LAKEWOOD ADVISORY COMMISSION
NEIGHBORHOODS COMMITTEE MEETING

MARCH 22, 2023
@ 6:30 p.m.
VIRTUAL MEETING

To join the Neighborhoods Committee Meeting:

By Computer: https://lakewood.zoom.us/j/81253223598
Phone Number: 1-720-707-2699
Webinar ID: 812 5322 3598
(press # after entering the webinar id then press # once more to join the meeting)
Press *9 to Request to Speak
(You will be prompted when to speak)
Press *6 to Unmute and Speak

Lakewood Advisory Commission meetings are public meetings where members are encouraged to attend and participate. In order to ensure productive meetings, Lakewood Advisory Commission members, as well as visiting guests, are respectfully asked to avoid grandstanding or repeating a point that has already been made, challenge ideas – not people, and to stay on task and topic.

AGENDA

1. **CALL TO ORDER** (3min)

2. **ROLL CALL** (2min)

3. **PUBLIC COMMENT** (3min)

4. **NEW BUSINESS** (20min)
   - For Committee Consideration: Neighborhood Noise Project – from Commissioner Sarah Griffin (attached)

5. **OLD BUSINESS**
   - Review of Neighborhood Links/Connect Lakewood Project to City Council on March 13, 2023 (5min)
   - Speed Reduction Project Update (attached) (20min)

6. **NEXT MEETING**
   - Next meeting scheduled for Wednesday, April 19, 2023, at 6:00 p.m.

7. **ADJOURN**

Agenda Attachments:
- Noise Pollution Request to LAC
- Draft Summary of the LAC Speed Reduction Project

LAC Grassroots Proposal Regarding
Effective Control of Noise Pollution

Lakewood neighborhoods are negatively impacted by noise pollution on a daily basis. Excessive noise from boom boxes (free standing and in cars), motorcycles/cars/trucks with illegal aftermarket exhaust systems, leaf blowers, car alarms, garbage trucks, busy highway/street noise, music venues with loud speakers/sound amplifiers, illegal fireworks and many other sources. Noise pollution is linked to many adverse effects including hearing loss, tinnitus, sleep deprivation, cardiovascular disturbances, mental and physical health impacts, aggressive behavior, and chronic fatigue.

Questions:

Does the current Lakewood Noise Ordinance, Title 9 Offenses Against Public Peace, Chapter 9.52 Noise, adequately address this growing health hazard to Lakewood residents?

How are other similar cities dealing with noise pollution?

What are the best practices that Lakewood could adopt, and would these include changes to the Lakewood noise ordinance, additional public education, and/or increasing enforcement?

The City Council should direct the Lakewood Advisory Committee to address the questions identified above and provide recommendations to the City Council.

Lakewood Advisory Commission

Speed Reduction Options and Recommendations

March 2023

Background: In fall 2022 the Lakewood City Council requested a report on speed cameras and speed/safety options for streets such as Jewell and Kipling. We note that traffic safety and management has evolved over time. Once the focus was almost exclusively on drivers, but as awareness of the 20-40% of people in each community that can't or don't drive has grown, cities are taking a more comprehensive view to ensure safety and mobility for all.

Summary of Research and Key Findings: There is an extensive body of recent research on the topic. The cheapest and easiest way to reduce speeds and improve safety is via re-striping. More advanced and increasingly effective ways to do that involve hardscaping or changing design so all users are safe and people want to drive more slowly. For streets such as Jewell, the gold standard is redesign for safe use by people of all ages and abilities and a "road diet". Some cities incorporate roundabouts instead of stop lights. A major aim is to slow traffic, often referred to as "traffic calming." Research has shown that speed cameras work to achieve that aim and that automated cameras are an effective and affordable approach short of re-design.

All of the below are cost-effective and recommended. The first two recommendations are ways the City could make best/**efficient use of existing programs**. Others, such as reducing speed limits city wide (like Denver's "20 is plenty" rule for residential streets, increasing visibility and safety) would **replicate other local best practices in Lakewood**.

1. **Take advantage of all repaving and repainting projects,** often a third to half of a city's regular transportation budget. These are key, low-cost times and opportunities to adjust striping to slow traffic and increase safety for people of all ages and abilities.
    - **When restriping, paint the lines closer for autos**; collision rates increase when lanes are over **10.5 feet wide, a good width or maximum for arterial lanes**.
    - **Neighborhood streets can have lane widths <u>less than</u> 10.5 feet wide.**
    - **Bump-outs and lane width restrictions at crosswalks naturally slow traffic** and shorten the at-risk distance to cross for pedestrians.
2. **Remaining/non-maintenance-related transportation dollars should prioritize further off-street multi-use paths**, connecting locations and gaps in the system.
3. **Reduce speed limits citywide**, as some cities have done. "20 is plenty" is the rule of the road on Denver's residential streets now, passing 11 to 1, increasing visibility, safety.
4. **Install speed cameras to slow cars** (e.g., near Kendrick Lake Park on Jewell). Speed cameras, used in more than 180 US communities according to the Insurance Institute for Highway Safety, have been shown to reduce crashes and injuries. **Part of the problem with speeding is noise**. **Some speed control cameras also evaluate noise**, which has been a regular complaint on Jewell. Noise has health effects, causing or exacerbating cardiovascular disease; type 2 diabetes; sleep disturbances; stress; mental health and

cognition problems, including memory impairment and attention deficits; childhood learning delays; and low birth weight. Scientists are investigating other possible links, including to dementia as well as cognitive impairment in children (hms.harvard.edu/magazine/viral-world/effects-noise-health, eea.europa.eu/articles/noise-pollution-is-a-major). See sample noise ordinance "Public property noise limits. No person shall produce, suffer or allow to be produced by any machine or device, or any combination of same, on public property, a noise level more than 15 dB above the local ambient at a distance of twenty-five feet or more, unless otherwise provided…."

5. **Design improvements**: More advanced and increasingly effective ways to do that involve hardscaping, changing the design. Some re-designs are major, adding roundabouts and more, but some are very affordable and easy to implement, test, and revise. See a 10 minute video from Manhattan, Kansas of seven improvements were implemented for less than $7500; design/physical improvements go up in cost from there, as safe, separated, and pleasant ways are built, that remove the possibility of cars hitting people who are trying to walk or drive bikes, strollers, wheelchairs, scooters, and more. See 2nd presentation here: https://vimeo.com/489610255).

One thing that is important to know about investing in safe/protected/separated infrastructure for people of all ages and abilities, beyond cars, is "if you build it, they will come." This is proven; people see they can be safer, that riding or commuting themselves is more possible for them, their children, or parents, and they use it. An extra foot of striping to buffer a bike lane is good but this is not "protected" or physically separated enough to create such appeal; compare paths separated from the street along Bear Creek or through parks to what is available along Garrison or not available in any fashion along or parallel to Wadsworth. Design improvements are a worthy investment and save lives, injuries, and health. The Council has a selection of other shorter term and lower cost "no brainers" in terms of cost and public benefit as well though.

Potential Basic Principles to Incorporate in Ordinances or Resolutions

- **Don't invest in what makes things worse**, such as widening roads or adding space for cars (speeding and worse driving). Reduce widths in accordance with research for safety improvements: 10.5 ft on arterials and less on painted neighborhood streets.
- **Make necessary road maintenance (resurfacing) do more for Lakewood residents** by adding affordable safety investments during restriping: reduce the distance for those walking across intersections with bumped out curbs. Narrowing lanes or crossing distances also helps car drivers be more careful and communicates shared space.
- ***Don't wait* to save lives and make our city more livable. Speed reduction is the cheapest and most effective thing that can be done right away.**
    - **Citywide speed reductions** to bring auto speeds closer to what won't kill on impact have been implemented in many places. These are dramatically effective. Denver just implemented these. Suburbs (like Montgomery County Maryland) just did.
    - **Speed control in problem spots/on certain corridors.** Speed cameras work.
    - **Re-design and invest in safe corridors for people of all ages and abilities**. 20-40% of the people in each community do not drive and need safe corridors, away

from or protected from cars. https://bit.ly/20-40percentDoNotDrive When this is provided, research shows that more people use these and community livability and local business revenues increase as well.

