

Executive Summary

The *Transit Development Plan for the City of Lincoln* includes an analysis of existing service demand and an assessment of service utilization for StarTran services leading to recommendations for potential modifications or restructuring. The Lincoln/Lancaster County Planning Department, in conjunction with StarTran, has retained a team led by Urbitran Associates for this effort. The study was comprised of a review of transit service characteristics and demographic features in the Lincoln/Lancaster County region, and a presentation and analysis of the StarTran route network. These elements, combined with observations collected through consultant fieldwork and discussions with StarTran and City/County planning staff, as well as local stakeholders and the public, allowed the consultant team to develop a preliminary list of service issues. These service issues, in turn, were explored in greater detail, leading to the development of specific service improvement alternatives.

Socio-Economic and Land Use Characteristics

The City of Lincoln is located in southeast Nebraska in Lancaster County. The city is located approximately 50 miles southwest of Omaha via Interstate 80 and US Highway 77 in the Platte River Valley. Lincoln's population makes up 90% of the population in Lancaster County. Lincoln is both the capital of Nebraska and the government center for Lancaster County and is also the second largest metropolitan area in the state, second only to Omaha. StarTran is the City of Lincoln's transit provider and operates fixed route and Handi-Van service throughout the city. Figure E-1 on page 3 is an overview map of the StarTran service area.

Lincoln has an estimated population of 236,146 (2004 Census Bureau estimate) and is home to the University of Nebraska-Lincoln (UNL). For the 2005-2006 school year, UNL reported having 21,675 students and 7,503 employees (UNL 2005-2006 Factbook).

Data collected from the 2000 United States Census, the 2000 Census Transportation Planning Package, the United States Census Bureau, the City of Lincoln, the 2025 Lincoln City/Lancaster County Comprehensive Plan, and the University of Nebraska 2005-06 Factbook were used to prepare the socio-economic and land use characteristics of the Lincoln area. This demographic analysis is used to create the 'transit score' map which is presented on Figure E-1. The transit score is a relative measure of how successful a fixed route transit system is expected to be in a particular region. Used in conjunction with a congruency analysis of major transit generators, the transit score can be used to evaluate existing service as well as to identify areas of potential demand. Transit-oriented variables used for the analysis include:

- Population Density
- Percentage of the Population under the age of 18
- Percentage of the Population over the age of 65
- Median Household Income
- Per Capita Income
- Percentage of the Population Living Below the Poverty Level
- Percentage of Zero-Car Households

Other considerations include:

- Employment
- Unemployment
- Land Use
- Major Generators
- Future Growth and Development

Service Overview

StarTran provides bus and paratransit service throughout the City of Lincoln, and operates as a division of the city government. StarTran operates a total of 21 regular bus routes on weekdays, which includes the downtown Star Shuttle circulator and 12 routes on Saturdays. Sunday service is not provided. Americans with Disabilities Act (ADA) paratransit service is provided through a StarTran service called Handi-Van, which offers door-to-door service throughout the City of Lincoln. StarTran charges a base cash fare of \$1.25 with unlimited ride monthly passports and 20 ride tickets available for a discount.

