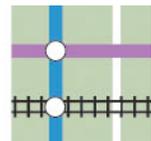


Transportation Service Plan for Alice Peck Day Hospital

*Final Report
Submitted to
Upper Valley Lake Sunapee Regional Planning Commission*

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Chapter 1: Introduction and Executive Summary

1.1 Introduction

During the winter of 2010 Tom Crikelair Associates developed a *Transportation Services Plan for Alice Peck Day Memorial Hospital*. This work was carried out for the Upper Valley Lake Sunapee Regional Planning Commission, with funding from the New Hampshire Department of Transportation. A advisory committee appointed by the regional planning commission provided guidance and oversight for this planning effort.

This report presents the findings and recommendations of the study. It includes five chapters:

Chapter 1 Introduction and Executive Summary

Chapter one presents a summary of the project report, including key recommendations and findings.

Chapter 2 Review of Existing Services

Chapter two describes transportation programs that currently serve Alice Peck Day Memorial Hospital and adjacent neighborhoods. It addresses services provided by Grafton County Senior Citizens Council, Advance Transit fixed route service, Advance Transit ADA paratransit service, and resident services for the Harvest Hill retirement community.

Chapter 3 Target Markets and Estimated Demand

Chapter three identifies different types of users that might benefit from improved transportation access to Alice Peck Day Memorial Hospital and other neighborhoods in downtown Lebanon. It provides estimates of anticipated demand from each market group. The chapter addresses people receiving out-patient care at the hospital and community care center, current and future residents of Harvest Hill and Woodlands, commuting Alice Peck Day employees, and downtown Lebanon residents who live in neighborhoods that are not directly served by fixed route Advance Transit buses.

Chapter 4 Service Design Alternatives

Chapter four presents five alternative strategies for improving transportation access to Alice Peck Day Memorial Hospital. It addresses dedicated paratransit service; flex route transit service; new Advance Transit fixed-route service; adjustments to Advance Transit's Red route; and construction of a pedestrian tunnel near an existing railroad underpass.

Chapter 5 Recommendations

Chapter five presents the consultant's recommendations for providing cost effective and productive transportation access to Alice Peck Day Memorial Hospital. The chapter includes a table that summarizes the alternatives described in Chapter 4. It offers a brief discussion of capital and operating costs, along with possible strategies to pay for the service.

1.2 Summary of Recommendations

The consultant's recommendations include the following:

- Alice Peck Day Memorial Hospital and its partners should work with Advance Transit toward implementation of flex route service between the Alice Peck Day campus and downtown Lebanon.
- The Alice Peck Day-Lebanon flex route should be extended to the Co-op at Centerra to attract more riders, and to increase the appeal of the service for current and future residents of Harvest Hill and Woodlands.
- The flex route schedule should include timed departures at three locations on the Alice Peck Day campus: the Community Care Center, the hospital emergency entrance, and the Harvest Hill main entrance.
- The flex route service should offer pick-ups and drop-offs on request at Dartmouth-Hitchcock Medical Center for people who have boarded the flex route bus at Alice Peck Day or elsewhere along the route.
- Flex route service should operate 9:00 a.m. to 4:00 p.m.
- Off-route pick-ups should be available with one-hour advance notice. Off-route drop offs should be available on request.
- Advance Transit should not shift Red route buses from Mechanic Street to Mascoma Street.
- NHDOT should not rebuild the Slayton Hill Road underpass to accommodate buses, but instead should construct a pedestrian tunnel and an associated walkway to facilitate pedestrian access between Mechanic Street bus stops and Alice Peck Day and neighboring residences.

1.3 Summary of Findings

Review of Existing Service

1. The Grafton County Senior Citizens Council provides programs and services for senior citizens and people with disabilities. The Council serves the Lebanon area with three small lift-equipped buses. The Council provides rides to medical appointments, volunteer jobs, and the Lebanon senior center. Shopping trips are available most afternoons.

