy Efficient Building Act provisions adopted by the State of Illinois set forth a number of changes, including:

Windows

- Any new windows, including replacement windows will need to meet the new energy code.
- Exterior windows that had no minimum U-Factor will need to have a minimum U-Factor of .35.
- Skylights that had no minimum U-Factor will now have a minimum U-Factor of .60.

Insulation

- Ceiling Insulation R-value will be increased from R-30 to R-38.
- Wood framed exterior wall insulation R-value will be increased from R-13 to R-20.
- Floor insulation R-value will be increased from R-19 to R-30.
- Basement wall insulation R-value will increase from 0 to R-13.
- Crawl space wall insulation R-value will increase from 0 to R-13.
- Air leakage testing or inspection is now required for the building envelope.
- Wood burning fireplaces will now need to have gasketed doors and have outside combustion air.



HVAC

- A programmable thermostat will be required for all new furnace installations.
- Duct insulation required for HVAC ducts located in unconditioned spaces shall be R-8.
- All HVAC ducts will be required to have all seams sealed.
- An air leakage test will be required to be performed on the sealed HVAC ducts.
- A duct leakage test will need to be performed by the contractor during the rough inspection phase of construction.
- All heating and cooling systems will be required to be sized per the International Mechanical Code.

Water Heaters

- Hot water heating systems will be required to have all water circulation piping insulated with R-2.

Lighting

- Recessed lighting will now be required to be air tight fixtures that are gasketed to the ceiling or wall covering.
- 50% of the lamps installed are required to be high – efficacy lamps.

Pools

- All heated pools will be required to have a vapor retardant cover and pools heated to over 90 degrees will be required to have an R-12 insulated cover.

Did you know?...

For every degree you lower the thermostat during heating season, you'll save between 1 and 3% of your heating bill?

Simple leaks can sap home energy efficiency by 5% to 30% a year, according to the U.S. Department of Energy. That means it pays to seal up gaps with caulking and weatherstripping.

Studies show 10% to 30% of heated (or cooled) air in an average system escapes from air ducts.

STORMWATER REMEDIATION

VILLAGE OF LOMBARD ◇ DEPARTMENT OF COMMUNITY DEVELOPMENT

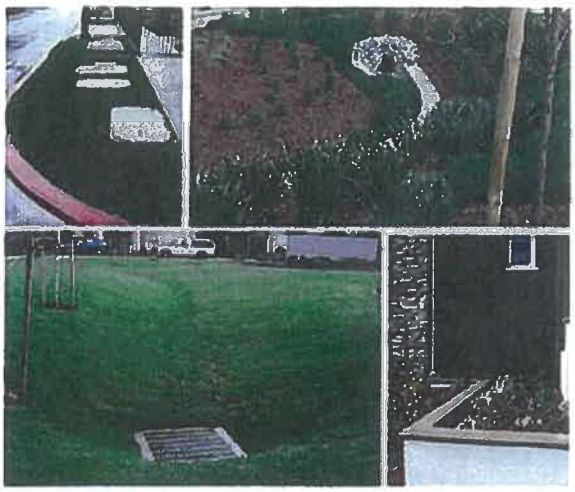
In This Section:

- ☼ Best Management Practices
- ☼ Infiltration Practices
- ☼ Runoff Storage Practices
- ☼ Runoff Conveyance Practices
- ☼ Filtration Practices
- ☼ Low Impact Landscaping

BEST MANAGEMENT PRACTICES

The DuPage Countywide Stormwater and Floodplain Ordinance now requires new developments to address stormwater quality issues through the implementation of Best Management Practices (BMPs). BMPs are techniques used to control stormwater runoff, sediment control, and soil stabilization, as well as management decisions to prevent or reduce nonpoint source pollution. The EPA defines a BMP as a "technique, measure or structural control that is used for a given set of conditions to manage the quantity and improve the quality of stormwater runoff in the most cost-effective manner."

The intent of the use of BMPs is to address the pollutants associated with stormwater runoff. The County has prepared a comprehensive appendix of available BMPs that can be implemented to achieve the required water quality. Runoff conveyance, infiltration practices, filtration practices, runoff storage practices and low impact landscaping are all examples of BMPs. Please note that parcels of less than one acre that are developed for single family or two family uses are exempt.



INFILTRATION PRACTICES

Infiltration practices are engineered structures or landscape features designed to capture and infiltrate runoff. They can be used to reduce both the volume of runoff discharged from the site and the infrastructure needed to convey, treat, or control runoff. Infiltration practices can also be used to recharge ground water. This benefit is especially important in areas where maintaining drinking water supplies and stream baseflow is of special concern because of limited precipitation or a high ratio of withdrawal to recharge rates. Infiltration of runoff can also help to maintain stream temperatures because the infiltrated water that moves laterally to replenish stream baseflow typically has a lower temperature than overland flows, which might be subject to solar radiation. Another advantage of infiltration practices is that they can be integrated into landscape features in a site-dispersed manner. This feature can result in aesthetic benefits and, in some cases, recreational opportunities; for example, some infiltration areas can be used as playing fields during dry periods.

