

LYMMO Bus Rapid Transit Downtown Circulator

Purpose:

- LYNX and the City of Orlando's Downtown Development Board and Community Redevelopment Agency created LYMMO, using transit to create capacity for downtown transportation that was Fast, Fun, Frequent, and Free
- Connect remote parking at outskirts of downtown with major employers in the core so those who come downtown park their cars once and make their trips on transit.

Summary:

- History
 - Previous Meter Eater and FreeBee services were downtown bus circulators operating in mixed traffic, sometimes with a nominal fare. Dates back to 1983.
 - OSCAR (Orlando Streetcar) project attempted to move to high-capacity, fixed-guideway transit downtown. The "best bus" option from OSCAR was selected and became Bus Rapid Transit. LYMMO was born.
- Service started August 1997.
- Project cost \$21 million (50% federal, 25% state, 25% local)
- Annual operating expenses are approximately \$1.2 million, paid largely from City of Orlando's parking revenues.
- LYMMO includes Intelligent Transportation Systems elements: transponders to track bus locations and timepoints, kiosks at stations, and signal priority.
 - Since implementation, Transit Television Network was tested on LYMMO, and is now on buses all over the world. TTN still runs on LYMMO buses and was expanded to LYMMO kiosks at the stations.
- LYMMO is distinguished from other local transit by:
 - Separate lane including extensive signage and pavement painting
 - Specialized paving and hardscape
 - Extensive landscaping features
 - Specialized paint scheme and shelters
 - Separate logo for signs at stops
 - Smaller, low-floor vehicles run on Compressed Natural Gas (10)
 - Free service
 - 3-mile loop
 - Headways are 4 minutes peak, 10 minutes off-peak, 15 minutes off-off-peak

Major Milestones:

- 1989 – City purchases vintage streetcar named OSCAR (Orlando Street Car) to generate interest in downtown transit.
- 1990-91 – Concept development, charrette, scope, fund studies, begin NEPA process.
- 1992 – Public involvement includes hearings, newsletters, workshops, storefront. Various committees and teams begin meeting to guide the project – business, citizens, agencies.
- 1994 – Project sponsors accept FTA's recommendation to switch from rail to "best bus" alternative using Bus Rapid Transit technology. Additional public involvement ensues.
- 1996 – LYMMO construction office opens to coordinate with contractors and also provide daily updates to impacted business owners.
- 1997 – Commenced service in August.
- 1997-2004 – Ridership continues to exceed projections (60,000/mo. at inception, averaging 90,000/mo over time.)

Executive Summary



The city of Orlando has taken an innovative approach to downtown transit and is home to a one-of-a-kind new Bus Rapid Transit (BRT) system named LYMMO. LYMMO is a \$21 million joint funded project between the Federal Transit Administration (FTA), the Central Florida Regional Transportation Authority (appropriately named LYNX), City of Orlando Downtown Development Board (DDB), Community Redevelopment Agency (CRA) and the city parking system.

LYMMO runs on a three mile, dedicated bus lane located conveniently on a north-south axis through the center of downtown Orlando. The route extends from the Centroplex Garage at the Orlando Arena (a major sports and convention facility at its northern terminus) to city hall and the future location of a planned performing arts facility.

Ten LYMMO buses run the eighteen-minute circuit and service eleven stations and eight stops. LYMMO runs every four minutes during the day and at ten-minute intervals during the evening hours.

Prior to the opening date, LYMMO was promoted by a huge public involvement process and extensive marketing. Since its opening in 1997, the project has been well received and has exceeded earlier estimated ridership projections.

Products and services, especially successful ones, require extensive and ongoing marketing support. The name or message of a product constantly has to be retold. In LYMMO's case little has been done to promote the system since the original marketing. This media outreach plan is being prepared to give LYNX a roadmap for marketing and imaging LYMMO. At the same time, LYNX is revisiting its image and means of identifying itself to the public. This is occurring through the nomenclature process, whereby HHI is assisting LYNX in evaluating its current imaging, conduits for the message, researching other communities and developing a new, more identifiable graphic language.

