

# Challenge Winner – Aaron Renn

## InnoCentive Challenge 7520002 Evaluation of Submissions

In response to your **Ideation Challenge** on “**Ideas for Increasing Public Transportation Use to Reduce Greenhouse Gases in Chicago**” InnoCentive is forwarding the following submissions to you for your consideration and evaluation.

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*My Solution:*

### **Executive Summary**

Raising annual transit ridership to one billion rides means increasing ridership by 61%, or 379 million rides. Accommodating these rides will require both increasing the utilization of the existing capacity and adding new capacity, which will require funds to implement. The new riders must also be attracted into the system.

Maximizing ridership is not the only goal that is currently held for transit. There are other goals which may conflict with it. Resolving this requires tradeoffs. Examples are transit as a social service vs. a public service, transit ridership maximization vs. congestion relief, and investing where demand is vs. equity of service. This response assumes ridership is the paramount goal. This will require sacrifices that may be deemed unacceptable.

To add 379 million rides, investment should be focused in areas of high demand, the Transit Addressable Service Area (TASA), which is largely in the CTA service zone, not Metra or Pace. Investments would be focused in the TASA and its fringes, with only more limited service available outside of it.

Adding capacity to handle the new rides will be accomplished in three ways:

1. More efficiently utilizing the existing infrastructure, especially adding new off-peak rides and shifting rides from peak to shoulder periods. (10 recommendations)
2. Adding a new bus rapid transit component to the CTA system.
3. Increasing mainline capacity on rail and bus (9 recommendations – no new rail lines)

New riders will be lured by:

1. A rider-centric view that focuses on maximizing the attractiveness of transit versus the alternatives in terms of cost (5 recommendations), end to end journey time (4 recommendations), and quality of experience (7 recommendations).
2. Maximizing demand for trips by increasing employment in the Loop and changing policies with regards to land use (5 recommendations).

The capacity increases will be funded through a variety of means (4 recommendations), notably re-prioritization of existing capital budgets and capturing the value created by transit via site value taxation.

Also, the CTA’s operating model should be examined. Some of the areas to explore are operations outsourcing, converting CTA value added services to revenue generators, and examining its talent mix.

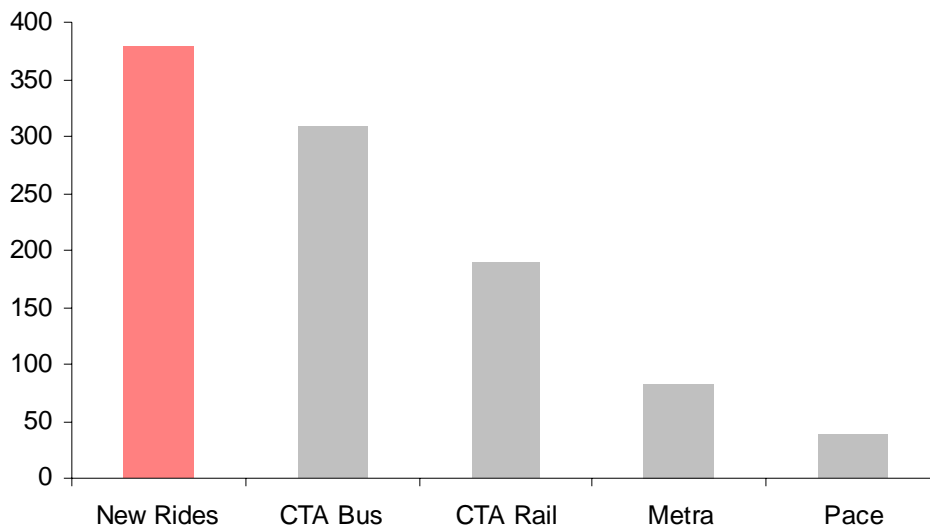
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Lastly, it should be noted that the CTA is making progress on improvements in many of these areas already and should be congratulated for the transformation it is already undergoing under the leadership of President Ron Huberman.

### 1. The Scale of the Challenge

To significantly reduce greenhouse gas emissions, the Chicagoland Chamber of Commerce wants to understand what it would take to raise transit annual ridership to one billion trips, meaning 800,000 new daily transit riders.

Total 2007 Chicago metro transit ridership totaled 621 million. Raising this to one billion annual rides implies an increase of 61%, or 379 million rides. To put this in perspective, the CTA L system carries 190 million passengers per year. To reach the target ridership levels will require attracting and accommodating about twice as many riders as currently ride the entire L system today, a system that often already experiences overcrowding at rush hour. Note also that this is twice the increase in ridership anticipated by the Chicago Climate Action Plan, which seeks a 30% ridership increase.



**Current and Required New Rides, in Millions**

This chart shows the scale of the challenge. Given crowded conditions on much of the transit system today, hitting the target is going to require changes to accommodate the increase along two dimensions:

1. In the short term, better utilizing excess off peak capacity by a) attracting new off-peak riders and b) shifting some current peak rides to shoulder or off-peak in order to accommodate new peak period riders.

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2. In the long term, significantly increasing capacity. This is likely to require large capital investments. The desired new rides simply cannot be accommodated on the current infrastructure.

