Houston’s 2nd Transit Era

Is high-speed rail on the way?

65 light rail neighborhoods
HOUSTON 3.0
If we play our cards right and don’t lose our nerve, we can become one of America’s best-connected, walkable cities.

HOUSTON 1.0 - TRANSIT BEGINNINGS
Houston began as an urban place with its earliest developments based on transit and walkable neighborhoods.

TODAY’S TRANSIT SERVICE
Against all odds, a pretty good - and pretty smart - transit system has evolved over the years.

THE GREAT LEAP FORWARD
Five new light rail lines that connect activity centers could put Houston in the forefront of ridership on modern rail systems.

65 TRANSIT NEIGHBORHOODS
The light rail system envisioned for 2016 or so will serve 65 neighborhoods with development potential for about 30 square miles.

A REGION FOCUSED BUT IN FLUX
Plenty of places have sufficient job and population density to support good transit service, but decades of sprawl make the future tough.

THINKING AHEAD
Some visions for future regional transit are expensive and fail to connect most centers. But there is a hopeful multi-modal solution.

FUTURE SERVICE FOR THE HOUSTON REGION
A comprehensive proposal for regional transit service that reaches most evolving communities and job centers.

OTHER PLACES
How transit works in other regions that compete with Houston.

OTHER TECHNOLOGIES
Bus Rapid Transit and streetcars are making significant inroads.

TRIANGLE TRANSIT
Interest in connecting the great urban centers of the Texas Triangle megaregion is focused on high speed rail.

NEIGHBORHOODS AS SMALL TOWNS
People would like to live in small towns. Can we begin to envision our neighborhoods as such places?

Cover photos: High speed rail train, Central Japan Railways, station area, Metro

TOMORROW is a publication of
An institute for research, education, and discussion
The entire contents are available at houstontomorrow.org
**Houston 3.0**

**It’s a new game - but we’ve played it before**

For nearly 13 years at Houston Tomorrow, we’ve been researching, analyzing, writing about, discussing, and using transit service, trying to get a handle on what works and what doesn’t. One of the things you learn early is that Houston wasn’t designed around cars, but around a massive streetcar system, long before people had cars. The neighborhoods built around the streetcar stations were walkable and compact. We call this long period that lasted until about 1940 Houston 1.0.

Houston 2.0 began with the advent of cars and the Interstate Highway System, with public money and policies aimed at moving people out to the edges of the region and redesigning their lives and environment around the idea of driving everywhere.

In April 2010, we held a transit framework retreat at Sky Farm, my family’s place in northwest Austin County. During an intense day around a long table, we looked at maps, photos, presentations, charts, and graphs, and filled long rolls of newsprint, pinned to the walls, with sketches and words.

A framework of principles and goals emerged that first day, as well as the beginnings of a conceptual approach to regional transit service. Fundamentally, we agreed, it’s all about access and equity and efficiency, about connecting people to jobs, goods, services, fun, food, and all the rest. (Note: While the ideals of the participants are reflected in this magazine, the final product is Houston Tomorrow’s and does not necessarily reflect in detail all the opinions of individual participants.)

The most basic principle was that transit service should first be available where the people are right now. That is, in the places where sufficient numbers of people are gathered every day for some reason, whether they live there, work there, are visiting there, or all of those things. We agreed that the lowest hanging fruit is to connect the biggest such place to the closest other big place.

That’s been accomplished; downtown, with 150,000 jobs, is connected via high-frequency light rail service to the Texas Medical Center, with 80,000 jobs. Both places also receive tens of thousands of visitors every day. The next big center is Greenway Plaza, and after that Uptown/Galleria, and the University of Houston/Texas Southern University complex. All of those places will be connected by light rail in the next five years or so.

At that point, hundreds of thousands of jobs in the 8-county region will be connected and hundreds of thousands of people will be a bike ride - or walk - from a light rail station.

Metro’s light rail strategy is to connect big activity centers and our group was in full agreement with it. But what happens beyond five years?

Houston Tomorrow has been analyzing job and population data for many years, and in 2010 Jay Blazek Crossley created a breakthrough map (pages 10-11) of the 25 biggest job centers in the region that also shows the number of people who live within five miles of those centers. It’s an astonishing map. The first thing you notice is that all but one of the centers is in Harris County, and all but two of them are within Metro’s service area.

Seventy-five percent of all the jobs in the 8-county region are in this concentrated area, and 60% of all the people in the region live five miles...
Houston 1.0

Our city grew up around transit

Almost from the beginning, Houston was transit oriented and a prime example of excellent design for walkable urbanism. The original Houston plan, by Gail Borden, was keyed on a grid structure with block sizes conducive to walking. The buildings were developed in an urban fashion, close together, often sharing walls, with windows and doors in the front.

