Houston 2035
Access & Mobility
3 million more cars? Or Plan B? What are the choices?

HIGH-ACCESS VILLAGE CENTERS
A paradigm people like. The feel of a small town, the fun of walking around with family and friends.
ACCESS OR MOBILITY? 1
The point is getting there, not necessarily to travel. Does that suggest different strategies for public policy? It does.

EARLY ACCESS 2
Houston was founded on a transportation channel and has created a complex network to the whole world - and to space.

NETWORKS TO AMERICA AND THE WORLD 4
Our connections to the rest of the globe are extensive and growing.

REGIONAL AND LOCAL NETWORKS 6
The major road network is largely in place, but others are just getting started, and some don’t really work at all.

ACCESS VS. MOBILITY 8
What’s the difference? How do our systems deal with each other?

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Researchers liken the mobility and access systems to electronics networks, with nodes (places) where different things can happen.

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As the world focuses on public transportation, engineers and visionaries are cooking up amazing choices and innovations.

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A call for a massive increase in the road system is the current plan - with the Houston region alone in that approach to the future.

2035 REGIONAL TRANSPORTATION PLAN 15
An extensive visioning process is providing new goals and values for the next round of planning - and preserving greenspace is tops.

EVOLVING TRANSIT 16
An innovative transit advocate explains Metro’s system plan, and proposes a more aggressive future.

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Research is strongly suggesting a different look at city regions, and ways to reduce automobile dependence.

ACCESS AND GARDEN CITIES 20
A continuing vision of high access and complex transactions in a diverse green paradise sums it all up.
Access or mobility?

Access is about the ends, mobility is about the means.

We get up in the morning ready to go, to get in front of other people and start exchanging ideas and goods and love and so on, and we spend our day interacting with enormous numbers of other human beings, and in the process, billions of transactions take place.

So that’s the key: access to each other for interaction. Making progress, moving through life a mile a minute.

More like a mile every 5 or 10 minutes, if we’re driving at peak hour, frustrated by the difficulty of gaining access. Difficulty in gaining access costs time, and time is money.

People in big companies in big office buildings move around those buildings like crazy every day and have rapid, easy access by foot and elevator to hundreds or thousands of people. The World Trade Center was an interior environment with 80,000 people in it.

A place with that many people close by can afford to have every amenity from cafes to cinemas. Some of the people with jobs there provide goods and services for others in the center.

Sometimes people live in these high-access environments. People in a condominium in Atlanta take the elevator to the grocery store. The grocery store also delivers, because it’s easy.

But sooner or later, you have to go out. Around the world are many places, like the one in the photo above, where people can go out and walk around and see a lot of people and get to a lot of services. No car necessary. In the photo, the city has an edge, connected to the rest of the world via transportation infrastructure. And beyond that greenspace, farms, orchards, rivers, streams. Garden cities, green cities.
Early Access

Houston began as a port, became a city, and then reached to the Moon

The story is that when the Allen Brothers cruised up Buffalo Bayou looking for the perfect place to found their new city, they discovered it was already taken and named Harrisburg. Undaunted, they went north and settled at the bayou’s confluence with White Oak Bayou.

Houston was connected to everything.

In the city itself, buildings were erected in urban fashion, enabling pedestrian access to stores and services. As the city grew, the efficient street grid enabled the use of mule-drawn streetcars in the dirt streets, and people could move around the area with ease, either by foot, private horse or wagon, or streetcars. The first suburbs, including The Heights and Montrose, were based on the ability of streetcars to extend travel distance without increasing travel time, the beginning of a mobility revolution that would expand in all directions and see the streets paved and rail installed.

But the coming of the automobile changed the formula, and ushered in a period of land expansion that has lasted for three-quarters of a century and shows no signs of stopping today.

In terms of access to other cities in the western hemisphere and the world, yet another revolution soon happened: airplanes. The establishment of Hobby Airport brought a new era of speed in the movement of people and goods to far-flung places. Houston became a world city with access to mobility systems that included airplanes, ships, trains, trucks, and cars.

And when the Soviet Union flew Sputnik into space, the United States established its own space program, with the Manned Spacecraft Center located in Houston to direct the journey to the stars. As we all know, the first words from the first person to stand on the Moon were reported to the Manned Spacecraft Center, in Houston. And the first word was “Houston.”
DESIGNED FOR URBANITY The original plan for “Houston-style development” was an urban scheme that allowed easy pedestrian access to shops and services, then for horse-drawn wagons, streetcars, automobiles and trucks, and eventually light rail. Rail figured large in Houston’s growth (below right) as 17 railroads reached out to America and the ports, and the locomotive became part of the City of Houston’s logo.

