



RESIDENTIAL  
ENERGY & WATER  
CONSERVATION  
GUIDE

*RESOURCE SAVING STRATEGIES  
FOR NAGS HEAD RESIDENTS*

## CONTRIBUTORS

This project was funded in part by ACTIVATE North Carolina, a program of the American Institute of Architects (AIA) North Carolina. The goal of ACTIVATE is to “help architects guide, listen, observe, advocate, connect, and envision with the public and their communities. Through these six exercises, the end goal is to inspire people to take action and shape the future of their communities around them.”

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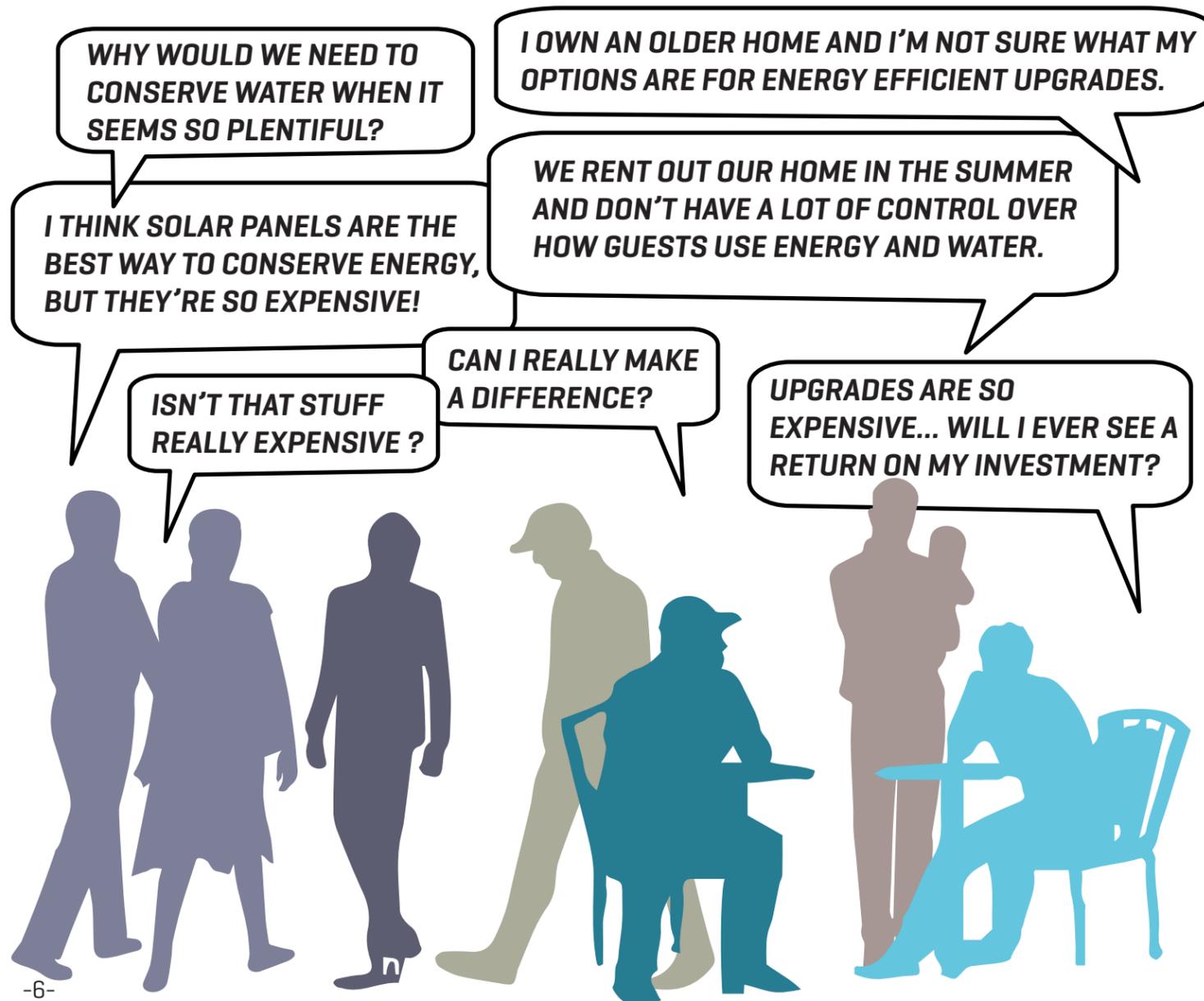
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# INTRODUCTION

## SURVEY RESULTS

Energy and water conservation are complex issues that will require the collective action of individual citizens and municipalities working together to address and ensure long-term sustainability of the community. The goal of this guide is to identify and present actionable ways for homeowners to incorporate more energy and water efficiency measures into home and landscape designs. To kick off the development of this guide, the Town of Nags Head created a series of surveys for residents, property managers, design professionals, and contractors to share their opinions and experiences with energy and water conservation strategies. Through this survey, the town learned more about residents' energy and water saving motivations and values, how people are already prioritizing energy and water conservation, and areas where conservation strategies can be strengthened.



## HOW TO USE THIS GUIDE

The following sections contain a range of strategies for conserving water and energy at home. These suggestions range from low- or no-cost actions to major renovations or construction projects. Strategies are organized based on whether they are applied to the house itself or the yard, and whether they involve construction or retrofits, are technology- and appliance-based, or are personal actions or behaviors. Each of the options presented throughout this guide are well-suited to the unique conditions and character of Nags Head, so residents can select one or more conservation strategies that will fit their property, lifestyle, and budget. The icons below appear throughout this guide to indicate some of the co-benefits of each conservation strategy.



This symbol means that the recommended energy or water conservation strategy will work for homes that have already been built. This might mean upgrading existing appliances with an energy efficient version, or choosing energy saving construction materials during home renovations and repairs.



This symbol means that the recommended energy or water conservation strategy should be considered when constructing a new home. Start a conversation with your architect or builder early to help make decisions about prioritizing energy and water efficiency from the start.



Strategies that have this symbol are primarily focused on reducing energy consumption around the house.



Strategies with this symbol are focused on ways to more efficiently use water around the house and yard.



This symbol means the suggested energy or water conservation strategy is beneficial to the local sea turtle populations!



Some of the conservation recommendations can also help improve water quality. When you see this icon, it means the conservation strategy is good for the environment, as well as your water bill!

# BACKGROUND

## WHY IS CONSERVATION IMPORTANT?

The Town of Nags Head is located in the northern Outer Banks on Bodie Island, a barrier island separated from mainland North Carolina by the Albemarle Sound. The town and the Outer Banks are exposed to extreme weather events including seasonal hurricanes and consistently extreme wind and rainfall events throughout the year. Additionally, the town and the Outer Banks are a seasonal tourist destination, with the town's peak in-season population exceeding the year-round population by approximately 10 times. The geographic and climatic conditions, coupled with seasonal demand, present unique challenges for the town, including unique emergency resiliency and response challenges.

As noted, extreme weather events create the potential for power outages throughout the year, particularly during the peak tourist season, potentially resulting in detrimental effects to health, safety, wellbeing, and the local economy. The number of substations serving the town [one] and the northern Outer Banks is limited, resulting in a lack of redundancy. Diversification of

power infrastructure to include reliable, resilient, and interconnected renewable sources, as well as improvements in energy efficiency, will improve our capacity to provide regular service and to operate during and after storms. Further, the Town has seen an increased frequency of high intensity rainfall events. This coupled with the natural "bowl" like topography of the barrier island and shallow groundwater table creates perfect conditions for flooding. This flooding impacts structures and private property, makes roadways impassable, and can inundate septic systems that serve many town structures, resulting in public health and water quality concerns. Water consumption and usage from all types of residential properties, including the many large vacation homes are treated via septic systems and released back into the ground. The town believes high water usage likely contributes to and exacerbates the already problematic high groundwater table.

## COMMUNITY PROFILE

The Town of Nags Head is a beach resort community located in Dare County, North Carolina. Bounded by the Atlantic Ocean to the east, it has over 11 miles of oceanfront shoreline, with 40 free, town-maintained beach access areas along the shore. On the west side, Nags Head is bounded by Roanoke Sound, part of the Albemarle-Pamlico estuary. The entire estuary encompasses 30,000 square miles of watershed and is the second largest estuarine system in the United States. The northern entrance to Cape Hatteras National Seashore is located along the town's southern boundary, and the Town of Kill Devil Hills lies to the north.

The unique geography, culture, and attractions of Nags Head draw thousands of people to this beach town every year. As of the 2018 U.S. Census, the permanent population of Nags Head was 3,044. During the summer season, however, population estimates range between 30,000 and 40,000 people as visitors come from around the state and the country to visit the area. The Town of Nags Head therefore has to plan for a small but diverse permanent population, along with an enormous influx of visitors and tourists of all ages and abilities.

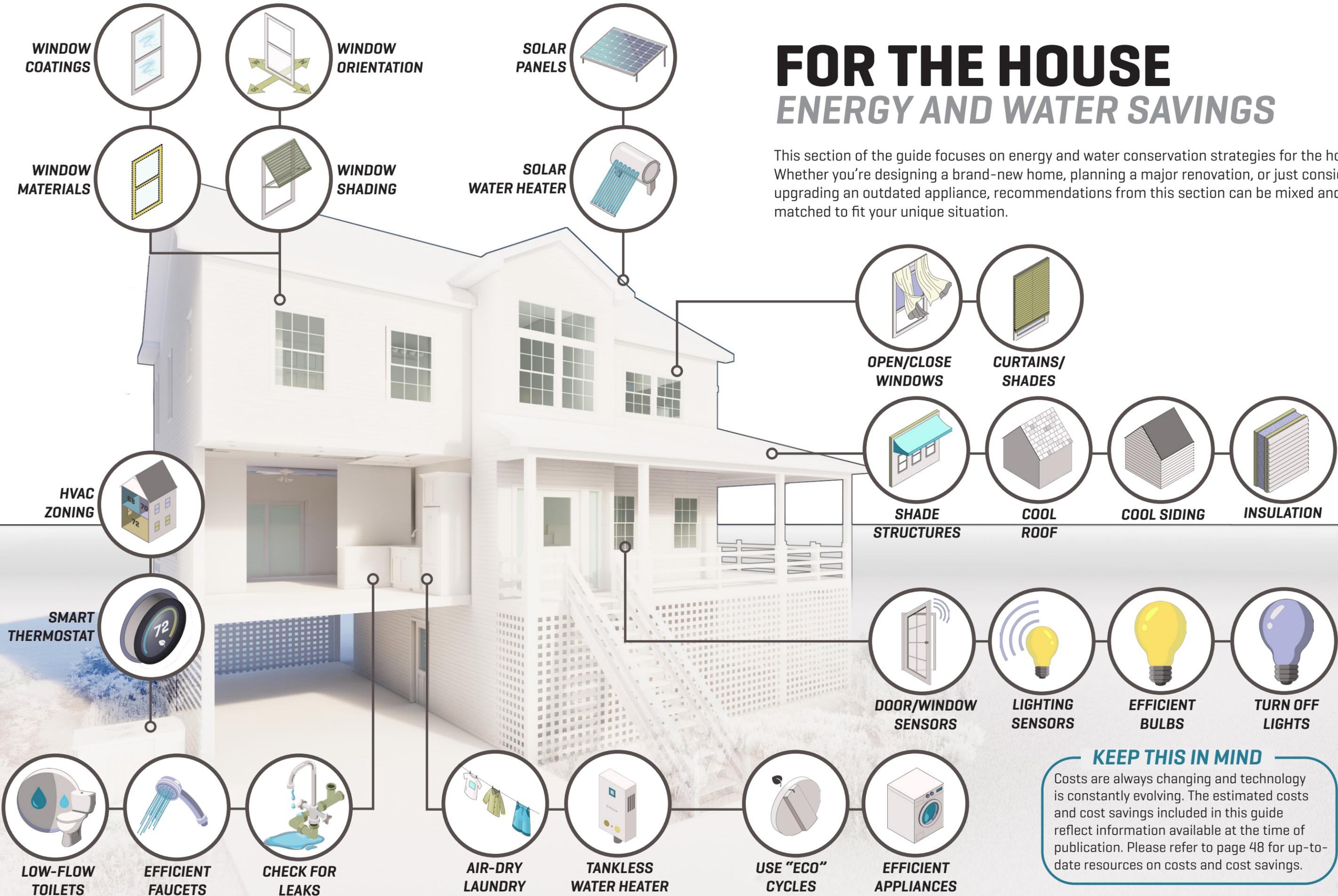


With 92% of the available land in Nags Head already built out and only 7.2 acres vacant, incorporating energy and water savings strategies in new construction is especially important, but prioritizing energy and water efficiency in renovations and remodels can also have a major impact in overall community resilience.