New suburbs like the Heights and Montrose and Bellaire were made possible by developers who put in streetcar lines to enable people to get to work and to shop and find entertainment and all the other things cities can provide.

Those first neighborhoods were highly walkable, and stores and services were organized around the streetcar stations because the people riding the streetcars were pedestrians at both ends of their trips.

Today, those neighborhoods are still pretty walkable and convenient. In fact, looking at the map of the region at walkscore.com we see that those areas are still walkers’ paradises relative to most of the rest of the region. And at the Center for Neighborhood Technologies, a map of vehicle miles traveled in our region shows that people in the households in those old neighborhoods drive far less than people in other parts of the region - and spend far less on transportation - even though the transit system that made them possible is gone.

Houston 2.0 began with the destruction of the streetcar system and the advent of new roads and then enormous highways that enabled and encouraged sub-urban development far from the city center. Ten years ago, that paradigm was almost 100% dominant. Today, as the region creeps toward Houston 3.0 - another transit age of walkable urbanism and complete streets - that paradigm based on cars remains dominant. But not quite so much as before, and change is clearly coming.

More than A Hundred Homes

There have been built in Woodland Heights alone, more than a hundred new homes since the Watson Street Car Line was built into that section a little less than a year ago.

Homes for the family of moderate means have been provided in this section, where land may be purchased much cheaper than in the congested downtown districts.

This growth is in accordance with that of several other outside sections of the city that are served by street cars.

Street Cars Promote the Growth of Houston

New homes never fail to follow where transportation facilities are provided with consequent increase in property values. The street car makes it possible for people to live out where the air is pure and clean and still be at their place of business promptly without delay.

Houston Electric Co.
W. E. Wood, Manager

Transit-Oriented Houston

1. The ad at bottom left notes that “The street car makes it possible for people to live out where the air is pure and clean and still be at his or her place of business promptly.” At bottom, we see (2) Heights Boulevard in the very early days. Other pictures, clockwise from above, (3) the City of Houston’s original plan from 1836 is totally urban and some planners now say it’s one of the top two walkable plans in North America. (4) A streetcar on Travis Street. (5) An early mule-drawn streetcar. (6) Downtown Houston with pedestrians, a bicycle, horse-drawn wagons and carriages, and a streetcar on rail - but no cars. (7) The Rocket, the Interurban train to Galveston, in front of Union Station, now the Astros offices. (8) The interior of The Rocket. (9) A 1910 drawing of the Main Street Viaduct across Buffalo Bayou, with ships, trains, streetcars, wagons, and carriages, but still no cars, in front of the increasingly urban City.
Today’s Regional Service

It’s better than you might think, and some of the stats are amazing.

The region’s basic transit service is provided by local buses operating in mixed traffic on city streets. Service levels vary dramatically. Some routes operate hourly, while others, like Westheimer and Harrisburg, run every 10-15 minutes, frequently enough that riders don’t need to consult a schedule. [Note: only the most frequent local bus service is shown in the maps in this magazine. The local system is complex and hard to read at this scale. Nevertheless, it serves the greatest number of people and is crucial to the system.]

The biggest limit to local service is METRO’s boundaries: outside those, the only local service is provided by Harris County in Pasadena and Baytown, and Island Transit in Galveston.

The 7.5-mile Main Street light rail line acts as the spine of the transit system, connecting the major employment centers of Downtown and the Medical Center. Houston’s single line carries more people per mile than any other light rail system except Boston’s. At rush hour, trains are crowded both ways into Downtown and the TMC; museums, parks, conventions, games, and universities along the line draw riders mid-day, evenings, and weekends. This short line serves a lot of destinations: nearly half of light rail riders make their entire transit trip on the train; the rest transfer from buses.

On routes where light rail isn’t planned, “Signature Bus” service – branded as Quickline or Swiftline – is being implemented as express service. It serves the same routes as local service, but stops less frequently to reduce trip times.

Suburban areas are linked to jobs in the urban core by a comprehensive system of park & ride buses. The service runs every 5 to 10 minutes at peak hours, using flyovers from the park & ride lots to enter barrier-separated HOV lanes, then running non-stop to Downtown. As Metro board member Christof Spieler has noted, the park & ride transit system would rank among the top ten commuter rail systems in the country if it used rail instead of buses. He has also said “The current service is more frequent, more convenient, and faster than most commuter rail systems, and equally reliable.”

Metro isn’t the only provider of such service: TREK and Woodlands Express buses cover some parts of the region not in the Metro service area.

