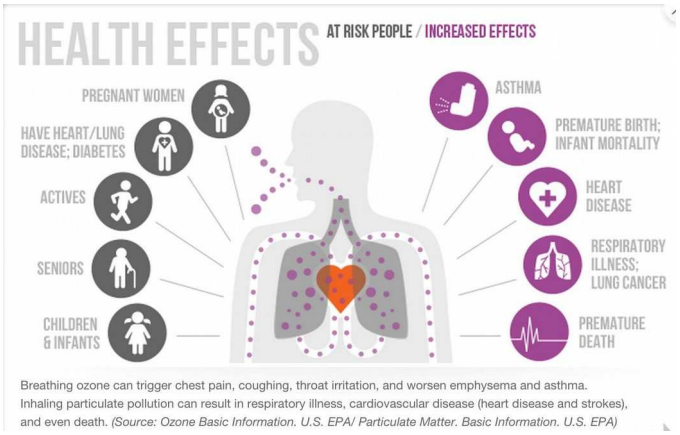
TRANSPORTATION & CLIMATE INITIATIVE
Of the Northeast and Mid-Atlantic States
TCI Regional Policy Design Stakeholder Feedback

To: All to whom it may concern
From: Richard Kerver, a stakeholder
Re: Feedback from participation in Community Engagement Workshop October 23rd ([1])

Thank you for the opportunity to participate and respond.

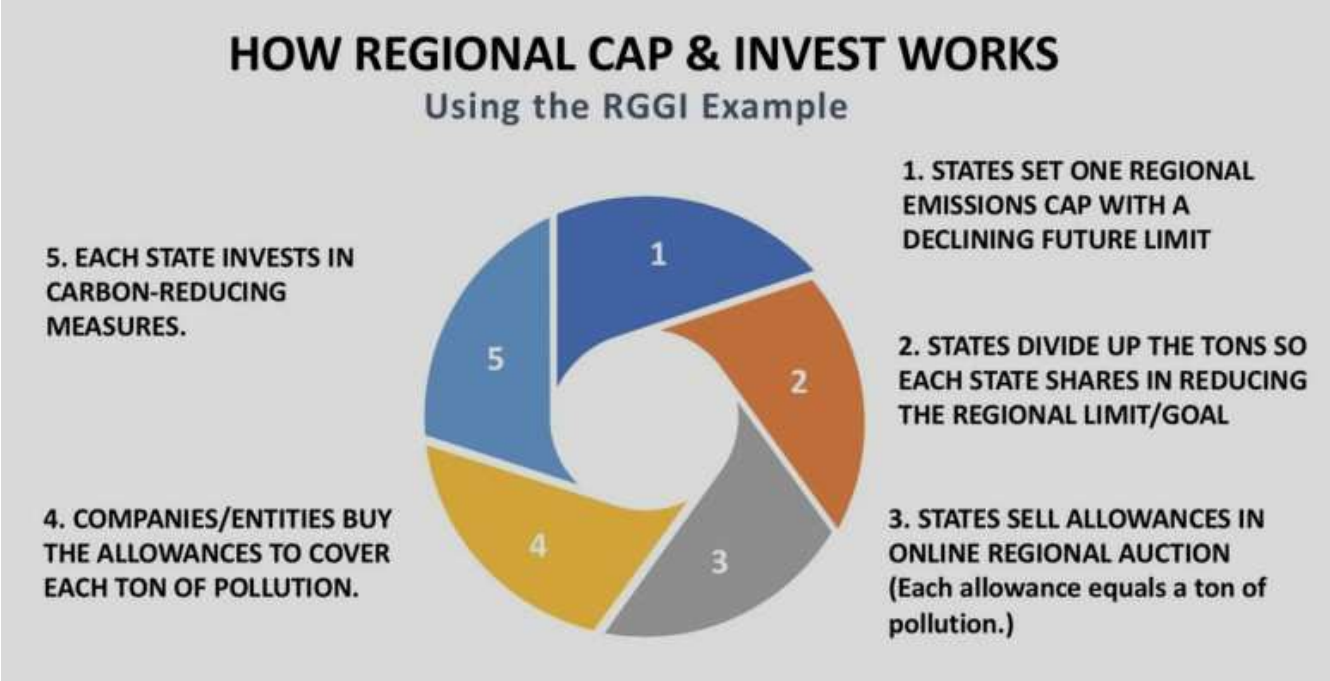
I have an M.P.H. degree and have researched the health impacts of tail-pipe emissions, so concur with the health effects slide. Our regulation of the tail-pipe – what is allowed to be emitted – hopefully in steadily diminishing quantities - is even now wholly permissible on public health grounds alone.



I would only add that we now have sufficiently conclusive evidence that forms of dementia including Alzheimer's may be caused by the breathing in of the vast array of micro-particulates being released into the air for all forms of fossil-fuel burning, including gasoline and diesel fuels for propulsion. Breath to brain transfer is direct through the brain cavity, and is highly toxic. As the TCI case is being made for the public and policy makers, I recommend enhancements to the science, references and so forth and the presentation as here.

A strong endorsement for the direction TCI is taking us! A yes to a multi-modal approach as displayed:

1 https://www.transportationandclimate.org/main-menu/tci-regional-policy-design-stakeholder-input-form; Submitted November 5, 2019



While I support the RGGI (Regional Greenhouse Gas Initiative) model for TCI, a cap-and-invest system and believe it would efficiently lower GG's from the transportation sector, I also believe there are other approaches which might be used in tandem here in the Commonwealth:

- ➔ Abandon a commitment to let the federal EPA control tail-pipe emissions through CAFE standards (note [2]). Their record is highly questionable, especially under the current administration. Massachusetts, California and the other states signing onto CARB should continue to set our own standards, and regulate the industry accordingly.

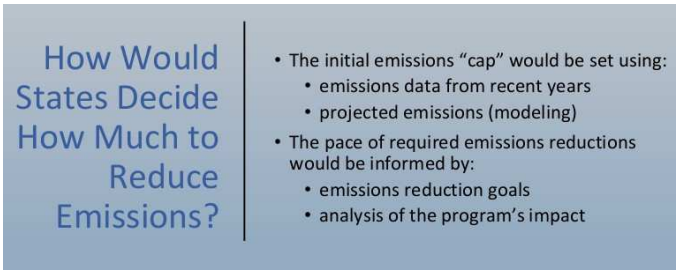
  California enacted legislation in 2002 directing CARB to develop global warming pollution standards for light-duty vehicles, which were finalized in 2004. Other states are able to adopt the California standards in lieu of the federal standards under section 177 of the Clean Air Act. Currently, 13 other states and the District of Columbia follow the state standards, representing nearly 40% of new vehicles sold in the United States.

Regulate the Tailpipe!

- ➔ So, per the TCI model, tax the fuel for subsequent investment. Also regulate the tailpipe through DMV and vehicle inspections.
- ➔ And modify the roadways, through Complete Street initiatives and Bicycle Friendly cities – see attached Mobility2040 feedback provided to CMRPC staff (Central Massachusetts Regional Planning Commission).

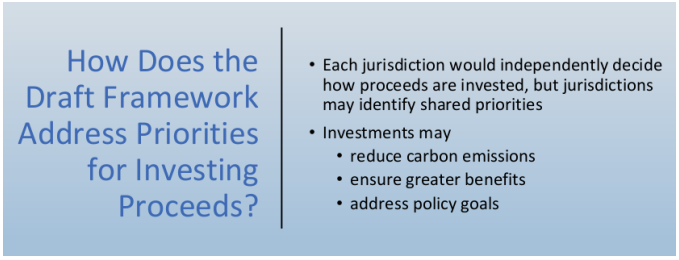
2 https://www.ucsusa.org/resources/brief-history-us-fuel-efficiency A Brief History of US Fuel Efficiency Standards: Where we are—and where are we going? Published Jul 25, 2006 & Updated Dec 6, 2017; attached in addendum

The Global Warming Solutions Act sets these goals for the Commonwealth. Current legislative session bills may amend the act to require a 100% reduction by 2050. An aggressive tact requires many entities to adopt early.

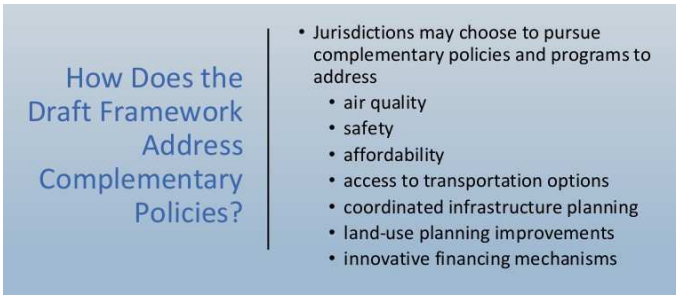


Our initiative in Worcester currently being considered by the City Council standing committee for Public Health and Human Services, as part of its Declaration of a Climate Emergency (note [3]) asks for a City commitment to be 100% by 2035, with a principal initiative of replacing its vehicle fleet with all electric.

There should be a broad consensus on investments. Fleet purchasing arrangements, for instance, across the region. A very large significant contract with one of the major automobile manufacturers committed to a transition to all electric (like Ford), will greatly hasten the requisite modal-shift we need.



This needs to be made explicit. A lot of complementary policies. The final TCI report must be detailed. My recommendation provided as an attachment, in the context of Mobility2040 is to implement ***Complete Streets*** and Bicycle Friendly policies ***Very Fast.*** Stop the conventional funding of roadways through TIP. Pour ***ALL AVAILABLE MONIES*** into a complete make-over of our cities and towns, so that bicycle and pedestrian transit becomes the preferred mode for most people most of the time.



And a modernized all-electric trolley service in our urban core ([4]). Which was once principal transit for working people before the oil & car corporations strategically destroyed that vital infrastructure.

I particularly liked the suggestion for a car-buy-back scheme to enable purchases of electric plug-in vehicles and a vast expansion or charging station infrastructure.

And follow the New York example (note [5] - New York City to 'break car culture' and build more than 250 new bike lanes).