History and Project Background

Since LYMMO has had an interesting genesis, and its successes are attributable to a number of different parties, no concise history of the project has yet been prepared.

Information on this one-of-a-kind Bus Rapid Transit (BRT) is sought after by public officials and transit agencies around the world. Many of these agencies are looking to create similar systems and are interested in the project process from start to finish.

One of the intentions is to tell this story in a concise and accurate manner. Another goal of this report is to provide technically correct information on the process so that others may experience successes in their communities.

A brief project history has been provided and is followed by information specific to BRT technology. Good teamwork and sound management also are a part of the formula. These shall be discussed in further detail.

Provided at the end of this text is an overview of the project management practices used, a list of public processes and an abbreviated timeline highlighting major events.



History

LYMMO was not Orlando's first attempt at a downtown circulator. Orlando determined in the early 1980s that downtown revitalization was largely driven by adequate infrastructure development, including parking. With this the Downtown Development Board (DDB) and Community Redevelopment Agency (CRA), both agencies charged with local redevelopment, created a policy framework to encourage parking garage construction at the periphery of the historic downtown core where arterial access was better and land was cheaper. This was accomplished jointly with the city's focus on parking garage construction and the adoption of limits on by private downtown parking. These policy decisions, in combination with enhanced road capacity, resulted in increases in development capacity and improved pedestrian access through enlarged and improved sidewalks.

With an early focus on downtown transit, the DDB and CRA began partnering with LYNX and developed two generations of downtown circulators, first the Meter Eater and then the FreeBee.

The Meter Eater project featured five buses moving people from the downtown parking garages to their destinations for a 25¢ charge. The community immediately embraced the project and the success encouraged the creation of an eight full-scale bus, second-generation system. This system was appropriately called the FreeBee because of the decision not to charge fares. To ease access and encourage ridership, the city began funding the system with parking garage revenues. LYMMO's operations are funded through the proceeds of the downtown parking system which relies on revenues from approximately 9,000 spaces.

Since the MeterEater trolleys were replaced with more traditional buses, a major challenge was to catch the riders' attention. To do this, the buses were painted with whimsical outdoor scenes. This system grew until 1994 when the original buses were replaced with smaller, newer, more efficient models.



FreeBee ridership saw steady increases over its life of operation and passenger trips were 1,750 each day. Because of its popularity, the city and LYNX began exploring the next levels of transit. During the preliminary planning phases, the gamut of transit options available were evaluated.

The city even considered the potential use of electric streetcars. A vintage streetcar was purchased by the city and used as a promotional tool for the project. The new trolley was named OSCAR (Orlando Street Car). Early stages of the alternatives analysis included designs for both OSCAR and a best bus alternative.

After extensive planning, discussions with the FDOT, coordination with the FTA and numerous public meetings, the preferred route and transit technology was selected. A best bus alternative was selected as the ideal option for downtown Orlando. The LYMMO project was conceived and approved by the Orlando City Council in 1994. LYMMO was to be the first of its kind BRT to operate downtown in its own dedicated lanes. Design of the project quickly ensued and project construction began downtown in April 1996.

Like its predecessors, the bus system was to be fun, fast, frequent and free. LYMMO set the groundwork for the regional transportation system hub with its ability to link to the downtown bus station and a future light rail system. Its primary goal was to help downtowners and out of town visitors park their cars once and then get around downtown by transit or as pedestrians for other daily trips.



System and Vehicle Type

Concerned about maintaining good air quality, LYNX, the DDB and CRA determined the most appropriate vehicle type would utilize compressed natural gas (CNG), which is environmentally friendly. CNG releases fewer emissions into the atmosphere. The choice of CNG required LYNX to construct a special state of the art fueling facility housed at its maintenance complex.

Thirty passenger, low floor buses were selected as the preferred vehicle to bridge the grade transitions with limited need for special equipment at bus stops. Ten buses were initially purchased for the system. The buses are slightly wider and shorter than standard buses. Lower ground design makes buses easily accessible for persons with physical challenges. The buses also contain a retractable ramp for wheelchairs.