2. The Council provides transportation to DHMC and to Alice Peck Day Memorial Hospital and adjacent medical offices. The Lebanon dispatcher estimates that the Council provides about 80 one-way trips a month to DHMC and about 20 one-way trips a month to Alice Peck Day. This translates into about three or four people a day traveling to DHMC, and less than one person per day traveling to Alice Peck Day. Demand varies, with as many as six or seven people traveling to DHMC on some days, and as many as three or four traveling to Alice Peck Day.

3. Advance Transit provides regularly scheduled fixed-route transit service for six Upper Valley municipalities in New Hampshire and Vermont. Advance Transit also operates complementary ADA paratransit service for individuals who cannot use regular buses due to a disability.

4. At this time, Advance Transit cannot consider changes to the Red route that will add extra time between downtown Lebanon and West Lebanon. Future changes may impact Red route scheduling. The Route 12A / Interstate 89 interchange is being reconstructed. And Advance Transit is investigating possible strategies for developing a new transit hub in West Lebanon. Whether these changes will free up enough minutes to allow Advance Transit to consider shifting the Red route to Mascoma Street.

5. Advance Transit already receives a large percentage of the FTA Section 5311 funding allocated to New Hampshire. It may be difficult for the Upper Valley to obtain more 5311 dollars, unless the overall national funding levels are increased. Advance Transit needs to ensure continued local support for the recently expanded Red route, before submitting requests to the city of Lebanon for money to pay for new service.

6. Advance Transit provides curb-to-curb bus service for people who cannot use regular route buses because of a disability. Advance Transit's *Access AT* program complies with the requirements of the Americans with Disability Act by serving locations within three-quarters of a mile of regular midday bus routes. Individuals must be certified to be eligible for the service. Participants arrange rides with the program administrator at least one day in advance of their trip.

7. Advance Transit estimates that the ADA program currently transports 3 or 4 people per week to Alice Peck Day Memorial Hospital, three or four people per week to the VA Hospital, two or three people per week to a dialysis center on Etna Road, and between 10 and 15 people per week to DHMC.

8. Advance Transit struggles to meet ADA transportation needs throughout an extensive service area with a limited vehicle fleet. A new flexible-route service in downtown Lebanon could relieve some of the pressure on Advance Transit's ADA program, especially if this new service transports residents of downtown Lebanon to DHMC and the Etna Road dialysis center.

9. Harvest Hill provides transportation services for residents with a van that operates two half days a week. The van provides transportation to off-site doctor appointments, grocery stores, drug stores, the library, hair appointments, and other shopping and errands. Demand for van transportation varies from four people a day to as many as fifteen people a day.

Target Markets and Estimated Demand

10. In 2009 Alice Peck Day had approximately 195,000 patient visits. This number is increasing as surgical and clinic volumes grow, and as out-patient and in-patient services continue to expand.

11. Alice Peck Day Memorial Hospital and the United Valley Interfaith Project carried out a survey of hospital visitors in November of 2009. Completed surveys were collected from 421 visitors. Thirteen percent of survey participants said they use Advance Transit for other transportation needs. Thirty-two percent of Advance Transit users cited problems generally in arranging transportation to Alice Peck Day. Seven percent of all participants said that arranging transportation to Alice Peck Day is a challenge.

12. Harvest Hill includes sixty-seven independent living apartments, plus seven special care units. Alice Peck Day plans to develop an additional 66 independent living apartments at Woodlands, on a site behind Harvest Hill. Van transportation for Harvest Hill residents is limited to two one-half days per week. Residents would benefit from more days of service and from a wider choice of travel times.

13. Harvest Hill and Woodlands residents are unlikely to utilize a bus stop on Mascoma Street. Future bus or van service should operate through the circle at the Harvest Hill main entrance.