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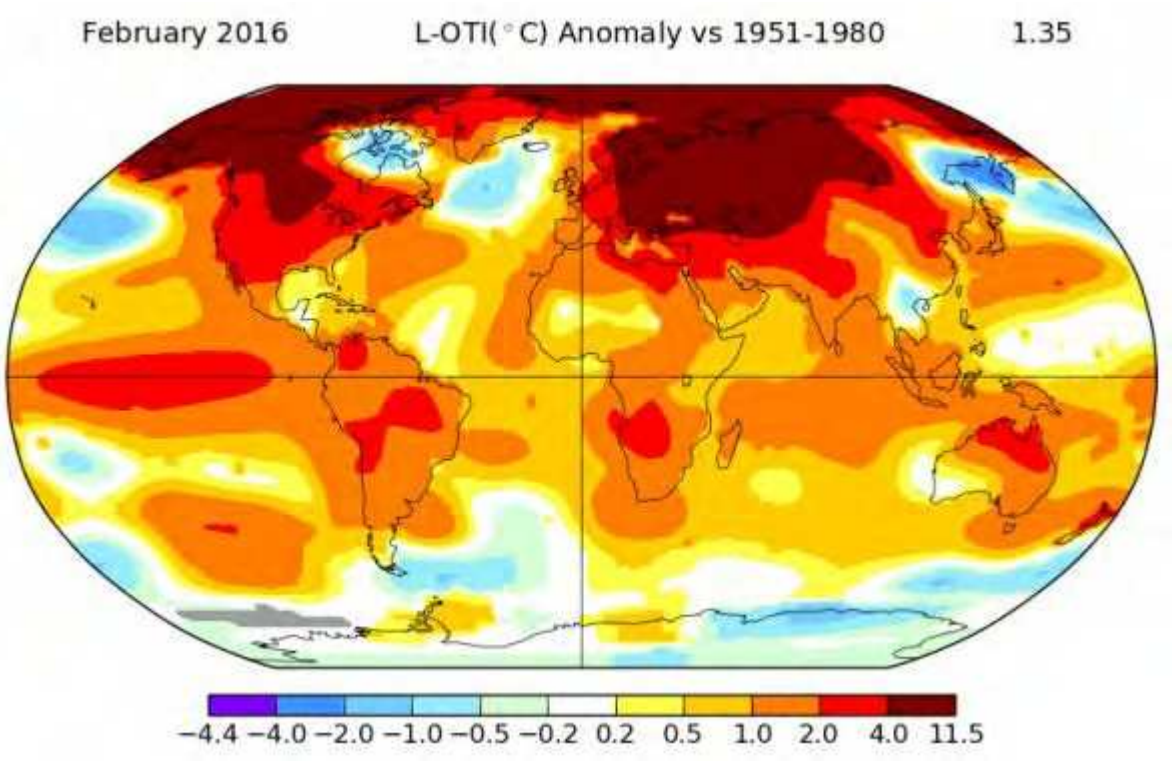
3 The Declaration of a Climate Emergency passed unanimously by City Council September 17th 2019 by petition of the members of 350 Central Massachusetts, Mothers Out Front, Extinction Rebellion and concerned citizens

4 https://worcester.ma/2016/08/free-to-read-worcestory-lesson-all-aboard-the-heydey-of-worcester-trolley-service/

5 New York City to 'break car culture' and build more than 250 new bike lanes; attached in addendum https://www.theguardian.com/us-news/2019/nov/01/new-york-city-bike-lanes-car-culture



Echo Chamber

Having read some of the many comments made by others (note [6]), I endorse the following:

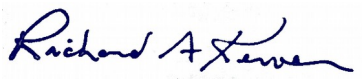
1. Some input received at public workshops and via online submission expressed opposition to market-based strategies for reducing emissions, including cap-and-invest or cap-and-trade approaches. They urged jurisdictions to focus on other policy approaches, and to focus their efforts on local air pollution reductions in places that are disproportionately affected by air pollution, and on improving transportation options for underserved communities. They pointed to their experiences with cap-and-invest programs applied to stationary sources and expressed concern that a regional transportation program could result in local air pollution increases in historically overburdened communities.
2. They also expressed skepticism that revenues would be invested in ways that benefit low-income communities and communities of color, and asked that the policy development process be extended to provide more time for community engagement.
3. Timeline for policy development - Many individuals and organizations, citing the urgency of the climate crisis, urged TCI states to move as quickly as possible and asked them to hold firm to their commitment to develop a policy proposal.
4. Another suggestion was that a percentage of investment dollars should fund projects that are community-led, operated by residents currently living or working in a specified area, and/or in collaboration with community-based organizations.
5. The public should have an opportunity to comment on proposed funding allocations before the spending plan is finalized. Many also asked that community members have meaningful roles in determining how those monies should be spent. Some specifically suggested that some portion of proceeds be set aside for community led initiatives,

6 WHAT WE'VE HEARD SO FAR; https://www.transportationandclimate.org/sites/default/files/TCI-What-Weve-Heard_10-01-2019.pdf

and that RFPs and project selection processes be set up to provide community members with meaningful roles in evaluating and selecting projects. For example, one coalition of organizations asked that no less than 10% of investment dollars should fund projects that are community-led and operated by residents currently living or working in a target area, or in collaboration with community-based organizations.

6. Input from many participants at public workshops and from a variety of groups and individuals urged that electrification of transportation, including private vehicles, public transit, and commercial freight vehicles.
7. Bicycling and Pedestrian Infrastructure: Commenters and workshop speakers described the need to invest in active transportation infrastructure, including dedicated bicycling lanes, improved sidewalks, and other components of "complete streets" policies to provide better transportation alternatives and improve safety.
8. Land Use and Planning: Input from numerous groups and individuals asked TCI jurisdictions to consider investments in initiatives to make streets more friendly to pedestrians and cyclists. Related input advocated for more extensive attention to land use planning to make it easier for people to reach jobs, services, and businesses without using their cars.
9. Another suggestion was that affordable housing should be located near transit hubs.

Thank all involved for your dedication!



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Addendum

1. 22-April-2019 (Earth Day) re-submission of 2015 Mobility2040 Public Response to the Central Massachusetts RPC and MPO regarding Bicycle Friendly, Naomi Klein's This Changes Everything, The Inadequacy of the Mobility2040 <then> Draft, and Conclusion <still relevant four years latter>
2. and attachment thereto of the Stephen Moss 28 April 2015 article "End of the car age: how cities are outgrowing the automobile"
3. The Union of Concerned Scientists "A Brief History of US Fuel Efficiency Standards: Where we are—and where are we going?" Published Jul 25, 2006 & Updated Dec 6, 2017
4. The Guardian article "New York City to 'break car culture' and build more than 250 new bike lanes" published Nov 1, 2019

22-April-2019 (Earth Day)

Metropolitan Planning Organization and CMRPC Staff
c/o Sujatha Krishnan, Transportation Program Manager
CMRPC - Central Massachusetts Regional Planning Commission
Sujatha@cmrpc.org

We recently spoke April 15th for a Mobility 2040 update. While I much appreciate the efforts of CMRPC staff in promoting a sane transportation future, I once again left disappointed. I'm going on my 3rd decade variously attending meetings which engage the public in transportation planning for the greater Worcester area. I'm an advocate for safe bicycle & pedestrian accommodation on our streets, for complete streets and significant reductions in the carbon footprint of our transportation sector. While there is an apparent directional shift towards the necessary, I am most disappointed at the slow speed which these developments are taking.

My request is that the TIP reports presented provide a clear metric by which all, including MPO members and public alike, can gauge the progress being made reducing our collective carbon footprint - a simple number, standardized that shows the expected reduction of each particular STIP program or MassDOT project will gain in carbon emissions. Increasingly, a judgment must be made in the allocation of funding based on such a metric. If hard data is lacking, that itself is an issue to be corrected. We simply have run out of time, and everyone involved knows it.

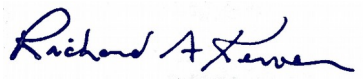
Even though I am 67 years old and disabled by childhood polio, I continue to use my electric assist bike as primary transportation, because I am committed to reducing my own carbon footprint. The lack of adequate accommodation for bicyclists on our streets and roadways is most frustrating. I am attaching my original response in 2015 when the Mobility2040 Plan was first unveiled - my assertions remain the same now.

With the addition of TheGuardian article on the release of the UN-IPCC Report stating we have only 12 years left (note [1]). "The world's leading climate scientists have warned there is only a dozen years for global warming to be kept to a maximum of 1.5C, beyond which even half a degree will significantly worsen the risks of drought, floods, extreme heat and poverty for hundreds of millions of people.... **carbon pollution would have to be cut by 45% by 2030**."

Hence the urgency is even greater now for a vast revolution in our means of transit. I advocate for light-electric vehicles (eBikes, eScooters, etc.) Others for the necessary recharging infrastructure for electric automobiles and trucks. Others for improvements in our mass-transit options. There are many good ways available now to create the transportation future we all need (including the non-humans threatened, endangered or on the brink of extinction).

Please share my appeal with the members of the MPO, our decision makers. These issues can not be ignored.

Truly,



Richard Kerver email: rkerver@gmail.com phone: 508-753-8874

1 We have 12 years to limit climate change catastrophe, warns UN; by Jonathan Watts Global environment editor; Mon 8 Oct 2018; https://www.theguardian.com/environment/2018/oct/08/global-warming-must-not-exceed-15c-warns-landmark-un-report

The Guardian

This article is more than **6 months old**

We have 12 years to limit climate change catastrophe, warns UN

Urgent changes needed to cut risk of extreme heat, drought, floods and poverty, says IPCC

Overwhelmed by climate change? Here's what you can do

A firefighter battles a fire in California. The world is currently 1C warmer than preindustrial levels. Photograph: Ringo HW Chiu/AP

Jonathan Watts *Global environment editor*

Mon 8 Oct 2018 02.23 EDT

The world's leading climate scientists have warned there is only a dozen years for global warming to be kept to a maximum of 1.5C, beyond which even half a degree will significantly worsen the risks of drought, floods, extreme heat and poverty for hundreds

of millions of people.

The authors of the landmark report by the UN Intergovernmental Panel on Climate Change (IPCC) released on Monday say urgent and unprecedented changes are needed to reach the target, which they say is affordable and feasible although it lies at the most ambitious end of the Paris agreement pledge to keep temperatures between 1.5C and 2C.

The half-degree difference could also prevent corals from being completely eradicated and ease pressure on the Arctic, according to the 1.5C study, which was launched after approval at a final plenary of all 195 countries in Incheon in South Korea that saw delegates hugging one another, with some in tears.

“It’s a line in the sand and what it says to our species is that this is the moment and we must act now,” said Debra Roberts, a co-chair of the working group on impacts. “This is the largest clarion bell from the science community and I hope it mobilises people and dents the mood of complacency.”

Policymakers commissioned the report at the Paris climate talks in 2016, but since then the gap between science and politics has widened. Donald Trump has promised to withdraw the US - the world’s biggest source of historical emissions - from the accord. The first round of Brazil’s presidential election on Sunday put Jair Bolsonaro into a strong position to carry out his threat to do the same and also open the Amazon rainforest to agribusiness.

The world is currently 1C warmer than preindustrial levels. Following devastating hurricanes in the US, record droughts in Cape Town and forest fires in the Arctic, the IPCC makes clear that climate change is already happening, upgraded its risk warning from previous reports, and warned that every fraction of additional warming would worsen the impact.

Scientists who reviewed the 6,000 works referenced in the report, said the change caused by just half a degree came as a revelation. “We can see there is a difference and it’s substantial,” Roberts said.