In addition to these decisions, the construction of exclusive lanes was deemed necessary to allow free movement of the buses through traffic. With this dedicated lane system and its built in requirement of separation, safety increased. The system also includes contra-flow lanes within the existing city street system with buses running directly opposite extant traffic circulation patterns.

To facilitate movement through downtown and ease the access of patrons to the system, Intelligent Transportation Systems (ITS) technology including a sophisticated computer system was designed to track LYMMO bus movements by sensors embedded in the street. The transponders and sensors also help to synchronize and preempt traffic signals so the buses get priority of movement throughout downtown. When the bus passes over a sensor, it transponds a signal to the computer which in turn marks the location on the kiosk maps. Transponders also trigger blinking lights embedded in the pavement at bus stations and activate audio systems in eleven kiosks located throughout the loop.



Design Beautification

With the need for right-of-way modification to accommodate the dedicated lanes, the city undertook extensive landscaping improvements and launched a coordinated design program with a focus on integrating the landscaping, street furnishings and bus amenities.

Magnolia Avenue was the recipient of the greatest level of beautification. The avenue was transformed from an urban concrete wasteland to a multi-functional tropical downtown garden within a period of eighteen months. Landscaping improvements included special paving treatments and lush plantings. The landscape featured majestic palm trees, custom designed light poles, 381 flower packed planters (at grade and in planter columns) and specially designed banner poles to complement the theme of the buses. The banner poles also offer the ability for additional event promotion within downtown.

The design consultants for the streetscape project, HHI created a unique shelter which was eye catching and solved a number of the client's problems such as: protection from sun and rain, hurricane safe, vandal proof and short term seating.

To complement the corridor, the concept of theming the buses was passed down from the earlier FreeBee system. A promotional campaign "Moveum of Art" was developed with the Orlando Museum of Art to theme the buses as mobile works of art. The idea had its genesis in the need to bring art to the public and the city's requirement that capital projects must spend part of their budgets on public art.

Since the bus graphics cover the entire vehicle including the windows, special Contravision technologies were used to display the images while maintaining visibility through the windows. The images are composed of hundreds of small dots that permit the graphic to flow seamlessly across windows while still allowing passenger and driver visibility. To keep the displays on the LYMMO and LYNX buses up to date, a special bus painting facility was constructed and used for both bus systems.

Operations and Maintenance

Since the DDB and CRA are not transit operators, it was determined that LYNX would be the system's operator. LYNX operates these downtown buses on a \$1.2 million dollar annual budget, which presently is funded by revenues from the downtown parking system which consists of about 9,000 structured parking spaces.

Ridership

Since the first month of operation, the city and LYNX have seen substantial, steady increases in ridership. Average weekday ridership has increased from 2,660 in August 1997 to 4,509 in March of 1999. This change amounts to approximately a 58% increase in daily ridership over a 20-month period. Overall monthly ridership, including Saturday and Sunday averages, has increased from 61,150 in August of 1997 to 112,825 in March of 1999. This amounts to a 54% overall increase in the same 20-month period. LYMMO reached 2 million riders in July 1999 less than two years after beginning operations. That's an average of over one million riders per year.



Public Process

As previously mentioned, downtown Orlando needed LYMMO to enhance quality of the downtown environment and reduction of traffic and parking volumes in the core. A major need for downtown transit was driven by the city's desire to expand the growth in the downtown core. According to state growth management regulations, new development must be concurrent with the infrastructure. This infrastructure includes roadway systems and according to the Downtown Development of Regional Impact (downtown's concurrency management plan), many of the downtown's streets are inadequately sized to service future traffic. Providing transit was a stipulation of the state's approval for additional development capacity downtown.

A brief outline of the process from inception to final construction is as follows. Specific major milestones may be discussed in more detail in the abbreviated timeline.

Project Development Process

In rough terms, this process may also be applied to the project timeline. For the sake of understanding the Orlando example, major planning activity milestones, setting the stage for the project, have also been provided

Opportunities for public input were provided at critical stages throughout the process. Numerous public involvement tools were employed and included: committee opportunities, workshops, newsletters and many others.

