



Learnings from Stockholm and Berlin: A Summary of Transit Innovations



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Introduction

The Metropolitan Planning Council (MPC) Transit Innovations initiative sparks fresh thinking about public transportation planning, management and finance strategies, and elevates decision-makers' understanding of the value of expanding and improving transportation options to keep the Chicago region attractive and economically competitive. This work advances MPC's core mission to develop, promote and implement solutions for sound regional growth that create a more sustainable and prosperous Chicago metro area.

A key part of achieving this vision is exploring transit innovations and best practices in other global cities and regions to learn how their solutions can be applied locally to improve Chicagoland's transit and transportation networks. Specifically, MPC is examining innovative strategies to:

- mitigate congestion;
- connect jobs, retail and homes;
- increase transit capacity;
- reduce vehicle miles traveled;
- improve transportation financing; and
- plan for the region's future.

Central to this activity is the Bombardier Peer Exchange, an international sharing of transit models being developed and used in Chicago, New York, San Francisco, Stockholm, Sweden, and Berlin, Germany. Through a series of dialogues and public forums that united experts from these diverse global cities, the MPC-Bombardier partnership examined common problems and promising solutions from around the world. U.S. peers connected with their international counterparts, sharing their experiences, strategies and challenges in

researching, implementing and operating emergent transit and land use policies.

To bring innovation and insight to metropolitan Chicago's transportation discussion, this white paper examines the learnings from the Peer Exchange visits to Stockholm in 2008, and Berlin in 2009. It highlights key transportation innovations at work in these cities and their metropolitan regions, and translates those learnings to a local context.

Peer Exchange City:

Stockholm, Sweden
June 16–20, 2008

The first Peer Exchange was in June 2008, in the Swedish capital of Stockholm, a city that has pioneered multiple groundbreaking transportation solutions. With its successful implementation of congestion (or cordon) pricing, Stockholm provided the delegation with the most pertinent example of innovative congestion relief in an urban environment. Participants were able to meet with high-level planners and experts, and examined a range of transportation policies and programs.

History

Stockholm, the largest Scandinavian city, was built on 14 islands of an archipelago, where Lake Mälaren meets the Baltic Sea. The city is home to more than 832,000 people; the surrounding region has more than 1.8 million inhabitants and accounts for about 20 percent of the country's population. Because of its location on the water, Stockholm has a long history of international trade. The eventual arrival of the steam ship and rail, and gradual construction of 57 bridges, added to Stockholm's significance. In 1866, much of the city was rebuilt to include railway stations, a drainage system, and tram network according to the town plan. During the 20th Century, in large part because of its neutrality during the two World Wars, Sweden experienced heavy modernization and urbanization under the influence of functional and technological advancements.

In recent decades, Stockholm has received numerous awards recognizing it as one of the greenest, most livable and technologically advanced cities in Europe and the world.



Stockholm's main train station.

Stockholm has an extensive multimodal transport system. The city boasts more than 1,900 buses and 1,000 trains, which transport more than 670 million people each year. A four-mile extension to the underground rail system is scheduled to begin construction in 2011, with the option for a double track under consideration. The city's light rail system carries more than 40,000 passengers daily and will be expanded with a new east-west route to be built by 2013. Stockholm has five international airports; the downtown Stockholm Arlanda Airport station serves as the city's primary intermodal transit hub, with access to more than 172 destinations.

Sweden has no shortage of green space: 1,000 parks comprise 30 percent of the city's land area. As an environmentally aware city, a main priority is to increase the availability of the transport system, and minimize traffic and the impacts of climate change. Stockholm planners are further integrating housing and labor markets in the region, and better coordinating transportation and land use investments.

Peer Exchange City:

Berlin, Germany

May 4-8, 2009



Berlin is an innovator in transit and related housing and environmental strategies.

The Peer Exchange delegation followed up its trip to Stockholm with a four-day visit to Berlin, Germany, in June 2009. Berlin is another global city that has had significant success with transit practices such as congestion pricing and Bus Rapid Transit (BRT), and related housing, transportation and environmental innovation.

History

After World War II, Berlin was divided into four sectors among the American, British, French, and Soviet Russian governments. Eventually these four sectors were separated as the democratic and communist states of West and East Berlin, respectively. In the early 1950s, West Germany began to establish itself as a post-war industrial powerhouse, attracting skilled workers from the East, and therefore threatening the

Communist state's existence. Eastern citizens also fled to the West for political reasons, seeking residence in the Democratic state. In an attempt to secure East Berlin from fleeing resources, a concrete wall nearly 12 feet high and 66 miles long was constructed in 1961, firmly dividing East and West Berlin. Known as the Berlin Wall, it surrounded the communist state of East Germany, separating political ideologies, governing structures, and families trapped on either side. For 28 years, two months, and 26 days, the Berlin Wall was a symbol of the Cold War. On Nov. 9, 1989, the Berlin Wall was destroyed and a unified Berlin began to rebuild itself as an integrated city.