At 1.5C the proportion of the global population exposed to water stress could be 50% lower than at 2C, it notes. Food scarcity would be less of a problem and hundreds of millions fewer people, particularly in poor countries, would be at risk of climate-related poverty.

Attendees take a photo before the opening of the 48th session of the IPCC in Incheon. Photograph: Jung Yeon-Je/AFP/Getty Images

At 2C extremely hot days, such as those experienced in the northern hemisphere this summer, would become more severe and common, increasing heat-related deaths and causing more forest fires.

But the greatest difference would be to nature. Insects, which are vital for pollination of crops, and plants are almost twice as likely to lose half their habitat at 2C compared with 1.5C. Corals would be 99% lost at the higher of the two temperatures, but more than 10% have a chance of surviving if the lower target is reached.

Sea-level rise would affect 10 million more people by 2100 if the half-degree extra warming brought a forecast 10cm additional pressure on coastlines. The number affected would increase substantially in the following centuries due to locked-in ice melt.

Oceans are already suffering from elevated acidity and lower levels of oxygen as a result of climate change. One model shows marine fisheries would lose 3m tonnes at 2C, twice the decline at 1.5C.

Sea ice-free summers in the Arctic, which is warming two to three times faster than the world average, would come once every 100 years at 1.5C, but every 10 years with half a degree more of global warming.

Time and carbon budgets are running out. By mid-century, a shift to the lower goal would require a supercharged roll-back of emissions sources that have built up over the past 250 years.

The IPCC maps out four pathways to achieve 1.5C, with different combinations of land use and technological change. Reforestation is essential to all of them as are shifts to electric transport systems and greater adoption of carbon capture technology.

Carbon pollution would have to be cut by 45% by 2030 - compared with a 20% cut under the 2C pathway - and come down to zero by 2050, compared with 2075 for 2C. This would require carbon prices that are three to four times higher than for a 2C target. But the costs

of doing nothing would be far higher.

“We have presented governments with pretty hard choices. We have pointed out the enormous benefits of keeping to 1.5C, and also the unprecedented shift in energy systems and transport that would be needed to achieve that,” said Jim Skea, a co-chair of the working group on mitigation. “We show it can be done within laws of physics and chemistry. Then the final tick box is political will. We cannot answer that. Only our audience can - and that is the governments that receive it.”

He said the main finding of his group was the need for urgency. Although unexpectedly good progress has been made in the adoption of renewable energy, deforestation for agriculture was turning a natural carbon sink into a source of emissions. Carbon capture and storage projects, which are essential for reducing emissions in the concrete and waste disposal industries, have also ground to a halt.

Reversing these trends is essential if the world has any chance of reaching 1.5C without relying on the untried technology of solar radiation modification and other forms of geo-engineering, which could have negative consequences.

A nearly ice-free Northwest Passage in the Arctic in August 2016. Photograph: VIIRS/Suomi NPP/Nasa

In the run-up to the final week of negotiations, there were fears the text of the report would be watered down by the US, Saudi Arabia and other oil-rich countries that are reluctant to consider more ambitious cuts. The authors said nothing of substance was cut from a text.

Bob Ward, of the Grantham Research Institute on Climate Change, said the final document was “incredibly conservative” because it did not mention the likely rise in climate-driven refugees or the danger of tipping points that could push the world on to an irreversible path of extreme warming.

The report will be presented to governments at the UN climate conference in Poland at the end of this year. But analysts say there is much work to be done, with even pro-Paris deal nations involved in fossil fuel extraction that runs against the spirit of their commitments. Britain is pushing ahead with gas fracking, Norway with oil exploration in

the Arctic, and the German government wants to tear down Hambach forest to dig for coal.

At the current level of commitments, the world is on course for a disastrous 3C of warming. The report authors are refusing to accept defeat, believing the increasingly visible damage caused by climate change will shift opinion their way.

“I hope this can change the world,” said Jiang Kejun of China’s semi-governmental Energy Research Institute, who is one of the authors. “Two years ago, even I didn’t believe 1.5C was possible but when I look at the options I have confidence it can be done. I want to use this report to do something big in China.”

The timing was good, he said, because the Chinese government was drawing up a long-term plan for 2050 and there was more awareness among the population about the problem of rising temperatures. “People in Beijing have never experienced so many hot days as this summer. It’s made them talk more about climate change.”

Regardless of the US and Brazil, he said, China, Europe and major cities could push ahead. “We can set an example and show what can be done. This is more about technology than politics.”

James Hansen, the former Nasa scientist who helped raised the alarm about climate change, said both 1.5C and 2C would take humanity into uncharted and dangerous territory because they were both well above the Holocene-era range in which human civilisation developed. But he said there was a huge difference between the two: “1.5C gives young people and the next generation a fighting chance of getting back to the Holocene or close to it. That is probably necessary if we want to keep shorelines where they are and preserve our coastal cities.”

Johan Rockström, a co-author of the recent Hothouse Earth report, said scientists never previously discussed 1.5C, which was initially seen as a political concession to small island states. But he said opinion had shifted in the past few years along with growing evidence of climate instability and the approach of tipping points that might push the world off a course that could be controlled by emissions reductions.

“Climate change is occurring earlier and more rapidly than expected. Even at the current level of 1C warming, it is painful,” he told the Guardian. “This report is really important. It has a scientific robustness that shows 1.5C is not just a political concession. There is a growing recognition that 2C is dangerous.”

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Public Response

Respectfully submitted by Richard Kerver, A Climate Protection Advocate

The Big Idea

Long range planning should first and foremost be an exercise in visionary thinking. It starts with the premise of change and steps forwards till a set of goals posited by the vision are, in time, met or exceeded. A vision derived by consensus, not just by those who govern, but by the governed, those whose lives are vitally connected to the constructed and/or deconstructed environment urban planners would implement. That's why public input is so important for the Mobility2040. Not just the minor details of how much gets spent on which projects, but the sum total of all projects in the region, the big vision.

My vision, which I share with everyone in Worcester and the region who have committed to a fossil-fuel free, sustainable energy future, is a City that becomes ***bicycle friendly***, and quickly rather than as a mere long-term eventual goal. Bicycle friendly is the description of cities that have transformed their roadways, trails, parks and transportation infrastructure in a manner that fully promotes a life-style that does not require the burning of fossil-fuels with their concomitant release of greenhouse gas emissions. Because getting people out of their cars more & more requires it. Boston is a city that is bicycle friendly, by the metrics, and Worcester unfortunately is not. One need only visit our neighbor to the east to understand this shift in policy to advance bicycle and pedestrian transit.

Hence the Big Idea is to allocate transportation dollars towards Worcester and other towns in the region becoming **rapidly bicycle friendly** by allocating transportation dollars as if that were a major infrastructure project, in TIP terms.

Bicycle Friendly

For a description of what a Bicycle Friendly city is, how those places make it happen and why, reference https://en.wikipedia.org/wiki/Bicycle-friendly.

Bicycle-friendly

From Wikipedia, the free encyclopedia

Bicycle-friendly policies and practices help some people feel more comfortable about traveling by bicycle with other traffic. The level of bicycle-friendliness of an environment can be influenced by many factors resulting from town planning and cycling infrastructure decisions.

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> *The manner in which the public roads network is designed, built and managed can have a significant effect on the utility and safety of cycling as transport.*

Hence, the degree to which people will increasingly adopt the modality for a majority of their local transit needs.

> *In 1996, the British Cyclists Touring Club (CTC) and the Institute for Highways and*

Transportation jointly produced the document "Cycle-friendly infrastructure: Guidelines for planning and design".[3] This defined a hierarchy of measures for cycling promotion in which the goal is to convert a more or less cyclist-hostile roads infrastructure into one which encourages and facilitates cycling.

I can say without equivocation that, while Worcester is making strides towards becoming bicycle friendly, its streets by vast percentage are ***cyclist-hostile.*** Try riding as I and many do. Get struck by a car and hospitalized, as I have. Its far from safe, far from bicycle friendly.

2-way bike lane on 1-way street

There are numerous ways the streets could be redesigned in a manner consistent to the principle local transit modality required by a clean & sustainable energy future. A cursory inventory by way of https://www.google.com/search?q=bicycle+friendly+cities provides a rich metaphor for implementation.

Again, this is said not to disparage the many positive steps Worcester is making or our urban planners who see the need for more. Strongly suggested...

Full segregation is sometimes effective

The CTC/IHT hierarchy

1. Traffic reduction. Can motor traffic levels, particularly of heavy vehicles, be reduced?
2. Traffic calming. Can speed be reduced and driver behaviour modified?
3. Junction treatment and traffic management. These measures include:
    - Urban traffic control systems designed to recognise cyclists and give them priority.
    - Exempt cyclists from banned turns and access restrictions.
    - Provide contra-flow cycle lanes on one-way streets.
    - Implement on-street parking restrictions.
    - Junction alterations, roundabouts with cycle paths around them, cycle-friendly junction design.
4. Redistribution of the carriageway -such as by marking wide curb lanes or shared bus/cycle lanes.
5. Cycle lanes and cycle tracks. Having considered and implemented all the above, what cycle tracks or cycle lanes are considered necessary?

For more information and reference, please see the ASLA's Guidelines for Healthy and Livable Communities (note [1]). Also attached is a recent article in The Guardian anticipating the *End of the Car Ag*e (note [2]) as a cultural shift:

It's a vision of cities in which residents no longer rely on their cars but on public transport, shared cars and bikes and, above all, on real-time data on their smartphones. He anticipates a revolution which will transform not just transport but the

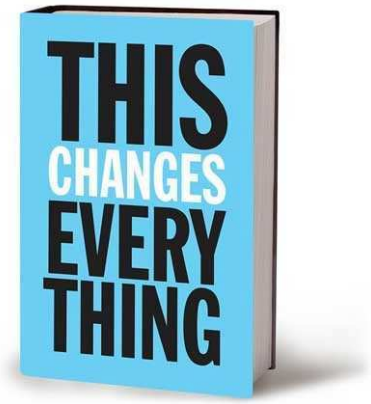
1 The American Society of Landscape Architects Guidelines for Healthy and Livable Communities; http://www.asla.org/contentdetail.aspx?id=23888

2 End of the car age: how cities are outgrowing the automobile, by Stephen Moss, 28 April 2015; http://www.theguardian.com/cities/2015/apr/28/end-of-the-car-age-how-cities-outgrew-the-automobile

cities themselves. "The goal is to re-balance the public space and create a city for people," he says. "There will be less pollution, less noise, less stress; it will be a more walkable city."

We Must Change Everything

At stake is not just the future of our cities, the locus of necessary change if we are to preserve a most-human environment, walkable, smart-growth oriented, but also the natural world on which life depends. Climate reality in 2015 demands a re-thinking of everything.