REACHING FOR THE SKY The Main Street Airport, shown above in the late 1920s about a mile from what is now Reliant Stadium, connected Houston to the world by air. Less than 50 years later, in the heart of the Manned Spacecraft Center (below), Houstonians directed the human journey from Earth to space.

SPREADING OUT Houston’s highly connected urban grid, shown in 1891, is largely intact today, but the new cul de sac and congestion development surround it now.
The success of Houston has come largely on the strength and extent of its networks. A clear understanding of the right of way to the rest of the world has always, relatively speaking, given Houston access to trade and culture that few cities enjoy. The Allen Brothers knew it’s always about access.

Fifty miles from the ocean, we’ve wound up with the largest seaport in the nation, in terms of foreign tonnage, and the second largest in total tonnage. It’s the 10th largest port in the world, and growing.

We have the sixth largest airport system on the planet, with flights to all those places over there in the left column.

Some 700,000 railroad freight cars come into Houston and out again every year. Coal from Wyoming comes here in trains that are five miles long, in order to stoke the electricity generators that power our iPods. Electricity and telephone service began in 1880, and today sending an http message from Houston to Hong Kong takes 186.09 milliseconds.

The air, rail, and port infrastructure is massive and impressive, but in the end, the network that carries the trucks, and the cars, is the most impressive. It brings that new Beaujolais from France right to your door as soon as it’s ready. Those last miles require a lot of concrete, and a lot of land. And that’s the story: As transportation networks get denser, they replace the natural world.

Rich connections to the world allow millions of complicated transactions, and fuel the economy.
Port of Houston Authority

Regularly Scheduled All-Water Services

Regional and Local Networks

They say that long ago the Rocky Mountains eroded and flowed down through mountain streams across the continent to smother the low swamps of Houston - a vegetable and animal paradise - with rich soil. The soil network, thick and full of life, settled out across the prairies and some of it went to the estuaries and into the Gulf of Mexico. Much of the land in this region is wonderful stuff, supporting vast wilderness, and fabulous for growing rice, cotton, and more. Underneath all that, organisms turned to oil, transforming huge quantities of energy originally produced by the sun. When it was found, rice and cattle were forgotten, and oil made some of us rich. Rich, and in need of networks to get the oil to people who could use it, pay for it, fire up our businesses, and create fantastic wealth, right here in Bayou City.

The soil network is teeming with life beyond understanding, and the water runs everywhere through it, headed out to sea. Thousands of miles of rivers, bayous, streams, and creeks flush the countryside and carry cargo to the sea. Along the way, the water twists and turns and changes direction and you never know when some will come right through your house. This network runs through hundreds of neighborhoods, and every year a pedestrian and bike network grows along it.

Then there are the roads. Snaking through the region, crossing the water a thousand times, using the land, making it accessible for development, giving us something to worry about.

There’s also the transportation infrastructure that we use for shared travel, the transit network. We already have the second highest ridership per mile of any light rail system in the US. We have arguably the best commuter transit system in the US, that delivers 40 percent of the Central Business District’s commuters each day. Busy fingers are at the drawing board designing a significant expansion of the system for the future, as we add 3,338,000 more people by 2035.

**THE LAND** In this map of the region, the major land and life types are shown with the networks increasingly broken by development, in white.

**WATER** Thousands of miles of rivers, bayous, and creeks traverse the region, providing opportunities for green infrastructure network nearly everywhere.

**ROADS** Freeways, highways, and major roads are shown in this map. The colored areas in all four of these maps, left and right, are our incorporated towns and cities.
THE WORST NETWORK The pedestrian network in Houston, which also serves the disabled, is badly disconnected and low-quality. No surprise, then, that more serious pedestrian accidents happen here than in any other Texas city.

COMPLEX ECOREGION Some say the Houston region has the most complex array of ecosystems in North America. This map from Houston Wilderness begins to grapple with the character of the networks of nature that sustain life.

TRANSIT Much smaller than the road network, the total transit system nevertheless reaches areas with more than half the region’s population.

