

## Climate Change Part 2: Act Locally

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In [Part 1](#) of this series, we commemorated Earth Day by “thinking globally” about climate change. In addition to naturally-occurring changes, each community member adds a bit of greenhouse gas that, together with other air pollution sources, has a far-reaching cumulative impact. In this edition, we “act locally” and explore ways to cut greenhouse gases—some may be new ideas and others good reminders. Even adopting several small changes carries a benefit. Best of all, many carbon-reducing steps have broader environmental benefits and save you money! As we look towards concepts like “the three R’s” (reduce, reuse, and recycle), always keep proper safety, sanitation, and hygiene top priorities.

### Ways To Reduce Greenhouse Gases

One significant, most overlooked household carbon emitters is tap water. In 2012, the Fairfax County Water Authority ([www.fcwa.org/](http://www.fcwa.org/)) purified and maintained waterline pressure to over 50.6 billion gallons of potable water. Purification consumed 44 million kilowatt hours (kwh) of electricity; pumping the water used another 87 million kwh. In 2012, the Fairfax County Wastewater Management Division ([www.fairfaxcounty.gov/publicworks/wastewater](http://www.fairfaxcounty.gov/publicworks/wastewater)) treated nearly 14.6 billion gallons of sewage, requiring 37.8 million kwh. Dominion Energy ([www.dominionenergy.com/](http://www.dominionenergy.com/)) supplies the electricity to both facilities; in 2011 (the most recent year available), fossil fuels generated 56% of their power (coal was 38%), translating into carbon dioxide (CO<sub>2</sub>) emissions. Fortunately, the fossil fuel percentage has decreased over the years. Both water treatment facilities look towards increasing operational efficiency and expanding renewable energy usage. We can decrease water bills and related energy by implementing these conservation measures:

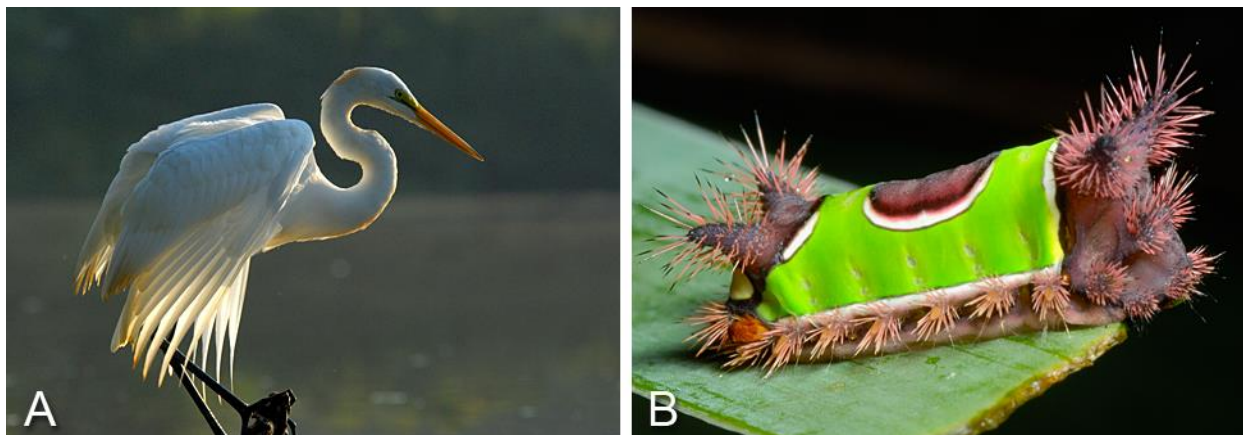
- Find and fix any water leaks.
- Skip summertime lawn watering and allow the grass to slip into dormancy. Less growing means less mowing, equaling saved fuel money and reduced CO<sub>2</sub> emissions (unless the mower is electric powered by renewable energy). If you must have a green lawn during the summer months, use a water-wise lawn species, like buffalo grass. Better yet, turn portions of that lawn into a native plant garden!
- When waiting for the hot water, collect the water and save it for watering plants.
- Take short showers instead of baths.
- Install water saving devices onto showerheads and faucets.
- Water purifiers attached to sinks should run for several seconds before collecting drinking water. Save that priming water for plants. Instead of filling only one glass of water after priming, top off several containers or a carboy for future use.
- Turn off the water while brushing teeth; turn water on to rinse the toothbrush and teeth.
- When shaving with a blade, turn the water off during the shaving act and briefly turn the water on when rinsing the razor.
- Run only full washing machine and dishwasher loads.
- Help sewage treatment efficiency by:
  - keeping out grease, dental floss, and other pipe and/or machinery-cloggers. Bottle kitchen grease in a container. Throw these items out with the curbside trash pickup. For more information about problems caused by oily substances in drains, check out this link: [www.fairfaxcounty.gov/publicworks/sites/publicworks/files/assets/documents/preventing\\_backups\\_1.pdf](http://www.fairfaxcounty.gov/publicworks/sites/publicworks/files/assets/documents/preventing_backups_1.pdf).
  - properly disposing hazardous wastes. Anything that is toxic, ignitable, corrosive, or reactive (e.g., petroleum products, organic solvents, lawn chemicals, poisons, wet paint, fertilizer, heavy metals, harsh cleaning agents). Such items should be deposited at any of Fairfax County’s Household Hazardous Waste Collection Sites, such as the I-66 Transfer Station **and not down the drain**. For details visit [www.fairfaxcounty.gov/publicworks/recycling-trash/hazardous-waste](http://www.fairfaxcounty.gov/publicworks/recycling-trash/hazardous-waste).
  - taking advantage of programs such as Operation Medicine Cabinet Cleanout and dropping off unwanted medicines at participating police stations