Naomi Klein was recently invited to the Papal conference subsequent to the release of his Encyclical. Naomi Klein is one of the world's most high-profile social activists and a ferocious critic of 21st-century capitalism, author of *This Changes Everything: Capitalism vs. The Climate*. She and Cardinal Peter Turkson are leading a conference on the environment, bringing together churchmen, scientists and activists to debate climate change action (note [3]).

The moral hazard before humanity is clear, continuing as we are along a path of continued high-energy production, transport and consumption, business-as-usual. Made explicit by Pope Francis in his Encyclical Letter to all, not just the Catholic faithful (note [4]).

> *Patriarch Bartholomew has spoken in particular of the need for each of us to repent of the ways we have harmed the planet, for "inasmuch as we all generate small ecological damage", we are called to acknowledge "our contribution, smaller or greater, to the disfigurement and destruction of creation".[14] He has repeatedly stated this firmly and persuasively, challenging us to acknowledge our sins against creation: "For human beings… to destroy the biological diversity of God's creation; for human beings to degrade the integrity of the earth by causing changes in its climate, by stripping the earth of its natural forests or destroying its wetlands; for human beings to contaminate the earth's waters, its land, its air, and its life – these are sins".[15] For "to commit a crime against the natural world is a sin against ourselves and a sin against God".[16]*

It matters not what faith one may presume. And it is not a mere call for prayer but a call to action, for a change in lifestyle, the day-to-day choices we all make. The meaning of *sin* is *missing the mark*, where here its the goal of caring for all Earth and the richness of nature and the vast biodiversity which humans share on this fragile planet.

Scientist are concerned, looking to the direct evidence of loss in biodiversity (note [5]).

> *Even under our assumptions, which would tend to minimize evidence of an incipient*

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3 Pope Francis recruits Naomi Klein in climate change battle, by Rosie Scammell, 27 June 2015; The Guardian, http://www.theguardian.com/world/2015/jun/28/pope-climate-change-naomi-klein

4 Encyclical Letter, Laudato Si', Of The Holy Father Francis, On Care For Our Common Home; paragraph 8.; http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html

5 Abstract; Accelerated modern human–induced species losses: Entering the sixth mass extinction; Gerardo Ceballos, Paul R. Ehrlich, Anthony D. Barnosky, Andrés García, Robert M. Pringle and Todd M. Palmer; Science Advances, 19 Jun 2015: Vol. 1, no. 5; http://advances.sciencemag.org/content/1/5/e1400253

mass extinction, the average rate of vertebrate species loss over the last century is up to 100 times higher than the background rate. Under the 2 E/MSY background rate, the number of species that have gone extinct in the last century would have taken, depending on the vertebrate taxon, between 800 and 10,000 years to disappear. These ***estimates reveal an exceptionally rapid loss of biodiversity over the last few centuries, indicating that a sixth mass extinction is already under way****. (note [6])*

There is no doubt that we are headed in the wrong direction, and the calls by various religions, scientific and political leaders remind us that we must *change everything*, and fast, if we are to keep a habitable planet.

The Inadequacy of the Mobility2040 Draft

Much in the draft is commendable. The most relevant section in the draft Mobility2040 Plan begins with

While recreation has been the primary use for bicycling in the past, transportation officials have recognized that it is increasingly becoming the primary mode of transportation for everyday activities. Nationwide, communities large and small are turning to bicycling to complete short trips, this holds true for the CMMPO region. According to the 2010-2011 Massachusetts Household Travel Survey, approximately 0.5% of CMRPC planning region residents commute to work via bicycle, while 0.2% of students travel to school via the same mode. Cycling can be more efficient, affordable, and convenient than traveling by vehicle on congested streets. {IV-9}

The language lends itself to the opportunity envisioned herein. But a closer reading of the draft demonstrates that as far as how the transportation dollars are being allocated, it is still a business-as-usual approach, doing little of consequence to make the necessary difference in our roadways that a radical re-envisioning of our city-scapes require, considering the aforementioned realities of climate change, loss of biodiversity and the sixth mass extinction event.

-and-

It is imperative that safe, easy to use facilities are available where there is a high level of pedestrian activity. For CMRPC planning purposes, a pedestrian is any person traveling on foot or wheelchair (manual or motorized). {IV-3}

Personally, this stated goal is of paramount importance. In the two years that I have been car-free, using an electric-assist bicycle (I'm disabled), I have been struck by an automobile twice, once hospitalized. The idea that small, light bicycles can safely share the roadways with large heavy fossil-fuel intensive vehicles, has been repeatedly been quashed.

-and-

USDOT's Accommodating Bicycle and Pedestrian Travel: A Recommended Approach, a policy statement drafted in response to TEA-21 that calls for expanded focus on bicycle and pedestrian accommodation. {IV-3}

GreenDOT is to promote the healthy transportation options of walking, bicycling, and public transit {IV-3}

6 https://en.wikipedia.org/wiki/Holocene_extinction

identify bicycle/pedestrian/transit gaps in the region {IV-4}

-and-

Table IV-1: 2009-2010 High Priority Pedestrian Clusters in the CMRPC Region

Crash Count	# Fatal	# Injury	# Non-Injury	EPDO	Street #1	Street #2	Town	Rank
103	0	79	24	419	MAIN STREET	SOUTHBRIDGE STREET	WORCESTER	3
37	0	26	11	141	MAIN STREET	CAMBRIDGE STREET	WORCESTER	
26	0	20	6	106	MAIN STREET	HAMMOND STREET	WORCESTER	
25	0	20	5	105	MURRAY AVENUE	MAIN STREET	WORCESTER	
24	1	17	6	101	MAIN STREET	MECHANIC STREET	SPENCER	
22	0	18	4	94	GRAFTON STREET	ORIENT STREET	WORCESTER	
24	1	14	9	89	BELMONT STREET	INTERSTATE 290	WORCESTER	
18	0	16	2	82	BELMONT STREET	EASTERN AVENUE	WORCESTER	
18	1	11	6	71	PARK AVENUE	PLEASANT STREET	WORCESTER	
19	0	12	7	67	INTERSTATE 290	VERNON STREET	WORCESTER	

-but.....

CMRPC staff will begin working on the update to the Regional Bicycle and Pedestrian Plan in the summer of 2015 {IV-8}.

All the above is a mere promise that in the next cycle of planning, some improvements might be identified. Here comes a loud voice to say that while the intention may be noble, it is all too little, too late. This is a twenty year plan from 2020 to 2040. It does not ***commit*** the spending of our transportation dollars so as to provide a bicycle friendly city – it just suggests that its a good idea. Not enough, not in sync with the need. The draft Mobility2040 Plan needs to be amended.

-and-

Preliminary shoulder width analysis via the CMRPC Pavement Management Program has identified over 150 miles of roadway in the region with shoulders wide enough for bicycle accommodation. {IV-12}

The presumption is that bicycle lanes might be added only if the shoulder of the road is adequate. Meaning business-as-usual for the fossil-fuel laden vehicles now on the road, and sorry, we can't do more for bicyclist, at least now.

There are better alternatives. For instance, many cities, in the dense urban environment will declare car-free zones. Whole streets can be dedicated to walking & bicycling community. Roads carefully selected so as to fully accommodate the safe passage of all modalities. Or take parallel roads and make them one-way, dedicating the remaining, formerly two-way lane to fully segregated bicycle transit.

Or like Boston, stop subsidizing the parking of cars by giving over streets to parking space. Turn that valuable road-based real estate into bike lanes. Leave the parking of cars over to private and/or municipal parking garages. Locate a bike-share program at every such garage so you park, then walk or bike to your final destination.

Again, this does not require lots and lots of more time, data collection, analysis, reporting, thinking etc. Now is a time for action & implementation and the draft Mobility2040 must reflect a commitment to that. It could come as a simple goal to turn 1% of city streets per year into

multi-modal transit lanes, bicycle friendly. That way, by 2040, near half of our city would be transformed.

While possibly outlandish to a motorist used to and wanting more business-as-usual, from a bicyclist perspective, the case could be made that the majority of dollars in the next 20 year spending cycle be spent on implementation of an extensive vision of recasting our city as pedestrian & bicycle friendly. To balance out decades of mis-spending and mis-allocation based on the availability of a cheap polluting fuel with a heavy carbon-footprint.

Again, a bicycle friendly city is an invitation to everyone to switch their mode of transportation and chose low-carbon modalities like the bicycle and electric-assist bicycle for a majority of their local transportation needs.

Worcester is hilly and many people, especially those who are aging or otherwise disabled (as I am), may find travel by bicycle too onerous, too slow to be practical. Enter the electric-assist bicycle. Its still a bicycle, but provides a boost to get up those hills. Many see the emergence of electric vehicle technology, the advances made in batteries and improvement in electric motor efficiencies and torque, as a paradigm shift, a just-in-time set of developments that enable people to abandon their carbon-fuel modes of transport. Its these developments that have led to a revolution in many places around the world in the use of electric-assist, whether on two, three or four wheels.

Doing so will have enormous positive economic effects as well.

The Millennial and after generations, who are the principal beneficiaries and/or victims of our policy decisions now, are largely rejecting the ownership models of their progenitors, preferring small houses in smart-growth cities and without car ownership at all. Its the reason there are more and more bicycles in use in our beloved city. So the most aggressively proactive cities and communities reaching to become the most bicycle friendly, will also be the winners in the game of retaining its young urban professionals, the jobs they fill and/or create, and the newest brightest entrepreneurial initiatives. As a bone-fide College town, Worcester would win, but only to the degree it can retain its graduates.

My hope and expectation is that this not occur slowly with a trickle of dollars, but fast, with lots of dollar, a get-it-done approach. By elevating bicycle friendly passage as a major infrastructure project, it could happen quickly and correct long-term deficiencies in the planning and budget allocation process.

Here are the *Major Infrastructure Projects* that have been identified as *Bike/Pedestrian in the draft plan:*

			Bike/Ped
3	Boston Worcester Air-Line Trail	Shrewsbury/Westborough	Use of former trolley R-O-W for multi-use trail. Connects with Southborough + Framingham. Serves area of high population and employment.
2	Multimodal Connection: Blackstone River Greenway to Mass-Central Rail Trail	Worcester/W. Boylston/Boylston	Regional connection between two major multimodal trails. Facilitates East Coast Greeway expansion.
1	Blackstone River Greenway (Segments 3,4 and 5)	Uxbridge, Northbridge, Grafton, Sutton, Millbury	13 miles in length.
2	Pedestrian Connection: Blackstone River Greenway to Mid-State Trail	Blackstone Valley	Regional pedestrian connection between two major trails. Expands recreational opportunities.

