

SUNSOURCE[®]

Commercial Energy System

Integrates with an Emergence[®] 3- to 6-ton rooftop unit, providing effective efficiency levels of 34 SEER* and beyond

Solar power for
an HVAC system
and beyond



LENNOX[®]
Innovation never felt so good.[®]



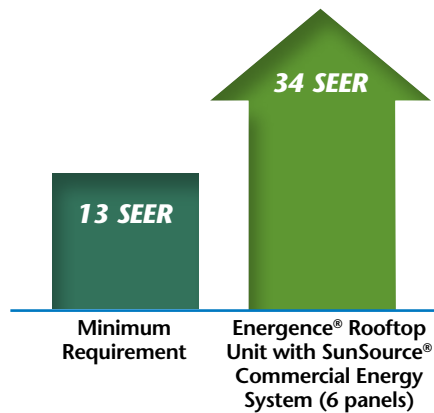
TECHNOLOGY WHOSE TIME HAS COME

Known for our commitment to innovation and excellence, Lennox is proud to introduce the SunSource® Commercial Energy System—the first and only commercial HVAC system that integrates directly with solar power.

The patent-pending SunSource system allows building owners to take control of their building’s energy costs and move commercial HVAC into the future by using the sun’s free, clean, solar energy.

Maintaining our commitment to comfort and efficiency

The SunSource system integrates with the Emergence® premium rooftop unit product line, **providing effective efficiency levels of 34 SEER* and beyond.** It also reduces a building’s dependence on the energy grid, which can result in substantial energy savings from reduced demand and operating charges.



5-Ton System Comparison, Omaha, NE

Energy cost savings aren’t the only benefits of the SunSource system. Building owners can also qualify for tax credits, rebates, government subsidies and grants, which may significantly reduce the first cost of the system. Credits from utility companies can also be earned for energy that is sent back to the power grid.

Simple, scalable and easy to install

System simplicity and flexibility are easily achieved with the SunSource Commercial Energy System. Capable of being installed on almost any size or shape roof without the stringent installation requirements of a traditional solar energy system, the SunSource system can also be expanded at any time with additional solar modules. Greater system performance is possible thanks to system redundancy—if one solar module fails or does not perform to its maximum capacity, output from the rest of the solar modules is not affected.

Safer installation and operation

The SunSource system is safer to operate than traditional solar systems. The output from each microinverter in the SunSource system has a maximum of 50 volts. In the event of a power loss, the microinverter will stop transmitting power to the rooftop unit and main building panel. A traditional solar system, however, frequently uses a high-DC-voltage line that can reach up to 600 volts, running the length of the entire building without a way to disconnect the power from the solar system to the main building panel.

Solar energy system comparison

The SunSource® Commercial Energy System has many benefits over a traditional string-inverter solar system:

- Improved Performance
- Increased Reliability
- Easier to Design
- Less-Complex Installation
- Lower-Cost Installation
- More Flexible & Scalable
- Safer

*Effective SEER estimates for the SunSource® air conditioning system are based on the U.S. Department of Energy (DOE) annual performance factor (APF) method for heat pumps and air conditioners (10CFR part 430). Estimates of annual solar energy production are calculated for a centrally located city in each DOE heating region, using National Renewable Energy Laboratory’s (NREL) PVWatts, Version 1. The annual solar energy production is solely an estimate for that region and is based upon a fixed-tilt south-facing array free of shading, with a module tilt angle equal to the local latitude of the installation. The annual solar energy production is included in the APF calculation as a reduction of the cooling season power consumption. In this example, the air conditioning unit is an Emergence® LGH060H4ES1P (5 Ton/17 SEER) located in Region IV (represented by Omaha, NE at 41° N. latitude) and with six solar modules rated 175 dc Watts each.