Beyond meeting the capacity challenge, new riders must be attracted into the system or existing riders induced to take additional trips. This provides the three elements of the challenge to solve: providing one billion rides worth of capacity, paying for it, and attracting the riders into the system.

This goal is a big challenge to the region. There is no silver bullet solution to getting there, nor will there be overnight success. Any program to drive this level of increased ridership will require a diverse set of initiatives and levers to hit the target, as well as sustained commitment over time.

### **2. Values in Conflict**

Hitting the one billion rides goal means changing the public transit game in Chicago. Beyond making transit “better”, it means changing the goals and values that underpin public transit as it exists in Chicago today. Some of these are not explicitly stated. Some of them conflict with each other. So before going to a recommendation, it is important to directly address this point.

What is public transportation? The simplest definition is just that: transportation for the public. However, this is not always how it is viewed. Many transit critics see it as a social service, not a public service, one that, apart from peak period Loop commuters, is effectively a social safety net program for the poor, the disabled, etc. Hence funding for transit is often seen through the same lens as welfare spending, which suppresses public support levels. Programs such as mandated paratransit service and free rides for seniors reinforce this view. And clearly the way transit is run today, it does serve at least some social service function.

On the other side, while transit supporters view it as a public service, they often implicitly argue that it is not primarily about transportation. The benefits of public transportation are frequently stated in terms of the positive externalities that transit creates, not direct mobility benefits to riders. For example, reducing traffic congestion, revitalizing urban neighborhoods, or, as in the case of this study, reducing greenhouse gas emissions.

While public transportation can indeed have all of these positive side effects, riders will only be attracted to transit to the extent that it best meets their mobility needs versus the alternatives, in terms of cost, end to end journey time, and quality of experience. So boosting ridership requires a rider-centric approach that focuses on improving these.

Also, though boosting transit ridership may seem like an unobjectionable goal, it is potentially in conflict with other goals and has undesired side-effects. Consider:

- Transit and the automobile are not good substitutes. Each is at its best where the other is at its worst. Maximizing transit ridership means creating an auto-hostile environment in the transit service area in terms of the built environment, cost of auto usage, and congestion. In short, less congestion reduces transit ridership while more congestion

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increases it. But more congestion drives up greenhouse gas emissions. Is the actual goal minimization of greenhouse gases or attaining ridership goals? The optimal mix of transit and road might be different in each case.

- Auto trips need not be replaced by transit trips. When someone switches from a suburban car oriented lifestyle to an urban transit oriented one, the majority of the auto trips may not be replaced by transit trips. Instead, they may be replaced by walking trips, bike trips, taxi rides, or ride shares. In effect, one transit trip for work may be leveraging several other trips on alternative modes each of which contributes to greenhouse gas reductions. If you increase transit ridership by converting these alternate mode trips to transit, that may actually have an adverse effect on greenhouse gas emissions.
- Maximizing ridership means redirecting resources from low demand areas to high demand areas. The principal sources of ridership in Chicagoland are CTA bus and rail. When asked why he robbed banks, Willie Sutton famously said, “Because that’s where the money is.” Similarly, to boost ridership, you need to go where the riders are. This means the CTA, not Metra or Pace. Furthermore, the CTA today currently has equity as a goal. It wants quality service throughout the city as a good in its own right. This creates an implicit “peanut butter spread” approach in investment. But to maximize ridership will require investing where demand is, which is potentially in conflict with the goal of equity and which could result in political or legal difficulties.
- There is tension between transit as a social and public service. Programs today that may provide some boost to ridership – free rides to seniors or using transit to link the inner city transit-dependent with suburban jobs – do so at the cost of creating a societal view of transit as primarily a social service. But to achieve significant market penetration, transit needs to be seen as a public service.

I assume in this response that the overriding goal is hitting the ridership target, and that other considerations such as equity of spending will be secondary. This may result in unwanted side effects. Tradeoffs will need to be made regardless of the course pursued.

### 3. Sources of Ridership Increases

I propose targeting to achieve the required 379 million net additional rides from the following modes:

Mode	New Rides (millions)	Percentage of Total	Percent Increase vs. Today
CTA Bus – New Bus Rapid Transit Facility	125	33%	N/A
CTA Rail	125	33%	66%
CTA Bus – Traditional	100	26%	32%
Metra	25	7%	30%
Pace	4	1%	10%
<b>Total</b>	<b>379</b>	<b>100%</b>	<b>61%</b>

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Note that the vast majority of the planned increases come from the CTA. Metra and Pace are not major contributors to the ridership increases. Increases in traditional bus service are half those of rail because the majority of the new bus rides will come from a new Bus Rapid Transit facility to be discussed later.

### **4. The Transit Addressable Service Area**

To reach the goal, transit must be positioned as a market competitive public service, and investments prioritized to high demand areas, not low ones. But most public services are provided ubiquitously throughout an area. Parks, police protection, libraries, etc. are available throughout the city. How can we position transit as a public service if its services are not available equally in all areas?

The answer is to make transit service an attribute of land use. This is already implicitly done today. No one expects that sprawling subdivisions on the fringe should have the same level and type of transit service as the Loop. This distinction needs to be made more fine grained and specific.