Determination of Vision and Need

Vision for downtown transit was originally supported by the Growth Management Plans of 1985 and 1991. The threads of the downtown transit concept were then laced in the downtown DRI and the CRA Plan Updates in 1991. Transit, new development and parking are inextricably linked to land use and the policies in each plan support each other.

In order to proceed in realizing that vision, a strong project management component was developed. This was later supported by good planning and a strong implementation team.

Project Management Tools

The city of Orlando, Downtown Development Board and Community Redevelopment Agency determined that the administration of this sizeable project would take a well organized approach. Key to this approach was the designation of a client representative, project manager and creation of appropriate committees to steer the project in a direction that was acceptable to the community.

Client Representative

Early in the process it was determined that the executive director of the Downtown Development Board and Community Redevelopment Agency, Thomas R. Kohler, would act as the client representative. His charge, among numerous other duties, was to secure the project management consultant, coordinate public involvement, secure board approvals and oversee coordination of city department and financial issues.

Project Manager

In the early development stages of the project, the DDB/CRA determined that it was necessary to have a seasoned transit professional with a track record and contacts necessary to move the project along. A search produced Charlier and Associates as the ideal company to undertake the numerous early development stages of the project. Activities included project coordination, securing federal funding for preliminary engineering stages of the project, hiring consultants necessary to undertake feasibility analysis, market analysis, environmental assessments, preliminary routes, selection of alternatives, beautification, determine projections and so forth.

The project manager set up several levels of project coordination committees to assist in project development, scheduling, citizen participation, design and other areas as necessary.



Committees and Groups

Project Management Group

The Project Management Group (PMG) was created to oversee all activities of the client and project manager. The group coordinated activities of all services agreements and also coordinated other activities required by agencies and other groups as required. The group included the client representative, project manager, major city, county, regional and state agency players and met at regular intervals throughout the process. Some of the consultants used in the early stages of the project included the following.

Project Management Planning - Charlier and Associates

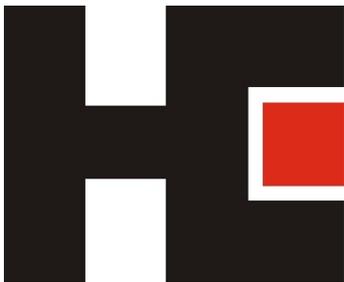
Planning Team

BRW (prime)
Vanasse, Hangen , Brustlin, Inc.
Lomorado Group
KPMG Peat Marwick
Manuel Padron and Associates
Real Estate Research Consultants, Inc.



Design Team

GAI Consultants-Southeast, Inc. (prime)
LTK Engineering Services
LKC Consulting Services
PSG Corrositon Engineering, Inc.
Metha and Associates
HHI
Demuth, Slick Consultants, Ltd.
Shaughnessy Hart & Associates
ITEC Productions
Project for Public Spaces., Inc.
Florida Department of Transportation



Project Steering Committee

The Project Steering Committee (PSC) was developed primarily to handle day to day coordination activities related to the project as it proceeded from the vision stage into final engineering and construction. This group was primarily composed of second tier managers from city, county, state and regional agencies. Their roles were primarily limited to concept review and coordination with other facility and service issues.

Citizens Advisory Committee

The Citizens Advisory Committee (CAC) met on a regular basis to review and provide comments on early conceptual designs, vehicle choices, landscaping, maintenance of traffic, maintenance of business issues and construction coordination. This group was composed of property owners, area residents, business persons, church representatives and representatives of other affected constituencies.

Public Involvement



Abbreviated Timeline

To help other cities understand the planning framework of Orlando as well as the time and effort put into this project, an abbreviated schedule of milestones is provided.



1970s

1972 Orlando creates by referendum a special taxing district for the downtown to encourage redevelopment planning and programming. The special tax district administration is assigned to the Downtown Development Board and is funded entirely by a 1 mil ad valorem tax. Monies are primarily used for planning and programming.