When the freedom to move between East and West Berlin was restricted by the Berlin Wall, there were profound effects on the transportation system in the divided city. The wall split one of the most complex and expansive transit networks in Europe – a network that dates back to the late 1800s. Made up of the S-Bahn (originally suburban rail) and U-Bahn (underground metro), train lines that once connected the city's four sectors became a system of limited service with trains running to the border and back. On a West Berlin train line, several stations were shut down when passing through brief sections of the East Berlin territory and became known as ghost stations. Two days after the fall of the wall, the first ghost stations were reopened to the public with ads and signage on the walls unchanged since 1961.

The S-Bahn was operated by the East German government until 1984, despite the fact that the majority of the network ran through West Berlin. In disapproval of the wall, many West Berliners boycotted the S-Bahn, leading to neglected and dilapidated stations that attracted crime.

The West German government created a new bus system that ran along the same routes as the S-Bahn, so its residents could avoid the S-Bahn services. Both governments expanded their halves of the U-Bahn system, resulting in independent and incongruent lines.

After the fall of the Berlin Wall, joining Berlin's divided passenger rail system, road network, and other transit services into one solid, fluid system was no easy task. Officials had to piece back together two systems that had evolved separately for nearly 30 years. The government quickly recognized a top priority was to create one city would be to integrate, modernize, and expand the municipal and regional transportation networks. It also was clear Berlin needed a single agency to coordinate regional transportation planning and develop comprehensive multimodal strategies to truly re-establish Berlin as one city, as well as integrate it with the surrounding state of Brandenburg. What resulted was the Verkehrsverbund Berlin-Brandenburg (VBB).



Traffic in the city center of Stockholm.

Combating Congestion

Cordon Pricing: Stockholm

Stockholm's cordon pricing system, while relatively new, has gained significant international attention thanks to its immense success and public popularity. Beginning in 2006, drivers entering or exiting the city were charged a fee that fluctuated based on the current level of congestion. The implementation of this pricing system had three goals: 1) to reduce traffic flowing in and out of the inner city by 10 to 15 percent; 2) to increase accessibility; and 3) to decrease vehicle emissions. After just two years, Stockholm had surpassed each of these goals, achieving 20 to 25 percent less traffic, a 30 to 50 percent reduction in travel times, and a 10 to 14 percent reduction in vehicle emissions.

Perhaps what is most remarkable about Stockholm's cordon pricing program is

its overwhelming public support. Polls conducted before and after the pilot program showed residents responded to its results: people were more receptive to congestion pricing after seeing how effectively it alleviated congestion. Because Stockholm is surrounded by water, designating pricing checkpoints around the city was moderately simple. In the U.S., a similar system might be suitable for an island such as Manhattan, but would be much less appropriate for a relatively land-locked city such as Chicago, which has multiple entry points, and where travel through the central business district is not the primary choke-point.

Stockholm residents were able to alter their travel almost instantly thanks to expanded public transit service put in place before cordon pricing was implemented. Many



Shared street in city center of Stockholm.

of the 100,000 users who left the roads headed to transit, which boasted an increase of 40,000 passengers per day after 2006.

Truck Tolls: Berlin

Since January 1, 2005, Germany has utilized a GPS automatic tolling system for “heavy goods vehicles” or trucks. This form of tolling, known as LKW-MAUT, uses satellites and onboard units in freight trucks to track the distance travelled on tolled roads and automatically bill the hauling company. This system charges users based on vehicle weight. Because heavier trucks cause more damage to the roadbed, they pay higher tolls. That toll revenue then goes to infrastructure operations, maintenance and repairs.

The \$875.3 million system was recommended by Germany’s Commission on Financing the Federal Transportation Infrastructure. A total of \$7.72 billion (U.S.) in revenue was collected the first two years the system was in place. These revenues were reinvested into three secondary highways added to the system in 2007. As of 2008, more than 650,000 trucks travelling on 7,500 miles of Germany’s

Autobahn are tolled via LKW-MAUT. It was predicted that in 2009, operating and maintenance costs would be equivalent to only 11 percent of that year’s total income. A number of safety mechanisms have kept the toll violation rate at less than 2 percent.

Since the implementation of LKW-MAUT, there has been a trend among companies shipping goods into Germany to utilize trucks with higher environmental standards, and to use these vehicles more efficiently. Demand for lighter, 10-to-12-ton vehicles has increased since the program was introduced. The Transportation Research Board reports the number of miles traveled by trucks without cargo has decreased by 15 percent.

Congestion Pricing Study: Chicago

A 2008 MPC report found the Chicago region loses \$7.3 billion every year in wasted time, fuel and environmental damages – enough money to fund a Chicago Transit Authority (CTA) Red Line extension, the Elgin-O’Hare and West O’Hare Bypass, a new West Loop Transportation Center, and new lanes on Interstate 80. Drivers annually waste an average of 2.5 days stuck in traffic.

