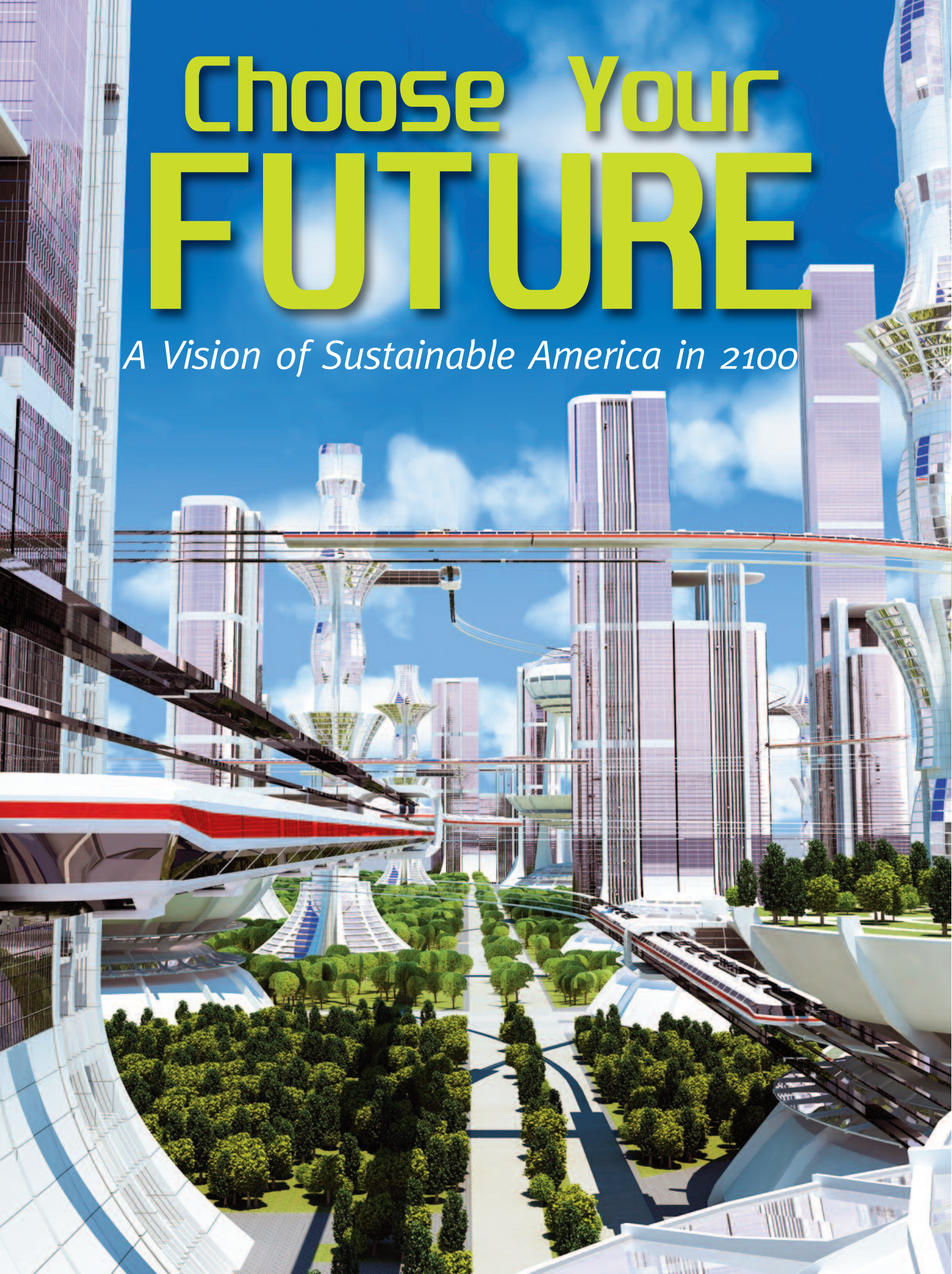
Choose Your
FUTURE
A Vision of Sustainable America in 2100

What would a truly sustainable United States look like? A place where we can still have personal (electric) vehicles, the latest smart phones and large "eco" homes? Not quite. Though it holds less than 5% of the global population, Americans use nearly of quarter of the world's fossil fuel resources and each American uses on average 168 pounds of resources per day, taking into account everything from food to fuels to plastics and metals. As China and India rush to catch up and the world adds another 2-3 billion people by 2100, current consumption patterns can't hold. Combine that with research like the Millennium Ecosystem Assessment, which warns that three-fifths of all ecosystem services are being degraded or used unsustainably, and new data revealing the likelihood that we'll be unable to stabilize the global temperature before reaching an increase of 3-4 degrees Celsius, and it becomes crystal clear that something has to give—either humankind, the Earth, or both.