SunSource® Commercial Energy System at a glance:

Industry’s first and only commercial HVAC system that integrates directly with solar power

Effective efficiency levels of 34 SEER* and beyond

Only rooftop that can feed power back to the building or the grid

Allows for integration of solar energy without any changes to the building’s electrical infrastructure

Helps meet ASHRAE Green Standard 189.1 requirement to be solar ready

Helps meet LEED® EAC2 On-Site Renewable Energy credit

More efficient and reliable than traditional string inverter systems

Installation costs can be up to 15% less than traditional solar energy systems

Communication module provides online monitoring of system status, energy production and environmental benefits in real time

Warranty

5-Year Limited Warranty, 12 Years of 90% limited peak power output guarantee, 25 Years of 80% limited peak power output guarantee on solar modules

15-Year Standard Limited Warranty on microinverters

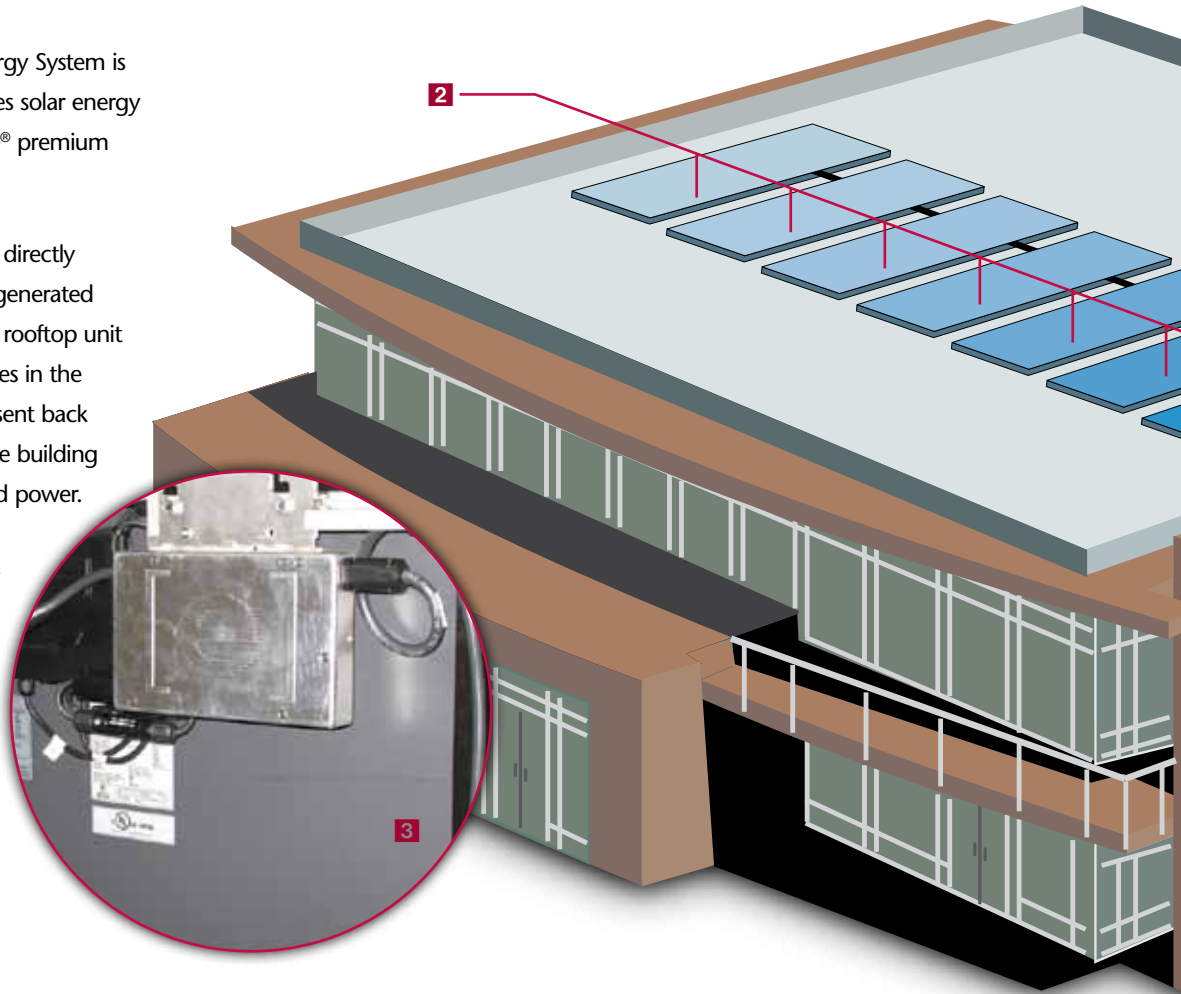
See warranty certificate for actual details.