If complemented with enhanced public transit, congestion pricing can be an effective way to reduce congestion, improve the environment, and expand transportation choices to meet people’s needs. Congestion pricing works by giving people options: to pay a fee to drive on a less congested road with predictable travel times, travel on an alternative route, or take transit. This tool is currently being studied or in operation in at least 22 states, including Illinois.

In MPC’s July 2010 report *The Road Less Traveled: Exploring Congestion Pricing in Chicagoland*, the data suggest that by better

managing new highway capacity, the region may be able to curb its congestion problem and generate additional revenue that can be reinvested into the transportation network, including transit. While further analysis is needed before pursuing any implementation of congestion pricing, this study (conducted in partnership with the Illinois Tollway and Wilbur Smith Associates) provides a comprehensive analysis of the potential effects of such a system on the region. With many Chicago-area transit agencies, including CTA and Metra, already operating at full capacity on many lines during rush hour, a significant increase in capital investment is needed to expand and enhance public transportation service before such congestion pricing mechanisms could be successfully implemented.

Public Transit Systems



Old-style trolleys in Stockholm.

Stockholm

A major reason for the success of cordon pricing in Stockholm is the city's extensive public transportation system as a viable option for travel into the city center. Stockholm Public Transit (SL) consists of buses and Citybanan, the subway system. SL has an operating income of about \$2 billion (U.S.), and employs approximately 700 people. On an ordinary weekday, SL accommodates 2.5 million boardings and moves 725,000 passengers through its various forms of surface transportation. SL is the preferred mode of transportation for 77 percent of Stockholm's rush hour travelers. Originally a public monopoly, all operations and station services were contracted out to suppliers in the 1990s. With increased competition, riders have experienced lower prices and higher levels of service.

Stockholm's system has many customer-friendly features that enable SL to run efficiently and effectively. Online traffic and system information, well-functioning infrastructure, punctuality, disabled access, clean cars and waiting areas (including

a vandalism database where graffiti can be reported), and increased security are all examples of how SL keeps public transportation a frequently used and well-liked travel option. Customer satisfaction surveys indicate 75 percent of riders are very satisfied with Tunnelbana (subway train) and the Buss (bus), while 90 percent of Lokalbana (local railway) users are very satisfied.

SL also strives to be a sustainable, environmentally conscious organization. It currently operates the world's largest ethanol bus fleet and has plans to use 100 percent renewable fuels by 2025 (currently at 25 percent).

Proper local and federal funding, a competitive contract system, and emphasis on customer satisfaction and environmental sustainability make SL an excellent transportation option for Stockholm residents.

Chicago & Berlin

With extensive public transportation infrastructure in place, Chicago and CTA could replicate some of the strategies Sweden SL has applied to improve system efficiency and customer satisfaction. Increasing both coordinated planning and competition among providers will lead to less expensive and more efficient choices. New contractors also may need the flexibility to respond better to changing demographics or regional growth. Other relatively minor customer service-related changes such as an online graffiti database could have a major positive impact on the quality of the public transit experience in Chicago.

Berlin's digital "next bus" arrival screens at key stations throughout the city is also a best practice for Chicago to consider.

Predictability and reliability have enabled Berlin's VBB to attract and maintain high ridership along its bus network – particularly in locations with multiple connections. The City of Chicago is working on an implementation plan to incorporate some of these tools as part of an Urban Circulator, by upgrading existing technology (such as the bus tracker service) at selected bus stops throughout the Loop.



A Chicago Transit Authority bus.

Coordinated Strategies



Berlin's main station.

Regional Transportation Planning: Berlin

VBB is the regional public transportation authority for the metropolitan Berlin-Brandenburg district. A private limited company established in December 1996, VBB is comprised of representatives from the federal government, states of Berlin and Brandenburg, 14 separate districts, and four cities. VBB ensures fluid and cohesive movement of people throughout the region, mediates between policy makers and operators, plans and executes a unified fare card system, supports operators, and promotes public transit in the region. The agency manages 41 private transit operators that serve approximately 3.4 million passengers every day. All of the states, cities and districts served by VBB's regional public transit system contribute to its financing.

Once the city's infrastructure was stabilized and transit began to function in a cohesive manner following unification, planners soon found a new dilemma: multiple fare systems. Whether traveling on the U-Bahn, switching to the S-Bahn, taking a short ride

on a trolley bus, hoping on a tram, or riding on a ferry, passengers found themselves using multiple tickets with complicated fare structures that differed between each of the service providers. Making connections on multiple modes meant untangling a web of fare systems, cards, or stamps. VBB created a unified fare card system in 1999, allowing people to travel on every mode of local public transit in the region using a single ticket. Fares are collected by the regional agency and re-distributed to the operating agencies depending on monthly ridership.