The problem is that most people—including environmentalists—won't admit that green consumerism is delusional. Plenty of environmentalists still love their burgers, iPhones, air conditioning and cheap flights. If we don't start painting an attainable vision of the future, the dialogue will continue to focus on "green growth," distracting us from the hard decisions that we have to make if we are going to build a sustainable America over the next century without the ugly collapse that will most likely precede it. With that in mind, I offer a vision of what life in a sustainable United States would look like in 2100, if we started today to make the dramatic shifts to the economic, political and cultural systems that are necessary to balance America's demands with other countries' and planet Earth's biocapacity.

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The Year: 2100

Climate change has had a devastating impact, and it's not over yet. The total warming of 3.3 to 4.5 degrees Celsius predicted by the Intergovernmental Panel on Climate Change has led to considerable ecological changes. Chicago now has the climate of New Orleans, and New Orleans, well, much of that was claimed by the Gulf of Mexico. The rest of that city, one half of Miami, a third of Manhattan and many other cities were either lost to rising sea levels or proactively converted into wetlands in order to provide a buffer to what habitable land remained. Losing that land was a great tragedy, but a shrinking population, combined with an increasingly agrarian economy made it less painful—in economic terms at least. Nothing will ever replace the loss of the birthplace of jazz.

There is some good news, however: Carbon dioxide emissions in the U.S. are now in the negative numbers. But that change took place just 34 years ago, leaving a few decades worth of climate change still built into the system.

Perhaps the most striking shift in the United States in 2100—and one of the reasons for those negative emissions—is that a large proportion of Americans now consider their primary occupation to be "homesteaders." The vast majority live in what were once called "bedroom communities," suburban infrastructure that was long ago retrofitted into small farmstead communities that provide a secure source of food, textiles and goods both for families living there and the adjacent urban populations.

Cities have shrunk in total area and population size as opportunities to become rich dwindled and the security of producing one's own food became abundantly clear during the New Dust Bowl of 2063, a drought twice as powerful as the first Dust Bowl that utterly ravaged America's breadbasket in the 1930s. But cities have also grown denser, with more people living in much smaller homes—the average is now 300 square-feet per person, about a third of what was considered normal back in 2003. And the confluence of shops, residences, gardens and parks is more reminiscent of 21st century Europe than America. The most striking change is the lack of any marginal or underutilized land in cities. Every square foot has its use—to provide shade, food, water filtration, or often a mix of all of these. Nearly every street has a number of urban gardens, parks and artificial wetlands to treat sewage, all managed by a mix of small entrepreneurs and public employees.

With cars nearly all but abandoned, city streets have been redesigned for bikes, pedestrians, pedicabs, taxis, buses, emergency vehicles and delivery trucks—with this small fleet of motorized vehicles running off renewables-derived electricity. Private car travel is still possible but between the extremely high cost and negative social and cultural pressures few people even want to own a car. Instead, vehicle ownership is relegated to car sharing and rental cars for 99% of the population. Those who commute into the city do so entirely by bike, bus and subway.

Much of the Interstate highway system has also been dismantled as the extreme cost of maintaining it was an unmanageable drain on the public coffers. In the most densely populated areas, highway right-of-ways were reassigned for trains and intercity bus rapid transit (BRT) systems—a variation of the urban version that makes long-distance travel fast and frees up the highways for emergency and delivery vehicles as well. Transport of goods has declined overall, with more food and goods produced locally, but those products without substitution—tea, coffee, spices, high-tech goods—are mainly ▸

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transported by rail, BRT highways or the rehabilitated canal systems originally built in the 1800s but abandoned not long after they were completed as the era of cheap coal began. With this era's end, the canal system is finally getting its day.

