A World Class Transportation System

A Kindle short by Charles L. Marohn, Jr. PE AICP

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Introduction

America is having a one-dimensional discussion on transportation. The central question – how do we get more money to continue with our current approach – fails to adequately explain why our current approach has left us lacking funds in the first place. Political leaders say they want a "world class transportation system" but are not able to explain, in any credible way, how to bring that vision about.

A World Class Transportation System, explains why we are stuck, the consensus principles that can unite Americans and the practical – albeit paradigm-shifting – approach that can be used to build the highways, transit systems and local facilities we need to be economically competitive. I was prompted to write it in early 2014 when the transportation coalition in my home state of Minnesota – an organization called Move MN – released their long-awaited, and very disappointing, transportation funding proposal.

The intention of this ebook is not so much to shape policy as much as it is to frame the debate. The discussions we are having in America over transportation funding are not serious. The solutions being put forward by politicians and activist groups do not even rise to the level of a band aid approach, as pathetic as that is. I'm tired of watching Rome burn while the insiders fiddle, seeing bridges fall down and expensive roads go bad while we spend billions on new stuff we will never be able to maintain.

Transportation policy in America needs to focus on building cities that are financially productive and then connecting them with high speed, high capacity roadways. We built the interstate. Cross it off the list. We're done. It's now time to use that investment – to mature that system – to start getting more out of it.

America needs a world class transportation system. We will only have one if we are willing to challenge our current belief systems and make some fundamental changes to our approach. This book is about doing that.

1. More is not always better.

After the 1914 Battle of the Marne, World War I settled into trench warfare. During the subsequent four years on the Western Front, German, French and British generals threw wave after wave of their soldiers against nearly impenetrable defensive fortifications. The almost gentlemanly art of war that had persisted throughout the prior century, where troops lined up in brightly colored uniforms and charged at each other in a struggle of strategy and finesse, gave way to the wholesale slaughter of millions with machine guns, barbed wire and chemical weapons.

Today we look back at this time with incomprehension. What is so clear to us today – that trench warfare is both disastrous and futile, particularly for those on the offensive – took millions of lives, and years of reflection, for them to fully comprehend. Nobody making decisions at that time had experienced anything remotely like what they went through. In both the military and the civilian leadership, all but a small minority were fighting the last war. Those tiny few that could see the changes happening were overwhelmed by accumulated dogma. Not until an entire generation had been thrown away did the fighting cease and the open questioning begin.

Across the country today, disparate groups are coming together to form transportation advocacy coalitions. Environmental advocates are joining with asphalt contractors, business leaders are standing hand-in-hand with labor unions, to advocate for more transportation spending. There is Texas Infrastructure Now. And Missourians for Better Transportation Solutions, which came up short advocating for a constitutional amendment but is not going away. In my home state of Minnesota, we have the organization Move MN.

The message being put forward by these coalitions share some common traits that are perplexing. First, they identify an enormous gap in transportation funding. They then paint a bleak picture of America's future if money isn't found to fill that gap. Finally, after showing us images of school buses being crushed by failing bridge girders[i] and other ghastly demonstrations to highlight exactly what is at stake, they make half-hearted proposals that come nowhere near meeting the urgent need they have identified.

For example, in 2013, Minnesota Transportation Commissioner Charles Zelle traveled the state telling Minnesotans that an additional $50 billion in transportation is needed over the next two decades if the state is to have an "economically competitive, world class system."[ii] To give some context to that number, a continuation of current law would see Minnesota take in just $15 billion during that same period of time. To go from $15 billion to $65 billion is not a modest policy tweak.

Zelle was appointed commissioner after chairing a statewide committee on transportation funding. The proposal from that committee is the most serious attempt to close this gap to date; an aggressive combination of taxes and fees that would raise just $20 billion. Swing and miss.

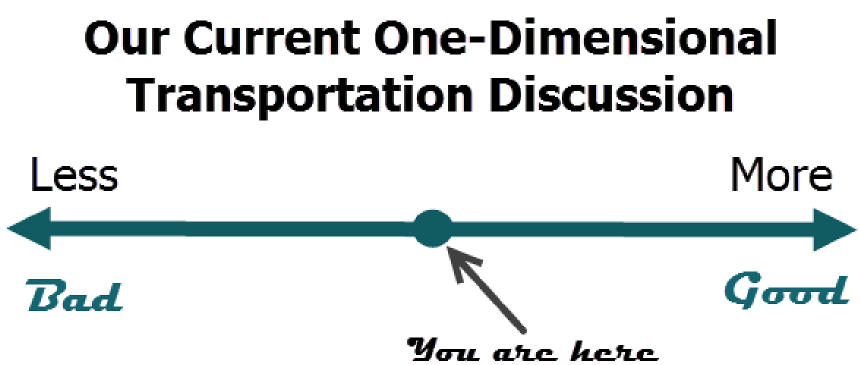
In comparison, however, the subsequent proposal by the Move MN coalition[iii] proved utterly ridiculous. After promising an approach that would be "comprehensive, balanced, gimmick-free and dedicated," the centerpiece of their plan was a modest sales tax on wholesale gas.[iv] Lacking the courage to propose an increase in the gas tax collected at the pump, the plan instead taxes the same gas when it is poured into the storage tank. Despite the opaque nature of this approach, Move MN's proposal would only raise of fraction of the $50 billion they claim is needed, just $7.2 billion over the next 20 years[v].

These half measures reveal a leadership clinging to accumulated dogma, throwing more scarce resources at the line in a mindless effort to move it a few hundred yards. Times have changed. Our cities have changed. Our ways of exchanging information has changed. Our people have changed. We have to realize that, when it comes to transportation, our leaders are trying to fight the last war.

We don't need broad coalitions finding new ways to storm the same trench. We need an entirely new way of thinking.

I'm using the military analogy because, when it comes to transportation systems, a recurring battle over the same ground describes our current debate. Americans today generally view transportation investments on a continuum of improvement. We move from one stage to another – as an army takes one hill after another – and it is unfathomable to us that we would ever give up ground. No retreat, because retreat is a sign of failure.

This mentality, which is never really questioned, has overtaken the entire transportation debate. When civic leaders write in support of more funding, they use terms like "upgrade" to reinforce that they are seeking to improve our current position, to take another hill. Never retreat. In this mindset, everything we have today is assumed to be good. More of what is good is then even better. Every two lane highway will someday become a four lane. Every four lane, a six lane. Every traffic signal is simply an interchange in waiting. Every bus line a future streetcar. Progress is measured in terms of building more of what we already have.

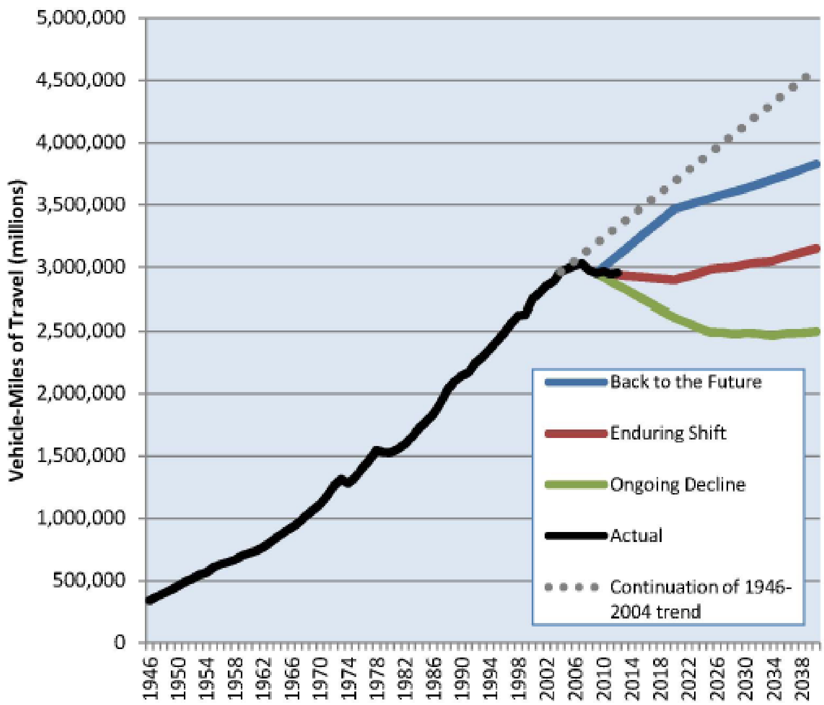


Even those who don't necessarily believe that more of what we are presently doing is good are willing, as part of a coalition, to accept a lot more of what they don't want it if they can only get more of what they do. There is only one thing Bituminous Roadways, Inc., the Minnesota Environmental Partnership, the Associated General Contractors of Minnesota and the Bicycle Alliance of Minnesota (among many others) can all agree on: more money for transportation. You can take your hill so long as I can take mine. No retreat.

Why do we accept that our leadership has acquiesced to a system far below "economically competitive" and "world class"? Are Democrats and Republicans in the legislature across the country, along with all these coalition leaders, saying we should accept – despite spending tens of billions more than we are now – a system that leaves us lacking in competitiveness, worse off than countries with much smaller economies?

Yes, actually they are, because they are all stuck in the current paradigm. They are generals fighting the last war. More is good and less is bad. No retreat. And because they are captive to this mentality, they are not able to communicate (or maybe even grasp) the implications of changes going on in society.

Anyone who is willing to dismount their horse, take off their plumed hat, sheath their sword and survey the new battlefield can see that traffic demand is no longer increasing in the predictable way it did for decades.[vi]



That fact in and of itself changes everything. Not only have we been overbuilding our transportation infrastructure for years based on bad projections – thousands of lane miles and billions of dollars that were misallocated – but we continue to project our future needs using this same dogma.[vii] How much of that $50 billion in new money that Minnesota supposedly needs is actually unnecessary? How much of what we've already built could we abandon without impacting the state's economy? These questions can't be answered because, in the current paradigm, where more is good and less is bad, we don't even ask the question.

In her book *The End of the Suburbs*, Leigh Gallagher describes how American living patterns are changing. Baby Boomers and Millenials – the two most mobile generations in America today – are showing strong preferences for urban living. This means less demand for auto-based infrastructure and more demand for walking, biking and mass transit. Where is the corresponding adjustment in spending priorities?

With auto-based infrastructure needing dramatically more money than is currently available just to maintain what we've already built, urban transportation advocates are forced to support lots of additional revenue for roads to get tepid support for walking, biking and transit funding. Going back to the war analogy, this is like deciding to engage along numerous fronts without adequate forces to break through on any, and no reserves even if you did. The result is guaranteed to be nothing like success, nothing that would approach “world class”.

