



Catoctin News

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Carroll, Frederick and Washington Counties

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We're Drowning in Plastic

By Kerri Hesley

Americans use more than 100 BILLION plastic bags per year, with a typical family bringing home 1,500 per year. Only an estimated 1-3% of these bags are recycled, and most municipal centers do not recycle them at all. The vast majority of plastic bags end up as landfill or litter.

Additionally, these “free” bags cost retailers approximately \$4 billion per year, which is passed on to shoppers at a rate of \$48 per year for a typical family of four.

For three weekends in September and October, the Catoctin Sierra Club Group studied this issue. Sixteen volunteers evaluated the single-use plastic habits of Frederick County residents by conducting a survey of 20 different grocery stores in the county for a one-hour period on Saturday or Sunday.

Volunteers were stationed at store exits and recorded the types of bags shoppers possessed as they exited. The survey was conducted in conjunction with those carried out in Prince George's, Montgomery, Washington and Howard counties, plus Baltimore City.

In total, volunteers observed 2,588 shoppers in Frederick County as they exited 20 chain grocery stores. Non-chain or smaller chain food stores were surveyed separately. Large retail stores such as Walmart were not included as this study exclusively focused on grocery stores.

Results were disheartening. Only 12% of the 2,588 shoppers used reusable bags; 81% used disposable bags and 7% carried merchandise without a bag.

Our neighbors in Howard and Prince George's Counties exhibited similar shopping habits. In Howard County, 76.6% of shoppers use disposable bags, while 88.2% of Prince George's County shoppers use disposable bags.

There is one notable exception. In Montgomery County, which has a 5-cent bag fee, only 41.9% of

customers use disposable bags. Similarly, at stores without “free” bags, usage of disposable bags is much lower. For example, at Aldi, which charges for paper and reusable plastic bags, only 8.6% of customers were observed with disposable bags.

What do these results tell us? They tell us that policies aimed at reducing disposable bag consumption are highly effective. In counties without a disposable bag policy, the overwhelming majority of food shoppers use single use plastic bags, while in the one county with such a policy, usage drops dramatically.

We should support legislation to decrease the use of single-use plastic in our communities. We won't be alone — legislation addressing this issue is occurring across the country.

Locally, the town of Westminster placed a ban on plastic bags. Baltimore City Council recently passed a similar ban. Montgomery County has had a bag fee since 2012, and Howard County is weighing a bag fee. There are, of course, individual efforts we can make to reduce our plastic bag usage. Keeping 2-3 reusable bags in the car can help change the single-use bag habit, and when a store gives you a disposable bag, reuse it for garbage or pet waste. We can also recycle (see the article in the fall newsletter about recycling plastic).

In the end, the most effective thing we can do to reduce single-use bag consumption in our communities is to advocate for smart, effective single-use bag policies, just like the successful policies already implemented in Maryland and across the country. It's time for our communities to realize we cannot continue this single-use plastic addiction. We owe it to our community and our children to care for our environment, and we can save some money in the process.

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GREY, BLUE & GREEN

Hydrogen Gas

By Dan Andrews

The great thing about hydrogen gas is that it allows for the storage of renewable generated electricity, which can augment the intelligent electricity of the future.



In an article entitled "Hydrogen Fuel Cells Driving the Future" that appeared in the Fall Catoctin Group e-newsletter (<https://www.sierraclub.org/maryland/catoctin-group-newsletters>), I wrote about hydrogen fuel cell technology. Now, I will explain how hydrogen gas is derived.

A hydrogen atom is an electrically neutral atom and contains a single positively-charged proton and a single negatively-charged electron, bound to the nucleus by an attraction force. On Earth, hydrogen is only found in chemical compounds. Some of these include; water, methane (natural gas) and methanol (wood alcohol).

Most hydrogen produced today is a by-product of processes used in the chemical industry. On a large industrial scale, most hydrogen is produced through the steam reforming of natural gas, a process which releases carbon dioxide (CO₂). If the energy used in the steam reformation process is generated by coal, oil or other polluting generation methods, this hydrogen is "grey hydrogen".

However, a cleaner "blue hydrogen" can be obtained from natural gas or industrial residual gases by splitting the hydrogen and carbon dioxide (CO₂). The captured CO₂ can be stored in empty gas fields or reused as a chemical building block.