# FOR THE HOUSE

## ENERGY AND WATER SAVINGS

This section of the guide focuses on energy and water conservation strategies for the house. Whether you're designing a brand-new home, planning a major renovation, or just considering upgrading an outdated appliance, recommendations from this section can be mixed and matched to fit your unique situation.

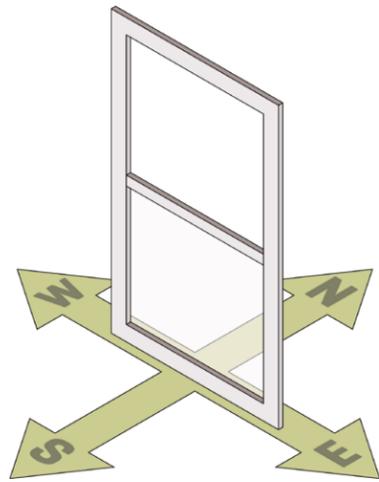


**KEEP THIS IN MIND**  
 Costs are always changing and technology is constantly evolving. The estimated costs and cost savings included in this guide reflect information available at the time of publication. Please refer to page 48 for up-to-date resources on costs and cost savings.

# FOR THE HOUSE

## RENOVATIONS & CONSTRUCTION

If you are considering a home remodel or new build, consider designing for energy efficiency purposes and aesthetics. There are several ways your construction and renovation projects can also reduce utility costs in the future. Some methods are obvious, such as checking for leaks, while other methods, such as window orientation, require a more conscious effort. Take the time to consider the elements below when planning your next project and it will help save money and energy.



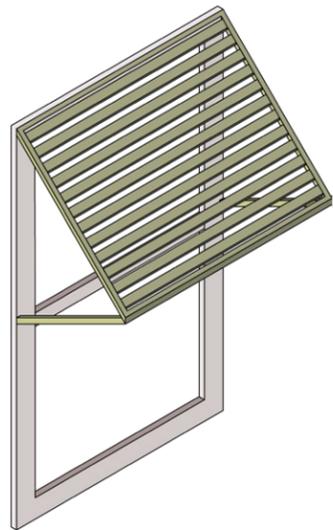
### WINDOW ORIENTATION



**APPROX. COST SAVINGS:** \$8,000 - \$20,000 20-YEAR SAVINGS



Designing with the path of the sun is an easy way to maximize a home's window investment. South is the most important direction for heating performance. Increasing the south-facing window area generates free heat and light. West facing is typically the least efficient orientation in our climate. Unshaded west walls without windows have a measurable negative influence, heated by the setting summer sun. With windows involved, it gets much worse. It's wise to reduce the quantity of west windows as much as possible in our climate, especially if not well protected by covered porches or large shade trees.



### WINDOW SHADING



**APPROX. COST RANGE:** \$10,000 - \$21,000

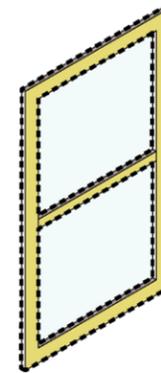


**APPROX. COST SAVINGS:** \$8,000 - \$20,000 20-YEAR NET SAVINGS

**LIFE SPAN:** 25 - 30 YEARS

Summer: Install white window shades, drapes, or blinds to reflect heat away from the house. Close curtains on south- and west-facing windows during the day. Install awnings on south- and west-facing windows to create shade. Apply sun-control or other reflective films on south-facing windows to reduce solar heat gain.

Winter: Install tight-fitting, insulating window shades on windows that feel drafty after weatherizing. Close your curtains and shades at night to protect against cold drafts; open them during the day to let in warming sunlight. Apply low-E film on the inside of your windows to keep heat from radiating out.



### WINDOW MATERIALS



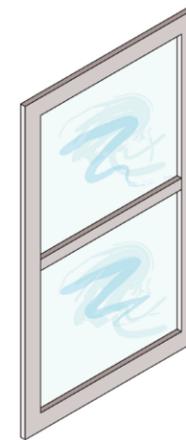
**APPROX. COST RANGE:** \$400 - \$1,000 PER WINDOW



**APPROX. COST SAVINGS:** \$8000 - \$20,000 20-YEAR SAVINGS

**LIFE SPAN:** 15 - 30 YEARS

The type of window frame can contribute to a window's overall energy efficiency, particularly its heat loss rate. There are advantages and disadvantages to all types of frame materials, but vinyl, wood, fiberglass, and some composite frame materials provide greater thermal resistance than metal.



### WINDOW COATINGS



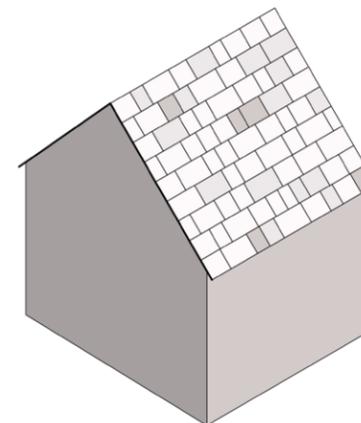
**APPROX. COST RANGE:** \$5 - \$12 PER SQUARE FOOT



**APPROX. COST SAVINGS:** 30% ENERGY BILL SAVINGS

**LIFE SPAN:** 10 - 15 YEARS

Apply sun-control or other reflective films on south-facing windows to reduce solar heat gain. In hot climates, consider adding them to east, west, and south-facing windows. Apply low-E film on the inside of your windows to keep heat from radiating out. Although low-E coatings are usually applied during manufacturing, some are available for do-it-yourselfers. These films are inexpensive compared to total window replacements, last 10 to 15 years without peeling, save energy, reduce fabric fading, and increase comfort.



### COOL ROOFS



**APPROX. COST RANGE:** \$0.75 - \$3.00 PER SQUARE FOOT



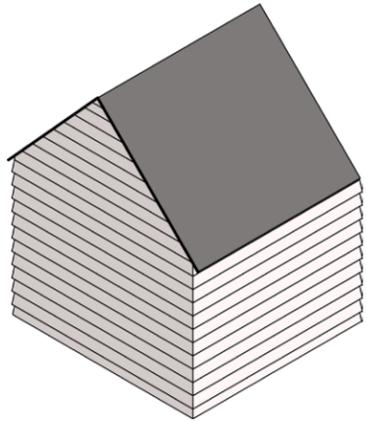
**APPROX. COST SAVINGS:** 7-15% TOTAL COOLING COSTS

**LIFE SPAN:** PROLONG LIFE OF ROOF

Cool roofs are designed to reflect sunlight and have a high rating of "thermal emittance"—the ability to shed heat by giving off "thermal infrared" radiation. The outermost layer of a roofing product or roof covering exposed to the sun determines whether the roof is cool or not. There are many different types of roof coverings to suit varying roof pitches and climate conditions. The roof covering can be installed when replacing the entire roof, or as an addition to an existing roof.

# FOR THE HOUSE

## RENOVATIONS & CONSTRUCTION



### COOL SIDING

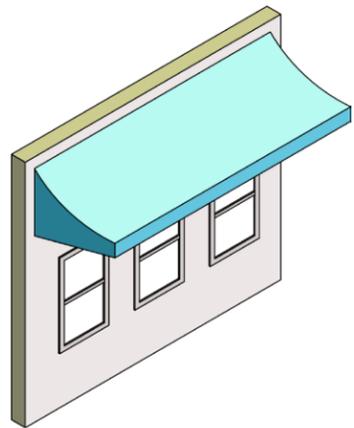


**APPROX. COST RANGE:** \$4 - \$12 PER SQUARE FOOT



**APPROX. COST SAVINGS:** 20% ENERGY BILL SAVINGS

**LIFE SPAN:** VARIES  
Choosing a siding material can have an impact on the energy efficiency of your home. One must consider maintenance, durability, and insulation to determine which siding truly is the most energy-efficient. Insulated vinyl siding is the most efficient type of siding on the market. It adds another layer of insulation to the exterior of the building. Choose light exterior colors that will reflect radiant solar heat rather than absorbing and retaining it.



### OVERHANGS & AWNINGS



**APPROX. COST RANGE:** \$500 - \$10,000



**APPROX. COST SAVINGS:** UP TO 30% ENERGY SAVINGS

**LIFE SPAN:** VARIES

Awnings, pergolas, and other exterior shade structures offer good protection against the sun for sides of your home that receive high amounts of sunlight. Studies conducted by the United States Energy Department show that such structures can reduce solar heat gain by 65%-77%. This is a significant amount that will help lower your energy consumption, saving your home or business hundreds of dollars annually.



### SOLAR PANELS



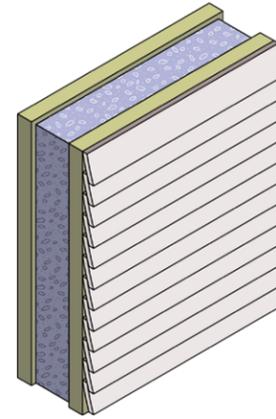
**COST RANGE:** \$10,000 to \$21,000



**COST SAVINGS:** \$8000 - \$20,000 [20 YEAR NET SAVINGS]

**LIFE SPAN:** 25 - 30 YEARS

Solar panels generate electrons when exposed to sunlight which helps produce a flow of electricity. They are best suited for homes that receive ample sunlight. Not only is solar power good for the environment, but you can earn money selling back excess power to the grid.



### INSULATION



**COST RANGE:** \$1.50 - \$5 PER SQUARE FOOT



**COST SAVINGS:** 15% ENERGY BILL SAVINGS

**LIFE SPAN:** UP TO 80 YEARS

Insulation is a material used that reduces heat loss or heat gain, and provides a barrier between the inside and outside of a building. An insulating material's resistance to conductive heat flow is measured or rated in terms of its thermal resistance or R-value. The greater the R-value, the more insulating effectiveness. Insulation effectiveness also depends on where the material is installed. The amount of insulation or R-value you'll need depends on your climate, type of heating and cooling system, and the part of the house you plan to insulate.