[www.fairfaxcounty.gov/health/operation-medicine-cabinet-cleanout](http://www.fairfaxcounty.gov/health/operation-medicine-cabinet-cleanout). Never flush medicines into the sewer.

- For additional water conservation tips, visit these sites:
  - [www.fairfaxwater.org/conservation](http://www.fairfaxwater.org/conservation)
  - [www.nationalgeographic.com/environment/freshwater/water-conservation-tips/](http://www.nationalgeographic.com/environment/freshwater/water-conservation-tips/)
  - <https://wateruseitwisely.com/100-ways-to-conserve/>

Other ways to conserve energy and reduce greenhouse gas emissions include:

- Gear the home for better energy conservation. Insulate the attic and hot water pipes. Replace windows with high energy efficiency rankings. If a remodeling project requires drywall removal, add insulation along exterior walls. When buying a new appliance, choose an ENERGY STAR-rated product.
- When replacing roofs, choose a light color. More energy is used to cool a heat-absorbing black-roofed house in the summer than is saved warming it during winter.
- Keep the household temperature in winter a degree or so cooler and wear a sweater. In the summer, up the interior temperature. Adding ceiling fans help circulate the air making the room feel cooler with less electricity than using the air conditioning. Many KPW homes have range hoods recycling hot air back into the kitchen. Hire a licensed contractor to install an exterior exhaust to blow out stove and oven heat.
- Plant more native shade trees around your yard. Their shade helps cool the house, reflects solar energy away from the ground, and adds moisture to the air through transpiration.
- “Work at” instead of “work out.” Rediscover the rake and don’t use the leaf blower, which emits CO<sub>2</sub>, loud noise, and stirs more allergy-aggravating antigens into the air. Bike or walk to destinations whenever feasible instead of driving. Out boating? Row, paddle, or sail instead of firing up the outboard motor.
- Carpool, take mass transit, or telecommute whenever possible.
- Drive fuel-efficient vehicles and keep the tires properly inflated.
- Consider the CO<sub>2</sub> output or “carbon footprint” of items you buy—energy is used in manufacturing, packaging, and transporting the goods. As the customer, you may reward sustainable, low-carbon-output businesses with your purchases and recommendations to others. The key is finding the right balance, including the commonly asked question, “Is buying conventionally grown local produce better than organic produce cultivated at distant farms?”
- Hang up laundry to dry and save the dryer for humid days. An interior clothes rack works wonders. The clothes will last longer, too.
- Save on airport hassles and jet emissions and take a “staycation.” The D.C. area has rich cultural, historical, natural, and recreational spots. In fact, people often ask which exotic locales Figure 1’s photographs were taken and are surprised to learn both images are within the neighborhood. After all, everywhere is someone’s backyard!



**Figure 1.** The great egret (*Ardea alba*, A) was photographed during a quiet, Royal Lake kayak outing on an early Saturday morning. The saddleback caterpillar (*Sibine stimulea*, B) was munching in the author’s backyard.

- When purchasing paper products, select ones with a high recycled content. Furthermore, look for the Sustainable Forestry Initiative ([www.sfiprogram.org/](http://www.sfiprogram.org/)) seal, pictured in Figure 2.
- Avoid purchasing foods made from unsustainable palm oil sources. Some growers are legitimate and packaging usually announces the sustainability as a selling point. However, a huge, unregulated portion of that industry is wiping out air-purifying old growth rainforests for monoculture palm plantations.
- Think about partaking in “Meatless Monday” or otherwise eating more veggies and less livestock products. Beef production especially generates more nitrous oxide (N<sub>2</sub>O), CO<sub>2</sub>, and methane than most other foods. Plus you get the increased health benefits of a greater fruit and veggie diet!
- Reduce or eliminate synthetic fertilizer usage. Mining and manufacturing these chemicals generates tons of CO<sub>2</sub>. Furthermore, over 27% of the world’s N<sub>2</sub>O output links to fertilizers.
- Although we live in a world of perpetually plugged in rechargers and “standby” instead of “off,” unplug as many “energy vampires” as possible. Turn desktop computers off when not in use.
- Invest in higher quality products. When given the choice between cheap Item A and Item B, which costs twice as much as A but lasts ten times longer, B might be the better investment especially if it also lowers the total manufacturing-related pollution output.
- Consider keeping the old model of electronic device over a few new version releases. Less gadget production cuts air pollution and decreases e-waste from older but functional units.
- Here are sites offering more energy reduction tips:
  - [www.dominionenergy.com/home-and-small-business/ways-to-save](http://www.dominionenergy.com/home-and-small-business/ways-to-save)
  - <http://energy.gov/energysaver/downloads/energy-savers-guide>