Capital Resources

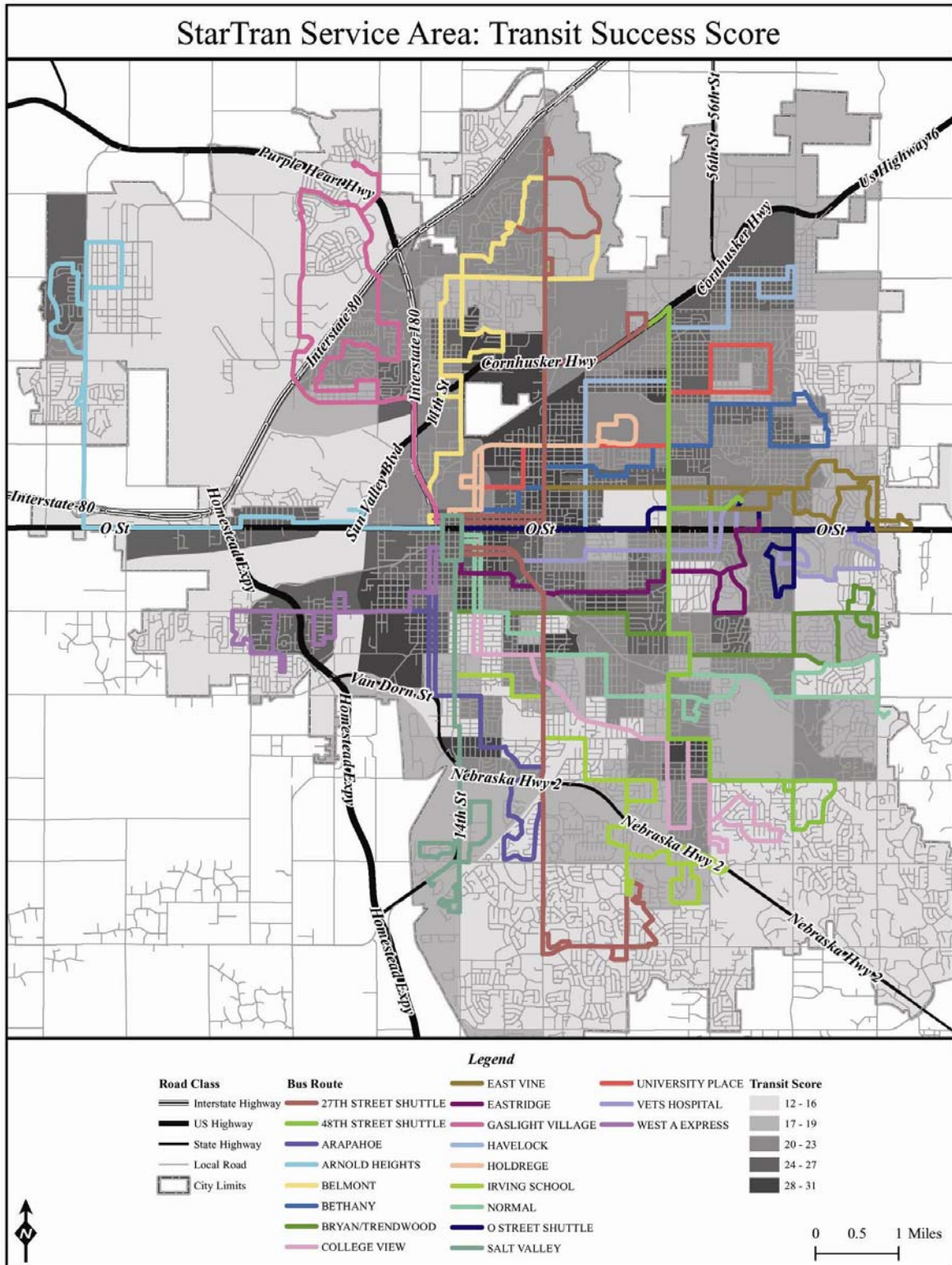
The capital resources owned by StarTran include buses, paratransit vans, bus stops, shelters, supervisory and maintenance vehicles, and property. StarTran currently has 61 bus shelters throughout Lincoln. The shelters are located at stop locations where there is significant boarding activity. The vehicle fleet includes buses used in revenue service, paratransit vans that are operated directly by Handi-Van and brokerage service that is contracted to private providers and non-revenue vehicles that are used for supervisory personnel and maintenance purposes. The peak requirement for fixed route services is 50 buses while the full fleet size is 60 buses, which results in a spare ratio of 20%. There are a total of 9 vehicles available for Handi-Van paratransit service.

Peer Group and Trend Analyses

The peer group analysis compares StarTran to similar systems. A description of the peer systems and the method for choosing peers are discussed in Chapter 3. Data for the peer analyses herein were taken from the 2004 National Transit Database (NTD) summary reports for fixed route service, the last full year for which data on all the peer systems is available. The trend analysis, to determine how the performance of StarTran has changed over time versus changes in the peer group, compares 2004 data with the data from the 1999 NTD reports.

StarTran performs well in terms of its financial efficiency, e.g. its use of resources to create miles and hours of service, but less well when it comes to the utilization of the service effectiveness as measured by passenger trips per mile or hour. The system does accrue significantly higher than average revenues per passenger to offset the low ridership, producing a better than average farebox recovery rate than its peers.

Figure E-1: Transit Success Score Map



Overall, the data suggest that it is the allocation of the resources and not the production of service that is critical to improving the StarTran program. This suggests a great deal of focus on where the routes operate, how they operate, and when they operate, which in turn links to some of the concerns already expressed during public sessions regarding where and when the service is operating, the directness of the network, and other factors related to the utility of the program to the community.

The trend from 1999-2004 for StarTran and its peers are not terribly dissimilar except that StarTran achieved much of its performance by managing costs better than its peers while seeing a larger than average drop in riders. StarTran management and operations are run cost effectively but with limited resources in comparison to its peers. These limited resources and the manner in which they are provided need to be the focus for the project to determine how best to allocate hours and miles of service to stem ridership losses, to create new and improved services, and increase the utility of the system for the entire community.

Public Outreach

The *StarTran Transit Development Plan* includes an extensive community participation program designed to elicit input from members of the general public, current users of the system, community leaders, key policy decision makers and other transportation stakeholders in Lincoln. The public outreach efforts include such activities as drop-in sessions, stakeholder interviews, open houses, and a section on the City of Lincoln’s website for members of the public to leave comments. A 13 member Advisory Committee consisting of all 7 members of the StarTran Advisory Board members and 6 other community representatives met 6 times throughout the TDP process to help guide the process and direct the findings. Other outreach efforts included driver meetings, a passenger survey, and public meetings for the public to comment on recommended route changes.

