

A. Respondent Profile

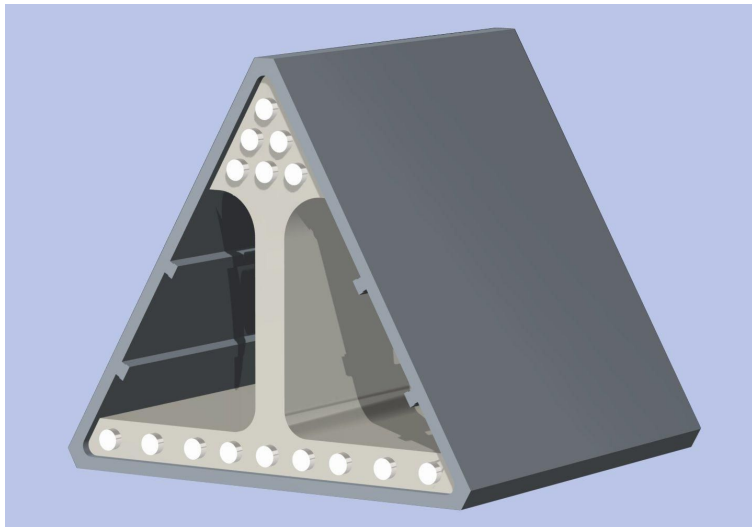
- i. TriTrack Motors Response to RFI 2019-DOT-PPD-4 airport transit connection
- ii. 30100 Spycglass Circle Georgetown, TX 78628
- iii. Legal Status: LLC
- iv. Jerry Roane, CEO
- v. jerry.roane@gmail.com
- vi. 512-294-1960
- vii. TriTrack is a dual mode electric vehicle capable of both driving on the street as a normal car and moving at high speed along a triangular guideway. TriTrack runs on solar radiation harvested along its path, making it 100% sustainable and eliminating pollution.
- viii. TriTrack aims to replace polluting cars and trucks damaging our air today. We will build guideways in a grid configuration approximately every 7th street in a typical city both East/West and North/South. Every segment of elevated guideway will travel at 180 mph whether in the city or in the country. Our primary revenue source is selling energy via the swappable battery mule of these vehicles with a monthly plan for unlimited miles. For \$199 per month you would also get the occasional use of a pickup truck, an exotic sports car or a nine-passenger family van. All costs of ownership are replaced by this small monthly subscription, similar to the cell phone subscription with unlimited gigs. Insurance, finance interest, tags, taxes, tolls, state inspection, energy, tire wear, brake pads, maintenance, etc. are bundled into one monthly charge. As soon as our self-driving supplier is qualified, these vehicles will also park themselves or rent themselves out to make the subscriber money on the side. We will not

require subsidies, instead paying our own way, which we believe the public will appreciate. We have secured the necessary funding commitments and have an agreement with Sunward, a Chinese manufacturer with 14,000,000 yuan in assets, to produce the vehicles and the TriTracker machine which builds guideway at 3 miles per hour. We will need the use of the city's rights of way for avigation rights and a 17 inch diameter foundation hole every 60 feet per guideway.

B. Proposed Concept

- i. We can build four parallel guideways from the San Jose Airport to the Diridon Train Station and from Diridon Train Station to the De Anza College Transit Station. The first route will be approximately 3.4 miles and the extension will be approximately 8.25 miles. Our vehicles can be rented with a system similar to Airbnb to run on the guideway at 180 mph. The power is provided automatically so the user has no interaction with energy delivery or commonly misunderstood batteries. The travel speed on the ground will be software limited to a non-lethal speed and upon entering the merge zone the self-driving software merges the road vehicle onto the guideway, where the battery mule drops off and goes underground for recharging and automatic delivery to the next pickup reservation. There is a linear motor inside the first 1,500 feet of guideway that launches the vehicle from 40 mph to 180 mph with approximately 270 horsepower. This takes 9.3 seconds at 6.9 Gs (the same as a Cadillac's 5 under 5, advertised during the Super Bowl). On the opposite end, 1,500

