Maine Association of Assessing Officers

Fall Conference

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Topics:

Renewal Energy – Data & Challenges

Performance Testing – Statistical Analysis

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June, 2019, LD 1430
was enacted in the State of Maine.

A summary of the Maine Legislature Bill Information states that the statute is
"An Act to Create Tax Equity among Renewable Energy Investment".

Solar Equipment

Data & Challenges

The valuation of solar equipment creates unique challenges for the assessing officer. Solar equipment is used for residential, commercial, industrial, and agricultural properties.

Description of Solar Energy Equipment

Solar power converts energy from sunlight into electricity. There are three major types of solar panels:

Monocrystalline: Monocrystalline panels are highly efficient and have high power capacity. These panels typically have a higher cost than other panels.

Polycrystalline: Polycrystalline have a lower cost and are less efficient than Monocrystalline.

Thin-film: Thin-film are light-weight, but also are less efficient than both Monocrystalline and Polycrystalline panels.

Monocrystalline Solar Equipment

Polycrystalline Solar Equipment

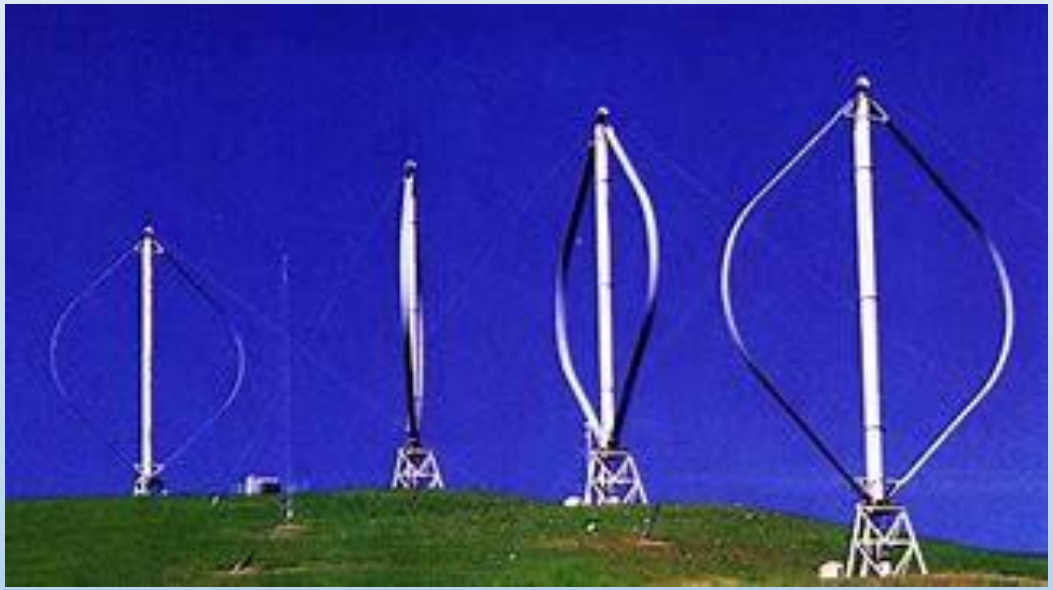
Thin-Film Solar Equipment

Description of Wind Energy Equipment:

<u>Horizontal-Axis Turbines:</u> Horizontal-Axis Turbines typically have three blades similar to airplane propellers. The turbines can be 200 feet high with blades longer than 100 feet.

<u>Vertical-Axis Turbines:</u> Horizontal-Axis Turbines have blades at the top and bottom of a vertical rotor. Very few of this type are in use today.

Horizontal-Axis Turbines



Vertical-Axis Turbines

Consumer Considerations

After the installation of the equipment, future energy costs are free, or have a nominal cost.

Consideration for conversion to renewable energy is that the energy does not create pollution or harmful rays, and reduces carbon footprints.

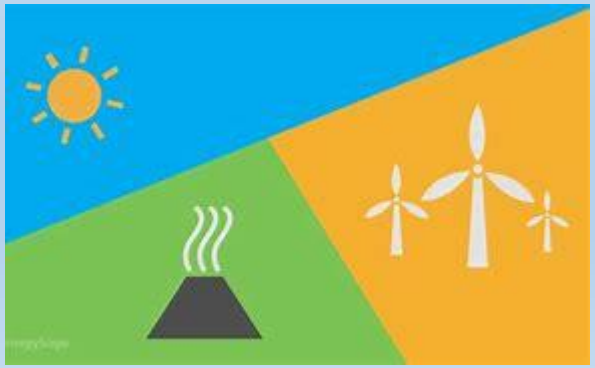
Consideration for conversion to renewable energy the adaptability to generate power for homes, equipment, vehicles, and other various uses. A forth consideration is the eligibility for tax incentives.

Other reasons and purposes exist for consumers to consider the use of solar energy.

Market Influences

Assessing Officers
should collect specific appraisal data
related to the physical characteristics
of the renewable energy equipment
on the appraisal record card.

The National Renewable Energy Laboratory (https://www.nrel.gov/) reports that a study in the Appraisal Journal, shows that residential values increase at a rate of $20 for every $1 reduction in utility bills.