LEADING TECHNOLOGY FOR MORE RELIABLE AND EFFECTIVE OPERA

The SunSource® Commercial Energy System is a whole-building solution that uses solar energy to power a solar-ready Energence® premium rooftop unit.

The solar modules are connected directly to the rooftop unit, so electricity generated from the modules can power the rooftop unit and other equipment or appliances in the building. The power can also be sent back to the electricity grid, enabling the building owner to receive credit for unused power.

The SunSource system can help a building reduce its dependence on the power grid during peak load times, which can help reduce demand charges that are incurred year-round.



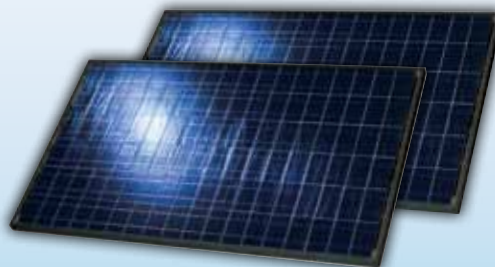
1 Solar-ready Energence® rooftop unit

Because the Energence® rooftop unit can be solar ready, it is quick and easy to integrate a solar system to the building. The effective efficiency of Energence 3- to 5-ton models, already the industry's efficiency leader, can increase from 17 SEER to 34 SEER and beyond when the SunSource system is integrated with the rooftop unit.