- **Apply for Complete Streets and Multi-Modal Options Fund money** to make design changes, implement road diets, connected and protected bike and multi-use paths, etc.

Longer Introduction to the Topic and Research Appendix

Speed is a big problem in terms of safety. As noted in an interview this month with USDOT Sec. Pete Buttigieg, Vision Zero (deaths) has largely failed in the U.S. because:

> engineers routinely design streets to support (and therefore invite) speeds well above the posted speed limit. Then, when speeding is observed on these streets, the manual published by the Federal Highway Administration requires that the speed limit be raised. Next, engineers have been aware for a quarter century that replacing traffic signals with four-way stop signs saves lives. When Philadelphia removed the signals from 472 intersections in the 1970s, severe injury crashes dropped by 62.5%. Yet engineers still routinely place traffic signals where stop signs should go. These are just two examples out of dozens available…
>
> In the Netherlands, 500 children were killed in traffic in 1971. This led to a national "Stop de Kindermoord" (child murder) movement, and a scientific rethinking of Dutch road design. By 2014, this effort had reduced the number of child traffic deaths to nine.
>
> How did they do it? Here in the U.S., engineers enforce "minimum design speeds"; Dutch engineers do the opposite. **When designing a street, they first ask what speed cars should travel in the neighborhood. They then shape that street to limit elbow room, so that drivers do not feel comfortable going faster**… Neither Helsinki nor Oslo witnessed a single pedestrian fatality in 2019. Meanwhile, Atlanta's Vision Zero coordinator was killed last year, run down with four others in a Chattanooga crosswalk.[1]

Former traffic engineer Chuck Marohn likens this activity to professional malpractice and documents how it meets the standards of gross negligence (Ibid). As lives and the ability of students/kids and their parents and grandparents to get around are at stake, not to mention those who can't afford a car or multiple cars in their family, it is important to understand that many of our community residents, likely increasing numbers, can't or don't drive. And there are also cases of those who shouldn't be driving, but feel like they have no or few other options. An elderly local book club had three accidents, wasn't safe to drive, and lost her license. She could ride a trike/3 wheeler, but there are few places where it is safe to do so. Lakewood kids have been hit by cars on their way to school, at gaps in protected paths, such as along Old Kipling.

Safety is a big and growing issue and there are proven solutions (See article in Bloomberg). Along with speed, in the past several years, **aggression on our streets has grown**. Cities found that more driving space during COVID led to faster driving lead to speed exceedances, recklessness, and accidents that kill. The extra noise, stress, fear for community residents, along with the prevention of enjoying the city, the street, or ability to use the public space also negatively impact city residents. These costs are unaccounted for in decision-making.

What *is* accounted for in current decision-making? Fatalities and injuries are calculated *when a ticket is involved* and the driver is charged. **The costs of other injuries, close calls, and deterred**

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[1] thehill.com/opinion/finance/3853943-secretary-petes-safe-streets-plan-wont-succeed-if-engineers-continue-business-as-usual/

walking, bicycling, activity, and mobility by all is not calculated. The city, business, and other costs of missing infrastructure for safe paths and mobility for those not in cars are not included, just as the costs of avoiding, or needing to avoid, more active mobility are not calculated. The costs to community well-being of having more pleasant and inviting streets to be outside on are not calculated.

The costs to health have been known for some time, with regard to the big five indicators used for decades: the contribution of fossil fuel pollution from vehicles to strokes, cardiac arrest and disease, respiratory disease, asthma, and emergency room visits and sometimes lost work and school days – these have been calculated in some areas. **However, the groundbreaking research of the last decade, that studied and documented the effect of fossil fuel pollution on health and the full range of mental, emotional, and all physical health, through the inflammation process and potentially more, are not included in transportation planning or local decision-making processes.** The regulations for air pollution were designed before these wide-ranging impacts were known and these are not included in transportation decision-making or financial allocations. Decades ago, the costs of air pollution from vehicles pointed to a different set of solutions. With the additional research on health harms from this past decade, is it 5-10x higher and more important to make different choices that promote health rather than harm? To take just one area, going on a decade old: 21% of Alzheimer's and dementia cases can be traced to air pollution. People across the political spectrum care about cognition and well-being, and avoiding negative impacts.

There is a broad spectrum from best/ideal development of safe and accessible mobility for all, with design and infrastructure investment for that. **Citywide speed reductions and speed reduction cameras in problem areas are one of the easiest, fastest, cheapest to implement, save lives, and improve safety and usability.** Bloomberg (11/3/22) noted the following:

- **US underperformance in road safety:** 11.4 Americans per 100,000 died in crashes (2021)
- **US roadways have grown more deadly during the last two decades**, especially for those outside of cars. Last year saw the most people walking killed in the US in 40 years. Deaths among those biking rose 44% from 2010 to 2020. In 2021, as the US hit a 16-year high for fatalities, Japan and Norway posted the lowest number of road deaths since the 1940s.
- **US results come from policy decisions that elevated fast car travel** and automaker profits over roadway safety. Other countries made different choices and they've saved lives as a result.
- **The contrast is especially striking among so-called vulnerable road users**, a category that includes people walking as well as those using bikes, scooters and wheelchairs. According to the OECD, deaths of people hit while walking in the US rose over 40% from 2010-18, more than twice the pace of any other member country, most of which saw a decline in injuries and fatalities from being hit by vehicles.
- **Smartphone adoption cannot explain the divergence in crash death rates**.
- **Europe has created more car-free and car-light urban neighborhoods than the US** but now a number of cities and neighborhoods in the US are following this path.. Since motor

vehicles play a role in virtually all roadway deaths, their removal from the urban core is a big boost for safety. Meanwhile, countries like Canada and France have embraced automatic traffic cameras — devices that are banned in many US states — to deter speeding and running red lights. Likewise, safe infrastructure enhancements like roundabouts and road diets have been adopted more enthusiastically in other countries.

Speed cameras

The Neighborhoods Committee has found that speed cameras come in several varieties. Cameras that record and log an infraction and create a "ticket" to the speeder vehicle person of registration without an officer present. There are also cameras that issue a ticket to a speeding car registration with no Agent interaction with drivers, but an Agent present when speeding occurred. Others log the speed of cars in a zone and create "speeding"or "slow down" or "49 MPH" and flash a warning light (yellow or orange) or flash a light bar to highlight the speed limit allowed.

General overview of the problem of design for speed

Any object's ability to become more deadly increases with its speed, as the laws of physics attest. Human bodies can only absorb so much before injuries become fatalities. It is now well documented that **speed kills**. Extensive research and references are available, along with solutions:

- **Narrower lanes** (with less "elbow room" for cars) **slow speed** and **increase safety.** This can be accomplished during regular resurfacing and repainting.
- **(Re) design/paint street to separate street users into protected lanes** for bikes and micro mobility, whether that's wheelchairs, scooters, or other. Delineate areas used by both pedestrians and cars. Pedestrians have the right of way and need better, safer and easier ways to use and cross streets, as do other forms of active transportation.
- **Speed radar cameras work. Colorado state law AVIS allows cities to use ticketing cameras** as long as drivers are notified it is in use, with some restrictions on locations.

All of the below are cost-effective and recommended

The research collated in the appendix revealed a number of cost-effective and highly recommended actions or basic practices:

1. **Take advantage of all repaving and repainting projects.** These are key low cost times and opportunities to adjust striping to slow traffic and increase safety for people of all ages and abilities. **Pass ordinance and/or update engineering guidance to require**:
    - When restriping, paint the lines closer for autos. Collision rates increase when lanes are over **10.5 feet wide, a good width or maximum for arterial lanes**.
    - **Neighborhood streets can have lane widths less than 10.5 feet wide.**
    - **Bump-outs and lane width restrictions at crosswalks naturally slow traffic** and shorten the at-risk distance to cross for pedestrians.

2. **Transportation dollars should prioritize further off-street multi-use paths**, connecting locations and gaps in the system.
3. **Reduce speed limits citywide**, as some cities have done. "20 is plenty" is the rule of the road on Denver's residential streets now, passing 11 to 1, increasing visibility, safety.
4. **Install speed cameras to slow cars** (e.g., near Kendrick Lake Park on Jewell). Speed cameras, which are used in more than 180 US communities, according to the Insurance Institute for Highway Safety, have been shown to reduce crashes and injuries.