I propose the creation of defined “Transit Addressable Service Area”, or TASA. The TASA will include those areas of the city and selected suburbs that are developed in a transit oriented manner well suited to routine transit ridership without recourse to the automobile. Attributes of this type of area would include things like:

- Medium to high densities of population and structures
- Mixed uses
- Limited parking
- Significant traffic congestion
- High quality transit service within walking distance
- Poor highway proximity
- Convenience retail within walking distance of most residents.
- Street frontage orientation (vs. campus style or other inward facing orientations)

These are neighborhoods such as the north lakefront that are well-suited to living without a car, or with only limited use of the car. It might also include walkable downtowns of suburbs with significant in-town residential populations such as Glen Ellyn.

Major transit investments would be focused inside the TASA. There would be two tiers of service: high services levels in the TASA and fringes, provided as a high quality public service, and lower service levels outside the TASA, provided on a more social service basis. Over time, the goal would be to encourage changes in land use to expand the TASA.

This may seem unworkable, but in fact it has worked elsewhere. For example, when Nashville and Davidson County, Tennessee merged, an “urban services district” was created for the more densely built up areas. This was not a transit specific district, but did relate to more intense city services versus suburban or rural services. This is a common element of city-county mergers. Particularly where at least some level of taxation follows the service district boundaries, it has

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functioned without significant public backlash. The challenge has been to adjust district boundaries over time as land uses change. It would be similar for the Chicago TASA.

### **5. Expanding Capacity to Meet Demand**

I propose expanding capacity to meet the projected demand through three mechanisms: more efficient utilization of the existing infrastructure, a new bus rapid transit system, and other capacity expansions.

#### *5.1 More Efficiently Utilizing the Existing Infrastructure*

The CTA experiences by far its highest loads at peak periods during morning and afternoon rush. Many bus and rail lines are at or above capacity during these periods, leading to unpleasant overcrowding. This makes it very difficult if not impossible to significantly increase ridership at those times. However, off peak ridership is currently far below potential, meaning much of the CTA's infrastructure is badly underutilized most of the day. Since adding mainline capacity to serve the peak of the peak is extremely costly, this should be minimized by seeking to add rides during non peak periods and shift rides from peak to shoulder or off-peak.

Below are recommended solutions to investigate for distributing demand to more efficiently utilize the existing infrastructure. Some of these involve incremental capital investments to better leverage the existing network. Note that for these and all recommendations in this response, I suggest a pilot to validate the results prior to full rollout.

1. Implement variable pricing. Many businesses with major demand peaks and troughs charge more for peak vs. non-peak. The CTA should implement congestion surcharges on bus and rail to encourage ridership to shift from peak to shoulder while increasing revenues at the same time. Conversely, off peak fares should be reduced or potentially eliminated entirely for some things like owl service. Elasticity of demand varies by day and pricing strategies should take account of this. Variable pricing – including dynamic variable pricing – has already been implemented successfully on many toll road systems. The CTA's electronic fare collection system makes this technically feasible to implement.
2. Increase bus and rail service frequency during shoulder periods. This is needed to accommodate new and shifted demand. This requires additional operating budget, but limited new capital. This is required for variable pricing to work effectively.
3. Establish employer programs to permit flexible work schedules for transit riders. This is needed to fully make the above items work. Also, it should be restricted to transit and alternative mode commuters, not people driving. To avoid cheating, this could also be bundled with a requirement that employees participate in a pre-tax transit fare payroll deduction plan.
4. Increase off-peak service on select high demand bus and rail lines. This would be done on a case by case basis where there is reason to believe additional discretionary trips can be attracted. The current approach of ten-minute headways requires an average five minute

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wait for a bus. Reducing headways to five minutes would likewise reduce average wait times and drive increased “spontaneous” trips.

5. Eliminate slow zones and signal problems. This is discussed in more detail below. These reduce effective capacity.
6. Re-allocate slots on the Loop L from lower to higher ridership trains. Loop frequencies should be allocated to the runs that will carry the most people to maximize capital efficiency.
7. Shift track work to overnights. Riding the L during the day can be like a slow form of torture due to track work that significantly elongates journey times. This should be moved to overnights where ever possible to reduce the disincentive to ride during the day.
8. Evaluate 10-car trains on the Blue Line. Many stations on this line already have long enough platforms for ten car operations. A combination of selected platform expansions and skip stop service could be used to add up to 25% in capacity with marginal expense.
9. Re-align Metra services to focus on high quality express service in the TASA, not large park and ride lots. Driving to the train station does not eliminate an auto trip at peak, nor does it reduce the need for non-commuting auto trips. The focus should be on transit oriented development, not using transit to make a sprawl based lifestyle more comfortable or to enable people to live even further from the city.
10. Increase Metra weekend frequencies and evaluate fare increases for weekend service. Metra trains are frequently overcrowded on weekends. There is potential demand for better service on selected corridors, as well as the potential to increase the weekend fare.

Beyond the first few items listed, what this illustrates is that efficiently utilizing capacity is a continuous improvement process. Transit, particularly rail transit, is capital intensive. So maximizing capital efficiency and getting as much out of the fixed cost base as possible is the name of the game. Manufacturers in the private sector do this every day.

