

COLT

**RECOMMENDED
BUSINESS PLAN**

2008

INTRODUCTION

The past decade has been one of change in Lebanon County and this situation is expected to continue in the future. This has included growth in population, jobs, and activity centers that generate travel and the need for increased transit access. In addition, the characteristics of Lebanon County are changing in a manner which may place an increased responsibility on the bus system to meet mobility needs. To respond to this situation, the County of Lebanon Transit Authority (COLT) in partnership with the Lebanon County Planning Department commissioned a *Business Plan* to analyze individual bus routes and the overall transportation system. Based on this evaluation, a comprehensive public transportation development plan will be prepared to guide the direction of transit in Lebanon County for the next five years.

To prepare this public transportation master plan, a work program of several sequential tasks was undertaken. This report represents Phase II of the study effort and includes the proposed service plan and the recommended plan for the study. The prior Phase I report provided a description of the current bus system and the setting in which it operates. Also included was an evaluation of the present system in terms of its efficiency and effectiveness and various measures that affect COLT customers and the broader community. A community participation program was undertaken that provided a forum for members of the transit community in Lebanon County as well as COLT staff and concerned residents to voice their opinions regarding transit service in the county. This public participation program also included an extensive data collection effort that included surveys of bus riders and residents in the county. Lastly, a review of the paratransit services operated by COLT is also included in that report. The data and analysis contained in the Phase I report served as a starting point for the development of service improvement proposals.

There are two chapters comprising this Phase II report, including:

Service Improvement Plan - The initial chapter defines service proposals that are developed based on the input and analysis performed and described in the Phase I report. The service improvement plan provides various changes that can be made to improve the convenience of the system without major disruptions to the current schedule structure or necessary resource level. The following are the key service improvement proposals:

- . More direct service to Lebanon Plaza and Lebanon Valley Mall
- . Bus every 30 minutes to the Lebanon Valley Mall
- . Extend service to Salvation Army Store
- . Revise service plan to South Lebanon and East Lebanon (more service but only two days a week)
- . Revise Twilight Route to have separate downtown Lebanon routing
- . New commuter route to Harrisburg

Recommended Plan - This chapter provided an impact analysis for the COLT Service Improvement Plan. Impacts for peak period vehicle needs and vehicle hours as well as projections for annual operating costs, ridership, passenger revenue, farebox recovery and operating deficit are provided for a five year period. The five year projections demonstrate that in FY 2013, COLT would carry about 64 percent more passengers and generate about 81 more passenger revenue. The five year projections also show that the operating deficit will increase as costs increase at a higher annual rate than revenue. However, it is projected that the convenience and simplicity of the new COLT system, along with public information and marketing improvements, would generate enough new ridership annually to maintain current farebox recovery levels.

A capital program is recommended to replace most of the over-aged Bluebird fleet and to expand the fleet size from 13 to 16 buses. A plan for 500 new bus stop signs and 10 new passenger waiting shelters is also proposed. This capital program would cost about \$2.6 million over a two year period with a local share requirement of under \$80,000 due to significant federal and state capital financial support.

SERVICE IMPROVEMENT PLAN

This chapter presents a description of the route and service change proposals developed for the County of Lebanon Transit (COLT) services. Changes of varying magnitude affect most of the existing fixed routes. The service proposals described in the following sections were prepared in consideration of a variety of service inputs. Also, a group of planning precepts guided the formulation of the proposals. These two components of service planning and development are discussed below. They are followed by the service proposals for COLT routes. A recommended plan including the impact of each recommendation on peak period buses as well as vehicle hours and an implementation schedule are provided in a subsequent chapter.

Service Proposal Inputs

Nine major inputs were considered while preparing the route and service change proposals. The Phase I Final Report for this study contained a number of important analyses that were utilized to develop the service improvement proposals. Each of these inputs is briefly described below.

- Community Characteristics - Chapter 1 of the Phase I report presented an analysis that identified residential areas and major activity centers that warrant transit service as well as census tracts and municipalities in the COLT service area with the greatest potential need for transit. Eight factors (such as population, population density, income levels, automobile ownership rates, etc.) were utilized to rate each municipality in terms of its transit potential. Results indicate that all areas of Lebanon County that should receive transit service are served. Seven types of transit trip generators (such as major employers, hospitals, retail shopping centers, etc.) were inventoried and compared to current COLT service. Results showed that COLT provides good service coverage to the transit trip generators in Lebanon County.
- Resident Survey - Chapter 3 described a mail-out/mail back survey of Lebanon County residents which was conducted during August/September 2007. The results were analyzed to determine community opinions regarding usage of bus service and potential system improvements. A total of 529 Lebanon County residents participated in the survey, 95.1% of whom had never used or had not used COLT service in the past year. Of the 529 Lebanon County residents surveyed, 22.0 percent rated local bus service as “very important” to Lebanon County, another 22.4 percent rated local bus service as “important” and another 14.3 percent rated the service as “somewhat important”. This is a favorable response from a group of residents who are not users of the transit system.
- Passenger Opinion Survey – The next Chapter describes a survey of riders on the COLT fixed route system which was conducted during October 2007. Survey

workers distributed survey forms to all passengers on all COLT trips on every COLT route for a full service day. Passengers were provided the option of either completing the survey form while on the bus and returning it to the survey worker on that trip or completing the form later and returning it to the vehicle operator of their next trip. The form was provided in English on one side and Spanish on the reverse. Of the 700 survey forms issued, a total of 172 valid surveys were returned. This is a response rate of about 25 percent which is relatively high for this type of survey. One series of questions asked passengers about the way they traveled to the route to begin their trip and the mode that they used to complete their trip. This allows for the determination of how COLT passengers are using the existing services and what are the most common trip patterns. Other sections of the survey concerned the passenger's opinions regarding COLT service. Overall, current passengers gave high ratings to the various aspects of COLT service. "Safety performance", "operator courtesy", "overall service" and "buses running on time" all received high ratings with over 90 percent of the passengers rating these service aspects as *good*, *very good* or *excellent*. The lowest rating was given to COLT's "telephone customer service". Only 77.1 percent of the respondents rated COLT's "telephone customer service" as *good*, *very good* or *excellent*.

- On-off Stop Location Rider Survey – One of the most important inputs to the service planning process was the information collected on the boarding and alighting activity for all COLT routes for all trips. The data was obtained during the rider survey where survey workers passed out the survey forms and recorded the on and off rider activity by stop location. This information was compiled for each trip for each route and then summarized on a chart to describe all ridership activity. This was compiled and reported for both the inbound and outbound trip direction.
- Community Leader/Stakeholder Interviews – Seventeen "one-on-one" interviews were conducted with various community leaders, policy makers and decision makers throughout Lebanon County who have a "stake" in both the future of the County as well as in the mobility of its residents. All of those interviewed had a positive opinion of COLT management and operation with most describing COLT as a good and well-run agency. However, they also felt that there was room for improvement. There was one major theme that emerged from these interviews. Many stakeholders mentioned that COLT could do more to improve public information and marketing. In terms of services, about half indicated that all transportation needs are being met with current services while the other half indicated that more suburban services should be operated especially to the northern parts of the County.
- Public and Vehicle Operator Input – On January 11, 2008, two walk-in meetings were held to allow the public to provide input to the planning process. One meeting was held at the Lebanon Valley Mall and the other at the COLT transit

center at 7th and Willow Streets. Over 20 people provided comments in these two sessions. Most indicated that they were pleased with COLT bus services. Suggestions primarily involved the desire to have more evening and weekend service. Also in January 2008, a member of the consultant team discussed the transit system with COLT bus and paratransit vehicle operators. Vehicle operators have extensive knowledge of the service area, past and present services as well as common passenger requests. Most COLT vehicle operators participated and offered suggestions concerning service and operational improvements. However, the primary recommendation made by COLT drivers was to improve public information and marketing as well as to have designated bus stops.

- Service Evaluation Analysis – Two interim reports were prepared that document the performance of the COLT system and its routes for a number of measures. A set of service and performance standards was developed and the performance of the COLT system was compared with the standards to determine service adequacy. Individual route data on farebox recovery and passengers carried per vehicle hour of service were used to demonstrate the productivity of the individual routes.
- Field Reconnaissance - Extensive observations were made in Lebanon County to gain a first-hand understanding of existing transit operating characteristics as well as the character of present and future development. During the course of these investigations, land use, key generators and other noteworthy items were recorded.
- Staff Input - Meetings were held on March 17 and May 27, 2008 with COLT staff where service change proposals were reviewed. Based on this input, a plan was identified for service improvements.

Service Design Principles

When analyzed together, the inputs mentioned above effectively expose the areas where improvements are needed in a transit system. For some transit systems the analysis of these inputs demonstrates a need for new services to major trip generators while at other transit authorities the analysis shows that current services provide good coverage throughout the service area but improvements could be made to that service. The latter is the case for COLT. The analysis of many of the inputs listed above (service coverage analysis and the various surveys) showed that there are no areas or destinations in Lebanon County that should receive transit service but currently do not. However, certain destinations could be served at a more enhanced level. Also, some of the current services failed to meet the suggested standards for route productivity and scheduling simplicity. Therefore, efforts to improve service should focus on providing an appropriate level and type of service to the various parts of the county as well as implementing bus routes and route scheduling that promote passenger convenience. Building

upon the results of these analyses, the following service design principles were employed to guide the development of various service improvement options.

- Service Provision System - To implement consistent and appropriate levels of service throughout Lebanon County, COLT's existing and proposed services should be organized around a defined Service Provision System. Existing COLT services were broken down into a system of different service types for the analyses performed in the Phase I report of this study. This system included the City Routes and County Routes. Service span and frequency standards were suggested for each of these route types. The analyses performed showed that no new services are necessary within Lebanon County and therefore, any new resources invested in the system should be directed towards improving the existing routes. The exception was the need for commuter service to Harrisburg. One manner in which to improve these existing services would be to upgrade existing service levels to comply with the suggested standards.
- Passenger Friendly Scheduling - The current structure of the City route network focuses heavily on loop routes. Many of these loop routes travel on one corridor in the outbound direction and another in the inbound direction. This system structure may provide convenient service in one direction and the need to travel most of the route in the other direction. Also, several route variations are often incorporated into the schedule of individual routes to accommodate different trip patterns. This service complexity and inconsistency makes a transit system seem much less accessible to the discretionary or new passenger and can impede ridership growth. The paragraphs below describe ways to render COLT schedules more "passenger friendly".

