

COMMENTS ON WISCONSIN DEPARTMENT OF TRANSPORTATION'S I-794 LAKE FREEWAY BICYCLE/PEDESTRIAN FEASIBILITY STUDY, MILWAUKEE COUNTY

Note to reader: to get you through the numbers, I have used bold type where I draw conclusions. I'm happy with numbers, and so is WisDOT. But we need everyone to make the City, including those who think with vision, beyond numbers. Thanks for your patience with the technical issues.

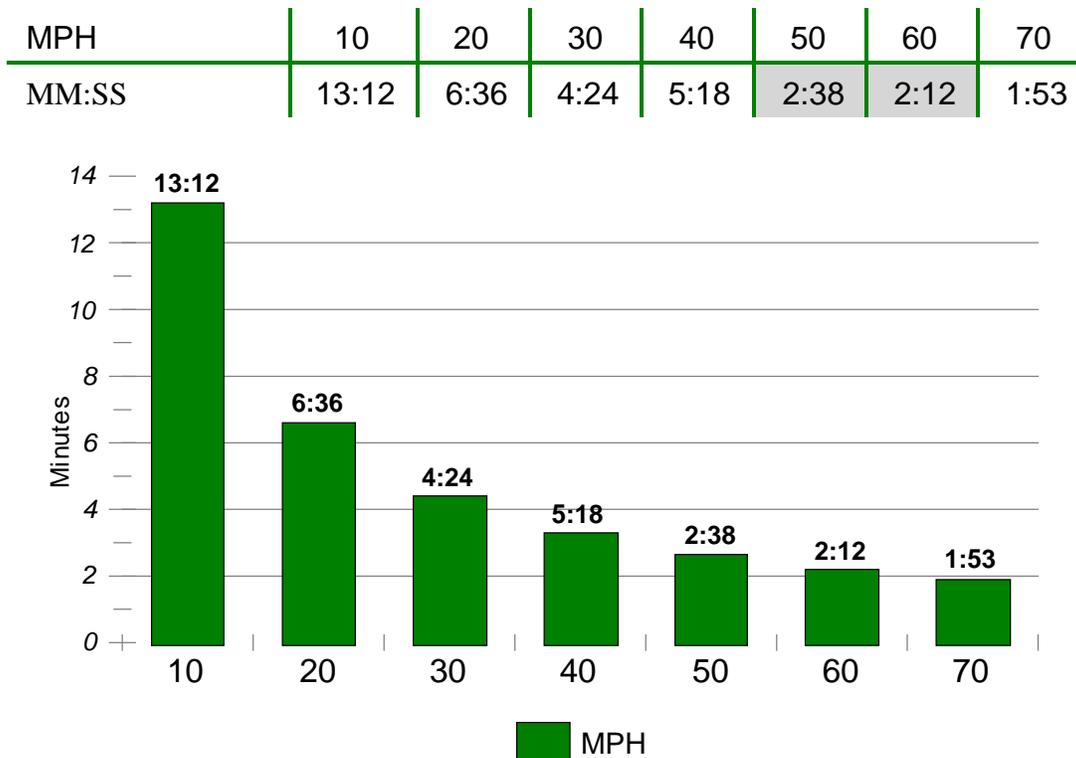
HIGH SPEED, SHORT DISTANCE = LITTLE GAIN.

WisDOT Project Development Chief Brian Roper pointed out to WisDOT's November 14 audience that 60 mph is common on the Hoan. Roper, disclaiming advocacy, observed that drivers typically travel 60 mph on the Hoan, and the planners used that fact in their traffic analysis in the FEIS.¹

The 2.2 mile long Hoan Bridge, built to freeway specifications, is a relatively short piece of the Interstate. While 60 mph is usually appropriate for long distance travel on the Interstate system, the driver benefit of 60 mph on the 2.2 miles of the Hoan is seconds. **Drivers who observe the speed limit of 50 mph will travel more safely than those who exceed the legal limit. And the difference in travel time is only 34 seconds.** [2:38 less 2:12 = :34]

Formula: time = speed * distance: [time = (60 / MPH) * 2.2 mile]

Travel time on the Hoan's 2.2 miles



¹ A transcript of Mr. Roper's comments on 60 mph:
<http://www.milwaukeerenaissance.com/BillSell/WisDotCommentsOn60MPH>

The advantage of over-the-limit speed in a 2.2 mile stretch of road is small. I ask WisDOT engineers to maintain perspective on the relative value of speed.

