VERMONT MUTUAL
INSURANCE GROUP
SINCE 1828

RESIDENTIAL PROPERTIES

PHOTOVOLTAIC (PV) SYSTEMS

Vermont Mutual Insurance Group® is pleased to furnish the following measures to help with your home.

PHOTOVOLTAIC SYSTEMS

Photovoltaic (PV) systems convert sunlight into electricity by means of photovoltaic modules or panels which contain a number of interconnected solar cells. In simple terms, sunlight passing through silicone wafers in the solar cells frees electrons which flow from the solar cells through wires as direct current electricity. Panel arrays are located so as to maximize their exposure to sunlight and depending on the characteristics of the site can be a roof surface installation or a ground array.

Residential PV systems are defined as "*grid-connected*", "*grid connected with battery backup*" or "*off-grid*":

- **Grid-Connected**: The solar panels are connected to the local utility's electrical grid to complement home's normal power supply.
- **Grid-Connected with Battery Back-up**: A grid-connected system that also includes a battery bank to collect the power generated from the solar panels. Power stored in the batteries can be used during power outages.
- **Off-Grid or Stand-Alone**: The home's electrical system is not connected to a utility power grid and the solar electric system represents the home's main source of power. Some homes are equipped with direct current appliances and lighting systems. More typically the system is connected to an inverter that converts the direct current generated by the PV array into alternating current compatible with the electricity supplied from the utility grid.

Today an estimated 95% of PV systems are grid-connected. Forty U.S. states have "net metering" legislation which requires utilities to buy excess electricity produced by grid-connected systems. When a grid-connected system produces more electricity than is needed to meet the current power demands of the home, the excess power automatically flows through the utility's electric meter and is fed to the grid. The ultimate end users of that power pay the utility directly for that electricity. The meter also keeps track of electricity the utility supplies to these homes when the PV system is not producing enough to meet demand. The homeowner pays for the "net" power used based on the difference between the power produced and power purchased.

ADDITIONAL INFO ON BACK

89 State Street, P.O. Box 188, Montpelier, VT 05601 | 800.451.5000 | www.vermontmutual.com

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RESIDENTIAL PROPERTIES

PHOTOVOLTAIC SYSTEMS (CONTINUED)

INSURANCE CONSIDERATIONS

...associated with residential photovoltaic systems

Homeowners contemplating installation of a PV system have the option of purchasing or leasing the equipment. Over 60% of the existing installations are leased. When PV equipment is leased, the lease documentation should be carefully reviewed to determine what obligations, if any, are imposed on the homeowner with regard to insurance coverage for the equipment.

- Homeowners with grid-connected PV systems will be required to enter into an interconnection agreement with the electric utility. Interconnection agreements commonly set forth minimum liability insurance requirements that the homeowner must keep in force.
- Homeowners planning to install a PV system are normally required to obtain a building permit, an electrical permit, or both before installation begins. These permits are typically issued by the town, city or county and normally are obtained by the entity installing the system.
- Homeowners who belong to a homeowners' association generally must obtain approval from their Association prior to proceeding with a PV installation.
- While applicable Code requirements for PV systems can vary by jurisdiction, most requirements are based on Article 690 of the National Electrical Code - NFPA 70 which details requirements for designing and installing safe, code compliant PV systems. Homeowners must require that installers of these systems provide documentation confirming compliance with article 690 of NFPA 70.
- If the PV system is owned or the lease provisions require the homeowner to provide replacement coverage for the system components, the replacement value of the PV system should be reflected in the appropriate limit of insurance on the homeowner's policy. The limit of insurance that applies can vary depending on whether the PV system is roof mounted or a ground array.
- Grid-connected solar electric systems are required to be equipped with safety disconnects. Safety disconnects are manually operated switches that enable service personnel to disconnect key points in the system to prevent electrical shock when servicing the system.
- PV systems can present significant hazards to fire fighting personnel who respond to a fire or other structural emergency on site. To appropriately protect fire fighting personnel and to encourage an aggressive and comprehensive response by the fire department to a fire or structural emergency, homeowners who have PV systems or are contemplating installation of such a system should be in direct communication with their local fire department both to obtain their input and to allow the fire department to establish a fire department response plan for that property.

NOTE: The information in this publication is designed to assist our policyholders in their loss control efforts. We make no warranties or representations as to the accuracy of the information, nor do we assume liability or responsibility for any error or omission in this information sheet. You should use your own judgment in determining the scope and specifics of your loss control efforts.

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