While the universal fare cards apply to all modes of regional transit in Berlin and Brandenburg, smart card technology is not a part of the equation; VBB has no immediate plans for a touch-and-go card. Instead, VBB is working with cell phone providers to enable passengers to tap cell phones before boarding, pay a full fare, then tap off at their destination with fares adjusted or credited based on the distance they traveled. Fares are charged directly to the person's cell phone bill and credited to VBB. While testing is still underway, VBB is committed to providing efficient and modern services by incorporating innovative technologies into its transit network.

Regional Fare Card: Chicago

The Chicago region has three transit service providers: Metra, Pace, and CTA. While all three agencies use a separate fare collection system, only Pace and CTA have coordinated their fare collection mechanisms to accept each other's cards. People sometimes need to travel outside of CTA, Metra, or Pace respective service areas, and transfers can be difficult, inconvenient and confusing. A regional approach – similar to VBB's structure in Berlin – would be a popular and effective

tool for service providers to encourage transit use. The Regional Transportation Authority (RTA) has recently discussed the modernization of the fare card system on Metra, and has been studying the possibilities of a universal fare card that would be accepted by all three service providers. These are necessary tools to help maximize the effective movement of people throughout the region.



VBB pilot cell phone transit payment system in Berlin's main station.

Multimodal Transportation Centers

Centralized Transportation Modes: Berlin

Berlin's main station, or Hauptbahnhof, was designed to reduce travel times within the region, provide greater transportation choices, and create easy-to-handle transfers between rail lines and different transit modes.

Opened in May 2006, Hauptbahnhof is five stories high and has nearly 756,000 sq. ft. of floor space, making it the largest rail station in Europe. Eight northbound and southbound tracks are located underground, and six eastbound and westbound tracks are located on the first floor. About 1,600 trains serve approximately 300,000 travelers daily. The station also includes 162,000 sq. ft. of retail space occupied by about 80 shops that created approximately 900 new jobs. On the roof, there are 28,800 sq. ft. of solar panels to provide about 2 percent of the station's electricity needs.

Berlin's Hauptbahnhof made intermodal transfers easier and more accessible. Travelers can easily switch from long-distance trains to commuter transit such as the S-Bahn, U-Bahn and various buses. Nearby Tegel and Schoenefeld airports also have frequent bus service to and from the main station, providing easy access to international air travel. There are several businesses, government offices, and tourist attractions within walking distance of Hauptbahnhof, as well as 900 short and long-term parking spaces accessible via the federal highway that tunnels below the station.



Bike parking in front of Berlin's main station.

The benefits of the \$921 million (U.S.) project are significant. Travel time has been reduced on almost every rail line, with some routes saving as much as 40 minutes. At the same time, travelers' options have been increased. The new train routes have 13 percent more stop options than the previous system. The open and attractive space, clean and well-kept facilities, and a variety of amenities have increased comfort for travelers and visitors.

West Loop Transportation Center: Chicago

The West Loop Transportation Center is one of the recommendations in the Chicago Central Area Plan and Chicago Metropolitan Agency for Planning's list of constrained projects in the *GO TO 2040* plan, to improve transfers between intercity rail, high-speed rail, commuter rail, rapid transit, and bus services. This gateway to the Chicago region would finally create integrated multimodal transportation options, and open up multiple economic development opportunities. MPC is partnering with the Chicago Dept. of Transportation to meet the six Livability Principles of the federal Sustainable Communities Partnership by meeting the

goals of the Central Area Plan, preserving and improving the pedestrian environment and "sense of place," and addressing economic development around the station's perimeter.

Traveling City to City: Via High Speed Rail



Intercity Express in Berlin.

The Arlanda Express: Stockholm

Air passengers worldwide have long searched for a fast, reliable connection from metropolitan areas to local airports. Traffic congestion and unpredictable transit options create frustration in getting to and from major airports. Transportation planners in Stockholm found a solution in their high-speed rail system, the Arlanda Express. With 98 percent of trains arriving within two minutes of their scheduled arrival, and four to six trains per hour, passengers enjoy reliable service for only \$30 (U.S.) each way between Stockholm's city center and Arlanda Airport.

The Arlanda Express is remarkable not only because of its speed (it is built to reach a maximum of 125 mph), but because it was Sweden's first major public-private partnership project in more than 100 years. The Swedish Railway Administration managed the construction, while private banks provided the loans with only future fare revenues as collateral. Public leadership bolstered private innovation and created a wildly successful product in a very short

timeframe – the project took only five years to complete, beginning operations in November 1999.

InterCity Express: Berlin

Developed in the 1980s by a German consortium, the high-speed train system run by Deutsche Bahn (DB), known as ICE (InterCity Express), took its current form in 1991. Initial estimates put the cost at \$7 billion (U.S.), but it has required additional investment to finish and expand the system. Every year, approximately 1.9 billion people utilize the DB network's 21,000 miles of track, including ICE's high-speed trains to Cologne, Munich, Frankfurt, Berlin, Hanover, Stuttgart, and 26 other cities. ICE travels to international destinations in Austria, Switzerland, Belgium, and the Netherlands, with future plans for a connection to Paris.