{Table V-2 Major Infrastructure Project Tiers, V-27}

With the elaboration:

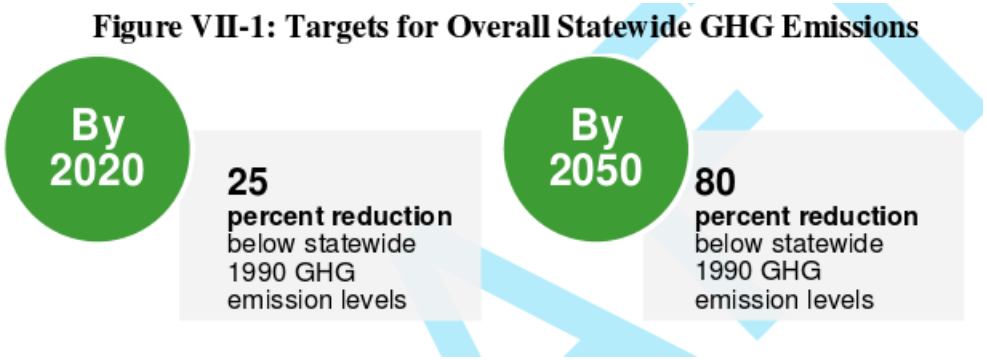
> *Multimodal Connection - Blackstone River Greenway to Mass-Central Rail Trail : An "Initiative", meaning "Staff will pursue an initiative to collaborate with the lead agency to establish costs and project scope" {V-28}*

This needs to be advanced from an “Initiative” to a “Project”, slated for implementation, rather than more and more study. Its implementation would create a state-of-the-art south-north bicycle friendly linkage through the City of Worcester. Doing so would significantly advance the capacity of the region in its planning, design and construction of bicycle friendly routes.

The Blackstone heritage corridor and national park, the East Coast Greenway and Massachusetts Central Rail Trail are all signature long-term projects of significant potential value to the region, recreational and economic. The route is through Worcester. This is good, better if more adequately supported by the draft Plan.

> *Based on the staff’s qualitative analysis the overall benefit for each of the options was “moderate”. The only project that would bring in huge amounts of GHG savings is the I-495/ Masspike Interchange project. Other projects have some moderate or minimal GHG savings. {V-41}*
>
> *-and-*

Figure VII-1: Targets for Overall Statewide GHG Emissions



> *{VII-4}*

It should be more than obvious that the reduction of GHG must occur primarily through a shift in modes of transport. Bicycle friendly has many benefits, one of them being it is zero emission transport. It is not sufficient to reiterate state goals for GHG reductions and then advance a Plan that does not significantly advance its achievement.

> *This approach by the MPO is consistent with the greenhouse gas reduction policies of promoting healthy transportation modes through prioritizing and programming an appropriate balance of roadway, transit, bicycle and pedestrian investments; as well as supporting smart growth development patterns through the creation of a balanced multi-modal transportation system. {VII-5}*

But, the Draft Mobility2040 does not do that! The balance is not there!

Conclusion

Mobility2040 is an opportunity to redirect our energies to making our great city better for ALL life, not just human, but non-human. The will to do so requires a grand vision that is sensitive to the damage being wrought by continued reliance on fossil-fuel intensive modes of transport. That damage is in the atmosphere – climate change. Its in the biosphere – the 6th mass extinction and loss of biodiversity. It is in the human-sphere – toxic emissions. Walkable, bike-able cities are better in every way possible. Its up to our urban planning community to fill in all the details and ensure our transportation dollars are consistent with this vision of our city and region.

The Mobility2040 Plan coincides with the release of Pope Francis' Encyclical and much international attention leading up to COP21 in Paris latter this year, to hammer out a new international climate protection treaty to reduce our collective emission of greenhouse gases. The G7 nations recently adopted a long-range policy to completely abandon reliance of fossil fuels by the end of the century. The Commonwealth of Massachusetts has already adopted many forward-thinking policy initiatives. The time for Worcester becoming wholly bicycle friendly and in the near-term is now, not latter. In this planning cycle, not the next.

There's a mismatch in the long-term vision and how dollars will be spent. While every one involved in the planning process apparently agrees that alternative modes of transportation than the conventional fossil-fuel intensive automobile need to be supported, the dollars are not flowing in a manner consistent with that intent. The Draft Mobility2040 must be amended to correct for the deficiencies.

Thank you for your active consideration. Please contact me for more information, assistance in re-drafting the Mobility2040 Plan, or route designation guidance.

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End of the car age: how cities are outgrowing the automobile

Cities around the world are coming to the same conclusion: they'd be better off with far fewer cars. So what's behind this seismic shift in our urban lifestyles? Stephen Moss goes on an epic (car-free) journey to find out

Stephen Moss

Tuesday 28 April 2015 02.00 EDT

Gilles Vesco calls it the "new mobility". It's a vision of cities in which residents no longer rely on their cars but on public transport, shared cars and bikes and, above all, on real-time data on their smartphones. He anticipates a revolution which will transform not just transport but the cities themselves. "The goal is to rebalance the public space and create a city for people," he says. "There will be less pollution, less noise, less stress; it will be a more walkable city."

Vesco, the politician responsible for sustainable transport in Lyon, played a leading role in introducing the city's Vélo'v bike-sharing scheme a decade ago. It has since been replicated in cities all over the world. Now, though, he is convinced that digital technology has changed the rules of the game, and will make possible the move away from cars that was unimaginable when Vélo'v launched in May 2005. "Digital information is the fuel of mobility," he says. "Some transport sociologists say that information about mobility is 50% of mobility. The car will become an accessory to the smartphone."

Vesco is nothing if not an evangelist. "Sharing is the new paradigm of urban mobility. Tomorrow, you will judge a city according to what it is adding to sharing. The more that we have people sharing transportation modes, public space, information and new services, the more attractive the city will be."

The Vélo'v scheme is being extended, car clubs that use electric vehicles are being encouraged, and what Vesco calls a "collaborative platform" has been built to encourage ride-sharing by matching drivers with people seeking lifts. There is, he says, no longer any need for residents of Lyon to own a car. And he practises what he preaches - he doesn't own one himself.

The number of cars entering the city has fallen by 20% over the past decade, without even a congestion-charging scheme (Vesco says it would impose a disproportionate burden on the less well-off, who tend to drive higher-polluting vehicles). And even though Lyon's population is expected to rise by more than 10% over the next decade, he is targeting a further 20% drop in car use. The car parks that used to run alongside the banks of Lyon's two rivers have already been removed, and human parks opened in their place. Vesco says someone returning to Lyon for the first time in a decade would barely recognise the city.

Birmingham, which vies with Manchester for the title of England's second city, has been following the experience of Lyon and other European cities closely, and is now embarking on its own 20-year plan called Birmingham Connected, to reduce dependence on cars. For a city so associated in the

public mind with car manufacturing, this is quite a step. The initiative is being driven by the veteran leader of Birmingham city council, Sir Albert Bore, who talks airily about imposing a three-dimensional transport plan on the two-dimensional geography of the city: “French and German cities all have an infrastructure which has a far better understanding of how you need to map the city with layers of travel.”

“Multi-modal” and “interconnectivity” are now the words on every urban planner’s lips. In Munich, says Bore, planners told him that the city dwellers of the future would no longer need cars. Bikes and more efficient public transport would be the norm; for occasional trips out of the city, they could hire a car or join a car club that facilitated inter-city travel. The statistic everyone trots out is that your car sits outside, idle and depreciating, for 96% of its life. There has to be a more efficient way to provide for the average of seven hours a week when you want it.

Car clubs offer a second statistic. Whereas a personally owned car caters for an individual or a family, a car-club car can service 60 people. As I type this I look at the VW Golf sitting outside my window, which I last drove a fortnight ago. Private cars are wasteful and expensive.

Bore recognises that his plan to transform his city will not be easy, and will require a healthy dose of public education. “Birmingham was seen as the champion of the car,” he says, “and as a result it didn’t develop an underground or the tram network you see in major cities across Europe. There’s been a failure to develop those systems because there’s been no longer-term vision.” Birmingham now has a long-term plan - but what it doesn’t have is the money. It needs £4bn; so far it has raised only £1.2bn. Central government, private-sector developers and local businesses are going to have be convinced it’s worth it.

Anne Shaw, Birmingham’s head of transportation services, walks me round the centre of the city to show me the changes already taking place. The single tram line, which runs from Wolverhampton, is being extended; the gyratory road which cuts off many of the municipal buildings is being taken out and traffic re-routed; forbidding concrete subways are being removed; cycle lanes are being put in, and a fast bus service is planned.

One day, perhaps, Birmingham will even have its own underground system, though that is many years and millions of pounds away. Commuting into Birmingham is currently split 50-50 between car and public transport; that, too, has to change - in London, only 15% of commuters use a car. In Birmingham, the district in the centre which houses Symphony Hall and the new state-of-the-art library is called Paradise. One day, Bore hopes it will live up to its name.

The planners in Birmingham accept they are late to the party. London, which has pioneered congestion charging and has a well-integrated system of public transport, has led the move away from cars over the past decade, during which time 9% of car commuters have switched to other forms of transport. “People in London have a lot of options and there’s been huge growth across all modes,” says Isabel Dedring, the American-born deputy mayor for transport in the capital. “There’s been a massive increase in investment in public transport.”

Dedring says London has always been progressive in terms of public transport - its narrow, twisting roads were never conducive to the automotive domination that occurred in many US and European cities in the 1960s and 70s, when the car was king. But from the turn of the millennium, there has been a concerted attempt to encourage switching to other modes of transport, and the past decade has seen a 30% reduction in traffic in central London.

“Traffic levels have gone down massively,” says Dedring, “partly because of the congestion charge, but also because we are taking away space from private vehicles and giving it to buses through bus

lanes and to people through public realm [developments].” And now to cyclists, too, with the planned “cycle superhighways” and cycle-friendly neighbourhoods being trialled in three London boroughs.

In Waltham Forest, which is running one of those pilot schemes (tagged “mini-Holland”), I go cycling with councillor Clyde Loakes, deputy leader of the council and the cabinet member responsible for the environment. What used to be rat runs in the area now known as Walthamstow Village have been closed to through-traffic, and at a stroke the number of vehicles using the area has dropped by more than 20%. The area is remarkably quiet and relaxed when we cycle around one weekday afternoon; indeed it comes as quite a shock when we leave the confines of the village and are suddenly pitched back into the noise and traffic as we head to the town hall.

Loakes says the trial is an attempt to alter behaviour and the feel of the area, but is also a recognition that change is already occurring. “In Waltham Forest, we have an increasing number of households without a car. Public transport is getting better; we have an increasingly young demographic; and in many of the developments being built car parking is not a priority, so car ownership is not an option.”

To put it more bluntly: many city developments are now predicated on there being no car spaces for residents. Developers worried about this initially, but have come to realise it doesn’t pose a problem for the young professionals likely to be buying their flats, so have accepted the demands of council planning departments.

The inner-London borough of Hackney, which prides itself on being the greenest council in London, tells a similar story. “We are trying to create a more liveable environment,” says councillor Feryal Demirci, the cabinet member for neighbourhoods, “and car-free developments are one way of doing that.” She says almost 90% of the developments currently under way are completely car-free, with the council guaranteeing alternatives to personally owned cars, including a commitment that every resident will live within three minutes of a car-club bay.