Speed cameras types and costs

- Flashing lighted sign informing drivers of speed - less effective
- Flashing lighted sign with speed and citation
- Mobile radar cameras - more expensive but able to relocate for use in multiple problem areas.
- Costs:
    - Flashing lighted sign (not recommended, less effective)
    - Flashing lighted sign with speed
        - $3,779 Solar radar feedback sign with data collection 12 inch
        - $4,579 Solar radar feedback sign with data collection 18 inch
        - $7,439 Solar "mobile" radar feedback sign with data collection 18 Inch
        - $3,985 Solar with a unique bracket that lets the sign be used in different geographic locations. Also, has stealth mode to record data without lighting up to compare signs effectiveness.
    - Speed (and noise) cameras enable cities to:
        - **Improve safety** by spurring driver action to slow speeds. This can be accomplished more organically through design that doesn't encourage speed, via repainting lane widths and reducing crossing distances for those walking, or both may be employed.
        - **Slow speeds and collect citation fees with little cost**.
        - **Proceed with what is now allowed under CO state law, AVIS.**
        - **Note or record noise**, a health and well-being issue with acceleration to speed.

Appendix: Research and Links

Use appendices as a reference tool. Use it as a place to store pertinent information, which is necessary and essential to the proposal, just not in the main body of the proposal. Additional information gathered, supplementary to proposal, should be placed in research folder, not appendix, for future reference.

Appendix A: Speed cameras benefits and costs

- **The technology of speed cameras to automatically cite violators, 24/7, is proven and readily available.**
    - **140 communities in the country have used it with impressive results**.
    - "**Washington DC saw a 70% reduction in speeding**," said Seleta Reynolds, general manager of L.A.'s Department of Transportation. "**New York saw huge reductions in severe and fatal crashes. That technology is going to save people's lives for years to come**."
    - Examples
        - https://www.iihs.org/topics/red-light-running/automated-enforcement-laws
        - https://www.theguardian.com/world/2022/feb/15/noise-radar-in-paris-will-catch-raucous-cars-and-motorbikes New speed cameras are addressing noise exceedances too.
        - https://www.capterra.com/sem-compare/ticketing-software/
    - https://safety.fhwa.dot.gov/speedmgt/ref_mats/fhwasa20047/sec6.cfm#toc27
        - **Data driven** – Successful adoption of safety cameras was due to NYC being able to respond to the key concerns about them. One strategy was use of a data-driven approach which highlighted the crash problem and focused on areas where safety issues existed. Camera locations were also selected using a data driven strategy.
        - **Comprehensive strategy** addressed the problem from multiple angles rather than relying on one solution. Also **Educating the public** helped them understand the problem and get buy-in. Citizen advocates were key since they demonstrated to both legislators and the public that speeding is a concern. It also took **additional effort by the city and advocacy groups** to ensure the program stayed active and expanded.
        - **Safety camera thresholds** – a general takeaway from the application of safety cameras is the use of thresholds. Most agencies set the system to activate at some threshold over the posted speed limit. This is generally 5 or 10 mph over.Selecting a threshold over the speed limit is a typical approach, since most agencies do not want to ticket drivers right at the speed limit. It also allays concerns that the system is unfairly ticketing drivers and being used for

revenue.

Miller, Richard, and J. Scott Osberg, Richard Retting, McKenzie Ballou, Randolph Atkins. *System Analysis of Automated Speed Enforcement Implementation.* National Highway Traffic Safety Administration Office of Behavioral Safety Research. DOT HS 812 257. April 2016.

Vision Zero NYC. *Vision Zero Year 5 Report.* March 2019. www1.nyc.gov/assets/visionzero/downloads/pdf/vision-zero-year-5-report.pdf

Vision Zero NYC (2019a). *Borough Pedestrian Safety Action Plans Vision Zero Update.* www1.nyc.gov/html/dot/downloads/pdf/vz-2019-update-city-hall.pdf

Automated Speed Enforcement Program Report 2014-2017. New York City DOT. June 2018. www.nyc.gov/html/dot/downloads/pdf/speed-camera-report-june2018.pdf

Colon, Dave. "As speed camera deadline looms, advocates turn up heat on New York pols." *Curbed,* New York. July 20, 2018. ny.curbed.com/2018/7/20/17596566/nyc-speed-camera-legislation-transit-advocates

Hu, Winnie. "2,000 Cameras Will Be Watching How You Drive in New York City." *The New York Times.* July 1, 2019. www.nytimes.com/2019/07/01/nyregion/speeding-cameras-nyc.html

Plitt, Amy. "NYC's expanded speed camera program to take effect July 11." *Curbed,* New York. May 24, 2019. ny.curbed.com/2019/5/24/18638686/new-york-speed-camera-program-vision-zero

Transportation Alternatives. www.transalt.org/citywide.

- Resistance to implementing speed cameras
  - Some state legislation preempts local governments from using automated traffic enforcement technologies. Colorado addressed this.
  - Pressure from police unions has blocked previous attempts to legalize speed cams out of fear it will cost cops jobs, rather than simply freeing more officers to focus on more important things.

Costs

High school students could build them. This could help drive awareness amongst this population also? Warren tech could also. Low Cost Radar Speed Sign : 11 Steps (with Pictures) - Instructables or this kit could be assembled by HS kids or public works FMS-300CB 7-Segments 12" Speed Display Kit - TNSense - Smart Cities and Security

Amazon $2895 to $3500 SafePace Evolution 11 Radar Feedback Sign, Residential, Solar Powered, 23"x29", LED Speed Limit Sign: Amazon.com: Industrial & Scientific with added bluetooth data collection $549 Safe Pace Data Collection via Bluetooth: Industrial Warning Signs: Amazon.com: Industrial & Scientific

Different options… “slow down” plus speed or just speed or.. SafePace Radar Speed Signs (trafficlogix.com)

This one is just a flashing light that could be added to the speed limit sign https://tnsense.com/en/home/9-lr-15-l-solar-radar-activated-rapid-flashing-beacons.html

$3895 for basic feedback radar sign, or $5270 with bluetooth and data stats, or $8105 mounted on a trailer with no bluetooth data. Radar Speed Signs, Speed Trailers, Solar Speed Signs for Sale (trafficsafetywarehouse.com)

Data on these signs will actually prove effectiveness of use. It will show how speeds change over time with the use of sign. May not be necessary on all signs but a few would prove effectiveness of concept.

Could a gentle rumble strip be effective at separating bikes and cars? “ Arizona DOT also reviewed roadways where bicycles are allowed (i.e., non-urban Interstate) and identified all locations where rumble strips are installed with less than 4 feet of effective shoulder width on the "Cycle Arizona Bicycle User Map." This map helps bicyclists chose specific routes that meet their individual needs and comfort levels.” Rumble Strip Implementation Guide: Addressing Bicycle Issues on Two-Lane Roads | FHWA (dot.gov)

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        - $7,439 Solar “mobile” radar feedback sign with data collection 18 Inch
        - $3,985 Solar with a unique bracket that lets the sign be used in different geographic locations. Also, has stealth mode to record data without lighting up to compare signs effectiveness.
    - Speed (and noise?) cameras
        - While some drivers don’t like making the effort to lower their speed on a road design that encourages higher speed, **safety improves** with slower driving
        - **City can slow speeds and collect citation fees with little costs**
        - **CO state law allows this with conditions**
        - **Some speed cameras can also note or record noise** with speed.

