Going Green: Steps Towards Energy Independence

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Heat from corn, electricity from the sun, driving on batteries and gas area residents are taking individual steps toward energy independence and a better environment.

Before autumn leaves began to fall, Gary Boll loaded up a truck with fuel to warm nearly 50 households in Takoma Park and the District. His cargo was corn from his Mount Airy farm. Only a pig would smack its lips at these dried nuggets of starch. But when fed into a $3,000 stove, the burning corn easily heats a house's first floor, shaving up to $500 off a winter heating bill, according to stove owners who buy the corn.

They have chosen Mount Airy corn over Appalachian coal, Louisiana natural gas, and Arabian oil to shield part of their fuel bills from the relentless rise of energy prices. And like thousands of others around Washington, they also seek to align their lifestyles with their values in the national debate over energy and environmental policies. Experts consider fuel corn a neutral emitter of carbon dioxide, meaning that it absorbs the same amount while growing as it releases when burned.

Corn stoves, hybrid vehicles, solar electric panels, argon-gas-filled insulating windows all are examples of advanced energy-conserving products that also reduce the cost and environmental impact of energy use. All are getting more attention from consumers amid increased concerns over climate change and the recent shocks of $3-a-gallon gasoline, $70-a-barrel oil, and double-digit increases in electricity.

Every consumer who has considered such investments surely asks, Will it be worth it? The answers are complex and rife with unknowns. How will conflict in the Middle East and other troubled regions move oil prices? Will the federal and state governments increase or cut back on incentives to buy energy-saving products? Are more technology breakthroughs on the way? Should we wait or buy now?

It s clear that higher prices have made energy ef ficiency and conservation more affordable. Payback can be four years away for energy-efficient home appliances, five to ten years for hybrid cars, two decades for solar panels in homes.

Because even the breakeven point is still distant, investment in conservation hasn't become a mass movement. For now, conservation and efficiency are more a matter of conviction and personal identification than dollars and cents, according to consumers and experts we interviewed. Some see themselves as technology trendsetters the same kinds of people who buy plasma TVs and

Bluetooth gear. Fundamentally, consumers who buy a corn stove, a distinctive Prius hybrid, or an array of solar panels are making a statement about their attitudes toward environmental threats or US dependence on foreign oil.

Most consumers who invest in energy conservation, says Therese Langer of the American Council for an Energy-Efficient Economy, are interested in things that don t boil down to dollars and cents.

Chris VanArsdale runs GBO Construction, a DC construction-management firm specializing in green building techniques that conserve energy and natural resources. He's getting lots more questions about energy conservation since fuel prices shot up in 2005. More than half his clients are choosing conservation options even though up-front costs are high. The rest look at the payback periods and decide to wait, he says.

VanArsdale says many residential clients go green for the environmental benefits alone: There is a communitarian sense that we shouldn t be polluting the atmosphere and increasing greenhouse-gas emissions.

JD Doliner and husband Steve Kaufman spent two years renovating their 1925 Arlington home and loading it with energy-saving features. There are photovoltaic solar panels on the roof to generate electricity, and another solar-based system heats water for bathrooms, kitchen, and laundry. Doliner was an investor in environmental firms before the couples two children arrived; Kaufman is a federal prosecutor in the District. We've both always been activists and environmentalists, Doliner says. And we like to walk the talk.

Holly Alpert and Steve Gomberg chose a Toyota Highlander hybrid SUV after their familys Sienna van was swamped by high water on the George Washington Parkway in June. If pump prices remain about $2.50 a gallon, the Arlington couples hybrid will save them about $385 a year in gas compared with fueling a conventional Highlander, according to the Edmunds.com car-buyers guide. They also got a $2,600 federal tax credit for buying the hybrid (that credit was cut in half for Toyota hybrid purchases after October 1). This fall, area car dealers are charging more than $6,000 more for the hybrid Highlander than for the base 2007 model, and with a reduced federal tax credit, the payback period for a hybrid Highlander could stretch out to a decade.

The payback math was a consideration, but it wasn't the controlling one, Gomberg says. Studies predict that the hybrid will produce roughly a third fewer greenhouse-gas emissions than the standard model. We wanted to reward a company that is making a cleaner, more efficient car.

Sat Jiwan IklÈ-Khalsa, a corn-stove owner and president of the Takoma Park cooperative that buys Gary Boll's corn, estimates that he will recover the costs of the new stove in four or five years.