The statistic Hackney is proudest of is that more than 15% of its residents commute to work by bike. “It’s about creating an environment where it’s easier for people to cycle or take the bus, so they’re not relying on cars,” Demirci says. Car ownership in the borough has dropped over the past 10 years: whereas a decade ago 56% of households did not own a car, that figure now stands at 65%. Hackney, which is not on the underground network, also claims the highest level of bus usage in London. Though the population has risen by 45,000, the number of cars owned by people in the area has fallen by 3,000. These are trends that urban planners elsewhere would kill for.

This model of denser, less car-dependent cities is becoming the accepted wisdom across the developed world. “The height [of buildings] is going up; density is going up; borough policies and London plan policies are all about intensification and densification of land uses,” explains Ben Kennedy, Hackney’s principal transport planner. “We’re probably going the way of Manhattan. People live very close and they don’t travel at all because everything is on their doorstep; the population in one block is so high, it can support all the amenities you could ever want. We’re slowly going in that direction in London.”

A revolution is coming, but it costs money

Rikhard Manninen is another man with a plan - a very large plan, which is laid out on a table in his office in the centre of Helsinki. Manninen is director of the city’s strategic urban planning division. The project is a vision of how the city will look in 2050. It will have a lot more people - the population is projected to rise by 50% - but with much less dependence on cars. The city’s population density will be increased; many of the new high-rise apartment blocks will not have residents’ car parking; key arteries into the city will be replaced by boulevards; more and more space will be given over to

cycle lanes. A report on the plan in the Helsinki Times last year confidently predicted: “The future resident of Helsinki will not own a car.”

“Agglomeration” is the buzzword that planners such as Manninen like to use, and the benefits which derive from it are driving the vision of a new city. “When you are located quite close, businesses can interact more easily; people can walk to work and use public transport. It’s more efficient.”

In many cities, the era of the suburban commuter, along with the era of the car, is drawing to a close. Manninen no longer wants a city with a single centre; he envisages a multi-polar city with half-a-dozen hubs where people live, work, shop and play. This will reduce transport congestion and generate a series of vibrant, efficiently organised, semi-autonomous units - that’s the plan, anyway.

Though Finland is seen as a pioneer in sustainable transport, the reality is rather different. Because the country came late to urbanisation and there was a huge amount of development in the 1950s and 60s, commuting by car is more entrenched than in some older cities. Finns have tended to live in the suburbs, driving to the centre of Helsinki to work and to their beloved country cottages at weekends. But Manninen echoes Vesco in Lyon in his view that attitudes are changing: “The younger generation are no longer car dependent. They are less likely to have a driving licence than previous generations.”

Generation Y, the so-called millennials now in their 20s and early 30s who have come of age in the digital era, seem less wedded to possessions than their baby boomer predecessors. Surveys show that the one object that is prized is the smartphone, and the future of transport is likely to be based not on individually owned cars but on “mobility as a service” - a phrase supposedly coined by another Finn, Sampo Hietanen, chief executive of Intelligent Transport Systems (ITS) Finland. Consumers will, so the theory goes, use their smartphones to check ultra-detailed travel news, locate car-club cars or bikes, check for parking spaces, call up Uber drivers, and arrange shared rides. Who needs a personally owned car?

While in Helsinki, I meet a delegation from the city’s Regional Transport Authority. I’m struck not just by their commitment to sustainable transport, but their willingness to engage with the public. They send staff into schools and workplaces to try to win converts to walking, cycling and public transport, and take their message to older people, who are usually the most resistant to abandoning their cars.

One of the initiatives they are proudest of is their Kutsuplus (“Call plus”) bus service - a fleet of nine-seater minibuses whose routes are determined by the bookings they get on any given day. It’s a great idea, and I book a bus to take me from their offices into town. It arrives quickly, picks me up at a bus stop just 100 metres away, and costs €5 for the two-mile trip. The problem is that, so far, Helsinki only has 15 buses, and doesn’t have the funding for any more. Like many of the schemes currently under way, it’s at the pilot stage. There’s a revolution coming, but revolutions cost money.

“We are not making a car-free Helsinki - that is not possible,” says Reetta Putkonen, director of the transport and traffic planning division, who I meet for lunch at an exhibition space devoted to the city’s vision of the future. “But we are going to take control of where the cars are and how they are used, so that we will have places where it’s really nice to walk, it’s very fast and easy to bike, and public transport is highly efficient. Walkers will be the kings, and the cyclists will have their own paths. We will still have cars - people need them for carrying goods - but their speeds will be very low and there won’t be so many of them. Our planning shouldn’t be based on cars and on parking. It will be a balanced system.”

After lunch, I meet another Reetta - not all Finnish women are called Reetta, they assure me. Reetta Keisanen is the city’s cycling coordinator, and she has brought two of the department’s pool bikes for us to undertake a tour of the city. She takes me first along a cycle path that used to be a rail track,

linking the town centre with the harbour. Halfway along the route, there is an electronic register counting the cycles as they pass - I am the 54,672nd so far this year. Reetta II tells me that 96% of the residents of Helsinki are pro-cycling, though Reetta I had cautioned that the figure might be lower if motorists realised how much of their road space was being eaten into.

There are only three gears on the bike and I am not dressed for this sudden spasm of activity - instead of shorts, I am wearing thick trousers and jacket - so it is a struggle, especially on the gritty areas near the seafront. It is, though, pleasant when we eventually get there, and sit in the spring sunshine in the garden of the Regatta, a tiny wooden café which is one of Helsinki's best-loved attractions.

Keisanen, who is in her mid-20s and committed to the sustainability cause, is convinced a major change is afoot. "We've got lots of work to do because many Finns still own cars," she says, "but in cities it is now possible to live without a car, and young people are buying fewer cars than older people." Cycling in Helsinki has doubled since 1997, and Keisanen predicts further increases as the cycling network expands. I suggest to her that not all cyclists behave well - I am thinking of the ones I see in London who whizz along pavements and go in the wrong direction down one-way streets - but she has a good answer. "Cities get the cyclists they deserve. If you have good infrastructure, you will get good cyclists. It's the same with drivers and pedestrians."

To drive or not to drive: have we reached 'peak car'?

All the trends in cities appear to be moving in the direction favoured by environmentalists, so do they think they are finally winning? "We're at a stage now in history where people, especially young people, want to have the choice whether to drive or not to drive," says Jason Torrance, policy director at sustainable transport group Sustrans. "We've seen a huge change over the past five years around an ownership model. You now have Spotify and other on-demand services. My entire record collection is in the loft. We have everything on iTunes and Spotify and my son, who is six, only vaguely knows what a CD is."

Torrance says the appetite is there for alternatives to the car, and that some cities - both in Europe and in the developing world, notably China - are responding to the challenge. The pro-car attitude which was dominant in the UK from the 1960s through to the end of the Conservative Thatcher era has certainly declined but, he says: "We have a poverty of ambition in the UK in our relationship with cars, and our city leaders should be a lot bolder."

Sustrans' response to what it sees as government inertia is to get involved in grassroots projects such as its DIY Streets scheme, where it works with local councils and residents to reduce the way cars affect their streets. The aim is to let the residents decide what they want in terms of traffic flow and number of parking spaces. "We find residents on DIY streets drive much less, there is a significant increase in the number of kids playing on the street, and there is a lot more cycling," he says.

Torrance believes we are still wedded to the car as a status symbol, but others disagree. Stephen Bayley, who has written several books on car design, is convinced the age of the car is coming to an end. "It's five minutes to midnight for the private car," he says. "It's no longer rational to use cars in cities like London." Cars were invented as agents of freedom, but to drive (and, worse, to have to park) one in a city is tantamount to punishment.

Bayley also believes the arrival of driverless cars will further undermine the driving experience. Sex, beauty, status, freedom - all the words which advertisers have tried to associate with cars over the past 50 years - have been replaced by mere functionality.

"There was some research a year or so ago which interviewed people in their 20s and 30s," he says.

"The great majority said they would rather give up their car than their smartphone, and in their list of cool brands, no car manufacturer appeared in the top 20. That's a very significant change. Twenty years ago, if you'd asked young people, BMW and other car brands would certainly have featured."

Bayley draws my attention to the French philosopher Roland Barthes' homage to the Citroën DS, which appeared in his 1957 book Mythologies. "I believe that the automobile is, today, the almost exact equivalent of the great Gothic cathedrals," wrote Barthes. "I mean, a great creation of the period, passionately conceived by unknown artists, consumed in its image, if not its use, by an entire populace which appropriates in it an entirely magical object." These days, cars all look the same and pretty soon, if the manufacturers have their way, we won't even have to drive them.

Christian Wolmar, the transport analyst who is seeking the Labour nomination for the London mayoralty in 2016, welcomes this demystification of the car. "Attitudes have changed," he says. "My stepson didn't bother passing his driving test till he was 27. None of my kids are car-oriented in the way that we were. When I was a teenager [he is now 65], we lived in Kensington and I used to borrow my mother's car, drive into the centre in the evening, park it somewhere, go to the cinema and a nightclub, then drive home again. That is inconceivable today with drink-driving laws, parking and the general hassle of it all. We have begun to shift away from cars. On trains, people can use their mobile devices; 'peak car' seems to have been reached in America, with young people favouring what they call transit; and there is a trend of younger people no longer seeing the car as central to their lives."

Peak car. This is a phrase I hear again and again. The question of whether there is now an irreversible move away from cars towards other forms of transport is central to the cars-in-cities debate. Glenn Lyons, founder of the Centre for Transport and Society at the University of the West of England, is in no doubt that something fundamental is happening. "For the past decade, predating the global economic downturn, car traffic has been flatlining. This is true not only of the UK but of a number of other developed economies around the world."

According to Lyons: "Young people have stood out particularly. Car licence acquisition has been going down among younger age groups, and there are strong suspicions that the digital age is contributing to why people now have less reliance on physical mobility. We are in the midst of a fundamental regime transition in society. We are increasingly seeing the car as a functional technology to get from A to B, rather than the much more symbolic representation it had in defining society in previous generations. That is not to suggest the car is done and finished with, but I believe it will become a background technology."

David Metz, former chief scientist at the Department for Transport and now visiting professor at University College London's Centre for Transport Studies, published a book last year called Peak Car, in which he argued that "car use in developed economies has reached a maximum" and that "we have come to the end of an era in which we have steadily travelled more". "Car use per capita in most of the developed economies has stopped growing," he tells me, "and stopped growing well before the recession. If you look at the UK data, you see a long-term rise in car travel which came to a stop in the late 1990s."