BACKGROUND RESEARCH

70% Speed Reduction in Speeding with Evolution Radar Signs - Traffic Logix

these have data logging ability SPEED WARNING SIGNS | SWARCO

2015 study Evaluation of Dynamic Speed Feedback Signs on Curves: A National Demonstration Project (bts.gov)

Spotlighting Speed Feedback Signs | FHWA (dot.gov)

different idea Signpostflasher • TraffiCalm Radar Speed Signs and Blinking LED Calming Products

Traffic Calming to Slow Vehicle Speeds | US Department of Transportation

How New Technologies Are Making Traffic Calming More Cost Effective (appinfoinc.com)

Bloomberg 2023: Speed cameras, which are used in more than 180 US communities, according to the Insurance Institute for Highway Safety, have been shown to reduce crashes and injuries.
In Europe, Intelligent Speed Assistance is a mandatory feature of all new cars as of last year. The so-called "speed governor" technology uses GPS signals to detect local speed limits and use an alert system to deter or prevent drivers from exceeding them.
https://www.bloomberg.com/news/articles/2023-02-02/police-traffic-stops-face-new-scrutiny-after-tyre-nichols-death

Appendix B: Other cost-effective solutions, applying learning about what's safer in making investment decisions

See bolded text for key points from the research.
Karim, CA ITE, 2015 Better design, narrower lanes, no more widenings are needed. This is an **easy, relatively inexpensive win-win-win solution that the city can decide tomorrow.** "Given the empirical evidence favoring'narrower is safer', the old 'wider is safer' intuition should be discarded."https://www.bloomberg.com/news/articles/2015-07-28/a-new-study-finds-that-10-foot-traffic-lanes-are-safer-and-still-move-plenty-of-cars

Texas A&M research on uncongested freeways found wider means faster and less safe driving. Journal of Transportation Engineering https://ssti.us/2016/10/31/more-evidence-that-wider-roads-encourage-speeding/

https://www.latimes.com/world-nation/story/2021-12-08/traffic-deaths-surged-during-covid-19-pandemic-heres-why

https://www.bloomberg.com/news/articles/2014-10-06/why-12-foot-traffic-lanes-are-disastrous-for-safety-and-must-be-replaced-now"the best thing we can do for the health, wealth, and integrity of this great nation is to forbid construction of any traffic lane wider than 10' on high volume roads.Neighborhood streets can have much narrower lanes. Contrary evidence not found.

Traffic engineers Paul Moore and Theodore Petritsch, "The Influence of Lane Widths on Safety and Capacity: A Summary of the Latest Findings."Earlier TRB research by Bob Noland estimates that increased lane widths could be blamed for at least 900 additional traffic deaths per year. Also 5/22 Study: Distracting Roadside Safety Billboards May Cause 17K Crashes/Year

https://www.apa.org/monitor/2018/04/curbing-speed reducing crashes

Faster speeds and more dangerous driving on emptier or wider roads

pewtrusts.org/en/research-and-analysis/blogs/stateline/2020/04/20/**speeders-take-over-empty-roads-with-fatal-consequences**

- Why Emptier Streets Meant an Especially Deadly Year for Traffic Deaths, NYT
- LA Times writer Steve Lopez called out speeding enabled by the relatively empty, over-engineered streets of Los Angeles, with full-throated endorsement of automated speed cams and automatic, mailed citations for speeding. California Highway Patrol
- "Nationally, there was an 8% increase in auto fatalities, with a death toll of 42,060 — and that was in a pandemic year with significant reductions in traffic." latimes.com/california/story/2021-03-13/pandemic-speeding-cars-lost-lives

Vision Zero efforts have been effective.*A Safe System recognizes that* ***humans will make mistakes****, and that* ***the human body has limits*** *to its ability to absorb crash forces without suffering injury or death.* ***Safety is a shared responsibility of all actors in a traffic system, not only that of a road user.*** *Thus,* ***all elements of the road traffic system should come together*** *in an integrated safety chain to* ***combine to prevent a crash, or at least prevent serious injury****, even if one or more elements fail (ITF, 2016b).*See Implementing the Safe System Approach (pres) Safety efforts in the US has focused more on

enforcement and less on design, falling behind on traffic safety. See recent articles from the Economist or Curbed for more details. YouTube, Delivering Quick-Build Projects webinar - OakDOT and Manhattan KS presentations, Fortaleza case study slides - cities and streets for children too

Transportation investment for access and mobility for all, with health and safety for all

- **Safety: Focus on real safety - serious injuries, deaths, and the most vulnerable**: CDOT, like other DOTs, needs to **de-emphasize fender benders** and **focus on where there are serious injuries and deaths**, often of the most vulnerable. State DOTs reported this was part of important project re-evaluation and transitions underway (Mar 2022)
- **All DOT projects can/should NOT be assumed to be safety investments** as CDOT Chief Eng. recently said to the DRCOG Board. The "forgiving highway" approach to traffic engineering design, with a bias to wider streets and highways, is wrong.
- **Collision rates rise as lane widths exceed about 10.5 feet.**(Karim, CA ITE, 2015). ***KEY: Better design, narrower lanes, no more widenings are needed. This is an easy, relatively inexpensive win-win-win that DOT could fund tomorrow.***
- **"Given the empirical evidence that favors 'narrower is safer'. The 'wider is safer' approach based on intuition should be discarded once and for all."** https://www.bloomberg.com/news/articles/2015-07-28/a-new-study-finds-that-10-foot-traffic-lanes-are-safer-and-still-move-plenty-of-cars
- **Research shows WIDER MEANS people drive FASTER and less safely.** When drivers have more room, cars go faster. When cars drive faster, collisions do more harm.
    - Journal of Transportation Engineering. Researchers from Texas A&M studied uncongested freeways in Dallas, Houston, and San Antonio. https://ssti.us/2016/10/31/more-evidence-that-wider-roads-encourage-speeding/

      Based on more than 650,000 observations researchers found that:

        - **Drivers drive faster in 12 foot lanes than 11 foot ones**. While 12-foot lanes are a common standard (and a min. requirement in some states), the *AASHTO Green Book* and *Guide for Achieving Flexibility in Highway Design* support the use of narrower lanes in many circumstances.
        - Wide **left shoulders adjacent to 11-foot lanes can increase speeds by as much as 1.1 mph per foot of shoulder width**, from 1.5 to 11 feet.
        - **Speed and capacity are often conflated in misleading ways** and safety can be ignored altogether; e.g., **as roads approach congestion, speeds don't change much but higher speeds drop** more quickly.
        - Maximum flow typically occurs at speeds well below the free flow speed

Better design, narrower lanes, no more widenings are needed. This is an easy, relatively inexpensive win-win-win that DOT could fund tomorrow.

- https://www.bloomberg.com/news/articles/2014-10-06/why-12-foot-traffic-lanes-are-disastrous-for-safety-and-must-be-replaced-now "best thing we can do for the health, wealth, and integrity of this great nation is to forbid construction of any traffic lane wider than 10' **Talking only about high-volume streets here: no more than 10.5 ft width**. Neighborhood streets can have much narrower lanes. Evidence must be provided for any contention to the contrary. We have found none.
    - Traffic engineers Paul Moore and Theodore Petritsch, "The Influence of Lane Widths on Safety and Capacity: A Summary of the Latest Findings."
    - Earlier TRB research by Bob Noland estimates that increased lane widths could be blamed for at least 900 additional traffic deaths per year.
    - https://www.apa.org/monitor/2018/04/curbing-speed reducing crashes
    - https://www.bloomberg.com/news/articles/2015-07-28/a-new-study-finds-that-10-foot-traffic-lanes-are-safer-and-still-move-plenty-of-cars
    - **CDOT's model and argument (erroneous) is that adding lanes and width is going to increase safety & decrease VMT** even with just a tiny amount of transit added. Bloomberg: Wider is terrible for public safety and pedestrians.

If the city wants to develop their own network of very adaptable devices then these products or some like them could help. These devices are adaptable and could be used to flash a yellow light when speeds are exceeded at 45mph or at crosswalks on Colfax. They can be capable of tracking data. They can be moved from site to site, either mobile on wheels or pole mounted which would allow the city to rapidly react to problem areas.

From TNSense

“”You are absolutely right – most of our customers are sign companies looking to build their "smart signage" line, such as Radar Speed Displays, parking information signs, or interactive Speed Limit signs.

Our RSD-300AT is a universal doppler radar sensor with traffic data collection feature. It can be connected to a set of LED beacons, activated on speed thresholds with various flashing platters. There is also an auxiliary output with separate speed thresholds, typically used to activate audible signals or even speed cameras. The budget price of the RSD-300AT unit is $510, but it can be slightly adjusted depending on specific configuration (e.g., additional Bluetooth interface), the order volume, or required customization.

The LR-15 is a radar-activated strobe beacon device that offers a wide range of features. We refer to it as the "Limit Reminder" (LR). It triggers high-intensity strobes in the event of speed violations and can gather traffic data, such as vehicle speeds, count, change in speed, and approximate vehicle size. The LR-15 is equipped with a Li-Ion battery and a 30 Watt solar panel, making it completely self-sufficient. The budget price of the solar-powered, complete LR-15 is $1190. The cost can also

vary depending on power options and other customizations.

