

**NJ Clean Energy Cool Advantage Rebates  
866-NJSMART**

For more information on energy efficiency and renewable energy programs for New Jersey, visit New Jersey's Clean Energy website, [www.njcleanenergy.com](http://www.njcleanenergy.com).

The Cool Advantage Program is an energy-efficiency program approved by the New Jersey Board of Public Utilities and the Office of Clean Energy and managed by New Jersey's **Clean Energy Program™**



# SHOP SMART, STAY COOL



**Your Guide  
to Buying an  
Energy-Efficient  
Central Air  
Conditioner**



# YOUR HOUSEHOLD BUDGET. THE COMFORT OF YOUR HOME. THE ENVIRONMENT.

*What do these three things have in common? If you are in the market for a new or replacement central air conditioner, you are about to make some choices that will have a significant, long-lasting impact on all three.*

Recent studies show that the average central air conditioner may consume twice as much energy as necessary. Year after year, that could result in hundreds of dollars wasted on energy bills. It could also impact your electric utility's ability to meet demand, and contribute to the pollution that causes smog, acid rain, global warming and other environmental problems. Just as importantly, improper installation can lead to comfort problems, higher maintenance costs and shorter equipment life for your new central air conditioner.



Can you avoid this fate? Absolutely. This booklet is designed to help you shop smart and enjoy the greatest possible level of energy efficiency and comfort from your new or replacement central air conditioner. It provides guidance on some of the critical decisions you must make during the purchasing process and how to help ensure an energy-efficient, quality installation.

To help you purchase an energy-efficient central air conditioner, see Page 8 of this booklet for details on how you may qualify for a cash rebate.



## SHOP SMART CHECKLIST

- ✓ The energy your new or replacement central air conditioner consumes over its lifetime may cost more than the equipment itself. That's why it's important to follow these 10 easy steps when purchasing and installing one:
- Please contact The NJ Clean Energy Cool Advantage Rebate Department at 866-NJSMART for information on rebate requirements and to request an application be mailed to you.
- Replace both the indoor coil and the outdoor compressor with matching components.
- Select a NATE-certified contractor who participates in the Cool Advantage Program. For a list of contractors in your area, contact the Eastern Heating & Cooling Council at 1-800-247-6547 or visit [www.eh-cc.org](http://www.eh-cc.org).
- Make sure your contractor is certified to handle refrigerant by asking for proof of certification.
- Make sure your contractor takes measurements of your home to calculate the size of the equipment you need. Feel free to review the calculations.
- Make sure your contractor has measured the airflow over the indoor coil and gives you the results.
- Check that the compressor is strategically located to receive as little direct sunlight as possible and that there is room for air to circulate around it.
- Ask your contractor to seal duct leaks and insulate ductwork in unconditioned areas, such as an unfinished basement, attic and/or crawl spaces. There may be an additional charge for this service.
- Install an ENERGY STAR® qualified programmable thermostat.
- Make sure you understand the maintenance requirements of your new system and how to change or clean your filter.

### 3. Check that your contractor takes the time to properly size the equipment.

The Air Conditioning Contractors of America (ACCA) have developed guidelines known as "Manual J" to help your contractor determine the size of the central air conditioner that will correctly fit your home's needs. The goal is to keep your home cool and comfortable while your system operates efficiently. However, studies in New Jersey and elsewhere show that new systems are often sized one-ton larger than the Manual J recommendation. You can pay a high price for such oversizing.

In addition, an oversized system will repeatedly turn itself "on" and "off," which lowers efficiency and increases energy bills. This action can make

your home feel clammy because the indoor coil does not get cold enough to remove humidity from the air in your home. It can put added stress on the outdoor condensing unit and lead to higher maintenance costs and shorter equipment life. Finally, oversized systems are noisier because they force air to rush through ducts and grills faster.

You may get the wrong size equipment if your contractor simply installs the same size unit you already have without an adequate inspection, or estimates the size needed based solely on the square footage of your home.



### AFTER INSTALLATION **The importance of regular maintenance.**

After purchase and installation, regular maintenance is necessary to keep your central air conditioner operating efficiently. The indoor coils should be cleaned every two years. The air filter should be checked every month and replaced or cleaned as necessary.