In all, a total of 376 members of the public provided input into the early stages of the study, as follows:

Drop-ins	
UNL Student Union	65
State Office Building	120
Gold’s Transfer Center (Midday)	54
Gold’s Transfer Center (PM Peak)	60
Open Houses	
Energy Square	15
Bennett Martin Public Library	10
Internet Comments	2
Stakeholders	50
Total	376

Whether talking to riders at the drop-ins and open houses, non-riders at these events, or the stakeholders, there were a number of common threads that ran through all of the sessions:

- StarTran service needs to be redesigned to match the changes in the community relative to trip origins and destinations. Downtown should not be the sole focal point of the system, as it creates trips that are too long and too indirect unless one is traveling downtown. Satellite transfer centers should be considered in the plan.
- StarTran has to change its image from that of a service only for the transit dependents to one that serves everyone in the community. This can be accomplished first by recognizing that there are a number of choice riders who use the bus now, and by redesigning the service to make it more convenient for people to choose over their cars.
- StarTran should expand its hours into the evening, and should investigate adjusting its services to provide higher quality schedules in the most densely used corridors.
- StarTran needs to make any or all of its changes within the context of limited resources, and with an eye to maximizing the use of those resources by concentrating services where they are most necessary.

Public transportation is clearly considered an important part of the community's infrastructure which can be significantly improved in the minds of those who participated, be they supporters of the program or the "loyal opposition." Many concerns, ideas, and issues were raised in these discussions which provide a great deal of direction for this project, and which will be used in developing concepts and recommendations in subsequent phases.

Later in the TDP process, two open houses were held on March 21st, 2007 to present the planned route recommendations to the public. A total of 291 people attended the open houses to learn about the new service proposals and comment. There were two parts to each of the open houses. The first part was a presentation on the development of the route proposals. During the second part of the open houses members of the public viewed the route proposals and asked questions to the consultant, planning, and StarTran staff who were present at the open house. Sixty people provided written comments.

Service Evaluation, Issues, and Opportunities

Evaluating the StarTran system against a set of service standards or goals is the first step in the evaluation process. The process allows one to deal with a variety of issues related to the quality and quantity of bus service. This provides initial guidance for the development of service strategies. Table E-1 provides a summary of proposed standards/goals that StarTran should strive towards, and the results for StarTran based on the data collected for this project.

Five important data sets were collected or calculated from StarTran 2005 records to create the database and calculations for the route diagnostics: ridership statistics, revenue hours, revenue miles, operating cost, and farebox revenue. For each of the diagnostic indicators, each route is ranked compared to the other routes in the system and also compared to the system average. Routes that are less than 60% of the system average may require substantial modification or possibly elimination. Routes that are between 60% and 80% of the system average need to be looked at in further detail to determine if small modifications are necessary.

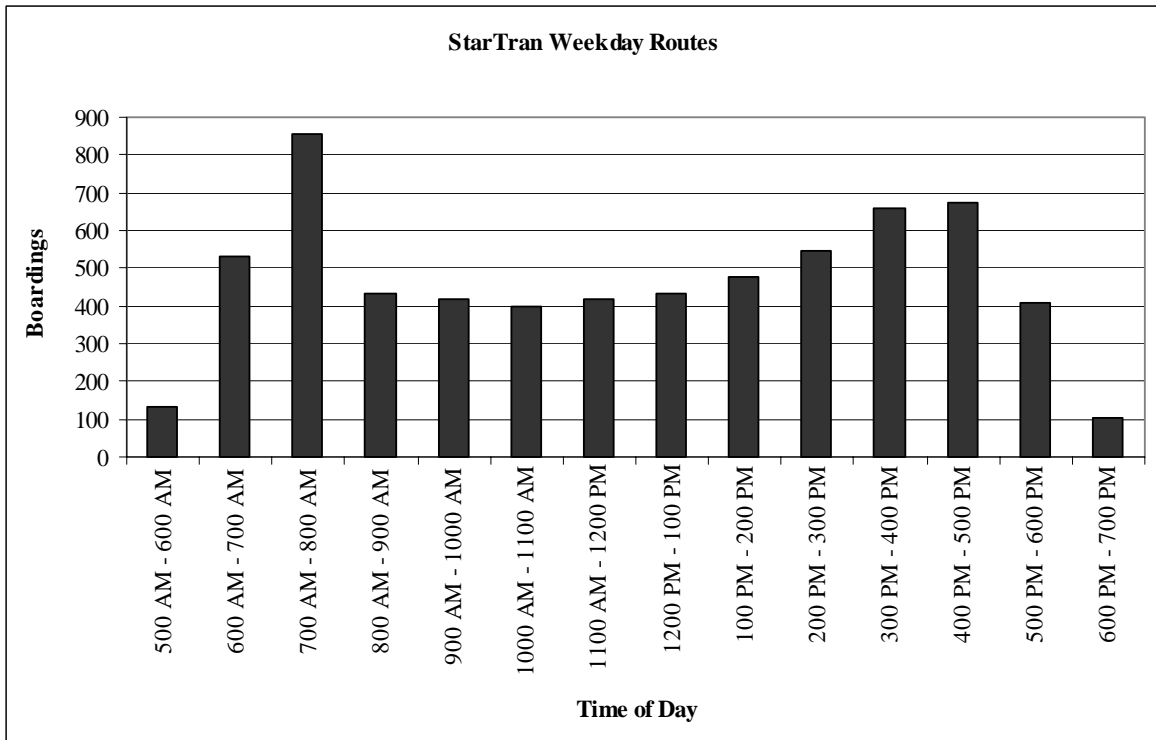
Table E-1: StarTran Performance versus Service Standards