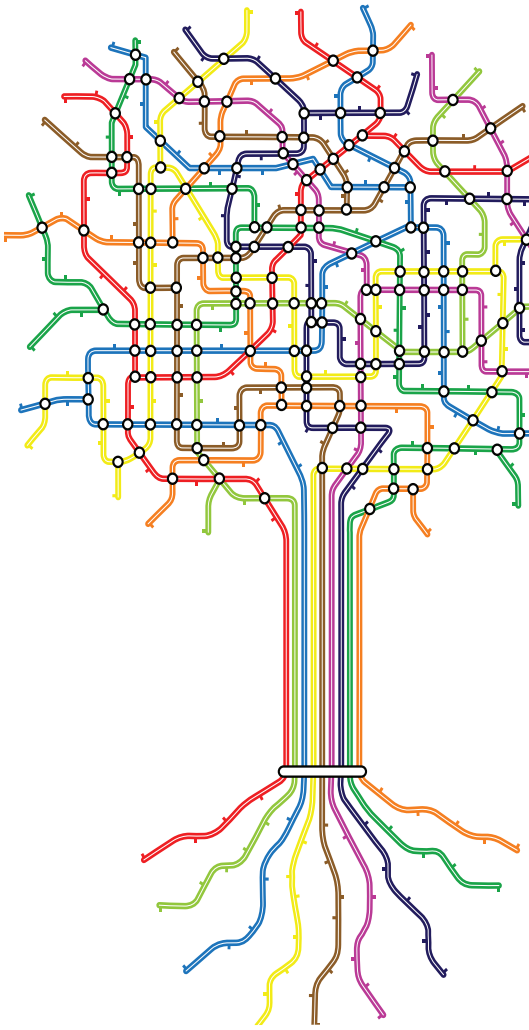
Goodbye, Fossil Fuels. Hello, Nature.

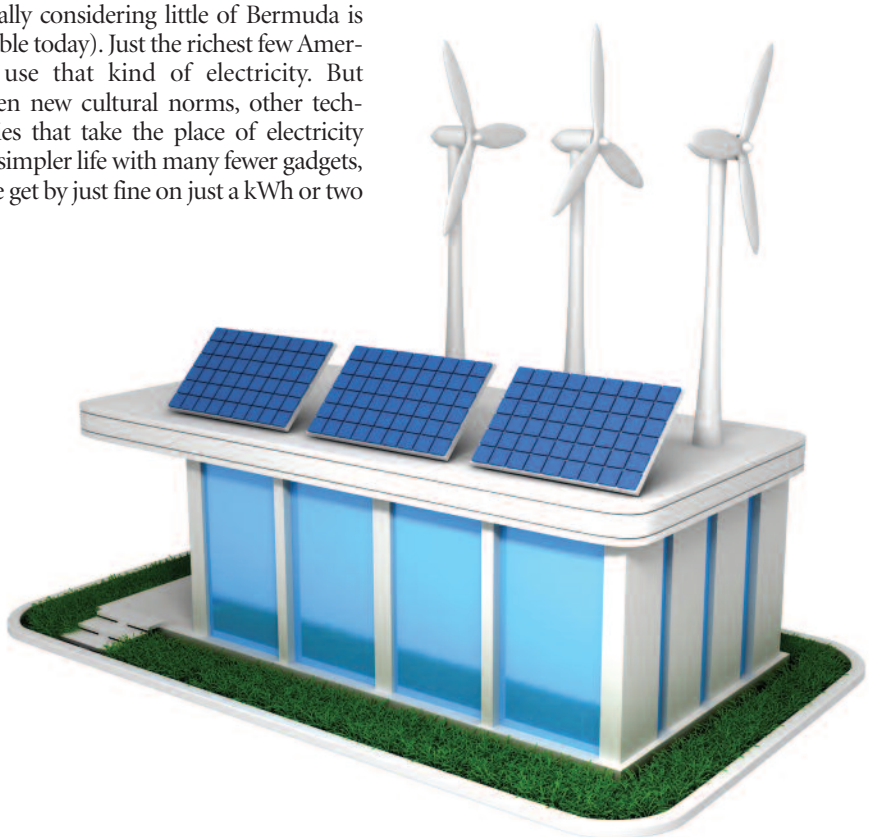
Naturally, with dramatic changes in urban design and American lifestyles, entire industry sectors disappeared. The car industry was retooled to make electric buses, trains, taxis and pedicabs. The less competitive and innovative companies—those that failed to read the changing winds—shut down long ago. This shift also contributed to some extent to the shrinking of the coal, oil and natural gas sectors. The largest drivers of this reduction were the fossil fuel taxes implemented in 2019 (and growing ever since) and America's reduced global military presence. Together these shifts led to a massive contraction of the fossil fuel industry—to about a hundredth of its peak size—and today the sector is state-owned and its products are reserved exclusively for industrial uses that have no effective substitution.