Here's the bottom line. Owning a reliable, energy-efficient central air conditioner means more than just buying a quality piece of equipment. It is just as important to be certain that the unit is sized and installed correctly, and that the ducts are in good condition, insulated (where appropriate) and sealed properly. It is also crucial to work with a qualified, experienced contractor.



Since a contractor will size and install your central air conditioner, improve the integrity of your ducts, and often provide regular system maintenance, choosing one is as important as choosing the air conditioner itself.

**1. Verify the qualifications of the installer.**

Ask whether the installer has taken any classes offered by equipment manufacturers, the Air Conditioning Contractors of America, the Eastern Heating and Cooling Council (EHCC), or other qualified organizations. Alternatively, ask if the installer has been certified by North American Technician Excellence (NATE), a nonprofit organization that works to raise the standard of excellence in the heating, ventilation, air conditioning and refrigeration industry through technician testing. For a list of NATE-certified contractors in your area, contact the EHCC at 1-800-247-6547 or visit [www.eh-cc.org](http://www.eh-cc.org).



**2. Determine if the installer has refrigerant recovery equipment and is certified to handle refrigerants.** It is illegal for uncertified contractors to handle refrigerant.



**3. Get price quotes based on an onsite inspection of your home.** An inspection is the only way a contractor can accurately estimate the size of the unit you need, the integrity of your duct system, the degree of difficulty to install your unit and the special needs of your home and family. Prices based purely on square footage or given over the phone will not ensure that you get a properly sized system.



**4. Make sure your contractor obtains any required permits.** Most New Jersey towns and/or counties require a permit for installation of central air conditioners.

**7. Use a contractor who participates in the Cool Advantage Program.** You may qualify for a cash rebate on a correctly sized and installed unit.

# SELECTING A CONTRACTOR

**5. The New Jersey Division of Consumer Affairs suggests that you obtain at least three price quotes in writing.** All price quotes should include costs for materials, labor, permits and fees, disposal of replaced equipment, and service contract (if any). Be sure to get quotes for equipment with the same efficiency and capacity so you can accurately compare the bids.

**6. Ask whether your contractor has liability and workers' compensation insurance that will cover any accidents that may occur on the job.** Ask to see proof of insurance.

**8. Don't automatically accept the lowest bid.** Be open to the possibility of paying more for energy-efficient equipment, the time the contractor must spend to install the equipment correctly, repairs to ducts, or other work necessary to improve your central air conditioner's energy efficiency. *Remember, what you don't pay for now, you may pay for later — perhaps several times over — in the form of higher annual energy bills, higher maintenance costs and comfort problems.*

# UNDERSTANDING THE INSTALLATION

**1. Make sure the indoor unit is installed for easy maintenance.** You should understand the maintenance requirements of your system and make sure the filter is easy to remove, clean or replace.

**2. Carefully choose the location of the condensing unit (outdoor component).** As it works to cool your house, the condensing unit of your central air conditioner may become warm. The unit may be under greater stress if it receives additional heat from direct sunlight or can't release heat efficiently because debris or plants may prevent adequate air circulation.

To avoid these problems, try to minimize the amount of direct sunlight the unit receives during the heat of the day. If possible, place it on the north or east side of the house and leave plenty of room for air to circulate on all sides of the unit.

**3. Ask your contractor to measure the airflow over the indoor coil.** Airflow should be within about 10% of the recommended manufacturer levels, typically 400 cubic feet per minute, per ton of capacity. (Each ton of capacity is equal to 12,000 BTUs\*.)



For example, the airflow for a 3-ton (36,000 BTU) unit should be 1,200 cubic feet per minute. Ask to see the manufacturer-recommended level, how the airflow in your home was measured and the results. You should also ask your contractor if the existing ductwork will be adequate to obtain the proper airflow. If ductwork needs to be added, make sure the additional cost is included in your estimate.

**4. Verify the correct amount of refrigerant.** Manufacturers always specify the amount of refrigerant that should be placed in an air conditioner. A unit installed without the correct amount of refrigerant could result in higher energy bills, higher maintenance costs and shorter equipment life. Consult with your contractor to verify that the correct amount of refrigerant will be provided for your system.

\* British Thermal Unit, a measure of a unit's cooling capacity.

To perform the industry standard Manual J sizing calculation, your contractor should measure floors, ceilings, walls, windows and insulation levels. Manual J also considers other factors in your home, such as window shading, roof color and number of occupants.

