

Tackling Transport this Spring



By Dr. Alan K. Betts

It has been a warm winter in New England. Burlington had no nights in January below 0 °F, and the temperature reached a remarkable 70°F on February 26th. The

biggest snowstorm came in mid-March with two feet of snow in many places, but the snow quickly melted with sunny skies and the approach of the spring equinox. I picked spinach before the snow fell, and within four days the snow had melted off the cold-frame.

I am asked how soon we can plant! Frost-hardy plants can go in as soon as your soil has thawed, but don't plant anything that a frost will kill until the maples leaf out, unless you are prepared to cover them well. The clear nights of spring make frosts likely, because the earth can cool rapidly to space at night, until the deciduous forests leaf out and put more water vapor in the air.

Politically the last two months have had a certain fascination. After the inauguration, plans to develop the coal industry replaced dealing with climate change by phasing out fossil fuels. Meanwhile, the same week China canceled plans to build 100 new coal-fired power plants and replaced them with a plan to install 130 GW of new solar power by 2020. To give you a sense of scale, this is a thousand times the large build-out of solar power

in New England in the last year or two. This illustrates in a nut-shell how climate change leadership shifted to China, while the U.S. stacked the new cabinet in Washington with fossil fuel advocates.

Our grandchildren will look back in horror and say "How could they sacrifice the Earth to protect the profits of the billionaires?" Well, our elected leaders pretend not to know that burning all our coal reserves will melt the icecaps, flood the coastal plains and wipe out half of life on earth. As Pope Francis pointed out in 2015, our use of power and our respect for creation is a deeply spiritual issue. We cannot serve both the Earth and money!

Transportation in New England uses a lot of fossil fuel so it is one of the big challenges we face to "decarbonize" our economy. A typical automobile getting 25 miles per gallon and driven 12,000 miles per year burns 480 gallons of gas and emits 4.3 tons of CO₂. A recent study showed that this melts an extra 140 sq.ft. of Arctic sea-ice every September. As the reflective sea ice shrinks, the warming of the Arctic accelerates, and we will soon face more amplifying factors like the release of methane, another stronger greenhouse gas.

I drive to meetings and to the grocery store, so how can I reduce the gasoline I use – only by shifting to electricity coming from solar power. For me this has taken a couple of years. First I invested in solar panels from a community array, providing 5.7 kW of peak power. Over the year,

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*Climate Forecast:
"Above average temperatures are forecast for this spring."*

80% of this power provides the electricity that powers our house and heats our hot water. The remaining 20% provides the power for a new Prius Prime plug-in hybrid, which we purchased last year.

The car's all-electric range is only about 25 miles, but that is enough to drive to my neighboring towns and back. The combination of an efficient hybrid car that gets 55 MPG and this modest all-electric range has surprised and delighted me. Even in the winter months, we have averaged 120 miles on a gallon of gas; which means we only fill up the 10 gallon gas tank every 1,200 miles. It is a far more efficient and comfortable car but using it will still emit almost a ton of CO₂ every year, and inexorably contribute to melting some Arctic sea-ice.

The more general issue is that it is still a typical car for four passengers weighing over 3,000 pounds. Where I grew up in England, there were networks of public paths connecting towns that had been used for centuries – on foot or on horseback. For the future, New England needs a new network of

small paved roads for lightweight electric cargo bicycles and tricycles. Even tricycles that are fully enclosed with a shell to keep out the weather are only a tenth of the weight of a standard car, so they are far easier and cheaper to power with solar electricity. But for safety reasons, they need a separate road network from heavy trucks and speeding cars. And yes, they will only go half the speed of cars - less than 30 mph. They could use heated seats in our winters, and there will be some snow-days.

But there are two fringe benefits that would benefit our health in the long term: some exercise commuting to work, and a closer connection to the landscape as we travel. This is of tremendous importance as our society must turn to the Earth for guidance.

Dr. Alan Betts of Atmospheric Research in Pittsford, Vermont is a leading climate scientist. Browse alanbetts.com.



Alan Betts in his plug-in-hybrid-electric car that is charged with the electricity from a community solar array. Courtesy photo.