Many new industries popped up, more than replacing these lost sectors in terms of employment—though critics argue even today that they are not as lucrative. But from their perspective, the new sustainable America is poor: an "underdeveloped country." Its formal economy shrinks by about 2% each year (as the economy shifts away from centralized corporate entities) but the informal economy has an annual growth rate of 4%—more than offsetting any real losses. In other words, more people are making their livelihoods out of homesteading, taking care of their own children and elderly parents rather than paying someone else to and making things for their family and for trade rather than selling their labor to buy poorly made mass-produced goods. Some argue that we're regressing to colonial days and in some ways it's true—most people work in labor-intensive trades like agriculture, education, healthcare, waste recycling, repair, trade and small-scale production of textiles and durable goods. But the gains made since the colonial era in medicine, in human and environmental rights, in planetary science and the arts have not been lost and arguably these aspects of human life flourish more today than ever before.

With fossil fuel usage minimized, and an intentional weaning off of nuclear and the decommissioning of aging and ecologically destructive hydroelectric dams, there is a lot less electricity to go around. Strategic investments in sustainable renewables (solar, wind, small hydro) have replaced much of the nuclear and large hydro lost, providing about 200 Kilowatt hours (kWh)/month of electricity per household—less than a quarter of the 958 kWh American households used in 2010. Effective implementation of electricity demand-reducing technologies like solar hot water, geothermal heating, solar ovens, better building design (such as insulation, better windows, green roofs and heat exchangers) and an evolution in cultural norms to wear more clothing in the winter and less in the summer in one's home (not to mention the end of the era of air conditioning)—has made this small amount of electricity feel like more than enough.

Electricity usage is further moderated by tiered pricing—the graduation of electricity costs based on the total used. The first 100 kWh a household uses each month are very cheap, perceived as a basic need—just $5 in 2010 dollars. The next 100 kWh are quadruple that, with every additional 100 kWh growing ever more expensive. To put it in perspective, a household using 958 kWh today would pay enough to take a two-week all inclusive five-star resort vacation to Bermuda (back in 2010 of course, especially considering little of Bermuda is habitable today). Just the richest few Americans use that kind of electricity. But between new cultural norms, other technologies that take the place of electricity and a simpler life with many fewer gadgets, people get by just fine on just a kWh or two a day.





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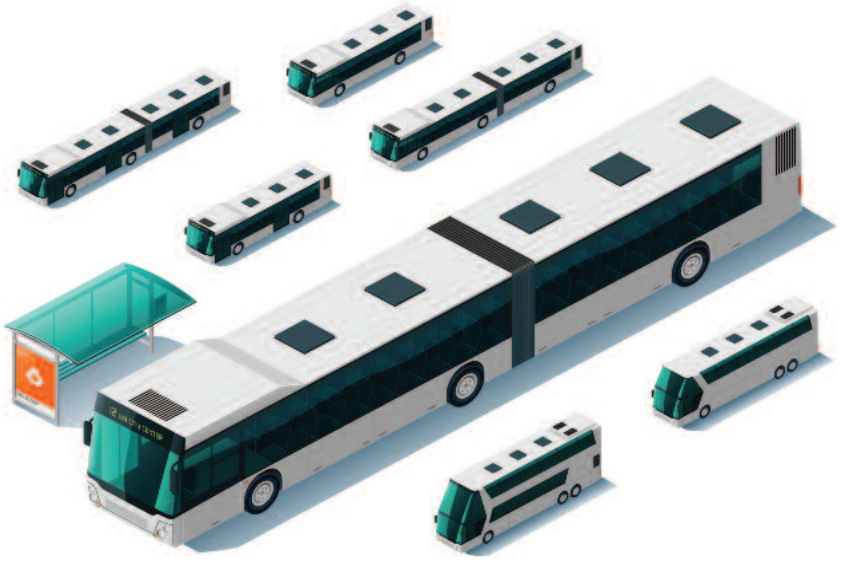
Biodiversity is recovering to some extent—partly driven by abandoning certain areas of the country and letting nature reclaim them and partly because agriculture is almost entirely sustainable and organic. Human and animal wastes are seen as valuable commodities and are captured and recycled rather than being allowed to pour down rivers and create coastal dead zones. Many people are also actively employed as ecosystem stewards, living a more back-to-basics life taking care of and improving forest lands. The government realized that instead of paying companies millions of dollars to log undergrowth in forests to prevent fires, many people would do this for free if granted the ability to live in and subsist off of these ecosystems. These "caretaker communities" now play a vital role in maintaining the health of ecosystems and, as many studies have shown, their presence is actively enriching these systems.