Category	Standard	StarTran Results
<i>Service Coverage</i>		
Availability	<ul style="list-style-type: none"> • Residential areas -90% of population within ¼ mile of a bus route -Route spacing guide presented in Table 5-2 • Major activity centers -employers or employment concentrations of 200 or more employees -health centers -middle and high schools -colleges/universities -shopping centers of over 25 stores or 100,000 square feet of leased retail space -social service/government centers 	<ul style="list-style-type: none"> -Most residential areas served, review some portions of block groups -Most activity centers served, review some major employers
Frequency	<ul style="list-style-type: none"> • Arterial Routes -30 minute peak -60 minute off-peak • Crosstown/neighborhood/shuttle services -60-minute all day service 	<ul style="list-style-type: none"> -9 out of 21 routes meet peak standard -7 out of 21 routes meet off-peak standard
Span	<ul style="list-style-type: none"> -5 AM to 10 PM on weekdays -6 AM to 7 PM on Saturdays 	<ul style="list-style-type: none"> -None of the routes meet the weekday standard -All Saturday routes exceed standard
Directness	-Maximum 25% of transfer rate	-30.15% transfer rate
<i>Patron Convenience</i>		
Speed	<ul style="list-style-type: none"> -Regular routes maximum of 15 MPH -Maximum of 10 MPH for Downtown Shuttle -12-18 MPH for outlying services depending on layout 	<ul style="list-style-type: none"> -11 out of 20 meet regular route standard -Star Shuttle meets shuttle standard
Loading	-25% standees for short periods acceptable	-Meets standard
Bus Stop Spacing	<ul style="list-style-type: none"> -5 to 7 stops per mile in core (every other block) -Fringe 4 to 5 per mile, as needed based on land uses 	-In general, StarTran has flag stops, but there are bus stops at most intersections within the core and some in the fringe areas
Dependability	<ul style="list-style-type: none"> -No missed trips -95% on-time service (0 to 5 minutes late) -No trips leaving early 	-All routes meet the 95% standard
Road Call Ratio	-4,000 to 6,000 miles per road call	-6,349 miles per road call, exceeds standard
<i>Fiscal Condition</i>		
Fare Structure	-Qualitative criteria	-Meets standard
Farebox Recovery	<ul style="list-style-type: none"> -Significantly alter routes less than 60% of average (16% is average) -Review and modify routes between 60% and 80% average 	<ul style="list-style-type: none"> <u>Below 60%</u> -Routes 18 and 19 <u>Between 60% and 80%</u> -Routes 6, 8, 10, and 17x
Productivity (Pass./Mi.)	<ul style="list-style-type: none"> -Significantly alter routes less than 60% of average (1.26 pass/mi is average) -Review and modify routes between 60% and 80% average 	<ul style="list-style-type: none"> <u>Below 60%</u> -Routes 12, 18 and 19 <u>Between 60% and 80%</u> -Routes 5, 6, 10, 13 and 16
<i>Passenger Comfort</i>		
Waiting Shelters	-25 or more boardings	-Review 16 stop locations with 25 or more boardings currently without shelters
Bus Stop Signs	-Denote StarTran, contact information, and route	-Do not meet standard
Revenue Equipment	-Clean and good condition	-Meets standard
Public Information	-Timetable, maps, advertising	-Meets standard

Weekday Time of Day Analysis

An analysis of ridership by time of day is important to understanding some of the dimensions of the performance described above. Figure E-2 provides a chart of ridership by time of day for the StarTran system. Systemwide, the greatest number of riders board during the morning peak between 7:00 AM and 8:00 AM. Overall, StarTran ridership reaches its maximums in the morning and afternoon peak periods, is reduced but strong during the mid-day.

Figure E-2: StarTran System: Weekday Ridership by Time of Day



Route Network Recommendations

The development of a recommended action plan was based on a number of factors including data collection, input from technical staff, and public involvement. These issues were used to shape the primary service goals which are as follows:

- Create a new network that is revenue neutral based on current service hours with no additional service hours in the near-term proposal.
- Maintain service coverage to most locations in the city.
- More efficiently match demand and supply.
- Provide service where service is needed.
- Be operationally efficient.
- Allow for most routes to operate at clock face headways, with 30 minute service during peak periods and 60 minute service during off-peak periods.
- Examine the potential for new service to areas with anticipated increased demand.