There are major gaps in the service. Trips to Downtown tend to be easy; trips to other job centers – Greenway, Uptown, Westchase, Energy Corridor – are often longer with more transfers. Many suburban areas have no local bus service at all; as the population ages and suburbs get more diverse that’s becoming a greater problem. The success of the park-and-ride system and the light rail line proves that Houstonians will ride high quality transit when it is offered, but it isn’t offered everywhere.

The map below shows the extent of the Metro service area, primarily in Harris County.

LIGHT RAIL, DAY ONE Former City of Houston Mayor Lee Brown drives the first light rail train on the first day of service on January 1, 2004.
**A PICTURE OF EFFICIENCY** The bus in the HOV lane at right is carrying 47 people, the number driving all the cars outlined in red at left.

**EVERY DAY** Metro’s primary services produce around 260,000 daily passenger boardings.

**MARKET SHARE** The numbers at right show the market share of transit for commuters arriving in six of the major activity centers. In the Central Business District, with the most transit service, 37% of commuters arrive via transit, followed by the Medical Center at 32%. Other centers have much less service and much smaller market share. Uptown and Greenway Plaza should see upticks as new service begins. Red dots indicate density.

<table>
<thead>
<tr>
<th>Service</th>
<th>May 2011</th>
<th>Year to date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light rail</td>
<td>34,000</td>
<td>35,000</td>
</tr>
<tr>
<td>Park &amp; Ride</td>
<td>31,000</td>
<td>29,000</td>
</tr>
<tr>
<td>Local bus</td>
<td>199,000</td>
<td>196,000</td>
</tr>
</tbody>
</table>

Map: Christof Spieler
Houston now has one light rail line that is 7.5 miles long. The next round of light rail development that is evolving will be five more lines, adding 32 miles of rail. Within the next five years, this intense system will have 65 stations with more than 150,000 boardings a day, likely surpassing all modern US light rail systems (possibly excepting Los Angeles, which in the first quarter of 2011 averaged 154,000 per day).

While these numbers would put Houston in the top ranks of light rail transit, it would still be some distance from the overall transit leaders, New York, Washington DC, Chicago, and several others.

What distinguishes the Houston light rail system from most other modern light rail systems is that it has no suburban commuter component. That service is provided by a growing network of park & ride alignments. Instead, the Houston strategy is focused on connecting large activity centers where tens of thousands - and even hundreds of thousands - of people either live or work or both.

The strategy also recognizes that more than 80% of trips every day are not about commuting to or from work, but basically running errands. Thus the trains have passengers all day, not just in the morning and afternoon peak hours.

Connecting big centers via light rail in Houston began with the linking of the Central Business District with the Texas Medical Center and the Reliant complex on South Main. The next large centers to be linked will be Greenway Plaza, Uptown/Galleria, and the southeast area university complex.

This system will contain 40 miles of rail while the Dallas system has 72 miles. But Houston’s ridership will be about double that of Dallas, at about half the cost.

The large activity centers will continue to grow and at least three of them are working on master plans to make them more walkable and amenable to regular high-quality transit service.

For years, most of the transit activity in the region has been focused on downtown. This system will expand that focus to other centers, but will add more service to downtown, which will remain the top transit destination.

Perhaps the most interesting activity center in this system is Uptown/Galleria, because it has a large residential base of more than 30,000 residents in addition to the largest retail base in the region. It’s a 24/7 magnet for people and that should only increase with the new service.

But the most exciting prospect will be that of the growth of small destinations, neighborhoods with interesting restaurants or shops or other amenities, including parks. People who ride transit discover these places because they are not distracted by driving and actually are able to see what’s there.

The emergence of popular places could drive economic development in a large number of neighborhoods.

Additionally, some attractive neighborhoods that aren’t necessarily well known now will begin to grow as people seek to live there and developers try to meet that demand.

Generally, a kind of development that Houston hasn’t seen much of for a century will occur: transit-oriented development (TOD). In TODs, shops and other amenities are clustered around transit stations because many people accessing them will be on foot and will want the convenience of complete neighborhoods (and a cup of coffee). While there has been some TOD along the Main Street line, the explosion of it is still in the future. And some argue that downtown wouldn’t have grown so much without the commuter bus system.

With 65 station areas encompassing some 30 square miles of TOD possibility, Houston may soon have the largest real estate market in the nation for walkable urbanism based on transit.