RAILROADS Trains are a huge part of the system, sending goods out and bringing them in every day, including enormous numbers of trains with coal for electricity.
Access vs mobility

Accessibility is a frame of mind that puts people first

Research shows that more roads and “mobility” do not relieve congestion, but a concept called “accessibility” does. Work to differentiate the two concepts is increasing at universities, and a recent conference called “Access to Destinations” explored the state of the research and the understandings that are arising.

Susan Handy, of the University of California-Davis, says we have been focusing on the means, rather than on the end. While there are people who just like to move around in vehicles, the purpose of mobility is almost always to reach a destination. We want access to some place — or some notion of needs, rather than to maximize the ability to travel. Another researcher said the issue should be “What can be reached and how much effort is required to get there?”

Randall Crane, of UCLA, argues that what the trip actually accomplishes should matter more than how fast you get there. Rather than emphasize how traffic flows between two points, he said, planners should emphasize the role of destinations. That is, what is the value of getting from point A to B? This includes the question of what travelers can do once they get to B, or whether they want to go at all.

Accessibility is a concept that captures this information.

David Levinson, of the University of Minnesota, says “Accessibility is a measure of ease of movement to opportunities, which is far better than mobility, which is simply a measure of ease of movement without any relationship to where that movement is ... movement to opportunities is more important than movement between two vacant parcels.”

From a sustainability perspective, says Thomas Gladwin, a University of Michigan researcher, we see a range of issues that have not been systematically investigated in the past, including loss of wildlife habitat, global climate change, automotive fuel efficiency, increasing air travel, conversion of agricultural land to urban uses, and the impact of air pollution on public health. He argued that accessibility should be seen as merely a means to an end — human welfare — constrained by the “ultimate means” of the provision of natural resources, and by the rules of justice. Placing accessibility in this context, he suggests, leads one to ask questions about the design of an accessibility system that truly optimizes human welfare, subject to maintaining the health of humans and natural systems while also ensuring a just and equitable process for using the system.

Defining the terms

Accessibility: the potential for interaction
Mobility: the potential for travel

Accessibility: ease of reaching a destination
Mobility: ease of movement around a network

Accessibility: requires increase in convenience (density)
Mobility: requires vehicles and space

Accessibility: focusing on the ends
Mobility: focusing on the means

Accessibility: some people have more than they need, others have less
Mobility: groups not dependent on transit exert significantly greater influence on transit planning than people who depend on it

Accessibility and mobility are parts of a system, that includes land use strategies, that determines the ability of people to engage in interaction.

Challenges
- Shift from congestion as the problem to automobile dependence as the problem
- Shift from mobility (ease of driving) to accessibility (reduced need for driving) as the goal
- Shift from mobility measures to accessibility measures to evaluate the performance of the system
- Shift from mobility-enhancing to accessibility-enhancing strategies

Categories of strategies

Mobility Enhancing Make it easier to get around without specific concern for who needs to go where
Accessibility Enhancing Make it easier for everyone to get where they need to go without necessarily driving
Mobility Limiting Make it harder or more costly to get around by car
New Mobility Make it easier for everyone to get where they need to go without necessarily driving

Accessibility-enhancing strategies
- Land-use strategies
- Transit systems
- Pedestrian and bicycle projects
- Information and communications technologies (ICT)

Plan movements to increase access

Street connectivity ordinances Shorter distances, more choice of routes
Main Street programs Stores within walking distances
Traffic programs Separate facilities for peds and bikes
Traffic calming programs Increased safety and comfort for peds
Access & place

The convenience of places, with increased amenities, improves access and reduces mobility need

The key to high access is robust, interesting places where a lot is going on. The shorthand for this is “density.”

A new study dramatically shows the effect of density. “Commuting in America III,” published by the Transportation Research Board, contains a version of the chart at right. This shows that as density increases past about 3,500 people per square mile, transit use begins to rise and auto use begins to decline. (Maps on pages 18-19 of TOMORROW show those areas in the Houston region.) Another chart in the study (see page 1) shows that transit use begins to take off when urban population reaches 5,000,000, which the Houston region passed a few years ago.

But it isn’t just about getting more people into a space; it’s mostly about the quality of the space, the design of it. Producing the kind of busy places that people love is not easy, particularly when public policy works to prevent it, as is often the case in Houston.

The “principles of true urbanism,” as Suzanne H. Crowhurst Lennard calls them, are ancient and practiced all over the world. Those principles are:

- Multifunctional squares and marketplaces
- Appropriate human-scale architecture
- Compact urban fabric
- Multifunctional land use and the shop/house
- Cellular city of short distances
- Balanced transportation planning
- Regional planning to maintain the city’s vitality
- Events and activities in the public realm
- Maintaining and enhancing the city’s DNA

While these need more study, the general picture is clear. What is not so clear is that this formula is not necessarily about enormously dense places like Manhattan, as it is about the hundreds of smaller neighborhoods that make up Houston.