Reduce or Eliminate Loop Routes – The COLT system is designed to provide coverage throughout the service area at the sacrifice of some convenience. For example, as stated above, most of the COLT city routes are loop routes. Even the COLT drivers pointed out that a rider that travels to the Lebanon Valley Mall in the outbound direction with a trip time from the transit center of about 12 minutes. The return trip time from the mall to the transit center takes about 39 minutes. The COLT routes that have these type loops should be revised to provide a more balanced and convenient trip time.

Service Frequencies – Service frequency on routes should follow a consistent pattern. Service is more convenient for passengers when buses are scheduled to arrive at set intervals. Trip arrival and departure times should also follow a consistent pattern. For example, buses depart every hour on the hour, or every 30 minutes past the hour. This is known as "clockface headways" and the goal is schedule consistency. COLT City routes follow this consistent pattern. However, the County routes do not and have a variety of trip departure times from the downtown transit center. This does not mean that COLT should employ pulse scheduling,

that is, buses on all routes leave the downtown transit hub at the same time. To enjoy more scheduling flexibility and efficiency, different routes can leave at different times. The reasons for the different departure times must be justified.

Interlining - Interlining, or linking trips on different routes, is an effective way to increase the efficiency of a transit system and decrease operating costs. COLT could expand the practice of interlining trips on routes which terminate in downtown Lebanon in order to accommodate any running time issues that may arise from potential service changes being proposed. For example, COLT should consider interlining two routes, one with a short running time with another route with a longer running time. In this way, the combined interlined route will be able to maintain an on-time performance. This interlining does not necessarily have to become a through-route where all trips on the two routes are interlined and the interlining is communicated to passengers.

Routing Variations (Turnbacks) - In many instances, different variations of the same route are operated as part of a route schedule. The suggested standards stated that routes should have no more than two different variations. If a particular trip pattern makes it necessary to operate more than two variations to a route, a separate route should be created. The two routes could either have a combined public timetable or the timetables of the two individual routes could refer to each other for information on additional service. Minimizing the number of routing variations on the same bus route is necessary to maintain the simplicity of the transit service.

These changes may increase COLT's operating costs. However, as the analyses performed as a part of this study shows, COLT does not need to invest additional resources in new services within Lebanon County. Any additional resources expended should be done in furtherance of the goal of improved passenger convenience.

These service design principles have been incorporated, in varying degree, into the development of the Service Improvement Plan presented below. The following sections describe, in detail, the specific proposals and how they build upon the analyses performed and the design principles described above.

Service Improvement Plan

This section presents an analysis for each of COLT's current fixed routes along with service proposals on a route level basis. These proposals suggest modifications to the current routing while maintaining the current route structure. These proposals are designed to improve the efficiency of service and ridership performance by building upon the service planning components. Route proposals are separately defined for City and County routes. A new Harrisburg route proposal is also developed.

CITY ROUTES

Route 1 – This City route operates three AM round trips on weekdays and Saturday with a 60 minute headway. The route is a loop route that uses one street for outbound service and another street for inbound service. Route 1 serves the lower part of Cornwall and Quentin Roads portion of the City and North Cornwall Township. It has a 30 minute round trip running time with its schedule and service is coordinated with Route 11. When the service on Route 1 ends at 9:00AM, service on the Route 11 is expanded to pick up the service area of Route 1. In fact, the Route 1 and Route 11 schedules are on the same public timetable. The route alignment is relatively direct with a directness ratio (straight line distance between the end points of a route) of 1.39 which is well within the standard of 1.75. The chart below shows that the financial performance in terms of farebox recovery and the productivity performance in terms of passengers per vehicle hour for Fiscal Year 2006/2007 are below the standard.

Revenue	\$3,678	Passengers	3,605
Operating Cost	\$37,638	Vehicle Hours	598
Farebox recovery (%)	9.8	Passengers/Vehicle Hour	6.0
Standard (%)	15.0	Standard	9.0

The data obtained on the ridership survey indicated that ridership is spread throughout the route but is about 2 to 3 riders for each round trip that equates to about 4 to 6 riders per hour. This performance confirms the overall productivity performance listed in the chart above. In conclusion, the analysis indicates that Route 1 is a poor performing route that must be changed.

It is proposed that service on Route 1 be completely revamped and operated independent of Route 11. It is proposed that Route 1 be operated as an all day service that would continue to serve the lower part of Cornwall and Quentin Roads within the City and North Cornwall Township. Most of the areas that are served by Route 11 in this corridor would be served by the new Route 1. The proposed routing for the new Route 1 is presented in Figure 1. The route would take about six miles to complete a round trip. This could be accomplished in about 25 to 27 minutes. Service would be operated every hour. Therefore, the bus that serves the new Route 1 could be interlined with another COLT route that has a similar running time and headway. Route 6 would be a candidate for interlining with the new Route 1. Route 1 service would begin at 6:00AM at the 7th and Willow Streets terminal and its last trip would end at 5:30PM.

performance based on COLT data. In conclusion, the analysis indicates that Route 2 is a relatively good performing route that could remain unchanged.

Route 3 – This City route operates 12 round trips on weekdays and on ten Saturday with a 60 minute headway. The route is a loop route that uses one street for outbound service and another street for inbound service. Route 3 serves the northwestern portion of the City, North Lebanon Township and West Lebanon Township. It has a 30 minute round trip running time. Weekday service on Route 3 begins at 6:00AM with the final trip ending at the transit center at about 5:30PM. Service on Saturday begins two hours later. The route alignment is relatively direct with a directness ratio of 1.60 which is within the standard of 1.75. The chart below using Fiscal Year 2006/2007 data shows that the financial performance in terms of farebox recovery is below the standard while the productivity performance in terms of passengers per vehicle hour is favorable.

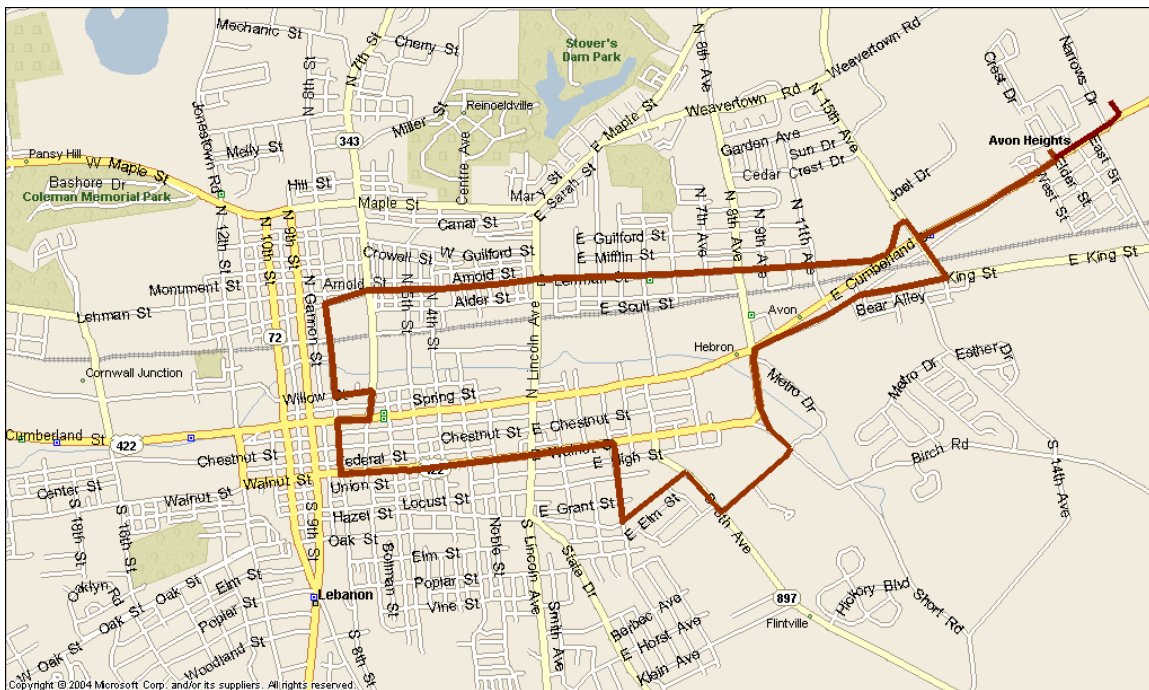
Revenue	\$13,630	Passengers	20,481
Operating Cost	\$107,7816	Vehicle Hours	1,713
Farebox recovery (%)	12.6	Passengers/Vehicle Hour	12.0
Standard (%)	15.0	Standard	9.0

The data obtained on the ridership survey indicated that ridership is spread throughout the route and averages about 5 riders for each round trip that equates to about 10 riders per hour. There are no major loading points on this route except the transit center. Survey data indicated that Route 3 performance is consistent with the annual performance based on COLT data. In conclusion, the analysis indicates that Route 3 is a medium performing route. However, there are no major activity centers along the Route 3 alignment. Therefore, a modification to Route 3 is proposed. The modification is shown in the accompanying Figure 2. The major revision to the route would be the extension to the Lebanon Valley Mall. The new route would take about seven miles to complete a round trip. This could be accomplished in about 25 to 27 minutes. Service would be operated every hour. Therefore, the bus that serves the new Route 3 could be interlined with another COLT route that has a similar running time and headway. Route 4 would be a candidate for interlining with the new Route 3. Route 3 service would begin at 6:00AM at the 7th and Willow Streets terminal and its last trip would end at 5:30PM.