Personally, I would pay a premium for the benefits I'm getting in reducing greenhouse-gas emission, says IklÈ-Khalsa.

Boll agrees. He raises pigs and turkeys and grows other crops on 500 acres, and while the fuel-corn business has grown fivefold in five years, I'm not getting rich with it. He adds, I believe God gave us this earth to use, not abuse. I see corn as a renewable resource and oil and gas as depleting resources. I see a value that way.

Corn stoves are a novelty. Kitchen appliances are not, and the greatest achievements in household energy efficiency are found in the kitchen.

Most major home appliances have to meet minimum federal regulations on energy efficiency; the most efficient ones bear an Energy Star label. A refrigerator with a top energy-use ranking can cost 10 percent more than the least efficient one, but it will use 15 percent less electricity. The cost and payoff details appear on Energy Guide labels on most major appliances sold in this country, and while the annual dollar returns are small, the most efficient refrigerators will pay for themselves in eight or nine years. Replacing a 15-year-old refrigerator with an efficient new one can cut its electricity use by half.

Despite its successes, the campaign for highly efficient appliances moves haltingly. The Clinton administration tried to push for more stringent energy-efficency regulations for appliances. The Bush administration has not, heeding manufacturers requests for a slower approach.

States are all over the map on tax incentives for buying energy-saving products. Some of the story can be found at the Web site of the American Council for an Energy-Efficient Economy, www.aceee.org, and at www.energytaxincentives.org and www.dsireusa.org. Regardless of what state they live in, consumers can get federal tax credits of up to $200 for installing high-efficiency furnaces and $300 for central air conditioning.

The issue of American motorists' addiction to oil, in President Bush's words, cleaves Republican and Democratic lawmakers. The Bush administration has instituted a gradual increase in fuel-economy standards for light trucks and SUVs through 2011 but has not acted on passenger-car standards. In Congress, GOP opponents of tighter standards, allied with Democrats from auto-manufacturing states, have blocked legislative changes.

Motorists could make a big impact on their own by accepting less horsepower and driving less. But the technical solution that has attracted most attention is the hybrid vehicle, which runs on both gasoline and battery power. The most popular hybrid sedans get more than 50 percent more miles per gallon than comparable cars running only on gasoline.

According to an analysis by Edmunds.com, the average breakeven point for hybrid vehicles varies greatly. That's the point at which a hybrid owner's savings at the pump exceed the higher price of buying a comparable hybrid and the lower trade-in value that Edmunds expects hybrids to fetch. (The calculation changes as pump prices move.)

In the Edmunds study, the payback for the Ford Escape hybrid is 2.9 years compared with a conventional Escape, but it is 15.1 years for the luxury 2007 Lexus GS 450 hybrid versus its conventional counterpart. The calculations assume hybrid owners will drive 15,000 miles annually and be able to buy gasoline at $2.50 a gallon. (This information can be found at edmunds.com/advice/fueleconomy/articles. To weigh the costs and benefits of hybrid models, see hybridcars.com/calculator/index.php.)

The difference has most to do with the popularity of the Toyota hybrids (including Lexus), which accounted for more than 70 percent of all hybrid sales through the first half of 2006. That allows Toyota dealers to tack a fat premium on hybrid price tags.

On the other side of the equation is the ability of hybrids to reduce greenhouse gas releases and other tailpipe emissions by lowering gasoline combustion. If every motor vehicle in the country used 25 percent less gasoline, US gasoline demand would drop by 2.4 million barrels a day. That would be the equivalent of eliminating US crude-oil purchases from OPEC. Likewise, emissions of greenhouse gases from tailpipes would fall by about 25 percent. Those are pipe-dream calculations, of course. There aren't enough hybrids on sale today even to approach those results. But hybrid owners can say that they, at least, are doing something.

If dollars alone are the bottom line, hybrid buyers lose out unless they receive the full federal tax credits approved by Congress last year, replacing the federal income-tax deduction previously available. The credits ranged initially from $650 for the Honda Accord to $3,100 for the Prius, based on their mileage performances. However, the credit drops once an automaker s hybrid sales exceed 60,000, starting at the beginning of 2006, thanks to a congressional impulse to help Detroit's manufacturers catch up with Toyota s hybrid leaders. The Japanese carmaker is the only one to have passed that threshold, and its credits dropped by half beginning in October and will disappear next October. Congress also arranged that the current credit will be cut or eliminated for consumers subject to the federal alternative minimum tax, a bite that is being felt increasingly by potential new-car buyers. All in all, Washington lawmakers have delivered a pretty mixed message about the value of hybrids.