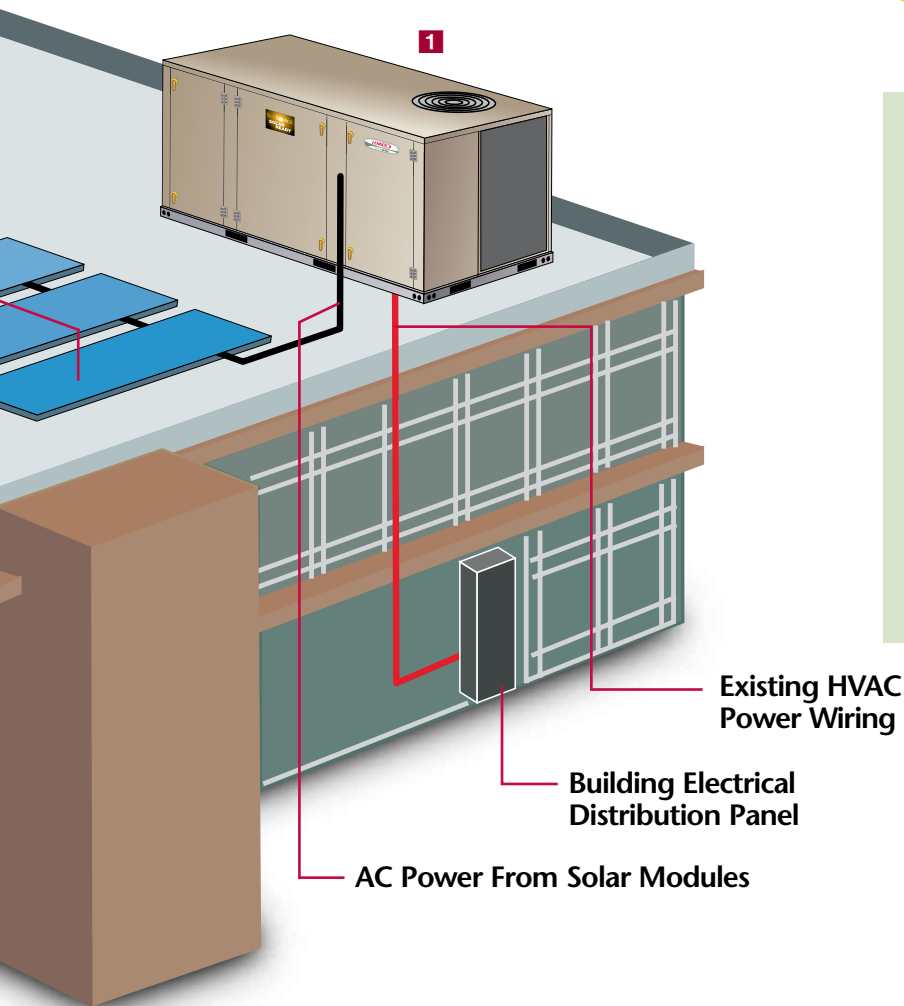
2 Solar modules

The SunSource system uses up to 21 solar modules per rooftop unit. The solar modules feature a fully integrated plug-and-play system, making them easier to install than ever before—just mount and attach, and installation is complete. The modular design of the SunSource system allows additional solar modules to be installed at any time, and no system redesign is required.



3 Microinverters

Each solar module uses a microinverter to convert DC power harnessed by the panels to AC power, which is then sent to the rooftop unit. The microinverter system is more efficient and reliable than traditional single-inverter systems. In a single-inverter system, if one solar module fails, all modules in the system are affected and system performance drops. With the SunSource system, if one solar module fails or does not perform to its maximum capacity, output from the rest of the solar modules is not affected.



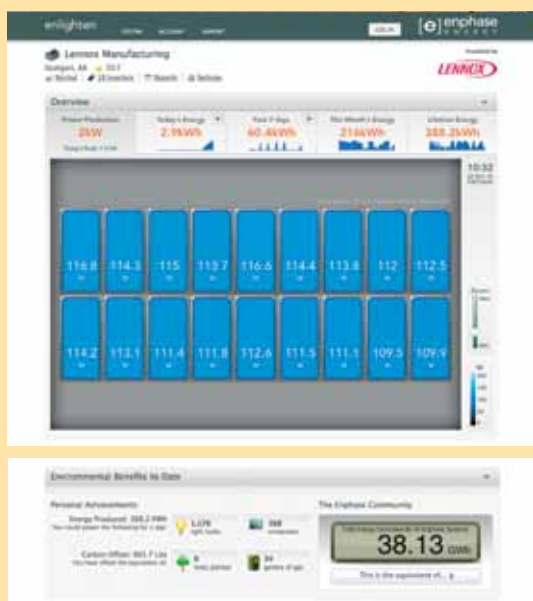
The perfect way to go green

The SunSource® system and the solar-ready Energence® rooftop units can help meet ASHRAE Green Standard 189.1 for high-performance green buildings and help meet the LEED® EAC2 On-Site Renewable Energy Credit.



Communications module

The communication module allows online monitoring of system status, energy production and environmental benefits in real time. This data is sent from each solar module through the power lines inside the building, where it is collected by the communication module.



Monitoring website

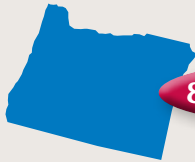
The system will automatically monitor and analyze the solar performance 24 hours a day, 7 days a week. Viewable on a secure website, this gives a detailed picture of the SunSource® system's environmental impact and energy savings.

SOLAR SYSTEMS CAN BE AFFORDABLE

Reduce your utility costs

Many state, federal and utility incentives and grants can help significantly reduce the first cost, or even provide an ongoing rebate, to enhance the attractiveness of solar energy systems.