### SOL SMART

THE TOWN WAS RECENTLY AWARDED THE BRONZE DESIGNATION FOR THE SOLSMART PROGRAM, A COMPREHENSIVE RESOURCE TO GUIDE LOCAL GOVERNMENTS THROUGH THE SOLSMART DESIGNATION AND TECHNICAL ASSISTANCE PROCESS. SOLSMART USES OBJECTIVE CRITERIA BASED ON ESTABLISHED SOLAR ENERGY BEST PRACTICES TO MEASURE LOCAL GOVERNMENT PROGRESS TOWARD CREATING A SOLAR-FRIENDLY COMMUNITY. LOCAL GOVERNMENTS THAT COMPLETE THE NECESSARY REQUIREMENTS ARE AWARDED SOLSMART BRONZE, SILVER, OR GOLD DESIGNATION.

# FOR THE HOUSE

## APPLIANCES & TECHNOLOGY

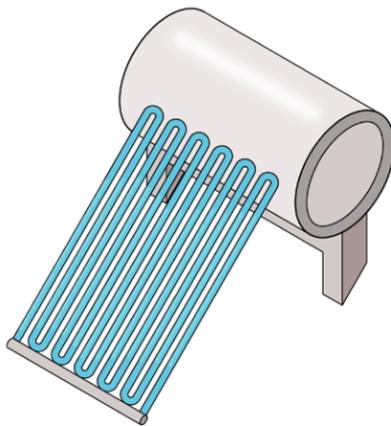
Appliances make up a significant portion of total electricity use so making them more efficient can have a strong impact on total electricity demand. The countries with the longest history of applying minimum energy performance standards have achieved electricity savings of around 15% of total energy consumption per year. Savings increase each year as older, less-efficient stock is replaced with equipment that meets higher efficiency standards. The American Council for an Energy-Efficient Economy estimates that if each of us increases the energy-efficiency in our major appliances by 10 – 30%, we'll release the demand for electricity by the equivalent of 25 large power plants.



### TANKLESS WATER HEATER

-  APPROX. COST RANGE: \$1,000 - \$3,000
-  APPROX. COST SAVINGS: \$100 ANNUALLY
-  LIFE SPAN: 25 - 30 YEARS
- 

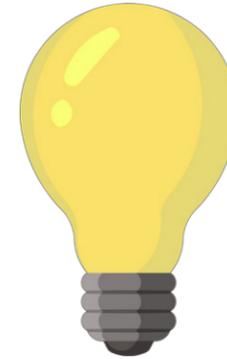
Tankless, or on demand water heaters save energy by only heating the amount of water being used at the time. Depending on the type of system installed, the up front costs can be higher than a traditional tank system, but tankless heaters tend to last longer, and most homeowners can expect a payback period of between 10 and 20 years. State incentives may exist.



### SOLAR WATER HEATER

-  APPROX. COST RANGE: \$3,000 - \$9,000
-  APPROX. COST SAVINGS: 50%-80% ENERGY BILL SAVINGS
-  LIFE SPAN: 20 YEARS

Solar water heating systems use solar panels to heat water in your home. While these systems may be more expensive to install versus traditional electric or gas tank heaters, they offer long term savings on your energy bill, as well as protection from future fuel shortages, outages, and price hikes.



### LED LIGHT BULBS

-  APPROX. COST RANGE: \$6.25 PER 12 W BULB
-  APPROX. COST SAVINGS: 90% ENERGY REDUCTION PER BULB
-  LIFE SPAN: 25,000 HOURS [11-17 YEARS]

Light emitting diodes or LEDs are semiconductors that convert electricity into light, and they're today's most efficient type of lighting. LEDs work well in both indoor and outdoor environments because of their durability and come in a wide variety of colors and shades of white light. With lighting accounting for up to 15% of the average monthly utility bill, reducing energy with LEDs can make an impact!



### SMART THERMOSTAT

-  APPROX. COST RANGE: \$80 - \$250
-  APPROX. COST SAVINGS: \$180 PER YEAR
-  LIFE SPAN: 10 YEARS

Smart thermostats connect to your central heating and cooling system, and control your home's temperature wirelessly. Some can detect when there are no people in the house and turn off the heating or AC to prevent wasting energy. When you come back home, the sensor will turn the thermostat on again and adjust it to your preferred temperature. Another great feature that comes with modern smart thermostats is password protection. If you have renters in your home, for example, you can set a password on the thermostat through a smart home app so that no energy is wasted.



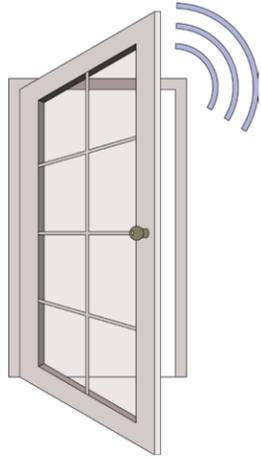
### LOW-FLOW TOILET

-  APPROX. COST RANGE: \$80 - \$250
-  APPROX. COST SAVINGS: \$140 PER YEAR
-  LIFE SPAN: 10 - 15 YEARS

Toilets use the most water in a home, accounting for almost 30 percent of household water use. By replacing older, inefficient toilets with WaterSense labeled models, the average home can reduce water consumption by 20 to 60 percent—that's nearly 13,000 gallons of water savings every year. Upgrading your toilets could also save more than \$140 per year in water costs, and \$2,900 over the lifetime of the toilets.

# FOR THE HOUSE

## APPLIANCES & TECHNOLOGY



### DOOR & WINDOW SENSORS



APPROX. COST RANGE: \$20 - \$80 PER SENSOR

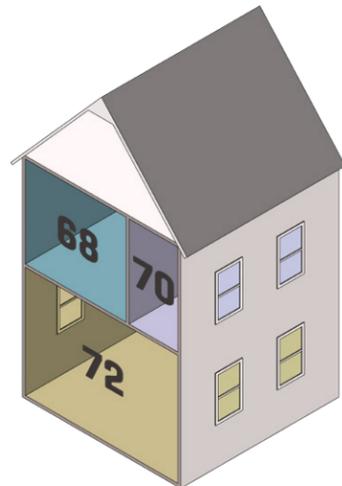


APPROX. COST SAVINGS: VARIES



LIFE SPAN: 5 - 10 YEARS

Window and door sensors can help provide energy savings for your home by detecting when a door or window opens or closes. Additionally, occupancy sensors can detect when someone enters or exits a room. The sensors can send a wireless message to your thermostat or other devices to lower or raise the thermostat or turn it off altogether. Sensors can be used for both energy efficiency and security.



### HVAC / ZONING



APPROX. COST RANGE: \$2,000 - \$3,500



APPROX. COST SAVINGS: 20% ENERGY BILL SAVINGS



LIFE SPAN: VARIES

With a zoned HVAC system, you can change the temperature in just one room or section of the home. The system will not release heated or cooled air anywhere but that one zone, which saves energy, resulting in lower electricity bills. HVAC zoning can also reduce unwanted dirt and debris that escaped the filtration system from circulating throughout the entire house every time the HVAC is turned on.



### LIGHTING & OCCUPANCY SENSORS



APPROX. COST RANGE: \$30 - \$200



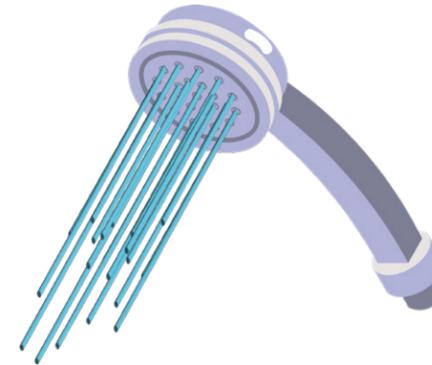
APPROX. COST SAVINGS: UP TO 70% ENERGY SAVINGS (LIGHTS)



LIFE SPAN: 10 - 15 YEARS



Lighting or "photo" sensors can detect ambient light and turn lights off during daylight hours. This type of sensor works well for exterior lights but is less effective inside as occupant needs vary. Occupancy sensors can be effective for indoor use because they detect when someone occupies and leaves a room, turning lights on and off for each situation. This can save energy and money and offer convenience.



### WATER SAVING FAUCETS



APPROX. COST RANGE: \$10+

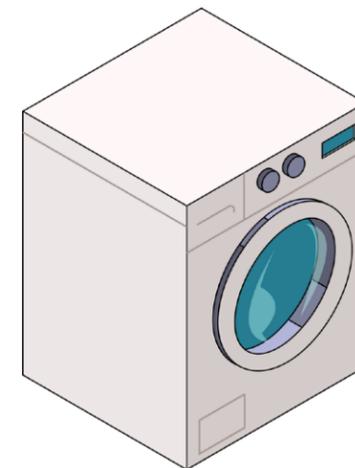


APPROX. COST SAVINGS: 30% - 50% WATER USE REDUCTION



LIFE SPAN: 10 - 15 YEARS

WaterSense labeled faucets and accessories can reduce water flow by 30%, potentially saving a family around 700 gallons of water per year. Also, since these water savings reduce demands on water heaters, households will also save energy - the equivalent of running a hairdryer 17 minutes a day for a year. Achieving these savings can be as easy as twisting on a WaterSense labeled aerator, which can cost as little as a few dollars.



### HIGH-EFFICIENCY APPLIANCES



APPROX. COST RANGE: VARIES



APPROX. COST SAVINGS: \$50 - \$200 PER YEAR



LIFE SPAN: 10 - 15 YEARS



On average, home appliances - including clothes washers, dryers, dishwashers, refrigerators, freezers, air purifiers and humidifiers - Will account for 20% of a home's total electric bill. Energy star appliances use 10- 50% less energy than their non-energy efficient equivalents. Purchasing an energy star appliance is making an investment that will reduce your energy bills for years to come.

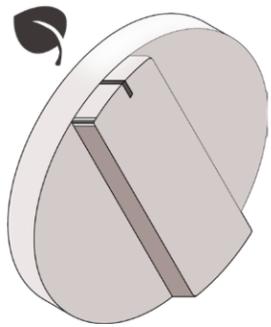
### DID YOU KNOW?

LIGHTING ACCOUNTS FOR AROUND 15% OF AN AVERAGE HOME'S ELECTRICITY USE, AND THE AVERAGE HOUSEHOLD SAVES ABOUT \$225 IN ENERGY COSTS PER YEAR BY USING LED LIGHTING. ADDING SENSORS AND/OR AUTO-SHUTOFF TIMERS TO LIGHT FIXTURES CAN SAVE EVEN MORE.

# FOR THE HOUSE

## ACTIONS & STRATEGIES

There are many low to no cost strategies that can be a part of your day to day routine that will lower energy and water costs. This page includes relatively simple-to-implement behaviors and habits that take advantage of your existing home and the appliances you already have. It can be as simple as turning off the lights when you leave the room, using your clothes dryer less, and staying vigilant about leaks.



### **APPLIANCE EFFICIENCY CYCLE**

 In most homes, the washer, dryer, dishwasher and refrigerator take up to 20 percent of the energy bill. Making small changes to how and when you use your appliances can make a big difference in reducing energy costs. For example, running the dryer on delicate or shortening the cycle by 10 minutes can save energy. Skipping the heat dry cycle on your dishwasher as well as setting your refrigerator to 40 degrees instead of 37 can also save energy and money.