feet of linear generator recycles the energy from the motion of the vehicle as the TriTrack slows from 180 to 40 mph magnetically, eliminating the wear and tear associated with mechanical braking. To calculate travel times divide the miles by three at 180 mph. 180 was chosen to make the math easy to know when you will arrive. The trip from San Jose International Airport to Diridon Station is 1 minute 27 seconds, considerably faster than any other mode. The trip from Diridon Station to De Anza College will take 3 minutes and 4 seconds. System capacity at typical 1.3 persons per vehicle average is 576,000 airport passengers per day.



C. Physical Elements

a. The guideway is built using patent number 7,334,534 at 3 mph. The extruded aluminum 6061-T6 alloy outer skin provides three precision rolling surfaces and the forms of the internal concrete and steel modified "I" beam inside. This triangular beam is a 14.5 inch on a side equilateral triangle and seven wheels hold the vehicle on the 3D trajectory precisely controlling pitch, yaw and roll.

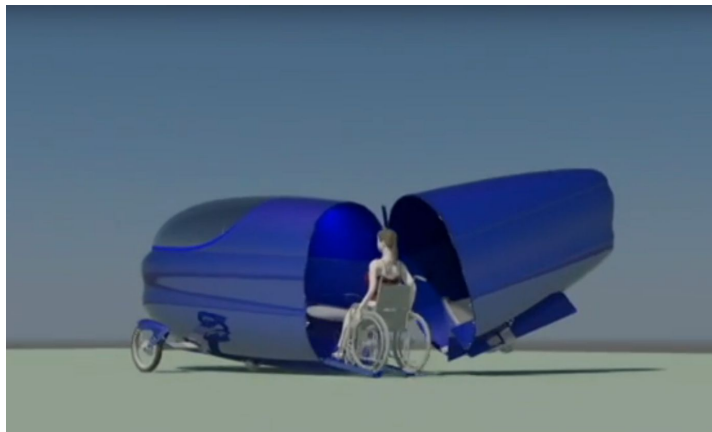
- i. View of guideway [left] from the street, depicted without solar panels installed.



- ii. It is built for 17 foot clearance underneath the panels so tall trucks can go under anywhere along the path.
- iii. The system's right-of-way need is aviation rights 7 feet wide high above the street or bike trail. We drill a 17" diameter foundation hole every 60 feet for the human transit version or every 50 feet for the version that carries water instead of people. Bike trials under the shade of the panels will be pleasant for the bike riders. Guideways can be built either side by side or one above the other. To serve 576,000 passengers per day we will need four guideways, two each direction. The preferred configuration is two above and two wide.

b. There is no station for TriTrack as a dual mode vehicle. The guideway brings you back down to ground level where a 100% charged battery mule rendezvous with the vehicle at 40 mph. There is a hole in the pavement where the battery mule comes up to join the vehicle body. The landing area is called the demerge zone and is fenced to reduce risk. It is one car lane wide and 30 feet long on the side of the road. Not needing a station saves a significant amount of public money.