14. Alice Peck Day Memorial Hospital currently has about 450 employees. Workers can currently utilize Advance Transit Red route bus stops on Mechanic Street. These commuters are required to walk through a narrow railroad underpass to reach Mascoma Street and the hospital. The distance involved may be an impediment for some employees. More significantly, the narrow underpass is unsafe for pedestrians.

15. There are several neighborhoods near Alice Peck Day and elsewhere in downtown Lebanon that are not directly served by Advance Transit buses. A fixed-route transit service from Alice Peck Day Memorial Hospital could operate through some of these areas. A “flex route” that offers route deviations on request could extend the benefits of an APD bus route to even more neighborhoods.

16. It should be possible to extend an APD route to serve the Co-op at Centerra, as suggested in the Advance Transit 2008 Transit Development Plan. This would provide improved shopping access for new and existing Advance Transit bus riders.

17. A new “flex route” service for downtown Lebanon would offer greatly improved convenience for people with disabilities by allowing them to request same-day rides. The current program requires ADA riders to request service 24 hours in advance.

18. To estimate demand for new Advance Transit service, the consultant used productivity measures generated elsewhere in the Advance Transit system. The consultant estimated demand for individual market groups. The results are summarized in Figure 1.1.

Figure 1.1 *Estimated Demand for APD / Centerra Bus Service*

	All-Day	Midday Fixed	Midday Flex
Total daily one-way trips	74	60	83
Monthly riders	1,554	1,260	1,743
Annual riders	18,500	15,000	20,750
Annual service hours	3,000	2,000	2,000
Riders per hour	6.2	7.5	10.4

Service Design Alternatives- Paratransit Service

19. Five service design alternatives are summarized in Figure 1.2.

20. Alice Peck Day Memorial Hospital could arrange for a dedicated paratransit service to transport patients between their residences and the hospital campus in Lebanon. A small lift-equipped bus would be needed for this service. The same vehicle could be used to provide transportation for Harvest Hill and Woodlands residents.

21. A dedicated paratransit service would be similar to the program currently operated by Grafton County Seniors. It would be different because the bus would say “Alice Peck Day,” the service would be available for anyone to ride, and it would include Harvest Hill and Woodlands among its primary markets.

Figure 1.2 Summary of Alternative Strategies

<i>Option</i>	<i>Likely Operator</i>	<i>Riders per Day</i>	<i>Riders per Hour</i>	<i>Strengths</i>	<i>Weaknesses</i>
Dedicated APD paratransit service	GCSCC or Advance Transit			<ul style="list-style-type: none"> • Service can be scheduled to match needs. • An APD bus will offer expanded visibility. • Offers customized service for individuals with special needs. 	<ul style="list-style-type: none"> • Demand may be limited. • Depending on the area served, scheduling conflicts may arise and productivity may be low. • Limited impact on AT's ADA program. • May be perceived as a service for low-income people.
APD / Lebanon / Centerra flex route service	Advance Transit	83	10.4	<ul style="list-style-type: none"> • Offers scheduled front door stops on the APD campus. • Increased convenience for some current AT riders. • New AT service for several Lebanon neighborhoods. • New access to shopping at Centerra. • Will help meet demand for AT's ADA service. • Should qualify for New Freedom grant because it offers increased convenience for ADA riders. 	<ul style="list-style-type: none"> • A dispatcher is required to handle trip requests. • Requires ongoing coordination between the AT dispatcher and driver. • Depending on demand, scheduling conflicts and timing issues may arise. • A new service concept may be difficult for some riders to understand. • Requires public outreach and education effort.
APD / Lebanon / Centerra fixed route	Advance Transit	60 (74 with all day service)	7.5 (6.2 with all day service)	<ul style="list-style-type: none"> • Simpler and easier to operate than a flex route or paratransit service. • Requires no dispatcher to handle trip requests. • Eliminates the potential for scheduling conflicts. • Easier for the public to understand. 	<ul style="list-style-type: none"> • Serves fewer Lebanon neighborhoods. • Generates fewer riders and lower productivity than flex service. • Has no impact on AT's ADA program, and will likely not qualify for a New Freedom grant.
Move Red route to Mascoma Street	Advance Transit			<ul style="list-style-type: none"> • Involves no additional operating cost. • Offers improved access for commuters and some hospital visitors. 	<ul style="list-style-type: none"> • Offers few benefits for APD visitors with mobility limitations. • Requires infrastructure improvements at both ends of Mascoma Street. • Cannot be considered until Red route issues in West Lebanon and on Route 12A have been resolved. • The long term feasibility of this change remains unknown. • Negative impact on riders who currently use the Rivermill bus stop on Mechanic Street.
New Underpass				<ul style="list-style-type: none"> • No impact on transit operating costs. • Has no impact on Red route schedules. • Has no impact on Rivermill bus riders. • Provides increased safety for APD commuters and some APD visitors. • Offers increased safety for other pedestrians and bicycle riders. 	<ul style="list-style-type: none"> • Less convenient for commuters than a Mascoma Street stop. • Offers little or no benefit for APD visitors with mobility limitation. • Does not provide a meaningful transit alternative for APD retirement community residents.