The data obtained on the ridership survey indicated that ridership is limited throughout the route and averages about 2.7 riders for each round trip that equates to about 5.4 riders per hour. This performance is lower than the COLT annual statistics. In fact, survey data indicated that four of the 12 weekday round trips had either zero or one rider. In conclusion, the analysis indicates that Route 4 is a low performing route that could be changed.

As seen in Figure 3 below, there is one primary change proposed for Route 4. The change is to extend the route to the Salvation Army store along Cumberland Street in Avon Heights.

**FIGURE 3
NEW ROUTE 4**



The Route 4 alignment and service on Saturday would remain as it is today. The new weekday Route 4 would take about seven miles to complete a round trip, or about one mile longer than the current route. This could be accomplished in about 25 to 27 minutes. Service would be operated every hour. Therefore, the bus that serves the new Route 4 could be interlined with another COLT route that has a similar running time and headway. Route 3 would be a candidate for interlining with the new Route 3. Route 4 service would begin weekday service at 6:30AM at the 7th and Willow Streets terminal and its last trip would end at about 6:00PM.

Route 6 – This City route operates 12 round trips on weekdays and ten on Saturday with a 60 minute headway. The route is a loop route that uses one street for outbound service and another street for inbound service. Route 6 serves the southeastern portion of City and South Lebanon Township including VA Medical Center and Good Samaritan Hospital. Route 6 has a 30 minute round trip running time with weekday service beginning at 6:30AM with the final trip ending at the transit center at about 6:00PM. Service on Saturday begins two hours later and ends the same time as weekday service. The route alignment is relatively indirect with a directness ratio of 1.79 which is slightly higher than the standard of 1.75. The chart below using Fiscal Year 2006/2007 data shows that the financial performance in terms of farebox recovery and the productivity performance in terms of passengers per vehicle hour are both favorable.

Revenue	\$19,200	Passengers	18,271
Operating Cost	\$108,572	Vehicle Hours	1,725
Farebox recovery (%)	17.7	Passengers/Vehicle Hour	10.6
Standard (%)	15.0	Standard	9.0

Rideship is limited throughout the route except for the VA Medical Center that accounts for about 40% of entire activity on route and the downtown transit center. Data from the rider survey indicates a productivity of about six passengers per trip or about 12 passengers per hour. This is consistent with the performance compared with the COLT annual data shown above. Therefore, this route should remain as is. One possible recommendation would be to combine this route with the new Route 1.

Route 11 – This City route operates 12 round trips on weekdays and ten on Saturday with a 60 minute headway. The route is a loop route that uses one street for outbound service and another street for inbound service. Route 11 serves the western portion of City, West Lebanon Township and North Cornwall Township including Lebanon Valley Mall. Route 11 has a 30 minute round trip running time for the first three trips and a 60 minute round trip running time for the last nine. Weekday service begins at 6:00AM with the final trip ending at the transit center at about 6:00PM. Service on Saturday begins two hours later and ends the same time as weekday service. The route alignment is very indirect with a directness ratio of 2.37 which is much higher than the standard of 1.75. The chart below using Fiscal Year 2006/2007 data shows that the financial performance in terms of farebox recovery and the productivity performance in terms of passengers per vehicle hour are both favorable.

Revenue	\$55,186	Passengers	51,875
Operating Cost	\$223,437	Vehicle Hours	3,550
Farebox recovery (%)	24.7	Passengers/Vehicle Hour	14.6
Standard (%)	15.0	Standard	9.0

Rideship is spread throughout the route. Besides the downtown transit center, major loading points are Lebanon Valley Mall, Weis Market and Lebanon Plaza. The 11:00AM, Noon, 1:00PM and 3:00PM trips have over 20 boardings. The first two trips are poor while all other trips average over 10 boardings. This is consistent with the performance compared with the COLT annual data shown above.

Route 11 is a good performing route. However, it has a high directness ratio that was even noted by the COLT drivers as an issue that must be addressed. Therefore, it is recommended that the route be completely revised as seen in Figure 4 below. The new route would focus on the Western part of the City including the Lebanon Valley Mall and Weis Market. The portion of the former Route 11 that served the Quentin and Cornwall Roads area would be served by the new Route 1. The total round trip on the new Route 11 would be about 6.2 miles and could be accomplished in about 25 to 27 minutes. Route 11 service would begin weekday service at 6:30AM at the 7th and Willow Streets terminal and its last trip would end at about 6:00PM.

**FIGURE 4
NEW ROUTE 11**



Route 17 – This City route operates 24 round trips on weekdays only. It does not operate on Saturday. It has a round trip running time of about 30 minutes and has a 30 minute headway. The route is a loop route that uses one street for outbound service and another street for inbound service. Route 17 serves the northeastern portion of City and North Lebanon Township including Wal-Mart. Weekday service begins at 6:00AM with the final trip ending at the transit center at about 6:00PM. The route alignment is relatively direct with a directness ratio of 1.48 which is below the standard of 1.75. The chart

below using April, May and June of 2007 data shows that the financial performance in terms of farebox recovery and the productivity performance in terms of passengers per vehicle hour are both favorable.

Revenue	\$10,063	Passengers	8,828
Operating Cost	\$48,716	Vehicle Hours	774
Farebox recovery (%)	20.7	Passengers/Vehicle Hour	11.4
Standard (%)	15.0	Standard	9.0

Rideship is spread throughout the route. Besides the transit center, major loading points are Lebanon Village, Wal-Mart and Giant. Ridership from the on-off survey indicated a ridership level of about 8.8 per revenue hour. This is a little lower but still in line with

the performance compared with the COLT annual data shown above. However, the survey indicated that there was only one boarding on all 24 trips at the park-n-ride stop.

Based on these results, it is recommended that the route should remain as is. One possible recommendation would be to eliminate the park-n-ride stop.

COUNTY ROUTES

Route 8 - Six round trips are operated on weekdays, with four round trips in the morning and two round trips in the afternoon. The morning trips operate at 75 or 90 minute headways, while the two trips in the afternoon leave Lebanon at 12:30 PM and 2:05 PM. Evening service is provided under the Twilight Route name. On Saturday's, Route 8 operates a total of seven round trips, with three trips in the morning and four trips in the afternoon. The headway on the morning trips is 90 minute; the headway on the afternoon trips is either 45 or 90 minutes. Aside from inbound service on Cherry and Chestnut Streets, Route 8 primarily operates along U.S. 422 in the inbound and outbound directions between Lebanon and Hershey. In addition to serving destinations in Lebanon and Hershey, Route 8 also serves Annville, Cleona, and Palmyra Boroughs, and several shopping centers including the Palmyra Shopping Center and Palmyra Wal-Mart, Cleona Square Mall and Hershey Park. The route alignment is very direct with a directness ratio of 1.11 which is well within the standard of 1.75. The accompanying chart shows that the financial performance in terms of farebox recovery and the productivity performance in terms of passengers per vehicle hour for Fiscal Year 2006/2007 are both favorable. In fact, Route 8 is the best performing COLT route.

Revenue	\$84,149	Passengers	42,690
Operating Cost	\$173,588	Vehicle Hours	2,758
Farebox recovery (%)	48.5	Passengers/Vehicle Hour	15.6
Standard (%)	15.0	Standard	9.0

Data from the on-off count rider survey indicates that ridership is spread throughout the route with the first and last weekday trips having 36 and 49 boardings, respectively. The remaining trips were averaging about nine boardings per trip. Overall, ridership is spread throughout the route; besides the transit center, major loading points are Excel Logistics, Annville Square, Cleona Square Mall and Cleona Borough, and Cumberland Street in Lebanon.

This is the best performing COLT route. It is recommended that no changes be made.

Route 9 – This route operates on weekdays only with one round trip in the morning at 8:20 AM and one round trip in the afternoon at 2:00 PM. It is a loop route that uses one street for outbound service and another street for inbound service. The PM trip also serves the western side of Quentin Road via Colebrook, Butler and Starner Roads. Route 9 serves southern Lebanon County, including Cornwall Borough, Lebanon Plaza, K-Mart and Lowe’s. Round trip running time is 42 minutes for the morning trip and 57 minutes for the afternoon trip.

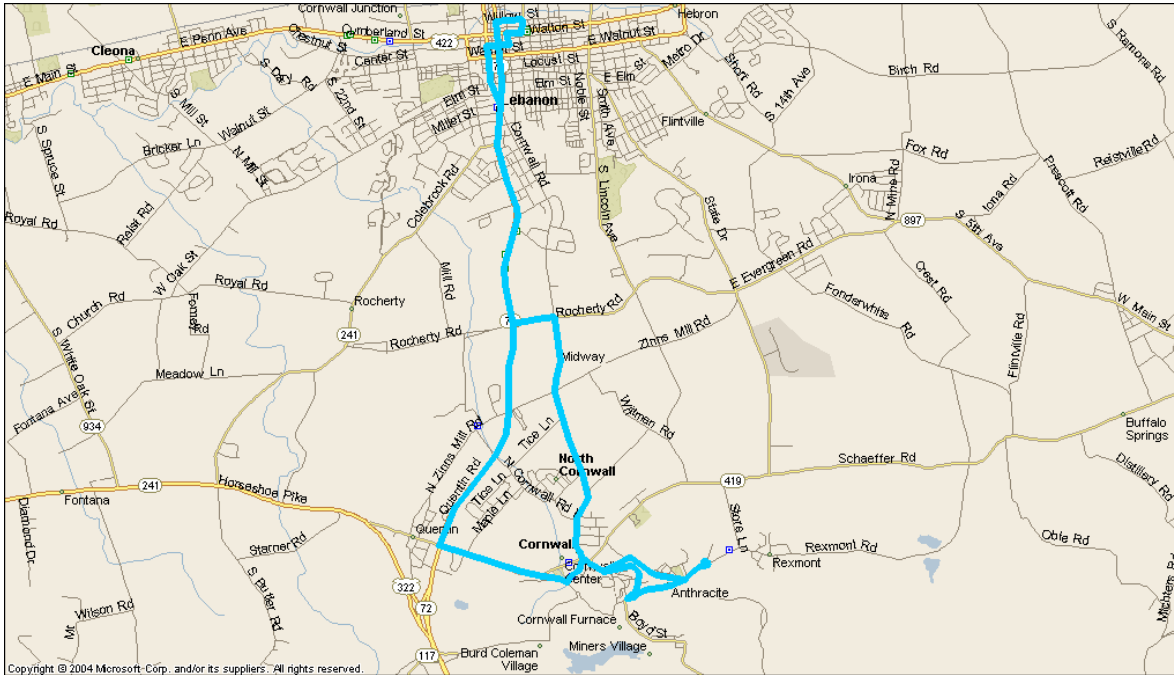
The route alignment is relatively direct with a directness ratio of 1.57 which is within the standard of 1.75. The accompanying chart shows that the financial performance in terms of farebox recovery and the productivity performance in terms of passengers per vehicle hour for Fiscal Year 2006/2007 are both below the standard.