I've attached flyers RSD-300AT and LR-15 brochures to this email. Please let me know if you need an official quote.""

Please let me know if you have any questions or if you require any further information. I would be more than happy to assist you. Electronic Traffic Signs, OEM Radars, Speed Displays, Traffic Counters, Microwave Sensors - TNSense - Smart Cities and Security
The good news is that traffic engineers are increasingly talking about **forgiving design** vs. the forgiveness of slow speeds: strongtowns.org/journal/2018/2/2/forgiving-design-vs-the-forgiveness-of-slow-speeds

Grants..
Safe Streets and Roads for All (SS4A) Grant Program | US Department of Transportation

LAC Grassroots Proposal Regarding
Effective Control of Noise Pollution

Lakewood neighborhoods are negatively impacted by noise pollution on a daily basis. Excessive noise from boom boxes (free standing and in cars), motorcycles/cars/trucks with illegal aftermarket exhaust systems, leaf blowers, car alarms, garbage trucks, busy highway/street noise, music venues with loud speakers/sound amplifiers, illegal fireworks and many other sources. Noise pollution is linked to many adverse effects including hearing loss, tinnitus, sleep deprivation, cardiovascular disturbances, mental and physical health impacts, aggressive behavior, and chronic fatigue.

Questions:

Does the current Lakewood Noise Ordinance, Title 9 Offenses Against Public Peace, Chapter 9.52 Noise, adequately address this growing health hazard to Lakewood residents?

How are other similar cities dealing with noise pollution?

What are the best practices that Lakewood could adopt, and would these include changes to the Lakewood noise ordinance, additional public education, and/or increasing enforcement?

The City Council should direct the Lakewood Advisory Committee to address the questions identified above and provide recommendations to the City Council.

Lakewood Advisory Commission

Speed Reduction Options and Recommendations

March 2023

Background: In fall 2022 the Lakewood City Council requested a report on speed cameras and speed/safety options for streets such as Jewell and Kipling. We note that traffic safety and management has evolved over time. Once the focus was almost exclusively on drivers, but as awareness of the 20-40% of people in each community that can't or don't drive has grown, cities are taking a more comprehensive view to ensure safety and mobility for all.

Summary of Research and Key Findings: There is an extensive body of recent research on the topic. The cheapest and easiest way to reduce speeds and improve safety is via re-striping. More advanced and increasingly effective ways to do that involve hardscaping or changing design so all users are safe and people want to drive more slowly. For streets such as Jewell, the gold standard is redesign for safe use by people of all ages and abilities and a "road diet". Some cities incorporate roundabouts instead of stop lights. A major aim is to slow traffic, often referred to as "traffic calming." Research has shown that speed cameras work to achieve that aim and that automated cameras are an effective and affordable approach short of re-design.

All of the below are cost-effective and recommended. The first two recommendations are ways the City could make best/**efficient use of existing programs**. Others, such as reducing speed limits city wide (like Denver's "20 is plenty" rule for residential streets, increasing visibility and safety) would **replicate other local best practices in Lakewood**.

1. **Take advantage of all repaving and repainting projects,** often a third to half of a city's regular transportation budget. These are key, low-cost times and opportunities to adjust striping to slow traffic and increase safety for people of all ages and abilities.
    - **When restriping, paint the lines closer for autos**; collision rates increase when lanes are over **10.5 feet wide, a good width or maximum for arterial lanes**.
    - **Neighborhood streets can have lane widths <u>less than</u> 10.5 feet wide.**
    - **Bump-outs and lane width restrictions at crosswalks naturally slow traffic** and shorten the at-risk distance to cross for pedestrians.
2. **Remaining/non-maintenance-related transportation dollars should prioritize further off-street multi-use paths**, connecting locations and gaps in the system.
3. **Reduce speed limits citywide**, as some cities have done. "20 is plenty" is the rule of the road on Denver's residential streets now, passing 11 to 1, increasing visibility, safety.
4. **Install speed cameras to slow cars** (e.g., near Kendrick Lake Park on Jewell). Speed cameras, used in more than 180 US communities according to the Insurance Institute for Highway Safety, have been shown to reduce crashes and injuries. **Part of the problem with speeding is noise**. **Some speed control cameras also evaluate noise**, which has been a regular complaint on Jewell. Noise has health effects, causing or exacerbating cardiovascular disease; type 2 diabetes; sleep disturbances; stress; mental health and

cognition problems, including memory impairment and attention deficits; childhood learning delays; and low birth weight. Scientists are investigating other possible links, including to dementia as well as cognitive impairment in children (hms.harvard.edu/magazine/viral-world/effects-noise-health, eea.europa.eu/articles/noise-pollution-is-a-major). See sample noise ordinance "Public property noise limits. No person shall produce, suffer or allow to be produced by any machine or device, or any combination of same, on public property, a noise level more than 15 dB above the local ambient at a distance of twenty-five feet or more, unless otherwise provided…."

5. **Design improvements**: More advanced and increasingly effective ways to do that involve hardscaping, changing the design. Some re-designs are major, adding roundabouts and more, but some are very affordable and easy to implement, test, and revise. See a 10 minute video from Manhattan, Kansas of seven improvements were implemented for less than $7500; design/physical improvements go up in cost from there, as safe, separated, and pleasant ways are built, that remove the possibility of cars hitting people who are trying to walk or drive bikes, strollers, wheelchairs, scooters, and more. See 2nd presentation here: https://vimeo.com/489610255).

One thing that is important to know about investing in safe/protected/separated infrastructure for people of all ages and abilities, beyond cars, is "if you build it, they will come." This is proven; people see they can be safer, that riding or commuting themselves is more possible for them, their children, or parents, and they use it. An extra foot of striping to buffer a bike lane is good but this is not "protected" or physically separated enough to create such appeal; compare paths separated from the street along Bear Creek or through parks to what is available along Garrison or not available in any fashion along or parallel to Wadsworth. Design improvements are a worthy investment and save lives, injuries, and health. The Council has a selection of other shorter term and lower cost "no brainers" in terms of cost and public benefit as well though.

Potential Basic Principles to Incorporate in Ordinances or Resolutions

- **Don't invest in what makes things worse**, such as widening roads or adding space for cars (speeding and worse driving). Reduce widths in accordance with research for safety improvements: 10.5 ft on arterials and less on painted neighborhood streets.
- **Make necessary road maintenance (resurfacing) do more for Lakewood residents** by adding affordable safety investments during restriping: reduce the distance for those walking across intersections with bumped out curbs. Narrowing lanes or crossing distances also helps car drivers be more careful and communicates shared space.
- ***Don't wait* to save lives and make our city more livable. Speed reduction is the cheapest and most effective thing that can be done right away.**
    - **Citywide speed reductions** to bring auto speeds closer to what won't kill on impact have been implemented in many places. These are dramatically effective. Denver just implemented these. Suburbs (like Montgomery County Maryland) just did.
    - **Speed control in problem spots/on certain corridors.** Speed cameras work.
    - **Re-design and invest in safe corridors for people of all ages and abilities**. 20-40% of the people in each community do not drive and need safe corridors, away

from or protected from cars. https://bit.ly/20-40percentDoNotDrive When this is provided, research shows that more people use these and community livability and local business revenues increase as well.

- **Apply for Complete Streets and Multi-Modal Options Fund money** to make design changes, implement road diets, connected and protected bike and multi-use paths, etc.