- Maximize an integrated system approach to the service plan.
- Remove duplication of service.
- Reduce transfers by having routes interlined through downtown.

Year 1 Route Descriptions

The year 1 recommendations significantly modify the StarTran route network. The network provides 30 minute service during peak periods on most routes that enter downtown and 60 minute service during off-peak hours all day as shown on Table E-2. The Saturday route network eliminates the current combination loop routes. Most of the Saturday routes are the same route that they operate during the week. Most routes operate once per hour on Saturday.

Table E-2: Weekday Route Network Frequency and Vehicle Requirements

Route Name	Color	Peak Frequency	Midday Frequency	Evening Frequency	Peak Vehicles	Midday Vehicles	Daily Trips
Bethany/Normal	Red	30 minutes	60 minutes	N/A	4	2	21
Belmont/Salt Valley	Blue	30 minutes	60 minutes	N/A	4	2	21
South Pointe	Brown	30 minutes	60 minutes	N/A	2	1	21
Havelock/Highway 2	Orange	30 minutes	60 minutes	N/A	6	3	21
West A/Gaslight	Pink	60 minutes	120 minutes	N/A	2	1	9
O Street/SCC	Yellow	30 minutes	60 minutes	N/A	2	1	21
O Street/Vets Hospital	Black	30 minutes	60 minutes	N/A	2	1	21
Arapahoe/Arnold Heights	Green	30 minutes	60 minutes	N/A	4	2	21
University Place/College View	Purple	30 minutes	60 minutes	N/A	4	2	21
Westfield/South	Neigh 1	60 minutes	60 minutes	N/A	2	2	10
Westfield/North	Neigh 2	60 minutes	60 minutes	N/A	1	1	10
Downtown Shuttle Day		20 minutes	10 minutes	N/A	1	2	45
Downtown Shuttle Night (Th-Fri)		N/A	N/A	8 minutes	0	2 ¹	40

