SUFFOLK COUNTY

3 MINUTE SPEECHES

November 19, 2015

The meeting will be directed toward safety. Toward this end, I wrote 8 speeches.

Each speech is under 3 minutes. As I understand it, each one of you can present as long as do not speak for more than 3 minutes. So each of you volunteer to read one, preferably in the order I give them. I'll let Hector and Stephen hand them out. Let Stephan and Hector know which speech you would like to read. At their discretion, you will present or not present. I leave it up to them.

By the way, I understand the purpose of the 3 minute limitation. It prevents blabbermouths from blabbering without limit. However at the same time, the 3 minute limitation violates the Bill of Rights' 1st Amendment--the Freedom of Speech. By cutting short one's speech to 3 minutes, government literally *abridges* your freedom of speech.

Speeches:

1. Red Light Cameras Undermine Safety
2. The Safety Argument
3. You Are Using the Wrong Equation
4. The Left Turn Yellows
5. Engineering is the application of physics.
6. You Force School Bus Drivers to Run Red Lights
7. The Omission of Tolerances for the Yellow Change Interval
8. Longer Yellows Cause Drivers to Disrespect the Yellow

Red Light Cameras Undermine Safety

Speech 1

Ladies and Gentlemen, there are several problems with the red light cameras which undermine safety.

1. Red light cameras give government financial incentive to withhold proven engineering countermeasures.

2. Red light cameras give traffic engineers the scapegoat of blaming drivers for engineering malpractice.

3. Because traffic engineers set yellow light durations to an equation which opposes physics for general allowable traffic movements, all drivers good or bad must run red lights from time to time. The error is so severe in cases, people will be forced to crash and some will even die. There is no escape for any of us. We must obey the laws of physics. The error traffic engineers introduce through their equation is so systematic that the problem exists at every intersection. Every intersection plays out a game of Russian roulette. It is the reason why we slam on our brakes. It is the reason why we beat the light.

   The purpose of red light cameras is to make a profit from the error. Because red light cameras enforce this equation to precision, the local ordinance is like a law forbidding gravity. Everyone is guilty, or soon will be guilty. The systematic error is the reason why Suffolk County has ticketed its entire population. You can either accept this truth or you believe that resident of Suffolk County is a criminal several times over. Believe it or not, you should have suspected that the money is too good to be true.

4. Red light cameras can only induce more rear-end collisions. Crashes cannot go away altogether as the snake-oil Xerox salesman promises. At best, a red light camera can only transmute right-angle crashes into rear-end

collisions. The fault lays with engineering, not with driver behavior. No driver wants to run red lights. No drivers wants to kill himself.

5. First Responders Are Having a Problem. As Fire Chief Peter Ardle of West Babylon said, "His first responders take alternate longer courses to the injured in order to avoid the red light cameras." For fear of getting tickets, emergency teams avoid such intersections taking a longer time to reach those needing help. These responders are supposed to safeguard life, health and property, but the red light cameras of government can only make millions of dollars by putting life, health and property in peril.

6. Let me conclude with this story. It is of a man, an ambulance and a red light camera. The man was stopped at a red light. He heard an ambulance approaching from behind. In order to let the ambulance get through the intersection, the man would have to move forward into the intersection to get out the way. But that would make the man run a red light. Because of the red light camera, the man wouldn't budge. He'd get a ticket.

   Many red light camera programs claim that the man will not get a ticket or that his ticket will be dismissed. Lies. The camera's field of view conveniently does not include the ambulance approaching from behind. The field of view only contains the vehicle running the red light. Any cause which testifies to the driver's innocence is conveniently not within the time and frame of the video. Camera companies design their systems to that end. Providing the evidence to suggest innocence is not conducive to generating revenue.

   Thank you.

The Safety Argument

Speech 2

[Face the engineers.]

Safety . . . safety. We always hear that safety is your goal. You decree it from on high. You repeat it as a mantra. Safety is a good thing. We agree. But now we now ask you as professional engineers to reveal the whole truth. The whole truth is that the safe motion of traffic has little to do with the legal motion of traffic. Let me repeat that.

The safe motion of traffic and the legal motion of traffic are apples and oranges. Traffic can be safe yet at the time be forced to systematically run red lights. Each of you has chosen to conceal this information from the police and the legislators.

We are not ignorant. We know your profession's goals when it comes to signal timing. When computing the yellow change and all-red clearance intervals, we know you have 3 goals.