The Gray Depression and the New American Family

After peaking at 319 million in 2019, the population declined rapidly to 295 million after the Gray Depression of 2025. (The Gray Depression was called this for three reasons: first the high costs of the consumer lifestyle caught up with the baby boomers, leading to substantial medical costs at the end of their lives. Second: the phasing out of the fossil fuel industry—gray industries as opposed to green—caused significant unemployment, partly driven by intentionally excessive layoffs by industry in order to scare the government into reversing its fossil fuel taxes. And third, due to the fact that more people were turning to the informal economy, or the "black market," and thus graying our overall economy and reducing total tax revenues to the government for programs like Medicare and Social Security.) Since then, the population has continued to decline by 0.4% each year—about one million people per annum. Demographers expect that the population will fall to 200 million people by 2125.

While the initial decline in population size was due to the departure of millions of immigrants during the Gray Depression, today's population contraction is driven primarily by the average family size falling to 1.1 child and by mothers being 29 years old on average when having their first child, much later than in 2006, when the average woman had her first child at 25. While about half of this contraction is driven by strong access to family planning and low infant mortality rate (reassuring families that their one healthy child will survive), studies have shown that cultural norms are just as important in shaping the number of children families want. Thus schools, churches, the media, even tax policies today reinforce a one-child family norm (though having more than one child is still legal). The government has a goal of stabilizing the U.S. population at 150 million by 2180 and from there will shift policies to slowly increase family size norms to replacement rate.

One of the effects of a shift to homesteading, smaller family size, and an increasingly informal economy has been the return of multi-generational households. The era of outsourcing elder and childcare came to an end as the total number of jobs shrank and cheap transportation declined but this was readily solved by having elders once again taking care of children while younger adults worked either in remaining formal jobs or around the homestead. Clearly—in such an individualistic culture—this transition didn't come without friction.

While discussing population, one surprise may be the dramatic decline in America's pet population, which fell from its 2013 peak of 171 million dogs and cats to less than two million today. Americans still have pets, but often they are shared at the community level and are full members of a community—serving important roles like guarding farm animals from predators or getting rid of mice. Most households no longer have their own dog or cat but have productive or edible pets, like chickens, rabbits or goats. While hard to believe, dogs and cats are minimally missed now that our human population isn't as socially isolated as it was in 2011. Pets' valuable therapeutic role became less important once people had close communities of friends and family to lean on and bond with.

Eating for Health

Healthcare also underwent a radical shift over the past century. Some diseases simply disappeared as diets changed and obesity rates went from over two-thirds of the population in 2010 to just over 2% 90 years later. Gone were the vast majority of cases of diabetes, heart disease, many forms of cancer and arthritis, thanks in large part to studies in the 2020s that found that Calorie Restricted Optimal Nutrition diets prevented many diseases. Even balding rates declined. Also, as cities became free of cars and communities became free of coal plants, most cases of asthma and other lung ailments disappeared, too (excluding the self-induced tobacco-based diseases, though less than 1% of the population smokes today and that's mostly confined to a ceremonial puff or two on special occasions).

With more people physically active and eating healthily, medical care focuses more on treating infectious diseases and accidents and teaching people to prevent sickness. Of course, this, too, was not an easy transition. The pharmaceutical industry, making billions on treating the symptoms of unhealthy living, did not go quietly into the night. But as basic access to care finally

became a human right in the U.S. and the system became socialized, the government finally had an incentive to refocus the healthcare system on prevention rather than treating symptoms. School food became healthy, junk food became steeply taxed, advertising for unhealthy products and drugs became tightly controlled. And with the end of contamination of the human body (and thus human waste) with pharmaceutical residues, "humanure" could be reintegrated into the natural cycle of life as a fertilizer.