Longer Introduction to the Topic and Research Appendix

Speed is a big problem in terms of safety. As noted in an interview this month with USDOT Sec. Pete Buttigieg, Vision Zero (deaths) has largely failed in the U.S. because:

> engineers routinely design streets to support (and therefore invite) speeds well above the posted speed limit. Then, when speeding is observed on these streets, the manual published by the Federal Highway Administration requires that the speed limit be raised. Next, engineers have been aware for a quarter century that replacing traffic signals with four-way stop signs saves lives. When Philadelphia removed the signals from 472 intersections in the 1970s, severe injury crashes dropped by 62.5%. Yet engineers still routinely place traffic signals where stop signs should go. These are just two examples out of dozens available…
>
> In the Netherlands, 500 children were killed in traffic in 1971. This led to a national "Stop de Kindermoord" (child murder) movement, and a scientific rethinking of Dutch road design. By 2014, this effort had reduced the number of child traffic deaths to nine.
>
> How did they do it? Here in the U.S., engineers enforce "minimum design speeds"; Dutch engineers do the opposite. **When designing a street, they first ask what speed cars should travel in the neighborhood. They then shape that street to limit elbow room, so that drivers do not feel comfortable going faster**… Neither Helsinki nor Oslo witnessed a single pedestrian fatality in 2019. Meanwhile, Atlanta's Vision Zero coordinator was killed last year, run down with four others in a Chattanooga crosswalk.[1]

Former traffic engineer Chuck Marohn likens this activity to professional malpractice and documents how it meets the standards of gross negligence (Ibid). As lives and the ability of students/kids and their parents and grandparents to get around are at stake, not to mention those who can't afford a car or multiple cars in their family, it is important to understand that many of our community residents, likely increasing numbers, can't or don't drive. And there are also cases of those who shouldn't be driving, but feel like they have no or few other options. An elderly local book club had three accidents, wasn't safe to drive, and lost her license. She could ride a trike/3 wheeler, but there are few places where it is safe to do so. Lakewood kids have been hit by cars on their way to school, at gaps in protected paths, such as along Old Kipling.

Safety is a big and growing issue and there are proven solutions (See article in Bloomberg). Along with speed, in the past several years, **aggression on our streets has grown**. Cities found that more driving space during COVID led to faster driving lead to speed exceedances, recklessness, and accidents that kill. The extra noise, stress, fear for community residents, along with the prevention of enjoying the city, the street, or ability to use the public space also negatively impact city residents. These costs are unaccounted for in decision-making.

What *is* accounted for in current decision-making? Fatalities and injuries are calculated *when a ticket is involved* and the driver is charged. **The costs of other injuries, close calls, and deterred**

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[1] thehill.com/opinion/finance/3853943-secretary-petes-safe-streets-plan-wont-succeed-if-engineers-continue-business-as-usual/

walking, bicycling, activity, and mobility by all is not calculated. The city, business, and other costs of missing infrastructure for safe paths and mobility for those not in cars are not included, just as the costs of avoiding, or needing to avoid, more active mobility are not calculated. The costs to community well-being of having more pleasant and inviting streets to be outside on are not calculated.

The costs to health have been known for some time, with regard to the big five indicators used for decades: the contribution of fossil fuel pollution from vehicles to strokes, cardiac arrest and disease, respiratory disease, asthma, and emergency room visits and sometimes lost work and school days – these have been calculated in some areas. **However, the groundbreaking research of the last decade, that studied and documented the effect of fossil fuel pollution on health and the full range of mental, emotional, and all physical health, through the inflammation process and potentially more, are not included in transportation planning or local decision-making processes.** The regulations for air pollution were designed before these wide-ranging impacts were known and these are not included in transportation decision-making or financial allocations. Decades ago, the costs of air pollution from vehicles pointed to a different set of solutions. With the additional research on health harms from this past decade, is it 5-10x higher and more important to make different choices that promote health rather than harm? To take just one area, going on a decade old: 21% of Alzheimer's and dementia cases can be traced to air pollution. People across the political spectrum care about cognition and well-being, and avoiding negative impacts.

There is a broad spectrum from best/ideal development of safe and accessible mobility for all, with design and infrastructure investment for that. **Citywide speed reductions and speed reduction cameras in problem areas are one of the easiest, fastest, cheapest to implement, save lives, and improve safety and usability.** Bloomberg (11/3/22) noted the following:

- **US underperformance in road safety:** 11.4 Americans per 100,000 died in crashes (2021)
- **US roadways have grown more deadly during the last two decades**, especially for those outside of cars. Last year saw the most people walking killed in the US in 40 years. Deaths among those biking rose 44% from 2010 to 2020. In 2021, as the US hit a 16-year high for fatalities, Japan and Norway posted the lowest number of road deaths since the 1940s.
- **US results come from policy decisions that elevated fast car travel** and automaker profits over roadway safety. Other countries made different choices and they've saved lives as a result.
- **The contrast is especially striking among so-called vulnerable road users**, a category that includes people walking as well as those using bikes, scooters and wheelchairs. According to the OECD, deaths of people hit while walking in the US rose over 40% from 2010-18, more than twice the pace of any other member country, most of which saw a decline in injuries and fatalities from being hit by vehicles.
- **Smartphone adoption cannot explain the divergence in crash death rates**.
- **Europe has created more car-free and car-light urban neighborhoods than the US** but now a number of cities and neighborhoods in the US are following this path.. Since motor

vehicles play a role in virtually all roadway deaths, their removal from the urban core is a big boost for safety. Meanwhile, countries like Canada and France have embraced automatic traffic cameras — devices that are banned in many US states — to deter speeding and running red lights. Likewise, safe infrastructure enhancements like roundabouts and road diets have been adopted more enthusiastically in other countries.

Speed cameras

The Neighborhoods Committee has found that speed cameras come in several varieties. Cameras that record and log an infraction and create a "ticket" to the speeder vehicle person of registration without an officer present. There are also cameras that issue a ticket to a speeding car registration with no Agent interaction with drivers, but an Agent present when speeding occurred. Others log the speed of cars in a zone and create "speeding"or "slow down" or "49 MPH" and flash a warning light (yellow or orange) or flash a light bar to highlight the speed limit allowed.

General overview of the problem of design for speed

Any object's ability to become more deadly increases with its speed, as the laws of physics attest. Human bodies can only absorb so much before injuries become fatalities. It is now well documented that **speed kills**. Extensive research and references are available, along with solutions:

- **Narrower lanes** (with less "elbow room" for cars) **slow speed** and **increase safety.** This can be accomplished during regular resurfacing and repainting.
- **(Re) design/paint street to separate street users into protected lanes** for bikes and micro mobility, whether that's wheelchairs, scooters, or other. Delineate areas used by both pedestrians and cars. Pedestrians have the right of way and need better, safer and easier ways to use and cross streets, as do other forms of active transportation.
- **Speed radar cameras work. Colorado state law AVIS allows cities to use ticketing cameras** as long as drivers are notified it is in use, with some restrictions on locations.

All of the below are cost-effective and recommended

The research collated in the appendix revealed a number of cost-effective and highly recommended actions or basic practices:

1. **Take advantage of all repaving and repainting projects.** These are key low cost times and opportunities to adjust striping to slow traffic and increase safety for people of all ages and abilities. **Pass ordinance and/or update engineering guidance to require**:
    - When restriping, paint the lines closer for autos. Collision rates increase when lanes are over **10.5 feet wide, a good width or maximum for arterial lanes**.
    - **Neighborhood streets can have lane widths less than 10.5 feet wide.**
    - **Bump-outs and lane width restrictions at crosswalks naturally slow traffic** and shorten the at-risk distance to cross for pedestrians.

2. **Transportation dollars should prioritize further off-street multi-use paths**, connecting locations and gaps in the system.
3. **Reduce speed limits citywide**, as some cities have done. "20 is plenty" is the rule of the road on Denver's residential streets now, passing 11 to 1, increasing visibility, safety.
4. **Install speed cameras to slow cars** (e.g., near Kendrick Lake Park on Jewell). Speed cameras, which are used in more than 180 US communities, according to the Insurance Institute for Highway Safety, have been shown to reduce crashes and injuries.

Speed cameras types and costs

- Flashing lighted sign informing drivers of speed - less effective
- Flashing lighted sign with speed and citation
- Mobile radar cameras - more expensive but able to relocate for use in multiple problem areas.
- Costs:
    - Flashing lighted sign (not recommended, less effective)
    - Flashing lighted sign with speed
        - $3,779 Solar radar feedback sign with data collection 12 inch
        - $4,579 Solar radar feedback sign with data collection 18 inch
        - $7,439 Solar "mobile" radar feedback sign with data collection 18 Inch
        - $3,985 Solar with a unique bracket that lets the sign be used in different geographic locations. Also, has stealth mode to record data without lighting up to compare signs effectiveness.
    - Speed (and noise) cameras enable cities to:
        - **Improve safety** by spurring driver action to slow speeds. This can be accomplished more organically through design that doesn't encourage speed, via repainting lane widths and reducing crossing distances for those walking, or both may be employed.
        - **Slow speeds and collect citation fees with little cost**.
        - **Proceed with what is now allowed under CO state law, AVIS.**
        - **Note or record noise**, a health and well-being issue with acceleration to speed.