Service Design Alternatives- Flex Route Service

22. A new Advance Transit “flex route” service could link the Alice Peck Day campus with downtown Lebanon and the Co-op at Centerra. The service could operate from 9:00 a.m. until 4:00 p.m. It could be structured around a variable route, with fixed bus stop locations limited to the end points and the middle of the route. Intermediate stops and the roadways traveled would vary depending on pick-up and drop-off requests. Riders who wish to board at intermediate points could be required to request service at least one hour in advance of their desired departure time. A proposed timetable for flex route service is presented in Figure 1.3.

Figure 1.3 APD / Lebanon / Centerra Flex Route Timetable

FLEX SERVICE: ALICE PECK DAY / LEBANON / CENTERRA										
ALLICE PECK DAY							ALLICE PECK DAY			
Harvest Hill	Community Care	Hospital Entrance	arrive Lebanon	depart Lebanon	Centerra Co-op	arrive Lebanon	depart Lebanon	Community Care	Hospital Entrance	Harvest Hill
							8:45 a	D	D	8:55 a
9:00 a	9:02 a	9:03 a	9:10 a	9:15 a	9:25 a	9:35 a	9:45 a	D	D	9:55 a
10:00 a	10:02 a	10:03 a	10:10 a	10:15 a	10:25 a	10:35 a	10:45 a	D	D	10:55 a
11:00 a	11:02 a	11:03 a	11:10 a	11:15 a	11:25 a	11:35 a	11:45 a	D	D	11:55 a
12:30 p	12:32 p	12:33 p	12:40 p	12:45 p	12:55 p	1:05 p	1:15 p	D	D	1:25 p
1:30 p	1:32 p	1:33 p	1:40 p	1:45 p	1:55 p	2:05 p	2:15 p	D	D	2:25 p
2:30 p	2:32 p	2:33 p	2:40 p	2:45 p	2:55 p	3:05 p	3:15 p	D	D	3:25 p
3:30 p	3:32 p	3:33 p	3:40 p	3:45 p						

D indicates drop off on request.

The route traveled varies from trip to trip. For intermediate pick-ups between designated time points, notify the Advance Transit dispatcher at least one hour before your trip.

Service Design Alternatives- Fixed Route Service

23. A new Advance Transit fixed route could link Alice Peck Day Memorial Hospital with downtown Lebanon and the Co-op at Centerra. Fixed route service is simpler and easier to operate than a flex route or paratransit service. But a fixed route will serve fewer neighborhoods and is projected to generate fewer riders and result in lower productivity.