### *5.2 Implement a Major New Bus Rapid Transit Service*

The CTA is already evaluating a BRT solution. BRT has proven extremely successful in environments as diverse as Curitiba, Brazil; Bogota, Columbia; and Cleveland. While some BRT systems use permanent dedicated ROW, high platform loading, and other elements that make them have a cost profile similar to a rail system, I believe there is an opportunity for a large scale “BRT-light” network in Chicago that could be implemented at a fraction of the cost of rail.

The CTA’s plans are available for inspection online so they will not be reviewed in detail. My proposal is for a three tier BRT system.

Tier One involves multi-lane arterial streets with a center median where one lane each direction, preferably the left one, could be converted to bus-only use during peak and shoulder periods. These would feature high frequency service with high-capacity double-articulated buses. Ideally

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these would use stations constructed in the center median with left-side boarding through multiple doors and potentially high platform loading in places. Left turn restrictions for autos would prevent interference from cars. Signal pre-emption would be used to ensure rapid bus progression. East-west routes would turn and utilize Lake Shore Drive and Michigan Ave. to downtown. One or more lanes of Lake Shore in each direction would be dedicated to buses. Cars would be banned from Michigan Ave. during peak and shoulder periods. Only buses and taxis would be permitted on Michigan Ave. at these times. This would dramatically reduce the congestion experienced by buses today and permit the many new BRT vehicles to efficiently navigate to downtown as well. Additional car restrictions, either outright elimination or conversion of lanes to bus only, should be considered on streets such as LaSalle to permit better service to the central and west Loop.

The BRT system would not be limited to Loop bound service. Lines such as Irving Park Rd. and Garfield Blvd. would be east-west crosstown routes, though they would use Lake Shore to serve the Loop as well. Additional north-south cross town routes such as Western and Cicero could also be developed.

Tier Two would involve BRT on narrower streets such as Chicago Ave., and would likely feature the right lane boarding on dedicated lanes at peak periods, and potentially smaller, though still specially branded, buses.

Tier Three would be similar to Tier Two, but without dedicated bus lanes. This would be similar to the existing CTA express bus service and indeed would be more properly classified as extending the reach of traditional bus service.

These three tiers of BRT can operate in parallel or sequentially. For example, Tier Two type service might “degrade” to Tier Three once the shoulder period is over.

BRT is a proven, successful technology. However, this recommendation should be viewed as a concept. Further studies would be required to move this forward to design the specific solution, but there is no reason to believe BRT would not be applicable to Chicago given its success elsewhere.

### *5.3 Other Capacity Expansion Projects*

Beyond BRT and capacity optimization, there are other selected capacity improvements that can be made.

1. Renew and expand the bus fleet. Much of the existing bus fleet requires replacement. Also, to handle expanded ridership and service increases, some increase in the fleet size is required, though not to the extent of ridership increases due to better capacity utilization.
2. Alleviate rail bottlenecks. These reduce the CTA’s ability to fully use the expensive track and signal infrastructure. It limits “inventory turns”. There are three principal bottlenecks: Clark Junction (Red/Brown Line junction north of Belmont), Tower 18 (NW corner of Loop) and Tower 12 (SE corner of Loop). The CTA should construct a flyover

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on the northbound Brown Line at Clark Jct. This will eliminate outbound Brown Line trains crossing the other three tracks, permitting significant traffic increases here. The other areas require detailed engineering studies to identify solutions.

3. Divert select Brown Line trains to the State St. Subway. The subway is underutilized while the Loop is at capacity. Moving Brown Line runs to the subway with a turnback on the south side of downtown reduces the pressure on the Loop interlockings. This also allows more Brown Line runs. Potentially the Brown Line could be through-routed with select runs on the Orange Line via the subway to avoid the Loop and the need for a turnback track while simultaneously providing service without a transfer from the north side to Midway.
4. Replace the three stations on the east leg of the Loop and State/Lake with two combined stations. This will reduce the amount of time needed for a train to Circle the Loop. The close proximity of these stations means there is limited negative rider impact. Additionally, the Clark/Lake platforms could be shifted to the east to increase spacing between that platform and the Tower 18 interlocking to avoid queuing trains blocking the platform.
5. Build infill stations on the existing Yellow Line. Potential stations are at Ridge, Asbury, Dodge, and Oakton. This is not the CTA's planned extension of the line, but rather infill stations on the current line.
6. Purchase equipment to support additional peak hour L frequencies, particularly on the Red and Blue Lines. These lines do not operate at theoretical maximum headways today. They are also the two busiest lines in the system and can be expected to handle a significant amount of the increase in rail ridership. Expansions on the other lines will be constrained by slot restrictions on the Loop L unless bottleneck improvements can be implemented.
7. Build new in-city Metra stations, particularly on the UP-North line. The UP-North line has an abandoned express track that could be leveraged for an in-city shuttle service at peak hours. This line passes through many high growth north side neighborhoods. It also parallels the CTA Brown Line for a good distance, offering the opportunity to better integrate the CTA and Metra. Potential station locations include such streets as Belmont, Addison, and Irving Park Rd. These locations could actually provide faster and higher quality service to West Loop locations than the L. Potentially this line could terminate at a special platform integrated with the Green Line Clinton station to provide a direct Metra to CTA transfer for distribution into the core of the Loop.
8. Utilize the Metra Electric line as a quasi-heavy rail service to the South Side. Expand headways and integrate fares and fare media with the CTA so that this functions as a south lakefront L. This means service on the same frequencies as other L lines during much of the day.