There is a meme in transportation advocacy circles that focuses on the lack of an inflationary increase in the gas tax since it was last raised in 1993. The argument asserts that inflation has eroded the purchasing power of the tax, which stands at 18.3 cents per gallon, even though gas tax revenue has more than doubled from $13.9 billion in 1994 to $29.3 million in 2013[viii].

While an annual inflationary adjustment would put the tax at 29.7 cents per gallon and add $16.7 billion to the 2013 balance, this is little more than a band aid[ix]. The American Society of Civil Engineers has indicated that maintaining our transportation infrastructure at “minimal acceptable levels” requires an additional $94 billion annually[x].

Assuming nobody drives any less as the gas tax is dramatically increased to fill that gap – a completely illogical assumption – the United States would need a 77.7 cent gas tax just to meet minimal acceptable levels. Forget world class. As the prices go up, people will actually drive less, necessitating the need for additional tax hikes to cover the drop in revenue. At some point we reach a condition where the dog chases its tail, every additional tax hike making driving less affordable, reducing the amount people drive and forcing yet more tax increases.

Our transportation is no longer serving us. We are serving it.

As a final example of how our thinking is stuck, unable to adjust to a new paradigm, just like those generals in the First World War, consider a clear case where less is actually better: the road diet. Many Americans – particularly my colleagues in the civil engineering profession – really struggle with the concept of the road diet because it runs counter to the “more is better” paradigm. By removing lanes, narrowing lanes, adding bike lanes and putting on-street parking back in place, road diets have been shown to improve traffic flow and increase safety for everyone.[xi] And they do this by spending less money, not more.

Why, when our leadership has expressed so clearly the enormous financial gap we have in funding a “world class” transportation system, are road diets not an obsession of transportation departments everywhere? Why are cities, who benefit financially not only from the reduction in expense but also from the dramatic increase in financial productivity of the resulting land use pattern, not demanding the less-is-more approach of the road diet?[xii]

The answer is simple: we are still fighting the last war. We experienced six decades of robust growth as we simultaneously built the world’s largest and most intricate network of roadways. As Baby Boomer and fellow Minnesotan Thomas Friedman pointed out in his book, *That Used to Be Us*, we know the equation to prosperity. We built the interstate system and it made us wealthy. We just need the *political will* to make the hard decisions, courage that becomes easier to find when there is a broad coalition giving cover for taxing and spending more without making any substantive policy changes.

Our current obsession is identifying more money to continue doing more of the same approach. In service of this obsession, we make ridiculously poor use of our collective investments. We never stop to actually measure the financial impact we believe we are having. We adopt policies that transfer collective wealth to a few. And, thanks to broad coalitions of our leadership class, we seem ready to tap America's remaining resources for one last hurrah.

To really move this country ahead, to make us a strong and economically competitive long into the future, we need a new obsession. We need build the collective wealth of all Americans and, in doing so, strengthen the entire nation. Our wealth is not measured in the number of roads we have but in how we use them. The interstate system is complete. It's time to shift focus from expanded it further to getting more return on this monumental investment.

The United States won the Revolutionary War almost entirely by retreating. Bunker Hill, Long Island, Valley Forge; these were all losses – retreats – in a military sense. They were ridiculed by leaders at the time but now, with history providing a dispassionate prism to view the events, are not only understood as military necessities, but sound strategy. If we want a strong and economically competitive America, we need to abandon the current "more is better" paradigm and rethink our entire approach to transportation.

2. Why we are short of money.

The Move MN proposal mirrors every other transportation funding increase now on the table nationwide. The goal is to expand the communal transportation fund with the least painful, and most indirect, revenue source that can be agreed upon[xiii]. For Move MN it is a wholesale tax on gasoline. In other states it is a dedicated sales tax. Sometimes it is a modest increase in the gas tax.

What is missing is any acknowledgement of why we are so critically short of transportation funding in the first place. That lack of acknowledgement likely stems from a lack of understanding, especially poignant since expansion of our communal transportation funds will only undermine the long term viability of our transportation systems.

In short, more money for the communal fund is the problem, not the solution. To understand this, we need to examine the financing of America's first great transcontinental transportation investment: the railroads.

The construction of America's system of railroads is a complex and nuanced story full of crimes against Native Americans, the exploitation of Asian labor and the general pillaging of the countryside. I'm not trying to gloss over these aspects (I know someone is going to be upset with me for doing so regardless) but I do want to focus on the financing of this system, which would have been the same whether or not our ancestors had behaved in an enlightened manner.

The government's initial role in the creation of the railroad system was to expropriate the land from its inhabitants (with little or no compensation) and then give it to the railroads. This government "contribution" to the effort was enormously important and the network of railroads likely could not have been built without it. There was, however, no real financial "cost" to this gift since the government owned much of the land anyway (and again, I'm not endorsing the "might-makes-right" approach that brought about this situation).

Once they had the land, private railroad companies then built the railroad lines. They paid the enormous capital costs by issuing bonds – borrowing the money – and then paid back those loans through a value capture mechanism. When the railroad built a stop along the line, that stop became a town, and the land in the vicinity of that stop became much more valuable. The railroad companies owned, or acquired, the land at each stop before it was built. Thus, by selling that land after the railroad line was constructed, the railroad company was able to capture the increase in value their investment had created.

So, before operating the actual railroad, these private companies were first land developers. Without developing the land and capturing the value their investment created, few railroad lines would have ever been built[xiv].

Once the railroad was built and the capital costs recouped through sale of the appreciated land, then the private railroad company could switch to operating the line. They charged fares to move freight and people along the railroad lines they had built. While some borrowing costs were retired through the fare box, most of the money collected went to covering operations, maintenance and profit.

It should be pointed out here how great an investment the railroad now was. So long as the company didn't overload the trains, the nearly frictionless tracks would stay in place indefinitely, requiring only a modest amount of maintenance. There are stories of tracks lasting over a hundred years, with replacement only coming when the company wanted to increase the weight the line could serve. That means that maintenance costs could be spread out over a very long period of time.

This system sounds great, but it didn't always work perfectly. There were many occasions when the private railroad companies made bad investments, when they built towns and nobody showed up to buy the land. In fact, after the U.S. Civil War, foreign money poured into the country and fueled rampant speculation in railroad-led development. When these investments got too far out in front of the market, the result was the Long Depression of the 1870's, a very painful financial correction that forced quite a few railroads out of business. It was the speculative housing bubble of its day.

When we began to build the interstate system, in many ways we were attempting to re-create the transformative economic expansion brought about by the construction of the railroads. Only this time it would not be the private sector leading the way and taking the risk. It would be the government.

This was consistent with our evolving sensibilities on the role of government. Not only had the Americans of that time lived through the Great Depression, they had also seen the awesome power and efficiency of centralization on display in America's efforts during World War II. We can accomplish great things when we collectively focus on something of national import. Franklin Roosevelt and Dwight Eisenhower were great leaders that embodied this ethos.

(Note: I'm not debating whether or not New Deal policies were good or bad, whether the centralized, Keynesian direction our economy took at this time was necessary or not. My grandfather, a World War II veteran whose formative years were in the Great Depression, once told me that, "Without FDR, we would all be dead." He climbed the cliffs in Nagasaki Bay after the bomb was dropped then returned to work in a paper mill for the next four decades. I'm not going to question his assessment of economic conditions in the 1930's.)

We chose to fund this expensive national undertaking with a communal tax on gasoline. There was some logic to this; the people who bought gasoline would be using the roadways and would thus be paying – albeit indirectly – for what they used. Tolling the interstate, something favored by Eisenhower, was not really feasible at the time due to the expense, in staff and delays, of a large-scale tolling system.

With a government-led approach, politicians would decide what got built, when and where. This wasn't a problem in the early years when there was a lot of money for building roads with very little local match required. It was especially easy for local officials to embrace the system because highway investments created so much tax revenue with very little direct cost to the local taxpayer. A new highway through a cornfield would essentially print money locally, allowing struggling farmers to cash in a windfall (or more often, land speculators with inside information who got there first).

This growth also dramatically improved the cash flow of local governments. Maintenance costs were high – those bituminous roadways require continuous maintenance or they fall apart rather quickly – but oil (and thus asphalt concrete) was cheap, as were transportation costs.

Let's pause here to contrast these two systems.

	Transcontinental Railroad System	Interstate Highway System
Who takes the initial risk?	Private Companies	Government
How is it financed?	Improvement of Land Values	Communal Slush Funds
Who benefits from the appreciation of property values?	Private investors who took the financial risk to build the line.	Individual landowners who own land in the right place.
How is maintenance paid for?	Fare charges	The same communal slush fund that funds new construction.
How long do improvements last before significant maintenance costs are incurred?	Multiple generations	A couple of decades with annual maintenance. Much sooner without.

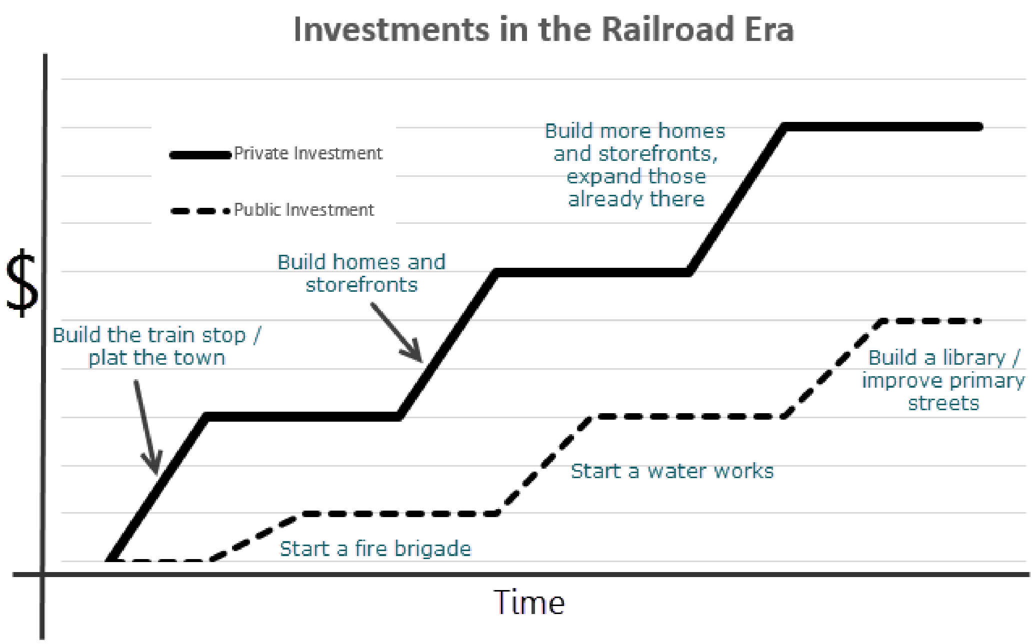
The transcontinental railroad system connected the entire country with a transportation network that was privately built and maintained. Its expansion was directly correlated to the real financial value it created while the long term maintenance costs, paid by the users of the system, were so low they could be recovered over multiple generations. This was such a financially stable system that, as it was set up, it could have operated for centuries had technology – and government intervention – not changed the marketplace for transportation.