¹ Evening hours

Figure E-3: Weekday Route Network

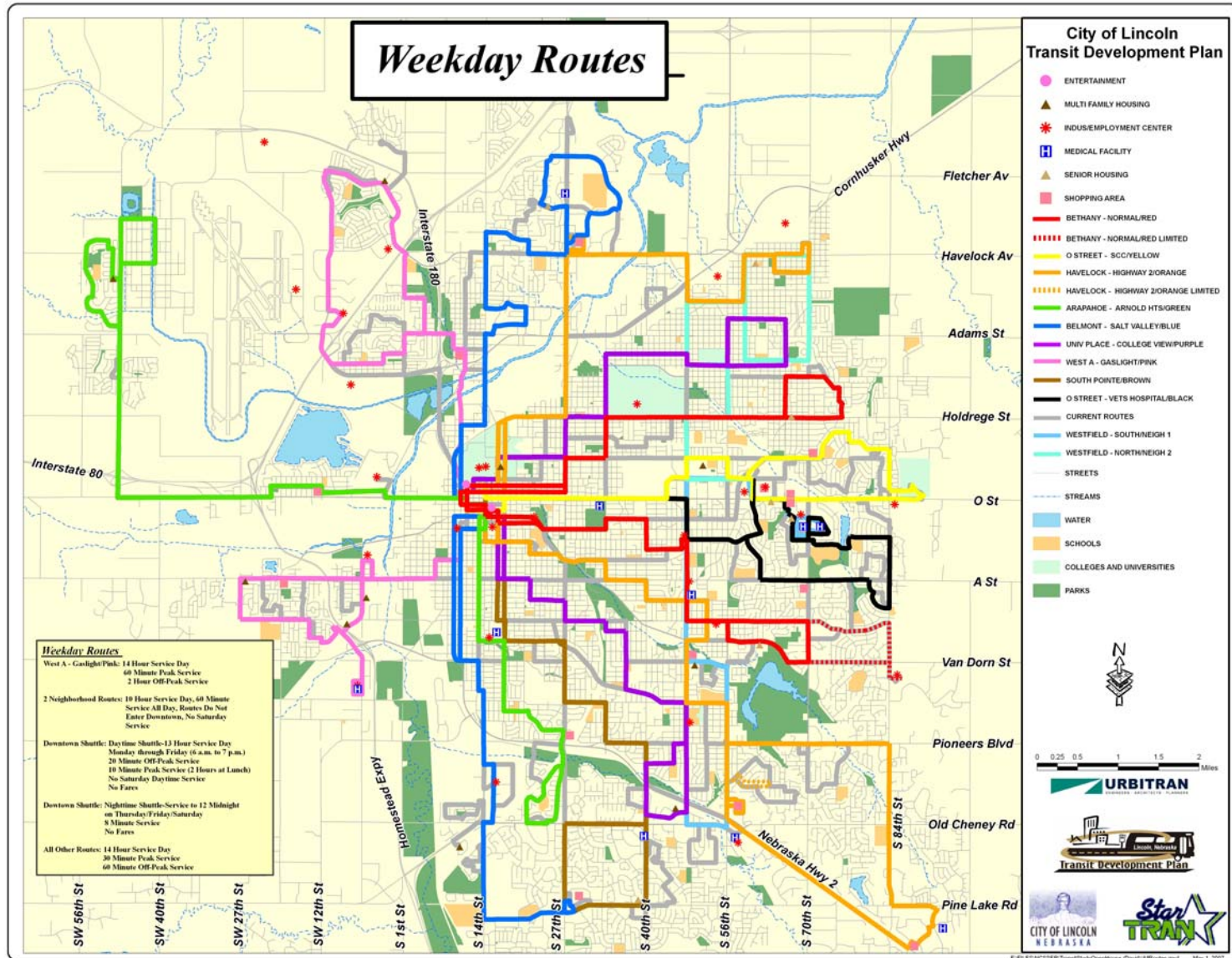
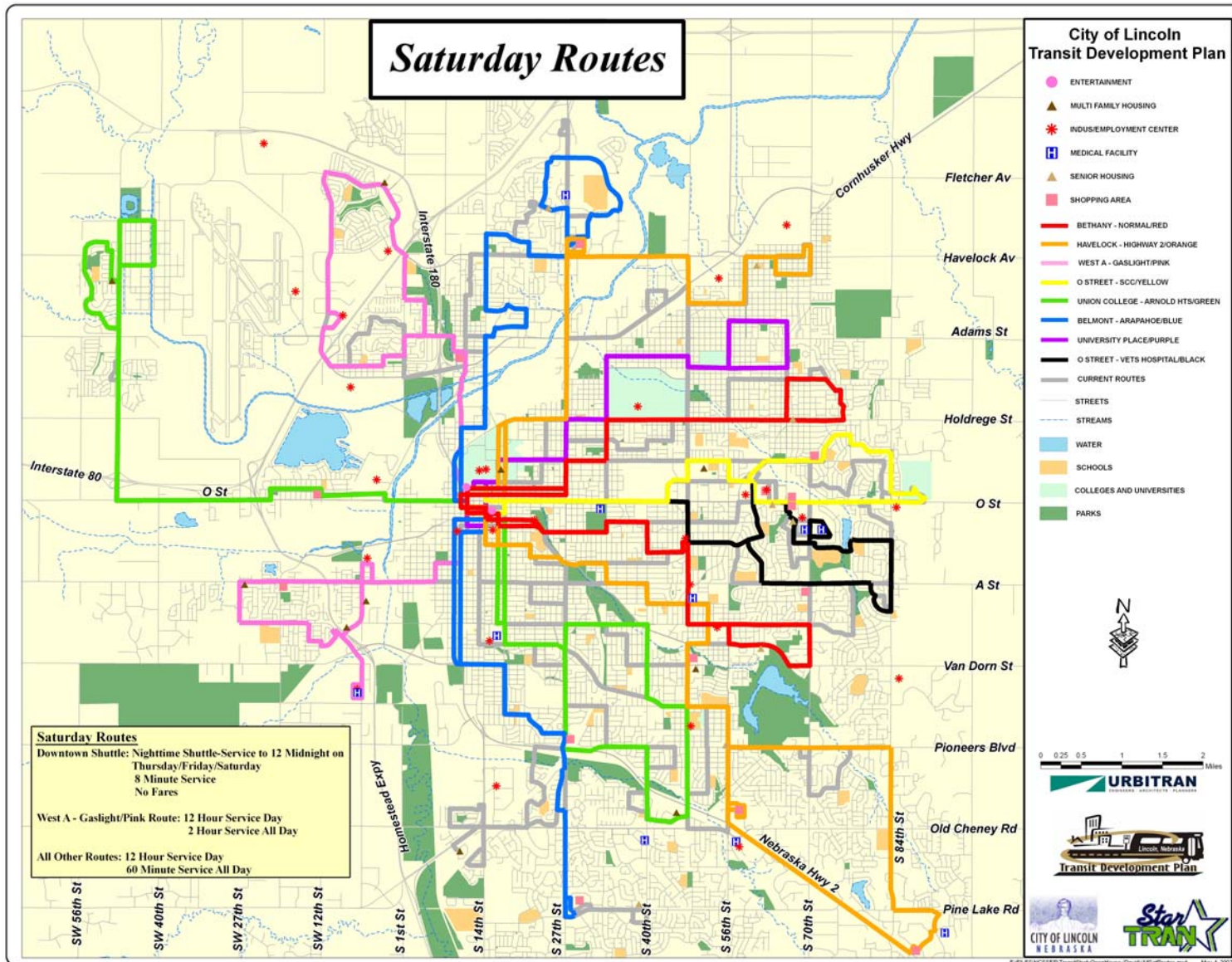