Examples of Infiltration Practices

- Infiltration basins and trenches
- Porous pavement
- Rain gardens and other vegetated treatment systems

RUNOFF STORAGE PRACTICES

Impervious surfaces are a central part of the built environment, but runoff from such surfaces can be captured and stored for reuse or gradually infiltrated, evaporated, or used to irrigate plants. Using runoff storage practices has several benefits. They can reduce the volume of runoff discharged to surface waters, lower the peak flow hydrograph to protect streams from the erosive forces of high flows, irrigate landscaping, and provide aesthetic benefits through the use of landscape islands, tree boxes, and rain gardens. Designers can take advantage of the void space beneath paved areas like parking lots and sidewalks to provide additional storage. For example, underground vaults can be used to store runoff in both urban and rural areas.

Examples of Runoff Storage Practices

- Parking lot, street, and sidewalk storage
- Rain barrels and cisterns
- Depressional storage in landscape islands and in tree, shrub, or turf depressions
- Green roofs

Rain barrels collect and hold rainwater from rooftops, which can be used for watering lawns and gardens. Water collected in rain barrels is kept from flowing over paved surfaces, picking up pollutants, entering a storm drain, and eventually discharging into local waterways.

Like rain barrels, cisterns can also harvest rain water for later use. Cisterns are typically larger in size and can also be outfitted with filters (or other water purification methods). Some cisterns sit on the top of houses or on the ground higher than the house, and supply the running water needs for the house.

Residential Cistern

RUNOFF CONVEYANCE PRACTICES

Large storm events can make it difficult to retain all the runoff generated on-site by using infiltration and storage practices. In these situations, conveyance systems are typically used to route excess runoff through and off the site. In Low Impact Development (LID) designs, conveyance systems can be used to slow flow velocities, lengthen the runoff time of concentration, and delay peak flows that are discharged off-site. LID conveyance practices can be used as an alternative to curb-and-gutter systems, and from a water quality perspective, they have advantages over conventional approaches designed to rapidly convey runoff off-site and alleviate on-site flooding. LID conveyance practices often have rough surfaces, which slow runoff and increase evaporation and settling of solids. They are typically permeable and vegetated, which promotes infiltration, filtration, and some biological uptake of pollutants. LID conveyance practices also can perform functions similar to those of conventional curbs, channels, and gutters. For example, they can be used to reduce flooding around structures by routing runoff to landscaped areas for treatment, infiltration, and evapotranspiration.

Examples of Runoff Conveyance Practices

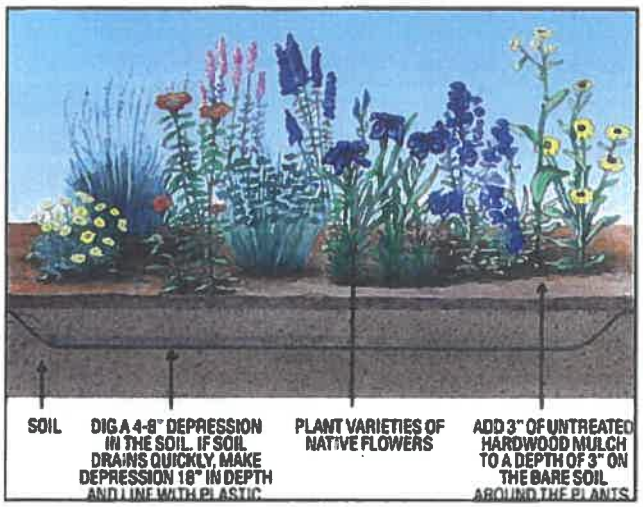
- Creating grassed swales and grass-lined channels
- Roughening surfaces
- Creating long flow paths over landscaped areas
- Installing smaller culverts, pipes, and inlets
- Creating terraces and check dams

FILTRATION PRACTICES

Filtration practices are used to treat runoff by filtering it through media that are designed to capture pollutants through the processes of physical filtration of solids and/or cation exchange of dissolved pollutants. Filtration practices offer many of the same benefits as infiltration, such as reductions in the volume of runoff transported offsite, ground water recharge, increased stream baseflow, and reductions in thermal impacts to receiving waters. Filtration practices also have the added advantage of providing increased pollutant removal benefits. Although pollutant build-up and removal may be of concern, pollutants are typically captured in the upper soil horizon and can be removed by replacing the topsoil.