METRO LIGHT RAIL SOLUTIONS 2016? This is the proposed system that was once supposed to be in service in 2012. In that year, the Main Street red line will be operating. The red extension of that, called the North Line, and the purple Southeast Line, are under promised federal dollars. The green East End Line will be built with local money and is also under construction. All three will be in service in 2014. The blue line is the proposed University Line, which is the most important to the system, but is still uncertain, although it is shooting for service in 2016. The brown Uptown Line is dependent on the University Line but is well-developed conceptually, the station names here are not yet official.
Houston could have the largest market for transit-oriented development in the nation.
The opportunities for walkable urbanism in Houston are huge.

It’s difficult to grasp the significance of so many different neighborhoods almost suddenly being linked together by light rail transit service.

First, many of these neighborhoods are diverse, low-income areas where car ownership is low, often slightly below one car per household on average.

These new, inexpensive links to jobs, health care, schools, and other amenities should allow significant improvements in hundreds of thousands of lives. Also, small businesses in these neighborhoods will be accessible to a new group of potential customers and clients.

Secondly, people who want to live in urban circumstances - which in Harris County is more than 41% - are a huge market of 1.7 million people who are really not currently served by the market. There are public policy reasons for that; urban form is essentially illegal everywhere in the City except in the Central Business District. The City’s Urban Corridors ordinance begins to address that by setting up an optional development code for the light rail corridors.

The City is forecast to grow by about 30% by 2035, so if each of these 65 neighborhoods grew by just that much right around the stations, all would improve the prospects for neighborhood amenities such as shops and services, which could also mean more local jobs.

But the opportunities for much more significant growth, particularly in some of the larger, more urban places, could mean that these 65 station areas could accommodate half or more of all of the City’s growth, without needing to pave and develop greenspace and farmland.

This is the Houston region’s near-term opportunity to develop a true “urban zone” in which many different places are connected by good transit service. This will begin to moderate the cost of such places by increasing the supply in response to clear market demand, enabling many of the people seeking walkable urbanism to find it.

Can neighborhoods work with the City to develop a vision and plan for their own futures?

NEW STATIONS This rendering shows the Cleburne station near the University of Houston. Students will have greatly improved transit service. The University’s master plan calls for dense development near stations.
DIVERSE NEIGHBORHOODS

The new light rail system will deliver service to 65 neighborhoods in a broad variety of communities. Nearly all of them will be destinations as well as origins and a huge variety of goods and services will be available via transit. The “urban zone” created in this system will enable a low-carbon lifestyle for those who want it.
Jobs are concentrated around major roads, but people are more dispersed.

Houston is known as a sprawling metropolitan region where everybody drives. Many people take this to mean that transit service is impossible, since cost-efficient transit loves density. But masses of people are more clustered than many realize, and jobs are very clustered. The maps here, produced by Houston Tomorrow, show different windows on data from the Houston-Galveston Area Council. They reveal the possibility of an efficient regional system that uses publicly owned right of way to provide potential service to about 3.5 million people.

The two maps of the eight-county Houston region below show concentrations of residential population (left) and jobs (right). Colors other than green or yellow indicate places where some level of transit service is feasible.

The similar map at the bottom of the right page shows population and job numbers added to produce a number called “activity intensity.” This measure is increasingly being used by transit planners to discover spots that could be reasonably served. The map to its right is a close-up of the densest parts of the region. Essentially all of the transit-ready development is in Harris County, with small hot spots in Fort Bend, Montgomery, and Galveston Counties.

The map at right shows the top 25 job centers in the region, determined by H-GAC in 2006 using 2005 data. This map, also by Houston Tomorrow, shows that all but one of those centers is in Harris County.

The small map at upper right shows, in beige, the service area for Metro, the largest transit agency. In this map, all but two of the top job centers are in the Metro service area.

But the interesting data in the larger map is in the green areas, which are 5-mile-radius circles around the job centers. The green area contains nearly 60% of all the people in the region and 75% of all the jobs. The light lavender color is a ten-mile radius, and that plus the green area contains nearly 80% of all residents and 86% of all jobs.

Connecting these centers with high-quality frequent transit service is the low-hanging fruit and should be the top priority for regional transit planning.

Metro’s light rail strategy has been to connect centers, and the system to be in place in about five years will connect the four closest big centers plus a second-tier center at University of Houston/Texas Southern University. The red line shows those links.

Looked at in this way, the best continuing strategy is pretty obvious: keep connecting the biggest centers, which also moves the edges of the transit system out to meet many more potential riders, who then would have access to hundreds of thousands of jobs, not to mention restaurants, shopping, sports, culture, recreation, entertainment, education, and the other things that density encourages.

So what does the map at right suggest should happen next? Extend service to the Westchase District, the Energy Corridor District, and the Greenspoint District - the three big blue dots.
THE METRO SERVICE AREA
Nearly all the biggest job centers and their accompanying populations are in the Metro service area.

