

NEVADA SURE BET PROGRAM

Offered By: NV Energy

Administered By: KEMA Services, Inc

High Efficiency Technologies that Save Energy Cost - High Efficiency Packaged Unit

The most widely used air conditioning and heat pump equipment in the United States is what is commonly called unitary or “packaged” equipment. Packaged air conditioners provide cooling by a means similar to that employed in the common household refrigerator – the refrigerant vapor-compression cycle. The vapor-compression cycle converts a liquid refrigerant to a gas, and back again, and in the process provides cooling and produces waste heat. (Packaged heat pump units reverse the process in the heating mode to provide space heating). Packaged equipment is built in a factory and includes all the components required to deliver heating and/or cooling to a space or building. These components consist of a fan for delivering air to and from the space, an indoor or “evaporative” cooling coil, a heating coil or furnace, air filters, dampers for regulating air flow, a refrigeration compressor(s), an outdoor or “condensing” coil for rejecting heat, and controls for automatically regulating space temperature. Sometimes these components are packaged into two factory-made assemblies and are referred to as “split systems.” For example, a typical split system may have the fan, evaporative coil, furnace, filters, and dampers in one assembly (indoor unit) and the compressor and condenser coil in another assembly (outdoor unit).

Air-cooled Equipment

One of the most attractive applications of packaged equipment is a rooftop air conditioning unit. This is an air-cooled unit that can be mounted on a roof or the ground. Packaged rooftop air conditioning units have been generally applied to low-rise buildings. They have also been applied in large multi-story buildings and, in these applications, typically involve single-zone, variable volume units with variable air volume terminal units providing zone control within the space.

Packaged air-cooled split systems are also widely applied in buildings. In general these systems are best suited to one- or two-story buildings but have been applied in buildings with as many of four stories. A single unit is typically required for each thermostatic zone. The outdoor units can be located on the ground but are more likely to be located on the roof. In split systems, the work required to circulate refrigerant through long runs of refrigerant piping adds to the system’s energy consumption and the long runs may lead to oil return problems. Furthermore, split systems with gas furnace heating must be located in areas with access to combustion air, which limits their flexibility.

Energy Efficiency in Packaged Air Conditioning Equipment

Packaged air conditioning and heat pump equipment in the cooling mode is rated in accordance with its energy efficiency ratio (EER), which is the measure of the net cooling capacity divided by the energy consumed at peak operating conditions. Another important measure of the cooling efficiency of this equipment is the integrated part-load value (IPLV), which is a single number based on the weighted average of EER for operation at various load levels. Manufacturers rate smaller equipment (less than 65,000 British thermal units – Btus – per hour of cooling capacity) on the basis of seasonal energy efficiency ratio (SEER), which is similar to EER except the rating takes into account the range of conditions during the cooling season. The higher the EER, IPLV, or SEER, the more energy efficient the equipment.

Sure Bet Upstream Incentive

The Sure Bet Upstream Program provides financial incentives to distributors to stock and sell qualifying high efficient air conditioning equipment to commercial customers in Nevada. Commercial customers include all commercial, industrial, and institutional customers. Distributors are the entities that buy HVAC equipment directly from the manufacturer and sell to commercial customers. Both retrofit and new construction projects qualify for incentives as the upstream program focuses on changing distributors' stocking practices to favor qualifying high efficiency air conditioning systems. Distributor incentives are offered for high efficiency packaged and split system air conditioners and heat pumps.

Reference: Guide to Energy Efficiency Commercial Equipment, 2nd Edition, American Council for Energy-Efficient Economy