Service Design Alternatives- Reconfigured Red Route

24. Advance Transit cannot commit at this time to moving Red route buses to Mascoma Street, even if improvements are made at both ends of Mascoma Street. It is impossible to determine the feasibility of such a change until the I-89 / Route 12A construction project is complete, and until the future of the West Lebanon transit hub has been determined.

25. Red route service to Alice Peck Day would be limited to a curbside bus stop on Mascoma Street. While a Mascoma Street stop would provide increased convenience for Alice Peck Day commuters, it would provide marginal benefits for only some Alice Peck Day visitors and residents.

Service Design Alternatives- Pedestrian Tunnel

26. An alternative to moving Red route buses to Mascoma Street would be to improve pedestrian access between Mechanic Street and the Alice Peck Day campus. This would involve construction of a pedestrian tunnel adjacent to the Slayton Hill Road railroad underpass. This would allow APD commuters and others to walk safely between Advance Transit's Mechanic Street bus stops and the Alice Peck Day campus.

Anticipated Costs and Program Revenues

27. The direct cost for midday paratransit or flex route service is expected to total about \$100,000 per year, regardless of who operates the service. A new Advance Transit fixed route may cost more, because fully allocated costs for Advance Transit's fixed route operations are higher than the incremental cost for on-demand ADA service.

28. The flex route option appears to have the best chance of qualifying for New Freedom funding from the Federal Transit Administration. It will offer a higher level of convenience for people with disabilities, because ADA riders who use this new service would be able to make same-day requests for transportation.

29. The local share cost for Alice Peck Day Memorial Hospital and its supporters is likely to total \$50,000 per year. This assumes that Advance Transit can add the service without requiring additional dollars to cover overhead costs that could be assigned to this service. Fully allocated costs could increase the local share requirement by \$70,000.

30. A new bus for an Alice Peck Day route is likely to cost between \$100,000 and \$150,000. Assuming 80% FTA funding and 10% state funding, the local share capital cost is likely to total between \$10,000 and \$15,000.

Chapter 2: Review of Existing Services

This chapter describes transportation programs that currently serve Alice Peck Day Memorial Hospital and adjacent neighborhoods. It addresses services provided by Grafton County Senior Citizens Council, Advance Transit fixed route service, Advance Transit ADA paratransit service, and resident services for the Harvest Hill retirement community.

- Section 2.1 Grafton County Senior Citizens Council
- Section 2.2 Advance Transit Fixed Route Service
- Section 2.3 Advance Transit ADA Service
- Section 2.4 Transportation for Harvest Hill Residents

2.1 Grafton County Senior Citizens Council

The Grafton County Senior Citizens Council provides programs and services for senior citizens and people with disabilities. The organization operates in seven locations and provides services to residents of thirty-nine Grafton County communities. The Council operates social and activity centers that offer lunch programs, exercise and craft classes, and discussion groups. It also provides health education and screenings, and transportation to shopping and medical appointments.

The Council serves the Lebanon area with three small lift-equipped buses. These buses operate for the most part in Lebanon, West Lebanon, and Hanover, but they also provide rides for people in Etna, Enfield, and Plainfield. Special arrangements have been made for the Council to provide transportation for residents of the Quail Hollow senior citizen apartment complex, located off Route 10 near the Lebanon / Hanover town line.

During the morning hours, the Council provides rides to medical appointments, volunteer jobs, and the Lebanon senior center. Shopping trips are available most afternoons. On Tuesdays and Thursdays, transportation is provided to the Route 12A shopping plazas. On Wednesdays, Council buses serve the Coop at Centerra. Rides to downtown Lebanon shopping destinations are available at any time. Rides from Enfield and Etna are available three days a week. Plainfield is served two days a week. Quail Hollow is served Monday through Friday, with trips scheduled around Quail Hollow stops at 9:30 a.m., 10:30 a.m., and 11:30 a.m.