Figure E-4: Saturday Route Network



Future Year Recommendations

A number of other proposals were discussed as part of this study. Many of these items are not appropriate for year 1 of the plan but should be considered during the five year time frame of the plan. Other items require major investment and would not likely receive funding for many years. All future recommendations are contingent on funding. Below is a prioritized list of short and long term recommendations:

- Evening service
- Increased service on current routes
- Service expansion
- Express services and park and ride
- Implement flexible services
- Coordinating and contracting for service in rural areas in order to connect these areas to Lincoln as well as with UNL Transit Services
- Downtown Streetcar service
- Second Transit Hub Development
- Express Commuter Bus service between Lincoln and Omaha
- Provide bus service on Sundays

Ridership Estimate

This section presents the estimated annual ridership for the five years of this plan. The modified route network will affect ridership on all services that StarTran operates. Mathematical computations were used to estimate ridership changes taking into consideration improved service levels and changes in the route structure. Annual ridership for the next five years is presented on Table E-3. Below are the assumptions used for estimating annual ridership for each route:

- Ridecheck data was used to distribute ridership from existing routes to the proposed routes, as well as by time of day
- Ridership changes were calculated based on frequency changes using a 0.37 elasticity² applied to time routes and time periods when frequency improves (for every 10% increase in service, ridership increases by 3.7%)
- Background ridership growth of 1.5% assumed based on regional population growth of 1.5%³ per year based on historical patterns in Lincoln and expected growth

² From *Patronage Impact of Changes in Transit Fares and Services*, US Department of Transportation Urban Mass Transportation Administration, 1980

³ Lincoln/Lancaster County Comprehensive Plan

Table E-3: StarTran Regular Route Annual Ridership Estimate

Route	Year 1	Year 2	Year 3	Year 4	Year 5
Bethany/Normal (Red)	196,324	199,269	202,258	205,291	208,371
Belmont/Salt Valley (Blue)	160,742	163,153	165,600	168,084	170,605
South Pointe (Brown)	105,809	107,396	109,007	110,642	112,302
Havelock/Highway 2 (Orange)	190,682	193,542	196,445	199,392	202,383
West A/Gaslight Village (Pink)	81,777	83,004	84,249	85,513	86,795
O Street – SCC (Yellow)	136,274	138,318	140,393	142,499	144,636
O Street – Vets Hospital (Black)	97,396	98,857	100,340	101,845	103,373
Arapahoe/Arnold Heights (Green)	153,670	155,975	158,315	160,689	163,100
University Place/College View (Purple)	223,084	226,430	229,826	233,274	236,773
Westfield South/Neighborhood 1	20,816	21,128	21,445	21,767	22,093
Westfield North/Neighborhood 2	11,150	11,318	11,487	11,660	11,835
Downtown Shuttle	54,888	55,711	56,547	57,395	58,256
Saturday Ridership	77,500	77,500	77,500	77,500	77,500
Ridership from other sources*	382,971	382,971	382,971	382,971	382,971
Total	1,893,083	1,914,572	1,936,384	1,958,522	1,980,993
Percent Change	2.13%	1.14%	1.14%	1.14%	1.15%

*Includes ridership from Handi-Van, Route 24, Booster Services, and other services

Finance and Capital Plan

The finance and capital plan presents the cost, funding, and capital program to implement this plan. The cost proposal presents the expected costs over the five years of this plan. The funding needed provides details on how to pay the costs of the plan. Table E-4 presents the annual cost estimate to implement the plan. Table E-5 presents the annual funding for the plan. The capital program details what equipment will be needed in order to implement this plan.

Table E-4: StarTran 5 Year Cost Estimate

	Base Year	Year 1	Year 2	Year 3	Year 4	Year 5
Regular Route Revenue Hours	98,123	97,565	97,565	97,565	97,565	97,565
Additional Route Revenue Hours	11,146	11,146	11,146	11,146	11,146	11,146
Total Revenue Hours	109,269	108,711	108,711	108,711	108,711	108,711
Cost per Hour	\$69.13	\$71.20	\$73.34	\$75.54	\$77.81	\$80.14
Regular Route Cost	\$7,553,766	\$7,740,647	\$7,972,867	\$8,212,053	\$8,458,414	\$8,712,167
Handi-Van Hours	22,575	23,045	23,045	23,045	23,045	23,045
Handi-Van Cost per Hour	\$66.80	\$68.80	\$70.87	\$72.99	\$75.18	\$77.44
Total Handi-Van Cost	\$1,508,010	\$1,585,588	\$1,633,156	\$1,682,151	\$1,732,615	\$1,784,593
Total Cost	\$9,061,776	\$9,326,235	\$9,606,022	\$9,894,203	\$10,191,029	\$10,496,760

Additional revenue hours includes additional service such as Route 24, Booster Services, and other services