**4. Ask for a copy or a computer printout of the central air conditioner sizing calculations.**

Ask your contractor to show you how the sizing calculation was performed. Check the accuracy of key inputs, such as the size of your home, the square footage and location of windows, window shading and insulation level.

**5. Ask the contractor if the existing duct system is adequate for your new central air conditioner.**

Ducts distribute the cool air generated by your air conditioner throughout the home, so it is critical that they are in good condition.

**Leaks:** Recent studies suggest that ducts often leak 20% of the air that flows through them directly to the outdoors. Although the leaks usually are not easy to see, a well-trained contractor with the right equipment can locate and seal them for you. Ideally, the contractor should use diagnostic equipment, such as "blower doors" and "duct blasters," to find leaks and fix them with quality sealants (e.g., mastic), not duct tape.

**Insulation:** Ducts in rooms that are not cooled or heated, such as attics, crawl spaces and basements, can also lose a lot of energy, even if they do not leak. If only a thin sheet of metal separates the cool air inside the duct from warm air outside the duct, energy will be lost

through conduction, much like it is lost through single-pane windows. Consider having your contractor insulate ducts. It doesn't make sense to pay for the cooling or heating of these spaces.

**Size:** Some duct systems are too small to allow proper airflow over a central air conditioner's indoor coils. Replacing these ducts may be costly. However, you may save enough on your energy bills to cover the cost. Properly sizing ducts may also help lengthen the life of your central air conditioner and prevent the need to call your contractor to fix future comfort problems.

**6. If you don't already have one, ask the contractor to install a programmable thermostat.**

Programmable thermostats allow you to pre-program your heating and cooling needs to precisely match your busy schedule and help reduce energy waste. Consider a model meeting the U.S. Environmental Protection Agency's



ENERGY STAR® criteria. Also be sure your contractor takes the time to explain how the thermostat works and helps you program the initial settings to meet your lifestyle needs.

# THE COOL ADVANTAGE REBATE PROGRAM

The Office of Clean Energy provides cash rebates toward the purchase and proper installation of an energy-efficient central air conditioner. The rebate amount is based on the unit's SEER and EER ratings. To qualify, a purchased unit must have a minimum SEER of 14 and a minimum EER of 12. (See the following chart for more information.) Other requirements to qualify for the rebate are listed on the rebate application. Please contact us at 866-NJSMART if you would like a rebate application mailed to you. In addition, to make sure that you receive the full benefits of an energy-efficient central air conditioner (i.e., that it operates as efficiently as its energy rating suggests it should), the rebate is provided only if your contractor submits documentation that the air conditioner has been *properly sized and installed*.

The rebate can help to cover the incremental cost to upgrade from an inefficient central air conditioner to an energy-efficient one, as follows:

SEER	Minimum EER	Rebate Amount
14.00	12.00	\$100
15.00	12.50	\$150

## WHAT YOU NEED TO KNOW TO BUY AN ENERGY-EFFICIENT CENTRAL AIR CONDITIONER.

You don't need to understand *everything* about a central air conditioner to make an informed decision about the type to buy and who to buy it from. However, it *does* help to understand the basics to aid in your decision-making process. The background and steps listed below will assist you in finding the right central air conditioner for your home.

### SELECTING EQUIPMENT AND SERVICES

#### 1. Understand energy efficiency ratings:

All central air conditioners have a Seasonal Energy Efficiency Ratio (SEER) rating, which measures the average efficiency over the summer. The Energy Efficiency Ratio (EER) rating measures the system's efficiency during the hottest days of the summer. In both cases, the higher the rating, the higher the level of efficiency.

Although an energy-efficient unit usually costs more than a standard efficiency unit, it should more than pay for itself in annual energy savings.

Look for an energy-efficient unit featuring a minimum SEER of 14 and a minimum EER of 12.

#### 2. Make sure that you have matching indoor and outdoor components.

Most central air conditioners have an outdoor component (the condensing unit) and indoor components (evaporator coils and blowers). Some contractors may suggest that you replace only the condensing unit, however, the two components are designed by manufacturers to work together. Therefore, your old indoor evaporator coil is unlikely to be a proper match for a new outdoor unit. You should replace both to achieve the highest level of energy efficiency for your home.