ACTIVITY INTENSITY
In the map at left, jobs and population are added together to show “activity intensity,” a measure of the number of people who gather at a place. At right, a close-up of that measure.

Maps: Jay Blazek Crossley-Data H-GAC
Thinking ahead

How to deliver regional service
Calls for more transit service now come from all over the region. Three years ago, the Houston-Galveston Area Council (H-GAC) completed a Commuter Rail Study that focused only on delivering service in existing freight rail corridors, which essentially limited the destination to downtown Houston.

The study proposes a "baseline" system at a cost of $3 billion to deliver about 40,000 boardings a day - about the same as the Main Street light rail line that cost about 10% as much.

This year, H-GAC published a second project called "Regional Transit Framework Study" that proposes four different scenarios, one of which is based on spending approximately what the region now spends on transit annually over 26 years. All the scenarios break some new ground by proposing some amount of "arterial bus rapid transit," which Houston Tomorrow has advocated for many years.

Three important concepts come into play for arterial bus rapid transit (BRT). First, the region is highly polycentric. The centers are the generators of the highest-paying jobs, and for the most part they arose from the freeway intersections created by the Interstate Highway System.

Second, it is less complex, cumbersome, controversial, and costly to deploy buses on rubber tires than to install miles of rail for trains.

Third, the public already owns the right of way, a major expense in transportation projects.

The regional arterials are how we get from home to work to play to school to culture and all the rest. Increasing the capacity of each of the freeways to connect the centers with high-quality rapid bus service that operates like light rail is the quickest, most flexible way to get to excellent regional transit service that does much more than deliver a few thousand people to downtown in the morning and take them home at night. Most of the freeways have HOV/transit lanes already. An arterial BRT system would move people around all day, and maybe all night, in both directions. Commuter origins also become destinations.

The map at right, opposite page, shows the centers described on pages 10 and 11. The blue lines simply use the major arterial system to connect all of the top 25 job centers. The corner inset map shows the population circles in the background, while the larger map shows the arterial system in place on a background of activity intensity, or density. This system would provide transit options to millions of people and at least touch all of the major activity intensity areas. [Note: this data is from 2005, and it is highly likely some places, such as Sugar Land, have moved into the top 25 and should be depicted in such a system. Indeed, Sugar Land has just such a proposal.]

H-GAC FRAMEWORK The least expensive and most expensive scenarios in the H-GAC report are shown below. Thick purple lines are “High Capacity Transit (HCT)-Peak Hour.” Heavy black lines are arterial Bus Rapid Transit. Blue lines are express bus. In the scenario at right, HCT lines touch many top job centers but miss two of the biggest. The cost is nearly $20 billion.

METRO 2035 Metro’s long-range plan (below) includes more light rail, extending it to Houston Intercontinental Airport and adding an Inner Katy line. It also might include lines to Missouri City and Brazoria County, outside the service area. Dashed lines are “managed lanes/HOT lanes” in freeways, which already are used by park & ride commuter transit service. Blue lines are “Signature Bus Service,” which is express service with few stations, acting as “Bus Rapid Transit.”
LINKED CENTERS Above, the top 25 job centers are shown connected by transit lanes in the major arterials, primarily Interstate Highways, but including State Highways 6/FM 1960, 290, 59, and 288, all controlled by TxDOT. In the larger version, the background grid is activity intensity, which combines population and job density. This system is very efficient in going to the places where the people are. The inset map at top right shows that this system links all the job/population circles explained on pages 10-11. Links from this system to places outside the centers is easy.

COMMUTER RAIL At left is the baseline proposal for a commuter rail system from the H-GAC Commuter Rail Study. It touches only a few of the top job centers, would have about 40,000 boardings per day, and would cost $3 billion. By contrast, the $7.5 million Main Street light rail line carries about that many people but cost only $350 million.

Map: Kimley-Horn for H-GAC
A new vision

A holistic approach to regional transit service

For the last two years, Houston Tomorrow has worked with a group of knowledgeable and passionate colleagues to seek consensus on a conceptual framework for regional transit service. While we have reached agreement on principles and goals, and have agreed in a general sense on the concepts in this map, in the end, Houston Tomorrow takes responsibility for the final product. There is no single service or mode that answers all issues; what we need is a connected seamless system that combines multiple modes and levels of service.

Local bus service, the heart of the transit system, is not shown or thoroughly considered here, although a local citizen, Mike McMahon, has produced a redesign of Metro's local service, pictured below.