1980s

1982 The DDB works with the city in the creation of a downtown Community Redevelopment Area (CRA). CRA allows the capture of future tax increments for a 30 year period to be used for redevelopment projects and infrastructure improvements.

First CRA Plan is produced and policies supporting downtown transit are included in the plan.

1983 Creation of the Meter Eater Trolley. A vintage trolley system to ferry downtown employees to peripheral parking systems for the small fee of 25¢.

1984 City of Orlando adopts its first Growth Management Plan which has policies regarding the provision of downtown transit and its subsequent impacts on development and infrastructure.

Meter Eater buses sold and FreeBee system implemented 25¢ fee dropped and replaced with revenues from the city's parking system. FreeBee buses ordered and painted with themes related to Florida's fauna and flora.

1989 Downtown Development of Regional Impact completed as city's requirement to have infrastructure concurrent with future development. Also, the CRA Plan update was completed and supports creation of a more permanent downtown circulator. Policies related to the relocation of Magnolia Avenue (one-way north) traffic to Rosalind Avenue were put into place.

Charlier and Associates hired to put preliminary project team together.

CRA purchases a vintage streetcar to generate a higher profile for downtown transit. Names streetcar OSCAR (Orlando Street Car).

1990s

November 1990

Project team (PT) assembled including major city, county, regional and state agency players holds first meeting to discuss conceptual development issues and preliminary schedules. Meets at regular intervals throughout the process to guide all other committee, consultant and funding activities.

Spring 1991

American Institute of Architects (AIA) charette on potential downtown transit routes, surrounding development and other issues. Assisted the DDB and CRA in defining system design issues and developing scope.

Magnolia and Rosalind realignment takes place to free up Magnolia Avenue for future transit connector.

April 1991

Project Management Plan unveiled and presentation to UMTA for preliminary engineering seed grant monies for transit, urban design and engineering.

June 1991

FDOT study on alternatives analysis, environmental assessment, scopes schedules, public process, Finding of No Significant Impact (FONSI) and other issues.

March 1992

CSX Transportation Issues report, Chariler and Associates produced a report covering rail interface issues and related CSX costs.

GAI Consultants Southeast under contract for concept engineering. HHI under contract for conceptual design.

First Project Steering Committee (PSC) meeting.

OSCAR Storefront opens on Pine Street to give the project public presence.

April 1992

First project newsletter appears announcing scoping meeting.

First public hearing on project scope, preliminary routes and vehicle choices.

First Design Review Team (DRT) meeting held to kickoff urban design issues, facility design, pedestrian issues and vehicle concepts.

PSC meeting on preliminary alternative alignments, vehicle technology and design concepts.

May 1992

Vehicle Platform Issues report on themeing and low-level boarding completed by HHI.

OSCAR Support Systems report issued by GAI, HHI, LTK

Vehicle Procurement Report issued recommending procurement type and path.

Public workshop on routes and technologies.

Newsletter 2 issued.

PMG, DRT and PSC team meetings on environmental assessment drafts, FTA requirements, design, funding alignments, procurement and other status reports and public workshops.





June 1992

Economic Impact Analysis report issued by Real Estate Research Consultants, Inc. Long-term impacts of the system outweigh any negative short-term construction impacts.

July 1992

Business Impact and Property Survey issued.

October 1992

Business Impact and Property Survey results released. Findings were that the concept was well received as a good solution to downtown parking and circulation issues.

October 1993

FTA to authorize city to proceed with preliminary engineering.

August 1994

PMG meeting to discuss status, design, identity design and hierarchy of stops.

PE phase begins for landscape architecture and urban design.

September 1994

PMG to discuss early ridership projections and further define route alternatives.

PSC to review environmental impact statement

PSC accepts FTA's recommendation to switch to "best bus"/BRT alternative.

Citizen Advisory Committee (CAC) meeting to unveil and discuss the public involvement plan.

October 1994

PMG meeting on traffic operations based on various route alignments. Bus design criteria established.

November 1994

Public involvement process begins. Public Information Principal (main project contact person for construction) is identified from DDB staff. Also in charge of marketing, promotions and public interface with the contractor and the public.