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9. Expand Metra and Pace in line with organic demand increases. As Loop employment increases, and many suburbs such as Evanston and Arlington Heights, which contain significant TASA areas, densify their downtowns, additional demand can be expected in line with this, particularly on Metra.

### *5.4 Summary*

While the terms of the challenge cautioned against recommending capacity increases of these types, there is simply no way to accommodate the required new rides without them. Elimination of the BRT component, for example, requires that other modes support an additional 125 million annual rides. Given the increases they are already being required to support and existing congested conditions, this is not realistic. The system is already straining under the recent ridership increases, which have been far more modest.

This program focuses on maximizing the investment in the existing infrastructure, targeted high-value but relatively low cost capacity expansions, and a reliance on low cost bus instead of extremely expensive heavy rail solutions to meet ridership demand. The focus has been on doing whatever is possible to accommodate the desired 379 million new riders at the minimum possible cost.

### **6. Attracting Increased Ridership**

Capacity can be added and that will attract some new riders through simply providing service that was not there previously. But the “build it and they will come” approach cannot be relied upon to supply 379 million additional annual rides. Active steps must be taken to increase ridership along two dimensions:

1. Making transit the mode of choice versus the auto. This is for both commuting and non-commuting trips.
2. Increase the quantity of trip generators. This means significantly boosting employment in the core area.

#### *6.1 Making Transit the Mode of Choice*

Making transit the mode of choice means taking a rider-centric view of the world. Most people are not going to ride transit because it is the right thing to do or in order reduce greenhouse gases. They are going to take it because it has the best combination of cost, end to end journey time, and quality of experience versus the car or other alternatives. So attracting riders means making improvements along these dimensions. Proposals for doing so are outlined below.

Transit is already significantly less expensive than driving and parking for downtown commuting. This will be true even with the peak period surcharges note above. Those surcharges, *ceteris paribus*, will depress transit usage, so will need to be made up for with improvements in other areas.

1. Cut off-peak fares. This was covered above and is designed to capture non-commuting trips, particularly ones where the auto alternative might involve a free parking versus expensive parking the Loop.

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2. Implement free transfers. Riders should not be forced to pay to switch between lines or modes. In effect, transfers force riders to pay more for lower quality service. They are paying a penalty for not having a direct route available. This is backwards. If it were feasible to do so, it should actually cost less if you have to transfer to make up for the inconvenience.
3. Implement downtown parking surcharges. This raises the cost of auto travel.
4. Make the default “opt in” for pre-tax transit contributions. As with recent debates about 401(k)’s and the low percentage of employees who contribute to them, transit use could be encouraged and the cost reduced by automatically enrolling employees in Loop businesses in a pre-tax transit payroll deduction plan. This may require legal/regulatory changes to accomplish.
5. Evaluate the pricing of passes. Today the CTA prices passes to discourage their use. A pass is not a good investment for a person who only commutes daily to and from work. This is in contrast to Metra where passes are very attractive. Passes encourage ridership because once you have one, any ride taken is free. If it makes financial sense to get one for work, then using it for a shopping trip or to get to dinner is a lot more attractive. However, passes have downsides. For example, they reduce peak period pricing and encourage peak of the peak ridership. They are not easily compatible with congestion pricing to encourage better utilization of shoulder periods. I propose a series of controlled tests with these pricing strategies to understand how they affect ridership in the real world, then decide the best approach. Potentially the best approach might be a hybrid model where there is a variable pricing model but at non-peak times there is a “day pass” that can be purchased on board as an impulse buy. It would have a price advantage and encourage additional use.

End to end journey time is just that: the door to door trip time. This includes time spent walking to and from a transit stop and time spent waiting. This can be reduced in several ways:

1. Increase operational reliability and predictability. One of the biggest drivers of journey time on transit is the extra contingency riders have to include in order to account for potential service disruptions. This is particularly true on the CTA. The CTA frequently experiences equipment breakdowns, signaling problems, bus and train bunching, unexpected track work, etc. All of these introduce a high probability of delays. For people who must be at work on time, in their seats at the opera promptly at curtain time, etc., the CTA is either not an option, or significant extra time needs to be built into the planned trip. This is in big contrast to Metra, where as they say, “You can set your watch to Metra”. The CTA needs to fix its operational reliability problems as its top priority. Not only do these affect journey time, they are among the worst contributors to a poor quality of experience. Fixing some problems will require capital investments. Some, such as bus bunching, may be impossible to fix. But there has to be a lot the CTA can do using methodologies like Six Sigma to identify and correct the root cause of operational

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issues. This is a must-do item. In particular, slow zones need to be completely eliminated and signal problems reduced to a rare event.