Priority 1: Efficient flow of Traffic

Priority 2: The safe motion of traffic

Priority 3: Last of all, the legal motion of traffic

The efficient flow of traffic can be achieved only by sacrificing the legal motion of traffic. According to the traffic engineers in Texas, from Texas DOT study 4273-2, yellows are first set to flow goals, second to safety and far down the list, 7th, is to enabledrivers to obey traffic laws. ITE has adopted these goals. You have adopted ITE.

It is standard operating procedure among traffic engineers to shorten the yellow to increase traffic flow with the known side-effect of forcing the innocent to run reds. To offset the safety problem, you increase the all-red a smaller amount of time. Increasing the all-red makes the intersection safer, but does not affect red light running rates. This strategy makes drivers see more green light during the

signal cycle, which increases flow, which enhances traffic capacity. This helps you satisfy your Level-of-Service goals, your first priority.

ITE recommends that you tune the yellow change interval such that it forces 1 to 3 of out every 100 drivers to unwillingly run red lights for a given signal cycle. ITE acknowledges that engineers are in full control of the number of people running red lights. ITE recommends to make good law-abiding citizens run red lights for the sake of attaining flow goals. Then ITE, to compensate for the introduced safety risk, tells the engineer to blindly hope that the all-red clearance interval compensates for the introduced danger.

Those instructions come from ITE's 2010 Traffic Engineering Handbook and ITE's 1994 Determining Yellow Change Intervals.

Let me conclude with this. You say, "We are following the federal guidelines." When you say that, you secretly confess that you deliberately make us all unwilling lawbreakers, subjecting all of us to unfair punishments.

[Facing Suffolk County Legislator Committee Chairman]

You may thank these traffic engineers for introducing systematic malfunctions into every yellow signal indication in the County. They have put the County in violation of Title 7, Article 24, Section 1111-b5 Subdivision "Oh." Through their errors and omissions, they have made you culpable for sending out hundreds of thousands of tickets which are null and void.

But there is something even worse than that. Traffic engineers have undermined the public trust. Any safety program Suffolk County wishes to make will be viewed as a ploy to make money. The public no longer trusts Suffolk County. It no longer trusts its legislators, its staff, and unfortunately its police. Traffic engineers have sewn badges of distrust and disrespect and affixed them on the forehead of Suffolk County government.

SUFFOLK COUNTY

3 MINUTE SPEECHES

November 17, 2015

YOU ARE USING THE WRONG EQUATION

Speech 3a

In Suffolk County's red light camera site selection process, Suffolk County says that it performs a video validation of the intersection in order to verify that the number of accidents that have occurred aren't an anomaly due to something other than driver error. The same selection process also says that Suffolk County uses ITE's yellow change interval equation to set the length of yellow lights.

Gentlemen and ladies, here is our problem. You are using the ITE yellow change interval equation. Very few traffic engineers understand this equation yet this equation is the problem. The equation sets the length of the yellow light to *half* the time to stop. You heard me correctly. The equation sets the yellow to HALF the time it takes us to stop our car.

It is for this reason that sometimes we feel compelled to beat the light or slam on the brakes. Once we are too close to stop comfortably, the equation commands us to go the speed limit or beat the light. Beating the light is the explicit mandate to the driver as written by ITE

That is the physics of the equation.

The ITE equation by its very nature, introduces anomalies. The traffic engineer calls the anomalies "dilemma zones". Dilemma zones are systematic. That is to say they are everywhere. There are two types of dilemma zones. 1) A type 1 dilemma zone is a stretch of road upstream from the intersection where if you are in it when the light turns yellow, you neither have the distance to stop nor the time to reach the intersection before the onset of red. A type 1 dilemma confronts the driver with an unsolvable decision. No matter what the driver

decides, physics makes him run a red light. Type 1 dilemmas exist at every intersection where a driver must slow down within several hundred feet of entering the intersection. A type 2 dilemma zone is less severe. A type 2 dilemma zone is also called an indecision zone. A solvable decision exists but the driver does not know what it is. Indecision zones always exist because engineers do not tell the driver exactly how long the yellow will last, nor do traffic engineers tell the driver the location on the road where stop turns into go. Lack of full disclosure causes a driver to judge imperfectly.

Traffic engineers blame dilemma zones on errant driver behavior, not on the faulty equation. That is because traffic engineers believe their equation is correct. They do not understand the equation let alone the side-effects of using this equation. For those handful of engineers who do understand, it is human nature for them to point a finger at someone else, rather than admit complicity in the unjust punishment of millions of innocent people, or worse, their deaths.