Examples of Filtration Practices

- Bioretention/rain gardens
- Vegetated swales
- Vegetated filter strips/buffers



Rain Garden Diagram

LOW IMPACT LANDSCAPING

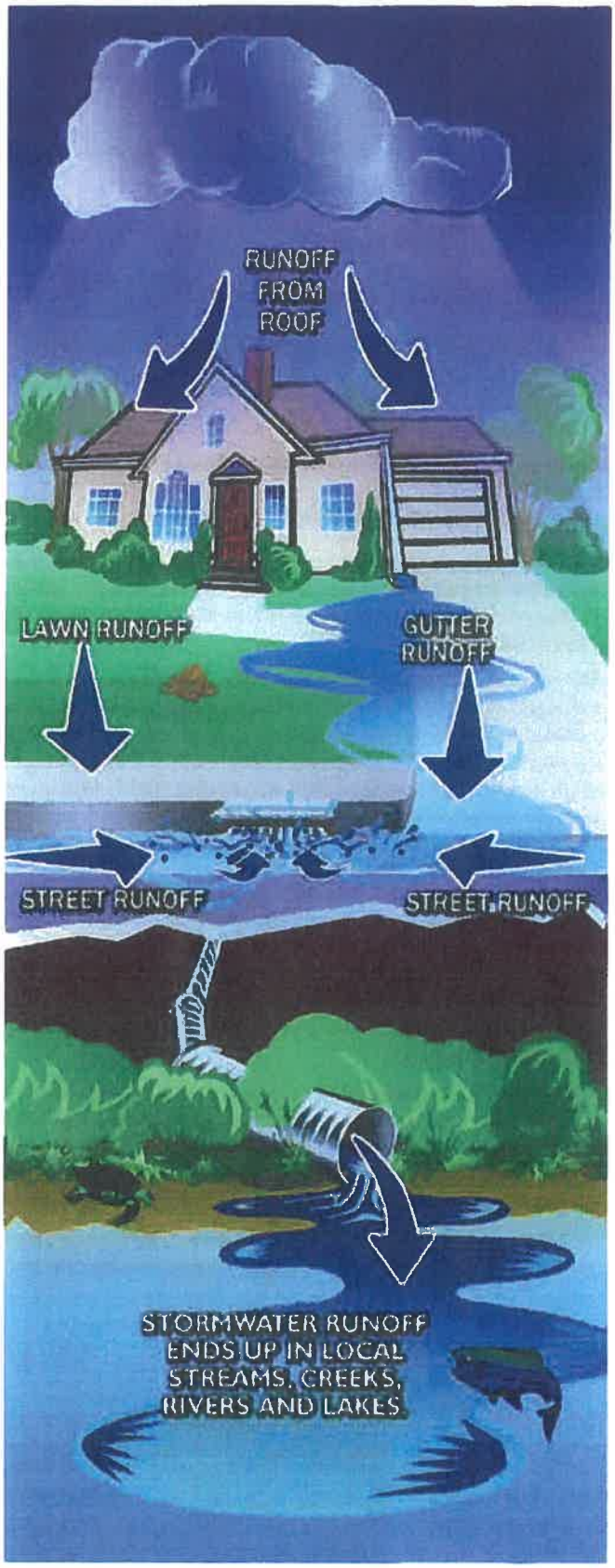
Selection and distribution of plants must be carefully planned when designing a functional landscape. Aesthetics are a primary concern, but it is also important to consider long-term maintenance goals to reduce inputs of labor, water, and chemicals. Properly preparing soils and selecting species adapted to the microclimates of a site greatly increases the success of plant establishment and growth, thereby stabilizing soils and allowing for biological uptake of pollutants.

Dense, healthy plant growth offers such benefits as pest resistance (reducing the need for pesticides) and improved soil infiltration from root growth. Low impact landscaping can thus reduce impervious surfaces, improve infiltration potential, and improve the aesthetic quality of the site.

Examples of Low Impact Landscaping

- Planting native, drought tolerant plants
- Converting turf areas to shrubs and trees
- Reforestation
- Longer grass length (where appropriate)
- Planting wildflower meadows rather than turf along medians and in open space
- Amending soil to improve infiltration

For more information on reducing stormwater costs, please visit...http://ec.dupageco.org/StormWaterUpdate/



OPEN SPACE

VILLAGE OF LOMBARD ◇ DEPARTMENT OF COMMUNITY DEVELOPMENT

In This Section:

- ☼ Open Space Provisions
- ☼ Open Space Conservation Design

OPEN SPACE PROVISIONS

Open space is an important quality of life issue because it provides recreational opportunities, aids in stormwater management and water quality, and adds to the overall suburban character of the Village.

The Zoning Ordinance creates and preserves open space through required yards (non-buildable areas of a property) and a minimum required amount of open space on each lot. In the Zoning Ordinance, open space is defined as " that portion of a lot or property maintained as lawn, garden, field, woods, wetland, or other natural landscape area and is free of buildings, structures and impervious surfaces." This definition prevents structures such as decks, driveways, and patios from being counted as open space. The minimum required open space ranges depending on the intent and use of each zoning district, from zero percent in the Central Business District up to 75% in the Conservation Recreation District. Single-family homes and other R1 and R2-zoned properties, which account for half of Lombard's zoned land area, are required to provide no less than 50 percent open space.

Requiring a minimum amount of landscaped open space on each property provides direct environmental benefits that other methods cannot. Lombard residents and property owners benefit from the open space requirement as it serves both to regulate bulk on a property and act as a passive check on neighborhood flooding.

OPEN SPACE CONSERVATION DESIGN

Preserving open space through design consideration can be used to minimize the generation of stormwater runoff. Such designs can reduce the amount of impervious surface, which can cause increased stormwater runoff volumes. Open space can also be used to treat the increased runoff from the built environment through infiltration or evapotranspiration. By preserving natural areas and not clearing and grading the entire site for housing lots, less total runoff is generated on the development parcel. Such simplistic, nonstructural methods can reduce the need to build large structural runoff controls like retention ponds and stormwater conveyance systems and thereby decrease the overall infrastructure costs of the project. Reducing the total area of impervious surface can also reduce the volume of runoff that must be treated. Residential developments that incorporate conservation design principles also may benefit residents and their quality of life due to increased access and proximity to shared open space and expanded recreational opportunities.