2. Increase frequencies. Especially during off-peak periods, wait time can be noticeable. On select, high density lines, reduce headways from ten minutes to five or seven off peak.
3. Implement skip-stop or other express services. The CTA eliminated skip stop service some years back, but this has the potential to reduce trip time at peak periods, especially when combined with increased frequencies.
4. Conversion of auto lanes to bus lanes. As part of the BRT system, many arterial street lanes will be taken away from cars and given to buses. This will worsen congestion, adding to journey time by car and reducing the quality of experience of that mode at peak periods. It will also improve journey times for transit.

Where the CTA can potentially make its biggest impact is through improving the quality of experience on public transit. Some of this will be obtained “for free” from the above items. It is more pleasant to travel on less crowded trains, for example, and variable pricing will reduce peak of the peak congestion. It is always better to travel on a train or bus that does not break down. But beyond that, the CTA needs to improve its quality of experience significantly. Here are some ways to do it:

1. Maintain absolute cleanliness.
2. Add restrooms at major train stations. Right now there is no where to use the restroom when traveling the CTA. This needs to be changed.
3. Design matters. As we have seen from products such as the iPod, design matters as much as the functionality of the product in question. The CTA needs to upgrade its institutional infrastructure to create a more inspiring user experience. Great architecture need not cost any more than mediocre. And budgets cannot be balanced on the backs of significantly degrading the rider experience. For example, eliminating canopies during the Brown Line expansion project, leaving most riders exposed to the elements, might be the most short sighted decision the CTA has made in recent years.
4. Multi-Modal integration. The CTA already has bike racks on buses, but does not always have enough bike parking at stations or bus stops. There should be continued integration with other modes as well. For example, the recently announced partnership with iGo cars is a great idea. As are taxi stands at stations. Kiss-n-ride type facilities can be provided. One item that should not be pursued, however, is park and ride lots. These do not eliminate auto trips and disengage transit from the neighborhood.
5. Better integration of convenience commercial space. The CTA is considering putting groceries in L stations. This is an excellent idea. It should be easy to buy convenience items near or in stations. Care should be taken not to get into direct competition with nearby businesses, but complementing what is on offer should certainly be explored.

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6. Link workplace flexibility to transit use. As noted above, employers could offer flexible schedules to transit users, while denying them to those driving.
7. Sell passes on the bus. Should passes prove the best pricing mechanism as discussed above, these should be widely available, including for purchase on the bus (one day passes at a minimum should be).

It is worth noting that the current administration of the CTA appears to be very committed to improving the rider experience. There have been many positive developments on this front, ranging from Bus Tracker to email service alerts, to integration with iGo cars. The CTA is to be commended for this.

One item that cuts across these areas is to ease regulation on private transit providers. The Chicago Climate Action Plan calls for more ride share type programs. These should be legally available on a commercial basis. That is, people should be able to charge others for ride shares. This would create a potential network of jitney vehicles that could complement the public transit agencies. To the extent that these providers actually replace public transit entirely, that is still one more car off the road and one less money-losing, subsidy-requiring passenger the CTA has to expand capacity to provide room for. Jitneys have the potential to complement the transit system by filling in the cracks in the CTA network and also providing service outside the TASA, expanding transit's effective footprint. Jitney vans operate extensively in places like New York City, even when illegal. This shows there is significant demand for the service. By regularizing these services and subjecting them to appropriate regulation, this can give citizens access to additional, safe, insured, regulated services as an addition to the current choice of either a fly by night operator or no service at all.

### *6.2 Increasing Trip Generators*

The easiest way to drive more transit trips is to boost employment in the Loop, where transit already has a high market share and which is the principal transit addressable employment center. However, changes that disadvantage the auto, some of which are proposed here, also make the Loop a less attractive business destination. Businesses do not want it to be hard for their employees to get to work and not everyone can take transit, even downtown. What's more, there is little prospect of a regional solution that will convince suburban business centers like Oak Brook or Schaumburg to stop actively competing for businesses. An urban growth boundary is highly unlikely to ever be passed in the Chicago area.

An economic development strategy for downtown is beyond the scope of this document. But it should be noted that the city is well positioned to succeed in the new global economy. Indeed, Chicago was recently ranked the #8 global city in the world by Foreign Policy magazine. The nexus of the financial and producer services that are in demand in the globalized world are centralized in the Loop. As those markets grow, the Loop is well-positioned to prosper. Additionally, while Chicago is not immune from the current financial crisis, it would appear that New York and London are being hit much harder than Chicago. So while Chicago may experience problems in the short run, in the long run its relative position may even be strengthened by these challenging times.

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Beyond Loop employment, there are policies at the city's command that can affect trip generation. Most of these relate to land use policies.