Most ICE trains average about 124 mph, but can travel as fast as 199 mph on some sections. The DB high-speed rail trains have reached a record high of 248 mph. ICE-T trains, called "T" because they tilt, allow for higher speeds on curved tracks while maintaining safety and comfort. They have been recently introduced to various corridors, increasing speed and reducing travel time. Ticket fares are based on miles traveled, with shorter trips being proportionately more costly. For example, the trip from Cologne to Frankfurt, which is 110 miles and takes 58 minutes, costs \$54.42 (U.S.) although there is a discount for advance-purchase tickets and weekend passes.

High-Speed Rail: U.S.A.

Served by two major international airports, the Chicago metropolitan area is a prime candidate for a high-speed rail system linking O'Hare and Midway airports with the city. Its existing rail infrastructure, relatively close proximity to all major Midwestern cities, and approximately \$8 million in federal money, make it an ideal location for the implementation of a successful high-speed rail system as an alternative to highway travel.

CTA's Blue and Orange lines currently provide public transit to and from O'Hare and Midway, respectively, but are far less efficient than Stockholm's Arlanda Express. Berlin's main station provided Peer Exchange delegates with a first-hand look at integrated multimodal connections. Likewise, in Berlin, Hauptbahnhof is a destination itself, with restaurants, shops and services. With easy access to suburban train lines, local transit services, and significant bike parking, Chicago's high-speed rail station should accommodate multiple alternatives for travel needs.

In January 2010, Illinois was awarded \$1.13 billion from the American Recovery and Reinvestment Act (ARRA) to improve the current Chicago-St. Louis-Kansas City corridor. This funding will overhaul tracks, signal systems, and existing Amtrak stations along 570 miles of track to create the region's first higher-speed passenger rail service. Trains will travel at 110 mph, transporting passengers between Chicago and St. Louis in just four hours – 30 percent faster than current service. These much-needed dollars also will dramatically improve metropolitan Chicago's passenger and freight rail network, and help alleviate railway bottlenecks choking the region. A portion of the money will lay the

groundwork for more high-speed rail service in the future by funding complementary planning and design studies. This improved rail service also will entice more people to travel from St. Louis to Chicago. Projections show that over the next 10 years, rail improvements between St. Louis and Chicago will enable about 800,000 new tourists to visit Chicago annually, providing a major boost to the local economy.

Case Study: Tourism Benefits of Higher Speed Rail in Chicago



In April 2010, MPC studied the economic benefits resulting from these new tourists over the first 10 years of rail operation. The analysis looked at how much money new tourists will spend (direct spending), how much money Chicagoans will spend as a result of tourist spending (indirect spending), and how state and local tax revenues will grow as a result:

- \$320 million in direct new tourist spending
- \$510 million in total direct and indirect spending as a result
- \$120 million in new state and local tax revenue
- 5,300 jobs as a result of tourist spending and building of the Englewood flyover bridge near 63rd street
- \$2.6 billion of additional income from job creation

These numbers do not factor in potential economic gains such as new hotels built to serve new tourists, or downtown investments sparked by the development of the West Loop Transportation Center, which will serve as the terminus for fast trains coming to Chicago.

Better rail service also means travelers will choose the train over trips they would have taken by air, bus or car, reducing harmful emissions and gas consumption. MPC examined the environmental impacts and found:

- 9.3 million barrels of gas saved
- .12 million tons of CO₂ saved, the equivalent of half a million roundtrips by car from Chicago to St. Louis

While the \$1.2 billion investment will cut the time it takes to get from Chicago to St. Louis by an hour-and-a-half to four hours. However, building a train line that could support truly high-speed rail would take an entire new track and billions of dollars more. The benefit is it would cut travel time down to two hours, truly linking the economies of both cities, and attract millions more riders.

Healthy Commuting: Storstockholms Lokaltrafik

Stockholm

Buses and trains are not the only modes of public transportation in Stockholm. In 2006, Stockholm launched a large-scale bike sharing program called Storstockholms Lokaltrafik in the city center. For \$4.50 (U.S.) per day or \$36 per season (April through November), residents can use one of the 1,000 bikes located at any of the city's 80 stations. The public-private partnership between the city and Clear Channel Adshel utilizes smart card technology, giving users maximum convenience by not having to deal with cash or credit cards. Additionally, the smart card acts as a protection against theft, as one must swipe the card to release a bike and return it within three hours, or risk the user's card being permanently blocked by the computer system.

Stockholm's bike-share program has been lauded as a strategy to complement congestion pricing initiatives and attract those who might otherwise travel inside the city center by car.