THE GAP

Recommendation from Wisconsin Department of Transportation:

"A minimum four-second following distance is recommended under ideal driving conditions. However, in [10] situations, you **may need more following distance** to be safe."²

A safe Gap includes both reaction time and braking time. The faster the car is traveling the more distance it covers during these four critical seconds.

The calculus done at the University of Washington (Seattle) shows **that a moderate speed makes for the least congestion.**³ A moderate speed allows cars to be closer together safely; traffic can then move at a reasonable pace, avoiding the start-stop annoyance of congestion.

Slide 9 of the same PowerPoint shows the 55 mph rate sustaining a larger through-put than higher speeds of 60 to 75 mph. Notice: higher speeds congest earlier under growing volume, then gravitate to a throughput comparable to 50 mph. **Speed as well as volume contribute to congestion; moderate speeds actually move more traffic.**⁴

A motorist is more likely to prefer a regular speed to the aggravation of congestion. I do not get a sense in the FEIS that this is articulated by WisDOT.

CONGESTION

Since speed and The Gap can trigger congestion, let's consider the highway environment itself.

Consider: the only time during any day that congestion on the northbound lanes is a question (according to WisDOT) is the 7 a.m. to 8 a.m. hour on weekdays. Otherwise congestion appears with a lane closure or an accident.

Consider: The 40 mph two-lane **Lake Parkway feeds the Hoan Bridge** from the south. To turn traffic going from 40 mph to 50 mph into congestion on the Hoan would require a traffic-slowing event such as an accident or construction.

Consider: **Carferry Road also adds traffic** to the northbound Hoan, but this is a single lane ramp with an uphill curve, which in turn is fed primarily by a single residential road (Russell) from a quiet neighborhood - restricting ramp traffic volume to something less than 30 mph.

² "*Motorists' Handbook*, WisDOT, May 2010, BDS 126. p.43 [emphasis is WisDOT's]

³ PowerPoint, Slide 8. <http://courses.washington.edu/cee320w/lectures/Freeway%20LOS.ppt>

⁴ PowerPoint, Slide 9. <http://courses.washington.edu/cee320w/lectures/Freeway%20LOS.ppt>

Consider: A report⁵ to WisDOT last July 2008 suggested that the Hoan be removed and replaced with surface roads. This "tear down and develop" attitude about urban freeways has found adherents and success in other cities.⁶

While this plan was scuttled under intense pressure from many sources, WisDOT appeared at the time of that HNTB Study to be considering that the Hoan is underused and replacing the Hoan with surface roads would result in \$5 billion of development. I found citizens who were sympathetic to WisDOT's ambition.

In the opinion of many observers, the Hoan is decidedly underused for 163 hours per week; adding a bike and walking lane would make the Hoan an iconic and well-utilized structure that will attract bicyclists, tourists and business services in Bay View and Downtown.

TOURISM

During the Harley rallies, motorcyclists found the bridge and its view, stopping to take photographs. Thankfully, the sheriff did not shoo these well-meaning guests off our bridge. **With a protected bike lane, the bridge will become a photography haven. Is that less important than a tiny benefit in speed for morning commuters?**

TRAFFIC VOLUME

Speed and tight-gap driving do little to improve traffic volume as traffic becomes dense.

DEFINITIONS

Gap: Space between the driver's car and the car ahead. Safe drivers use wider gaps at higher speeds. The larger gap means fewer cars per mile.

Virtual Car Length (VL): Length of Car (here 10 ft) + Length of Gap

The Gap rises proportionately with speed. WisDOT-recommends a 4-second Gap.⁷ A 3-second gap, is condoned in some states. And the 2-second Gap – well, it's a life-changer at worst; at best it is congestion bait – individual drivers fighting congestion and making it worse.