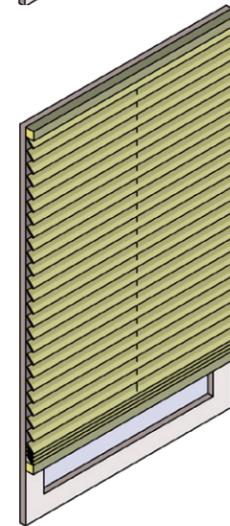
### **TURNING OFF LIGHTS**

 The simple action of turning off lights when you leave a room saves energy and when practiced often, can reduce your electric bill noticeably. While the amount of energy saved depends on the type of light bulb used, turning off lights can also prolong the life of your light bulb, providing even more savings. If you have a difficult time remembering to turn off lights, install sensors that shut off lights automatically instead.



### **OPEN/CLOSE DOORS & WINDOWS**

Opening doors and windows during nice weather allows warm or cool breezes into your home, and fresh air to circulate. However, during extremely hot or chilly weather, it is important that doors and windows remain closed, so the heating and cooling systems operate efficiently. Even a small crack or door ajar can cause a system to run more than it needs to. If your home's occupants have a tough time remembering to close doors and windows, consider installing sensors that alert when open, and can also connect to the central heating and cooling system to regulate run time.



### **DRAW CURTAINS/SHADES**

The efficient use of blinds, curtains, and other window treatments can help keep your house cool and your energy bills lower. According to the Department of Energy, the smart management of window coverings can reduce heat gain by up to 77 percent. Not all window coverings provide equal savings. Dark and medium colored curtains with white backings are most effective at reducing heat gain. Window blinds and shades also work but need to be kept closed and drawn to be most effective.



### **LINE DRY LAUNDRY**

Hanging out laundry to dry is one of the simplest ways to save energy and money. Driers are one of the most energy intensive appliances in the home. While it may take some extra time, installing a rack or line in your home and line drying your items can help to reduce your energy bill by 10%-20% and prolong the life of your clothes.

# FOR THE HOUSE

## ACTIONS & STRATEGIES



### CHECK FOR LEAKS

According to the EPA, ten percent of homes have leaks that waste 90 gallons or more per day. Common types of leaks found in the home are worn toilet flappers, dripping faucets, and other leaking valves. These types of leaks are often easy to fix, requiring only a few tools and hardware that can pay for themselves in water savings. Fixing easily corrected household water leaks can save homeowners about 10 percent on their water bills.

### DID YOU KNOW?

INEFFICIENT OR POORLY MAINTAINED TOILET FIXTURES CAN BE A MAJOR SOURCE OF WATER WASTE IN HOMES. THIS IS TYPICALLY A LOW COST FIX THAT CAN ADD UP TO BIG SAVINGS ON A WATER BILL. IT MAY BE AS SIMPLE AS REPLACING THE TOILET FLAP IN YOUR BASIN, WHICH COSTS AS LITTLE AS \$5-\$10. BE SURE TO LISTEN FOR RUNNING WATER, LOOK FOR ANY MOISTURE ON AND AROUND THE TOILET, AND DETERMINE A FIX AS QUICKLY AS POSSIBLE.

### TIPS FOR TURTLES

NESTING SEA TURTLES AVOID LIT BEACHES AND OFTEN TURN BACK TO SEA PREMATURELY WHEN EXPOSED TO ARTIFICIAL LIGHT. THESE ARE STEPS HOMEOWNERS CAN TAKE TO ENSURE A HEALTHY SEA TURTLE HABITAT:

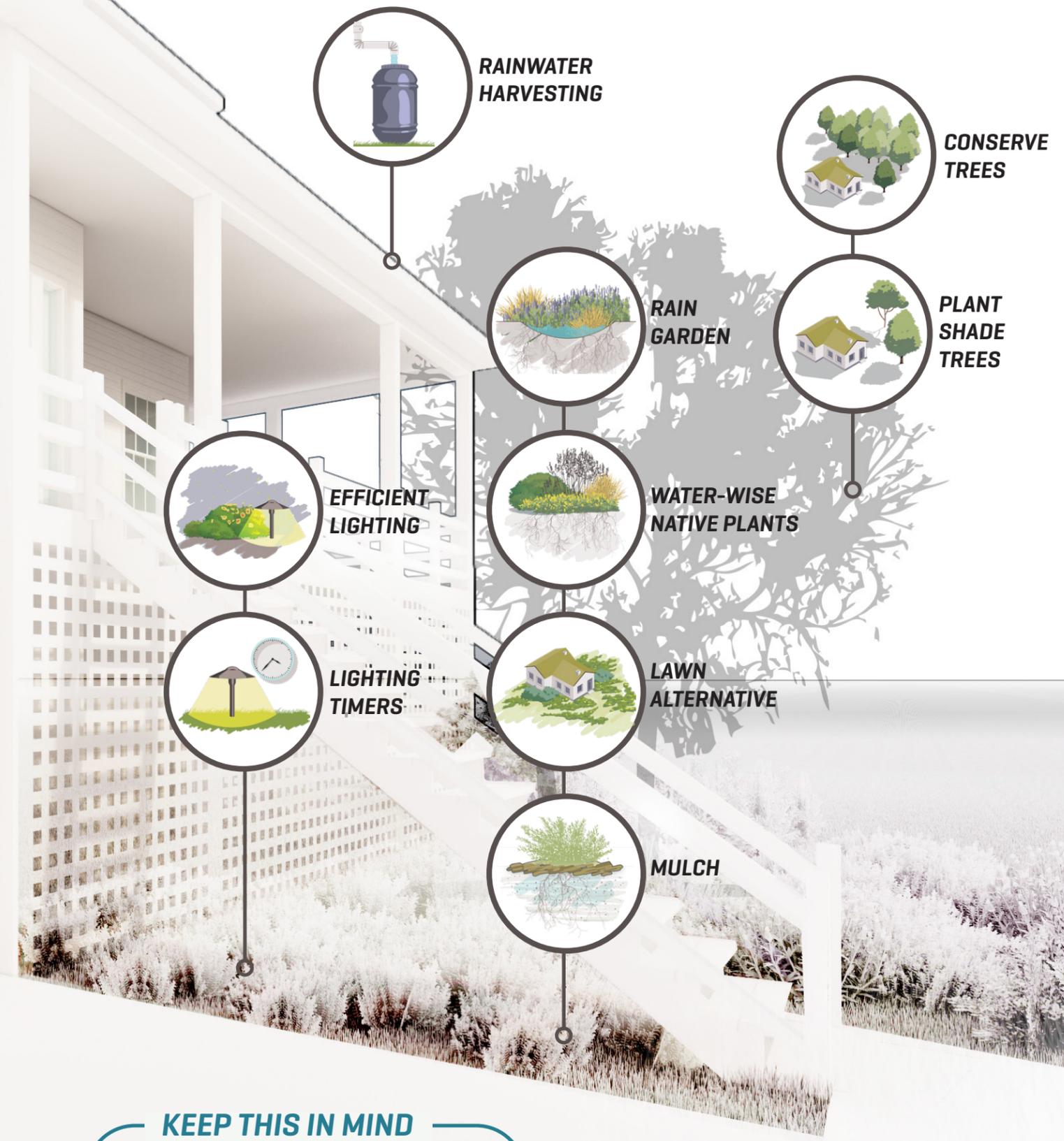
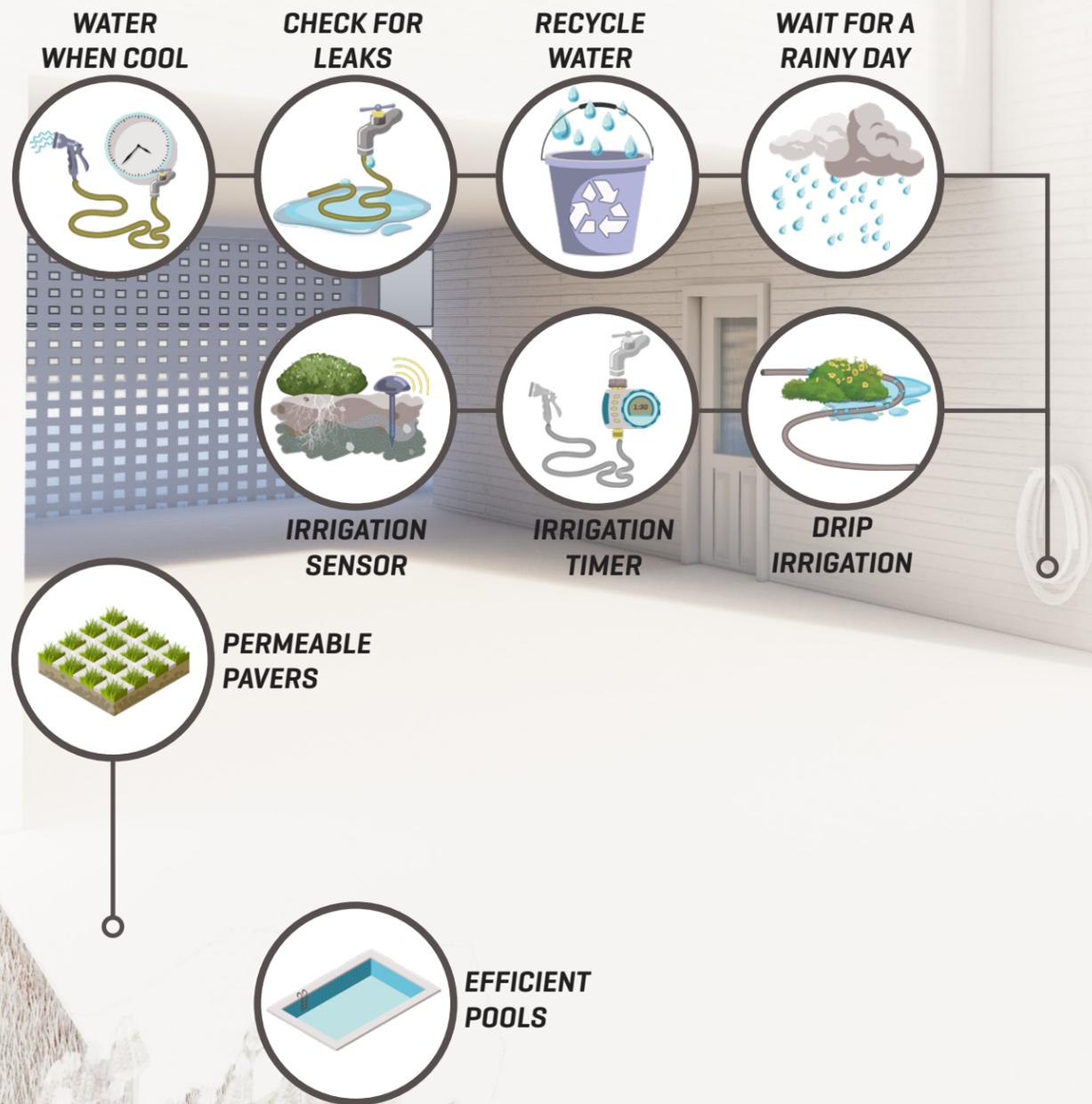
- ENSURE THAT NO LIGHT IS VISIBLE ON THE NESTING BEACH AT NIGHT DURING THE NESTING/HATCHING SEASON (MAY THROUGH MID-NOVEMBER).
- USE DIRECTIONAL LIGHT FIXTURES TO DIRECT LIGHT JUST WHERE YOU NEED IT AND AWAY FROM THE ADJACENT BEACH.
- INSTALL LIGHT SHIELDS TO EXISTING FIXTURES TO DIRECT LIGHT WHERE YOU NEED IT AND AWAY FROM THE ADJACENT BEACH.
- TURN OFF LIGHTS AT NIGHT.