We replaced this stable system with the interstate highway system and all of its related state and local auto-based improvements. The expansion of this new system was not correlated with the value created but with the priorities of the political system. Since expansion bestowed windfall gains on those positioned to benefit from expansion (individual landowners at first and, ultimately, major national/international corporations), as well as local governments who experienced quick and easy growth (with the maintenance costs put off a generation[xv]), there was plenty of "demand" generated within the political system for doing more. Maintenance was not funded by user fees but by a communal fund (the gas tax) that, over time, has been augmented with general taxation and debt.

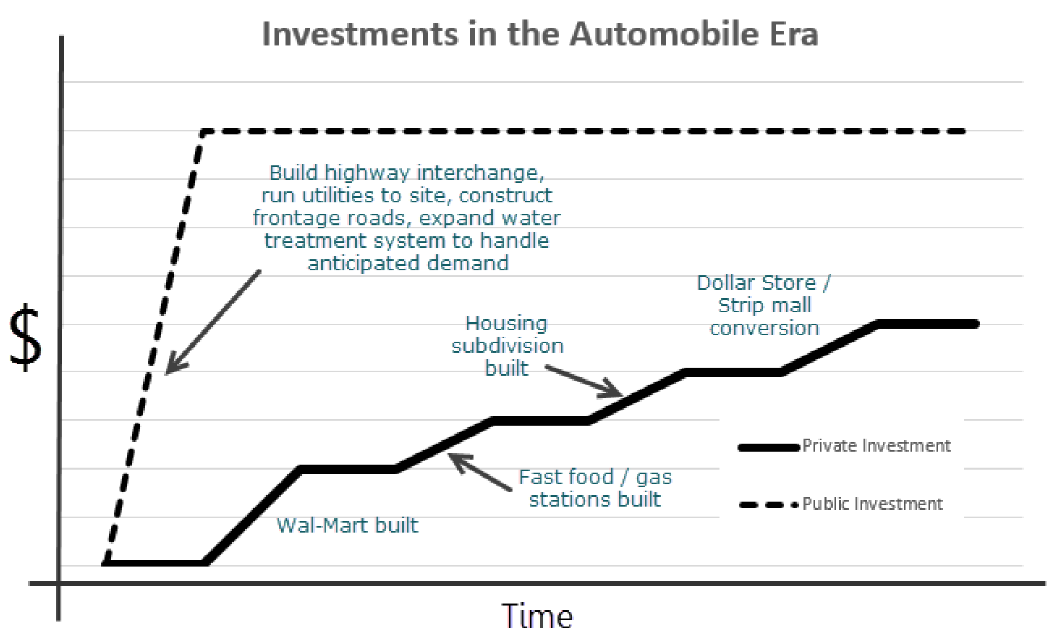
There are two fatal flaws embodied in our current transportation approach. The first is that our transportation system has no correlation between supply and demand. We all subtly pay into a giant communal fund and then we all expect that communal fund to deliver on its promise and meet our insatiable demand for quick, uncongested commutes.

What is the price people are willing to pay for a quick commute free of congestion? Nobody really knows. Time and again we see that, when prices are not hidden in a communal fund but instead are paid by the user at the time of consumption, demand drops. For a government-led transportation system, a drop in demand is devastating. Put a toll on that road priced for current usage and fewer people will use it. The drop in demand forces an increase in the toll if the same revenue is to be sustained. An increase in the toll further depresses demand and on and on and on… Nobody knows what the current real demand is because nobody currently pays anywhere near the real cost to access the system.

The second fatal flaw is the interaction between public investment and private investment. In the railroad era, private investment generally led public investment. The railroads would construct the lines, build the towns and the town itself would be somewhat established before any public investments were made. In other words, the private sector bore the risk that the development would not work out. In a rough sense, this is how public and private investment would interrelate.



In the automobile era, the risk taking is reversed. For all but the most local of transportation improvements, governments front the investment capital and take the risk. Governments gamble that the growth will happen and that, if it does, it will hold its value over time – it will generate enough wealth long term – so as to enable the system to be maintained. This is so accepted that it is never really questioned. The interrelation between public and private investment in the automobile era is quite different that it once was.[xvi]



Here's where the perversity of the funding mechanisms kicks into high gear. What happened when the private railroad companies overbuilt their system? What happened when they got out in front of market and had too much supply without enough demand? They, of course, got the painful feedback of losing money and watching their assets drop in value. Sometimes entire companies went out of business.

What happens when the government, operating in the automobile era, overbuilds? What happens when we create so much supply, so many miles of roadway, that demand can't possibly utilize it productively? Well, the feedback isn't quite so direct. Budgets start to be frayed. Obligations go unfulfilled. There isn't enough return on these government investments and so there ultimately isn't enough money to care for them. These things can be attributed to many causes, of course, most of which appeal to our psyche more than the idea that we've overbuilt.

In fact, with public sector transportation investments now designed to lead and induce private sector investment, we can actually forestall the painful feedback (recession/depression) by making *even more* government investments. Yes, our core transportation funding problem is that we've built more transportation infrastructure than we can effectively utilize. Our solution, bizarrely, is to build more.

So long as the government has the money to avoid the hardest decisions, any uncomfortable response – land use changes, shifting from automobile trips to walking or biking or modifications to the tax code, to name just three – will remain off the table, or at least relegated to the fringe. More money doesn't solve any problems. It just forestalls the pain of transition, compounding the imbalances in the process.

One last observation on the current approach: it has long astonished how asymmetrically we react to the wealth created by public transportation investments. When my hometown was bypassed with a new highway, state and federal transportation investments made millionaires out of a number of people who had done nothing but have the good fortune to inherit land at key spots along the chosen corridor. Did we, in our desperate lack of funds, ask for even a tiny portion of that wealth back to pay for the improvements that created their good fortune? Of course not. Yet, we insisted on compensation for the gas station owners and other auto-dependent businesses along the old route that would now see their traffic counts decline, as if the state's role is to guarantee a base amount of congestion.

Without a correlation between supply and demand, without any painful feedback for bad investments and underutilized infrastructure, more money will only make the underlying productivity problem worse. I'm sympathetic to those who want to continue to live their current lifestyle at current prices, who have the reasonable expectation that the government will deliver on its promises to sustain these systems – and even improve our collective quality of life – based on the returns of public transportation investments. I'm sympathetic, but my sympathy won't make the math work.

3. Establishing modern priorities.

Transportation coalitions around the country are trying to meet funding shortfalls by marginally adding to our communal funds with a series of hidden taxes and opaque fees. This may be good politics, but it isn't how we are going to build a stronger America. It isn't the way we will have the world class transportation system we need.

Our no retreat mentality – where more transportation infrastructure is good and less is bad – has closed our eyes to alternatives that would cost less and produce better results. That mentality developed from a funding approach that reinforces disconnect between supply and demand, one where governments actually have the perverse incentive to increase demand by adding to an already bloated supply.

Today, less would actually be better. Imagine if we had half the lane miles we have today. Half the bridges. Half the interchanges. Half the turn lanes and traffic signals. Maybe we would have experienced less growth over the prior six decades – a hypothetical conclusion I would dispute – but it certainly wouldn't have been *half* the amount of growth. No, there is much more to economic growth than simply transportation spending.

And if we hadn't had all this transportation investment, if we had only built half as much – done the obvious things like connecting major economic centers – then today we would have half the obligations with a tax base proportionately more up to the challenge. We would not be faced with overwhelming financial commitments, giving us far more options for adapting to an economy in transition.

Less is actually better.

Transitioning to a new approach means starting where we are today – in a terrible financial mess – and applying a new set of shared principles to get us where we want to be. There are seven new operating principles I would apply to help us deal with this crisis. These operating principles address the core financial problems of our current system and present a new way of looking at transportation funding that could be understood and accepted by most Americans.

1. A financial mechanism that balances supply and demand is an essential component of any transportation funding approach.

2. Risk belongs primarily in the private sector. We should not gamble with communal resources.

3. Where public investments are made, they must follow, and be proportionate to, productive private investments.

4. Communal wealth must not be appropriated for individual gain.

5. The more complex and nuanced the impact of a transportation project, the more localized the funding mechanisms and design decisions must be.

6. Where communal funds are used to fund transportation investments, there must be intensive and ongoing accounting to monitor the financial return-on-investment.

7. In the absence of sufficient communal revenue to meet all communal obligations, priority must be given to transportation projects that provide the greatest economic benefit.

Our transportation system must be designed to build the wealth, and enhance the prosperity, of all Americans. These seven operating principles should be added to the safety and mobility goals of our state and national transportation departments as mechanisms to achieve those broader goals consistently over time.

To elaborate:

1. A financial mechanism that balances supply and demand is an essential component of any transportation funding approach.

This principle addresses the primary cause of financial imbalance: the lack of a pricing mechanism that balances supply and demand. The next chapter will elaborate on one way we can establish that critical feedback, but those that assume I mean privatization of the road network or a system that would toll all roads are wrong. In the system we have created, there is a role for government spending and a focused use of communal resources to provide a base level of mobility. At the end of the day, however, there needs to be a price that people pay directly that expresses the real dollar value they put on transportation infrastructure.

2. Risk belongs primarily in the private sector. We should not gamble with communal resources.

"Communal resources" is my way of saying "tax dollars" while clinging to the notion that this money represents all of us coming together to accomplish something. Gas taxes are incredibly regressive, as are licensing fees. If we are going to use these sources of revenue – and I think we should continue to do so do a degree – we should hold ourselves to the strictest standard of prudence.

We need the private sector to take the bulk of the risks in today's economy. This isn't to say that there is no room for risk taking within government[xvii], but not in the area of transportation where we are massively overbuilt. For transportation projects, the only real risks we should be taking are small experiments to figure out how to make better use of our current investments.