Revenue	\$2,307	Passengers	2,050
Operating Cost	\$26,309	Vehicle Hours	418
Farebox recovery (%)	8.8	Passengers/Vehicle Hour	4.9
Standard (%)	15.0	Standard	9.0

Data from the on-off count rider survey confirms the poor ridership. In fact, the survey indicated that there were no riders on the morning trip and only three on the afternoon trip.

This is a poor performing route that should be either eliminated or changed. The recommendation is to completely revise the route as per the new alignment presented in Figure 5 on the accompany page. The new Route 9 would be operated two days a week with six round trips each day starting at 8:00AM, 9:00AM, 10:00AM and 1:00PM, 2:00PM and 3:00PM. The round trip route length is 14 miles that could be completed within 60 minutes.

**FIGURE 5
NEW ROUTE 9**



Route 10 – This route operates five round trips per weekday all with different route alignments. There is no Saturday service provided. The first two round trips are a combined Route 10 and Quest North route, and have running times of 42 and 105 minutes; the remaining three trips are on Route 10 and have running times of either 52 or 57 minutes. Route 10 is a loop route that uses one street for outbound service and another street for inbound service. The route serves northern and western portions of City and North Lebanon Township.

The route is very indirect for the Route 10 alignment with a directness ratio of 3.01 which is well above the standard of 1.75. The Route 10/Quest North alignment is relatively direct with a directness ratio of 1.56 which is within the standard of 1.75. The accompanying chart shows that the financial performance in terms of farebox recovery and the productivity performance in terms of passengers per vehicle hour for Fiscal Year 2006/2007 are both favorable. In fact, Route 10 is the second best performing route in the COLT system.

Revenue	\$25,640	Passengers	15,417
Operating Cost	\$70,619	Vehicle Hours	1,122
Farebox recovery (%)	36.3	Passengers/Vehicle Hour	13.7
Standard (%)	15.0	Standard	9.0

Data from the on-off count rider survey confirms the good ridership. There were a total of 20 boardings on Route 10, with 14 of these riders boarding during the 2:50 PM trip. Overall, ridership was spread throughout the route, with the Quest and transit center stops being the major loading points. A total of 35 people boarded the two Route 10 and Quest North trips, with 21 people boarding the bus during the 5:15 AM trip and 14 people boarding during the 6:30 AM trip.

This is the second best performing COLT route. It is recommended that no changes be made.

Route 14 – This route operates three round trips per weekday with no Saturday service provided. The first trip is a Quest East morning trip and has a round trip running time of 73 minutes. The second round trip is called the Route 14 and has a running time of 85 minutes. The third round trip is called the Route 14A and also has a running time of 85 minutes. The three Route 14 services are loop routes that use one street for outbound service and another street for inbound service. They all serve the western portions of the City, North Cornwall Township and other western portions of the County.

The Quest East portion of the route is relatively direct with a directness ratio of 1.54 which is within the standard of 1.75. The Route 14 and Route 14A alignments are indirect with a directness ratio of 1.79 which is slightly above the standard of 1.75. The accompanying chart shows that the financial performance in terms of farebox recovery and the productivity performance in terms of passengers per vehicle hour for Fiscal Year 2006/2007 are both below the standard.

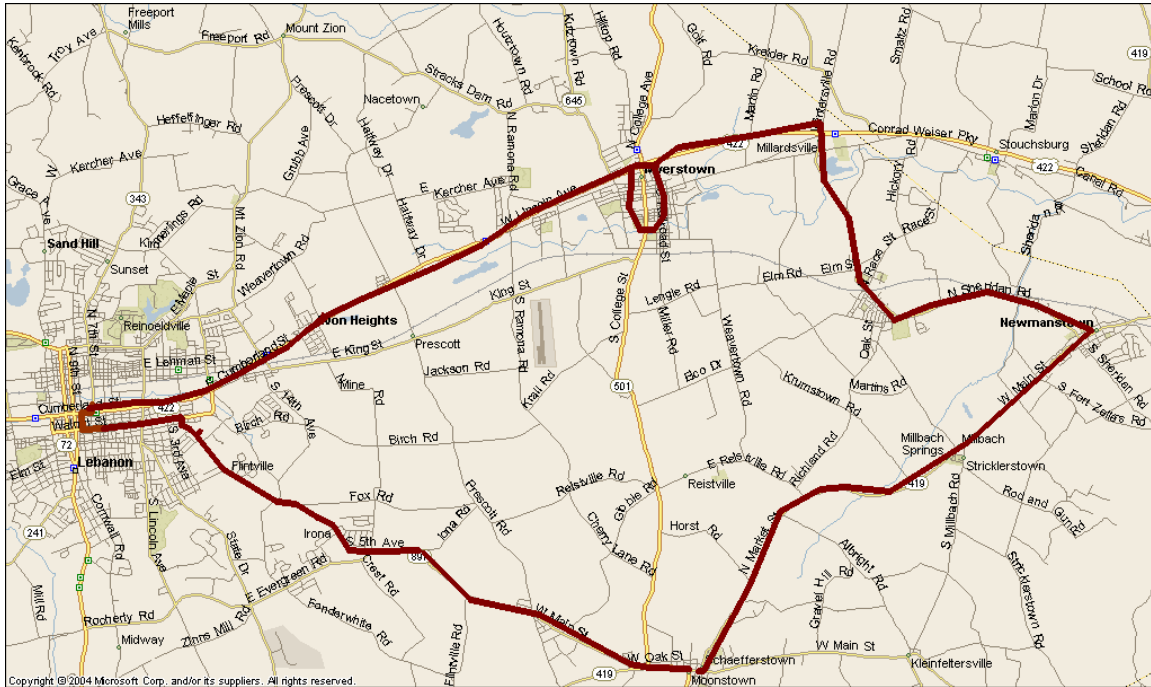
Revenue	\$7,553	Passengers	9,333
Operating Cost	\$65,709	Vehicle Hours	1,044
Farebox recovery (%)	11.5	Passengers/Vehicle Hour	8.9
Standard (%)	15.0	Standard	9.0

Data from the on-off count rider survey confirms the low ridership. The survey indicated that the Quest East trip had a total of six boardings that were spread throughout the route; the Route 14A trip had a total of eight boardings, with six of these boardings occurring at the transit center and Quest stops.

It is recommended that Route 14 Quest East morning trip remain as is because of the limited amount of service and the fact that it serves an important activity center, Quest. The remaining two round trips should be discontinued and replaced with a service similar service to the Route 9 proposal. Figure 6 shows a proposed routing for the new Route 14 service. The route would be designed to provide local service in Myerstown. The new Route 14 would be operated two days a week with four round trips each day starting at 8:30AM, 10:00AM, 2:00PM and 3:30PM. The round trip route length is 30 miles that could be completed within 90 minutes. The route would be coordinated with Route 9 in

that Route 9 could be operated on Mondays and Wednesdays while Route 14 could be operated on Tuesdays and Thursdays.

**FIGURE 6
NEW ROUTE 14**



Route 18 Express - Route 18 Express is a weekday only service that operates five round trips in the morning and three round trips in the afternoon between the COLT Park and Ride in Lebanon and the Hershey Medical Center in Hershey. The headway on the first three morning round trips is 30 minutes, with the first trip starting at 5:45 AM; the two remaining roundtrips in the AM period leave the COLT Park and Ride Lot at 8:30 AM and 11:00 AM. The headway on the three afternoon round trips is 45 minutes, with the first trip leaving the COLT Park and Ride Lot at 2:15 PM. The majority of this route operates along U.S. 422, with portions of the route traversing smaller arterial roads in Hershey and Lebanon. The route serves Lebanon, the Hershey Medical Center, the Lebanon Valley Mall and the Palmyra Wal-Mart as well as other locations along US 422. The route has a 127 minute round trip running time.

The route alignment is very direct with a directness ratio of 1.20 which is well within the standard of 1.75. The accompanying chart shows that the financial performance in terms of farebox recovery and the productivity performance in terms of passengers per vehicle hour for Fiscal Year 2006/2007 are both below the standard.

Revenue	\$7,179	Passengers	3,557
Operating Cost	\$175,791	Vehicle Hours	2,793
Farebox recovery (%)	4.1	Passengers/Vehicle Hour	1.3
Standard (%)	15.0	Standard	9.0

Data from the on-off count rider survey confirms the poor ridership. Ridership is limited throughout route. There are no major loading points except at transit center. Ridership averaged about 5.1 per trip or 3.2 per hour. However, this route is a relatively new route and has exhibited recent ridership increases. Therefore, while Route 18 Express is a poor performing route that should be either eliminated or changed, the fact that it is a relatively new route that is showing signs of ridership increases, it should continue as is for the next year. After one more year, COLT should carefully monitor its performance per the criteria listed in this report. If it does not reach the standard levels, changes or even elimination should be considered.