Holding out against what is rapidly becoming the orthodoxy is Stephen Glaister, former professor of transport at Imperial College and about to retire as director of the Royal Automobile Club Foundation: "Until the 2008 recession, broadly speaking there was continued growth [in car travel]," he insists. "Then the young age group were very badly hit economically, so it's not surprising their take-up of driving licences is falling. To what extent that's also to do with some fundamental change in attitudes remains to be seen. Let's see what happens when they get to 30 and have a family."

Glaister points out that the Department for Transport is still assuming an overall increase in traffic of more than 25% by 2040. “You can make different assumptions about oil prices and demographic effects,” he says, “but whichever way you look at it, you’re going to get substantial traffic growth.” Stephen Joseph, executive director of the Campaign for Better Transport, counters that the DfT is hooked on out-of-date thinking: “What we are still battling with is a bunch of policies, design manuals and ways of thinking that are driven by 1989; that where we’re going to end up is Los Angeles and that’s the natural order of things. But that’s not true. It’s not even true worldwide: there are examples, particularly in parts of Latin America, of cities that have been built around buses rather than cars. The idea that the natural end of development is Los Angeles - even Los Angeles doesn’t think that now.”

So where does this leave car manufacturers? At a conference on driverless cars organised by the Society of Motor Manufacturers and Traders (SMMT), I buttonhole BMW executive Glenn Schmidt, who is giving a talk on what this future generation of cars means for a manufacturer such as BMW, which has traditionally put great emphasis on the driving experience. In his talk, he admits we are now seeing “a shift from ownership to accessing mobility”, and that young people are less likely to own cars than previously. Hence BMW’s backing for DriveNow, a car club which has established itself in Germany, the US and, more recently, central London.

“There is a fundamental change taking place,” Schmidt tells me, “and if you look at dense urban environments with traffic jams, the solution can’t be to stuff more cars into that environment.” So BMW will sell fewer cars? “We obviously have the cars in DriveNow; usually younger people choose to use these, and later they will move into buying cars. DriveNow is a mechanism to attract young people. It gives us an edge by attracting younger people and bringing them to our brands, and later on they will be interested in buying our vehicles.” That, at least, is what car manufacturers are hoping.

Jean-Philippe Hermine, vice-president of strategic environmental planning at Renault, which has pioneered electric cars, accepts that vehicles are now regarded differently. “The relationship with the car is changing,” he says. “You can question the need to own a car. Some people are looking for more functionality. With our electric cars, where customers can rent the battery, we are to some extent selling mobility and mileage more than a product.”

Disruption is coming - especially if Google and Apple bring their experiments with driverless cars to fruition - and there are sure to be casualties, but for the moment the manufacturers are citing the old adage that every crisis is an opportunity. No one wants to be left behind - Autolib’ is poised to come into London with a fleet of electric cars, and will also take over the running of the charging infrastructure in the capital - but eventually consolidation in the car-club market seems inevitable, with a few national players dominating, as with mobile phones. This is an industry in which scale will be everything.

“We’re going to see a very different state of play over the next couple of decades,” says Richard Brown, manager of Ford’s advanced product group, “and the car is clearly going to be part of the internet of things that everybody is talking about. You have to be prepared to embrace the potential disruption and be excited by the challenges that lie ahead. We’ve seen over the past five or 10 years a number of companies that didn’t recognise the changes that were happening around them - and they don’t exist any more. Look at the Kodaks and Nokias of this world. We don’t want to allow ourselves to become a Nokia.”

“People think we love our cars, but do we?” Sampo Hietanen asks me, following a seminar staged by the thinktank Nesta to discuss mobility-as-a-service. “If you get a good enough service-level offer, you will switch,” he says. “If I offer £100 of free use of taxis and guarantee you can do all your trips by

taxi, people will say, 'what do I need a car for?'"

Hietanen argues that in the future, instead of buying cars, we will have a monthly contract with a supplier which meets all our mobility needs. So how long will it be before we see these mobility service providers, as he calls them, start to appear? "I'm expecting the first services at the start of next year," says Hietanen. "It won't be long before someone is providing this in London."

Transport consultant George Hazel, another of the speakers at the seminar, cites a report which anticipates 16 major mobility providers entering the global market. "The idea is that a supplier understands my needs, constantly learns about my profile, and gives me a package according to what I'm prepared to pay." For mobility suppliers, he says, the attraction will be that once they have you as a customer, they will be able to offer you a range of services in addition to transport.

Hazel's vision reminds me of a technology consultant I talked to at the SMMT conference, who said that in the future, the car that people drive (or that drives them) will be less valuable than the data derived about the person from the vehicle's connectivity - where they travel, what they listen to or watch as their driverless vehicle ferries them around, where they take their holidays, even how they sit in the car. He anticipated a time when connected, autonomous cars were given away, just so suppliers could add the recipient to their customer base and access that data. The car as loss leader.

Cities of the future – without cars?

On a sparkling spring morning, I meet David Nelson, head of design at architects Foster and Partners, and Bruno Moser, who heads its urban planning division. Increasingly, Foster and Partners is interested in designing whole cities, and in trying to take the sustainability message to the developing world. In Abu Dhabi, it has spent the past 10 years creating Masdar City, an environmentally friendly community which will eventually grow to 100,000 people and in which cars are kept out of the centre, and walking and cycling encouraged.

"We were trying out zero-carbon, zero-waste thinking, and mobility plays a key part in that," says Nelson. What he calls "carbon cars" are kept at the perimeter, and in the centre Foster and Partners have designed a personal rapid-transit system similar to the pods used at Heathrow's Terminal 5. The crash of 2007-8 slowed the development of Masdar, and so far only the first two phases have been completed, but Nelson insists the project has been a success, despite criticisms of the slow rate of progress and a lack of affordable housing that means many workers have to commute to the city, undermining some of its key goals.

Foster and Partners is more interested in the way cities are evolving in the developing world than in Europe. Moser thinks the battle against the car has been more-or-less won in the west, where car ownership in cities is lower than in suburban and rural areas. But in the developing world, the opposite is true: city dwellers are wealthier and more likely to own cars, and unless the public can be educated in the merits of sustainability and cities are created that aren't car-dependent, there will be exponential growth in car ownership and usage.

"If cities in the developing world go through the same cycle that we have in the past 50 years, we have a problem," says Moser. Nelson believes there is a "great opportunity" for radical new solutions, but worries that "the desire for the middle-class lifestyle, which includes a big car" will get in the way. "If you start out planning with cars in mind, everybody learns from the US, so in the middle of cities you'll get six-lane roads. The car becomes king and you design for that, and everybody forgets about everything else. That is still happening a lot in Asia, and when we get a project we try to convince everyone that's not the right thing to do."

Even in a traffic-clogged, car-fixated megacity such as Mumbai, however, there are glimmers that the anti-car lobby is gaining some traction. Last October, the Equal Streets movement began closing one four-mile stretch of main road there each Sunday morning so that residents of a city desperately short of public space could walk, cycle and play freely. And despite Mumbai politicians' penchant for building new flyovers, the sheer crowdedness of street life and poor state of the roads are surely a disincentive to owning an expensive "status symbol" car.

The final stop on my car journey is the Future Cities Catapult, which I visit on its first day in new offices on the edge of the City of London - so new the smell of fresh paint is overwhelming. The government has set up these trendily named catapults in a number of key areas - energy, transport, cell therapy, the digital economy - to encourage innovation and act as a bridge between academia and industry. Here, surely, they will have a vision of where we are heading.

"I hope we are at peak car," says Dan Hill, executive director of futures and best practice, when we settle down to talk in their showroom-cum-lounge. What, even in the developing world? "They have an opportunity to leapfrog and not make the same mistakes we have over the past 50 years," he says optimistically.

"If the 20th-century approach to solving a mobility problem, just like solving a housing problem, was to build some roads or add some rail, in the 21st century we have to adopt a non-building approach, optimising the existing built-fabric we have," Hill says. "That's where the possibility of, say, a shared, autonomous, self-driving car service could radically transform the way people move around a city without building a single road - just as we are already seeing companies like Airbnb transforming the approach to accommodation without building a single hotel. They don't own any buildings at all, they write code, but they've changed the way the fabric of the city is working. Uber doesn't own any cars, but they're changing the nature of mobility."

The mobility revolution is already happening, according to Hill, and can only accelerate. He believes Hietanen's notion of mobility service providers is likely to become a reality, and agrees with Bayley's contention that the era of the car is nearly over. "The idea that we use privately owned cars to shift the massive bulk of people around a city seems utterly absurd to me. What a crazy thing to do."

But what's the timescale? Hill offers a qualified answer. "It depends on the city. Cities like Helsinki, Copenhagen, Zurich, those small cores with a 2 million exterior [population]; in the next five years I think we'll be seeing really coherent mobility-as-service offers. They're already halfway there - they've got Zipcar and Uber, really good public transport systems, are very walkable and bikeable, and have a strong public policy on carbon emissions and making a safer city. So I can't see why in five years we wouldn't have reached a significant transition point."

Those, though, are the easy ones. "With somewhere like London, which is 15 Copenhagens in size, it's really difficult to say. It depends on the decisions that Transport for London makes, and on manufacturers like Ford and BMW extending their mobility experiments. Then with cities like Sydney and San Diego, you are maybe talking 20 or 30 years before you get significant modal shift from private car ownership.

"Once you've built all those highways and car parks, it takes a lot of money and time to unpick them. They placed a big bet on cars in the late-1950s, and it's a long time before you get a chance to make another bet. A city like London, which is a couple of thousand years old and contains many different histories, ends up with a tapestry of multiple side-bets rather than one overweening vision. That's actually more interesting and more malleable."

What is evident is that the cities of tomorrow are likely, in effect, to revert to the cities of yesterday:

denser, more neighbourhood-based, with everything you need for work and leisure in one district. There will be less separation of functions, less commuting, less travel generally.

"To me, this last 50 or 60 years feels like an anomaly," says Hill. "If you haven't already guessed, I'm a non-driver. I think we will look back on this time and say, 'Wasn't it odd that we drove ourselves around?' In the 1920s and 30s, you'd have gone to the butcher on your high street, and a grocery boy (it would have been a boy then) would have delivered the goods to your home on a bike - and they'd have been there by the time you got back."

In Hill's view, that age and those services will return. Neighbourhoods and self-sufficient communities will make a comeback in a new era that will be dominated not by the car, but by the smartphone and the network. The commuter is dead. Long live the hipster.

Are we seeing the decline of the car in cities? Share your thoughts in the comments below

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A Brief History of US Fuel Efficiency Standards

Where we are—and where are we going?

Published Jul 25, 2006 | Updated Dec 6, 2017

Investing in technologies that increase the fuel economy of America's vehicle fleet will create domestic jobs, save consumers money at the pump, cut global warming pollution, and put us on a path to cut projected US oil consumption in half over the next 20 years. Increasing fuel economy—a measure of how far one travels on a gallon of fuel (mpg)—is not a silver bullet. Yet, sound fuel economy policy and good engineering can deliver the cleaner and more fuel-efficient cars, trucks, and SUVs we need to help tackle our oil consumption and climate change problems.