3. Where public investments are made, they must follow, and be proportionate to, productive private investments.

Build-it-and-they-will-come is a great movie plot. It is also a sure path to insolvency for governments. America needs to make strategic investments in transportation infrastructure, but only in support of productive private investments. From the taxpayer's perspective, a productive private investment is one that generates more revenue for the government than it creates in ongoing service burden. When we invest in productive places, the wealth of our country grows. When we take resources from our productive places and use them to subsidize unproductive places, we are weakening the financial health of the country and performing a public disservice.

While our public investments must follow productive private investment – in a sense, be secured from risk – they must also be proportionate to the private investment. We should not be building multi-million dollar interchanges, for example, to provide access to strip malls, gas stations and big box stores, all of which have very low financial productivity.

4. Communal wealth must not be appropriated for individual gain.

When taxpayers are called on to collectively make an investment in transportation and that investment disproportionately increases the property values (wealth) of an individual or corporation, that value needs to be captured to pay for the investment. State-funded transportation is a public good, not a lottery or – worse – corporate welfare.

State departments of transportation like to pretend they are not in the land development business, yet they take actions every day specifically to facilitate land development. Without measuring and capturing these gains, we continue to make dumb investments. We need to become more sophisticated.

5. The more complex and nuanced the impact of a transportation project, the more localized the funding mechanisms and design decisions must be.

The relationship between transportation and land use is incredibly complex and nuanced. For decades, transportation funds have come along with standards and mandates that are blind to this complexity and nuance. These funds overwhelm local budgets and induce local officials to undertake projects they don't fully support or believe are best for their communities, diverting resources from more worthy efforts in the process. We need to give local governments the ability – and the responsibility – to undertake and fund local transportation improvements in the way best suited for their community.

6. Where communal funds are used to fund transportation investments, there must be intensive and ongoing accounting to monitor the financial return-on-investment.

We have largely convinced ourselves that transportation spending creates jobs, opportunity and wealth for Americans. Does it? This is a testable hypothesis where we can generate and obtain plenty of data, yet we don't. Why?

If we were deliberative about collecting and analyzing financial data relating to our transportation investments, we would learn what the best investments are and, most importantly, how to build our collective wealth. If we are going to tax everyone and use that money as an "investment" for common good, we need to get serious about measuring the return on that investment.

7. In the absence of sufficient communal revenue to meet all communal obligations, priority must be given to transportation projects providing the greatest statewide financial benefit.

The lack of productivity in our development pattern is forcing us to do triage on our transportation infrastructure. The triage process should be focused and intentional, not a byproduct of avoiding political pain. Spreading out resources in a completely political process where everyone "gets their share" will guarantee that many high-returning projects are short-changed. America's cities need to focus on growing resources incrementally over time, the only way to truly improve our capacity to serve people.

4. Financing a mature transportation system.

Just because governments own, run and manage a system, they don't magically become immune to the financial constraints imposed on all capital endeavors. For the system to remain viable, revenues must exceed expenses, an accounting term known as profit. Governments should not be called upon to maximize the profitability of their transportation investments, but they can no longer operate outside of basic fiscal accountability. The assumption that roads create growth is no longer enough to justify the allocation of scarce resources.

Our current transportation system has become desperately insolvent. Drawing inspiration from the financing of the transcontinental railroad network, I have put forth seven operating principles to govern the financing of a world class transportation system for America. We built the interstate system we originally envisioned, then we built a lot, lot more. It is now time to take these investments and use them to mature our cities, making them once again the productive wealth engines that drive the economy.

Here is one version of how those principles can be applied. In general, my proposal optimizes our transportation system by reducing travel times between productive places while ensuring that our city governments have the ability, and the right incentives, to make productive use of our transportation investments.

<u>The Interstate System</u>

Maintenance of the *base* interstate system will continue to be funded by federal gas tax dollars, supplemented, as needed, by the state gas tax. The *base* system includes two lanes in each direction. This is the backbone of the communal system that taxpayers collectively fund. It is the transformative investment from which we all benefit.

Any lanes constructed beyond the base system must be subjected to congestion pricing, a mileage fee that would increase during times of high congestion and abate in slower times. A congestion fee will ensure that there is actual demand in place to justify expansion (or retention) of the base system. The revenue from this fee will not be put into the general revenue stream but instead be sequestered to fund maintenance and, where needed, future expansion of the corridor in which the funds were generated. This is the critical feedback mechanism that will ensure we are getting the most out of our transportation investments.

A few words about congestion pricing: Americans are used to and, in almost everything except highway systems, comfortable with the notion of congestion-based pricing. Airlines vary their rates based on demand. The same goes for hotels. The cost is higher at peak times and we accept this as being a fair and logical way to price a good or service. The higher the price the differential for peak times, the more incentive there is for providers to create additional capacity and for users to seek alternatives.

What I am proposing here is a way to actually measure demand – people's willingness to pay – and use that market signal to determine where additional capacity is necessary. Note that I don't suggest a specific price target; the level of demand will set that. I am simply suggesting that the funds raised in a specific corridor go towards maintaining and/or expanding that specific corridor so that we can find an equilibrium between supply and demand.

If a corridor is highly congested, the congestion price for one or more free flowing lanes will be really, really high. This will provide the revenue for expansion while, alternatively, give a strong market signal for people to consider other alternatives. If a corridor has little to no congestion, even at peak travel times, this is a clear indication that the extra capacity was not warranted and should be, at the next iteration of significant maintenance, downscaled in a cost-saving measure.

Any access points off the interstate must be in the form of an interchange. Interchanges will be constructed at a rate of no more than one per every six miles outside of a municipality, or one per 20,000 individuals within a municipality. Where interchanges conform to this dispersion rate, their maintenance should be paid through the gas tax. Where there are extra interchanges in place today, they should be subject to an access charge (toll for entering and exiting) sufficient to cover their long term maintenance costs. This will ensure we are not misappropriating communal funds for politically-driven (but not economically-driven) local initiatives.

Any new interchanges should be funded through direct assessment (value capture) of benefitting property owners. The authority municipalities currently have to conduct direct assessments should be provided to state transportation departments, where it hasn't already. This will ensure that taxpayers are recovering a sufficient share of the wealth their investments are creating.

The Metropolitan Planning Organization (MPO) system that currently directs much of the federal government's transportation spending should be redirected to study alternatives for corridor expansion in those places where excess revenues have demonstrated demand. In this structure, appointment to an MPO would likely be a boring commission in all but the busiest metropolitan areas, unlike today where members wield disproportionate influence on development patterns.

The federal Department of Transportation should assemble and distribute best practices for tracking and monitoring the ongoing real return (dollars in versus dollars out) of the interstate system.

<u>State Highway Systems</u>

Maintenance of the "base" state highway system should continue to be funded by federal gas tax dollars, supplemented, as needed, by the state gas tax. The "base" system includes one lane in each direction. As with the interstate system, this is the transformative investment from which we all benefit.

The same congestion pricing approach applied to the interstates should be applied to anything beyond the base state highway system.

Where interchanges are in use on the state highway system, they should be constructed at the same dispersion rates as on the interstates. Where interchanges conform to this dispersion rate, their maintenance should be paid through the gas tax. Where there are extra interchanges, they should be subject to an access charge sufficient to cover their long term maintenance costs. As with the interstates, any new interchanges should be funding through direct assessment (value capture) of benefitting property owners.

Any private access to the state highway system outside of a municipality, or within a municipality where the speed limit is set at 25 mph or greater, will be subject to an annual access fee. The fee will be based on a ratio of the traffic on the highway versus the traffic accessing the highway, using methodology currently applied in signal placing and benefit/cost analysis. Under such a system, a farmer with a driveway on a remote state highway might pay $25 per year since the impact of a single home on a low volume roadway would be minimal. A strip mall on a congested corridor may pay thousands (or more) to offset the cost of slowing traffic on the highway. The access fee is compensation to the general taxpayer for degradation of the highway's capacity, which the general taxpayer paid for. Access fee revenue is to be used to purchase access rights and remove accesses along portions of the highway where the speed limit is set at 25 mph or greater.

Municipal governments would have the option to assume the maintenance and overall responsibility for any state highway segment within their boundaries that has a speed limit of 25 mph or less. It will be to their advantage to do so in order to cultivate land values. States would be allowed to establish a "turnback" fund with excess gas tax dollars (I anticipate there will be some) to facilitate conversion of these segments to true urban form before they are given over to the city for maintenance.

<u>Intercity Transit</u>

I emphasize transit between cities here because funding transit within cities is something I reserve for municipal governments. We don't have a lot of intercity transit today outside of the Northeast and what we do have tends to serve park-and-rides, cornfields and the back of big box stores, all financially unproductive uses. Those sunk costs can't likely be recouped and the cost of maintenance of those locations is not that great.

The capital costs of intercity transit need to be funded by a combination of (1) value capture and (2) revenue from congestion pricing.

Value capture can be done by a direct assessment of property owners whose properties improve in value as a result of the construction of the station. Another option is to allow a DOT to acquire the land directly adjacent to the proposed station using the same process currently used for right-of-way acquisition. As part of constructing the station, the transportation department would also be tasked with developing the property, the "profit" from which would be captured to pay for the station and any other related improvements. This would be a very complex process that would necessarily involve a partnership with the city and, through public bidding processes, private developers.

If congestion pricing along a highway corridor yields sufficient revenue (a reflection of demand) to justify transit improvements (high initial cost but ultimately lower costs per passenger per trip), then diverting that sequestered revenue to fund the capital costs of transit is a good investment. This is a decision which should involve the MPO.

Note that intercity transit has a sequential nature. Shuttle vans can provide great, low-cost transit between cities, building value on each end. After demand is established with vans, they can be replaced with a bus line to improve capacity and add even more value on each end. Finally, with enough demand on each end, rail becomes a feasible alternative using the financing mechanisms already described.

Operations and maintenance of intercity transit systems should be funded through the fare box.

Bridges

Bridges on the interstate and state highway systems would be paid with the gas tax where they are part of the "base system" as previous defined. Where they are beyond the base system, a tolling mechanism shall be established to cover the repair, maintenance and replacement of the existing bridge. Fares collected shall be sequestered for that purpose.

America currently has too many bridges to maintain. There is no justification for the construction of any new bridges on the interstate or on any state highway system when we literally have heavily-used bridges falling down and being closed due to deterioration. Replacement bridges must not automatically be overdesigned for huge future traffic flows, as is nearly always the case now, but should be designed based on a reasonable, data-driven analysis of existing flows and trends.