Twilight Route - This route operates six round trips on weekdays and five round trips on Saturdays. It is a combination of the Quest West Route, Route 8 and a circulator route that serves major activity centers in the area including the Lebanon Valley Mall, Weis Market, Lebanon Plaza, Lowes/K-Mart, Giant and Wal-Mart. A shorten version of the circulator route is also operated that focuses only on the downtown and Wal-Mart. On Saturday, the circulator route takes another alignment that is similar to the larger route but does not serve the Lebanon Valley Mall and Giant. The first weekday round trip operates as a Quest West Route and begins service at 3:15 PM with a running time of 125 minutes. The remaining five weekday round trips switch between Route 8, the circulator route, Route 8 again, the shorten version of the circulator and finally Route 8. The running times on the Route 8 trips are 64, 68, and 75 minutes, while the running times on the circulator route is 67 minutes with the shorten version at 23 minutes. On Saturdays, the Twilight Route operates three round trips along Route 8 and two round trips along another version of the circulator route. The running times on the Route 8 trips are either 58 or 73 minutes, while the running time on the two circulator trips is 42 minutes.

Twilight Route serves Lebanon City, the western portion of the County via the U.S. Route 422 corridor, and the Quentin Road area in North Cornwall Township.

The route alignment is relatively direct for all alignments of the Twilight Route except for the major circulator route. It has a directness ratio of 3.14 which is well above the standard of 1.75. The accompanying chart for Fiscal Year 2006/2007 data shows that the financial performance in terms of farebox recovery and the productivity performance in terms of passengers per vehicle hour are both above the standard.

Revenue	\$32,643	Passengers	33,206
Operating Cost	\$147,154	Vehicle Hours	2,338
Farebox recovery (%)	22.2	Passengers/Vehicle Hour	14.2
Standard (%)	15.0	Standard	9.0

According to rider survey, there were 24 boardings on the weekday Quest West trip, with the major loading points being in the City at Quest and at the downtown transit center stop. Ridership was spread throughout the three weekday Route 8 trips, with 10 boardings on the 5:30 PM trip, seven boardings on the 8:30 PM trip, and 34 boardings on the 10:15 PM trip. The major loading points on Route 8 were the transit center with 22 boardings and Excel Logistics with eight boardings. A total of four people boarded the two weekday circulator trips, with two of the boardings at 9th & Walnut, and one boarding each at Lowe's and Wal-Mart.

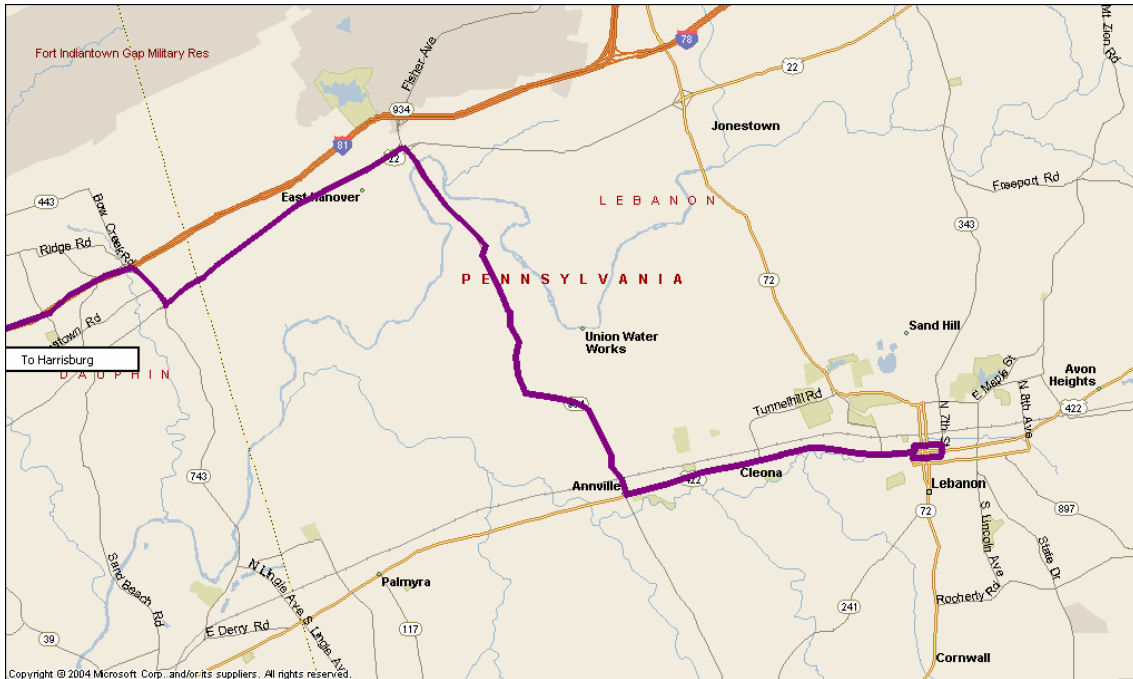
This is relatively good performing route. However, it is very confusing in that it has five different route descriptions on one public timetable. One recommendation is to include the Quest West trip and the three Route 8 evening trips as part of the Route 8 service and public timetable. Next, the downtown circulator route should be shown as separate service on its own public timetable. Instead of having three variations of an evening downtown circulator route, there should be one. The suggested route should be the alignment that is operated on Saturday with an extension to the Giant food store. This alignment excludes the Lebanon Valley Mall. However, the Mall is served during the evening by the Route 8. The new downtown circulator route could begin service at 6:00PM and would have less than a 60 minute round trip running time. A clockface service is recommended for three round trips leaving on the hour with the last trip ending at the transit center at 9:00PM.

New Harrisburg Route – The 2000 Census data indicates that there is a growing trend for more Lebanon County residents to travel outside the County for work purposes. In the 1990 Census, about 31.3% of County residents traveled for work outside Lebanon County. In the 2000 Census, this number grew to 37.2%. The primary location where people are traveling outside the County for work is the City of Harrisburg. In fact, a study is now underway titled “CORRIDOR TWO” that is investigating high mode options such as commuter rail and Bus Rapid Transit (BRT) for service from Lebanon County to Harrisburg.

A proposed Harrisburg route is shown in Figure 7 below. The route would begin at the downtown transit center and proceed west on US 422. In Annville it would proceed north on Route 934. The route would proceed west on Route 22 and then north on Route 743 to I-81 to downtown Harrisburg. COLT should investigate possible sites for a park-n-ride lot along the Route 22 segment of the route.

The round trip distance would be about 72 miles. Therefore, one bus could operate a round trip in about two hours. To provide some level of service, two buses would be required resulting in a one hour headway. Three AM and three PM round trips are proposed for weekdays only. If one bus left the downtown transit center at 5:45 AM, it would arrive in downtown Harrisburg at about 6:45AM. Another bus could leave 7th and Willow at 6:45AM and arrive in Harrisburg at 7:45AM. The first bus would make another round trip leaving at 7:45AM and arriving in Harrisburg at 8:45AM. The return trips would leave Harrisburg at 3:15PM, 4:15PM and 5:15PM.

**FIGURE 7
NEW HARRISBURG ROUTE**



The proposed operating statistics for the new Harrisburg route are set forth in the chart below. These statistics assume ridership of ten each trip with each rider paying a \$4.00 fare. The farebox recovery performance is above the standard while the productivity performance is below the standard. However, a more reasonable standard for commuter service is 10 riders per trip. The new Harrisburg route should meet this standard.

Revenue	\$61,200	Passengers	15,300
Operating Cost	\$192,596	Vehicle Hours	3,060
Farebox recovery (%)	31.8	Passengers/Vehicle Hour	5.0
Standard (%)	15.0	Standard	9.0

Chapter Summary

The service proposals described above build on the service input and service design principles discussed at the beginning of the chapter. The service improvement plan provides various changes that can be made to improve the convenience of the system without major disruptions to the current schedule structure or necessary resource level. The following chapter provides the fiscal and capital impact of that plan and recommendations for other non-service related aspects of COLT operation with the focus on the public information and marketing.

RECOMMENDED PLAN

The Phase I Final Report presented considerable information on COLT and the transportation setting in which it operates. A comprehensive examination of existing service both at the route and system level was performed. Based on this thorough examination, which consisted of various analyses, a Service Improvement Plan for COLT's fixed routes were developed and presented in the previous chapter. This chapter summarizes the financial and equipment impacts of the Service Improvement Plan. This impact analysis includes estimates of service levels and operating costs as well as expected patronage and revenue. The chapter then provides a recommendation as to what level of service changes should be implemented and a suggested plan of how the program should be implemented throughout the five year period FY 2009 - FY 2013.

Also presented in this chapter is a capital improvement program that has been specified to reflect current needs and those attributable to various service proposals. It includes recommendations for revenue equipment, bus shelters, bus stop signs and other transit facilities. Other improvement opportunities are summarized including those involving public information, marketing and other specific issues.

Two points should be noted regarding all financial forecasts. First, all dollar amounts are presented in current dollars in the year that cost and revenue occur. Actual outlays and revenues have been adjusted to reflect inflation. Second, a conservative approach has been followed throughout the analysis. Due to uncertainties associated with forecasting future events, a conservative approach is prudent. Forecasts presented in this chapter reflect a conscious effort to avoid understating costs and overestimating revenue.

The following sections provide an impact analysis for the proposals presented in the previous chapter.

Service Improvement Plan

Earlier chapters of this report provided a series of standards for productivity performance, schedule simplicity and passenger convenience. Analysis of current service based on these standards identified certain deficiencies among COLT's current routes as well as other opportunities to improve passenger convenience. One way to address these deficiencies and to take advantage of the identified opportunities is to implement minor routing adjustments to the current route and schedule. The previous chapter presented a set of proposals that addressed each of COLT's current fixed routes. These proposals call for varying degrees of changes to the routing of certain services as well as some changes to the current schedule structure but do not include recommendations for a major schedule restructuring. Service productivity and an increasing ridership trend did not warrant major service change recommendations.

Table 1 below summarizes the recommended service changes for the COLT routes. The changes are divided into City, County and other routes.