Examples of Conservation Design

- Cluster development
- The use of pervious pavers
- Provide only the minimum required amount of parking (or reducing the amount of unnecessary spaces).

Please note: While the Zoning Ordinance does not recognize pervious pavers as open space, such surfaces do provide greater stormwater runoff benefits.

ZONING ORDINANCE PROVISIONS

VILLAGE OF LOMBARD ◇ DEPARTMENT OF COMMUNITY DEVELOPMENT

In This Section:

- ☼ Background
- ☼ Small Scale Wind Energy Systems
- ☼ Geothermal Systems
- ☼ Solar Panels
- ☼ Rain Barrels/Cisterns

BACKGROUND

Until recently, the Zoning Ordinance did not specifically address alternative energy structures. However, one could have placed such structures on their property as they were considered "accessory structures" and regulated as such. Due to increased energy costs and the demand for alternative energy solutions, the Village of Lombard updated its Zoning Ordinance to allow these structures to be placed in their niche locations. Through text amendments to the Zoning Ordinance, solar panels, wind turbines, rain barrels and cisterns have now all been given special consideration in order to encourage residents to utilize their beneficial attributes.

SOLAR PANELS

Solar panels are now regulated in the Zoning Ordinance as follows:

Roof mounted:

Single Family Dwellings, Attached Dwellings, Two-Family Dwellings:

Roof mounted solar panels shall not project more than five (5) feet from the structure upon which they are located.

All others:

Roof mounted solar panels shall not project more than ten (10) feet from the structure upon which they are located.

Ground mounted:

Regulated as an accessory structure. Permitted obstruction in the rear yard only. Area determined by the total surface area of the panel(s).

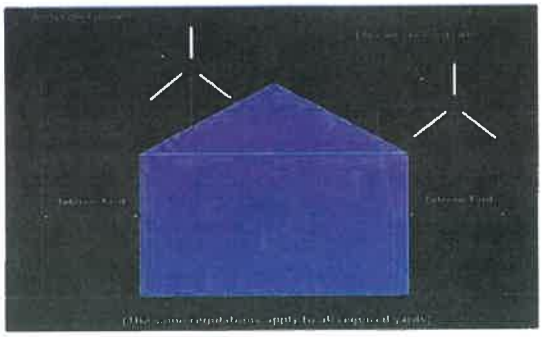
SMALL SCALE WIND ENERGY SYSTEMS

Small Scale Wind Energy Systems (wind turbines) are now regulated in the Zoning Ordinance as followed:

Roof Mounted:

Roof-mounted Small Scale Wind Energy Systems shall be permitted in all zoning districts as accessory structures, subject to the following regulations:

Location. Roof Mounted Small Scale Wind Energy Systems shall not project into any requisite yard.



Size. The maximum rotor diameter of any Small Scale Wind Energy System shall not exceed ten feet (10').

Number. Each property shall be limited to one (1) roof mounted Small Scale Wind Energy System.

Height. The height of a Roof Mounted Small Scale Wind Energy System shall be measured to the blade extended at its highest point. No Roof Mounted Small Wind Energy Systems shall project higher than ten (10) feet above the maximum allowable roof height of the underlying zoning district.

Appearance. Roof Mounted Small Scale Wind Energy Systems, and their accompanying support structures; shall be neutral in color or of a color and material which matches the exterior of the building or structure on which they are mounted. No advertising shall be allowed on any Roof Mounted Small Scale Wind Energy Systems.

Lighting. No signals or lights or illumination shall be permitted on Roof Mounted Small Scale Wind Energy Systems unless required by the Federal Communications Commission, the Federal Aviation Administration or the Village.

Sound levels. The average sound level from a Small Scale Wind Energy System abutting any residential properties shall not exceed fifty-five (55) dB(A) during daytime hours or forty-five (45) dB(A) during nighttime hours, as measured at a height of five feet (5') directly above the adjoining property lines during operation. For properties abutting industrial properties on all sides, the sound level limit is sixty-five (65) dB(A) and for properties abutting nonresidential properties on all sides, the sound level limit is sixty (60) dB(A) at any time of the day, as measured at a height of five feet (5') directly above the adjoining property lines during operation. These sounds levels can be exceeded during short-term events such as utility outages or severe windstorms.

Access. Access to Small Scale Wind Energy Systems shall be controlled in a manner consistent with local Building Codes.

Please note, text amendments relating particularly to ground mounted Small Scale Wind Energy Systems may come at a later date, when more information is available on the structures and when there is an increased demand for such structures.

RAIN BARRELS/CISTERNS

Both rain barrels and cisterns are regulated in the Zoning Ordinance as accessory structures. Both are also listed as a permitted obstruction in the interior side yard and rear yard only, not to exceed two (2) feet in diameter in the side yard.

Rain Barrel

Did you know?...

