

Improving Savings and Health through Minor Conservation Measures in the Home¹

Randall A. Cantrell²

Quick Facts

- Mechanical upgrades can increase the overall performance of a house by as much as 40–50%.
- The remaining 50–60% inefficiency in the overall performance of a home is largely misunderstood.

Terms to Help You Get Started

Home: The house, the land where it is sited, and the occupants residing therein

Overall Home Performance: How well the house, its land, and its occupants function to maximize resources

Mechanical Upgrades: Largely related to higher-costing heating, ventilation, and air-conditioning (HVAC) improvements

Minor Conservation Measures: Largely related to lower-costing mechanical upgrades or behavior and practice(s) modifications

Maintenance: Actions that are executed on a routine basis in order to prevent unanticipated repairs from occurring

Family Operations: Routines and behaviors that are practiced at home by the occupants

Keywords

Home performance, home-occupant behavior, home maintenance, family operations, home finances

Introduction: A Personal Lesson in Using Cost-Saving Technology in the Home

In order to show my family how our various practices and routines used electricity in our home, I had a smart meter installed (U.S. Energy Information Administration (2017)). The meter electronically communicated with the electric meter enabling me to show my family how the monthly electric bill was being assessed. My family tentatively agreed to the experiment and went about its business as usual. I felt that having the smart meter installed was a small step to take in order to show my family how we all could contribute toward improving the overall performance of the home.

The point from this story is that small steps can be taken in your pursuit of improving the overall performance of your home. Improving the overall performance of your home is rarely a direct, uninterrupted path to success, but the extra effort caused by taking small steps typically will be worth it in the long run. Because of the smart meter, we are much more aware of where and how electricity is consumed in our home. Whether we all admit it or not, we now know

1. This document is FCS3309, one of a series of the Family, Youth and Community Sciences Department, UF/IFAS Extension. Original publication date March 2012. Revised June 2015, July 2018, and September 2021. Visit the EDIS website at <https://edis.ifas.ufl.edu> for the currently supported version of this publication.

2. Randall A. Cantrell, associate professor, Department of Family, Youth and Community Sciences; UF/IFAS Extension, Gainesville, FL 32611.

when we are diminishing the overall performance of our home.

This series of EDIS publications will provide information about how improving your home's overall performance can help you improve savings, health, and your happiness. This publication discusses ways to improve your home by making minor conservation measures in your home. Other publications in this series include:

- *Improving Savings and Health by Maintaining Your Home at a Ready-to-Sell Level* (<https://edis.ifas.ufl.edu/fy1321>)
- *Improving Savings, Health, and Happiness by Modifying How the Family Operates the Home* (<https://edis.ifas.ufl.edu/fy1322>)
- *Improving Savings, Health, and Happiness by Making Small Modifications to Your Home* (<https://edis.ifas.ufl.edu/fy1323>), for an academic audience)
- *Improving Health and Happiness in the Home by Being and Energy Giver Rather than an Energy Taker* (<https://edis.ifas.ufl.edu/fy1339>)

How can your family benefit from improving your overall home performance?

The concept of overall home performance has much to do with re-thinking how we can be happier, but this is not necessarily synonymous with being comfortable. Finding ways to keep our family members together under the same roof and in a relatively peaceful state is no easy task. Many families may decide to spend extra money on the family rather than paying for unnecessarily excessive costs of maintaining a home. This is understandable because keeping the family together and happy for many is a noble goal worthy of pursuit. If families focus on the various factors comprising their overall home performance, there exists the real possibility of creating financial savings for the family as well as having more discretionary time. However, improving the home performance sometimes occurs in small increments. It often requires extended periods of time before the benefits are truly noticeable.

Which minor conservation measures can help improve your overall home performance?

Respondents from a representative sample in the United States were asked to rate multiple items—as identified in the literature—that could improve the overall performance

of a home (Cantrell, 2012). The goal was to determine which of 81 items the respondents thought had the greatest likelihood of improving the remaining 50–60% of their home's overall performance. Within the minor conservation measures category, they chose 25 of 27 modifications.

Minor Conservation Measures That Can Potentially Improve Savings and Health

Lists 1 through 3 show the minor conservation measures that the sample participants felt could most likely improve the overall performance of their home (these modifications were most reflective of improvements to the family's savings and health). Please note that all the items contained in the lists are unranked and not necessarily in any order of priority. The implementation time frames are listed so that readers can gauge how soon they can hope to realistically make these types of modifications within their home.

List 1. Nine Minor Conservation Measures to Consider Implementing Immediately

- Unplug electronics when not in use. When you see a little red or green light lit up on an appliance that is in the “off” position, keep in mind that it requires electricity for that little light to stay lit. (This is sometimes referred to as a “phantom load.”)
- Turn off fans when people (or animals) are not present in the room. Fans only cool skin temperature and do nothing to reduce the temperature of a room.
- Keep interior doors to unoccupied rooms open. Opened interior doors help to maintain balanced air pressure in older homes. A home is designed to be tightly wrapped with a breathable membrane that allows air in but not water. This tightness of modern homes can sometimes keep undesirable gases from leaking out of the house like they did in the past. It is imperative that the house be properly ventilated, both mechanically (forced air) and passively (free-flowing air).
- Use detergents on clothes and dishes that have the least impact on pipes, the environment, etc. Some detergents are less damaging, especially for septic systems.
- Turn off water during activities such as shaving and brushing teeth in order to conserve water.
- Wash clothes at the coolest tolerable water temperature possible in order to conserve hot water (i.e., electricity) unless there is a reason some items require higher

temperatures for cleaning due to special circumstances (e.g., illnesses).