Bicycle Infrastructure: Berlin

Berlin's cycling system has undergone significant recent improvements. In 2000, the Berlin Senate committed to increasing bicycle infrastructure in the city to ensure cyclists would make up 15 percent of the city's total traffic by 2010. In the first year, the Senate invested nearly \$4 million (U.S.) in bike lanes, signals and parking citywide. Since 2000, a total of \$11.5 million (U.S.) has been allocated for bike infrastructure, resulting in an overall reduction in congestion, improved mobility, and increased bicycle tourism. As of 2009, Berlin is nearing its goal: 400,000 daily cyclists represent 12 percent of Berlin's total traffic.

Cyclists in Berlin can travel on 385 miles of designated bike lanes, 62 miles of pedestrian/bike paths, and 31 miles of sidewalk bike lanes; they also have access to 44 miles of bus lanes. At the end of their



Bike rack in Berlin.

rides, they can park at any one of the 3,000 bike parking spaces scattered throughout the city, primarily at train stations for easy connections. Berliners do not even have to own a bike to ride. For only 10 cents (U.S.) per minute, up to about \$11 a day, or \$45 a week, one can call Deutsche Bahn's CallaBike flex system, get an unlock code and location for the nearest available bike, of which CallaBike has 4,500, travel to where he or she needs to go, and then lock it up and leave it for the next person.

Bike Sharing: Chicago

If precautions are taken to ensure the safety and protection of both bicycles and their riders, Chicago, which touts itself as the "best big city for bicycling in North America," could greatly benefit from a large-scale bike sharing program. The city has invested more than \$45 million to create bike lanes, racks and stations. Some CTA stations have bike-accessible facilities, and

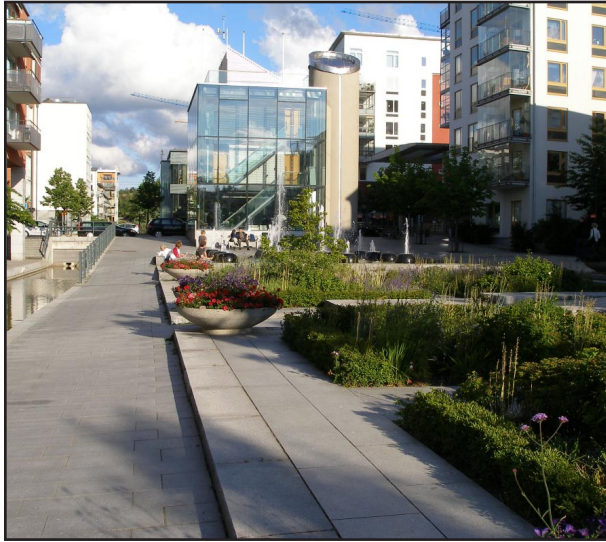
many Metra stations have bike racks.

Mayor Richard M. Daley, a bike enthusiast, announced the launch of a bike-sharing pilot program in Chicago in July 2010. The pilot program, Chicago B-cycle, launched with 100 bikes at six stations. Participants can purchase a daily membership card for \$10 or a 90-day pass to access a bike and lock. Hourly rates also are available: after leaving the bike station, the first half hour is free and each additional half hour is \$2.50. Depending on the success of the program, Chicago B-cycle could be expanded to other key destinations and transit stations throughout the city.

While the B-cycle program is a great first step, the Chicago region still has a long way to go to create an integrated bike network like those in many European cities. We can learn from Berlin's commitment to better bicycle infrastructure and help promote alternative modes of transportation.

In this region, Evanston, Elgin, Homewood, and Naperville are among the cities planning, constructing and expanding bicycle capacity in their communities. A lack of capital dollars limits the extent of transit investments in many places throughout the region, and cycling has been a lower priority in transit planning efforts. Fortunately, bicycle investments are becoming more widely accepted as a key part of a balanced, integrated and sustainable transportation network.

Sustainable Communities



Stockholm's Hammarby Sjöstad.

Transit-Oriented Development: Hammarby Sjöstad, Stockholm

Formerly a brownfield industrial site that was originally designed as an Olympic village for the 2004 Summer Olympics bid, Hammarby Sjöstad is one of Stockholm's largest urban development projects. Its name means "Hammarby Lake City," and it was designed to be one of the world's most environmentally sustainable urban areas. Hammarby Sjöstad includes 9,000 apartments for approximately 20,000 residents, and will deliver nearly 10,000 jobs by 2015.

The street dimensions, block lengths, building heights, density, and usage mix take advantage of water views, parks and sunlight. Restricted building depths, setbacks, balconies and terraces, and green roofs are just a few of the design features required to meet Hammarby Sjöstad's environmental goals. The neighborhood design also incorporated renewable energy, waste reduction, ecological building

materials, and alternative transportation options.