A single 20' X 30' roof can yield over 13,000 gallons of rainwater. If you capture only a fraction of that, you'll go a long way toward preserving our rapidly diminishing fresh water supply.

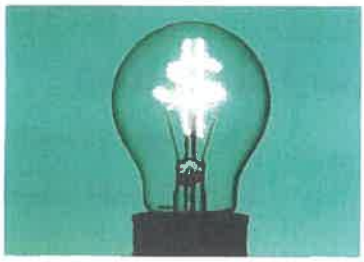
GEOTHERMAL SYSTEMS

As the piping associated with geothermal heating and cooling systems are placed below grade, they are not regulated by the Zoning Ordinance directly. However, it is important to note that the infrastructure associated with such systems could have an impact on the access to utilities and drainage ways. Therefore, they shall be prohibited in any easements.

Geothermal systems are a permitted obstruction in all requisite yards; however, they shall be prohibited in any easements.

LOMBARD INCENTIVE PROGRAMS

VILLAGE OF LOMBARD • DEPARTMENT OF COMMUNITY DEVELOPMENT



In This Section:

- ☼ Compost Bin Grant
- ☼ Rain Barrell Grant
- ☼ Backyard Drainage Program

COMPOST BIN GRANT

The Compost Bin Grant is a reimbursement program available to residents who purchase residential compost bins June 1, 2009 or later. The Village will reimburse a maximum of $80 for the purchase of one (1) bin. Composting not only reduces your refuse output, but is excellent for the garden. Grant applications shall be submitted to the Department of Public Works along with a copy of the store receipt and a photo of the installed bin. Public Works shall evaluate the grant application and shall verify correct installation of the bin prior to approving the grant.

Compost Bin

RAIN BARREL GRANT

The Rain Barrel Grant program was created to encourage residents to conserve water. Through this program the Village will reimburse residents a maximum of $80 per barrel for the purchase of up to two (2) rain barrels. Rain barrels are excellent for outdoor watering use and at the same time allow residents to save on their water bill! Grant applications shall be submitted to the Department of Public Works along with a copy of the store receipt and a photo of the installed barrel(s). Public Works shall evaluate the grant application and shall verify correct installation of the barrel(s) prior to approving the grant.

BACKYARD DRAINAGE PROGRAM

The purpose of the Backyard Drainage Program is to eliminate flood-prone backyards through cooperative efforts by the Village of Lombard and effected residents. Interested homeowners who can demonstrate that two (2) or more contiguous properties are directly effected by backyard flooding can apply for a grant for 50% of the costs to install a backyard drainage system. "Directly effected" means that the property is subject to standing water for more than 72 hours.

Eligible costs may include surveying, engineering, permits, and construction work including connection to public storm sewer and street restoration. The property owner must initiate the project and have the surveying/engineering plans prepared by a Professional Engineer. Those plans are then submitted to the Community Development Department for approval. Approved plans are then eligible for a grant.

Grant applications are submitted to Public Works along with approved plans, cost estimates or bids. Public Works shall evaluate the reasonableness and appropriateness of the grant application. Costs associated with preparing unapproved plans are not eligible for grant funds.

Drainage systems must include an appropriate restrictor. Upon successful completion of the work and final inspection, the Village will reimburse the homeowner group for 50% of the project costs up to a maximum of $10,000.

Please visit www.villageoflombard.org for more information on the Village grant programs.

RESOURCES

VILLAGE OF LOMBARD ◇ DEPARTMENT OF COMMUNITY DEVELOPMENT

In This Section:

- ☼ Village of Lombard Resource Information
- ☼ Additional Resources

VILLAGE OF LOMBARD RESOURCE INFO.

Building/Plan Review

For questions regarding the 2009 International Energy Code or general building inquires, please call: **(630) 620-5750**

Department of Public Works

For questions relative to the Rain Barrel Grant and Compost Grant Programs, please call: **(630) 620-5740**

Private Engineering

For questions related to the Backyard Drainage Program or general stormwater issues, please call: **(630) 620-5749**

Planning and Zoning

For questions related to open space or general Zoning Ordinance inquiries, please call: **(630) 620-5749**

ADDITIONAL RESOURCES

American Council for an Energy-Efficient Economy

Non-profit organization dedicated to advancing energy efficiency as a means of promoting both economic prosperity and environmental protection. **www.aceee.org**

Energy Star

Joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy helping us all save money and protect the environment through energy efficient products and practices. **www.energystar.gov**

Smart Growth

Comprehensive site about many aspects of green design, especially grants and funding opportunities; searchable by state, issue, land development regulations. **www.smartgrowth.org**

US Green Building Council

Non-profit organization comprised of leaders working to transform the way buildings and communities are designed, built and operated and has developed the Leadership in Energy and Environmental Design (LEED) rating system to certify the environmental performance of building. **www.usgbc.org**

BuildingGreen

Online resource featuring a searchable database of articles on green building and access to *Green Spec®*, a directory of over 1,600 green building products. BuildingGreen also features, *Environmental Building News*, a monthly newsletter devoted to green building. **www.buildinggreen.com**

August 19, 2010

Mr. William J. Mueller,
Village President, and
Board of Trustees
Village of Lombard

Subject: PC 10-08: Text Amendments to the Zoning Ordinance

Dear President and Trustees:

Your Plan Commission transmits for your consideration its recommendation regarding the above-referenced petition. The Village of Lombard is proposing text amendments to the Lombard Zoning Ordinance, amending Section 155.200 to establish provisions for geothermal systems, rain barrels, cisterns, Small Scale Wind Energy Systems and solar panels, Section 155.212 to establish geothermal systems, rain barrels, cisterns and solar panels as permitted obstructions in certain required yards and Section 155.800 establishing definitions for Small Scale Energy Systems while amending the definition of "Rooftop Mechanical Equipment".