So the region’s traditional “downtown” is just one of the many downtowns that are possible - and that could be connected to each other with transit.

Gallup has been asking people for decades where they would live if they could live anywhere. The clear winner, and growing, is “small town.” Small towns can be all over a region, knitted together with transit.

A city like Houston has hundreds of neighborhoods, each potentially a “small town.” As Crowhurst says, “This finely textured urban fabric that eliminates unnecessary travel makes the city socially healthy, as well as ecologically sound.”

WHERE WOULD YOU LIVE? For decades, the Gallup Poll has found that “small town” is the most popular setting - and it’s the least available.
Access beyond the “place” is achieved using networks, whether it’s access to information or peanut butter. The efficiency of networks is partly determined by the number and spacing of places, or nodes. Some nodes, as in road intersections, are destinations, but they are also places where changes in direction can occur. Information in a network seeks the fastest, safest most direct route to a destination node. So do people.

It’s implied that there is some kind of management intelligence at nodes to direct traffic. That’s easy for transit, tough for cars.

Some nodes in a network are high-access places, where lots of goods and services are available (which is to say lots of people, who deliver those goods and services). These nodes are successful, ultimately, to the extent people are on foot, and okay with that.

The Uptown/Galleria area is an example of a node where success (or number of transactions) is limited to the number of people who can get there and move around. The area, as opposed to the Galleria itself, was designed for people to park a car in front of each business, and then drive to the next one. This means massive amounts of expensive real estate must be given over to move and store cars, real estate where no transactions can take place, where mobility and access are frustrating.

The Galleria itself, however, is a car-free place where people move from one business to the next on foot, stopping for coffee or lunch, and spontaneously making transactions they hadn’t intended. Cars are stored vertically at the edge. But even the Galleria is limited by the number of cars that can get to it, and that system is often saturated.

The answer is to evolve into a vast walkable place, with transit to it and in it, and that is exactly the Uptown/Galleria Master Plan.
THE PEDESTRIAN REALM  This graphic illustrates the dynamics of the variables that produce - or prevent - the evolution of a strong pedestrian realm, where maximum access can take place without transportation.

LOW-ACCESS, HIGH-ACCESS NODES  This connection on the Grand Parkway (left below) is essentially devoid of human destinations - nobody has any interest in being in that node. It’s entirely about access to the generally discontinuous roads at left and right. The high-access node (right below) is the corner of Bagby and West Gray in Midtown, an almost perfect pedestrian intersection, marred only by a sub-urban CVS drugstore and its parking lot. The corresponding road maps at bottom show the high connectivity and many choices for travel of the pattern at right, and the low connectivity of the pattern at left. The area at left contains around 933 residents and 7,884 jobs, while the one at right has around 17,478 residents and 156,022 jobs. Both use the same amount of greenspace. The one at right is constantly evolving over 150 years, while the one at left is unlikely to evolve at all.

ACCESS VS MOVEMENT IN A HIERARCHY OF ROADS  Different types of streets serve different purposes, with traffic in high-access streets slower and contained, while high-movement streets need few access points.
Mobility

Choices & Innovations

An array of options and some dazzling ideas

**HIGH SPEED MAGLEV** Magnetically levitated high-speed trains operate with great efficiency and low maintenance. The Japanese maglev above is not in service yet, but has reached speeds of 360 mph. The maglev below is in service in Shanghai, and peaks at about 245 mph. The 19-mile trip to the airport takes 7 minutes.

**HIGH-SPEED JAPANESE WORKHORSE** The Shinkansen (700 model below) is Japan’s famous high-speed bullet train, which runs at operational speeds of about 185 mph. Japan was first with high-speed rail.

**NAGOYA MAGLEV** This maglev train (below) in service in Nagoya, Japan, is not a high-speed version, but travels at about 60 mph. It’s intended for urban use and operates in tight situations with low maintenance costs.

**UNDERGROUND MAGLEV** Subterranean maglev (left and below) is proposed by Swissmetro. The concept is of a high-speed (300 mph) vehicle traveling in a tunnel in a partial air vacuum.