# FOR THE YARD

## ENERGY AND WATER SAVINGS

Water and energy saving strategies are not just for inside your home. The following list of actions and methods can be implemented in the areas surrounding your home. Whether you have a large formal garden, a small vegetable patch or something in between, simple actions such as watering during the cooler parts of the day (like early morning and late evening) and installing irrigation timers can save water and money. Always consider installing native plants instead of water-thirsty sod or mix up the areas in your yard to include more plants than sod.



### KEEP THIS IN MIND

Costs are always changing and technology is constantly evolving. The estimated costs and cost savings included in this guide reflect information available at the time of publication. Please refer to page 48 for up-to-date resources on costs and cost savings.

# FOR THE YARD

## LANDSCAPE DESIGN

Well-designed landscapes can add value to your home, benefit the environment and reduce water and energy costs. In addition to requiring less water, fertilizer, pesticides, and usually maintenance, well designed landscapes offer other benefits as well. These include:

- Lower water bills from reduced water use.
- Conservation of natural resources and preservation of plant, pollinator, and wildlife habitat.
- Decreased energy use and lower greenhouse gas emissions from energy generation.
- Reduced home heating and cooling costs through the careful placement of shade trees.
- Reduced stormwater and irrigation runoff that carries top soils, fertilizers, and pesticides into water bodies.
- Fewer yard trimmings to be managed or landfilled.



### PLANT SHADE TREES



**COST RANGE:** \$13 - \$288 PER TREE



**MAINTENANCE COST:** \$15-\$81 PER TREE



**MAINTENANCE SCHEDULE:** PRUNING, WATERING, PEST CONTROL AS NEEDED

Depending upon the amount of shade, trees can reduce household energy consumption by 5-15%. The air temperature under a tree can be up to 25 degrees cooler than the unshaded area around it, in part because of evapotranspiration, the process by which plants release water vapor. Trees also add visual interest to a property.



### LAWN ALTERNATIVE



**COST RANGE:** \$3 - \$18 PER SQUARE FOOT



**WATER SAVINGS:** 18-30 GALLONS SAVED PER SQUARE FOOT



**MAINTENANCE SCHEDULE:** CUT BACK OR MOW TWICE PER YEAR; REPLACE GRAVEL AS NEEDED

Conventional lawns require a large amount of water to maintain. Alternatives to a water-intensive lawn include planting ornamental native grasses, wildflowers, and herbaceous plants. Consider using gravel or other permeable materials instead of concrete for walking and gathering areas. Make sure to use edging to keep any loose gravel from migrating into planting beds.



### PERMEABLE PAVING



**COST RANGE:** \$5-\$12 PER SQUARE FOOT



**MAINTENANCE COST:** \$0.01 - \$0.23 PER SQUARE FOOT



**MAINTENANCE SCHEDULE:** SWEEPING, VACUUMING TO MAINTAIN INFILTRATION

Permeable paving consists of porous concrete, gravel, interlocking concrete paving units, or another permeable surface that allows water to infiltrate into the ground. Surfaces can be used for walking, sitting or if designed appropriately, parking and driving.



### WATER-WISE NATIVE PLANTS



**COST RANGE:** DEPENDENT ON PLANT TYPE AND SIZE



**COST SAVINGS:** UP TO 80% REDUCED MAINTENANCE COSTS



**MAINTENANCE SCHEDULE:** WATER FIRST TWO SEASONS AND PRUNE EARLY SPRING

Native plants are those that occur naturally in an area. After establishment, they require minimal maintenance, fertilizer, and water use. Natives can also provide food and shelter for animals, and are generally more resistant to attack by insects and disease.

### DID YOU KNOW?

THE TOWN ENCOURAGES THE USE OF PERMEABLE PAVEMENT THROUGH A LOT COVERAGE INCENTIVE. FOR THE PURPOSES OF DETERMINING LOT COVERAGE, THE TOTAL SQUARE FOOTAGE OF PERMEABLE PAVEMENT MATERIALS IS MULTIPLIED BY 0.67. THIS MEANS THAT BY CHOOSING PERMEABLE PAVEMENT, YOU MAY BE ABLE TO HAVE A LARGER BUILDING FOOTPRINT.

# FOR THE YARD

## LANDSCAPE DESIGN



### MULCH



APPROX. COST RANGE: \$1 - \$3 PER CUBIC FOOT (BAGGED)



APPROX. COST SAVINGS: VARIES



MAINTENANCE SCHEDULE: REFRESH ANNUALLY

Using mulch in flower and vegetable beds cuts down on the need for watering and weeding. Organic mulches are best, including hardwood and softwood shredded mulch, pine straw, and pine bark nuggets. While rock can be an attractive option, as rocks are heated by the sun they pull moisture from the soil and can dry out plants. Rarely used alone, landscape fabric or weed barrier is usually covered with other mulches for aesthetic reasons. While the double-barrier is excellent for stopping weeds, using fabric barrier with mulch keeps desirable organic material from reaching the soil as the mulch on top breaks down.



### RAIN GARDEN



COST RANGE: \$5-\$16 PER SQUARE FOOT



MAINTENANCE COST: \$0.31 - \$0.61 PER SQUARE FOOT



MAINTENANCE SCHEDULE: WATERING, PRUNING, WEEDING, CONTROLLING INVASIVE SPECIES AS NEEDED

Rain gardens are low areas in your yard, where water is diverted, usually from a gutter system associated with a roof. The area is planted and maintained much like a landscaped area, however it does not require supplemental watering unless subjected to an unusually dry period which can save money.

### DID YOU KNOW?

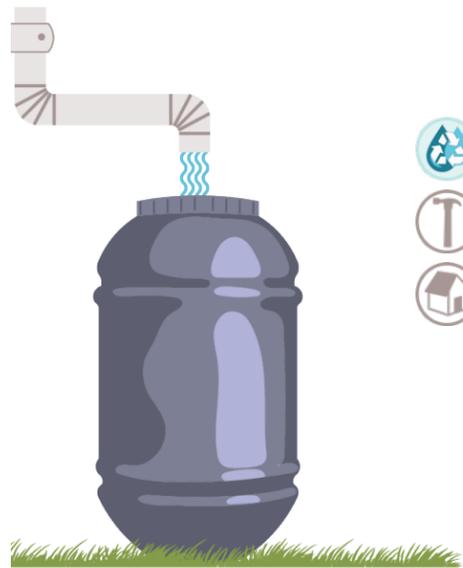
RAIN GARDENS ARE BEST PLANTED WITH NATIVE PLANTS SINCE THEY'RE ADAPTED TO VARYING WATER LEVELS. THESE AREAS CAN BE ATTRACTIVE AND BOOST CURB APPEAL IF MAINTAINED PROPERLY. RAIN GARDENS ALSO REDUCE THE AMOUNT OF STORMWATER RUNOFF INTO THE SURROUNDING ENVIRONMENT.



# FOR THE YARD

## APPLIANCES & TECHNOLOGY

Watering your yard wisely and using energy efficient outdoor lights and pool technology is important for both your wallet and the environment. Using water efficient technologies can make a significant difference in keeping your home irrigation system running efficiently and lowering use without a lot of effort. This reduces your water bill as well as potential runoff into storm drains and nearby aquatic habitats.



### CISTERNS & RAIN BARRELS

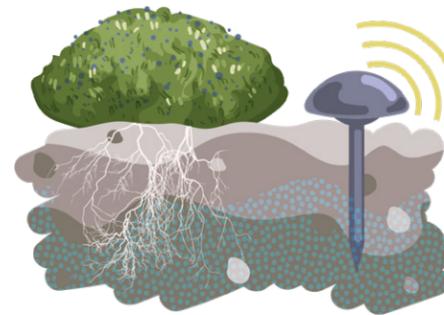
-  **COST RANGE:** \$200-\$10,000 DEPENDING ON MATERIAL AND SIZE
-  **APPROX. WATER SAVINGS:** UP TO 1300 GALLONS PER YEAR
-  **MAINTENANCE SCHEDULE:** SPRING STARTUP & WINTERIZATION
-  Rain barrels and cisterns capture and temporarily store rainwater from gutter downspouts before it's used for irrigation. Rain barrels are typically used on smaller structures (sheds and houses) and are usually the size of 55-gallon drums, but they may store up to 200 gallons. Cisterns can be much larger (10,000 gallons or more) and are more suitable for larger structures like office buildings. In both cases, the storage vessel needs to be designed to direct overflows either back into the downspout or out into the landscape where it will not cause foundation problems or safety issues.

### SOLAR LANDSCAPE LIGHTING

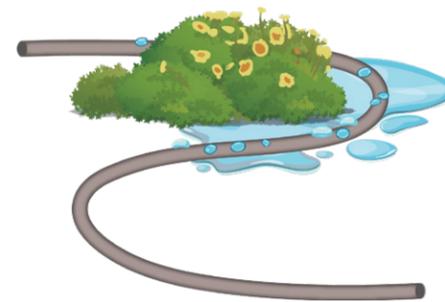
-  **APPROX. COST RANGE:** \$25 - \$1500 PER UNIT DEPENDING ON FIXTURE
-  **MAINTENANCE SCHEDULE:** CHECK ANNUALLY FOR LEAKS
-  **LIFE SPAN:** 6 MONTHS - 10 YEARS
- Solar outdoor lights come with a solar panel that absorbs energy from natural sunlight and converts it into electricity. It stores the energy in an integrated battery and uses it to power the light when you switch it on. Therefore, you don't need wiring or an electrical supply to install solar-powered outdoor lights in your backyard.



-  **IRRIGATION TIMERS**
-  **APPROX. COST RANGE:** \$20 - \$30
-  **APPROX. COST SAVINGS:** WATER BILL SAVINGS
-  **LIFE SPAN:** 5 - 25 YEARS
-  Irrigation timers range from a simple hose connection that turns one sprinkler on and off, to a multi-zone smart sprinkler control system. Timers can be set to water at the most ideal part of the day, early in the morning when evaporation is less. A smart sprinkler control system can also connect to real time weather data and skip watering based on forecasts and/or soil moisture.



-  **IRRIGATION SENSORS**
-  **APPROX. COST RANGE:** \$20 - \$100
-  **APPROX. WATER SAVINGS:** UP TO 50% WATER REDUCTION
-  **LIFE SPAN:** 5 - 8 YEARS
-  Two types of sensors can be found, weather based irrigation controllers, and soil moisture based controllers. Both technologies match water distribution to plant needs. Weather based controllers use real time local weather data.



-  **DRIP IRRIGATION**
-  **COST RANGE:** \$1.50 to \$4.50 PER SQUARE FOOT OF IRRIGATED AREA
-  **MAINTENANCE SCHEDULE:** CHECK ANNUALLY FOR LEAKS
-  **LIFE SPAN:** 10-15 YEARS
-  Drip irrigation systems use less water than conventional irrigation systems. They are designed to save water by depositing it directly by the roots of your plants. The initial cost can be more than a conventional irrigation system but can save you money over time with lower water use and improved plant health.