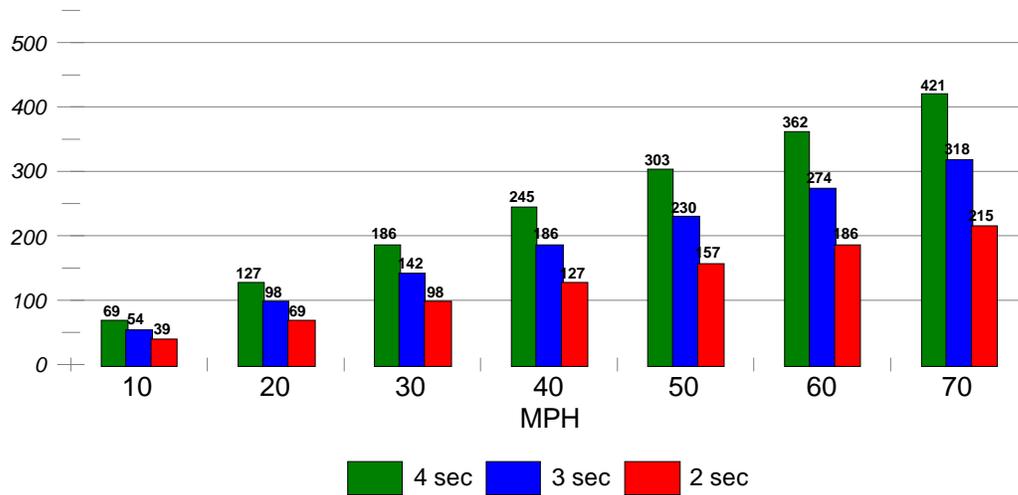
⁵ "Hoan analysis recommends land roadway," MJS, Oct 3, 2008
<http://www.jsonline.com/news/milwaukee/32471134.html>

⁶ Tearing down highways; saving cities, Yonah Freemark and Jebediah Reed.
<http://www.infrastructurist.com/2009/07/06/huh-4-cases-of-how-tearing-down-a-highway-can-relieve-traffic-jams-and-help-save-a-city/>

⁷ See footnote 2 above.

The Length of Three Gaps plus Length of Car (in feet)

MPH	10	20	30	40	50	60	70
4 sec	69	127	186	245	303	362	421
3 sec	54	98	142	186	230	274	318
2 sec	39	69	98	127	157	186	215



NOW WE CAN CALCULATE TRAFFIC VOLUME.

Traffic Volume: The vehicle count at a moment in time, or at a specific rate.

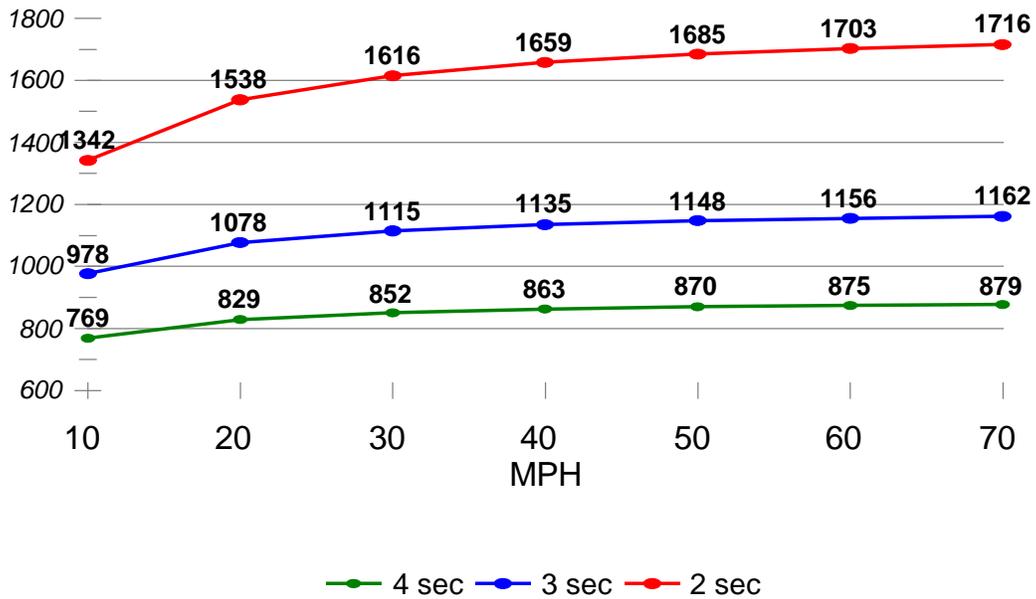
MPH: Speed at any given moment.