- i. The demerge zone looks like a small parking lot. TriTrack vehicles that are off of the guideway but have not yet been taken control of by the driver will be parked in these demerge zones until the driver has time to take over. If they are having trouble for some reason they will remain in the fenced area until EMS help can arrive.
- ii. A 12 foot by 30 foot area is required for landing with a reduced headroom area in front of the landing pavement.
- iii. The urban landscape will remain the same but four street parking spaces will need to be used for access points.
- iv. The train station parking lots will accept the TriTrack ground mode vehicles while they unload and then they will self-drive away to be stored.
- v. To take the train you bring your luggage in the front door of the train station from the parking lot.
- vi. Because we are 100% clean TriTrack will load inside the terminal building next to the luggage carrousel and out of the rain or any bad weather. TriTrack spare vehicles will be stored on the unused grounds of the airport past the end of the runways and inside the highway cloverleaf.
- vii. These are fully autonomous vehicles and will be owned, rented, borrowed and also reserved with an app as a person-to-person business transaction. Each guideway is strictly one way so you get on the guideway that is going where you want to go. The battery mules under the ground are on their own system that is very much like pure PRT except they are in a small PVC plastic tunnel just under the grass in a specially shaped buried tube. Most mule movements are very short trips going to the nearest needed location while always being on charge.
- viii. Level boarding is provided in the ADA variant. Getting in a TriTrack is no more difficult than getting in a car. You step on the strut and step on the gunwale then hop in your seat. In the “Jimmy” version you roll your wheelchair into the middle of the vehicle as it splits and squats



to let the electric wheelchair enter the driving position of the vehicle (see video animation on YouTube). The wheelchair occupant does not leave their chair but rather drives the TriTrack with the joystick of their wheelchair. This avoids needing an

attendant to go wherever the person in a wheelchair wants to go. The Jimmy model opens up the entire city to those who find themselves in a wheelchair. If you can safely drive your chair you can drive anywhere in North America.

- ix. Complete streets provides a strip of land for bike trails. We would share that land. In locations where overpasses are encountered we always build higher. We build higher because our cost to go higher is always cheaper.
- x. The guideway always comes to the ground on each end.

C. Describe the Vehicle



- i. TriTrack is a regular street vehicle except it is lacking the extra rear wheel. It can be found in a parking lot space using mobile device navigation with walking instructions turned on.
- ii. TriTrack seats four adults but has an always-measured strict maximum payload weight limit of 920 pounds. That is four 180 pound people and 200 pounds luggage. If four persons and their luggage exceed this strict limit they won't be electronically able to enter the guideway. They can take two or more TriTracks to comply with this important hard limit. The trunk can hold very long items like skis or a foldable electric bike or scooter.
- iii. A young kid can load into the vehicle in about 10 seconds. Older individuals may take up to a couple minutes to load so the vehicles load offline from the

monorail beam. This avoids unnecessary waiting and wasting valuable system capacity. It takes 30 minutes to load a 747 aircraft, wasting 147 million dollars' worth of investment sitting burning energy, going nowhere. Load time is cut to a minimum to save operational costs.

- iv. TriTrack only has one speed on the guideway. It goes 180 mph, period. It enters the guideway at precisely 40 mph and the linear motor is programmed to accelerate exactly .69 Gs to bring the vehicle up to 180 mph. This launch takes 9.3 seconds. The reverse is true on the opposite end of the trip slowing at .69 Gs and it takes 9.3 seconds to slow back to 40 mph. Driving on the ground the driver is in charge of speed between 40 mph and 1 mph.
- v. We are working with a Chinese self-driving group to provide fully autonomous travel and parking the empty vehicle. By the time this study is over we anticipate that self-driving will be 100% ready. On the guideway, self-driving is simple and will not require us to wait for advances in autonomous driving tech to move at high speed. You wouldn't want a random person driving at 180 mph anyway.
- vi. TriTrack spare vehicles that are instantly rented will be stored on the airport grounds in the grass. They are very lightweight and will not damage the turf.
- vii. Some may be stored on the roof of the terminal as they park on their tail.
- viii. The consumer has no connection with how energy is delivered. There is no consideration by them for battery or super capacitor by design. All things to do with power are hands-off automatic. Each power mode is separate and the sun provides all the power so that no detractor can lodge complaints about once-through coal power plants of the 1940s. There are no uninsulated wires to shock workers or small animals. All connections are done in double-enclosed tiny spaces. Only cockroaches will be able to fit in the space for physically connecting electric wires. Direct current of a voltage that can be touched without causing death will be used for the safety of technicians. San Jose has 5.35 sun hours a day, on average. The battery mule fleet is the energy storage for darker days with less power output on those days. Keep in mind they still put out power on a cloudy day and the battery fleet capacity is large.
- ix. The vehicles do not require a maintenance facility. They are very modular and modules swap out in a few minutes in the loading area in the open air.
- x. In self-driving mode the vehicles will move to the forecasted need each night.