**UNDERGROUND FREIGHT** Tube transportation for freight is an alternative that is gaining worldwide attention. Use of existing highway rights-of-way is an attractive feature of tube transportation. There are a number of desirable features and advantages relating to productivity, safety, environmental issues, and energy savings. These images at left are from TubeExpress. Texas A&M has a project to run freight underground at speeds of 45 to 55 mph with containers large enough to hold three or four standard 48 inch by 40 inch pallets. Researchers expect a very low failure rate, with a design life of 50 to 100 years.
PERSONAL RAPID TRANSIT

The engineer's dream, the concept of personal rapid transit tries to provide the benefits of the private car in an efficient system that can reduce the need for cars. Computer-guided, personal nonstop service from point to point is the key. Clockwise from top left, the dream as book cover; a proposal for an Austin system; the SkyTran vehicle; two scenes from a video about a PRT system for the Microsoft campus. The video says “Connect a single bus stop to 30,000 desks.” The first real world example will be at Heathrow Airport. Obvious Houston applications: Texas Medical Center, University of Houston, Uptown/Galleria.

MONORAIL

Monorail transit has existed for 105 years, and is widely used in Asia. The classic design is the one below, called “straddle beam,” which is used in the US at Walt Disney World, Seattle, Las Vegas, and a few other places. Separations from road traffic, safety, driverless automation, and minimal infrastructure are the key benefits. The composite below is shown on Richmond Ave.

BUS RAPID TRANSIT

This fairly new technology brings together the operational characteristics of light rail with the flexibility and lower cost of buses. Metro will use BRT, as it is known, for four of its new urban lines. The example below is the latest, the Phileas bus, which will be deployed in Eindhoven, the Netherlands. Houston BRT service will begin in 2011.

BASIC STREETCAR

Streetcars, like this one in Portland, can fill in blanks between light rail nodes and add many new ones capable of densifying, as here in the Pearl District, an explosive, ongoing development project.

BASIC SERVICE

Most human units are capable of extensive self-transport via rubber tread, as in the personal transport utility at right.

MONORAIL

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The plan that has the greatest impact on land use - and thus on the largest number of issues that concern citizens of the region - is the Regional Transportation Plan (RTP). This is a federally required plan that ties together all road, transit, bike/pedestrian, and port/airport projects for the Houston-Galveston area over the next two decades. The Houston-Galveston Area Council (H-GAC), a regional governmental agency, develops the long-term plan with the cooperation of local cities, counties, and transportation agencies. The plan must be “fiscally constrained,” that is, it must show that the region plans to have revenues sufficient to do everything proposed.

In the current plan, the 2025 RTP, total proposed expenditures between now and 2025 are $77 billion. Of that, $65 billion is for road and transit projects (a small amount is set aside for bike and pedestrian projects) and the rest is for ports and airports. Of the $65 billion, $29 billion is for new capacity, with $24 billion of that going to roads and nearly $5 billion for new transit capacity. Citizens may not vote on this plan as they did on the Metro Solutions plan. Instead, the RTP is voted on by an H-GAC group called the Transportation Policy Council. Many members on the Transportation Policy Council are county judges, city council members, and other elected officials.

Road and transit projects affect everything from flooding to air quality to property values in neighborhoods. Many of those projects include road widening and construction, rail and busways, bike lanes, and sidewalks that could go through or near neighborhoods. The projects affect the air we breathe, where we can choose to live, what goods we have access to, how we get to work, greenspace and open space, flooding, as well as the economic futures of many entities such as the City of Houston.

Like any plan, the RTP emanates from its vision and goals. The most recent Houston RTP, the one for 2025, has this vision: Enhance mobility by providing an efficient, affordable, safe, and environmentally responsible transportation system for both people and goods.

The goals to achieve that visions:
1. Reduce congestion and improve access to jobs, markets and services.
2. Preserve and maintain the existing transportation infrastructure.
3. Improve transportation safety and security.
4. Be environmentally responsible.

Because nothing impacts land use like transportation infrastructure, the 2025 RTP begins to address land use, but only peripherally. The primary emphasis is on expansion of the road system.

USER BENEFITS The center map below shows median household income in the region. The maps at left and right are from the 2025 RTP, and show user benefits in terms of time saved (or lost) as a consequence of the plan. The one on the left shows who benefits from roads, and the one on the right shows who benefits from transit.
The next Regional Transportation Plan looks ahead to 2035. H-GAC has produced forecasts for that time that show the region adding 3,338,000 residents and 1,527,000 new jobs. The “base case” (shown at left center) for where residential development would occur if current trends and policies continue shows a massive loss of greenspace everywhere in the region, and a much larger travel area.