Table E-5: StarTran 5-Year Revenue Estimate

	Base Year	Year 1	Year 2	Year 3	Year 4	Year 5
Ridership	1,853,648	1,893,083	1,914,572	1,936,384	1,958,522	1,980,993
Average Fare	\$0.66	\$0.66	\$0.66	\$0.66	\$0.66	\$0.66
Fare Revenue	\$1,220,350	\$1,246,312	\$1,260,459	\$1,274,819	\$1,289,394	\$1,304,188
Advertising	\$65,000	\$120,000	\$135,000	\$150,000	\$165,000	\$180,000
Federal Sources	\$1,315,000	\$1,365,000	\$1,365,000	\$1,365,000	\$1,365,000	\$1,365,000
State Sources	\$523,000	\$423,000	\$423,000	\$423,000	\$423,000	\$423,000
City General Fund	\$5,884,646	\$6,138,423	\$6,389,063	\$6,647,884	\$6,915,135	\$7,191,072
Miscellaneous	\$53,500	\$33,500	\$33,500	\$33,500	\$33,500	\$33,500
Total	\$9,061,496	\$9,326,235	\$9,606,022	\$9,894,203	\$10,191,029	\$10,496,760

Revenue by source provided by City of Lincoln

Additional Funding Sources

A majority of StarTran’s funding comes from the city general fund. For transit to expand in Lincoln, StarTran will need to access additional funds to operate new and expanded services as well as invest and improve core services. Listed below are a number of sources for additional funding sources that should be considered to fund StarTran.

- Parking Fees
- Downtown Business Fees
- Development Fees
- Rental Car Fees
- Hotel Occupancy Fee
- Real Estate Title Transfer Fee
- Expand the current U-Pass program
- Tax District
- Public/Private Partnership

Capital Plan

The current StarTran 6 year Capital Program items include such elements as fleet replacement, storage facility expansion, purchase and replacement of maintenance equipment, security enhancements, and transit enhancements. StarTran has approximately \$35,000 a year dedicated to transit enhancements which include such items as bus shelters, signs, bike racks, and public art. Also, the capital program does include \$1,600,000 for the purchase and implementation of an Automatic Vehicle Location System (AVL) and \$935,000 for new electronic fareboxes. Security enhancements include facility lighting, camera surveillance and recording equipment, and emergency telephones, which StarTran is eligible to spend an average of \$40,000 per year. Key elements of the proposed capital plan include the ongoing and continued purchase of replacement vehicles, the installation of bicycle racks on buses, and longer term considerations for a new downtown transit center and possible future secondary transfer hub outside of downtown.

StarTran Organizational and Funding Options

StarTran is currently organized as a division of the City of Lincoln's Public Works and Utilities Department. The StarTran General Manager reports to the Director of Public Works and Utilities, who reports directly to the Mayor and City Council. Policy and funding decisions are made by the Mayor and Council. There is a seven-member StarTran Advisory Board that provides guidance to the Mayor and Council concerning transit issues and operations. The StarTran Advisory Board is responsible for reviewing and acting upon matters related to the operation of the system, including the following specific areas: Transit-related studies and plans, route studies and evaluations, performance indicators, rates, fares, and schedules. The Board does not have authority to review the salaries, employee benefits, or the system for the selection, promotion, and retention of employees or managers of the system.⁴ As a division of a city department, the StarTran service area includes only the City of Lincoln.

StarTran is funded by the City's general fund revenues (about 64% of the total, or \$5,915,402); federal transit funding (about 16%); fare revenue (about 14%); and the State of Nebraska (about 6%).⁵ This financing arrangement is such that StarTran must go through the City budget process annually, competing with all of the other departments, with no guarantee of a particular level of funding. For the adopted 2006-07 budget, the City's contribution from the General Fund to StarTran represents about \$0.0386 per 100 dollars of assessed value (in the context of property tax).⁶

Organizational Alternatives

Four organizational alternatives are considered in this technical memorandum. These are:

- Status Quo;
- StarTran as a Stand-Alone City Department;
- StarTran as a Joint Public Agency- either City/County/University or City/County or City/University; and
- StarTran as a Transit Authority.

The general advantages and disadvantages of each of these are discussed (in terms of staffing, cost, and implementation), along with whether or not the particular alternative can:

- allow for a dedicated local revenue stream, and if so, through what mechanism?
- allow for bonding if needed?
- allow for a decision-making body that represents the interests of the public, the finances of the major funding partners, and focuses on transit?
- allow StarTran to serve areas outside of the City of Lincoln?

⁴ City of Lincoln Ordinance, Chapter 2.38, Section 2.38.080 Powers and Duties Generally.

⁵ Based on the City of Lincoln's Council-Adopted 2006-07 budget.

⁶ Based on the estimated market value of all property (\$15,342,163,788), as stated in the City's Budget Summary for 2006-07.

- maximize the use of funding for public transportation, including all potential sources such as the Federal Transit Administration, the University of Nebraska, the State of Nebraska, and human service agencies?