The unique features of Hammarby Sjöstad include a renewable fuel-fired district heating plant that supplies the energy for the community, and the Henriksdal sewage plant where wastewater is treated. The recovered heat is used for heating houses and the silt is converted into biogas. Surface water is treated locally to avoid overloading the sewage works. Combustible waste in Hammarby Sjöstad is recycled as heat, and food waste is composted into soil.

There has been substantial investment in public transportation to reduce car usage. Besides the bike lanes, buses and Tvärbanan, the light rail line that forms a central link with four stops along the main boulevard through Hammarby Sjöstad, there is a ferry across Lake Hammarby Sjö from early morning until midnight. There also is a carpool system available to local residents. Abundant public space along the lakefront and a variety of services, ranging from restaurants to dry cleaning, make Hammarby Sjöstad a pioneer in inner-city redevelopment.

Transit-Oriented Development: Chicago

Stockholm's Hammarby Sjöstad model of environmental sustainability could be replicated in a number of Chicago communities. There are many similarities between the Hammarby Sjöstad site and various brownfield sites throughout the city, as well as redevelopment opportunities such as Chicago Housing Authority's Lathrop Homes.

CTA train stations on multiple transit lines are emerging as anchors in redevelopment plans for established communities. A new Green Line station at Damen Avenue and Lake Street on the Near West Side would provide a focal point for the West Haven area

consistent with federal Livability Principles. As the city looks at revitalizing the Green Line's 43rd and 47th Street stations on the South Side, mixed-use transit-oriented development along the corridor would provide economic development opportunities and help revitalize the historic Bronzeville community. Modernization and extension of the Red Line from 95th to 130th streets would provide residents with an alternative, more sustainable means of travel. By providing the building blocks of a holistic and comprehensive community, residents will have an opportunity to shape the future of thriving, walkable and complete neighborhoods. Integrating businesses with housing and transit not only provides a healthier, more sustainable community, but helps Chicago achieve its climate change goals. The Hammarby Sjöstad model shows ecologically friendly development does not require dramatic lifestyle changes and, in fact, can create a high quality of life for city dwellers.

Case Study: U.S. Steel Southworks

On Chicago's South Side, a new planned development is in the works to turn the abandoned U.S. Steel Southworks site into a thriving mixed-use community. Once home to the Southworks steel mill, this 5000-acre site sits on slag, building foundations, crushed concrete, and industrial debris. However, this proposed development is ideally located within 10 miles of downtown Chicago, and the last available site in the city on the shores of Lake Michigan.

An initial challenge will be to turn this area into usable residential land and establish infrastructure, including streets, curbs, gutters and sewers. The construction of this \$4 billion project is to be done in phases over 25 to 40 years, and is slated to begin in early 2013. The \$397 million first phase, partially funded through \$96 million in Tax Increment Financing (TIF) money, will encompass 87 acres in the northwest portion of the site, and provide 800,000 sq. ft. of retail and 848 new residences including 136 affordable townhomes.

The final vision for the project includes 13,575 single family homes and high-rise units intermixed with almost 18 million sq. ft. of commercial space, and blanketed by 125 acres of landscaped open space, parks, bike paths, and a 1,500 boat slip marina. The development team has deeded more than 100 acres of lakeshore to the Chicago Park District, to continue one lakefront park system.

The redevelopment known as Southworks Lakeside is planned to be built as a LEED-ND certified community, an MPC priority. It will be located within a five-minute walk of two Metra stations and numerous CTA bus lines. An elementary school is already on site, and plans call for a new high school as well. Southworks Lakeside also is environmentally ambitious, with a stormwater management plan to return 95 percent of the site's stormwater to Lake Michigan, and the potential to develop energy-producing windmills on an existing pier in the lake.

Final Thoughts

Applied learnings from the MPC-Bombardier Peer Exchanges advance the research and evaluation of transportation options and land use planning for Chicago and the surrounding region. Stockholm and Berlin demonstrated best practices in station development opportunities around high speed rail, a best context for applying congestion pricing to better manage demand, and the importance of quality multimodal transportation options. The Chicago region can continue to learn from measures tested in other parts of the world, as we experiment with strategies to create a more competitive, equitable and sustainable region.

For more information: Stockholm, Sweden

- Trial Implementation of a Congestion Tax in Stockholm
www.stockholmsforsoket.se/templates/page.aspx?id=2432
- Hammarby Sjostad
www.hammarbysjostad.se/inenglish/pdf/HS_miljo_bok_eng_ny.pdf
- Arlanda Express: High Speed Rail in Stockholm
www.arlandaexpress.com/start.aspx
- Trafikverket – Swedish Transport Administration
www.trafikverket.se/Om-Trafikverket/Spraksida/English-Engelska/
- Stockholm City Bikes
www.citybikes.se/en/