The overriding principle all participants agreed on is that transit service should go to where the people are. The maps on the previous pages helped the group see where the people actually are, in numbers sufficient for the greatest support of the system. To help see clearly, political jurisdictions were removed from one set of maps.

A large majority of the people (3,526,625 of 5,891,999 - 60%) in the 8-country region live in the Metro service area, mostly in Harris County, but not all of Harris County, and over 100,000 in Fort Bend, Montgomery, and Waller Counties.

This map proposes a great deal of new regional service, with particular emphasis on using Bus Rapid Transit in our major arterials to connect many of those top 25 centers. This service could be provided relatively quickly using right of way the public already owns.

Certainly light rail will increase and be the core of local service for reasons of capacity and quality of the ride.

This is just one vision for how the Houston region could effectively provide the most access to the most people at the least cost. We hope it is useful.

A BUS MAP Mike McMahon's redesign of the local bus system is at http://sites.google.com/site/redesignoflocalbusroutes/
GOING WHERE THE PEOPLE ARE

In this stylized map, a number of transit innovations are brought forward. All are based on the concept of connecting together the places where most of the people are. One of those innovations is the idea of "Regional Rapid Bus," (orange lines) or bus rapid transit, running in dedicated guideways in the freeways. (Thin orange lines are BRT in mixed traffic.) The important concept is that the public already owns all of that right of way and infrastructure, and its capacity is simply increased by adding more transit vehicles going to more places, not just as park & ride service in the morning and afternoon.

There is also much more light rail service, creating a system that also connects large and small centers while providing access to many more places because of its fine-grained nature. This is high-quality, very reliable service, much different from buses in the street, but it's still focused on neighborhoods (although some are very large.)

Other proposals include intercity rail, more frequent local bus service, and more park & ride service.
Other Places

There’s more than one way to do it.

Most of the advances in US transit service over the past couple of decades have used light rail technology to provide new routes in cities that have not had much rail service for several generations. Much of that new service has been aimed at commuters, usually in suburbs far from the downtown, which, in theory, was supposed to invigorate that downtown.

But it hasn’t always worked that way. In Dallas, for instance, the light rail lines have spurred a lot of new development in suburban places. Denver and San Diego sent lines out into the suburbs while Portland and Los Angeles focused more on the central cities.

The results have been mixed, with Houston’s short line generating more ridership per mile than any of them except Boston’s 100-year-old Green Line. Houston’s approach to commuter transit has been to use park & ride buses in HOV lanes in freeways, and that service combined with the light rail line has generated approximately the same ridership as the 70-mile light rail system in Dallas.

Cities and regions also use other technologies, including heavy rail, and commuter rail. There are interesting numbers on heavy rail and commuter rail ridership, as shown in the charts below.

Older systems like New York’s are drawing more riders over time to heavy rail, and the Washington DC system has transformed the District in terms of the creation of many places now celebrated as excellent walkable urbanism.

Commuter rail, which usually provides service to distant suburbs and other towns and cities, operates in several regions, but the best ones don’t hold a candle to the number of riders per mile of Metro’s park & ride service.

Overall, New York’s annual operating expenses per rider are the lowest and Seattle’s are the highest, with Houston in the middle (although more efficient than Dallas).

Dozens of cities are looking at options other than light rail to expand their systems. Bus rapid transit and streetcars are less expensive modes than light rail, commuter rail, or heavy rail, and both are seeing new service created.

But the service strategy is the most important part, and many providers are now looking at the Houston strategy of connecting big activity centers as an efficient way to grow ridership.

A TALE OF THREE CITIES
The row of maps below shows the evolving regional transit systems of Houston, Dallas/Ft. Worth, and Denver. Houston’s red lines are the extensive HOV lanes that provide right of way for the high-demand suburban park & ride service. The blue line is the beginning of the light rail backbone that will form an urban zone accessible over time by park & ride. Dallas/Ft Worth is primarily light rail in Dallas that reaches out to suburbs. The brown line is the Trinity Railway Express that links the two big cities. In Denver, a pure light rail system also provides commuter access to the downtown area.

THE NUMBERS
The graph above left shows the number of riders per mile of heavy rail investment for the select peer cities that provide such service. New York is the clear leader, largely because Manhattan is so dense with both jobs and residents.

In the center graph above, Houston is the leader among modern light rail systems in terms of riders per mile. Boston’s 100-year-old Green Line also includes heavy rail that brings riders to the light rail.

The graph at right above shows Houston as the leader in terms of commuter rail/bus riders per mile of rail or HOV investment. If Houston’s park & ride service was steel wheels on rail instead of rubber tires on roads, it would be among the top commuter rail systems in the nation.