- Avoid pre-rinsing of dishes whenever possible to conserve water.
- Air dry dishes whenever possible to conserve electricity.
- Reduce the thermostat setting on the hot-water tank to conserve electricity.

List 2. Eight Minor Conservation Measures to Consider Implementing during the Short Term

- Install EnergyStar CFL¹ or LED² lighting throughout the home. These types of light sources use less energy, reduce the amount of heat emitted into the house, and last longer than standard incandescent bulbs.³
- Ensure the clothes dryer vent is clear of any debris. Dryer-vent blockages lead to longer drying times and eventual failure of the dryer's heating element. Dryer-vent blockages can also cause dryer fires.
- Insulate behind electrical outlet boxes, and cap off ones not being used. Insulating behind electrical outlet boxes reduces air leakage.
- In homes that do not have intake and return vents bringing air in and out of room, trim ½" off the bottom of interior doors that do not have visible clearance, or install louvered doors. Sufficient clearance helps to maintain balanced air pressure in the house
- Maintain unbroken weather stripping around windows and exterior doors. Weather stripping reduces air leakage.
- Ensure the bathroom tub and sink drains do not leak. Leaking drains cause water to be continuously used during activities.
- Install a clean air-conditioning (AC) filter. Dirty AC filters require more suction and can cause strain on a condenser.
- Compact fluorescent lamp
- Light emitting diode
- EnergyStar brands are designed to last longer than incandescent bulbs, but other "off brand" similar products sometimes fail sooner.

¹ Compact fluorescent lamp

² Light emitting diode

³ EnergyStar brands are designed to last longer than incandescent bulbs, but other "off brand" similar products sometimes fail sooner.

List 3. Eight Minor Conservation Measures to Consider Implementing during the Long Term

- Ensure that properly sized exhaust-vent fans are installed in the kitchen and bathrooms. Exhaust fans not removing sufficient vapor can result in growth of spores while those removing too much can pull undesirable gases into the house's airflow.
- Install a programmable thermostat. Programmable thermostats allow greater control over the time and temperature in which air is forced throughout the house, which results in reduced electricity use and costs.
- Install low-flow/high-efficiency toilets/high-efficiency toilets and water fixtures. Low-flow/high-efficiency toilets and water fixtures conserve water and electricity.
- Ensure that air ducts are sealed tightly at each joint. Sealed air ducts reduce air leakage.
- Ensure that attic space is filled with uncompressed insulation that is piled high. Insulation is designed to capture air and should never be compressed.
- Install a tankless water heater. Tankless water heaters save electricity by only heating water when needed. A propane/gas fuel source might be preferable to an electric fuel source, and there are maintenance issues to consider as well—especially in areas where there is "hard" water.
- Ensure the home heating unit is inspected and that it displays an inspection-card history. Inspected heating units indicate that it is safe to operate the unit.
- Ensure the electrical service panel has its circuits/breakers clearly identified on the service panel door. Identified circuits on the electric-panel door show which breaker to reset after they have been tripped.

Summary

Mere minor conservation measures in the home will not necessarily result in instant improvements in overall savings and health. However, when combined with other home-performance measures (e.g., maintenance and family operations), the results will become more noticeable over time. The point is not to seek instant results but rather to establish a lifestyle that naturally gravitates toward conserving and optimizing resources.

References and Resources

Cantrell, R. (2013). *Homeflow*: An analysis of the home-living situation. *Housing and Society*, 40(1), 25–50.

Haldeman, B., Porter W. A., Ruppert K. C., & Cantrell R. A. (2012). *Energy efficient homes: Introduction to LED lighting* (FCS3280). Gainesville: University of Florida Institute of Food and Agricultural Sciences. Retrieved October 1, 2021, from <https://edis.ifas.ufl.edu/fy1049>

Porter, W. A., Ruppert, K. C., & R. A. Cantrell. (2015). *Energy efficient homes: Water heaters* (FCS3277). Gainesville: University of Florida Institute of Food and Agricultural Sciences. Retrieved October 1, 2021, from <https://edis.ifas.ufl.edu/fy1025>.

U.S. Department of Energy. (2021). Tankless or demand-type water heaters. Retrieved October 1, 2021, from <https://www.energy.gov/energysaver/water-heating/tankless-or-demand-type-water-heaters>.

U.S. Department of Energy (2021). Ventilation systems for cooling. Retrieved October 1, 2021, from <http://energy.gov/energysaver/articles/ventilation-systems-cooling>.

U.S. Energy Information Administration. (2017). Nearly half of all US electricity customers have smart meters. Retrieved October 1, 2021, from <https://www.eia.gov/todayinenergy/detail.php?id=34012>.

U.S. Fire Administration. (2021). Clothes dryer fire safety outreach materials. Retrieved October 1, 2021, from https://www.usfa.fema.gov/prevention/outreach/clothes_dryers.html.

Disclaimer

This material was prepared with the support of the University of Florida. However, any opinions, findings, conclusions, or recommendations expressed herein are those of the author(s) and do not necessarily reflect the views of the University of Florida.