Bridges not on the interstate or state highway system shall become the sole responsibility of local governments. It is appalling that we have major bridges in disrepair, that in my home state of Minnesota we had a major bridge collapse with loss of life, and yet the state and federal bridge funds were recently used to re-construct two bridges near my rural home, one which provides service along a local road to a handful of people living in some very high-priced homes on an island. Federal and state bridge funds are badly misused currently and, for the foreseeable future, must be utilized solely for urgent projects on our major transportation corridors.

Finally, one-lane bridges that are currently rated "functionally obsolete" and are scheduled for replacement solely for that reason shall not be improved. Where traffic is sufficient to warrant more than one lane, the improvement may proceed, but we shouldn't improve any bridge that is functioning adequately simply because it doesn't meet some theoretical standard.

Freight, Air and Water

I wanted to include these simply to acknowledge that they are significant factors in the overall conversation, but I must admit that, besides airports where I have done some projects, I have limited knowledge of how we currently finance these modes of transport. My experience with airports has left me with a sour sense that, without a bizarre web of subsidies from the federal government, air travel would be limited to a handful major airports. I don't want to discount freight, air and water, but I don't have a lot to add (and our national debate seems to be focusing on everything else as well).

Complete Streets and Trails

I don't propose anything in conjunction with the interstate system.

We can aspire to trails between cities but, right or wrong, today they are predominantly recreational. Where they are not recreational but designed for commuting between cities, they can and should be funded by gas taxes and congestion fee revenue. Recreational trails are an important part of a community and a region, but they should not be funded with transportation dollars.

I would require that any "rails to trails" corridors be required to retain the rail alignment in perpetuity. It is important that we reserve the right to have a "trails to rails" program when that need arises (which I suspect it will).

Finally, I’m not a fan of how state transportation departments implement complete streets programs, which would more properly be called “complete roads”. Cities have far more incentive – and should be given even more – to build financially productive places. Such places are strongly correlated to bike and pedestrian facilities. By making cities more directly responsible for their own development pattern, their transportation investments and their revenue sources, local governments will have a tremendous financial incentive to incorporate excellent biking and walking infrastructure into their development framework.

Transportation Funding within City Government

In my home state of Minnesota, we had the “Minnesota Miracle” of 1971 where the legislature ended most local taxes and fees in exchange for agreeing to fund a number of local obligations with statewide revenue, the relationship between the state and local governments has been one of parent/child. This is similar to agreements made in states across the country during the same time period, the high water mark for idealism in the ability of top-down systems, flush with cash, to improve society. The parent (the state) may have made this bargain while aspiring to benevolence, but as resources have waned and demands grown, the relationship since has evolved into a controlling and dysfunctional version of the helicopter parent.

Author Judith Warner describes the helicopter parent as physically "hyper-present" but psychologically absent. States tell cities what development fees they can charge, the detailed process they must go through to charge those fees and directs the limited ways in which those fees may be spent.

My state, like many, allows local governments only one tax – in Minnesota’s case, the perverse and destructive property tax – and even establishes limits on how much that tax can be increased in any given year. Every city, regardless of whether the community is a county seat or a bedroom community, a center for mining or tourism, heavy into manufacturing or services, they all have the same tax structure.

In Minnesota, cities can’t adopt a local sales tax unless they complete the mandated process which includes (1) a direct tie to a specific capital project, (2) approval by a majority of local voters and (3) approval by our benevolent parent, the state legislature. Even when cities have met (1) and (2), the legislature has often withheld their approval.

Things might be different if the helicopter parent weren’t, in this case, such a deadbeat. Unfortunately, they are. Not only has the state repeatedly balanced their budget at the expense of local government aid (their part of the Minnesota Miracle grand bargain), it has made transportation funding a political undertaking, an approach that favors building new over the prudent but less politically-rewarding task of maintenance.

It’s time for daddy to let go.

When it comes to transportation, cities have the complex task of building productive places, the source of wealth that this entire exercise in government is meant to nurture and secure. Cities need to have every tool at their disposal, including:

- The option for a land value tax (instead of a property tax).
- The ability to create transportation districts, special taxing areas for funding maintenance.

- The ability to do direct assessments.
- Local sales taxes.
- Impact fees for communal infrastructure.
- An option for other customized local taxes, such as extraction taxes (mining/logging areas), lodging taxes (tourism areas) and even a local income tax.

In short, cities need to be able to customize their local tax and fee structure to meet the pressing needs – transportation and otherwise – of their community. No two cities are identical. They should not be forced to have the same exact revenue structure. If we are truly about cities being able to compete with each other – like it or not, that is how they are currently set up – then let them truly compete across a broad range of factors. Some cities may find a high tax and high service model to be optimum. Some may find the opposite. Let's let them try.

There is only one tool in the municipal toolbox that I would limit: debt. Debt is like dynamite. You use it well and you can clear away a lot of problems. Use it incorrectly and you can blow a place up. To limit the ability of cities to blow themselves up, I would cap municipal debt service at 5% of the current year's budget. I would allow that amount to climb to 10% only where voters approve. I would place a hard cap at 10%.

I do not know a state that currently puts a cap on debt. The market theoretically does but we've witnessed, sometimes spectacularly, how that can go really badly. Default isn't the only problem with debt. Excessive debt limits options and opportunities. It allows one generation to live at the expense of the next. I've seen cities that are deeply caught up in debt that they now spend 50% of their budget (and rising) on debt service. I've seen cities where no council member is under sixty years old take on thirty and forty year debt obligations. Both of those instances are inter-generationally immoral. The state does have an obligation to limit this type of irresponsibility, especially since –by currently limiting the range of options for cities – it is inducing the debt.

It is also important to briefly emphasize the difference between a land tax and a property tax. The former taxes the value of the land only (just the dirt) while the property tax includes both the land and the improvements that have been made. The land tax creates an incentive to improve one's property (since only the land is taxed, taxes don't increase when the property is improved) while the property tax creates an incentive to allow properties to decline (improving a property raises one's taxes). If we want cities to be successful, if we want to build wealth within our state, we will stop discouraging people from improving their property.

In conjunction with giving cities more options for paying for transportation improvements locally – including streets, sidewalks, trails and transit – we need to repeal one of the most destructive forces acting on cities today: the local transportation aid systems.

Again, the dysfunctional helicopter parent provides resources to make transportation improvements, but those resources come with a litany of design standards, many of which are not compatible with creating value and building wealth throughout our communities. I'll provide one example from my hometown that I've seen dozens of times around the country.

H Street in Brainerd, Minnesota, is 44-feet wide. It runs through one of the oldest, traditional neighborhoods in the city. Few people park along the street – the city's code requires off street parking for every lot – and the openness combines with the width of the street to give it a drag strip feel. Speeding is a problem, particularly near the school, and the city often sends a police officer out to park during pickup and drop off times.

Last summer I was part of a team that did a speed study on this street. We tested the impact that narrowing driving lanes and adding bike lanes would have on speed. Our results suggested the change would reduce speeds dramatically. When it got to the city, the proposal was rejected, not because anyone opposed the idea or because it wouldn't work. It was rejected because this hyper-local street – a street that carries little traffic, all of it from the neighborhood – was built with state aid money and the state aid standards require wide lanes.

In our current way of funding local transportation improvements, we've legislated stupid, destructive outcomes. These are complex, nuanced situations that can't be successfully micromanaged from a centralized state aid office. I could provide dozens of examples where state aid is the primary driver of stupid. This entire system should be shut down, the money that goes to cities today through the program given to them through a transportation block grant or through general aid.

Finally, I've already explained how I would address congestion between cities with congestion pricing evening out demand and ultimately funding additional capacity. Since today we treat congestion within cities the same way we do between cities (we add capacity), you might be tempted to believe I think the same. You would be wrong.

The proper response to congestion between cities is to build capacity. The proper response to congestion within a city is to intensify land use. The former is simple, almost mechanical. The latter is extremely complex and nuanced. After decades of ripping cities apart in the fight against congestion, it is time we recognize congestion as our best friend in our effort to build wealth and prosperity.

<u>Transportation Funding within Regional Government</u>

When it comes to transportation and our current funding crisis, regional highway departments are dinosaurs in search of a meteor. Their expertise lies in that unproductive wasteland between street and road, that stroad environment that neither moves cars quickly nor creates an environment of enduring value.

I can say with all conviction that I can't think of a county transportation project worthy of public funding. Perhaps there are some, but I can't identify one. Show me a county road that provides a critical link between two important economic centers and I'll show you a transportation investment that should be a state highway. Show me a county road that provides a platform for creating productive land use and I'll show you a street that should be part of a city system.

The greatest value the county system provides, which is does at great expense, is a marginal improvement in travel time on the first and last miles of many trips. These segments are simply not worthy of our scarce resources.

I would provide counties all the tools I would provide cities with a couple of extra provisions. Funds collected within a municipality for transportation must be used for transportation within that municipality. Funds may not be transferred from within municipalities to subsidize the transportation desires of individuals or businesses located outside of the municipality (something nearly every country currently does that is self-destructive, not to mention financially nonsensical as city dwellers pay county taxes too).

With dismantling the transportation aid system for cities, I would also dismantle it for counties, but while I would give cities the same money as a transportation earmark (without the design mandates), I would divert the county's current share back to the state system. The county road system has little to no statewide value. Where it has regional value, let the region fund it.

I am fully aware that there is a group of transit advocates that will be outraged by this suggestion. That is because, unfortunately, regional governments have become the funnel for federal transit dollars and, thus, the home of most of our nation's top-down transit investments. The political coalitions that are necessary to rank highly in these funding channels also requires the kind of design compromises that give us park and rides and multi-million dollar transit investments in corn fields, all while high demand areas go unserved.

My vision for transit is not a reinterpretation of the automobile highway – corridors for commuters – but a return to traditional transit systems: investments in financially productive places. A successful transit trip begins in a financially-productive place and ends in a financially-productive place, connecting the two in a way that is scaled to the demand. Transit is an incredibly high-returning investment when it makes that kind of connection. When transit investments mimic the build-it-and-they-will-come mindset of the modern highway investment, they are just as unproductive.

5. Winners and losers

Today we have a transportation funding system that is highly political, full of entrenched interests. Despite building out the interstate system and then some, we continue to expand the system while maintenance obligations languish. The broad transportation-advocacy coalitions seen popping up around the country do not reflect the seriousness of the issue as much as they reflect the short-term vested interests of their members. America deserves better.

Like any change, the approach I outline – one way to build a world class transportation system – would create winners and losers, people whose power and resources grow and those whose shrink. It is important to understand where the major players sit.