System	Average Installed Cost*
3kW	\$24,000



84% of first cost covered



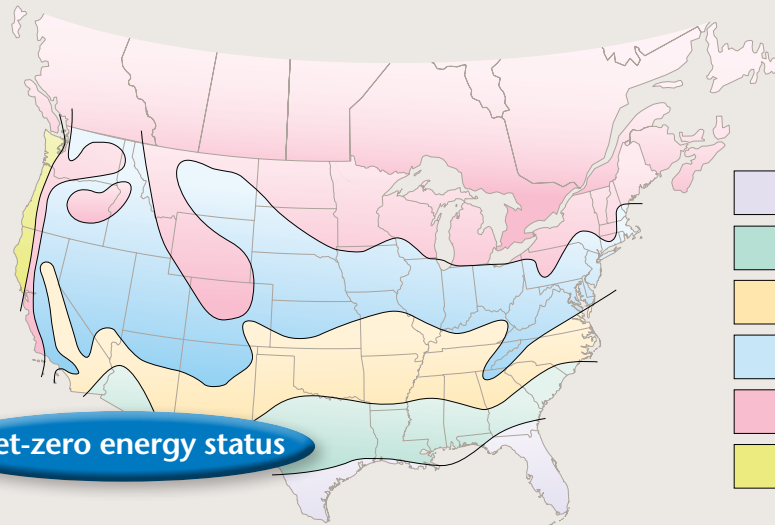
27% ROI

Oregon	
Average installation cost	\$24,000
Federal tax credit (30%)	-\$7,200
Oregon state credit (35%)	-\$8,400
Energy Trust of OR rebate of \$1.25/watt	-\$4,500
Total incentives	\$20,100
Net cost	\$3,900

New Jersey	
Average installation cost	\$24,000
Federal tax credit (30%)	-\$7,200
New Jersey solar rebate (\$0.75/watt)	-\$2,250
Total incentives	\$9,450
Annual electric savings	\$448
SREC Annual Renewable Credit	\$2,631
Total annual savings	\$3,079

Overall impact of the SunSource® Commercial Energy System

Lennox' SunSource® Commercial Energy System can help significantly reduce energy costs all across North America. In certain regions, adding additional solar panels can help the rooftop unit achieve net-zero energy status, as the SunSource system will generate more power than the rooftop unit consumes.



- Region 1
- Region 2
- Region 3
- Region 4
- Region 5
- Region 6

Estimated annual cooling operating cost savings** of a 5-ton 17 SEER Energence® rooftop unit with solar modules, compared to a 13 SEER rooftop unit.

	with 6 Modules	with 15 Modules	with 21 Modules
Region 1	33.1%	51.5%	63.8%
Region 2	34.4%	56.4%	71.1%
Region 3	36.7%	63.6%	81.5%
Region 4	39.4%	71.6%	93.0%
Region 5	48.6%	94.2%	124.6%
Region 6	45.1%	86.8%	114.6%

*Average installed cost includes solar module equipment and installation for the SunSource® system. Cost for Energence® rooftop unit and installation is not included. Rebate information taken from the Database of State Incentives for Renewables & Efficiency (DSIRESolar™) website. All rebates are subject to change.

**Estimates of annual solar energy production are calculated using National Renewable Energy Laboratory's (NREL) PVWatts, Version 1 calculated at a tilt angle equal to the local latitude. Estimates of annual cooling operating cost savings for the rooftop units are calculated using Lennox' Total Cost of Ownership Calculator, with operating hours from 10 am to 10 pm in a small retail environment. Estimated energy savings calculations using Energence LGH060H4E (5 ton/17 SEER 3-phase - 460V) and 190DC W solar modules.

SOLUTIONS FOR CUSTOMIZED COMFORT



Don't just choose a Lennox® product...choose a Lennox Commercial Comfort System. These complete packages of HVAC solutions provide tools to create a healthy and comfortable environment.

Packaged Units

- Strategos® Rooftop Units
- Emergence® Rooftop Units
- Landmark® Rooftop Units

Split Systems

- S-Class® Air Conditioners/Heat Pumps
- T-Class™ Air Conditioners/Heat Pumps
- Air Handlers
- Indoor Coils

Heating

- T-Class Separated Combustion Unit Heaters
- Unit Heaters
- Duct Furnaces
- Furnaces

Commercial Controls

- Prodigy® Control System
- L Connection® Network
- Systems Integration Solutions
- Commercial Thermostats

Indoor Air Quality

- Humiditrol® Dehumidification System
- Demand Control Ventilation
- Energy Recovery Systems
- Air Filters
- UVC Lamps



LENNOX

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