The graph at right shows annual operating expenses per rider throughout each region’s total transit system. Houston falls in the middle with New York the most efficient and Seattle the least.
Other Modes

Bus rapid transit and streetcars are hot

The last decade of transit mode deployment in the US has been largely about light rail. But this decade is shaping up as the decade to also include Bus Rapid Transit (BRT) and streetcars.

BRT properly executed mimics all the characteristics of light rail except for the rail. Increasingly sophisticated, high-design buses run in their own dedicated rights of way with short headways - intervals between vehicles - multiple doors, level station platforms, and off-vehicle ticket purchasing. They are considerably less expensive to deploy. However, they cost more to operate and maintain and don’t last as long as light rail vehicles. Also, some say they don’t encourage development the way rail does.

The BRT revolution began in Curitiba, Brazil, with about the population of Houston, where cars were choking the city and rail was too costly. The mayor created a BRT system with newly designed vehicles and innovative tubular stations and the city was transformed. Some 70% of all commuters use it. A system in Bogota, Colombia, carries more than 1.5 million people a day. The US gold standard is the Cleveland HealthLine, which carried 4.1 million people in 2010, and has induced extensive development.

Streetcars began a comeback in Portland a decade ago and now nearly 20 cities use them or are planning to. Some argue that they operate like expensive buses, others note that they generate development, as they have in Portland, and can attract more ridership.

STREETCARS The Portland streetcar pumped life into development of the Pearl District and set off a wave of streetcar advocacy across the nation (map at top).

BUS RAPID TRANSIT At left, the Cleveland HealthLine operates like light rail for a fraction of the cost, and has helped re-invigorate the city’s Euclid Avenue corridor, shown in the map at bottom. Inset is a view of the Curitiba tubular station.
Triangle transit

Creating a neighborhood-to-neighborhood megaregional network

You live in the Memorial Villages. Your daughter is graduating from UT Law this weekend, but you have to close a deal in Dallas on Friday afternoon. By plane, the trip includes three hours and 26 minutes of driving (unless you hit traffic), at least 3 hours of sitting in security lines and the airport if you arrive on time, almost two hours on planes without access to your cell phone, if all goes according to plan. Let’s include the rental car cost and all the lost time in this complicated trip.

Consider a different scenario. Friday morning you head to your office in the Energy Corridor by local bus. At 10:45 you catch the BRT Express to Greenspoint and arrive in time for the 11:30 high-speed train to Dallas. On the train, you have lunch in the café car, work on your laptop, make a few phone calls, and arrive in downtown Dallas at 1:15, where you immediately catch a DART train for the 10-minute ride to your customer’s office.

HIGH SPEED RAIL In at least 17 nations, high speed rail is a growing presence for megaregional travel. The driving factors in the development of such service are the cost, complexity, and congestion of regional air travel and the likelihood that such service will slowly go away, as it is doing in Europe already. Eurostar trains own 65% of the market vs air on trips up to 3 hours and about 95% of market share vs air on journeys up to 2 hours long. There is no high speed rail service in the US that is similar to service in Europe and Asia, but the Northeast corridor Acela train carries more people between New York and Washington than the airlines do. Some vendors believe the Houston-Dallas route is the most promising corridor pair in the country.

Saturday morning you stop by the Modern Art Museum of Fort Worth via a half hour ride on the T where you catch up on some emails. Then you catch the high speed train again and head to Austin for another comfortable, connected trip and a quick snooze. In Austin, you use their new light rail system and head to UT where you meet your husband who came straight from Houston to Austin on the Texas Brain Train, which you will ride together to go back home Sunday, arriving at the multi-modal hub in Jersey Village, where you catch a local bus to your neighborhood.

No cars or airplanes, no excessive waiting, no wasted time, no stress.

For this scenario to be possible, a long series of public and private decisions need to be made in the best interest of the people of Texas. A sustainable Texas needs balanced transportation spending on transit, walkability, bicycle infrastructure, and roads, all of which must be integrated with land use and long-term planning decisions, and tied together with a Texas-style ambition to provide access to jobs, homes, and services with a high-speed rail system as the major backbone.

Local governments must build complete neighborhoods with complete streets, affordable access to transit and walkable urbanism, and safe walk/bike facilities on every block.