**TABLE 1
ROUTE RECOMMENDATIONS**

Number	Designation	Recommendation
City Routes		
1	Lebanon Plaza	Increase from 3 AM round trips to all day service (Replace Rt. 11)
2	Wal-Mart & Lebanon Village	No Change
3	Townhouse Apts. & West Lebanon	Alignment revision with extension to Lebanon Valley Mall
4	Cedar Court & 15 th & Lehman	Extend to Salvation Army Thrift Store
6	VA Medical Center	No Change
11	Lebanon Valley Mall & Weis Market	Shorten route to serve only Mall and Weis with 30 minute frequency
17	Park-n-ride Shuttle & Wal-Mart	No Change
County Routes		
8	West Lebanon & Hershey	No Change
9	South Lebanon & Quentin	Revise routing and provide service only two days a week
10	North Lebanon & Jonestown	No Change
14	South and East Lebanon & Myerstown	Revise routing and provide service only two days a week
18	West Lebanon & Hershey Express	No Change
Other Routes		
Twilight	West Lebanon and Shopping Circulator	Combine West Lebanon portion with Route 8 and operate separate downtown evening shopping circulator
16	Downtown and Casino	No Change
Harrisburg	Lebanon-Harrisburg Express	New Route

As can be seen, changes are suggested for eight of the 15 COLT fixed routes. For two of the routes, Routes 16 and 18, no changes are recommended since both are relatively new routes with ridership exhibiting a growing trend. The other routes where no changes are recommended are relatively good performing routes. Two of the recommendations are minor and involve a route alignment change (Routes 3 and 4). A major recommendation for the City routes is to change Route 1 and 11 so that they provide separate all day service to the Lebanon Plaza and the Lebanon Valley Mall areas, respectively. Service to the Mall (Route 11) would be improved to a frequency of every 30 minutes. The major change for the County service would be to provide service on Routes 9 and 14 two days a week only with six round trips operated each day. Currently both of these routes operate two round trips each for five weekdays. The final change

involves separating the Twilight Route into two separate routes. One new route is recommended to provide service from downtown Lebanon to downtown Harrisburg. Please note that the Route 16 Casino Route was implemented during the last stages of this study. Since was just started, no review was made.

The following sections describe the impact that the recommended service plan has on COLT's frequency of service, fleet needs, vehicle hours, annual ridership and finances. The impacts are compared with information for a baseline condition of FY 2007. The purpose of using FY 2007 is to describe impacts of implementing changes compared to the existing system.

Frequency of Service - Tables 2 provides a route by route impact of the service changes proposed under the Recommended Service Plan on frequency of service. As the table shows, the proposals improve service frequency on all COLT fixed routes.

**TABLE 2
FREQUENCY OF SERVICE RECOMMENDATIONS**

Route Number	Route Designation	Current Headway (Minutes)	Recommended Headway (Min.)
City Routes			
1	Lebanon Plaza	60 (AM Peak only)	60
2	Wal-Mart & Leb. Village	60	60
3	Townhouse Apts. & West Lebanon	60	60
4	Cedar Ct. & 15 th & Lehman	60	60
6	VA Medical Center	60	60
11	Lebanon Valley Mall & Weis Market	60	30
17	Park-n-ride Shuttle & Wal-Mart	30	30
County Routes			
8	West Lebanon & Hershey	Varies	No Change
9	South Lebanon & Quentin	2 Round Trips	6 round Trips
10	North Lebanon & Jonestown	75	75
14	South and East Lebanon & Myerstown	3 Round Trips	6 Round Trips
18	West Lebanon & Hershey Express	Varies	No Change
Other Routes			
Twilight	West Lebanon and Shopping Circulator	Varies	No Change
16	Downtown and Casino	Varies	No Change
Harrisburg	Lebanon-Harrisburg Express	None	60

Revenue Vehicle Impact - The impact of the changes on COLT's peak period revenue vehicle requirements are analyzed. A route by route impact is provided in Table 3. The ½ vehicle means that the bus is used during the peak periods on two different routes. For example, between 7:00AM and 7:29AM the bus is used on Route 1. From 7:30AM to 7:59AM the bus is used on Route 2. Therefore, a ½ bus is assigned to each route. As shown in Table 3, the various service improvements included in the recommended service plan would increase COLT's peak period vehicle need by two and one-half vehicles. This increase is due to the service enhancements proposed for Routes 11 and the new Harrisburg Express route.

**TABLE 3
PEAK BUS NEEDS**

Route Number	Route Designation	Current Peak Bus Needs	Recommended Peak Bus Needs
City Routes			
1	Lebanon Plaza	0	½
2	Wal-Mart & Leb. Village	½	½
3	Townhouse Apts. & West Lebanon	½	½
4	Cedar Court & 15 th & Lehman	½	½
6	VA Medical Center	½	½
11	Lebanon Valley Mall & Weis Market	½	1
17	Park-n-ride Shuttle & Wal-Mart	1	1
County Routes			
8	West Lebanon & Hershey	1	1
9	South Lebanon & Quentin	½	1 bus two days
10	North Lebanon & Jonestown	0	0
14	South and East Lebanon & Myerstown	½	1 bus two days
18	West Lebanon & Hershey Express	2	2
Other Routes			
Twilight	West Lebanon and Shopping Circulator	0	0
16	Downtown and Casino	1	1
Harrisburg	Lebanon-Harrisburg Express	0	2
TOTAL		9	11 ½

The current COLT bus fleet consists of 13 buses with the recent addition of the 2008 Low Floor Gillig Hybrid. Based on the recommended service plan, a fleet of about 16 buses is needed, 12 for peak service and four spare vehicles. Therefore, COLT needs to obtain three more buses to operate the recommended service plan. A bus acquisition plan is presented later in this chapter.

Vehicle Hours Impact - The impact of the changes of the Recommended Service Improvement Plan on the number of vehicle hours operated by COLT annually was developed. The impact on revenue hours is particularly important because additional service hours equate to additional hours of operator wages which are typically the biggest component of transit operating costs. The charts below (Table 4) provide the impact on vehicle hours for the plan. The figures presented are based on the assumption of operating 255 weekdays and 52 Saturdays annually. As the chart shows, total annual revenue hours would increase from 27,650 to 33,583, or by 5,933 vehicle hours, a 21.5 percent increase. The primary reason for the increase is the addition of the new Harrisburg Express route that adds 3,060 vehicle hours.

**TABLE 4
VEHICLE HOUR COMPARISON**

Route Number	Route Designation	Current Vehicle Hours	Recommended Vehicle Hours
City Routes			
1	Lebanon Plaza	598	1,713
2	Wal-Mart & Leb. Village	1,713	1,713
3	Townhouse Apts. & West Lebanon	1,713	1,713
4	Cedar Court & 15 th & Lehman	1,665	1,665
6	VA Medical Center	1,725	1,725
11	Lebanon Valley Mall & Weis Market	3,550	3,550
17	Park-n-ride Shuttle & Wal-Mart	774 (3 months)	3,060
County Routes			
8	West Lebanon & Hershey	2,758	2,758
9	South Lebanon & Quentin	418	624
10	North Lebanon & Jonestown	1,122	1,122
14	South and East Lebanon & Myerstown	1,044	934
18	West Lebanon & Hershey Express	2,793	2,793
Other Routes			
Twilight	West Lebanon and Shopping Circulator	2,338	2,338
16	Downtown and Casino	0	2,815
Harrisburg	Lebanon-Harrisburg Express	0	3,060
Various	Various	5,539	2,000 (estimate)
TOTAL		27,650	33,583

Annual Ridership Impact - An annual ridership impact has been projected for each of the changes included Service Improvement Plan. These ridership impact projections assume that the marketing and public information recommendations presented later in the chapter will be implemented. Table 5 provides a route by route impact on annual ridership. As the table shows,

total annual ridership is projected to increase by 103,973 unlinked passenger trips over the baseline FY 2006/2007 as a result of the service changes included in the Service Improvement Plan. This is a 42 percent increase that is primarily attributable to four changes -- the addition of a new express route to Harrisburg, Casino service, operation of the Route 17 Shuttle for a full year and making Route 1 a full day service. The remaining increases reflect continuing the growing ridership trend.

**TABLE 5
RIDERSHIP IMPACT**

Route Number	Route Designation	Current Ridership	Projected Ridership
City Routes			
1	Lebanon Plaza	3,605	25,695
2	Wal-Mart & Leb. Village	23,733	24,920
3	Townhouse Apts. & West Lebanon	20,481	22,529
4	Cedar Court & 15 th & Lehman	16,963	18,659
6	VA Medical Center	18,271	19,185
11	Lebanon Valley Mall & Weis Market	51,875	54,469
17	Park-n-ride Shuttle & Wal-Mart	8,828 *	37,078
County Routes			
8	West Lebanon & Hershey	42,690	44,824
9	South Lebanon & Quentin	2,050	5,616
10	North Lebanon & Jonestown	15,417	16,188
14	South and East Lebanon & Myerstown	9,333	8,406
18	West Lebanon & Hershey Express	3,557	3,912
Other Routes			
Twilight	West Lebanon and Shopping Circulator	33,206	34,866
16	Downtown and Casino	0	25,335
Harrisburg	Lebanon-Harrisburg Express	0	15,300
Others	Park City/Town-Town/Market Shuttle	1,357	1,357
TOTAL		251,366	358,339

* Three months of data

Financial Impacts - The financial impacts of the changes included in the Service Plan have been analyzed. This analysis includes the Plan's impact on operating costs, farebox revenue, farebox recovery and operating deficit. The impact is calculated in comparison to the baseline FY 2006/2007 figures and is presented in FY 2006/2007 dollars.