Suffolk County government must obey the 3 “E”s of safety. Engineering, Education and Enforcement. One cannot have the latter with first doing the former. Suffolk County has no right to enforce the law in the presence of engineering error. Drivers are not at fault. But traffic engineers are misapplying physics resulting in the loss of life, health and property of the public. That is the breaking of a different New York law—its engineering practice laws.

YOU ARE USING THE WRONG EQUATION

Speech 3b

Suffolk County's red light camera program is predicated on the assumption that engineers are not introducing anomalies which cause red light running. But traffic engineers have introduced anomalies. They have introduced a systematic error called the dilemma zone at every intersection. That is because engineers use the ITE yellow change interval equation.

The yellow change interval equation originated with the 1959 classic paper "The Problem of the Amber Signal Light in Traffic Flow". Written by 3 physicists, this paper clearly states that the equation can only be used for straight-through unimpeded traffic travelling at the constant maximum allowable speed towards and into the intersection, and that with additional preconditions—like dry pavement. For every other kind of traffic movement, the equation fails. The equation shorts the yellow by several seconds.

How did today's traffic engineers come to misapply the equation? That started when ITE miscopied the equation 50 years ago into its 1965 Engineering Handbook. This led to decades of misuse, misuse which continues to this day and to this County. It is true that ITE has studied the equation, made modifications to the equation, and refined its use. But the studies, modifications and refinements are in not in the positive direction. They have actually make problems worse. The equation is not intuitive but counter-intuitive. What they think helps, hurts. What they think hurts, helps. The introduction of a grade term in 1982, for example, is incorrect. The latest paper on traffic signal timings, NCHRP 731, is incorrect. All the inconsistencies in ITE papers over the years testify to a basic misunderstanding of the physics.

Many physicists have confronted ITE. ITE deliberately conceals this information. To acknowledge such an error is like the cigarette industry acknowledging that cancer causes deaths. For example, Dr. Alexei Maradudin--the highest authority in the world on this equation—because he invented the equation, told ITE last August that:

"My equation does not provide a long enough minimum amber time for . . .

1. Traffic turning left where the speed limit is greater than the intersection entry velocity.

2. Traffic turning right where the speed limit is greater than the intersection entry velocity.

3. Traffic executing a U-turn. U-turning requires almost double the time than what the formula provides.

4. Traffic approaching two close-by intersections. Traffic may have to slow down from the second light (or traffic waiting for the second light) before arriving at the first light.

5. Traffic preceding straight that slows down for vehicles entering and exiting the roadway to and from business entrances and side-streets near the intersection.

6. Traffic slowing down because of traffic density within the intersection making it impossible to continue at the initial velocity when entering the intersection.

7. Traffic slowing down because the speed limit decreases on the far side of the intersection.

8. Traffic slowing down for vehicles changing lanes in front of them.

9. Traffic slowing down for railroad tracks, bumps or potholes near the intersection.

10. Traffic slowing down for hazards like pedestrians suddenly entering the highway near or in the intersection in front of them."

That is only a partial list. Suffolk County does the "don'ts". Aside from max-green-time and gap anomalies engineers have introduced, the locations where

you have placed the red light cameras are where the ITE yellow change interval equation most fails the physics of the traffic movements. Such locations are red light camera gold mines. Such locations are also where you'll find your crashes.

Remember: No driver wants to die and scofflaws do not cluster. Anomalies in crash rates have nothing to do with bad drivers but all to do with bad engineering. Driver's drive the same regardless of location. That is civil engineering 101.

The yellow change interval opposes the laws of physics. Your red light camera law enforces the yellow change interval to precision. We cannot break the unbreakable laws of physics and so you have condemned us all. There is a law being broken here but it being broken by Suffolk County. Suffolk County is violating NY article 7, title 24, Section 1111-5b – paragraph o "oh". Suffolk County's traffic engineers have introduced a malfunction at every traffic signal yellow indication in the County. Suffolk County owes everyone a refund.

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THE LEFT TURN YELLOWS

Speech 4

[To the Traffic Engineers]

Let us discuss protected left yellow change intervals. Mr. Stephen Ruth has taken videos of several of these at various intersections around Suffolk County. They are 3 seconds long.