Traffic volume (Cars Per Mile) is calculated from two factors: 5,280 feet per mile; Virtual Car Length. We assume here that the average car length is 10 feet. Formula: $[5280 \text{ ft per mile} / \text{VL}]$

Traffic Volume (Cars Per Hour) is calculated by multiplying Traffic Volume Cars per Mile by the MPH Rate. Formula: $[5280 \text{ ft per mile} / \text{VL} * \text{MPH}]$ or $[\text{Cars Per Mile} * \text{MPH}]$

Traffic Volume/Hour @ Speed, Rated by The Gap Between Cars

MPH	10	20	30	40	50	60	70
2 sec	1342	1538	1616	1659	1685	1703	1716
3 sec	978	1078	1115	1135	1148	1156	1162
4 sec	769	829	852	863	870	875	879



Note, as speed rises, in differences in traffic Volume shrink. This is related to smart drivers who observe the larger Gap that high speed requires.

Increasing speed from 40 mph to 50 mph

- 4-second Gap⁸ delivers **7 more cars per lane per hour** [863 to 870].
- 3-second Gap delivers 13 more cars per lane per hour, but raises the risk. [1135 to 1148]

Speeding up from 50 mph to 60 mph

- 4-second Gap delivers **5 cars per lane per hour** [870 to 875].
- 3-second Gap to delivers 8 more cars per lane per hour, but raises the risk. [1148 to 1156]

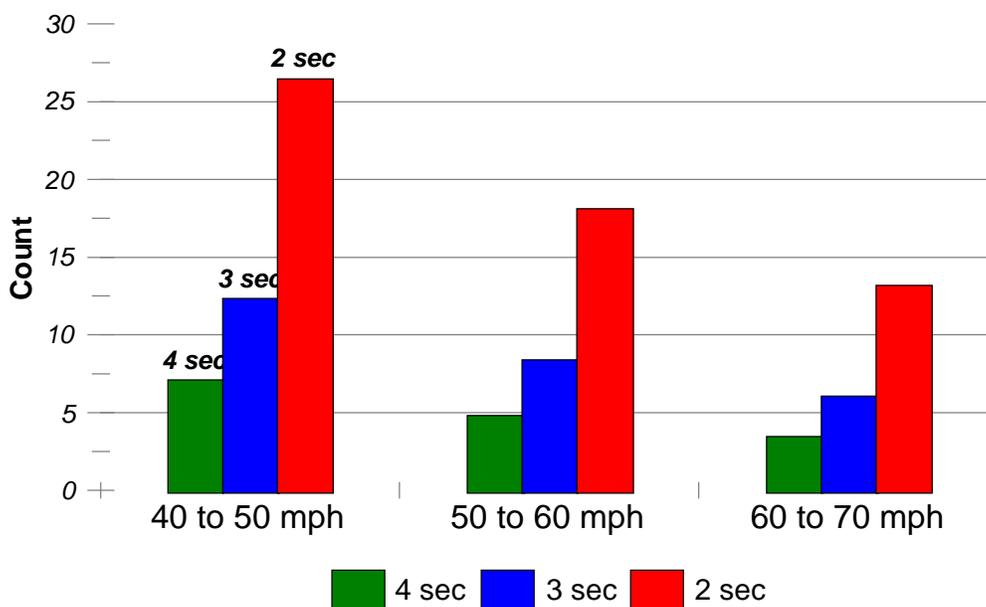
⁸ See footnote 2 above.

There is no huge payoff in traffic volume with increased speed or risk. This may be counterintuitive, but volumes diminish as gaps enlarge.

For those who prefer a chart for comparison numbers; this one brings the slight changes in volume into clear focus.

**Increasing Car Volume
by Increased Speed or Reduced Gap**

Gap	40 to 50 mph	50 to 60 mph	60 to 70 mph
4 sec	7	5	3
3 sec	12	8	6
2 sec	26	18	13



Excessive speed and "following too close" are not only dangerous but the "benefits" of aggressive or illegal driving on a short stretch are ever so small.

So much for the laws of physics – which are preface to traffic planning: Distance = Rate * Time, or Time = Distance divided by Rate. And the well documented evidence of the distance required to bring a car to a full stop.

Now let's apply this to the FEIS, the Hoan Bridge itself.