1. Eliminate minimum parking requirements in the TASA and fringe. Chicago mandates significant parking for most new residential and commercial developments. This should be reconsidered. The market should determine whether or not parking is required. If anything there should be incentives to limit or reduce parking.
2. Ban single use, suburban style retail strip centers in the TASA. The parking requirements noted above have encouraged large scale strip center type development in the city, complete with “big box” and other establishments, in corridors far removed from the population. Elston Ave. between Fullerton and Diversey is a good example. These types of developments cannot be served except by the automobile and should generally be discouraged by policy. Importing suburban style development, in either form or substance, into the core of the city is self-defeating in the long run. A residential and commercial infrastructure of smaller scale, with less parking, would lead to more walking and transit use instead of driving trips to a far off mall.
3. Take a skeptical eye towards other single-use type developments. Campuses or other large, single use districts discourage walkability and effective transit service. Clearly, some types of institutions such as colleges or hospitals inherently require large footprints, but these should be designed to the greatest extent possible to be in harmony with, not opposition to or apart from, their neighborhoods.
4. Upzone areas in the TASA, particularly in proximity to rail stations. The city has actually been reducing zoning densities in parts of the city. This is antithetical to transit oriented development.
5. Do not widen streets at intersections. The city has often widened streets and narrowed sidewalks at intersections to facilitate turning movements of vehicles. Pedestrians should be prioritized and left-turns banned as required to maintain good bus operations.

It is important to understand that all of these items will tend to act with a lag. It takes time for people to adjust where they live and work, what type of car they drive or whether they drive it, and the types of stores and businesses and residences on offer in a neighborhood. Just as capacity cannot be added overnight, neither can large new demand for trips. It will require a sustained commitment, understanding that there will be trade-offs and some pain in the journey.

### **7. Financing**

Additional operational capacity and capital expansion of the regional transit system will require additional funds to build and operate. While a determination of the exact cost to implement this plan cannot be made until preliminary engineering is performed, a rough guess of the dollars required for the major capital expense items is about \$4 billion (see Appendix A). If operating expenses remain constant on a cost per ride basis, then operating expenses would likewise expand by 61%.

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The capital portion of the program would be paid for via four principal mechanisms: redirection of existing capital funds, using road funds for projects that benefit road users, capturing transit-generated value via site value taxation, and additional state and federal support.

1. Redirection of the existing capital program. Existing capital funding would need to be redirected to support this plan. This involves three principal actions:
  - Significantly reducing the current Metra capital plan, in particular cancelling almost all major suburban expansion programs. Included in this would be the STAR Line, the Southeast Service, and the UP-Northwest extension. Servicing new far flung suburban areas is only a subsidy to sprawl. When, for example, Metra extended UP-West line service to Elburn, it only encouraged people to move even further from downtown.
  - Significantly reduce planned CTA rail line expansions. Included in this would be the Circle Line, the Red Line extension and the Yellow Line extension. These are not inherently bad, but they should not be funded ahead of lower cost, higher impact items. Heavy rail is the most expensive solution to meeting ridership demands. The proposed Yellow Line extension does not even serve transit oriented areas.
  - Limiting investment designed to facilitate reverse commuting to sprawl based developments the suburbs where such funds could be better used in the core TASA.
2. Do not fund road-benefiting projects with transit funds. Transit systems often pay for bridge upgrades, highway crossings, etc. out of transit funds. For example, Metra recently replaced several bridges on the UP-Northwest line to provide increased vertical clearance for large trucks. Tractor-trailers are not Metra's problem. Projects on the transit systems that significantly benefit road users should be paid for from highway funds.
3. Transit Value Capture. What is the value of the real estate in downtown Chicago? What would the value of that real estate be without transit? Sans transit, Chicago's Loop might look a lot like the hollowed out downtowns of far too many other Midwestern cities. Clearly, transit generates enormous property value increases. Some of this increase created by transit should be tapped to fund it. Conceptually this is similar to Tax Increment Financing. However, ideally a split rate tax should be adopted whereby the bulk of the taxes fall on the value of the site alone, with a low tax on buildings. Taxes are preferred on sites to buildings because the supply of sites is perfectly inelastic. That is, unlike with taxing buildings or income, taxing sites does not discourage production because no one is producing any new sites. The surface area of the earth simply is. Also, taxing based on site value encourages a development intensity of a site in line with its value. This helps drive increased transit generating uses such as new high rises on prime transit oriented land. Today's single rate system has the perverse effect of punishing the person who builds a skyscraper with a hefty tax bill while rewarding the person who tears

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down a building to create a low tax value parking lot. Anticipated tax revenues could be used to back a bond issue.

4. Additional Federal and State Support. Chicago will certainly qualify for some level of capital support for its major transit programs from the federal government. For example, federal dollars are paying for the Brown Line expansion program. These dollars, as well as any funds from a state capital program for service expansion, should be directed to this program, recognizing that maintenance of the existing system should take priority.

Any expansion of transit ridership, from whatever source, will require operating subsidies. The number of transit systems worldwide that operate at a profit could be counted on one hand. The CTA's farebox recovery ratio of 50% is actually not bad. This can be increased through the fare optimizations proposed above, and also through focusing transit service on high demand routes instead of peanut butter spreading service. The CTA should also seek to increase farebox recovery by seeking to remove legal mandates that cause transit to be viewed as a social service, such as free rides for seniors.

In the end, however, subsidies will still be required. This is a problem since traditional funding mechanisms such as the sales tax have already been raised to high levels in Chicago. The best source is likely the site value tax above. Again, this is because it is not market distorting, and it captures for transit the value created by transit.