# FOR THE YARD

## APPLIANCES & TECHNOLOGY



### POOL TECHNOLOGY



APPROX. COST RANGE: VARIES



APPROX. COST SAVINGS: \$340 PER YEAR



LIFE SPAN: VARIES

Using a pool cover when your pool is not in use can reduce water loss through evaporation and potentially save up to 50%-70% on your pool heating costs. If you need to heat your pool, install an efficient swimming pool heater. Keep your pool as cool as you can. Most pools are kept at 78°F to 82°F; each degree rise in temperature could increase energy costs by 10%-30% depending on your location. On average, ENERGY STAR certified pool pumps are 70% more efficient than conventional models and can save you up to \$340 a year.



### LANDSCAPE LIGHTING TIMERS



APPROX. COST RANGE: \$20 - \$100



LIFE SPAN: 3 - 5 YEARS



If your home utilizes landscape lighting, using timers to adjust the length of time lights are on and off can eliminate unnecessary electricity use. As the seasons change, and daylight hours shift, consider setting the lights to accommodate changing levels of ambient light. Solar lights are also a good choice and have become popular with homeowners. These types of lights do not require an electrical connection and harness the power of the sun. Often, they do require batteries to be replaced depending on the level of use.

### DID YOU KNOW?

THE PURPOSE OF A LANDSCAPE BUFFERS IS TO HELP PROVIDE TRANSITION BETWEEN DIFFERENT TYPES OF LAND USES, TO BREAK UP OR SOFTEN THE APPEARANCE OF PAVED SURFACES, AND TO PROVIDE THE SHADE AND GREENERY NECESSARY TO CREATE A LIVABLE ENVIRONMENT. PROPERTIES THAT PROVIDE FOR DRIP IRRIGATION OF LANDSCAPE MATERIALS OR A LANDSCAPE PLAN THAT CONSISTS ENTIRELY OF NATIVE PLANTING MATERIALS AS SPECIFIED IN THE TOWN OF NAGS HEAD VEGETATIVE PLANTING GUIDELINES MAY REDUCE THE OVERALL NUMBER OF REQUIRED PLANTINGS BY TEN (10) PERCENT.



# FOR THE YARD

## ACTIONS & STRATEGIES

There are many low or no cost options homeowners and renters can take to save water and energy. The following are actions and habits that you can begin practicing in your day-to-day life, and also encourage others to practice as well. These actions repeated over time and multiplied by each home's occupants can add up to meaningful energy and water conservation. We can all do our part!



### WATER WHEN IT'S COOL

The ideal times to water your garden or lawn are early in the morning, followed by early evening. Watering during cooler hours reduces evaporation allowing most of the water to be absorbed. Additionally, watering in the early morning is most ideal for preventing mold and mildew growth because plants have a chance to dry out during the day.



### WAIT FOR A RAINY DAY

Check the weather forecast regularly and opt out of watering if rain is on the way. A good rule of thumb for planting new plants or sod is to plant the day before a forecast rain. This way the plants receive a good soaking and have less shock when installed.



### RECYCLE YOUR WATER

Reusing water from baths and showers to water landscaping [otherwise known as greywater recycling] is becoming more common. This can be as simple as directing an outdoor shower to nearby plants or working with a plumber to create a recycling system that directs water to the exterior landscaping. Don't pour water from your water bottle down the sink, use it to water plants whenever you can.



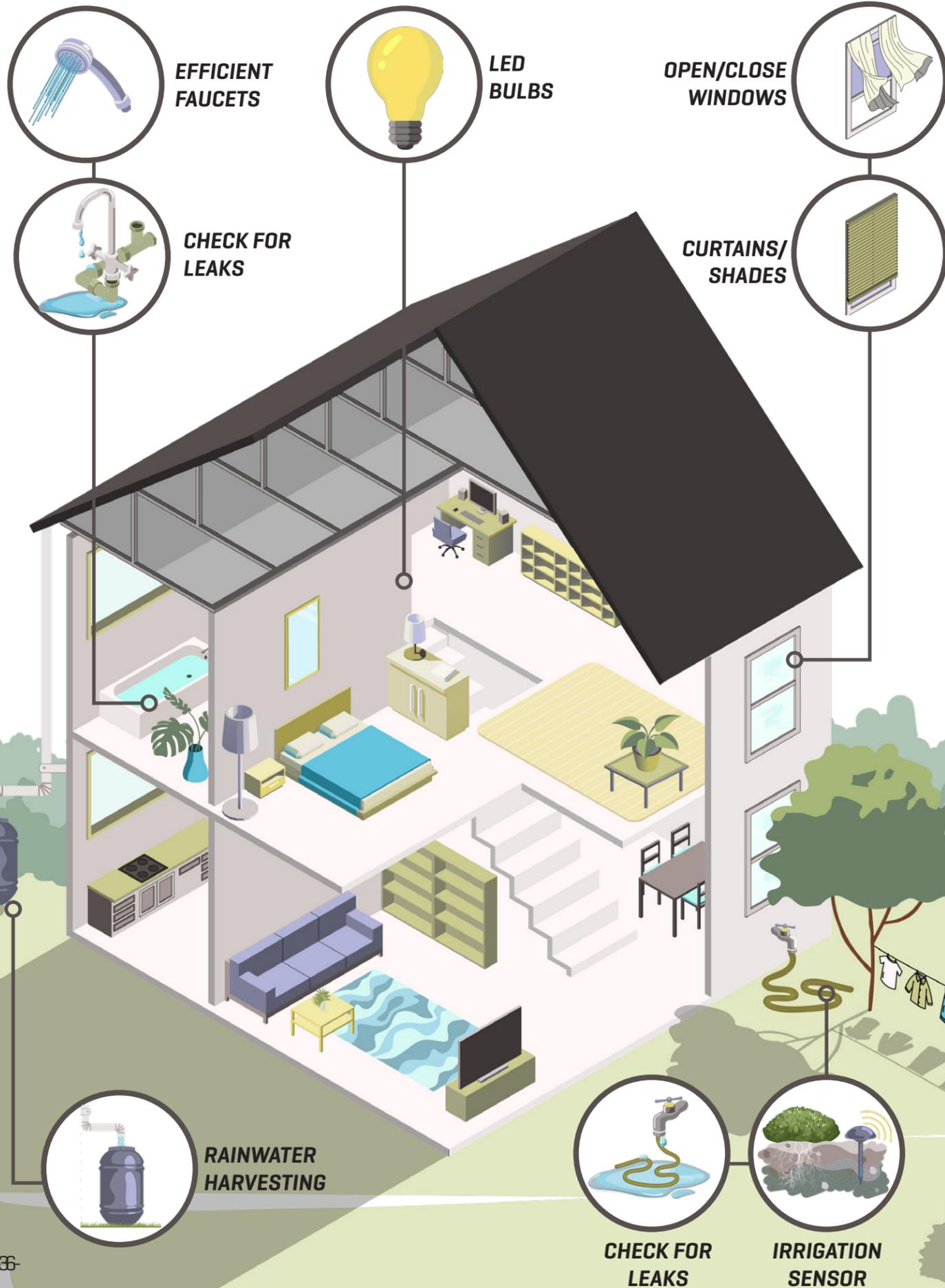
### CONSERVE TREES

When siting your home or considering a renovation, conserving trees is a smart way to shade your home and cut down on energy costs. Trees also provide interest and beauty in the landscape, increasing your home's curb appeal and value, while soaking up standing water on your lot.



### CHECK FOR LEAKS

Each spring, before you turn on your irrigation system, make sure there is no damage from frost or freezing during the winter. An irrigation system with a leak as small as 1/32 inch in diameter [about the thickness of a dime] can waste about 6,300 gallons of water each month. Always check for leaks in hoses, outdoor faucets, and sinks. Replacing or repairing these items regularly can save water and money.



# LOW-COST SOLUTIONS

## BUDGET: LESS THAN \$1,000

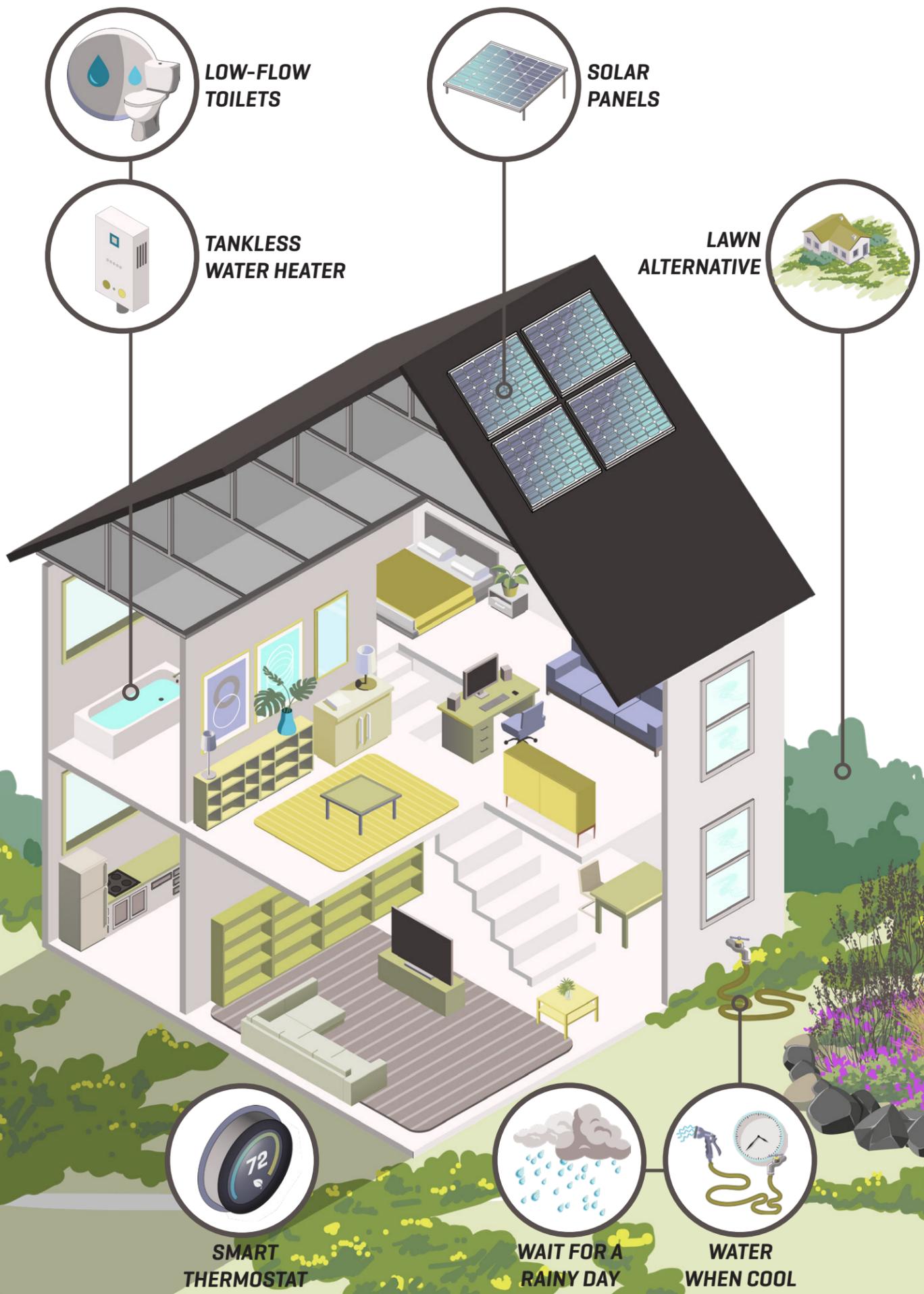
RECOMMENDATION	QUANTITY	COST	SAVINGS (YEARLY)
WATER SAVING FAUCETS	6	\$100	\$7 (700 GAL)
CHECK FOR LEAKS (INSIDE)	--	--	\$21 (3,000 GAL)
LED BULBS	40	\$250	\$225
RAINWATER HARVESTING	1 (55 GAL)	\$300	\$7 (1,300 GAL)
OPEN/CLOSE WINDOWS	--	--	VARIES
DRAW CURTAINS/SHADES	--	--	VARIES
AIR-DRY LAUNDRY	--	--	\$260
CHECK FOR LEAKS (OUTSIDE)	--	--	\$21 (3,000 GAL)
IRRIGATION SENSOR	1	\$100	\$63 (9,000 GAL)
		<b>\$750</b>	<b>\$604</b>

### LOW-COST SOLUTIONS

Even when you're working with a small budget, there are plenty of options for conserving water and energy at home. Replacing your light bulbs with high-efficiency LEDs, swapping out your shower heads for water-saving faucets, and purchasing irrigation timers for your sprinkler system are all great DIY weekend projects. Paired with behaviors like remembering to draw your curtains during the hottest times of the day and regularly checking your plumbing for leaks can add up to big savings over time. The biggest investment on this list is a rain barrel, but it also has the greatest water savings potential. Depending on the capacity and the size of your yard, a rain barrel can replace most of the watering you do from the spigot and hose each summer!