The report on

Guidance for Determining Valuation and Assessment of Renewable Energy Facilities that Qualify for Exemption,

A Report Prepared Pursuant to Public Law 2019, Chapter 440,

Department of Administrative and Financial Services,

Maine Revenue Services (December 1, 2019)

provides guidance related

to both residential property and commercial properties.

On July 26, 2021
Maine Revenue Services Property Tax Division
issued Bulletin No. 29
titled *"Solar Energy Equipment Exemption."*

“Generally, when valuing residential property, an assessor uses the cost approach…”

“For commercial properties,
an assessor must consider all three approaches
when attempting to value any renewable energy facilities,
although the income approach
is considered a more reliable approach in this situation.”

"For solar installations,
an online valuation tool,
endorsed by the Appraisal Institute for the income approach method,
called PV Value® is available at
www.energy.gov/eere/solarpoweringamerica/pv-value."

The PV Value tool is a
valuation model for solar equipment.
The model is often used by
appraisers, realtors, homeowners, and others
in all 50 states and develops
both a cost approach and income approach to value.

When market data for residential property is insufficient, and Paired-Sales Analysis cannot be properly considered, the Maine Revenue Service provides the following classes of property and reasonable values for determining the exemption from taxation:

Class I - <u>Minimal relative importance.</u> This class is typified by simple systems having a basic installation design and/or having minimal anticipated cost savings. Value: $4,000

Class II – Moderate relative importance. This class is typified by adequate systems, whether larger installations for less insulated homes or smaller installation for highly insulated homes.
Value: $9,000

Class III - <u>Significant relative importance.</u> This class is typified by extensive systems, covering all or most of the electrical needs of a residence and may be primary influence in the contributory value to the property.

Value: $15,000

Class IV - <u>Custom system.</u> This class is for systems that do not fall under one of the other three classes and may be a nontraditional system exceeding the typical capacity and efficiency of a Class III system.

Systems in this class may have sufficient capacity to be a material contribution to the overall value of a property in excess of that in Class III.

Values in this class should be individually calculated by the assessor and may incorporate the DDF analysis.

Bulletin No. 19 provides informative definitions for several terms including:

<u>Electrical Grid:</u> "Electrical grid" or "the grid" generally means the system that receives or generates electricity and delivers it to consumers. Electrical grids include generating stations, transmission lines, and distribution lines. Generating stations produce the electrical power which is carried over high-voltage transmission lines to demand centers. Distribution lines then move the electricity from the demand centers to individual customers.

<u>Inverter:</u> ***"Inverter" means a mechanical unit that converts direct current ("DC") power produced by solar panels to alternating current ("AC") electricity so it can be used in household appliances.***

<u>Nameplate capacity:</u> ***"Nameplate capacity," also referred to as rated power, means the maximum AC output for a solar panel or a solar array, measured in watts, kilowatts, or megawatts under optimal circumstances such as peak sunlight and ideal outside temperature.***

<u>Solar array:</u> ***"Solar array" means one or more solar panels connected to create a desired energy output and generally providing energy for one residence or business.***

<u>Solar cell:</u> A "solar cell" is the basic component of a solar panel. When sunlight hits the cell's surface, the cell produces electricity. A solar cell is typically made of a thin silicon wafer. A large bundle of solar cells can be combines into a solar panel.

<u>Solar farm:</u> A "solar farm" is a collection of solar panels, which are usually freestanding, that allows more than one customer to benefit from solar power without purchasing, installing, or maintaining individual solar arrays.

<u>Solar panel:</u> A "solar panel" is a bundle of solar cells incorporated into either a solar array or solar farm. Solar panels are often referred to photovoltaic ("PV") panels. Solar panels are offered with a wide selection of capacity, efficiency, quality, and life expectancy.

Valuation Considerations:

<u>Cost Approach:</u> RCNLD

<u>Income Approach:</u> As recommended by Maine Revenue Services, The Discounted-Cash-Flow Analysis is used for the valuation of renewable energy equipment.

<u>Sales Comparison Approach:</u> The sales comparison approach can be developed into an estimate of value when sufficient sales exist.

Often challenging
for the appraiser
to estimate the value
of the renewable energy component.

It is important to note
that not all property owners actually own the renewable energy equipment.

Leased!

Not all buyers see potential value in the equipment in the same manner. Realtors often consider renewable energy equipment as they do a swimming pool.

That is, it is an attribute for some, and a determent for others.

Other Considerations

In February, 2021 Texas lost power after a storm crippled the energy infrastructure. Multiple deaths were attributed to the crisis. Many claims were made about the reliability of renewable energy wind turbines and solar panels. News outlets reported a variety of reasons for the failure, with experts on both sides of the issue asserting blame to the other.

News outlines also report other problems with renewable energy equipment. They include:

Hotspots on the panels

Cracks on the panels

Contamination

Corrosion

As more data becomes available,
assessing officers can modify their valuation models
to reflect market responses to renewable energy equipment.

Questions/Discussion!!!