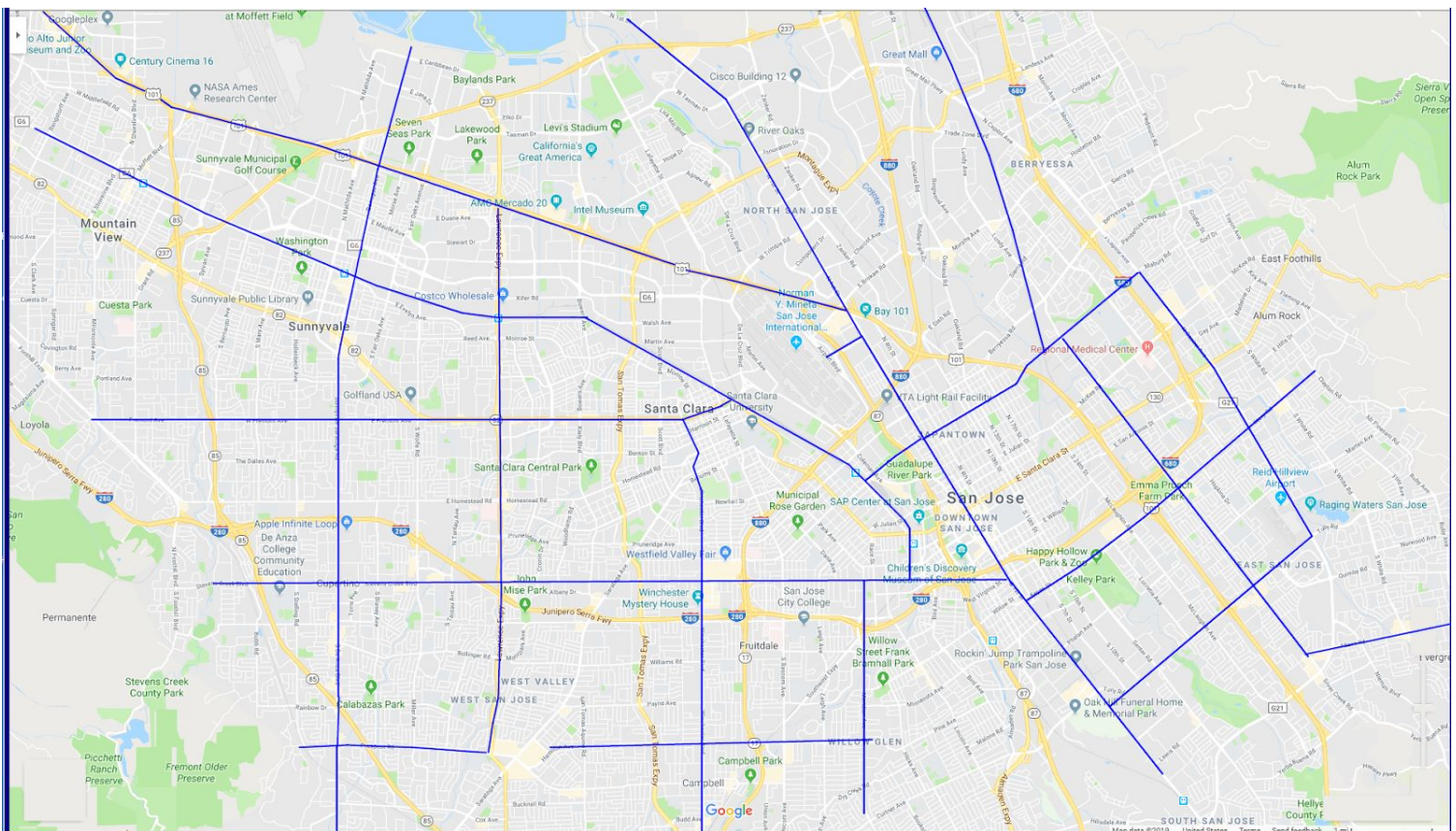
D. Operational Elements

a. Describe the operational model.