Updates on the credit's status can be found at hybridcars.com/tax-deductions-credits.html. The tax agency's information is at irs.gov/newsroom. State and local policies are listed at dsireusa.org.

Homeowners who want to cut energy bills can start out cheaply, says Arlington homeowner JD Doliner. The list of helpful products includes smarter thermostats, ceiling fans, and a $5 stretch of clothesline to furlough the laundry dryer. Compact fluorescent lights earn back their higher price tags long before they burn out. But the starting point for household energy conservation is even more basic. First you caulk every crack you see, Doliner says. Closing off serious

leaks around window and door drafts can lower utility bills by 10 percent for a minor cost, according to utility companies.

You can get a rough idea of the impact of investments in efficient appliances and insulation with an energy-cost calculator on the Web site of Baltimore Gas & Electric, bge.apogee.net/rescalc. It invites you to put in information about your household and estimates your energy costs. Then it lets you simulate changes such as switching to newer appliances, plugging window leaks, and cutting back on thermostat settings and shows you the expected dollar savings. But the computer program uses a lower electricity price than consumers are now seeing in Maryland and the District with the end of electricity price caps. To update the calculations, find the kilowatt hours saved and multiply that by today's average prices in the District and Maryland 11 to 15 cents a kilowatt hour.

The capstone of the Doliner-Kaufman project is on the roof a solar-electric power unit producing 1.1 kilowatts of electricity and a solar collector that heats water for the kitchen and bathroom. Because Kaufman commutes on Metro and Doliner is at home, they are low-mileage drivers. So instead of a Prius, we got solar, she says. Their solar-panel installation cost $12,000, while the solar array that heats household water cost $6,000.

The photovoltaic cells in the solar-electric panels produce a varying amount of direct current depending on how much of the sun's energy strikes the unit. On average, the unit produces 40 percent of their electricity needs; at some times, the couple sells excess electricity back to Dominion Virginia Power. On nice sunny days, the meter runs backwards, Doliner says.

By changing their consumption habits, insulating walls and floors, and buying advanced insulated windows, they have cut their electric and heating bills by 40 percent, even though the space in their remodeled home is now 50 percent larger.

But the payback on a residential solar-electric installation is on the order of 20 years, says Keith Winston, whose Earth Sun Energy Systems in Hyattsville provides consulting services on alternative-energy projects.

To complete the equation, you have to calculate the social benefits of saving energy, but they are even harder to pin down than the financial payback. What is it worth to the nation and the planet if energy conservation slows the expected increase in greenhouse-gas emissions? What is the value to Americans if we can curb our appetite for foreign oil, thus slowing the flow of dollars into foreign hands?

In search of answers, we visited a Web site run by Gridpoint, a DC firm that has developed advanced control systems to manage solar-electric units and provide backup power during outages (www.gridpoint.com/tools/CPStart.aspx). Gridpoint s software estimates that a $15,000 solar-electric unit installed on a Northern Virginia home with good sun exposure would generate a maximum of 1.5 kilowatts a year, shaving the annual electric bill by 10 to 20 percent. While it takes energy to build the solar unit, once it's installed, the solar energy it

produces would reduce the operations of utilities coal- and gas-fired power plants, eliminating 483 pounds of CO2 emissions a year. A home≠owner would have to plant half an acre of trees to achieve the same reduction in CO2.

By itself, the impact is infinitesimal against the overall challenge of global greenhouse-gas releases. To grasp the problem, consider that arching maple in your backyard. It can absorb 450 pounds of CO2 a year, and if it had done so for 100 years, it would have removed about the same amount of CO2 emitted annually per person nationally. So what each of us burns each year, directly or indirectly, has the effect of sucking that big tree into space. But small individual energy savings, multiplied by thousands or millions, would matter.

When the United States finally confronts the issue of global warming, power companies that want to keep making electricity from coal the most prominent power-plant fuel will have to alter their operations dramatically, removing CO2 from their boiler exhaust and injecting it deep underground, scientists say. Assuming society can and will pay for it, that upheaval will force electricity prices higher. At that point, residential solar-power units and energy-saving vehicles will become much more valuable, both to those who own them and to their neighbors.

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