### How to Landscape for Climate Change

With a potential for increased temperature and extreme weather, there are two landscaping schools of thought:

- 1) Get an edge on climate change by planting more drought-tolerant and heat-resistant native plants. Incorporate species native from more southern localities.
- 2) Continue planting more natives to this immediate area because they are better suited to survive regional weather swings and any cold snaps. Choosing drought-tolerant species is fine, but prepare for wet periods. Plants from moist areas survive droughts better than plants requiring dry soil fare after a time in water-logged ground. Even more important than using regionally native species, choose species naturally occurring in this part of the county.

Both philosophies agree that the planting site should be similar to the species’ natural habitat: plant marsh plants in a low area prone to water accumulation and dry species along well-drained slopes. Design richly diverse native gardens, not just a single specimen here and there. Groups of plants are called “plant communities.” They compliment each other and improve their collective survival odds during weather extremes better than isolated specimens.

Enduring woody species, such as oaks, hemlocks, and hickories, help absorb CO<sub>2</sub> and store carbon—technically termed “carbon sequestration.” Long-lived, herbaceous perennials may lose the surface growth, but the deep roots also amass carbon. Whereas annuals such as jewelweed (*Impatiens capensis*) have other environmental benefits, they do little towards reducing CO<sub>2</sub> levels since their husks decompose (e.g., discharging any stored carbon) within the following year. As short-lived trees (lasting 30 years or so) may delay carbon release, they are not considered a means of true carbon storage. Carbon gets rereleased as methane and/or CO<sub>2</sub> once that tree is chopped or a branch is cut and breaks down through incineration, decomposition, or consumption.

### Renewable Energy

Renewable energy is not perfect, but it is an improvement over what we currently have. Solar energy—the most promising renewable source—generates toxic waste during solar cell manufacturing, air pollution to remove that waste (sometimes trucked over multiple state lines), and disposal challenges

since the cells eventually need replacement. Large solar farms occupy otherwise beneficial habitat acreage.

However, solar energy is cleaner than fossil fuels. Technology is improving the solar cells' efficiency, increasing their functional life, and reducing costs. Solar pricing is expected to become more competitive with fossil fuels within a decade or so. Improving solar storage capacity means energy collected during the day may be used at night. If each household could be self-sustaining, grid dependency would be lower with less impact from storm outages and reduced need for solar farms. Some companies produce solar panels that resemble roof shingles; already mounted on an impervious surface, water shed from rooftop solar cells could be absorbed by rain gardens. If your home uses solar energy, please contact me at [greg@grsykes.com](mailto:greg@grsykes.com) and share details about your experiences.

### Acting Locally

This series explored the science behind human anthropogenic climate change and steps each community member can take to reduce greenhouse gases. Native landscaping can help offset carbon emissions while saving on utility bills, plus improve aesthetics and create wildlife habitats. KPW is a large community, with each household possessing global purchasing power and local capabilities to cut greenhouse gas emissions. The steps herein are some of the actions you can take. As we learned how small pollution emissions add to an enormity, each little step towards pollution reduction is a tremendous help. You have the choice—the power—to help make this community a better place and this world a healthier planet.

Additional ways to reduce greenhouse gas emissions:

- <http://www2.epa.gov/recycle>
- <http://www.epa.gov/climatechange/wycd/>
- <https://www.nationalgeographic.org/education/act-on-climate>
- [https://defenders.org/publications/global\\_warming\\_and\\_wildlife\\_fact\\_sheet.pdf](https://defenders.org/publications/global_warming_and_wildlife_fact_sheet.pdf)

Dominion's plan to address greenhouse gases: <https://dominionenergy.mediaroom.com/2018-05-01-Dominion-Energy-Foresees-Even-Greater-Growth-of-Renewable-Energy>

Solar energy:

- <http://environment.nationalgeographic.com/environment/global-warming/solar-power-profile/>
- <http://www.renewablegreenenergypower.com/solar-energy-facts/>
- <http://theweek.com/article/index/244437/are-we-on-the-cusp-of-a-solar-energy-boom>

Gardening and landscape design:

- <https://www.arborday.org/trees/climatechange/plantatree.cfm>
- <http://www.asla.org/climatechange.aspx>

Bright, Chris. November 2012. Where does ecological restoration fit? An interview with Rod Simmons on pages 2-4 in the e-newsletter of the Earth Sangha, *The Acorn*:

[http://docs.wixstatic.com/ugd/102a93\\_22b6589774014394b16c0949c2728ab2.pdf](http://docs.wixstatic.com/ugd/102a93_22b6589774014394b16c0949c2728ab2.pdf)

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