- i. TriTrack as a dual mode vehicle provides what transit systems have failed to provide for over 100 years. Actual door to actual door service. If the city wants to rid itself of cars, the alternative must surpass all features of the private luxury car. Providing superior speed and safety from actual locations is how to reduce the number and negative impacts of the traditional car.

Guideway grid as described in US patent number 6,923,124 provides all long distance travel in Silicon Valley and driving on the ground will ONLY be very short drives to the nearest guideway entrance. Your navigation system will avoid two people trying to use the same patch of asphalt at the same time as the entire city is routed including also including all cars not in the system. This orchestration of all traffic flow using big data is the solution the problems that are being blamed on the traditional car. Perfect time multiplexing is where we engineers can make a contribution. Adding two or four more layers in the city for travel is another advantage. Building it cheaply and very quickly is another advantage unique to TriTrack patents.

- ii. The airport to Diridon Train Station time is 1 minute and 27 seconds.



- iii. Two TriTrack vehicles leave every 1.5 seconds headway.
- iv. There is no station and there is essentially no dwell time. The parking lot allows for loading at your leisure but does not hold up others who may be in more of a hurry behind you.
- v. Guideway can be double decked or triple decked on the same foundations. Running out of capacity is limited by the population that is traveling. The grid flow exceeds the San Jose population so no traffic jams ever.
- vi. Brushless electric motors have an MTBF of 131,400 hours (15 years) continuous duty. No TriTrack motor will ever wear out before the rest of the

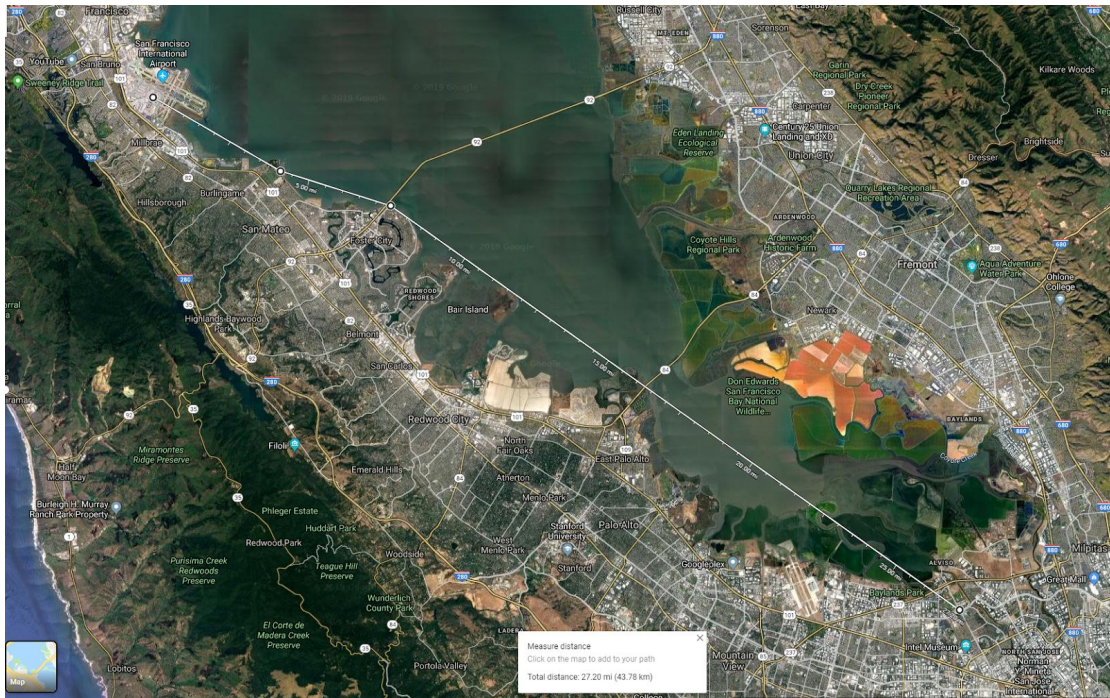
vehicle is completely used up. Upholstery will wear out long before the motor or electronics.