But in the fall of 2005, H-GAC began a visioning process to determine what values and goals the citizens of the region hold, in a quest to create a mobility plan that honored and supported those goals. The themes that came out of that are shown at right.

Now H-GAC is working to incorporate those values into the new plan, which will be appearing in draft form sometime in February, with public meetings scheduled in March. The plan could be approved in June. For more, visit gulfcoastinstitute.org.

**2035 Regional Transportation Plan**

**A new look at greenspace, town centers, more transit**

Four Population Scenarios The top left map shows population distribution today. Scenario A, left, is the base forecast with yellows indicating new suburban development, darker colors more compact development. Scenario D, bottom left, is a hybrid produced by H-GAC from the growth values of participants in last fall’s workshops and assumptions about what actually may happen. Scenario X, right bottom, is by the Gulf Coast Institute and shows most of the growth allocated to existing towns and cities, with no new greenspace used for development. Both scenarios A and D show massive loss of greenspace, including forests, wetlands, prairies, and riparian areas.

Some drivers willing to change For the 2025 RTP, an H-GAC survey found that 28% of people who drive would prefer to travel some other way, with most of those wanting transit or carpools. In this chart, blue represents current method of travel and green represents preferred method.

### Citizen Themes

At the 2005 workshops, the following themes emerged as citizen values for transportation and land use planning:

- **Conservation of greenspace**
- **Linear parks on the bayous**
- **Respect for floodplains**
- **More transit and less road development**
- **Mixed-use “town centers” and “urban villages” in a number of sizes**
- **Shorter work trips**

### H-GAC version

- **Better mobility, less congestion and cost**
- **Easier access to jobs, homes, and services**
- **More transit**
- **Coordinate transportation to better preserve floodplains as reservoirs and recreational areas**
- **Healthier environment**

### A Sensible Approach

H-GAC’s proposal for land use and transportation planning uses strategies for centers, connections, and context to absorb population with minimum impact on greenspace and traffic.
Evolving Transit

A transit advocate’s views of Houston’s future transit

Houstonians are often envious of transit systems in cities like New York and London and wonder if we could build something similar. The answer is about time and money. Other cities have a 100-year head start. With current funding, we can build 10 miles of light rail or 5 miles of grade-separated heavy rail a year. The map below shows METRO’s plans for 2012. But what could we add in 20 more years if we shift funding priorities?

Ultimately, transportation planning is urban planning. Transit is effective where jobs and population support it. The map at right below is a speculative transit system for Houston, based on the same principles as mature transit systems around the world.

SERVE DENSITY Transit that serves dense employment and population areas attracts more passengers (since they can get to the station on foot) and are more cost-effective (since the same number of stations and miles of track serves more people.)

USE DIFFERENT SERVICE FOR DIFFERENT TRIPS Transit built to serve urban neighborhoods

Editor’s Note: These two pages contain the work and ideas of Christof Spieler, a practicing structural engineer in Houston. He is a member of the Citizens’ Transportation Coalition board and is also on the editorial board of Cite magazine. He publishes a blog about transit called “Intermodality,” which can be found at ctchouston.org/intermodality/index.php

6. AIRPORT EXPRESS BUS Everyone wants rail to the airport. But that’s at least 10 years away, and urban rail offers more bang for the buck. Instead, run express buses every 15 minutes from Hobby to IAH via the I-45 HOV lane and the Hardy Toll Road. With only 3 intermediate stops, we can connect to 4 of the 5 LRT/BRT lines open in 2012. And we can do it right now.

7. MARKET! Building and operating an effective transit system is not enough. The public needs to know about it. We need billboards, brochures, mailers, web links, and ads, all highlighting specific services, not generalities.

6. FREQUENT FEEDER BUS SERVICE Rail can’t go everywhere. But we can extend its reach with bus service, especially if it’s frequent, distinctly branded, and designed to connect to stations. LRT/BRT lines open in 2012. And we can do it right now.

4. COORDINATE REGIONALLY The Woodlands and Sugar Land don’t get METRO commuter service because they’re outside METRO’s service area; their buses are provided by other agencies. But why should passengers have to care about that? All these services should take the same farecards, and their’ routes should be shown on METRO maps and schedules.