**\$18,120**  
30-YEAR SAVINGS

**17,000 GAL**  
YEARLY WATER SAVINGS



# STRATEGIC UPDATES

## BUDGET: \$25,000

RECOMMENDATION	QUANTITY	COST	SAVINGS (YEARLY)
LOW-FLOW TOILETS	4	\$800	\$90 (13,000 GAL)
TANKLESS WATER HEATER	1	\$1,500	\$100
SOLAR PANELS	--	\$10,000	\$750
LAWN ALTERNATIVE	1,000 sq ft	\$5,000	\$125 (18,000 GAL)
HIGH EFFICIENCY APPLIANCES	1	\$750	\$125
SMART THERMOSTAT	1	\$150	\$180
WAIT FOR A RAINY DAY	--	--	VARIES
WATER WHEN COOL	--	--	VARIES
RAIN GARDEN	75 sq ft	\$1,200	VARIES
		<b>\$19,400</b>	<b>\$1,370</b>

### STRATEGIC UPDATES

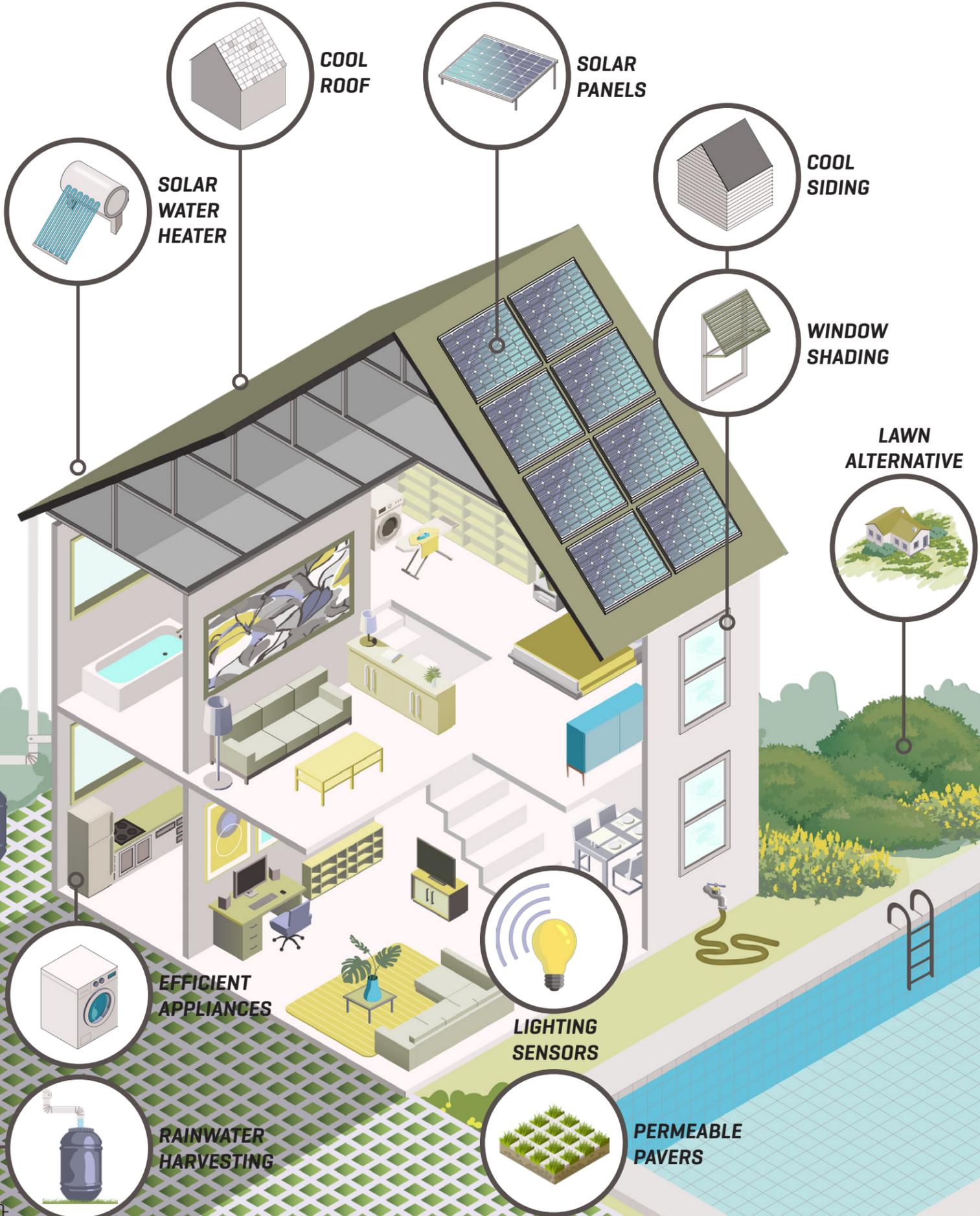
If you're working with a larger budget (up to \$25,000), investments in energy saving technology like solar panels, tankless water heaters, and upgraded appliances can have a big impact on your energy usage and power bill. Installing a smart thermostat, building a raingarden, or replacing your lawn are great DIY projects for some people, but others may feel more comfortable hiring a professional.

**\$41,100**  
30-YEAR SAVINGS

**31,000 GAL**  
YEARLY WATER SAVINGS

# FULL-HOME RENOVATION

BUDGET: \$100,000+



RECOMMENDATION	QUANTITY	COST	SAVINGS (YEARLY)
COOL SIDING	5,350 sq ft	\$42,800	\$350
COOL ROOF	3,000 sq ft	\$4,500	\$210
SOLAR PANELS	--	\$15,000	\$1,000
SOLAR WATER HEATER	1	\$6,000	\$1,100
WINDOW SHADING	20	\$20,000	\$800
HIGH-EFFICIENCY POOL PUMP	1	\$1,500	\$340
RAINWATER HARVESTING	1 (500 GAL)	\$800	\$91 (13,000 GAL)
HIGH EFFICIENCY APPLIANCES	3	\$2,250	\$450
LAWN ALTERNATIVE	2,500 SQ FT	\$12,500	\$313 (45,000 GAL)
LIGHTING & OCCUPANCY SENSORS	8	\$500	\$140
		<b>\$105,850</b>	<b>\$4,794</b>

## FULL-HOME RENOVATION

If you're considering a complete home remodel or thinking about new construction, there are great options for maximizing your home's energy and water efficiency. Work with your architect or builder to select energy saving materials like cool roofing and light colored siding, and work with a landscape professional who has experience installing innovative stormwater management features like permeable paving and rain gardens.

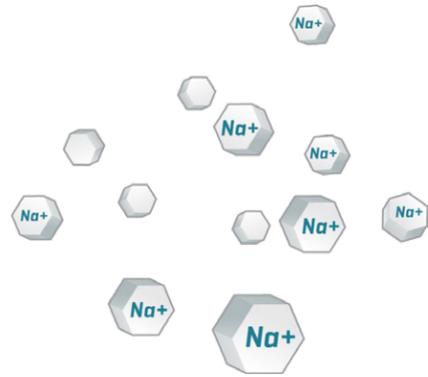
**\$143,820**  
30-YEAR SAVINGS

**58,000 GAL**  
YEARLY WATER SAVINGS

# LANDSCAPING 101

## TIPS FOR GETTING STARTED

Interested in trying out some of the landscaping recommendations, but don't know where to start? The following list includes a few important things to consider when selecting plants for your yard and deciding where to install your new garden. You can also find knowledgeable staff at your local nursery who can help you pick out plants that will thrive in your yard, look beautiful, and help conserve water.



### SALT TOLERANCE

Salt spray from waves and wind accumulates on leaves and can damage or kill certain plants. The closer you are to the ocean, the more important it is to choose landscaping plants that have a higher salt tolerance. The general rule of thumb is that properties within 1/8 mile of the ocean (about 3 blocks) are the most susceptible to salt spray.



### TREE-FALL ZONE

Trees create valuable shade, block unwanted views, and provide habitat for wildlife, but also have the potential to fall on and damage your home if planted too close. Factors such as the type of tree and size will determine how close to structures you can safely plant trees, so consult with landscape professionals and use your own discretion when making decisions about tree placement.

### SOIL MOISTURE

Certain plants thrive in very dry conditions, while some love to keep their roots wet at all times. Soil moisture typically increases the closer you are to water and decreases inland and at higher elevations, but it can also vary across your yard based on a number of factors. Before choosing plants, observe which parts of your yard are usually dry and where it stays moist. Using a soil moisture meter is an easy way to measure how much water is in your soil, but you can also just feel the soil with your hands.



### SUN/SHADE

How much sun your yard gets every day will depend on the orientation of your property and the size and proximity of nearby buildings and vegetation. When shopping for plants, check the label to see whether they prefer sunny, shady, or mixed conditions.

## ADDITIONAL GARDEN AND LANDSCAPE RESOURCES

### COASTAL LANDSCAPES INITIATIVE

The Coastal Landscapes Initiative, or CLI, is a new collaborative effort to address landscaping at every stage of the process, from planning and design to installation and management. Their goal is to foster coastal landscapes that are beautiful, functional, cost-efficient, and environmentally friendly. For more information, please visit: [ncseagrant.ncsu.edu/program-areas/healthy-ecosystems/coastal-landscapes/](https://ncseagrant.ncsu.edu/program-areas/healthy-ecosystems/coastal-landscapes/)

### MASTER GARDENER PROGRAM

Master Gardeners are trained volunteers who provide educational assistance and programming to Dare County citizens on a wide variety of subjects such as lawns, fruits, vegetables, trees, and ornamentals. For more information, please visit: [dare.ces.ncsu.edu/ask-a-master-gardener-volunteer/](https://dare.ces.ncsu.edu/ask-a-master-gardener-volunteer/)

### NAGS HEAD PLANNING DEPARTMENT

The Town of Nags Head Planning Department is a great source for information about stormwater management, tree preservation, and low-impact development strategies including landscaping recommendations. For more information, please visit: [www.nagsheadnc.gov/210/Planning-Development](https://www.nagsheadnc.gov/210/Planning-Development)

# RESOURCES

## REBATES & COST-SHARE PROGRAMS

Upgrading to high-efficiency home products can be a major investment, but there are a lot of incentive programs such as rebates and cost-share options that can help make it more affordable.