Our diets changed rapidly as cheap fuel and agricultural subsidies dried up. At first, this manifested with the dramatic shrinkage in availability of total number of calories and packaged, processed foods. Over time, total calories increased but the majority came from less calorie-dense, and more nutritional vegetable matter, including a large percentage produced locally either by small-scale farmers or by one's own family. With less meat being produced (factory farms started disappearing when the cheap grain and fuel did) meat once again became incorporated into one's diet ritually, with a small amount being cooked once a week for the Sunday meal and on holidays.

Lifestyles of the Thrifty and Sustainable

As goods and services became relatively more expensive (since it is much harder to have globalized supply chains) the culture shifted so that owning and wearing just a few sets of well-made clothes once again became the norm. Often these outfits were produced locally in completely sustainable ways, such as locally raised wool dyed with organically grown indigo. Nylon and polyester, like all petroleum products, is reserved for essential uses only.

One of the biggest changes in 2100 America stemmed from the departure of cheap air travel. This loss (along with comparable increases in other long-distance transportation costs) led to the re-rooting of American families, with most families remaining in the towns, or at least the states, in which they were born. Those that do wander far, driven by their dreams or a desire to start anew, rarely return. But with cultural norms that emphasize familial and community responsibility, this kind of reinvention has become rare. While air travel is uncommon, it has not been altogether abandoned. Instead, it became a sacred rite of passage, with most Americans flying a few times in their lives. Intercontinental travel is now a once-in-a-lifetime luxury, perhaps driven by a study-abroad during university, a post-schooling stint in the Peace Corps, a missionary effort or a long-term work exchange. The idea of traveling to another continent for a week of fun and sun, however, was relegated to the history books for almost all Americans starting around the time of the Gray Depression.

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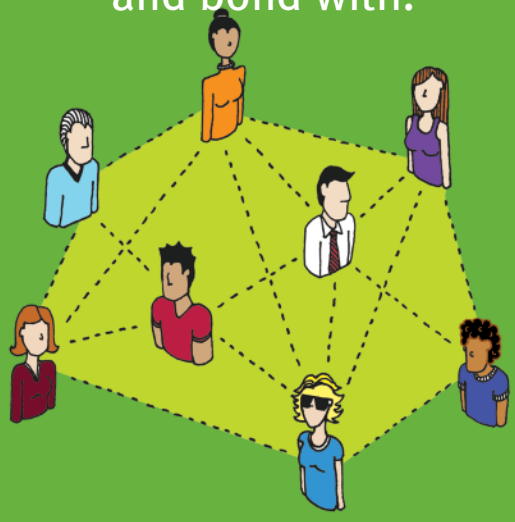

Day to day, things function much the same way as they have throughout history (the 20th century arguably excluded). People get up, do a few errands like milking the goat or collecting eggs, have breakfast, listen to the news on the radio, work on their homestead or head to their job, come home, have dinner with their family, relax—maybe read a book or play a board game that they borrowed from the library, or on special occasions, watch something on the family laptop. One of the most remarkable shifts is that average TV/video consumption has declined from four hours a day to four hours a week (and no, there is no Virtual Reality network that everyone's plugged into). By 10 o'clock most Americans are in bed, with the whole cycle starting again eight hours later. Not surprisingly, chronic sleep deprivation disappeared along with TV addictions.

Admittedly all this adds up to an almost alien world as compared to America in 2012. First and foremost, this vision assumes an ever increasing level of equity—resources better distributed among Americans including employment, land and, most importantly, a fair share of wealth being returned to society by the richest in order to fund public infrastructure and social goods, including a basic level of healthcare for all people. But America is not like that, nor is any country in existence today. Instead, growth in all its forms is celebrated uncritically.

More likely, the America of 2100 will have more in common with post-Soviet Tajikistan. Tajikistan in 2012, two decades after the collapse of the Soviet Union, is rabidly inequitable with most people lacking heating in the winter while a small minority lives an affluent consumer lifestyle, complete with iPhones, gym memberships and foreign travel. Much of the infrastructure is old and inefficient Soviet construction—not a comfortable lifestyle for those that can't afford gas or electricity. Most people eke out a living in the informal economy, but lack any security whatsoever—access to healthcare, a social safety net, even a functioning banking system.

This, sadly, is a more probable path for America, but it is certainly not inevitable. The key to avoiding this, however, will be to have a clear, attainable vision of a truly sustainable society. Even a green consumer lifestyle is directly in conflict with the realities of a finite and increasingly overtaxed planet and is a vision based on denial. Only when people face this reality will a future of true sustainable prosperity for the United States and the planet be possible. E

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