State DOT's (WINNER): While state departments of transportation would have to change their mode of operation, it would be a welcome change for most of their staff. No longer would they be cajoled to build stuff they know makes little sense while they tried to patch together parts of the system they know to be critical. Instead, it would be very clear when an improvement was needed and where the money was to come from. These departments would need to become skilled at deploying a value capture technique – something they have no clue about today – and those on their staff that obsessively believe that building more is always good will be somewhat disillusioned. Even so, state transportation offices would have more money from funds redirected from the State Aid system which would make things somewhat easier during the transition phase.

Regional Transportation Departments (LOSERS): I called regional transportation departments "dinosaurs waiting for a meteor" and my proposal would completely defund their efforts. They would scream and moan at the unfairness of having to build their miles of unproductive stroads (street/road hybrids) without the benefit of federal and state gas tax dollars. Austerity is not a policy, it's a consequence, and if we are going to do triage, it only makes sense to do addition by subtraction and cut off funding to the leading driver of transportation waste, inefficiency and lack of productivity. As I do with cities, my proposal would give counties the tools to make their own decisions and raise their own revenues, but it is a task they will find impossible to do. There simply isn't enough value created in their parts of the transportation system, and thus enough wealth that can be extracted from their use, to justify keeping it going.

Municipal Governments (MIXED): In my proposal, cities gain all the tools they need to grow and maintain a strong town, but they lose the federal/state support along with the destructive design mandates. For many local officials, this would be a terrifying new world, one in which the buck truly does stop at city hall. They can't just sit around and wait for the federal and state governments to bail them out (or pass the blame when they don't). For other local officials, this would be a tremendous opportunity to build and fund a viable, productive city. While there would obviously be a transition and widely variable outcomes, over time the best practices of a strong town would reestablish (by necessity) and that knowledge would spread across society and the professions.

Chamber of Commerce (WINNER): It isn't clear to me why the chambers of commerce around the country are advocating so strongly for increases in the current approach as doing so wouldn't directly benefit all but a handful of their members (those positioned to get a quick gain from one of the proposed system expansion projects). I suspect their support (or the way they are explaining their support to their broad membership) is an effort to stem the overall decline of the system. If that is the case, they should embrace this proposal, which is the only serious approach out there to truly balance supply and demand while addressing long term maintenance. I suspect they would complain about not having transportation-oriented commerce subsidized to the extent they would like, but I think they could get over that.

Unions (WINNERS): It is also not clear to me why labor unions everywhere are expending so much time and resources trying to get the modest transportation proposals passed. The new money in every proposal is supposedly going to capital improvements – not to salaries and pensions of their members – but we all know how this game works. Nonetheless, if you are a public employee today, you have a huge vested interest in seeing that the government does not go broke. Proposals that keep the current system in place guarantee our future insolvency, even if they do buy us a little more time until we have to face up. My proposal actually provides a stable financial environment where public employees can keep their jobs and their pensions.

Highway Contractors (WINNERS): There is no way for highway contractors to come out losers in this discussion, unless we absolutely go bankrupt and do nothing. Under any scenario – including mine – they are paid to build stuff. I'll acknowledge that, in my world, there will be less stuff to build. Still, these guys are going to make good money long into the future by maintaining the miles and miles of stuff we have already built.

Developers (WINNERS AND LOSERS): The United States has an approach to land development that is amazingly simple and straightforward once one understands it. Those formulaic developers that fall in line around every transportation expansion, whether it is a new interchange or a greenfield park and ride, will be losers with my proposals. Bewildered, who-moved-my-cheese kind of losers. There is an entire class of developer that is struggling to emerge, however, and they will be winners. This would be the entrepreneur (in the traditional sense), the one who buys the house in foreclosure across the street to fix up as a duplex or opens an office in their garage to kick start a business. All the capital currently flows away from these players, but they are the ones that will stitch back the fine-grained economies needed to make our cities strong again. Shifting capital from low-productivity corridors to high-productivity cities will increase opportunities for the upstart developer.

Truckers (LOSERS): The massive subsidy for over-the-road hauling will be wound down (sorry Amazon, WalMart and McDonalds) and this will cut into the profits of shipping companies. Actually, it will not cut into profit margins (the amount made per trip) but it will reduce overall demand. Higher prices for delivered goods will mean more stuff will be transported for longer parts of each journey by rail/boat and there will be an increased market for locally produced goods. Again, for much of the country, this is addition by subtraction.

Transit Advocates (WINNERS): Unfortunately, they won't believe themselves winners at first. Most transit advocates I know – "*Chuck, I just want a train*" is one lament I've heard – buy into these transportation funding coalitions with the promise of accelerated action on transit. In joining in these efforts, they are giving up their greatest leverage: the fact is that transit generates far greater financial returns than any highway project today. Under my proposal, transit advocates would need to go about the hard work of actually building a place, but once they figured that out – a task they could accomplish with the wind now at their backs – it would not just be the scraps they would be fighting over anymore.

Bike Advocates (WINNERS): Biking and walking infrastructure, even more than transit, is the immediate high-return, transportation investment. The immediacy is due to the low cost, ease of construction and the high impact. When cities have the tools and the incentives to focus on their long term health (as opposed to the political incentive to chase the big project), investments in biking and walking will be ubiquitous. We're not talking about going from 1% of the transportation budget to 2% (what today would be considered a monumental victory for bike advocates). We're talking 25-50%. If you want biking and walking infrastructure, focus on return-on-investment.

Environmentalists (WINNERS): While I'm not going to claim to understand the entire environmental movement or the motivations of each complex part, in general my proposal will result in fewer automobile miles traveled, less intrusion on habitat in order to build automobile infrastructure and ultimately a reclamation of some places already impaired. On the flip side, it will also result in an intensification of the land use pattern, an essential (and inevitable) outcome but one which many environmentalists fight against on the ground.

Urban Dwellers (WINNERS): Clearly, ending a system that takes wealth from financially productive urban areas and transfers it (in the name of "economic growth") to financially unproductive areas in the suburbs and exurbs will help urban dwellers. And while some urban areas will use their money for parking lots, stroads and traffic signals because they don't understand how wealth is created, it won't take long for those that haven't yet figured it out to fully understand that catering to commuters is not the path to prosperity. My proposal creates instant, albeit incremental, opportunities for urban improvement that should accelerate over time.

Suburban Dwellers (MIXED): I'm going to lump suburban dwellers into two categories (probably unfair): those who choose the suburbs as a lifestyle preference and those who "drive until they quality" and have chosen the suburbs purely for perceived affordability. For the former, assuming they have the wealth to live in other places but choose the suburbs, their quality of life would improve. Congestion pricing may bring more costs but it will also bring consistently shorter commutes and predictable investments in transportation infrastructure. Suburban cities would have more tools to meet financial challenges and improve the quality of life for residents. Without the current collection of subsidies, they will have to pay for more of what they want, but that is the kind of government many theoretically envision anyway. Many cities will likely do a decent job.

For the latter – the drive until you qualify – well, their outlook is not likely to be that optimistic. While trading the cost of a car and gasoline for lower housing costs has some logic (even many urban neighborhoods in the U.S. require a family to own two cars to thrive), when the cost of commuting goes up, that is going to hurt. Not only will suburban housing prices continue to drop in response – likely by huge amounts – but these people will have longer commutes that likely now involve carpools. The American dream they were chasing will be found to be a mirage – a very sad ending that could have been avoided had we made this necessary policy switch earlier.

Exurban Dwellers (LOSERS): Take the losses of the "drive until you quality" suburban dwellers and put them on steroids, then you will have exurban dwellers. While some of these people are rural dwellers living too close to a major metropolitan area, the majority of the population is tied to and dependent on that metro for their livelihood. The last link in the Ponzi scheme always loses the most and, unfortunately in this case, that is the exurban dweller. In the coming generation, many of their homes will be used for salvage, the individual wires and fixtures and trim having more value disassembled for use elsewhere. As we walked away from our urban neighborhoods after World War II, we will voluntarily walk away from these investments as well. My proposal simply hastens the inevitable and, by doing so, limits the number of lives that are destroyed in the process.

Rural Dwellers (WINNERS): While many rural dwellers would consider my plan a disaster – build them roads straight and wide is a rural mantra – I'm going to advocate that this would be a huge bonus for rural areas. And by rural areas, I'm not talking about the hobby farms on the far edge of town or the converted resort cabin on the lake or in the woods. I'm talking about real farms, forests and mines. The kind that are priced out of existence, forced to expand and over-commoditize, driven into debt and then completely disconnected from the local market. Rural dwellers have seen a little bit of benefit from the 45 mph culture, but really, we've also destroyed an entire way of life and placed well over half of this country's small towns on life support in the process. It is too late to save most of them – we're going to lose hundreds in the next decades – but to help the rest thrive again, we need to re-localize the economy. This proposal would help with that process.

Lobbyists (LOSERS): Transportation coalitions and their patrons – a long list of professional whiners dedicated to perpetuating and exploiting the centralized, paternalistic relationship between state and local governments – will not have much to do in a depoliticized transportation system, one dedicated primarily to maintaining what we have already built. As individuals, a lot of these people are probably decent and redeemable and so I hope they find jobs working for positive change in the places they live, albeit with a smaller expense account. I'm sure my Twitter feed will be a lot cleaner without their constant propaganda.

Local Politicians (MIXED): I'm often told (most often by the lobbyists and their patrons – see above) that local governments are run by idiots and we can't trust them to make good decisions. While I would put forth that government, in general, has a higher proportion of clueless people in leadership positions than we would like, it is not a higher proportion than we find in the general population. In other words, government leadership doesn't attract idiots but rather reflects the general competence of society (which has a fair number of idiots). That's a theory, mind you, so feel free to disagree.

I have worked with many city councils, however, where individual incompetence can be particularly magnified. That being said, I'll paraphrase the great Hans Monderman who said, "when you treat people like idiots, they act like idiots." Amen. Few sane people not interested in climbing the political ladder would want to be on a city council. You have all the responsibility, none of the power. You are a punching bag with little to no pay. It is a horrible job. It attracts a fair amount of low IQ, disgruntled, dead-end people because of that.

For that subset of our population, my proposal is going to be rough. Time to grow up and get real. For people who have the imagination, the leadership skills and the desire to make their places better, a new day will dawn. This is going to mean that some cities will innovate, adapt and see their places soar while others will stagnate or decline. In short, I'm describing the messy process known as "progress". So long as we don't let cities blow themselves up (which a limit on debt is designed to do), we can avoid most failures and even the worst run places can find a way to make incremental progress over time.