Appendix: Research and Links

Use appendices as a reference tool. Use it as a place to store pertinent information, which is necessary and essential to the proposal, just not in the main body of the proposal. Additional information gathered, supplementary to proposal, should be placed in research folder, not appendix, for future reference.

Appendix A: Speed cameras benefits and costs

- **The technology of speed cameras to automatically cite violators, 24/7, is proven and readily available.**
    - **140 communities in the country have used it with impressive results**.
    - "**Washington DC saw a 70% reduction in speeding**," said Seleta Reynolds, general manager of L.A.'s Department of Transportation. "**New York saw huge reductions in severe and fatal crashes. That technology is going to save people's lives for years to come**."
    - Examples
        - https://www.iihs.org/topics/red-light-running/automated-enforcement-laws
        - https://www.theguardian.com/world/2022/feb/15/noise-radar-in-paris-will-catch-raucous-cars-and-motorbikes New speed cameras are addressing noise exceedances too.
        - https://www.capterra.com/sem-compare/ticketing-software/
    - https://safety.fhwa.dot.gov/speedmgt/ref_mats/fhwasa20047/sec6.cfm#toc27
        - **Data driven** – Successful adoption of safety cameras was due to NYC being able to respond to the key concerns about them. One strategy was use of a data-driven approach which highlighted the crash problem and focused on areas where safety issues existed. Camera locations were also selected using a data driven strategy.
        - **Comprehensive strategy** addressed the problem from multiple angles rather than relying on one solution. Also **Educating the public** helped them understand the problem and get buy-in. Citizen advocates were key since they demonstrated to both legislators and the public that speeding is a concern. It also took **additional effort by the city and advocacy groups** to ensure the program stayed active and expanded.
        - **Safety camera thresholds** – a general takeaway from the application of safety cameras is the use of thresholds. Most agencies set the system to activate at some threshold over the posted speed limit. This is generally 5 or 10 mph over.Selecting a threshold over the speed limit is a typical approach, since most agencies do not want to ticket drivers right at the speed limit. It also allays concerns that the system is unfairly ticketing drivers and being used for

revenue.

Miller, Richard, and J. Scott Osberg, Richard Retting, McKenzie Ballou, Randolph Atkins. *System Analysis of Automated Speed Enforcement Implementation.* National Highway Traffic Safety Administration Office of Behavioral Safety Research. DOT HS 812 257. April 2016.

Vision Zero NYC. *Vision Zero Year 5 Report.* March 2019. www1.nyc.gov/assets/visionzero/downloads/pdf/vision-zero-year-5-report.pdf

Vision Zero NYC (2019a). *Borough Pedestrian Safety Action Plans Vision Zero Update.* www1.nyc.gov/html/dot/downloads/pdf/vz-2019-update-city-hall.pdf

Automated Speed Enforcement Program Report 2014-2017. New York City DOT. June 2018. www.nyc.gov/html/dot/downloads/pdf/speed-camera-report-june2018.pdf

Colon, Dave. "As speed camera deadline looms, advocates turn up heat on New York pols." *Curbed,* New York. July 20, 2018. ny.curbed.com/2018/7/20/17596566/nyc-speed-camera-legislation-transit-advocates

Hu, Winnie. "2,000 Cameras Will Be Watching How You Drive in New York City." *The New York Times.* July 1, 2019. www.nytimes.com/2019/07/01/nyregion/speeding-cameras-nyc.html

Plitt, Amy. "NYC's expanded speed camera program to take effect July 11." *Curbed,* New York. May 24, 2019. ny.curbed.com/2019/5/24/18638686/new-york-speed-camera-program-vision-zero

Transportation Alternatives. www.transalt.org/citywide.

- Resistance to implementing speed cameras
  - Some state legislation preempts local governments from using automated traffic enforcement technologies. Colorado addressed this.
  - Pressure from police unions has blocked previous attempts to legalize speed cams out of fear it will cost cops jobs, rather than simply freeing more officers to focus on more important things.

Costs

High school students could build them. This could help drive awareness amongst this population also? Warren tech could also. Low Cost Radar Speed Sign : 11 Steps (with Pictures) - Instructables or this kit could be assembled by HS kids or public works FMS-300CB 7-Segments 12" Speed Display Kit - TNSense - Smart Cities and Security

Amazon $2895 to $3500 SafePace Evolution 11 Radar Feedback Sign, Residential, Solar Powered, 23"x29", LED Speed Limit Sign: Amazon.com: Industrial & Scientific with added bluetooth data collection $549 Safe Pace Data Collection via Bluetooth: Industrial Warning Signs: Amazon.com: Industrial & Scientific

Different options… “slow down” plus speed or just speed or.. SafePace Radar Speed Signs (trafficlogix.com)

This one is just a flashing light that could be added to the speed limit sign https://tnsense.com/en/home/9-lr-15-l-solar-radar-activated-rapid-flashing-beacons.html

$3895 for basic feedback radar sign, or $5270 with bluetooth and data stats, or $8105 mounted on a trailer with no bluetooth data. Radar Speed Signs, Speed Trailers, Solar Speed Signs for Sale (trafficsafetywarehouse.com)

Data on these signs will actually prove effectiveness of use. It will show how speeds change over time with the use of sign. May not be necessary on all signs but a few would prove effectiveness of concept.

Could a gentle rumble strip be effective at separating bikes and cars? “ Arizona DOT also reviewed roadways where bicycles are allowed (i.e., non-urban Interstate) and identified all locations where rumble strips are installed with less than 4 feet of effective shoulder width on the "Cycle Arizona Bicycle User Map." This map helps bicyclists chose specific routes that meet their individual needs and comfort levels.” Rumble Strip Implementation Guide: Addressing Bicycle Issues on Two-Lane Roads | FHWA (dot.gov)

Speed cameras types and costs

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        - $3,985 Solar with a unique bracket that lets the sign be used in different geographic locations. Also, has stealth mode to record data without lighting up to compare signs effectiveness.
    - Speed (and noise?) cameras
        - While some drivers don’t like making the effort to lower their speed on a road design that encourages higher speed, **safety improves** with slower driving
        - **City can slow speeds and collect citation fees with little costs**
        - **CO state law allows this with conditions**
        - **Some speed cameras can also note or record noise** with speed.

BACKGROUND RESEARCH

70% Speed Reduction in Speeding with Evolution Radar Signs - Traffic Logix

these have data logging ability SPEED WARNING SIGNS | SWARCO

2015 study Evaluation of Dynamic Speed Feedback Signs on Curves: A National Demonstration Project (bts.gov)

Spotlighting Speed Feedback Signs | FHWA (dot.gov)

different idea Signpostflasher • TraffiCalm Radar Speed Signs and Blinking LED Calming Products

Traffic Calming to Slow Vehicle Speeds | US Department of Transportation

How New Technologies Are Making Traffic Calming More Cost Effective (appinfoinc.com)

Bloomberg 2023: Speed cameras, which are used in more than 180 US communities, according to the Insurance Institute for Highway Safety, have been shown to reduce crashes and injuries.
In Europe, Intelligent Speed Assistance is a mandatory feature of all new cars as of last year. The so-called "speed governor" technology uses GPS signals to detect local speed limits and use an alert system to deter or prevent drivers from exceeding them.
https://www.bloomberg.com/news/articles/2023-02-02/police-traffic-stops-face-new-scrutiny-after-tyre-nichols-death

Appendix B: Other cost-effective solutions, applying learning about what's safer in making investment decisions

See bolded text for key points from the research.
Karim, CA ITE, 2015 Better design, narrower lanes, no more widenings are needed. This is an **easy, relatively inexpensive win-win-win solution that the city can decide tomorrow.** "Given the empirical evidence favoring'narrower is safer', the old 'wider is safer' intuition should be discarded."https://www.bloomberg.com/news/articles/2015-07-28/a-new-study-finds-that-10-foot-traffic-lanes-are-safer-and-still-move-plenty-of-cars

Texas A&M research on uncongested freeways found wider means faster and less safe driving. Journal of Transportation Engineering https://ssti.us/2016/10/31/more-evidence-that-wider-roads-encourage-speeding/

https://www.latimes.com/world-nation/story/2021-12-08/traffic-deaths-surged-during-covid-19-pandemic-heres-why

https://www.bloomberg.com/news/articles/2014-10-06/why-12-foot-traffic-lanes-are-disastrous-for-safety-and-must-be-replaced-now"the best thing we can do for the health, wealth, and integrity of this great nation is to forbid construction of any traffic lane wider than 10' on high volume roads.Neighborhood streets can have much narrower lanes. Contrary evidence not found.