TRAFFIC VOLUME ON THE HOAN

From WisDOT's FEIS:

WisDOT's 2011 Hoan FEIS now reports that during the construction of the Marquette interchange, and the interruptions of I-94 at the Mitchell interchange construction, **"that traffic on the Hoan Bridge has remained relatively stable during the same time period [2002-2010]."**⁹

"Interestingly, the current lane closure from 3 to 2 traffic lanes in both directions of travel on the Hoan Bridge for maintenance activity indicates a June, 2011 reduction of 12% in weekday volume compared to 2010 volumes going from 51,800 vpd to 45,400 vpd."¹⁰

Summerfest and July 4th gatherings do not generate more traffic than do the peak commuter hours.¹¹ (As an aside, this bodes well for the future, with growing traffic gravitating to a summer event; many would have the choice of a safe bicycle path taking each family member directly to the door of the events. Transportation options besides the car offer a practical way to build safer participation in these events. **The South Side has few of the safe bike paths that are abundant on the North and East Sides. Our City government has long advocated for a bike path on the Hoan.**)

The historic directional distribution of morning peak hour traffic has "slowly been decreasing."¹² Evening peak hour traffic "distribution has remained relatively stable over time with a minor decreasing trend."¹³

Both I-94 due west of, near and parallel to the Hoan and the Hoan bridge itself are configured as six-lane freeways. But the capacity of I-94 ranges from 90,000 to almost 130,000; while the Hoan capacity is slightly above and below 40,000. This discrepancy points to the under-utilization of the Hoan, except for the peak hour in five mornings per week that is pertinent to the FEIS.¹⁴

The "concerns" about congestion mentioned in the August 2002¹⁵ press conference announcing the end of the previous Hoan bike path Study, have not materialized. In fact, **the FEIS reports that in**

⁹ FEIS, p.23.

¹⁰ FEIS, p.25. Figure 6.2 available.

¹¹ FEIS, p. 27

¹² FEIS Figure 65., p 29

¹³ *ibid.*

¹⁴ FEIS, Figure 6.1, p.24

¹⁵ A personal note: I was present at the meetings when "concerns" about congestion were raised and discussed, using a software tool (Corsim) that presented a visual demonstration of congestion, projecting 20 years into the future. What we saw on the projection screen was Free Flow traffic in a two-lane configuration with traffic projections for the 7 a.m. weekdays of 2021 - not congestion.

the past decade traffic volume had self-adjusted to the two events that were in 2002 anticipated to cause congestion on the Hoan: The Marquette interchange construction, and the construction of the Mitchell Interchange.

Those two construction projects moved along at relatively the same time, but the increase in traffic on the Hoan bridge did not reflect the construction-caused dips in traffic on I-94. Traffic on the Hoan rose slightly, briefly, and then fell back to pre-2005 levels after the Marquette and Mitchell projects.¹⁶ **The historical projections and the fears of traffic volume on the Hoan are exposed in the FEIS as not substantial.**

LEVEL OF SERVICE

From the former Director of New Jersey DOT, Gary Toth, I quote:

...press your DOT to move away from the LOS measures and to calculate travel time savings. This always puts the community and financial costs of widening a roadway in perspective. In New Jersey, when moved to this new measure, it was often realized that the **NJDOT was damaging communities and investing tens of millions of precious funding to shave a minute or two off of 45 minute or more commutes!**¹⁷

I have a personal unease about commenting on LOS as an equal with WisDOT planners, but I firmly believe that traffic design is a concept that must be within reach of the lay person. It is, after all, our city, our home that we are designing here. Mr. Toth, whom I know through a colleague of his as a gifted and visionary planner, spells out what I believe the citizen role in this process is.

I have done my best to present speed, distance, rates and congestion in terms I can understand.

LATENCY

Latency usually refers to unpredicted driver response to new roads, after under-predicting traffic volume. Is there a reverse Latency? Are there factors that reduce traffic and undercut the projections made with tried-and-true methodology?

The FEIS appears to acknowledge this by deploying a 0.05% "moderate" factor. But the FEIS does not list criteria; the lower percentage appears to be a guess. So let me step in here and suggest reasons why people might move away from car ownership.

Owning a car itself is becoming problematic, expensive. With worker productivity at an all time high, with wages stagnant, and with insecurities about any kind of employment today, the need to own a car will be a question.

First, let's get a professional comment on Latency, then I will make observations on the opposite trend, and the factors that we may need to consider.