- Operating Costs - To calculate the impact of the Service Improvement Plan on COLT's annual operating costs, a simple operating cost model has been developed using the figures reported by COLT for FY 2006/2007. COLT operated 27,650 vehicle hours during FY 2006/2007 while incurring costs of \$1,740,402. Using these figures, a cost model of \$62.94 per vehicle hour was calculated. The additional vehicle hours were inserted into the operating cost model to determine the annual operating cost impact for the Service Improvement Plan. Therefore, the projected cost for the new service plan in FY2006/2007 dollars would be \$2,113,714, an increase of about \$373,312.
- Farebox Revenue and Farebox Recovery - Given the projected ridership under the Basic Service Improvement Plan, farebox revenue projections have been prepared. The projections, shown in the chart below, assume that COLT will not adopt any fare changes during the planning period of five years. Another assumption is that the demographics of COLT's ridership will not change as a result of the Service Plan, and therefore, the average fare of \$1.21 observed in FY 2006/2007 will remain consistent. However, a different revenue figure is separately computed for the Harrisburg Express service.

	Annual Ridership	Avg. Fare	Total Annual Farebox Revenue
Baseline - FY 2006/2007	251,366	\$1.21	\$304,050
Service Improvement Plan			
Service Plan	343,039	\$1.21	\$415,077
Harrisburg Express Route	15,300	\$4.00	\$61,200
Subtotal	358,339	-	\$476,277
Difference	106,973	-	\$172,227

As shown in the chart, annual farebox revenue would increase by \$172,227 over the baseline FY 2006/2007 figure as a result of the service changes included in the Service Improvement Plan. This would result in a total annual farebox revenue figure of \$476,277. Given the projected operating costs and farebox revenue, a farebox recovery rate can be calculated for Service Improvement Plan. The accompanying chart provides the figures and calculations.

	Annual Operating Costs (\$)	Annual Farebox Revenue (\$)	Farebox Recovery (%)
Baseline - FY 2006/2007	1,740,402	304,050	17.5
Service Improvement Plan	2,113,714	476,277	22.5

As the chart shows, farebox recovery under the Service Improvement Plan would improve compared with the baseline condition. It is important to note that these farebox recovery figures do include revenue from the State of Pennsylvania for senior citizen transportation.

- Deficit - The projected impact on COLT's operating deficit has been calculated using the projected operating costs and farebox revenue presented above. The chart below provides the figures and calculations.

	Annual Operating Costs (\$)	Annual Farebox Revenue (\$)	Annual Operating Deficit (\$)
Baseline - FY 2007	1,740,402	304,050	1,436,352
Service Improvement Plan	2,113,714	476,277	1,637,437
		Difference	201,085

As the chart shows, COLT's annual operating deficit would increase by \$201,085 over the baseline FY 2006/2007 figure for the Service Improvement Plan. This would result in an annual operating deficit of \$1,637,437.

The above paragraphs provided an analysis of the impacts of the Service Improvement Plan. The proposals that comprise the plan, detailed in the previous chapter, include the minor routing changes as well as changes to the schedule structure of some routes. The service changes proposed would increase COLT's peak period revenue equipment need, operating costs and operating deficit while increasing the levels of annual ridership and passenger revenue.

Public Information Improvements Proposals

One of the most important issues facing any public transportation system is the ease with which people may obtain information about the system. Where buses operate, when they operate and where bus stops are located should all be relatively easy to understand. However, COLT's public information program is lacking in many respects. Route nomenclature is confusing, bus

stop signs relay very little information about which route or routes serve a particular stop, and the general quality and design of the public information materials can be greatly improved upon. Simply put, all elements of COLT's public information program need to be improved and updated.

Image - One issue that was raised in the community leaders/stakeholder interviews was COLT's image in the community. Some interviewed said that COLT is seen as a public service in Lebanon County that is there for those who need it. In a mail-out/mail-back survey of Lebanon County residents, the need for more public information about transit was noted as a major concern. Although these are similar observations to those made of transit authorities operating in other areas, these two findings point to a need for an enhancement of COLT's image.

One strategy to improve COLT's image would be to develop a branding for routes which promotes them more as an interconnected mobility system rather than a collection of separate bus routes. Promoting the City Routes as a single network will help to establish COLT as an integral part of the city and a convenient way to move around. The city route network should be given a single title, for example "CityNet". COLT could undertake an effort to identify what title allows for the most effective marketing strategy. The network title should be something that is easily referred to and has the potential to become a city institution like "The T" in Boston or the "The El" in Philadelphia. All routes would then bear this title as well as a number designator and a destination (e.g., "CityNet 1 – Lebanon Plaza").

Other attributes of this image enhancing program could be the introduction of low-floor buses on City Routes. This policy will serve to reduce passenger boarding and alighting times. As part of this program, COLT should install more passenger waiting shelters throughout the City with the branding color scheme of routes for easy identification and recognition. Also bus stop signs should be installed to reflect the new branding scheme and, to the greatest extent possible, poles furnished with bus stop signs should also have a network map, fare information as well as the frequency and span of the route that serves that particular stop.

COLT's County Routes should also be branded in a similar way as the City Route network. As part of this program, COLT should establish a presence in each community served by a County Route. This would include a passenger waiting shelter furnished with a bench, a complete COLT system map as well as a detailed map for the route that serves that community. There could also be another blow up map showing the routing through that specific community. The route and community maps should be actual street maps and not the type of map currently used in the public timetables. This kiosk/shelter (which should be at a bus stop in the center of the town) will act as the COLT station for that community. There should be a sign on the shelter that identifies COLT, the County Route branding and the community (e.g., "COLT CountyNet - Cornwall") to reinforce the station feel.

Timetables - Current COLT public timetables should all be reviewed to determine whether or not all directional information included on the timetable maps is provided and comprehensible. Further, each public timetable should have a similar set of information including the schedule for service, a route map, fare structure information and general

information about riding COLT. Further, the public timetables for many COLT routes are confusing (e.g., Route 14 and the Twilight Route have several different routings). Also, COLT should investigate a single timetable booklet format for the City and County Routes. Public timetables should also be updated to reflect routing changes associated with this plan and be made available at least one week before changes are implemented.

System Map - COLT should publish a system map and customer guide in both English and Spanish. This guide would be a good source of information for the passengers. The system map should include fare zone boundaries on the County Route map. Inserts should be included to show detailed routings in downtown Lebanon, Myerstown, Quentin and Harrisburg.

Marketing Proposals

Besides the need to provide the public with information to use the service as well as having the visible signs that the service exists (bus stop signs and shelters), there is a need to market the service. This means to implement a series of programs and promotions to attract people to want to use public transportation. Now is an ideal time for such a program with gasoline prices at an all time high and the strong push for people to make “environmentally friendly” choices. In this regard, it is recommended that COLT hire an outside marketing firm to set up and implement a local transit marketing program. Sources such as media advertising and direct mail should be explored. Campaigns should be developed to include a new system branding, logo and color scheme. Other campaigns should be undertaken to attract new ridership by focusing on gasoline prices, more and better bus service, “green” issues, etc. Further, a major campaign for the “New COLT” needs to be launched which would introduce the new system layout.

Implementation Schedule

Provided below is a potential five-year implementation schedule for the recommendations described above. Specific tasks are provided for specific time periods within each fiscal year.

Summer 2008 – Fall 2008 - Plan for Service Improvement Plan proposed changes. This task includes determining if any changes are needed to the routing proposed in the plan. This also includes riding the proposed route changes with a COLT bus to determine running time and other issues.

Winter 2008 - Spring 2009 - Select theme for enhanced image of City and County Routes. Identify capital needs (i.e., shelters), sites for shelters in Lebanon City and in towns throughout the county.

Winter 2008 – Summer 2009 - Work with municipalities on signage and shelter installation issues. Design public information material to be placed on poles with bus stop signs and in shelters.

Winter 2008 – Fall 2011 – Perform activities needed to implement the Harrisburg Express route including establishing and building a Park-n-Ride lot, interfacing with Capitol Area Transit (CAT) regarding downtown Harrisburg routing and obtaining new buses to implement the service.

Summer 2009 - Install new shelters and signage for new COLT image campaign.

Fall 2009 - Implement Service Improvement Plan proposals for all routes except Harrisburg Express service.

Summer 2010 - Implement new image campaign and any policy/service changes identified as part of the program. Analyze first complete fiscal year performance of the service changes implemented under the Service Improvement Plan.

Fall 2010 - Implement any service changes needed to improve or eliminate poorly performing routes based on route level analysis of the previous fiscal year.

Fall 2011 – Implement Harrisburg Express route.

Fall 2012 - Implement any service changes needed to improve or eliminate poorly performing routes based on route level analysis of the previous fiscal year.

Five Year Projected Impacts of Recommended Plan

This section contains five year financial projections for the Recommended Plan over fiscal years 2009 - 2013, which is the planning horizon for this document. Operating costs, ridership, farebox revenue, deficit and funding support levels are presented. For each of the projections a baseline year of FY 2006/2007 has been used. Figures for FY 2006/2007 are the most recent complete fiscal year data available for COLT. FY 2007/2008 was not complete at the time of the preparation of this report. Therefore, projections use FY 2006/2007 as a baseline year but skip to FY 2009 for the financial projections for the plan. It is important to note that conservative estimates are used for changes in operating costs, ridership and revenue. What is presented below should be considered the maximum expected increases in costs and the minimum expected gains in ridership and revenue.

- Operating Costs - Transit operating costs for the five-year planning period were estimated to reflect future service levels under the Service Improvement Plan as set by the implementation recommendations provided earlier in this chapter as well as cost increases attributable to inflation. Future service levels are not expected to increase from one fiscal year to the next, except for the addition of the

Harrisburg Express route. Therefore, most cost increases are attributable to inflation. Another exception is the added cost for a continuing and comprehensive marketing program. An annual inflation figure of seven percent has been used as a conservative estimate of annual cost increases to system costs. This inflation rate reflects the anticipated continuing large cost increases for fuel and health care.