Traffic engineers Paul Moore and Theodore Petritsch, "The Influence of Lane Widths on Safety and Capacity: A Summary of the Latest Findings."Earlier TRB research by Bob Noland estimates that increased lane widths could be blamed for at least 900 additional traffic deaths per year. Also 5/22 Study: Distracting Roadside Safety Billboards May Cause 17K Crashes/Year

https://www.apa.org/monitor/2018/04/curbing-speed reducing crashes

Faster speeds and more dangerous driving on emptier or wider roads

pewtrusts.org/en/research-and-analysis/blogs/stateline/2020/04/20/**speeders-take-over-empty-roads-with-fatal-consequences**

- Why Emptier Streets Meant an Especially Deadly Year for Traffic Deaths, NYT
- LA Times writer Steve Lopez called out speeding enabled by the relatively empty, over-engineered streets of Los Angeles, with full-throated endorsement of automated speed cams and automatic, mailed citations for speeding. California Highway Patrol
- "Nationally, there was an 8% increase in auto fatalities, with a death toll of 42,060 — and that was in a pandemic year with significant reductions in traffic." latimes.com/california/story/2021-03-13/pandemic-speeding-cars-lost-lives

Vision Zero efforts have been effective.*A Safe System recognizes that* ***humans will make mistakes****, and that* ***the human body has limits*** *to its ability to absorb crash forces without suffering injury or death.* ***Safety is a shared responsibility of all actors in a traffic system, not only that of a road user.*** *Thus,* ***all elements of the road traffic system should come together*** *in an integrated safety chain to* ***combine to prevent a crash, or at least prevent serious injury****, even if one or more elements fail (ITF, 2016b).*See Implementing the Safe System Approach (pres) Safety efforts in the US has focused more on

enforcement and less on design, falling behind on traffic safety. See recent articles from the Economist or Curbed for more details. YouTube, Delivering Quick-Build Projects webinar - OakDOT and Manhattan KS presentations, Fortaleza case study slides - cities and streets for children too

Transportation investment for access and mobility for all, with health and safety for all

- **Safety: Focus on real safety - serious injuries, deaths, and the most vulnerable**: CDOT, like other DOTs, needs to **de-emphasize fender benders** and **focus on where there are serious injuries and deaths**, often of the most vulnerable. State DOTs reported this was part of important project re-evaluation and transitions underway (Mar 2022)
- **All DOT projects can/should NOT be assumed to be safety investments** as CDOT Chief Eng. recently said to the DRCOG Board. The "forgiving highway" approach to traffic engineering design, with a bias to wider streets and highways, is wrong.
- **Collision rates rise as lane widths exceed about 10.5 feet.**(Karim, CA ITE, 2015). ***KEY: Better design, narrower lanes, no more widenings are needed. This is an easy, relatively inexpensive win-win-win that DOT could fund tomorrow.***
- **"Given the empirical evidence that favors 'narrower is safer'. The 'wider is safer' approach based on intuition should be discarded once and for all."** https://www.bloomberg.com/news/articles/2015-07-28/a-new-study-finds-that-10-foot-traffic-lanes-are-safer-and-still-move-plenty-of-cars
- **Research shows WIDER MEANS people drive FASTER and less safely.** When drivers have more room, cars go faster. When cars drive faster, collisions do more harm.
    - Journal of Transportation Engineering. Researchers from Texas A&M studied uncongested freeways in Dallas, Houston, and San Antonio. https://ssti.us/2016/10/31/more-evidence-that-wider-roads-encourage-speeding/

      Based on more than 650,000 observations researchers found that:

        - **Drivers drive faster in 12 foot lanes than 11 foot ones**. While 12-foot lanes are a common standard (and a min. requirement in some states), the *AASHTO Green Book* and *Guide for Achieving Flexibility in Highway Design* support the use of narrower lanes in many circumstances.
        - Wide **left shoulders adjacent to 11-foot lanes can increase speeds by as much as 1.1 mph per foot of shoulder width**, from 1.5 to 11 feet.
        - **Speed and capacity are often conflated in misleading ways** and safety can be ignored altogether; e.g., **as roads approach congestion, speeds don't change much but higher speeds drop** more quickly.
        - Maximum flow typically occurs at speeds well below the free flow speed

Better design, narrower lanes, no more widenings are needed. This is an easy, relatively inexpensive win-win-win that DOT could fund tomorrow.

- https://www.bloomberg.com/news/articles/2014-10-06/why-12-foot-traffic-lanes-are-disastrous-for-safety-and-must-be-replaced-now "best thing we can do for the health, wealth, and integrity of this great nation is to forbid construction of any traffic lane wider than 10' **Talking only about high-volume streets here: no more than 10.5 ft width**. Neighborhood streets can have much narrower lanes. Evidence must be provided for any contention to the contrary. We have found none.
    - Traffic engineers Paul Moore and Theodore Petritsch, "The Influence of Lane Widths on Safety and Capacity: A Summary of the Latest Findings."
    - Earlier TRB research by Bob Noland estimates that increased lane widths could be blamed for at least 900 additional traffic deaths per year.
    - https://www.apa.org/monitor/2018/04/curbing-speed reducing crashes
    - https://www.bloomberg.com/news/articles/2015-07-28/a-new-study-finds-that-10-foot-traffic-lanes-are-safer-and-still-move-plenty-of-cars
    - **CDOT's model and argument (erroneous) is that adding lanes and width is going to increase safety & decrease VMT** even with just a tiny amount of transit added. Bloomberg: Wider is terrible for public safety and pedestrians.

If the city wants to develop their own network of very adaptable devices then these products or some like them could help. These devices are adaptable and could be used to flash a yellow light when speeds are exceeded at 45mph or at crosswalks on Colfax. They can be capable of tracking data. They can be moved from site to site, either mobile on wheels or pole mounted which would allow the city to rapidly react to problem areas.

From TNSense

“”You are absolutely right – most of our customers are sign companies looking to build their "smart signage" line, such as Radar Speed Displays, parking information signs, or interactive Speed Limit signs.

Our RSD-300AT is a universal doppler radar sensor with traffic data collection feature. It can be connected to a set of LED beacons, activated on speed thresholds with various flashing platters. There is also an auxiliary output with separate speed thresholds, typically used to activate audible signals or even speed cameras. The budget price of the RSD-300AT unit is $510, but it can be slightly adjusted depending on specific configuration (e.g., additional Bluetooth interface), the order volume, or required customization.

The LR-15 is a radar-activated strobe beacon device that offers a wide range of features. We refer to it as the "Limit Reminder" (LR). It triggers high-intensity strobes in the event of speed violations and can gather traffic data, such as vehicle speeds, count, change in speed, and approximate vehicle size. The LR-15 is equipped with a Li-Ion battery and a 30 Watt solar panel, making it completely self-sufficient. The budget price of the solar-powered, complete LR-15 is $1190. The cost can also

vary depending on power options and other customizations.

I've attached flyers RSD-300AT and LR-15 brochures to this email. Please let me know if you need an official quote.""

Please let me know if you have any questions or if you require any further information. I would be more than happy to assist you. Electronic Traffic Signs, OEM Radars, Speed Displays, Traffic Counters, Microwave Sensors - TNSense - Smart Cities and Security
The good news is that traffic engineers are increasingly talking about **forgiving design** vs. the forgiveness of slow speeds: strongtowns.org/journal/2018/2/2/forgiving-design-vs-the-forgiveness-of-slow-speeds

Grants..
Safe Streets and Roads for All (SS4A) Grant Program | US Department of Transportation