3. DIRECT TRAINS, THIRD WARD TO MEDICAL CENTER There’s an obvious travel market for UH and TSU students and Third Ward residents traveling to the Med Center. We can make that trip easier with direct trains by adding track connections at Wheeler. That would also create a new way for I-45 commuters to get to work at the TMC.
needs to stop often - and be relatively slow. Regional trips need higher speeds. The solution is to create multiple, connected systems with different speeds and station spacings.

CREATE NODES Transit networks connect at major nodes. These stations should be the places the greatest number of people want to get to: the hearts of major activity centers. Where such centers do not exist, nodes should be designed to help create them.

START WITH LOCAL SERVICE Ridership for high speed regional and intercity rail comes from urban feeders. Build those first, to reinforce and build the ridership and urban patterns that sustain a regional system.

WHAT METRO IS PLANNING ... and 7 ways to make it better.

By 2012, Houston will have two interconnected high-capacity transit systems: a light rail and bus rapid transit network in the urban core, and an HOV lane bus and commuter rail network extending out to the suburbs. The public still has the chance to shape the result: final alignments have yet to be determined for some lines (shown dashed) and a lot of design - including final station locations - remains to be done on the rest. Here's what's in METRO's plans right now - and a few ideas for how to make it better at modest cost.

1. FIX THE DOWNTOWN TRANSFER Under METRO’s plans, passengers transferring from the Southeast line to the Main Street line have to walk 4 blocks. One alternative? Put the Southeast Line on McKinney instead of Capitol, creating a transfer station at Main Street Square. The route is less direct. But it’s better to make buses go out of their way than to make passengers go out of theirs.

2. DIRECT TRANS, DOWNTOWN TO UPTOWN A thing stands, traveling from Downtown to the Galleria will take 2 transfers. That’s an awkward way to link the two biggest activity centers in Houston. Add connecting tracks at Wheeler and a mile and a half of overhead wire on Post Oak, and you get there with no transfers: every other train on Main Street/Downtown goes to Uptown, and every other train on Post Oak in Uptown goes Downtown.

3. REGIONAL SPINE SERVICE Links nodes to each other and to regional destinations like Galveston and Lake Jackson. These might be 125 mph electric trains, stopping every 5 to 10 miles and running mostly in existing rights of way like freight railroads and freeways, but tunneling to reach urban nodes. Trains run every 10 to 20 minutes on the outer spurs, resulting in a train every 3 to 5 minutes on the central spine.

4. URBAN CONNECTOR SERVICE Provides frequent, reliable service in dense neighborhoods and employment centers, running every 3 to 12 minutes, stopping every 1/3 to 1 mile and averaging 15 to 25 mph including stops. This would be light rail or Bus Rapid Transit, usually running in streets but sometimes elevated or tunneled.

5. HIGH-SPEED RAIL SERVICE Connects Houston and Intercontinental Airport to San Antonio, Austin, Dallas, Beaumont, and New Orleans.

6. NODES Link regional spine service to urban connector service. Many of these - Main at McKinney, Westheimer at Post Oak, Holcombe at Fannin - are already dense urban centers; others - Gessner at I-10, US 59 at Highway 9 - are emerging centers. Some nodes connect regional rail and light rail to the region: the Intermodal Center just north of Downtown is a central station for high speed rail; Hobby and Intercontinental airports link the regional network to the rest of the country and the world.

A MODEST PROPOSAL This map suggests a strategy for a long-term system that brings transit to most areas of population and jobs, with a combination of service types as shown above. The colors over each service name represent the lines on the map.
The emerging paradigm about how towns and cities grow - or could grow - is focused on the concept of the center, which is highly walkable, convenient, and interesting. Centers are connected to other centers by shared transportation. Metropolitan “regions” are collections of connected centers, in a wide variety of sizes. And coming forward is a new concept of “megaregions,” in which metropolitan regions like Houston, Dallas, Fort Worth, Austin, and San Antonio work together at a large scale to create a successful, shared economy.

Two recent studies reinforce the concepts. One, called Commuting in America III, is briefly discussed on page 9. It has data showing the population densities that produce a decrease in auto use and an increase in transit use. The second, called “Urban Design to Reduce Automobile Dependence,” finds that the way to look at density is to combine population and jobs into a concept called “activity density.” It then notes that at an activity intensity of about 14 people per acre, transit use begins to climb and “auto dependence” decreases. The authors find extensive support for the geometries of the system explained in the graphics at the far right.