They are 3 seconds long for any speed limit, even on roads which are 45 mph and greater. Only a person who does not know basic physics would set them so short. By working the algebra backwards, we see that you set the approach speed to 26 mph. You set the approach speed to 26 mph despite that the speed limit is 45 mph. You have silently forbidden drivers to travel at the legal speed limit. A trap by definition.

A 3 second yellow gives a driver 96 feet to decelerate from 45 mph to a stop. 96 feet is about 5 car lengths. Can you stop your 45 mph car in 5 car lengths? That requires a deceleration of 23 feet per second per second. That is almost at the limits of a passenger car's ABS emergency braking capability. From your 3 second yellow, we see that you expect a driver to brake for a left turn yellow under normal conditions at head-into-windshield braking force.

How about those 55 mph roads where you set the yellow to 3 seconds. That deceleration requires 34 feet per second per second, literally beyond the emergency braking ability of any car on earth.

We know that you assume that all drivers who are going to turn left are in a turn bay stuck in a queue waiting for the light to turn green. You assume all cars are impeded and moving slowly, not unimpeded and approaching at the speed limit. But the latter happens often. It is common occurrence. These unimpeded drivers have a clear path into the intersection, see a green arrow, and they are going for it, as is legally allowed.

Do not offer the turn bay argument. It is does not matter how long the turn bay is. The driver can such scooch over into the turn bay at the last few moments as is legally allowed.

As a result of your 3 second yellow, you do not give the law-abiding driver the distance to stop. You do not give the law-abiding driver the time to proceed. You force them all to run a red light.

And to make matters worse, not only did you plug the wrong speed into the yellow change interval equation, but also you used the wrong equation. The ITE equation does not work for turning motions. The ITE equation computes 4.3 seconds and that value is only for a straight-through unimpeded driver 4.3 under the special preconditions. A turning driver, however, needs at least 5.3 seconds. It takes an extra second from him to slow from 45 mph to an intersection entry speed of 20 mph. Instead of increasing the yellow light duration to accommodate him, you decreased the time to 3.0 seconds. You did the opposite of what is required. This is a clear demonstration that you do not know what you are doing.

How many people have you injured? How many people have you killed? The yellow is so short that drivers by the laws of physics must enter the intersection after the all-red clearance is over. You have literally put conflicting traffic into the intersection at the same time.

Last August at the international ITE convention, Dr. Maradudin himself reprimanded ITE in a recited letter for ITE's screw up of left and right turning yellows, impeded straight-through movements, and for using approach speed less than the speed limit. Instead of ITE issuing a command to halt red light camera operations everywhere and to start increasing the yellow to the requirements of physics, ITE has chosen to conceal this information. And that is another story.

Thank you.

Engineering is the Application of Physics

Speech 5

[Face the Engineers]

I wish to remind you of the definition of engineering. Encyclopedia Britannica, Merriam-Webster's dictionary and State statutes define engineering as the application of the physical sciences. The physical sciences are physics, geology and chemistry. Therefore when you set the length of a yellow light, you are required to set the length using the proper application of physics.

For the last 50 years up to this day, traffic engineers have been improperly applying physics. Traffic engineers like yourselves have been using the wrong equation, the ITE formula, to set the yellow lights. Abiding by this formula shorts the yellow by 2 to 5 seconds for what is required by allowable traffic movements.

ITE and many traffic engineers have forgot the definition of engineering. Many engineers have redefined engineering as the mere following of specifications. The blind following of specifications is what technicians do, not engineers. ITE itself has a different and incorrect definition of engineering. ITE defines engineering as the result of consensus. ITE wrote this gem into its new traffic signal timing proposal. This is not engineering.

Laws of physics do not change upon consensus.

Laws of physics do not change upon specifications.

Engineering is the application of physics.

To do the engineering right, you must do the physics right.

We know that many traffic engineers do not even believe in the laws of physics. They do not believe that physics applies to yellow lights. Are you one of those? If so, then by definition you are not an engineer.

Do you believe that human factors trump the laws of physics? Many traffic engineers believe that. If so, I challenge you to fly out of your seat right now and see if human behavior can trump the law of gravity.

Do you believe that physics do not include human factors? If so you do not know the definition of physics, for physics includes all factors of nature. Besides, perception-reaction time is a human factor, a factor literally, in the physics of the ITE equation.