County Politicians (LOSERS): I want to be at the meeting when the county engineer is forced to explain how, without state subsidies and without shifting wealth from municipalities, they don't have any money to keep that over-designed highway from reverting back to the two-tire path it was thirty years ago. The five homes along that trail a generation ago are still the only development along it today, and the occupants of those homes – who pay a few hundred dollars a year in TOTAL county taxes yet have their road maintained, snow plowed, ditches mowed on someone else's dime – show up to lament how America is going to hell, how we are just not the great country we once were.

I know there is an urban equivalent to that – one where counties have a meeting with the fast food joints and strip malls along one of their stroads to see if they want to come up with some money now that the subsidies have disappeared. I'd like to be at that meeting too. Hopefully this generation of news reporters will ultimately provide some economic context for why a $200,000 public investment in sewer, water, sidewalk, curb, roadway and parking lot is not viable for a business slinging 99 cent tacos in a drive through lane.

State Politicians (LOSERS): You might say "winner" and I certainly think any legislature that passed my plan would ultimately be seen as statesman of the highest order, but in the short term, politicians are loath to give up power, which is exactly what they would be doing. As the current transportation financing approach is seen more and more to be a bad trade for most, there might be some winners in making a change. I'm not naïve enough to think we are there yet. There is still a lot of road to kick this can down, albeit with a growing number of potholes.

Free Market Advocates (WINNERS): I count myself among this group and I love the concept of transportation spending decisions actually being made by supply and demand, not political patronage or an arbitrary standard. In a related sense, I also love the notion that local governments can customize their approach to the economics of their own community. (Note that there is a fairly large swath of people that think of themselves as "free market advocates" that will be shocked to find out how insolvent the current system is and how non-market oriented it is. They will have to find a way to make their free market beliefs congruent with their socialist outcomes, but that will be a healthy inner struggle.)

Small Business Entrepreneurs (WINNERS): I'm separating the locally owned and originated business from the franchise or chain business. The latter is really a vehicle for absconding community wealth, not building it. Many small businesses start out by serving a local market, but the table is tilted so far in support of their franchise/corporate competition that it is the rare gem that can make it. If we want an entrepreneurial culture, we have to tilt the table the other way, in favor of the locally-owned enterprise. Today, I would just settle for a level playing field. My proposal would be a big step in that direction.

Seniors (WINNERS): Today's new class of seniors have grown up with the automobile. And affluence. They are not used to anything but an improving situation and are rather disillusioned with the notion that America may have overshot with our transportation system. Their generational mentality is the driving force for today's transportation coalitions, the notion of "more is better." As this group moves in greater and greater numbers to urban areas – which they are doing – they will support and even demand improvements to our cities. That this will mean defunding their approach of the past 40 years won't occur to them (they will assume we are a great nation and, of course, great nations do this kind of thing, thank you Tom Friedman), but they will be able to ignore it, or blame it on others, because it won't be their day-to-day reality. That day-to-day reality will be whatever they demand it be because they have the voters, their people in power and a disproportionate share of the country's assets. As Boomers cut back on driving, we will all cut back on driving. End of story.

Children (WINNERS): The happy accident of the Boomers ensuring that they will be winners in whatever economy comes next is that, for the time being, the transportation interests of seniors aligns with those of children. I used to love going to the store with my parents. My kids hate it. Why? A large part of the reason is that a trip to town means twenty minutes each way strapped into a seat in the back of the car. It is boring and I don't blame them for hating it. A modern transportation system will give children the autonomy their brains and bodies need to thrive.

American Taxpayers (WINNERS): Transportation is a means to an end, not an end in and of itself. Today our taxpayers are asked to serve a system that doesn't properly serve them. My proposal aligns the desires of citizens with the actions of government, without the filter of political patronage. It also creates a new set of incentives for local communities to work on addressing the needs of their people, not chasing state and federal money. Transitions are often difficult, and this one would not be pain free, but the result of a little bit of pain today – or a whole lot of pain in the future – will be a stronger, healthier and more prosperous America.

6. Questions and answers

I penned an opinion piece in the Minnesota Daily (the campus newspaper at the University of Minnesota) about congestion pricing back when I was an undergraduate in civil engineering school. At that point in my life I believed – like most Americans today believe – that gas taxes pay for the cost of highways, that any lack of funding was due to bloated bureaucrats taking money from roads to pay for other things and that rural areas generated most of the revenue in the system. If that article surfaced today, it may be a bit scandalous, especially given how much my understanding has changed over the years.

Of course, the gas tax comes nowhere near paying for the road system. The cost of bureaucrats – bloated or not – is a small percentage of transportation funding. And rural areas pay a tiny fraction of the cost of their transportation, instead relying on the financial productivity of urban areas to maintain their lifestyles and what they inappropriately label a “local economy”. It is a cruel world.

When I released an early version of these thoughts on the Strong Towns Blog, I took a lot of heat over congestion pricing. I want to elaborate a little bit and, for those of you having the same difficulty, see if I can find some converts.

With the current highway system, we design for rush hour – for peak flow – and, ironically, we call that efficient. For places like my hometown of Brainerd, that means for 10 minutes each day the main highways are a little congested. For the remaining 23+ hours they are vastly underutilized. That is quite a perverse definition of efficient.

For major metropolitan areas, the peak flow is spread out over a longer period of time and congestion can snarl roadways for hours. Yet, when new capacity is built, the pent up demand combined with the induced demand (people drive more when it is easier) often overwhelms any improvements. In places where traffic flows are stagnate or declining, plans that have been in the works for decades are often mandated to plan for aggressive growth.

It is difficult for many of us to understand how congestion pricing of roadways would work because we are used to the current system. It is easier to understand when we think of cell phones. Or subway fares. Or airline tickets. If the airlines had to have enough capacity for the day before Thanksgiving and couldn’t charge anyone a different rate for flying in peak time or on a red-eye, well, they would quickly go bankrupt. We all get that supply and demand is balanced by price in these markets – a congestion price during peak times – and that optimizes the system.

Note that I intentionally use “optimize” as opposed to “efficiency” as efficiency usually is a one-dimensional measurement while optimize acknowledges complexity and the need to balance different objectives. We have too much one-dimensional efficiency, especially in transportation, and not nearly enough effort at optimizing.

Where congestion pricing or mileage charges have been tried (or proposed) in this country, they have generally been about raising revenue, not optimizing the system. Some proponents of congestion pricing theories would argue with that assertion, but I have yet to identify a system that captures the revenue from a priced lane and targets it towards capacity improvements (including transit). If you congestion price a heavily-used urban freeway and then use that money to resurface an exurban frontage road, you're being really dumb. I don't blame people for opposing that.

If we are going to move away from a project prioritization system that is both politically-driven and focused on new construction into a modern system focused on maintenance and optimization of our current investments, then there needs to be an objective signal – other than whining constituents – for what improvements are a priority. Politically, "congestion" is a relative term. The people of my hometown of Brainerd, Minnesota, and the engineers that plan and build that city, believe they struggle with congestion. For anyone who has driven in Southern California or the suburbs of Chicago, the suggestion that Brainerd has any congestion at all is so ludicrous as to be beyond laughable. Yet we line up at the trough to whine for our share – or more – of highway money. And we get it. The same is true in nearly every city in this country.

Putting a price, not just on the lane but on the time of day that lane is used, and then sequestering those funds for the ongoing maintenance and improvement of that lane, will allow the market to send a clear signal for what the high-returning investments are. This clear signal would be free of any politician, bureaucrat or interest group. I find that to be quite elegant.

Here is some of the specific feedback I received on these thoughts and how I respond.

"Chuck, isn't congestion pricing just a Lexus lane for the rich?"

I can see that, but I think that effect is mitigated in a few ways. First, by sequestering the money collected on the congestion-priced lane and using it for capacity along that corridor, we are essentially using the revenue of those willing to pay more for the capacity (not all of which will be rich) to build that capacity. The new capacity will be available for everyone (albeit at a cost).

Another important factor here is that our scarce resources will be applied where there is the greatest demand, not the greatest political connections. While the former might sometimes benefit wealthy drivers, this proposal is going to be a lot more egalitarian than the current patronage system.

And right now our system is pretty fair in that, when it is overly congested, it doesn't work for anyone. That means it doesn't work for the rich dude in his Lexus, it doesn't work for the single mom running late for her job interview on the other side of town, it doesn't work for the van of construction workers carpooling to the construction site and it doesn't work for the small business owner making an urgent house call. Having that capacity there – always – is going to be a benefit for everyone.

My proposal also allows for other responses to congestion other than increasing capacity. In most urban situations, the proper response to congestion is a maturing of the development pattern. It is going to provide that single mom late for the interview a lot more opportunity if she can drive across town on the congestion-priced lane OR consider a job opportunity closer to home. Our current system, which addresses peak efficiency, doesn't optimize for job/housing location. We need a system that optimizes more, provides rote efficiency less.

"Why, Chuck, would we not apply congestion pricing to all lanes?"

I theoretically like the idea, but I see two problems. First, we have already built the system with gas tax money and I think there is a certain logic to maintaining that base system with that source of revenue. I would even be open to increasing the gas tax if that is needed to support the base system, although I don't think it would be (at least not as I've defined the "base" system).

Second, there are a number of parts of the transportation system that are important but are simply not viable with a mileage tax or congestion pricing system. A lot of farm roads, logging roads and mining routes are critical to the economy but don't pay for themselves with their usage. Amazingly, political influence has built many of these routes beyond anything needed for farm, logging or mining (just visit Minnesota's Iron Range to see a most bizarre collection of empty, Jim Oberstar-funded, four-lane, divided highways), but that is beyond that "base" and thus would be subjected to congestion pricing. In one life cycle, that excess capacity would be abandoned. But the components necessary for getting those commodities to market would still be there, and I think paying for those through a gas tax is a reasonable solution.

And there is only so much inertia we can overcome at one time. Containing and channeling our communal funding into maintenance of a defined system would be a huge victory.

"Congestion pricing sounds great in theory but I'm against it for privacy reasons."

I understand this concern and respect it. Included in the "base system" of my proposal would be lanes that would not be subjected to congestion pricing. An individual could always opt to stay out of the congestion-priced lanes and, thus, remain as anonymous as they presently are able to.

"I disagree with your plan, Chuck. We should just raise the gas tax until people stop driving."

While a couple people called my proposal "politically naïve", I'm guessing it is far more politically viable than raising the gas tax a buck or two.

While some people may think eliminating driving would be a good thing, I'm not one of them. If my system cut vehicle miles traveled (VMT) but 50%, I wouldn't be sad, but the automobile is a really helpful device for travel between places. If its use were eliminated entirely, I think we'd lose something helpful and productive.