Berlin, Germany

- Transit Profile: Berlin – TCRP Report
onlinepubs.trb.org/Onlinepubs/tcrp/tcrp_rrd_31.pdf
- About the VBB
www.urbansustrans.cn/info_detail_e.asp?id=1273
- Berlin by Bike
www.berlin-tourist-information.de/english/sightseeing/e_si_stadterkundungen_fahrrad.php
- DB Bahn – Trains in Germany
www.bahn.com/i/view/USA/en/trains/index.shtml
- Intercity Express High Speed Rail Network
www.railway-technology.com/projects/germany/
- Germany's Truck Tolling
www.hhh.umn.edu/centers/slp/vp/vp_org/pdf/Germany_Truck_Tolls_Jan07.pdf
- Berlin Hauptbahnhof Main Station
www.railway-technology.com/projects/berlin-hauptbahnhof/

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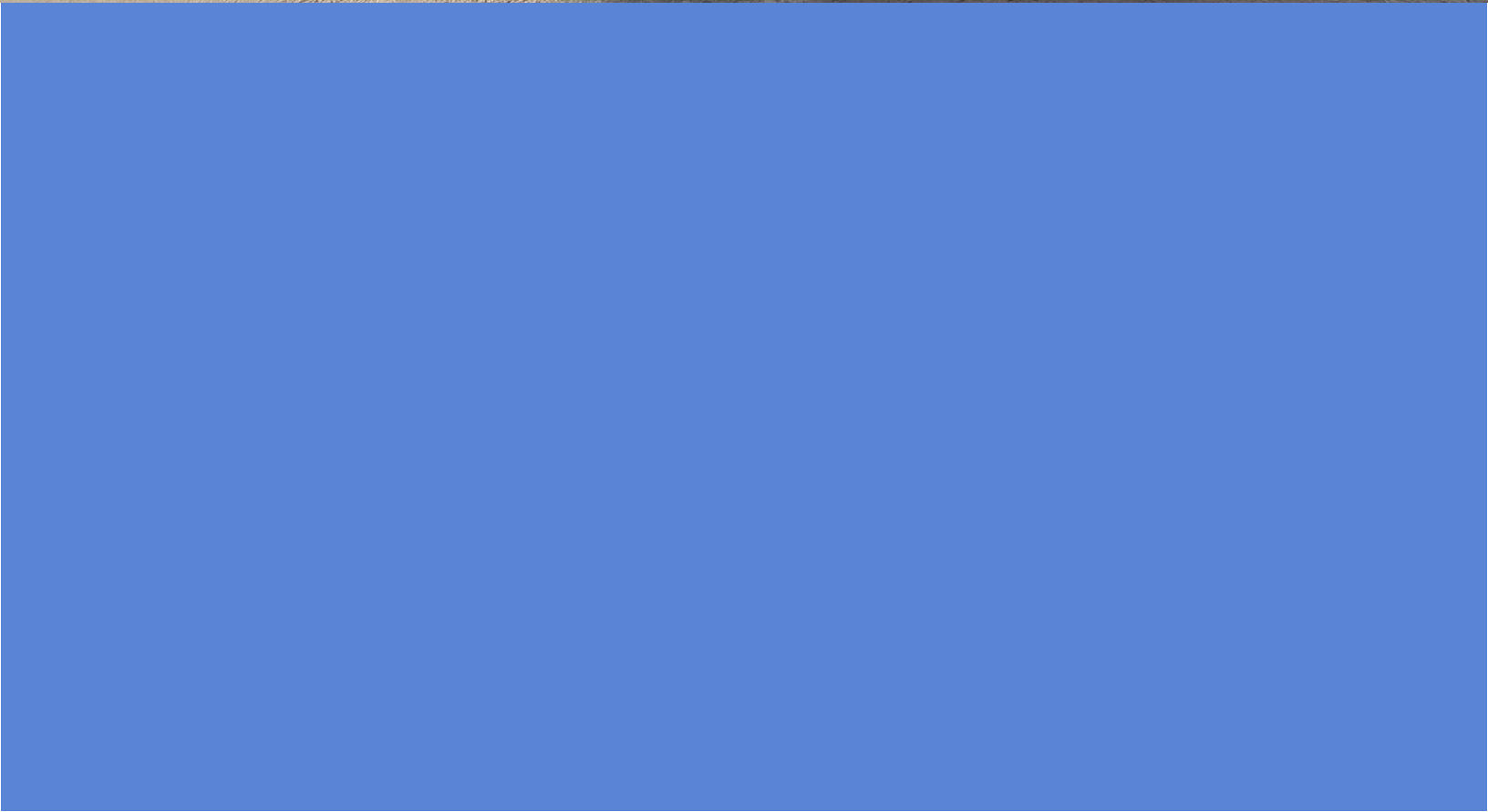
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Our Mission

Since 1934, the Metropolitan Planning Council (MPC) has been dedicated to shaping a more sustainable and prosperous greater Chicago region. As an independent, nonprofit, nonpartisan organization, MPC serves communities and residents by developing, promoting and implementing solutions for sound regional growth.



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