¹⁶ FEIS, Figure 6.1, p.24

¹⁷ *A Citizen's Guide to Better Streets*, Gary Toth with Herman Volk. Project for Public Spaces, Inc. ISBN 9-78097-063-2449 [emphasis added]

The question has been raised by traffic planners. Here is an opening statement on a study of Traffic Reduction by the Victoria (BC) Transport Policy Institute.

It made sense to invest significant resources in roadway when the basic roadway system was first developed and automobile travel demand was growing rapidly. During that period highway projects provided high economic returns, consumers reaped large benefits, and there is little risk of overbuilding roadway capacity since it would eventually fill. But once the road system matures so there are high-speed highways connecting regions and a well-developed network of paved local roads, the marginal benefits of incremental roadway expansion tend to decline.

Transport planning and financing practices will need to change in response to reduced growth in vehicle travel demand and congestion problems, and increasing demand for travel by alternative modes. This will require reducing emphasis on congestion problems and roadway expansion and increasing emphasis on other planning objectives and other types of transport system improvements.¹⁸

In March 2010 I testified at the State Assembly in favor of a bill that would have fixed the fiscal crisis that is causing bus systems around the state to fail. One of my clients also spoke at that hearing. He spoke about recruiting young people to work for him. Since he already has an office in a large city, the decision about recruiting helped him make a point about transit to us.

Young people, he said, who wanted to work for him were not partial to Milwaukee because the other city did not require them to own and use an automobile to commute. Priorities of the generations shift; and this is clearly one of those choices that new young workers wish to make, building a life and a family without the financial burden of an automobile - \$8,000 to \$40,000 per year; insurance and parking are pricey in a city. The car is the second-most costly item after the mortgage, and for some more costly than health insurance.

The young have an attitude about cars in their personal future. Can we bring that demographic into the picture here? Does this affect Milwaukee? Yes, let me paint a quick picture I am witness to:

The young job seeker, with no marital ties, will hook up with a city brimming in prospects, rather than a company in a city where job mobility is scarce. I invite transportation planners to think about this generation; they will carry on what we build if we build it suitably. **Planning for this cohort of the young will make metro Milwaukee more attractive to them; ignoring this trend is not a good idea for Milwaukee. I know this generation and have seen in the last year several leave Milwaukee because we are letting our future get away from us.**

¹⁸ *Smart Congestion Relief, Comprehensive Analysis Of Traffic Congestion Costs and Congestion Reduction Benefits*, 6 November 2011. Todd Litman, Victoria Transport Policy Institute, p.6

PREFER ALTERNATIVE 1A

Because of the cost, I prefer Alternative 1A. Otherwise, any of the Alternatives are acceptable. I'm a bicyclist and this lifestyle has taught me frugality.

Cost is going to be a large factor, politically. Out of a \$3.6 billion dollar WisDOT budget¹⁹, **the Hoan investment of 20 to 50 years will serve the region particularly well if it is built as an asset in the minds of the next generation.** Bicyclists are also motorists so, yes, we pay for roads with gasoline taxes; but all citizens pay for roads through the variety of taxes. Bicyclists also send less money out of the state to support a car.

In this same article, David Riemer calculates that the gasoline tax covers 58% of the costs of road building and management in Wisconsin. Other taxes pay the rest. Yet, some citizens do not, cannot, or should not drive a car. It is imperative that the State serve up a wide range of transportation options.

Still, all that being said in favor of fairness, I prefer Alternative 1A, because any price will be labeled "Bike Path" even though it may well be "motor vehicle congestion" that drives WisDOT's decision.

TAKING AWAY FREEWAY LANES

Other cities have demoted whole freeways (larger even than our disbanded Park East) and found that traffic did not pile up in the city grid. A bike path on the Hoan would be a rather modest change compared to what these cities did to their city freeways. Graphic and compelling, this story comes from four other cities: *Huh?! 4 Cases Of How Tearing Down A Highway Can Relieve Traffic Jams (And Save Your City)*, Yonah Freemark and Jebediah Reed.²⁰

Pedestrian and bicycle traffic on this bike lane will spur development²¹ shops, bicycle stations and restaurants near Milwaukee's great lakefront.²²

Knitting together the County parks into one contiguous bike and walking path will redound to the benefit of the parks, and a renewed political will to save our park system. There is nothing like "eyes on" an object of beauty to save it from neglect. We want to make it easy for Chicagoans to find Bradford Beach – and our hotels and restaurants, to say nothing about a certain ballpark.