And in terms of being naïve, I find it kind of humorous to think that I'm naïve for proposing a plan that would solve the financial problem while transportation coalition groups like Move MN are not considered naïve for proposing a band aid (one that makes the underlying problems worse) and my fellow Minnesotans are not considered naïve for believing a small tax on wholesale gasoline will result in substantive change.

"*Chuck, I just want a train.*"

I interpret this as, "*Chuck, the coalition is promising me a train when nobody else will.*" Good luck with that.

"Are you really suggesting we use the congestion pricing revenue for transit?"

Yes, depending on the situation. If we have a lot of trips between two productive places, so much so that our congestion-priced lanes are producing revenue in excess of what is needed to maintain the lanes, then transit is likely a great option.

The equation here is all about moving goods and people between two places. I want to optimize that and so transit would absolutely be on the table. We'd be fools to not include it.

If you are worried about fees from automobiles going to transit, why? If we can reduce traffic – and this lower the congestion charge – by adding transit, why is that not good for the automobile driver?

"Under your system, Chuck, a lot of highway miles are going to be abandoned or otherwise not maintained."

That is a feature, not a flaw. Understand that under the current system, or with a system where we raise a marginal amount of additional revenue through a hidden or communal tax, we are still going to abandon and not maintain miles of highways and other roadways. The present system is overbuilt and is going to contract. My proposal would triage that contraction with some market forces and an emphasis on supporting places that are making the most financially productive use of these public investments. The alternative is to triage based solely on political influence and patronage, a system I do not believe will produce good results.

"I believe there is a larger role for the federal government in promoting equity than what you suggest."

That may be so, but I would suggest two things. First, the federal government is not doing a fantastic job today of using transportation investments to promote equity. Most disadvantaged people would benefit more from walking and biking improvements than the transportation megaprojects we are currently prioritizing. The federal government can't work with the level of agility needed to make those types of investments, things like patching sidewalks and striping crosswalks. Often we use the "equity" banner to wrap around really horrible projects in order to make them more palatable. One of the clearest recent examples of this I've experienced is in Chester, Pennsylvania where federal funds were used to build an interchange for a soccer stadium next to one of the poorest neighborhoods in the country[xviii]. The disingenuous rhetoric on equity was palpable.

Second, I believe there are more nuanced and effective ways to achieve equity goals than through the blunt object of federal transportation funding. The gas tax is one of the more regressive taxes imaginable. The spoils of federal transportation spending are rarely directed to poor neighborhoods except as a means of limiting impact to affluent neighborhoods.

I can support social justice goals, but transportation funding is not the means to that end.

7. Concluding thoughts

The proposal I have outlined in this book is not perfect. I would not assert that it is. I also don't pretend that it is the only way to achieve a world class transportation system. That being said, it is a thoughtful approach that attempts to address the real underlying problems and provide a real, workable solution. This is in sharp contrast to the band aid, kick-the-can measures being put forth by transportation coalitions around the country.

Anytime one puts forward a concrete idea, people will attack it, even if they obviously haven't bothered to read it. I acknowledge that I tend more to the idealist side of the ledger than the realpolitik. I've said all along that the Move MN proposal being put forth in my home state is good politics. It would take tremendous leadership to propose something as truly comprehensive, complex and – quite frankly – challenging to our institutional inertia as my proposal does. We don't have that kind of leadership, and even if we did, that kind of proposal is generally only possible during a time of crisis.

One might think that a projected $50 billion transportation shortfall would presents a time of crisis in Minnesota, a $1.7 trillion gap nationwide likewise, but alas, we are still able to ignore the core financial problems we face. That may persist, perhaps even for some time, but the inevitable mathematics of overwhelming liabilities will collide with increasing costs and decreasing demand to create a crisis that cannot be ignored. There will certainly be an event – something similar to the housing correction of 2008 – that we will be able to blame our misfortune on, even though the occurrence of such an event is predictable, if not precisely identifiable in advance.

Our economy is incredibly fragile. Our approach to transportation funding is incredibly fragile. The coalition proposals being put forth around the country will make the system more fragile, not less. Fragile systems eventually break.

So when that crisis comes, instead of there being only the tired coalition of "more versus less," there will be another, credible alternative to consider. Between now and then, I want to sharpen and refine the ideas put forward in this proposal. And I want to get them in the hands of true leaders – all across the country – who can step up and inspire people at every level when the opportunity presents itself. That time is coming.

I'm personally deeply offended by the Move MN proposal here in Minnesota. A wholesale tax on gasoline is as disingenuous as it is crafty. That it is wrapped in a slick PR campaign, and all the right insider tradeoffs, all heretofore unquestioned by major media outlets, only intensifies my frustration. The broad coalition of vested interests – whether they directly benefit from more spending or simply by being players with a seat at the table – represents everything that I believe is wrong with government today. They will surely win the approval they desire. It is not a good outcome for Minnesota.

Someone emailed me and said, "*Chuck, I just want a train.*" I get that. We live in a country where, through a complex set of financial circumstances, we created an illusion of wealth that has conditioned us to think big. That isn't necessarily a bad thing. America needs big thinkers with big ideas. And if your big idea is a train, you've been in the wilderness a long time. I understand the impulse that makes you want to embrace a deal – any deal – that gets you that train now.

I have a big idea too. I want to change this country. Make it stronger. Healthier. More prosperous for everyone. I want to transform our governments, our businesses and our neighborhoods. I want a nation in a self-perpetuating cycle of improvement, a Zen state between pleasure and pain, where wealth is not a byproduct of efficiency, but of strength. Real, enduring strength. The kind that doesn't show up in the GDP report but instead is reflected in the generosity, contentment and humility of this country's people. That's what I want. That's my train.

There is no coalition for that. There is no ribbon cutting. No program or subsidy.

There's just me, along with a growing number of people that have joined me in building the Strong Towns movement. I hope you will consider being one of them.

About the author

Charles Marohn is a father, husband and an imaginer of great things. He is the founder of the Strong Towns movement and currently serves as President of Strong Towns, a 501(c)3 non-profit organization. He is an author, columnist, podcaster, amateur videographer and public speaker.

Marohn has a Bachelor's degree in Civil Engineering from the University of Minnesota's Institute of Technology. He is a licensed engineer in the state of Minnesota. He also has received a Master's of Urban and Regional Planning from the University of Minnesota's Humphrey Institute. He holds certification from the American Institute of Certified Planners.

Marohn is a member of the Congress for the New Urbanism and is active in their NextGen affiliation. He is also a member of the American Planning Association.

Charles, his wife, their two daughters and their two Samoyeds live north of Brainerd, MN.

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You can learn more about Strong towns online at www.strongtowns.org. You can reach Charles Marohn at:

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The next full length book from Charles Marohn will be released around February 2015. It will focus on the steps that municipalities can take to become financially healthy and strong. You can get the latest on Moneyhall, including pre-order information when available, at www.moneyhall.org.

ENDNOTES

[i] Your money or your life from the Strong Towns blog. July 17, 2014. http://www.strongtowns.org/journal/2014/7/17/your-money-or-your-life.html

[ii] Minnesota faces a bumpy road in trying to fund transportation needs by Steven Dornfeld in MinnPost. September 12, 2013. http://www.minnpost.com/politics-policy/2013/09/minnesota-faces-bumpy-road-trying-fund-transportation-needs

[iii] The list of members of the Move MN coalition is available on their website at http://www.movemn.org/about/.

[iv] The promise of a "comprehensive, balanced, gimmick free and dedicated" funding proposal was on the MoveMN website at http://movemn.org/move-mn-agenda/ when they released their proposal. It has since been removed.

[v] Coalition unveils transportation tax plan by Tim Pugmire of Minnesota Public Radio. February 18, 2014. http://blogs.mprnews.org/capitol-view/2014/02/coalition-unveils-transportation-tax-plan/

[vi] A New Direction: Our Changing Relationship with Driving and the Implications for America's Future by U.S. PIRG Education Fund. Released on May 14, 2013. http://uspirg.org/reports/usp/new-direction

[vii] *Transpo agencies are terrible at predicting traffic levels* by Angie Schmitt of Streetsblog USA http://usa.streetsblog.org/2013/12/17/study-transpo-agencies-are-terrible-at-predicting-traffic-levels/

[viii] Federal Highway Administration data from https://www.fhwa.dot.gov/ohim/onh00/chart3.htm

[ix] Some Perspective on the Gas Tax by Strong Towns http://www.strongtowns.org/journal/2014/7/24/some-perspective-on-the-gas-tax.html

[x] Failure to Act report from the ASCE at http://www.asce.org/infrastructure/report-card/economic-study/

[xi] Road Diet Conversions: A Synthesis of Safety Research by Libby Thomas http://katana.hsrc.unc.edu/cms/downloads/WhitePaper_RoadDiets_PBIC.pdf

[xii] For more on financial productivity, see my essay on the Fool Proof City on the Strong Towns blog. http://www.strongtowns.org/journal/2013/11/25/the-fool-proof-city.html#.UxQj2_ldVsg

[xiii] Instead of a communal fund, I originally called this a "slush fund". I am trying to describe a mechanism whereby we all pool our resources and then re-allocate them to project, sometimes very local projects. The term "slush fund" was deemed by a few to be too political, although, in a politically-driven system, I think it more accurately describes the way these type of funding mechanisms are used. I have settled on "communal fund" because I don't want people to get hung up on the politics of this discussion but focus, regardless of affiliation, on the distorting effect our policies have.

[xiv] I'm providing here a simplified explanation for what evolved in many complex ways across the continent. Value capture was the primary mechanism the railroad companies used to build their lines. There were many instances, especially as the system matured, where governments provided incentives, including loan guarantees, to the railroad companies in order to entice them to build in ways they favored. Even so, it was the value capture mechanism that was the primary funding source for construction of the railroads.

[xv] At Strong Towns, we have written extensively about the exchange of near-term benefits for long-term liabilities that post World War II growth patterns have provided. More information on this can be found within the Curbside Chat (http://www.CurbsideChat.org) or at http://www.strongtowns.org/the-growth-ponzi-scheme/.

[xvi] Note that the risk governments take on include not just the immediate cash flow risk but the long term risk that the tax base and wealth generated by the private sector as a result of the public investment will be insufficient to meet the long term maintenance obligations the government assumes in the transaction.

[xvii] For those that are interested, we wrote a report about government experimentation and risk taking called Neighborhoods First. It is available on our website at www.StrongTowns.org.

[xviii] I wrote about the Chester, Pennsylvania, case in the blog post PennDOT Fiddles. http://www.strongtowns.org/journal/2012/12/17/best-of-blog-penndot-fiddles.html