The high-speed rail nodes need to be in optimal places where the people and jobs of Texas are today and where they will grow. High-speed rail where the people are means connecting the hearts of Texas’ major job destination with such service, and enabling movement deeper into communities with regional and local transit service. At all of these transit nodes, the planners, engineers, and architects of Texas need to do a creative job of allowing and encouraging dense development integrated into existing density with walkable street life.
ONE BIG ECONOMY  The great majority of people and jobs in Texas are within a megaregion called the Texas Triangle. The biggest metro regions within the Triangle are Houston, Dallas-Fort Worth, Austin, and San Antonio. Together they are an important economic powerhouse on the world stage. Better megaregional connections are crucial, as are high-quality local service connections to high-speed rail.

HIGH-SPEED DOWNTOWN  Many people are working on a plan for the downtown Post Office site to become a vast multi-modal mixed-use urban complex tying together high-speed rail, light rail, regional bus service, commuter rail and bikeways. The drawings and graphics here were created pro bono by Morris Architects.
Neighborhoods as small towns

Could we create that feeling in many places across the region?

In surveys over decades, when Americans are asked where they would live if they could live in either a city, a suburb, a small town, or a rural area, the small town always wins. But of the four, more people actually live in cities and suburbs than in small towns or rural areas.

So the trick would be to create small towns inside cities, and inside suburbs, for that matter. What is the real difference between a small town and a neighborhood? Isn’t what most people want who live in urban or suburban neighborhoods the safety, convenience, familiarity, and peace of a small town?

THE CORNER STORE The heart of a small town is often a store where people know each other and run into each other. This one is in the Heights. There is a relationship between the mom, the young girl, and the guy who runs the store. Places such as this take time to develop, but introducing walkability kickstarts that process.

TRANSFORMING A NEIGHBORHOOD Having a vision for a neighborhood could result in changes like this. What is the difference between the neighborhood in the picture at the bottom and a great small town? Could we create that feeling in many places across the region? But public policy for 50 years and continuing today has been focused on the opposite, on developing new land with subdivisions that require people to drive everywhere and thus require vast amounts of land just to store cars and take care of them.

Indeed, the greatest threat to a healthy, small town strategy is the enormous project to build a state highway (SH99) around the region in order to draw growth away from our towns and cities. Elected officials almost uniformly support this expensive, unnecessary, wasteful, and dangerous project.

Such social engineering will be very difficult to slow down. But because most of the early opportunities for small town-like neighborhoods will occur inside the City of Houston, maybe City officials could grasp the competitive opportunity and begin to allow and even encourage models to develop that people will grow to love once they see how attractive they are.

One of the interesting aspects of this idea of transit-oriented neighborhoods is that it really doesn’t matter what’s in the corridors between the stations, although it should look good at all times. What matters is the area a little more than a quarter mile radius around the station. People will readily explore that size area on foot if there’s something to explore. (That area can be bigger for people using bikes.)

The Houston region is expected to grow in population by about 50% by 2035. One way to think about that is to expect every neighborhood in the region to plan how to grow by that much. But another way to think about it is to look at the areas that are already at least somewhat dense with residents and/or jobs and focus growth there.

In the map on pages 14-15 there are perhaps 200 transit stations (not including the local bus stops. If each of those 200 stations had small town development around them in a half-mile radius, with low- to midrise density at the core and single-family density at the edge, that would constitute over 300 square miles of real estate.

At a modest average density in these areas of 10,000 people per square mile, 3 million people - nearly all the growth expected for the region - could be accommodated. All the new population would have access to excellent transit service and walkable neighborhoods that could very well function as small towns.

But public policy for 50 years and continuing today has been focused on the opposite, on developing new land with subdivisions that require people to drive everywhere and thus require vast amounts of land just to store cars and take care of them.

Indeed, the greatest threat to a healthy, small town strategy is the enormous project to build a state highway (SH99) around the region in order to draw growth away from our towns and cities. Elected officials almost uniformly support this expensive, unnecessary, wasteful, and dangerous project.

Such social engineering will be very difficult to slow down. But because most of the early opportunities for small town-like neighborhoods will occur inside the City of Houston, maybe City officials could grasp the competitive opportunity and begin to allow and even encourage models to develop that people will grow to love once they see how attractive they are.

At least 41% of Harris County and 46% of Houston residents* want to live this way now. Why not support their desires, too?

*Houston Areas Survey
For your home, business or vehicle... Natural Gas is today’s choice for a clean tomorrow.

THE BROWN FOUNDATION, INC.

MORRIS ARCHITECTS

THE FONDREN FOUNDATION
Anchorage Foundation of Texas

chain reaction
Fuse the convenience of buses and rail with the health and eco-benefits of your bike, aboard METRO. The NEW METRO continues its dedication to our region’s environmental concerns with green technology that unites pedestrian-friendly forethought with hybrid smarts.

Change your ride - take METRO.

RideMETRO.org • 713-635-4000