- vii. The monthly subscription payment avoids any ticket issues. Tickets are a poor way to try to do small financial transactions. Modern financial technologies handle the transaction processing and accounting associated with small purchases much more efficiently. TriTrack is so energy efficient that it will be a trivial cost to the consumer to go lots of miles; this in turn will induce more travel so being able to cheaply build much more capacity is essential.
- E. Current Status of TriTrack
- a. We are post prototype and pre-revenue. We have an international agreement to have SunWard USA and SunWard China build our vehicles and the machine that builds guideway at 3 mph called the TriTracker (US Patent Number 7,334,524).



- This 14 billion yuan company also builds sport aircraft using a similar technique to our monocoque composite body.
- b. The system can be completed in 6 months once all necessary approvals have been obtained.
 - c. The trade war with China could potentially complicate our partnership with Sunward, a Chinese company.
- F. Concept Requirements
- a. We will need to obtain an EPA FONSI (Finding Of No Significant Impact) because our entire footprint is the same bore hole as the very start of the environmental study (a 17" diameter hole). We will require city building permits pre-approved, and right-of-way provided. The system can be implemented 6 months after last approval step.
 - b. TriTrack can go deep underground if required. The linear motor (patented) can go straight up 90 degrees to the ground with no problem. For comfort we recommend no more than a 60 degree incline to move from deep below ground to high above the nearest highway overpass. Since the airport needs aviation rights at the end of the runway tunneling may make sense, but for cost reasons tunneling is not an ideal solution. Building very tall structures near an airport is also not ideal, so moderation is the best choice for structure height. Sharing bridges with highways works for TriTrack with proper fencing off of the biggest trucks.

- c. This is an important point in long term value to the traveling public. San Jose Airport and San Francisco Airport if connected with a 14 minute connection would serve the public as if it was one airport.



Right now the cost differential for flying into one versus the other can be a hundred dollars a person. That cost differential can be captured by a high-speed link between the two airports making them virtually two terminals of one airport. The extension we see as the most likely may be one of the least obvious. Extending TriTrack guideway from the San Jose Airport to the water of the San Francisco Bay and following the shoreline to stay mostly in the shallow water, would avoid endless eminent domain lawsuits trying to build inland. Of course it may seem radical to some to utilize the bay for high speed travel, but with its hard weight limit TriTrack can build low-cost piers in the water inexpensively. The view from the ride will be spectacular. If the city is concerned with the route's effect on the beauty of the bay, a more expensive alternative is to build guideway along every major highway on the median strip on top of the Jersey barrier. At each overpass the guideway would go higher. A small ribbon in the sky will look better than endless red lit tail-lights of traffic congestion on the land.

- d. We have no stations but we would love to build out the patent in the entire city grid and end traffic congestion in San Jose. Not only can we end the traffic nightmare, but going sun powered will drop air pollution by 1/3rd moving the air quality from EPA failure to being certified "healthy" by the EPA.
- e. Guideway is to be 100% recycled every 50 years. Vehicles to be 95% recycled every 250,000 miles logged.