¹⁹ From the work of David Riemer, respected analyst and public citizen who lives in Milwaukee. *MJS*, April 3, 2010. <http://www.jsonline.com/news/opinion/89803737.html>

²⁰ <http://www.infrastructurist.com/2009/07/06/huh-4-cases-of-how-tearing-down-a-highway-can-relieve-traffic-jams-and-help-save-a-city/>

²¹ *Developers Cater to Two-Wheeled Traffic in Portland, Ore.*, Linda Baker, Sept. 20, 2011. http://www.nytimes.com/2011/09/21/business/portland-ore-developments-cater-to-bicycle-riders.html?_r=3&pagewanted=1&seid=auto&smid=tw-nytimesbusiness [you may need subscription access to NY Times files.]

²² <http://www.bikethehoan.com/FinalReport.pdf>

In San Francisco, walking the Golden Gate bridge is so popular that tour buses carry walkers to the bridge²³ because parking near the bridge cannot handle the thousands who want to walk. The can happen here, if we build it, and then market it. There will be nothing like this in the entire Midwest.

SUMMARY

I end my comments with a plea for balance. The issue of congestion arises (and then fades) only on the northbound lanes, only at 7 a.m. weekdays, only on 5 of 168 hours per week.

We are asking the commuter motorist to give back that 34 second advantage in the morning to the benefit of the community, to the economic health and well being of our shop owners and restaurants. It is no mistake for **a city to dedicate one iconic traffic lane to boast of its commitment to personal health.**

If we can give up that 34 second advantage and if we can give up the 5 more cars per hour per lane, I see a city:

- making a healthy move into the future,
- rich with diverse transportation styles,
- rich with local development because people can be closer to home,
- rich with bicycles demonstrating every day what the personal possibilities might be for every driver watching,
- a city rich now because the we are committed to growing away from the costs and problems associated with burning fossil fuels,
- a city finding the sustainable groove in spite of the stress of international competition, and
- kids enchanted with their bikes and their parks. Off the couch!

But it's time for the new decisions now, it is not the time for same-old decisions of another time, because now Milwaukee dares to rethink old problems. **Milwaukee is late, but we can turn that into a benefit - so many cities have gone before us and proven the value of a mix of transportation.**

Looking ahead, as a senior I can see better where we've been and have learned hope. Our bus service will eventually be rescued from its fiscal crisis. And the KRM commuter rail will regroup with new energy once elected officials understand WisDOT's true mission. **And your mission, DOT Planner, is this: transportation infrastructure; that is the key to bringing business to the region. Your mission is no longer to move traffic as fast as possible.**

As a entrepreneur I say: Give us the multi-modal infrastructure we cannot buy by ourselves, and we will come to the plate.

I see that this will happen in Milwaukee because it has happened (sometimes also painfully) in smaller cities: St. Louis, Charlotte, Milwaukie (Oregon), Minneapolis (yes, smaller than Milwaukee).

The small business development we can expect from people loving this bridge will be nothing short of phenomenal, and will be a major boost to the protection of our lakefront.

²³ http://www.sanfranshuttletours.com/golden_gate_bridge.htm

BAY VIEW

My home is in Bay View and our bridge is iconic. Its photo or sketch appears everywhere in our promotions, our literature, our sense of place. It is our bridge to love. And we want to use it, to its fullest possibilities. We don't want ALL the traffic on that bridge to come here at once; but some drivers will choose the grid, and Bay View welcomes them. And facilitating that choice is something a Transportation Planner can do.

More traffic on Kinnickinnic, Oklahoma, Lincoln and Howell Avenues will be served by the shops and restaurants here. Bay View neighbors encourage these visitors because we want shops and restaurants close to us. The many organizations that serve the neighborhood work for this kind of neighborhood, to name a few: Bay View Business Improvement District, Bay View Neighborhood Association, Bay View Community Fund (a/k/a Bay View Bash), and many others.

The Hoan is not an isolated tool designed to move automobiles as fast as possible. We see the bridge as bringing people to our neighborhood. Speed and Volume without Destination is madness. We would like visitors to come here to slow down and to sit down, with us.

Respectfully submitted,

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