The “ecocities” movement, which explores “sustainable development,” also tout polycentric models. In this paradigm, the centers are not only slightly removed from each other, but are surrounded by agricultural and wild greenspace.

This paradigm has the benefit, at the largest scale, of allowing important connectivities in the natural infrastructure, particularly water flows. In the most ambitious thinking, the natural world is relatively whole, flowing around pods of human activity in comparatively benign concentrations. This efficiency is said to have positive benefits for the health of all life, including humans, and appears to be more stable over long periods of time than the concept of continuous sub-urban development. Further it allows a fantastic diversity of lifestyles, at every scale of town and city.

As it happens, the Houston region, with its several very large centers and many small ones, may have developed in a way to take quick advantage of the idea, as it adds 3,538,000 more people.

**High-Access System**

*Houston is poised to be a premier example of a polycentric region.*

The Houston-Galveston Area Council has found many access and mobility benefits in this model of different scales of connected centers. A HIERARCHY OF CENTERS The darkest squares in the map at left are Houston’s primary density opportunities to reduce automobile independence and to provide a high-quality, high-speed regional transit backbone. These include Downtown, the Medical Center, Greenway Plaza, Uptown, Greenspoint, and Galveston. A backbone to connect the “transit cities” is shown below. Other levels of transit service can be provided to the next two layers of density, but service to the lightest colors is impractical until they densify.
MEGAREGIONS

In the diagram at right below, the Houston region is shown as the seaport for the much larger Texas Triangle, an area known as a “megaregion.” Dallas-Ft. Worth, Austin, and San Antonio are the other big regions. While each region is autonomous, they all work together in an economic way, and need cooperative thinking to preserve and improve the transportation infrastructure and natural, or “green,” infrastructure that makes it all work. Houston is also considered part of the Gulf Coast Megaregion.

SECONDARY CENTERS

The next areas of density, below, could begin to connect to the regional backbone, right, in order to build a system that allows car-free travel to nearly all services and jobs, as well as high-density residential areas. Both the black and dark red areas should become increasingly self-sufficient and highly walkable to support riders.
If the goal is to preserve greenspace, green infrastructure must be connected, to flow around nodes of human habitat. 

Throughout 2006, the Gulf Coast Institute has explored the idea of the Garden City as a possible model for future development and redevelopment in the Houston region. We will continue to use this last page of each issue to explore the Garden City further, related to the issue’s topic.

The Garden City, based on the original design by Ebenezer Howard in 1898, generally embraces the idea of access. Howard’s cities were eminently walkable, and had roads and avenues. The cities were connected to each other by both roads and railroads. The cities measured about 1.5 miles across, with most goods and services in the center, so everyone had less than a three-quarter-mile (10-15 minutes) walk to gain access.

Because the Garden City was to be surrounded with greenspace, everyone was also within a 10-15 minute walk to nature (and the City itself had a generous park system). Places developed on this idea can be found all over the world. Cambridge, England, for instance, in the aerial photos at left, is a complicated, busy, and beautiful place, entirely surrounded by greenspace, as are many other English cities. The Netherlands is full of such places, including Amsterdam, which many people think is the most sensible, comfortable, cosmopolitan city on Earth.

One of the evolving metaphors is of the “polycentric city,” or “polycentric region.” In this view, a number of cities and towns of many sizes function together in a common economic system, and also share certain kinds of infrastructure. But at heart they are their own places, free to specialize and develop their own characters, creating a region that is rich in diversity, allowing a range of lifestyle choices. People might live, work, go to school, and much more in their own towns, but still have easy access to other towns.

If we in Houston were to pursue such a dream, we are already well along in the formation of large, relatively stand-alone cities, including Downtown, the Medical Center, Greenway Plaza, Uptown/Galleria, Westchase, and Greenspoint. The green infrastructure to support those and many other garden cities and towns is clear in the map below: the areas along the water network.
Houston needs a plan.

1000 Friends of Houston

1000 Friends of Houston, a Gulf Coast Institute project, began a media campaign that called for the City of Houston to adopt a General Plan for Houston’s Future, based on the vision and values of its citizens. That initiative became Blueprint Houston, which has worked to make that happen. As 2007 begins, City Council has before it plans to begin to create a plan. The people listed here are the visionaries who have contributed to the Institute’s effort.

1000 friends. We will hold galas to reach 500 and 1000 Friends of Houston.

1000 Friends of Houston at 1000friendsofhouston.org

Contributions can be made to 1000 Friends of Houston at 1000friendsofhouston.org

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