The FY 2006/2007 COLT operating costs were utilized as the baseline year for the forecast. As mentioned previously, cost estimates are stated in current year dollars in the year of expenditure. It should be noted that FY 2009 costs are expanded by \$75,000 to reflect the design and publication of the public information materials involved in the enhanced COLT image program. Also, administrative costs in each subsequent year are expanded by \$60,000 in each fiscal year to reflect the marketing program. The anticipated annual operating costs for the planning period from FY 2009 to FY 2013 are shown below, including the effect of implementing the entire package of service changes in the beginning of FY 2010. The Harrisburg Express route would be implemented in FY 2012.

Fiscal Year	Major Change	Annual Operating Costs (\$)
2007 (Baseline)	-	1,740,402
2008	Route 17 all year and Casino ½ year	1,906,425
2009	New Timetables & System Map	2,114,875
2010	New Route Plan + Marketing	2,417,652
2011	Continue New System/Marketing	2,586,888
2012	Harrisburg Express Route	3,038,097
2013	Make needed changes	3,250,638

These cost estimates reflect only those expenses associated with COLT's fixed route bus system. Other costs such as special services or ADA complementary paratransit services are not included. Under the projection, operating costs in FY 2013 are 86.7 percent higher than the baseline FY 2007. This represents an average annual cost increase of 14.5 percent which is due to cost escalation,

added services and the marketing program. Please note that from FY 2002 to FY 2007, COLT's costs increased by about 11.1 percent each year so that a 14.5 percent increase is not unreasonable, especially considering that it includes a significant service increase and a public information and marketing campaign.

- Ridership - Ridership forecasts were prepared for each year of the planning horizon. An overall impact of the Service Improvement Plan on annual ridership levels was presented earlier in this chapter. As seen below, ridership gains were assumed to be realized during the fiscal year of the service change to which the gain is attributable. All other projected ridership gains were attributable to improved public information and the COLT image enhancements.

Fiscal Year	Major Change	Ridership
2007 (Baseline)	-	251,366
2008	Route 17 all year and Casino ½ year	289,850
2009	New Timetables & System Map	304,343
2010	New Route Plan + Marketing	343,035
2011	Continue New System/Marketing	360,187
2012	Harrisburg Express Route	393,496
2013	Make needed changes	413,171

Annual ridership figures for the intervening year, FY 2009 thru FY 2013 were projected to improve over the FY 2002 - FY 2007 trend of a 2.4 percent average annual passenger increase to a five percent increase. With the implementation of service changes in fall of 2009 (FY 2010), ridership is anticipated to increase to 343,035. For FY 2012, ridership is expected to increase to 393,496 with the new Harrisburg Express route. These projections are very dependent on COLT's implementation of an aggressive public information and marketing campaign.

- Farebox Revenue & Farebox Recovery - Revenue forecasts projected for the planning period for the Service Improvement Plan reflect fares paid by the number of passengers forecasted in the previous section. Due to the fact that, except for the Harrisburg Express service, the Service Improvement Plan does not include aspects that would substantially alter the make-up of COLT's ridership

base, and assuming COLT would not pursue a policy of fare increases through FY 2013, the average passenger fare observed in FY 2007, \$1.21, was used to project passenger revenue throughout the five year planning horizon. Revenue generated by COLT from sources other than passenger fares was not included in the projections. The farebox revenue projections are presented below.

Fiscal Year	Passenger Revenue(\$)
2007 (Baseline)	304,050
2008	350,718
2009	368,255
2010	415,072
2011	435,826
2012	518,817
2013	550,758

As the chart shows, passenger revenue would increase to a level of \$550,758 in FY 2013. This represents an increase of approximately \$246,708 over the baseline FY 2007 figure. Given the passenger revenue projections presented above and the five year projected operating costs, farebox recovery rate projections have been calculated and presented in the chart below. Revenues received as part of the State of Pennsylvania’s senior citizen transportation program are included in these calculations.

Fiscal Year	Farebox Recovery (%)
2007 (Baseline)	17.5
2008	18.4
2009	17.4
2010	17.2
2011	16.8
2012	17.1
2013	16.9

The chart above shows that under the Service Improvement Plan, farebox recovery remains relatively unchanged throughout the five year period even with the conservative estimates included in these projections. As stated before, this performance is dependent on the need for improved public information, a strong marketing program and implementation of this comprehensive route restructuring plan.

- **Deficit** - The annual deficit was determined as the difference between revenue and operating costs. As shown below, the operating deficit is projected to increase from \$1,436,352 in FY 2007 to \$2,699,880 in FY 2013, an 88 percent increase.

Fiscal Year	Operating Costs(\$)	Passenger Revenue(\$)	Operating Deficit
2007 (Baseline)	1,740,402	304,050	1,436,352
2008	1,906,425	350,718	1,555,707
2009	2,114,875	368,255	1,746,620
2010	2,417,652	415,072	2,002,580
2011	2,586,888	435,826	2,151,062
2012	3,038,097	518,817	2,519,280
2013	3,250,638	550,758	2,699,880

Deficit increases during the period are attributable to costs increasing at a rate greater than revenue. Although the deficit increases by approximately 88 percent, the farebox recovery rate remains relatively unchanged.

Capital Improvement Plan

This section describes the impact of the Recommended Plan on COLT's capital program.

New Buses - The Recommended Plan would increase COLT's peak period revenue vehicle need by three vehicles from 9 to about 12 buses. COLT's current fleet consists of 13 vehicles, including the new 2008 Gillig Hybrid. To account for spare vehicles, a fleet size of 16 is recommended. This would result in a spare ratio of approximately 33 percent, which is acceptable for small transit systems. This would require the addition of three vehicles to the fixed route fleet.

If the implementation schedule detailed above is followed, the peak vehicle need would not reach 12 until the implementation of the Harrisburg Express service planned for the beginning of FY 2012. Currently, COLT has eight 1997 Bluebird Q-Buses that have reached

their designated 10 year useful life in calendar year 2007. They also have accrued excessive mileage and are becoming a maintenance cost burden. COLT should plan to replace these buses as soon as possible. COLT has recognized this issue and plans to replace three of the buses in a few years. As seen below, it is recommended that the remaining five Bluebird buses be replaced in 2010 and 2011 with two new buses added to the fleet in 2011 for the Harrisburg Express service.

FY	Bus Acquisition Plan
2009	Two new buses (already programmed by COLT)
2010	Replace three Bluebird buses
2011	Replace two Bluebird buses
2011	Add two new buses for Harrisburg Express

Bus Stop Signs – The on-the-street amenities of COLT services need to be greatly improved. The most important item is the need to install bus stop signs throughout the entire fixed route system. Signs should be installed at every other block, or about six per mile, in the urban areas of the system and about four per mile in the suburban areas. Bus stops in rural areas could be accommodated with a flag stop by the customer. It should be noted that designated bus stops should be installed in the vicinity of all major activity centers. At a minimum, the signs should include the COLT logo, phone number and route number (and possibly even route color) that serve the stop. The ideal situation would be to include the times that the particular route is scheduled to serve each stop.

The COLT urban area route structure includes about 70 one way unduplicated miles while the suburban area includes about another 20 miles that require bus stops. Therefore, about 420 bus stop signs in the urban areas and 80 in the suburban areas are needed, or about 500 total.

Bus Shelters - As a means to increase COLT's recognition and prevalence in the service area as well as improving passenger information and amenities, COLT should plan to install at least ten additional bus shelters in Lebanon County. This would include a shelter placed in each town center served by a County Route, such as Annville and Myerstown. Each shelter should include a bench, a system map and timetable of the route or routes serving the shelter. They should also be visually compatible with the surrounding neighborhood.

Bus Garage - The proposals included in the recommended plan would not require any changes to the current facilities.

Park-n-Ride Lot – COLT has funding to construct another Park-n-Ride lot for their riders. Finding a suitable location for the lot would be a COLT responsibility. As noted in the recommended service plan, the location should be located to augment the new Harrisburg Express service.

Capital Funding Program – Table 6 presents the recommended capital funding program for COLT for the next five years. The two new buses are already programmed by COLT for 2009 at a cost of about \$650,000. The recommended capital program would be focused in two years, 2010 and 2011. The total capital cost in those years would be about \$1,092,000 and

\$1,509,000, respectively. With Federal Transit Administration (FTA) funds paying about 80 percent of the capital costs and the state discretionary capital program supporting about 17 percent, the local share would only be about \$32,760 in 2010 and \$45,270 in 2011.

TABLE 6
CAPITAL COST BY FISCAL YEAR
(\$000's)

Capital Item	2009	2010	2011	2012	2013
2 New Buses	\$650	-	-	-	-
3 New Buses	-	\$1,024	-	-	-
4 New Buses	-	-	\$1,434	-	-
250 Bus Stop Signs	-	\$38	-	-	-
250 Bus Stop Signs	-	-	\$42	-	-
5 Passenger Waiting Shelters	-	\$30	-	-	-
5 Passenger Waiting Shelters	-	-	\$33	-	-
TOTAL	\$650	\$1,092	\$1,509	-	-

With federal funds paying about 80 percent of the capital costs and the state supporting about 17 percent, the local share would only be about \$32,760 in 2010 and \$45,270 in 2011.

Chapter Summary

This chapter provided an impact analysis for the COLT Service Improvement Plan. Impacts for peak period vehicle needs and vehicle hours as well as projections for annual operating costs, ridership, passenger revenue, farebox recovery and operating deficit are provided for a five year period. The five year projections demonstrate that in FY 2013, COLT would carry about 64 percent more passengers and generate about 81 percent more passenger revenue. The five year projections also show that the operating deficit will increase as costs increase at a higher annual rate than revenue. However, it is projected that the convenience and simplicity of the new COLT system, along with public information and marketing improvements, would generate enough new ridership annually to maintain current farebox recovery levels.

A capital program is recommended to replace most of the over-age Bluebird fleet and to expand the fleet size from 13 to 16 buses. A plan for 500 new bus stop signs and 10 new passenger waiting shelters is also proposed. This capital program would cost about \$2.6 million over a two year period with a local share requirement of under \$80,000 due to significant federal and state capital financial support.