### **ENERGY STAR® REBATE FINDER**

[www.energystar.gov/rebate-finder](http://www.energystar.gov/rebate-finder)

Find rebates and special offers available in your ZIP code on ENERGY STAR certified products. Products that earn the ENERGY STAR label meet strict energy-efficiency specifications set by the U.S. EPA helping you save energy and money while protecting the environment [ENERGY STAR, 2022].

### **DOMINION ENERGY - APPLIANCE & EV CHARGER REBATES**

[www.dominion.myrebateportal.com](http://www.dominion.myrebateportal.com)

**FUNDING RANGE:** \$25 - \$100

Dominion Energy offers rebates for the purchase and/or installation of a range of ENERGY STAR® certified appliances including refrigerators, freezers, dishwashers, dehumidifiers, washing machines and dryers, air purifiers, and electric vehicle [EV] chargers. Visit the link above for a list of eligible models and the associated rebate value [Dominion Energy, 2022].

### **FEDERAL SOLAR TAX CREDIT**

[www.energy.gov/eere/solar/homeowners-guide-federal-tax-credit](http://www.energy.gov/eere/solar/homeowners-guide-federal-tax-credit)

**FUNDING RANGE:** TAX CREDIT OF 22% - 26% COST OF SOLAR PV SYSTEM

The federal residential solar energy credit is a tax credit that can be claimed on federal income taxes for a percentage of the cost of a solar photovoltaic [PV] system. It provides a 26% tax credit for systems installed in 2020-2022, and 22% for systems installed in 2023 [Dept. Of Energy, 2022].

### **NORTH CAROLINA PROPERTY TAX INCENTIVE**

[www.programs.dsireusa.org](http://www.programs.dsireusa.org)

In August 2008, North Carolina enacted legislation that exempts 80%-100% of the appraised value of a “solar energy electric system” (also known as a photovoltaic, or PV, system) from property tax [DSIRE, 2022].

### **DATABASE OF STATE INCENTIVES FOR RENEWABLES & EFFICIENCY®**

[www.dsireusa.org](http://www.dsireusa.org)

The Database of State Incentives for Renewables & Efficiency [DSIRE] is the most comprehensive source of information on incentives and policies that support renewable energy and energy efficiency in the United States. Established in 1995, DSIRE is operated by the N.C. Clean Energy Technology Center at N.C. State University. You can either search for energy efficiency policies and incentives by state or enter your ZIP code to see results for your town [DSIRE, 2022].

### **ELECTRIC VEHICLE TAX CREDIT**

[www.fueleconomy.gov/feg/taxevb](http://www.fueleconomy.gov/feg/taxevb)

**FUNDING RANGE:** UP TO \$7,500 TAX CREDIT

All-electric and plug-in hybrid cars purchased new since 2010 may be eligible for a federal income tax credit of up to \$7,500. The credit amount will vary based on the capacity of the battery used to power the vehicle [DSIRE, 2021].

### **ENERGY EFFICIENT MORTGAGES**

[www.energystar.gov/newhomes/mortgage\\_lending\\_programs](http://www.energystar.gov/newhomes/mortgage_lending_programs)

Homeowners can take advantage of energy efficient mortgages [EEM] to either finance energy efficiency improvements to existing homes, including renewable energy technologies, or to increase their home buying power with the purchase of a new energy efficient home. The U.S. federal government supports these loans by insuring them through Federal Housing Authority [FHA] or Veterans Affairs [VA] programs. This allows borrowers who might otherwise be denied loans to pursue energy efficiency, and it secures lenders against loan default [DSIRE, 2020].

### **TOWN OF NAGS HEAD SEPTIC HEALTH PROGRAM**

<https://www.nagsheadnc.gov/280/Septic-Health-Initiative-Water-Quality>

The Town of Nags Head Todd D Krafft Septic Health program is focused on maintaining and improving water quality as well as conserving water. The program offers free septic system inspections, and if pumping is indicated as required, a water bill credit on the subsequent billing statement is applied. Keeping your septic system running efficiently can improve water conservation and help reduce your water bill.

# RESOURCES

## ARCHITECTURAL RESOURCES

The following architecture resources may be useful as you start thinking about and planning a home renovation or construction project.

### **AMERICAN INSTITUTE OF ARCHITECTS (AIA) - EASTERN NC CHAPTER**

[www.aia.org/easternnorthcarolina](http://www.aia.org/easternnorthcarolina)

The American Institute of Architects [AIA] is a professional network organization that advocates for the value of architecture and gives architects the resources they need to do their best work. With a mission of driving positive change through the power of design, the AIA has a long history of requiring that its members adhere to the highest ethical standards. In addition to generously funding and providing technical support and expertise for the development of this guide, AIA's Eastern North Carolina Chapter has helpful resources including a 'Find an Architect' search tool.

### **LEED RATING SYSTEM**

[www.usgbc.org/leed](http://www.usgbc.org/leed)

The Leadership in Energy and Environmental Design [LEED] rating system is the most widely used green building certification system and was developed by the US Green Building Council [USGBC]. Even if you're not pursuing LEED certification, the website linked above contains numerous resources on design strategies and products to maximize energy and water efficiency.

### **MODERNIZE**

[www.modernize.com/homeowner-resources](http://www.modernize.com/homeowner-resources)

Modernize describes their organization as "the reliable and trustworthy solution to thoughtfully connect homeowners with professionals who provide home improvement projects and services." This website provides comprehensive articles on home improvement projects with an entire section dedicated to energy efficiency resources. They offer guidance on everything from project planning to project installation and provide useful tools such as cost calculators and services to help homeowners connect with reliable local professionals, and select the best contractor for the job.

## LANDSCAPE RESOURCES

The following landscaping resources may be useful as you start thinking about and planning a landscaping project for energy and water conservation.

### **AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS - NC CHAPTER**

[www.ncasla.org/](http://www.ncasla.org/)

The American Society of Landscape Architects [ASLA] is the professional association for landscape architects in the United States. The North Carolina chapter offers online resources such as their Firm Finder tool to help locate licensed landscape architects in your area.

### **NC LANDSCAPE CONTRACTORS' LICENSING BOARD**

[www.ncclcb.com/](http://www.ncclcb.com/)

The North Carolina Landscape Contractors' Licensing Board, a state licensing board, was created by the North Carolina General Assembly that regulates landscape contracting in North Carolina; thereby safeguarding life, health, and property and maintaining a high professional standard for the landscape industry. Use their 'Find a Licensed Landscape Contractor' tool to find landscape professionals in your area.

### **COASTAL LANDSCAPES INITIATIVE**

[www.ncseagrant.ncsu.edu/program-areas/healthy-ecosystems/coastal-landscapes/](http://www.ncseagrant.ncsu.edu/program-areas/healthy-ecosystems/coastal-landscapes/)

The Coastal Landscapes Initiative, or CLI, is a new collaborative effort to address landscaping at every stage of the process, from planning and design to installation and management. Their goal is to foster coastal landscapes that are beautiful, functional, cost-efficient and environmentally friendly. Their extensive resources list includes information on plants that will thrive in coastal yards, places where you can visit demonstration gardens, buying plants from local nurseries, and garden designs.

### **MASTER GARDENER PROGRAM**

[www.dare.ces.ncsu.edu/ask-a-master-gardener-volunteer/](http://www.dare.ces.ncsu.edu/ask-a-master-gardener-volunteer/)

Master Gardeners are trained volunteers who provide educational assistance and programming to Dare County citizens on a wide variety of subjects such as lawns, fruits, vegetables, trees, and ornamentals.

# RESOURCES

## *COSTS & COST SAVINGS REFERENCES*

There are a ton of options for products, brands, materials, and specifications related to energy and water savings. With prices always changing and technology constantly evolving, the suggestions included in this guide are just a snapshot, representing the best information available at the time of publication in Summer/Fall 2022. The costs and cost savings figures included for each of the conservation recommendations are broad estimates but should provide a good starting point for planning purposes. Much of the information related to cost estimates, product life span, and cost savings contained within this report is based on information from the following sources. For the most up-to-date information, please refer to the links below.

### ***DEPARTMENT OF ENERGY - ENERGY SAVER PROGRAM***

[www.energy.gov/energysaver](http://www.energy.gov/energysaver)

Energy Saver provides energy efficiency and renewable energy information to U.S. consumers, including families, homeowners, renters, and drivers. This information-packed website contains guidance on heating and cooling options, weatherization, home design, electricity, and fuel. It also has great resources and step-by-step instructions for DIY home energy savings projects.

### ***COOL ROOF RATING COUNCIL***

[www.coolroofs.org](http://www.coolroofs.org)

The Cool Roof Rating Council (CRRC) is a 501(c)(3) nonprofit organization that develops fair, accurate, and credible methods for evaluating and labeling the radiative properties of roofing and exterior wall products. Information provided on the website is geared more toward industry professionals than homeowners, but their Rated Product Directory for roofing and siding materials is an excellent resource for comparing and selecting products with your builder.

### ***ENVIRONMENTAL PROTECTION AGENCY (EPA)***

[www.epa.gov/environmental-topics/greener-living](http://www.epa.gov/environmental-topics/greener-living)

The EPA's Greener Living page provides an extensive list of resources to help individuals reduce their environmental footprints including tips for reducing waste, fuel efficiency and sustainable travel, sustainability actions at home, green products guide, clean energy options, and sustainable business options.

### ***ENERGY STAR®***

[www.energystar.gov](http://www.energystar.gov)

ENERGY STAR® is the government-backed symbol for energy efficiency, providing simple, credible, and unbiased information that consumers and businesses rely on to make well-informed decisions. Browse the interactive product directory to explore options for upgrading your home appliances and fixtures, search for builders who construct ENERGY STAR® certified homes, and explore rebate programs. You can also enter information about your home to create a custom home energy profile with recommendations and checklists for increasing your home's efficiency.

### ***WATERSENSE***

[www.epa.gov/watersense](http://www.epa.gov/watersense)

WaterSense, a voluntary partnership program sponsored by the U.S. Environmental Protection Agency (EPA), is both a label for water-efficient products and a resource for helping you save water. The WaterSense page contains a number of valuable resources including a product directory and strategies for conserving water in and around the home.

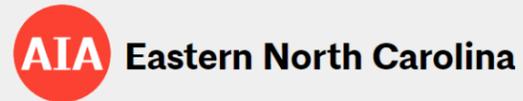
### ***ENERGY SAGE***

[www.energysage.com](http://www.energysage.com)

The mission of EnergySage is "to make going solar as easy as booking a flight online". This service aggregates multiple solar quotes for you, calculates the financial merits of each offer, and then presents them back to you in an easy-to-understand format. They describe their service as "your unbiased solar matchmaker, connecting homeowners with our network of over 500 pre-screened solar installers. People who use EnergySage generally save \$5,000 to \$10,000 as compared to those who only work with a single installer." They also provide comprehensive information on solar energy, strategies for deciding whether solar is right for your home, and an interactive tool that calculates suitability, estimated cost, and estimated cost savings based on your home's address, solar orientation, and roof area.



**NC STATE** College of Design



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