Ideally, hydrogen can be produced from water using electricity. Using the process of electrolysis, water is split into its component parts: hydrogen and oxygen, and some of the energy used is stored in the hydrogen. If the electricity used in the electrolysis is generated from renewables, like wind and solar power, the hydrogen is a zero-emission product. This is termed "green hydrogen".

There is an intriguing invention known as the proton exchange membrane (PEM) electrolyzer, which is a cell equipped with a solid polymer electrolyte that is responsible for the conduction of protons, separation of product gases, and the electrical insulation of the

electrodes. The PEM electrolyzer, an electrochemical device, is used to convert electricity and water into hydrogen and oxygen, which can be used as a means to store energy for later use.

Scientists also are working on innovative ways to produce "green hydrogen" through artificial photosynthesis, by using sunlight and coated nanoparticles to separate hydrogen from water. Biological hydrogen production with algae or other biomass is a method of photo biological water splitting which is done in a closed photo bioreactor.

The great thing about hydrogen gas is that it allows for the storage of renewable generated electricity, which can augment the intelligent electricity of the future.

There is little doubt, that hydrogen gas will be used for stationary and portable power as our world moves toward a hydrogen economy. After all, hydrogen is the most abundant element in the/our universe.

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Further Information

<http://www.sierraclub.org/maryland/catoctin-group>

CLEAN ENERGY INVESTING

By Cameron Bell

Clean Energy and Personal Investing— Are you really doing all you can?

Climate Change news is all over. Every day there are articles about how the Earth's climate is changing at the expense of humans. As Sierra Club members, we may feel good about our role in fighting the good fight about preserving the planet for the next generation. After all, we have joined the premier environmental club in the country; participate in tree plantings; attend meetings; protest with climate strikes; stay abreast of environmental regulations in Annapolis; and are active in politics to help elect candidates who will sponsor measures to reduce our carbon footprint; we've done an energy audit of our house, and we drive cars with a low carbon footprint. What else can you do?

You can consider including green energy into your personal investment portfolio.

Investing has changed a lot over my 28 years in the business. Not just the economic landscape, but in the types of investment products and processes available to individual investors and their advisors. For investors, there are now an array of investment products that target very specific sectors of the economy. These products range from mutual funds, to exchange-traded funds, (ETF to actively managed professional investment models. Among

them are investments that focus on environmental products and services. As a green energy investor, you might be happy to find a mutual fund that has exposure to renewable energy stocks, but disappointed that there are a significant number of non CO2 sensitive companies. If you are looking for a more concentrated effort, you could consider a small, but growing number of clean energy ETFs



As in any investing, it is important that you carefully consider how to select and manage your portfolio. You could choose to do it all on your own. The problem with that is the fact the entire burden is on you to research and manage the process. With work and family obligations that may be too much to handle.

Additionally, you'll need to determine suitable investment candidates, make decisions on which candidates to buy, and determine when to sell. In other words, come up with an investment process. The alternative is to engage a competent investment advisor.

The world is changing. And climate change is a big part of it. As an advocate for clean energy, you owe it to yourself to explore what options are best for you when you decide to include clean energy investments into your portfolio. Moreover, you should encourage others to follow your example.



"You are never too old to set another goal or to dream a new dream."

— C.S. Lewis

ANNOUNCEMENTS

CARROLL COUNTY FORESTRY BOARD WORKSHOP

— *Watershed Moments* —

Saturday, March 14
8 am — 3 pm

**Wesley Freedom
United Methodist Church**

961 Johnsville Road
Sykesville, MD 21784

\$50/ person

Includes continental breakfast, snacks, lunch and handouts

This workshop includes a series of presentations by experts on topics ranging from flood risk management to protecting honeybees and other pollinators. Continuing Education credits are available.

Topics include:

Trout Streams
Stream Restoration
Forests and Climate Change
Bog turtles and Riparian Wildlife
Bugs, Blight and More

Proceeds help send Carroll County high school students to the 2020 Natural Resources Careers Camp. <http://www.marylandforestryboards.org/nrcc.cfm>

Past attendees have included arborists, foresters, master gardeners, naturalists, landowners and the general public.