In the end, State law holds a professional engineer personally accountable for properly applying physics. It is your signature and seal on those traffic signal plans. That makes you liable for everything that occurs at your intersection. The NYSDOT is not liable. ITE is not liable. ITE is not going to be held responsible for your implementing their bad math, a guideline only. The Suffolk County is not going to hold itself liable for your errors either, nor should it. You are where the buck stops. Your signature and seal puts your head on the block. Every crash, every death, and every red light camera $ taken has been taken on account of your errors and omissions.

One last thing. We know that Suffolk County cannot put up a single red light camera without your personal approval. A camera is a traffic control device – so billed. All traffic control devices fall into your hands. Again you cannot point the finger. Regardless of all the legal abuses Suffolk County adds to your errors, you have enabled the misdeeds of Suffolk County.

We recommend that you take your seal of approval off of all the red light cameras now. Let Suffolk County deal with its own greed. Then begin to increase the yellow light durations. Start with adding 1 second to all through movements (ITE + 1), and make the turning lanes 1 second more than the through lanes.

This recommendation works wonders for safety. Watch you crashes go down 70%. But of course, increasing the yellow as such will take the gas out of Suffolk County's red light camera program. Suffolk County will lose several millions dollars each year.

Thank you

Traffic Engineers Force School Buses to Run Red Lights

Speech 6

[To the Police]

For you the police, we ask you to recall your crash reports. How many of those reports involve running a red light and a commercial vehicle? Commercial trucks, as you know, include tractor-trailers, public buses and school buses. How many of these crashes involve a turning vehicle and a commercial vehicle?

It is routine for a policeman or the DA to file charges against a driver for a crash. You generally don't think of the possibility that anyone other than a driver is involved. You see the driver of vehicle A. You see the driver of vehicle B. That seems to be the field of scope. Who else could be involved? The police really never consider a third party. But there is. There is a third party. Consider the traffic engineer. It is his intersection which through all drivers pass, or not pass.

When setting the length of the yellow light, traffic engineers use the average perception-reaction time of a passenger car driver. Not the average time of a commercial truck driver. When setting the length of the yellow light, traffic engineers use the average deceleration of a passenger car. Not for a commercial truck. When setting the length of the yellow light, traffic engineers assume a passenger car's disk brakes, not a commercial vehicle's air brakes which need about a half second to pressurize before working.

Let us first consider the word "average". Traffic engineers use the average time, not the maximum time, for perception-reaction. Traffic engineers use average deceleration, not minimum deceleration. If a structural engineer designed a bridge like traffic engineers time yellow lights, the bridges would sustain only the average weight passenger car. A heavier truck passing over the bridge could collapse the bridge. The analogy is exact.

Just as there is a known range of vehicle weights, there is a known range of human perception-reaction times and vehicle decelerations. But as opposed to bridge engineers, traffic engineers do not care. They do not consider all traffic allowable on the road for to consider it, means to decrease traffic flow. This

negligence and the back-and-forth arguments over this dates back to the 1930s. Flow wins . . . as always. But the traffic engineer does not tell you, the police, any of this.

Traffic engineers use a perception-reaction time of 1.0 second. But 2.2 seconds is the perception-reaction time of a commercial trucker. Engineers use a deceleration of 10 feet per second per second. But commercial trucks do not decelerate that rapidly. Commercial trucks do only 7 feet per second per second in order to stop comfortably. Truckers do not have the perception-reaction of a passenger car driver because truckers are worried about shifting cargo, jack-knifing and scaring vehicles driving alongside them. Transit vehicle drivers, like those of public buses, are concerned about the safety of their passengers. If a public bus driver decelerates at the more aggressive deceleration traffic engineers assume, the bus driver would knock all his standing passengers off their feet. That fact is from the Federal Highway Administration.

To accommodate the commercial vehicle's needs under normal driving conditions, traffic engineers would have to add 4 seconds to the yellow. But 4 extra seconds is taboo. That would decrease the traffic flow, and traffic flow trumps safety every time. In lieu of proper engineering, the engineer justifies his neglect by casting his hope on fate. He hopes that everyone else, even when they have the right-of-way, will luckily see the school bus coming and avoid it.

Suffolk County Government has uploaded a red light camera video showing 12 red light running clips. It is great video demonstrating what I have just told you. Even though about 5% of the vehicles on the road are commercial vehicles, 50% of the clips in the Suffolk County video show commercial trucks running red lights. Several clips are of school buses.

Any excuse that the traffic engineer offers, like truck drivers are professional drivers and thus have faster response times, or truckers can decelerate at a passenger car's rate, have no substance. All claims have been debunked for decades, the latest in Timothy Gates 2010 report, Dilemma Zone Driver Behavior as a Function of Vehicle Type, Time of Day and Platooning.