PMG meeting on FDOT and CSX concerns.

January 1995

City council to approve rail to bus change.

PMG meeting on landscape and streetscape design. New system name LYMMO presented.

PC and CAC meetings on urban design and final route alternatives.

March 1995

Workshop on operations, final traffic simulations and modeling of alternatives.

Station/stop design meeting.





December 1995

CAC meeting final revisions to southern loop option. Contraflow lane option on Orange Avenue selected as preferred alternative.

Spring 1996

Final engineering completed and construction bid phase commences.

Hubbard Construction Company selected as contractor of record.

April 1996

Open LYMMO construction office.

July 4, 1997

Construction competition and dedication.



Construction Issues

Although the Magnolia Avenue corridor is largely institutional, there were also a small number of retail businesses that could have been highly negatively impacted by construction. To reduce the effects of this impact took a well managed approach which included the essential elements of: project management, project information, feedback from the local businesses/property owners and good construction management.

Project Management

The Project Information Principal (PIP) previously mentioned was given the charge to maintain good relations between the city, client agencies, public and the contractor. This was an enormous task requiring numerous meetings with various interest groups. Another responsibility of the PIP was the dissemination of information on the project status. This is discussed in more detail in the following section.

Project Information

Good project information strategy was necessary to have a project with a successful outcome. The project information strategy was multifaceted and included: updates to community groups through special presentations, the distribution of newsletter/fax updates and the creation of a newspaper insert (special section) for the dedication.

Newsletters included timely updates on construction (including specific, parking, traffic and loading information) couponing and the promotion of other specials at no cost to the business owners in the corridor. The DDB and CRA were active in project information and marketing, spending approximately ____ on outreach efforts. The special insert for the dedication was financed through the sale of advertisements to the downtown merchants, therefore no cost was incurred by the agencies.

Feedback

Prior to construction the DDB and CRA surveyed businesses, property owners and others in the corridor to determine the issues faced by each. Some areas discussed were temporary access to business, loss of on-street parking and the effects of duration of construction.

Construction

Because construction had the potential to negatively impact business, special attention was paid to phasing the construction. The project was broken down into five segments, each only several blocks. The most critical segments of the construction, those involving retail businesses, were handled during typically slow retail season of summer. Other less critical segments were fit into the schedule accordingly. Also to minimize impacts, construction for each segment was kept to a three to four month schedule with noisy or dirty tasks occurring largely after business hours. Critical utility work was coordinated for evening hours to minimize the impacts on business interruption. Materials loading and unloading were also scheduled as minimize interference with daytime traffic. A detailed maintenance of traffic plan accompanied the construction documents and included special temporary pedestrian walkways and directional signing to local businesses. Special temporary parking arrangements were made for area business as required.



List of Acronyms

American Institute of Architects (AIA)

American Public Transit Association (APTA)

Bus Rapid Transit (BRT)

Citizens Advisory Committee (CAC)

Central Florida Regional Transportation Authority (LYNX)

Compressed Natural Gas (CNG)

Florida Department of Transportation (FDOT)

Federal Transit Administration (FTA)

Intelligent Transportation Systems (ITS)

? (NETSYM)

OSCAR (Orlando Street Car)

Preliminary Engineering (PE)

Project Management Group (PMG)

Project Steering Committee (PSC)

Urban Mass Transit Authority (UMTA)



American Public Transit Association (APTA) Conference

You can experience LYMMO first hand! On October 9th – 14th, LYNX is hosting the American Public Transit Association’s International Bus Operator’s and Maintenance Rodeo and the 1999 Annual Conference and Expo. A special tour on LYMMO, the bus painting facility and the CNG fueling station will be available to conference attendees. Last year’s conference in New York was attended by almost 3,000 people. With Orlando’s weather, beautiful environment and multitude of hotels and attractions, conference promoters are anticipating an increase in attendees. This year’s theme is “Transit Makes a Difference” and will address how transit can make cities more livable.

***For more information on LYMMO please contact
LYNX at (407) 841-8240.***