After due notice and as required by law, the Plan Commission conducted a public hearing for this petition on June 21, 2010. Michael Toth, Planner I, presented the petition. The Zoning Ordinance does not specifically address alternative energy structures. However, one can place such structures on their property as they are considered "accessory structures" to principal uses and regulated as such. Due to increased energy costs and the demand for alternative energy solutions, the Village wishes to take a proactive stance and update the Zoning Ordinance to allow these structures to be placed in their niche locations. Through text amendments to the Zoning Ordinance, solar panels, wind turbines, rain barrels and cisterns would all been given special consideration in order to encourage residents to utilize their beneficial attributes.

During the April 19, 2010 workshop session, the Plan Commission raised a number of issues relative to the proposed text amendments. While the Plan Commission did not raise any issues with geothermal systems, rain barrels and cisterns, there were a number of issues raised pertaining to solar panels and wind turbines (Small Scale Wind Energy Systems). More specifically, the Plan Commission was concerned of the impact that solar panels and wind turbines

could have on residential neighborhoods. With regard to solar panels, it was the Plan Commission's opinion that ground mounted solar panels could produce excessive bulk on a property and roof mounted solar panels could also become an aesthetic issue - if placed too high above the principal structure. The Plan Commission felt that wind turbines could produce unwanted noise, which could have a detrimental impact on surrounding properties. The Plan Commission also instructed staff to look into placing a cap on the permitted number of these devices.

The Plan Commission also recommended that staff research the topic based upon findings of surrounding communities. The proposed text amendments are a result of the Plan Commission comments and findings from surrounding communities. Those communities include: Oswego, IL; Lincolnshire, IL; and, the Wind Energy Task Force of Lake County Communities. Please note, staff did originally propose text amendments relative to *ground mounted* Small Scale Wind Energy Systems; however, those amendments are no longer being proposed. Text amendments particularly relating to ground mounted Small Scale Wind Energy Systems may come at a later date, when more information is available on the structures and when there is an increased demand for such structures.

Mr. Toth indicated that he prepared a PowerPoint presentation in order to provide a visual image for the proposed amendments.

The first slide shows solar panel application examples. For a single family application a five foot (5') pitch would be allowed to accommodate flat roofs. For commercial, industrial, office and multiple family dwellings, a ten foot (10') pitch would be allowed to accommodate flat roofs.

The second slide shows that solar panels having a five foot (5') maximum pitch would be acceptable for single family, attached and two-family dwellings. This pitch allows for the structure itself to be pitched toward the sun.

The third slide shows a ten foot (10') maximum pitch which would be acceptable for solar panels on commercial, industrial, office and multiple-family dwellings. As these structures are not located in residential neighborhoods, the allowable pitch would not be an aesthetic issue.

The next few slides address small scale wind energy systems or wind turbines as it relates to their allowable location, size, height and sound levels. As previously mentioned, ground mounted structures are not being proposed at this time and possibly could resurrect at a later date when more information is available and there is an increased demand.

The first slide shows a few examples of the technology being used. The horizontal wind turbine type is primarily used on wind farms. The vertical type is popular with residential and business uses and does not have the same impact as the horizontal type.

Location - This slide shows the acceptable location for roof mounted small scale wind energy systems which will be permitted in all zoning districts as accessory structures. It shall not project into any requisite yard and would have to stay within the buildable area of the lot.

Size – This slide illustrates the allowable size. The maximum rotor diameter will be capped at ten feet (10').

Mr. Toth mentioned that the amendments being proposed are a culmination of the different languages found. There wasn't much language found from adjacent communities so in order to be proactive, we used language from the Village of Oswego for the ten feet (10').

Height – This language came from Lincolnshire in regard to the allowable height of ten feet (10') above the maximum building height. To capture the essence of the technology, it is crucial to have the structure project above the tree lines in order for it to operate successfully.

Sound Levels – This was taken from the Village of Lincolnshire. On the left of the slide shows what we are proposing and to the right a sound comparison chart was provided from the City of Naperville's Zoning Ordinance. It gives an example of what decibel levels are on the property.

Appearance and lighting standards were taken from the Oswego model. This allows our building department to have access to these devices for maintenance.

The permitted structures remain the same from the workshop itself as it relates to geothermal systems, rain barrels and cisterns, and solar panels.

We added a definition for small scale energy systems and had to amend the definition for rooftop mechanical equipment to exclude these energy systems.

Concluding, Mr. Toth stated that staff finds that the proposed text amendments meet the standards for text amendments and is recommending approval.