G. Costs

- a. \$530,000 per guideway mile. Solar panels are at \$.18 per watt today ignoring temporary trade conflicts.
- b. Stations do not need to be built. Merge zones will take four parking spaces from the side of a residential street.
- c. Starting system can be a very small fleet to get going. 100 TriTrack vehicles and 5 Jimmy models exceeding the ADA requirement.
- d. City cost, \$1.00. Toll project cost vehicles and guideway \$5 million and \$13 million double decked or half that if 2 guideways per instead of 4 guideways per.
- e. As a 40 year lease toll road the cost to the city of San Jose would be a token \$1.00.

H. Business Plan

- a. TriTrack Motors would like to offer our patented system to connect SJC airport to your community as a 40 year lease of the land and aviation rights as a toll system, subsidy-free. After the 40 years the city gets the land and these two routes of the system back. In the longer view we feel like high speed efficient pollution-free transportation will slowly render more pollution-heavy solutions obsolete. That will increase our value proposition and the value to the public. Saving energy is how all this is paid for because the current forms of vehicles and trains were never intended to save energy or produce zero air pollution. It was never a design consideration and the diesel engine is terrible even with extensive expensive exhaust equipment that does not last the life of the engine. Diesel engines must be detuned to reduce their nitrogen oxide emissions. Maintenance on diesel emissions parts is rarely done correctly so in practice, large bore diesels are killing us whether they are in big box buses, trains or VW cheating. Pollution from one malfunctioning diesel bus negates hundreds of Silicon Valley citizens driving their Toyota Prius.
- b. TriTrack Motors will be the operating entity selling energy and charging mileage tolls to fund this proposed system. Our toll will be cheaper than present transit fares.
- c. Monthly subscription of \$199 per month unlimited miles for the prime customer and they are free to sublet their investment to whomever makes a deal with them but the unlimited miles only applies to the prime. A mileage fee will need to be established for rental units funded by citizens who want to participate in that business enterprise.
- d. The US average mileage is 15,000 miles a year so unlimited miles would be \$.16 per mile. AAA calculates that the cost of a standard American car in 2019 is 60.8 cents per mile. A BMW 4 series costs 88 cents per mile (ref Edmunds). Gasoline cars will never be able to compete with high speed guideway. Recently the CEO of BMW called it right and resigned.
- e. Speed is the key to improving ridership. Privacy and personal space come in a close second. Saving nearly four times the money clinches the deal. Google Maps gives the transit time between SJC and SFO at 1 hour and 1 minute on the \$10.50 route, whereas the trip would only take 14 minutes with our system.
- f. Yes. Tolls and energy sales fund everything and all costs are bundled into the subscription price.
- g. We will not be using fareboxes. Many people do not carry change or paper dollar bills anymore. Saving money on what is being bought is the key to affordability.

Aerodynamics of TriTrack is multiple times better than the alternatives.



Cashing in on the advanced aerodynamics is how we keep our costs manageable without requiring subsidies, as opposed to AmTrak requiring approximately \$2 billion dollar subsidies annually. Improving the machines so they don't break is cheaper than maintenance and repair depots.

I. Impacts

- a. There will be "nimby" folks galore. Once they travel at 180 mph to work the first day, that will subside. That is why we want to build the guideway so fast. It won't give the nimby folks time to stew. Visually, we are in the skyline and that is a negative.
- b. The aerodynamic sound a vehicle makes going 180 mph will be audible. The swoosh will occur every few seconds on a heavily traveled day. This sound will be softer than the noise of a standard car.
- c. The solar panels will help reduce the noise but not eliminate it. They will be much quieter than a traditional car.
- d. TriTrack's goal is to clean up our air. In China, the latest health study found that 4,400 people per DAY die young from their nasty air pollution. China is a big country but those numbers are unconscionable. India is 3,288 per DAY. 548 per DAY die due to air pollution in the US according to a recent MIT health study. We believe that

these air pollution death statistics are completely unacceptable. Once the public knows the facts, they will understand why we must change, stop equating moving with creating air pollution, and join our fight. We live in a marvelous world and as its stewards, it is our obligation to do our best to stop polluting just to get where we are going.