### **8. The CTA Operating Model**

Beyond this plan, the CTA should undertake an operating model review to strategically evaluate its organization. Some items to consider include:

1. Prioritization of capital spending plans. The CTA has in the recent past prioritized capital investments in the rail system in almost in the inverse order of ridership. First the Green Line was fixed, then the Douglas L, now the Brown Line. Meanwhile the "crown jewel" of the system, the Howard L, has been left to whither. This is exactly the reverse of the approach that should be taken. Capital funds should go where the ridership is.
2. Looking at utilizing outsourcing or other privatization approaches. This would be politically controversial and difficult, but private transit contracting is widely used around the world, and used successfully. This includes, for example, London's iconic red buses. Outsourcing can give financial predictability, while bringing on board a profit-motivated partner with an incentive to maximize ridership and hit service levels (i.e., operational reliability). Clearly, great care would need to be taken in structuring this type of arrangement. It should not involve a single monopoly provider on a long term lease, but a collection of operators who must meet stringent operational metrics and re-win their concessions on a regular basis. However, care should also be taken to create contracts with long enough duration to allow private operators the ability to recover investments they make to improve the system. This will likely require trials over time.
3. Truth in budgeting. The CTA produces budgets like most government/transit agencies: with an operating budget and a capital budget. But the operating budget is not like a

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private sector income statement. It does not include depreciation, which in a capital intensive operation like the CTA is one of the biggest expenses. Because this is not budgeted for, the CTA ends up with a big “negative surprise” when its capital stock reaches end of life. The CTA needs dedicated funding to maintain and refresh the existing capital stock in addition to just running the system.

4. Turning services into revenues. The CTA has rolled out a number of great services like Bus Tracker. Why not look to provide these on a service bureau basis to smaller agencies? This would be a win-win. Those agencies can leverage the CTA’s economies of scale while the CTA helps cover its fixed costs. Potentially the CTA could partner with Google, which already has a Google Transit site, to do this. It could possibly even be a joint venture or business spin-off that could generate cash for this program.
5. Evaluate the talent and compensation mix. Is the CTA’s compensation market relevant? Is there the right mix of internal experience and outside expertise? What additions might the CTA need to make to its personnel to support these ridership goals? Should the CTA to the extent allowed by law look to convert employees from defined benefit pensions to retirement plans such as 401(k)’s that are aligned to the private sector model and today’s realities of mobile employees? Today CTA employees, even those who may be unhappy in their jobs and thus less productive, can almost be forced to stay in order to keep accruing pensions. CTA President Ron Huberman himself took a big pension hit to switch to the CTA from the Police Department. More mobile pensions might help the CTA recruit its target profile of employee, particularly those from the private sector who may not be interested in making a lifelong career of government service.
6. Start a “Friends of the CTA Program”. Create an officially sanctioned group of citizens and riders that takes on various projects for the agency for free, potentially including station maintenance, art work, research, etc. The city DOT already does something similar by partnering with neighbors to landscape and maintain traffic calming devices.
7. Live the green agenda. The CTA could be the showplace agency for green government operations. In addition to just providing an auto alternative, the organization itself could scrutinize every aspect of its operation to be sure it is “walking the talk”.

There are potentially many other changes or additions that can be explored. Again, it should be noted that the CTA is making very good progress here under the new administration of Ron Huberman. Many of these items are already being looked at. I highlight it in this report since the CTA’s internal operations are clearly an area that requires change to reach the stated ridership goal.

### **9. Role of the Chicagoland Chamber of Commerce**

The principal actors in Chicago transit are government agencies of various sorts. The Chamber of Commerce can play a key role in promoting improved transit however. Some steps that could be taken include:

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- Financing the refinement of a plan such as this to create something that could be taken forward for development or adopted as regional policy, by various government agencies. An iterative discussion around the goals and tradeoffs, and around the potential solution packages, needs to occur, backed by well-researched analysis.
- Supporting legal/regulatory changes to permit “opt-in by default” for pre-tax transit deductions, regularization of private transit service providers, increased transit funding, outsourcing of transit operations, elimination of free rides for seniors, etc.
- Taking the lead on business items such as flexible work schedules for transit users, and economic development strategies for the Loop.

### Appendix A: Basis of Capital Cost Estimate

There is no way to produce a realistic cost estimate of this program at this time, and I am not an engineer. However, since some scale of the financial cost is required, below is a table of the major components and guesses at the capital costs based on rough comparatives.

Item	Cost \$M
Variable pricing	50
Incremental buses (500 @ 500K per bus for compressed natural gas models)	250
CNG infrastructure	100
Slow zones and signals	200
Clark Junction flyover	50
Brown Line turnback	50
Loop station replacements (2 @ 150M)	300
Other new stations	300
Metra stations (10 @ 20M)	200
Bus Rapid Transit	2500
<b>Total</b>	<b>4000</b>

Note that these estimates do not include investments to bring the current system up to a good state of repair, apart from limited signal and track work. Nor is organic growth for Metra or Pace estimated. I assume that off peak service expansion will use existing equipment and thus be primarily operational in nature.

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