This I hope will shed light on the crashes you see.

Thank you.

The Omission of Engineering Tolerances for the Yellow Change Interval

Speech 7

[To the Police]

The red light camera delay is the amount of time a driver can run a red light without the camera system giving me a ticket. To what value do you set the red light camera delay?

Most jurisdictions set the delay to under 0.3 seconds. For your information, 0.4 seconds is the blink of an eye.

[To the Engineers]

Every branch of engineering and physics requires the use of tolerances to express the uncertainty or error in a dimension. Tolerances apply to distances, volumes, velocities, deceleration and even time itself. The yellow light duration, being a time, is no different. The yellow change interval has engineering error associated with it.

The known range of valid values for perception-reaction time is from 0.6 to 2.4 seconds. The distribution of the range of values is pretty much a solid curve from end to end. Likewise, the known range of valid values for deceleration is from 7 feet per second per second to 13 feet per second per second.

Given the standard mathematical technique of error propagation, one can compute the engineering error in the yellow change interval.

What is the engineering error for the yellow light duration for a 45 mph level road for a driver going straight, and unimpeded to the intersection? It is plus or minus 2.3 seconds. (+/- 2.3 seconds)

What is the engineering error for a left turn yellow light? For a 45 mph level road, the engineering error for is +/- 3.2 seconds.

[To The Police]

But do you not set the red light camera delay to 0.3 seconds or less? You are literally punishing drivers for engineering error. Drivers are entering the

intersection within the engineering tolerance of the yellow light, yet you are punishing them for it.

When you are on patrol and watching an intersection, you give drivers some grace time. You cannot issue a ticket to a driver who runs a red light within a second because you yourself, a human being, cannot detect whether he really ran the red light or not. It is too close. The driver is no different. Before you pull him over, you probably give him about 2 seconds. When you do this, you are innately following the rules of physics. You are literally “propagating error” in your brain and thus giving grace time to the driver to make a judgement over an imprecise mental calculation.

Engineering solutions are not written as just 4.3 seconds. They are written as 4.3 plus or minus some value. In our case 4.3 +/- 2.3 seconds. To let you know, any student of engineering or physics would flunk his class if he did not supply the tolerance along with his value.

Thank you.

Longer Yellows Cause Drivers to Disrespect the Yellow

Speech 8

[To the Engineers]

The common excuse engineers use to not increase the length of the yellow light is that a longer yellow will cause drivers to disrespect the yellow. Disrespecting the yellow means that drivers take advantage of the yellow and treat it like a green light. When confronted with all the problems we have be enumerating, traffic engineers will fall back on the disrespecting the yellow argument to justify their incorrect scientific processes.

Let us debunk this claim right now. The disrespecting the yellow is a legend and was dismissed in the 1959 classic paper The Problem with the Amber Signal Light in Traffic Flow, the same paper from where the yellow light equation came from.

The legend was again debunked in a paper dedicated to that topic. In 1961, Olsen and Rothery, in Driver Response to Amber Phase of Traffic Signals concluded from their data, "The results lend no support to a popular hypothesis; that is, that drivers tend to "take advantage" of a long amber phase by treating it as an extension of the green."

There is an amusing story behind the legend. The legend was true before 1930. Before 1930, traffic signals were very different. Back then a policeman stood in the middle of the intersection with the traffic signal. The policeman manually flipped a switch to turn the yellow to a red. The policeman would hold the yellow until he knew the driver was going to stop. The driver would test the policeman's resolve. The driver would keep on approaching, and treat the yellow as if it was a green, knowing that the policeman would hold the yellow for just a little longer. That is the origin of the traffic engineer's excuse, now obsolete. The disrespecting of the yellow stopped when a stepper gear and a motor replaced the finger of the policeman. In 1930, automation became the standard and automation does not budge in its resolve.

Let us come back to the present. There are many studies showing the opposite of the legend is true. Dozens of studies with millions of examples show that increasing the yellow light duration drastically and permanently reduces red light running. A one second increase above the ITE minimum will decrease red light running by 70%. There are no exceptions.

There is a simple reason why this always works.

Physics says so. The ITE formula opposes physics for general traffic movement.

There the closer the yellow time approaches the time to stop, the fewer drivers have to run red lights. Right now, traffic engineers set the yellow to half the time to stop.

Thank you.

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