Chairperson Ryan asked if anyone was present to speak in favor or against the petition. There was no one to speak in favor or against the petition.

Chairperson Ryan then opened the meeting for comments among the Commissioners.

Commissioner Olbrysh asked staff to repeat the numbers associated with the amount of sound that comes from air conditioner units versus the wind turbines. Mr. Toth stated that the example gave 60 decibels at 10 feet away. It would be comparable to the number used for setbacks. These structures cannot be placed in interior yards but set back just like an air condenser can.

Commissioner Olbrysh commented that he did not have a problem with solar panels but was concerned about wind turbines. His research indicates that roof mounted wind turbines would have to be a 100' high tower to do its job; otherwise, with these types of home units it is like prepaying your electric bill for 20 years. On average the cost is $7,000 - $10,000 and it would take a long time in order to recoup your investment. He questioned whether any one in Lombard had one. Mr. Toth answered that he wasn't aware of any residential applications but there are

industrial applications. The height regulation goes back to 30-40' tall so there is clearance from the ground for them to be effective.
Commissioner Olbrysh stated that his research indicates that to be effective they need to be at least 30' above the tree line. He stated that it is good to be proactive but questioned if this type of energy is useful or just for show. He was also concerned about vibration and noise as most of lot widths in Lombard average 60' whereas most of the western communities have larger lots. Mr. Toth answered that was why we excluded ground mounted types. We found that the information pertained to larger lots with different characteristics than Lombard's. We found that what they allowed didn't work here. The technology might evolve in the future to where it can accommodate the smaller lot areas.

Commissioner Olbrysh asked what happens if someone wants to mount one today. Mr. Toth answered that it would be considered an accessory structure and would follow those regulations. Mr. Stilling noted that staff is taking a baby step as we do not know where the technology is going. We would rather take our research and make it available should inquiries arise. As time goes by, we can assess this and if we need to change our code, we can take it into consideration.

Commissioner Olbrysh asked if it was staff's opinion that it was better to do this as a text amendment rather than on a case-by-case basis. Mr. Stilling stated that right now we are being proactive with building provisions and are comfortable with what we have come up with by meeting the intent of the Zoning Ordinance. If someone wants to go beyond that, for instance, have two units instead of one, they would have to get a variation. Mr. Toth added that this would be similar to a pilot program and staff will see where the market takes us. If we find that we have a lot of variations coming through, we can evolve (along with the market) and allow something above and beyond classifying it as an accessory structure.

Commissioner Sweetser stated that this is a great first step and is in favor of it as there is no definitive information about height and cost effectiveness. She suggested that when staff begins to get requests for this technology, that there be as much information available to inform people about statistics and background information. Mr. Toth referenced the green building handbook that was introduced earlier. He added that some municipalities are being reactionary and scrambling to incorporate these elements into their code. He is hoping to see more commitment between the municipalities to share this information with each other. CMAP is currently working to get communities to cull information, but topography will ultimately be the determining factor of what is in demand and what is not.

Commissioner Cooper referred to the table in the staff report, page 3 Section 155.212, water collection, about rain barrels and cisterns. She asked for clarification in that they are not permitted in the front and corner side yards. Mr. Toth answered that it is true, that is in the yard itself a rain barrel or cistern could be put on the side of your house. The more buildable area you have the larger the barrel you can have. He explained that the structure cannot encroach more than two feet into the side yard. In the front and corner side yards we do not list it as a permitted encroachment due to aesthetics but there is no specification in the rear yard. Mrs. Stilling added that it depends on the setback of your house – you are allowed a 2' encroachment.

Commissioner Cooper stated that she did not see a problem in having them located within the 30' front yard setback because now you are minimizing and prohibiting water collection points around the home.
Commissioner Olbrysh commented that it is good that the Village is taking a proactive approach. He is hoping that everyone will do research to determine if a roof mounted wind turbine is right for them. His research does show that for this area, size does matter. The bigger it is, the better chance of recouping your investment in a shorter period of time.

On a motion by Commissioner Sweetser and a second by Commissioner Flint, the Plan Commission voted 5 to 0 that the Village Board **approve** the text amendments associated with PC 10-08.

Respectfully,

VILLAGE OF LOMBARD

Donald Ryan, Chairperson
Lombard Plan Commission

c. Petitioner
Lombard Plan Commission

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ORDINANCE _____

AN ORDINANCE APPROVING TEXT AMENDMENTS TO THE LOMBARD ZONING ORDINANCE TITLE 15, CHAPTER 155 OF THE CODE OF LOMBARD, ILLINOIS

(PC 10-08; Text Amendments to the Zoning Ordinance)

WHEREAS, the Village of Lombard maintains a Zoning Ordinance which is found in Title 15, Chapter 155 of the Code of Lombard, Illinois; and,

WHEREAS, Section 155.102 (E)(13) of the Zoning Ordinance directs the Director of Community Development to initiate a review of the provisions established within the Zoning Ordinance; and

WHEREAS, the Board of Trustees deem it reasonable to periodically review said Zoning Ordinance and make necessary changes; and

WHEREAS, as the Director has identified and recommends text amendments to the Zoning Ordinance as set forth herein; and

WHEREAS, a public hearing to consider text amendments to the Zoning Ordinance has been conducted by the Village of Lombard Plan Commission on June 21, 2010 pursuant to appropriate and legal notice; and,

WHEREAS, the Plan Commission has filed its recommendations with the President and Board of Trustees recommending approval of the text amendments described herein; and,

WHEREAS, the President and Board of Trustees approve and adopt the findings and recommendations of the Plan Commission and incorporate such findings and recommendations herein by reference as if they were fully set forth herein.