History of US fuel economy standards

Congress first established Corporate Average Fuel Economy (CAFE) standards in 1975, largely in response to the 1973 oil embargo. CAFE standards set the average new vehicle fuel economy, as weighted by sales, that a manufacturer's fleet must achieve.

Through the Energy Policy and Conservation Act of 1975, Congress established fuel economy standards for new passenger cars starting with model year (MY) 1978. These standards were intended to roughly double the average fuel economy of the new car fleet to 27.5 mpg by model year (MY) 1985.

Additionally, the Department of Transportation set the first round of CAFE standards for light trucks (i.e., pickups, minivans, and SUVs) beginning with MY 1978. CAFE standards for light trucks were increased to 22.2 mpg for MY 2007 and scheduled to increase further. No similar increases were made for passenger cars until 2007, when historic energy legislation was passed by Congress and signed by the President. This new energy legislation, the Energy Independence and Security Act of 2007, raised the fuel economy standards of America's cars, light trucks, and SUVs to a combined average of at least 35 miles per gallon by 2020—a 10 mpg increase over 2007 levels—and required standards to be met at maximum feasible levels through 2030.

Federal law directing increases in fuel economy became necessary because oil consumption had been steadily escalating, in large part due to the relative stagnation in CAFE standards,

the doubling of annual vehicle miles traveled in the previous 25 years, and a sizable increase in the market share of less efficient SUVs and light trucks.

In 2009, a historic agreement between the Federal Government, state regulators, and the auto industry established a national program to implement these first meaningful fuel efficiency improvements in over 30 years and the first-ever global warming pollution standards for light-duty vehicles.

The agreement grew out of the new fuel efficiency standards passed by Congress in 2007, the Supreme Court's decision in Massachusetts v. EPA, which precipitated global warming pollution standards for vehicles under the Clean Air Act, and global warming pollution standards enacted in California and subsequently adopted by 13 other states and the District of Columbia. The agreement provided a mechanism for automakers to build a single national fleet of new vehicles that are in compliance with federal and state requirements under both the Clean Air Act and the Corporate Average Fuel Economy (CAFE) program.

While each regulatory agency with legal authority promulgates and finalizes separate standards, the National Program harmonizes the three requirements. This is achieved by coordinating the rulemaking process and promulgating final standards that ensure that automakers can build a single fleet which complies with all three standards.

The National Program is comprised of three legal authorities:

- **Department of Transportation (NHTSA)**: The first CAFE standards were administered by the National Highway Traffic Safety Administration (NHTSA), a part of the US Department of Transportation. As a result of the 2007 energy legislation, NHTSA is required by statute to set fleetwide average fuel efficiency standards for each new model year at the maximum feasible level.
- **Environmental Protection Agency (EPA)**: The EPA is required to set pollution standards for new light-duty vehicles under section 202 of the Clean Air Act. Specifically, EPA is required to set standards at a level that protects public health and welfare. EPA successfully implemented automobile pollution standards covering smog-forming, toxic, and other emissions for decades. Following the Supreme Court's decision in Massachusetts v. EPA that greenhouse gases are pollutants under the Clean Air Act and the subsequent finding that those gases endanger public health, the agency was required to set global warming pollution standards for vehicles under the Clean Air Act.
- **California Air Resources Board (CARB)**: When the Clean Air Act was originally enacted, Congress provided the State of California unique authority to set vehicle standard that are more stringent than the federal standards. California enacted legislation in 2002 directing CARB to develop global warming pollution standards for light-duty vehicles, which were finalized in 2004. Other states are able to adopt the California standards in lieu of the federal standards under section 177 of the Clean Air Act. Currently, 13 other states and the District of Columbia follow the state standards, representing nearly 40% of new vehicles sold in the United States. These states are required to adopt identical standards to those established by CARB, ensuring that there are just two alternatives — a baseline federal requirement and a stronger state requirement — instead of multiple standards.

Phase I of the National Program: Model Year 2012–2016

The first phase of the National Program was finalized in April 2010 after a 12-month regulatory process. The 2012–2016 standards were supported by automakers, state regulators, the United Auto Workers (UAW), environmental organizations and other stakeholders. Overall, phase I of the National Program represents a 23 percent improvement in new vehicle pollution standards, an average annual improvement of nearly 5 percent.

The EPA established global warming pollution standards of 250 grams per mile, on average, for model year (MY) 2016 vehicles. NHTSA set fuel efficiency standards which target a new vehicle average of 34.1 miles per gallon in MY2016. These two standards reflect a harmonized level of stringency. CARB agreed to accept compliance with the National Program as compliance with its standards even though the federal standards are weaker until 2016.

Phase II of the National Program: Model Year 2017–2025

Building on the success of the first phase of the National Program, the second phase of fuel economy and global warming pollution standards for light duty vehicles covers model years 2017–2025. These standards were finalized by the US Environmental Protection Agency and US Department of Transportation in August 2012.

These new standards will reduce average global warming emissions of new passenger cars and light trucks to 163 grams per mile (g/mi) in model year 2025. This is equivalent to 54.5 miles per gallon (mpg), if the standards were met exclusively with fuel efficiency improvements 1.

Benefits of Fuel Economy Standards

These standards will reduce America's consumption of oil, save consumers money at the gas pump, and protect public health and the environment by curbing global warming pollution. They will also help spur investments in new automotive technology, creating jobs and helping sustain the recovery of the American auto industry.

- **Oil Consumption**: Nearly doubling the average fuel efficiency of new cars and light trucks is the single biggest step our nation can take to reduce oil use. When taken together, the two phases of fuel economy standards will result in oil savings in 2030 of more than 3 million barrels per day. This is roughly equivalent to the US imports from both the Persian Gulf and Venezuela combined.
- **Jobs:** A June 2012 study by the Blue Green Alliance finds that the second round of standards alone will create an estimated 570,000 jobs (full-time equivalent) throughout the US economy by 2030, including 50,000 in light-duty vehicle manufacturing (parts and vehicle assembly).
- **Environment**: The two rounds of standards will reduce global warming pollution by as much as 570 million metric tons (MMT) in 2030. This is equivalent to shutting down 140 typical coal-fired power plants for an entire year.
- **Consumer Savings**: The standards will save consumers $140 billion in 2030. When compared to a typical vehicle on the road today, a new car buyer will save more than

$8,000 over the lifetime of a new 2025 vehicle, even after paying for the more fuel-efficient technology.

Notes:

The actual Corporate Average Fuel Economy (CAFE) standard is expected to be about 49.6 mpg in 2025, with the remaining 5 miles per gallon equivalent reached through improvements to in-car air conditioners (better efficiency, reduced leaks, and use of refrigerants with a lower impact on the climate). Because CAFE compliance tests are out of date and overinflate fuel economy, the average on-road fuel economy of new cars and light trucks is expected to be 36-37 mpg by 2025. By comparison, the average of today's on-road fleet is 21 mpg. See the UCS fact sheet Translating New Auto Standards into On-Road Fuel Efficiency for more information.

The Guardian - https://www.theguardian.com/us-news/2019/nov/01/new-york-city-bike-lanes-car-culture

New York City to 'break car culture' and build more than 250 new bike lanes

City Council passed legislation to invest $1.7bn in road infrastructure over 10 years in move to improve safety

Miranda Bryant *in New York*

02.00 EDT 11.47 EDT

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Figure 1: While cycling is on the rise in New York – the number who ride several times a month grew by 26% between 2012 and 2017, according to the city's most recent cycling trends report – more cyclists are dying. Photograph: Drew Angerer/Getty Images

New York is set to build more than 250 new bike lanes and add 1m sq ft (92,903 sq meters) of pedestrian space in a landmark move designed to "break the car culture" of the city.

The city council passed legislation this week that will see $1.7bn invested in road infrastructure over 10 years in a move that it is hoped will transform city streets and dramatically improve safety for cyclists and pedestrians.

The New York city council speaker, Corey Johnson, who introduced the "streets master plan" bill and is anticipated to run for mayor in 2021, said after the vote: "The way we plan our streets now makes no sense and New Yorkers pay the price every day, stuck on slow buses or risking their own safety cycling without protected bike lanes … I want to completely revolutionise how we share our street space, and that's what this bill does.

“This is a roadmap to breaking the car culture in a thoughtful, comprehensive way, and I am so proud to pass this bill today.”

While cycling is on the rise in New York – the number who ride several times a month grew by 26% between 2012 and 2017, according to the city’s most recent cycling trends report – more cyclists are dying.

So far this year there have been 25 cyclist deaths, the highest number in 20 years, and pedestrian and cyclist fatalities have risen by 24%.

Figure 2: Corey Johnson: ‘This is a roadmap to breaking the car culture in a thoughtful, comprehensive way, and I am so proud to pass this bill today.’ Photograph: Miranda Bryant

The new law requires the city to release and carry out a “master plan” every five years that prioritises street safety, public transport use, cutting vehicle emissions and access for people with disabilities.

The first plan, due in December 2021, will include 150 miles of bus lanes protected either physically or by camera and 250 miles of protected bike lanes – meaning they are physically separated from traffic – over five years, improved bus stops and passenger information and changes to traffic lights to speed up buses. Within the first two years, the plan pledges to create more than 1m sq ft of pedestrian space.

The second, due in 2026, will commit to a full, connected cycle lane network, protected bus lanes on all viable routes and accessible pedestrian signals at 2,500 intersections in five years.

While New York has some way to go before it can compete with cycle-friendly leaders such as Copenhagen and Amsterdam, the new law marks a significant moment for the city, which has prioritised cars since the 1920s.

Marco te Brömmelstroet, professor in urban mobility futures at the University of Amsterdam and academic director of Urban Cycling Institute, said the change in approach represents a "radical shift in the logic that underlies choices in the design of street infrastructure".
He added: "Where there is a century-long tradition in the US, and in much of the world that followed examples from the US, that puts the speed and efficient flow of vehicles central, and that made travel times the undisputed central goal of infrastructure planning, this new law seems to make this secondary to choices that put justice central."
He said New York has the potential to set an "inspiring example" to other US cities if it can show that the law not only functions but also has a positive impact on other aspects of society.

Nearly 800,000 New Yorkers cycle regularly, according to city statistics. It is estimated that more than 490,000 bicycle trips are made every day in the city – three times more than the number made 15 years ago.

As of last year, there were a total of 1,240 miles of bike lanes in the city – 480 of which were protected.

Meanwhile, use of Citi Bike, New York's on-street cycle hire scheme, is on the rise. Close to 2.5m trips were made in September, with an average of 80,475 a day. In comparison, September 2018 saw nearly 1.9m trips and an average of 62,616 trips a day.
But safety remains an issue for many riders and potential cyclists amid increased congestion on roads – in part because of services such as Uber and Lyft – and a crisis on the subway.