NOW, THEREFORE, BE IT ORDAINED BY THE PRESIDENT AND BOARD OF TRUSTEES OF THE VILLAGE OF LOMBARD, DU PAGE COUNTY, ILLINOIS, as follows:

SECTION 1: That Title 15, Chapter 155, Section 200, of the Code of Lombard, Illinois is hereby amended to read in part, as follows:

SECTION 2: GENERAL PROVISIONS

155. 224 SOLAR PANELS

All solar panels shall comply with all of the following requirements:

A. Roof mounted:

1. Single Family Dwellings, Attached Dwellings, Two-Family Dwellings:

   (a) Roof mounted solar panels shall not project more than five (5) feet from the structure upon which they are located.

2. All others:

   (a) Roof mounted solar panels shall not project more than ten (10) feet from the structure upon which they are located.

B. Ground mounted:

See 'Permitted Obstruction Table'

155.225 SMALL SCALE WIND ENERGY SYSTEMS

All Small Scale Wind Energy Systems shall comply with all of the following requirements:

A. Roof Mounted:

Roof-mounted Small Scale Wind Energy Systems shall be permitted in all zoning districts as accessory structures, subject to the following regulations:

1. Location. Roof Mounted Small Scale Wind Energy Systems shall not project into any requisite yard.

2. Size. The maximum rotor diameter of any Small Scale Wind Energy System shall not exceed ten feet (10').

3. Number. Each property shall be limited to one (1) roof mounted Small Scale Wind Energy System.

4. Height. The height of a Roof Mounted Small Scale Wind Energy System shall be measured to the blade extended at its highest point. No Roof Mounted Small Wind

Energy Systems shall project higher than ten (10) feet above the maximum allowable roof height of the underlying zoning district.

5. Appearance. Roof Mounted Small Scale Wind Energy Systems, and their accompanying support structures; shall be neutral in color or of a color and material which matches the exterior of the building or structure on which they are mounted. No advertising shall be allowed on any Roof Mounted Small Scale Wind Energy Systems.

6. Lighting. No signals or lights or illumination shall be permitted on Roof Mounted Small Scale Wind Energy Systems unless required by the Federal Communications Commission, the Federal Aviation Administration or the Village.

7. Sound levels. The average sound level from a Small Scale Wind Energy System abutting any residential properties shall not exceed fifty-five (55) dB(A) during daytime hours or forty-five (45) dB(A) during nighttime hours, as measured at a height of five feet (5') directly above the adjoining property lines during operation. For properties abutting industrial properties on all sides, the sound level limit is sixty-five (65) dB(A) and for properties abutting nonresidential properties on all sides, the sound level limit is sixty (60) dB(A) at any time of the day, as measured at a height of five feet (5') directly above the adjoining property lines during operation. These sounds levels can be exceeded during short-term events such as utility outages or severe windstorms.

8. Access. Access to Small Scale Wind Energy Systems shall be controlled in a manner consistent with local Building Codes.

155.212 "Permitted Obstructions In Required Yards"

Types of Structure or Use Obstruction X = Permitted Obstruction	Front & Corner Side Yard	Interior Side Yards	Rear Yard
Geothermal Systems, provided that the system does not encroach into any easement area.	X	X	X
Rain Barrels and Cisterns		Must meet footnote G	X
Solar Panels, ground-mounted - area determined by the total surface area of the panel(s).			X

G. The structure shall not encroach more than two (2) feet into the side yard.

SECTION 2: That Title 15, Chapter 155, Section 800, of the Code of Lombard, Illinois is hereby amended to read in part, as follows:

SECTION 8: DEFINITIONS

SMALL SCALE ENERGY SYSTEMS shall be defined as equipment and appurtenances used in the production of energy through the transfer of natural energy which includes, but is not limited to, solar panels and wind turbines.

ROOFTOP MECHANICAL EQUIPMENT shall be defined as equipment and appurtenances used in the operation or maintenance of a building including, but not limited to, heating, ventilation and air conditioning equipment, elevator equipment, and utilities. Small Scale Energy Systems shall be specifically excluded from this definition.

SECTION 3: That this ordinance shall be in full force and effect from and after its passage, approval and publication in pamphlet form as provided by law.

Passed on first reading this ____day of _____, 2010.

First reading waived by action of the Board of Trustees this _____day of _____, 2010.

Passed on second reading this____ day of _____, 2010.

Ayes:_____

Nayes:_____

Absent:_____

Approved this _____ day of _____, 2010.

_____
William J. Mueller, Village President

ATTEST:

_____
Brigitte O'Brien, Village Clerk

Published by me in pamphlet form this ____ day of _____, 2010.

_____
Brigitte O'Brien, Village Clerk