Transportation staff based in Lebanon estimate that they generally provide about 50 one-way rides for an estimated 25 to 30 different individuals each day. Ridership can vary from as low as 25 trips a day to as high as 75-80 trips a day. Staff members suggest that about 30% of the trips they provide are for medical appointments, about 30% are for the

senior center lunch program, and about 30% are for shopping. The remaining 10% are for other errands and appointments.

The most common destination for medical trips is Dartmouth-Hitchcock Medical Center. The Council also provides transportation to Alice Peck Day Memorial Hospital and adjacent medical offices. The Lebanon dispatcher estimates that the Council provides about 80 one-way trips a month to DHMC and about 20 one-way trips a month to Alice Peck Day. This translates to about three or four people a day traveling to DHMC, and less than one person per day traveling to Alice Peck Day. Demand varies, with as many as six or seven people traveling to DHMC on some days, and as many as three or four traveling to Alice Peck Day.

The Council does not typically receive requests for transportation from residents of the region's two higher income retirement communities. Kendal in Hanover and Harvest Hill on the Alice Peck Day campus in Lebanon transport residents with their own vehicles and drivers. Kendal is also served by Advance Transit's Brown route. The Council generally gives lower priority to people who have other available resources.

The Grafton County Senior Citizens Council spends about \$450,000 per year on its countywide transportation program. Title 3 of the Older Americans Act pays for roughly 60% of the agency's transportation program. Other funding sources include rider donations, area hospitals, United Way, municipalities, and Grafton County. A \$20,000 contribution from Alice Peck Day Memorial Hospital covers about 4% of the Council's transportation expenses.

2.2 Advance Transit Fixed Route Service

Advance Transit provides regularly scheduled fixed-route transit service for six Upper Valley municipalities in New Hampshire and Vermont. Advance Transit also operates campus and park-and-ride shuttle routes in Hanover and Lebanon, and complementary ADA paratransit service for individuals who cannot use regular buses due to a disability. ADA service is described in Section 2.3.

2.2.1 Routes and Services

Regularly scheduled buses operate five days a week on five routes, serving Lebanon, Hanover, Norwich, Hartford, Enfield, and Canaan. Passengers board all Advance Transit routes and services without paying a fare. In addition to municipal funding, Advance Transit receives financial support from the Federal Transit Administration, NHDOT, VTrans, Dartmouth College, Dartmouth-Hitchcock Medical Center, and private donors.

In 2008, Advance Transit provided a total of 456,233 one-way trips. In the last 15 years, Advance Transit ridership has experienced a nearly four-fold increase. Use of regular-route service climbed from about 10,000 riders a month in 1994 to an average of 38,000 riders a month in 2008.

The Red route links downtown Lebanon, West Lebanon, and the Route 12A plazas, and is the second busiest Advance Transit route. The Red route carries about 10,000 riders a month. The total for October 2009 was 10,011.

Figure 1 *Advance Transit Performance Measures for April 2008*

	Monthly Riders	Daily Riders	Riders per Hour	Riders per Round Trip
BLUE	19,530	888	21	26
GREEN	4,650	211	18	19
RED	9,876	449	37	37
BROWN	4,065	185	17	9
ORANGE	5,448	248	21	21
DARTMOUTH	7,350	334	11	5
DHMC	19,914	905	27	7
TOTAL	70,833	3,220	21	9
FIXED-ROUTE	43,569	1,980	23	22

The Blue route links Hanover and Lebanon throughout the day, and offers peak hour links to Enfield and Canaan. The Blue route is the busiest route in the Advance Transit system, with nearly 20,000 boardings per month.

Performance measures for individual Advance Transit routes are presented in Figure 1. These April 2008 figures are taken from Advance Transit’s 2008 Transit Development Plan.

2.2.2 Route Timing and Connections

Advance Transit operates a triangular system of routes, with three transfer hubs. Passengers transfer between buses in downtown Lebanon, West Lebanon, and downtown Hanover. Because of increasing ridership and worsening traffic congestion, schedules are tight, with little or no room for additional stops or diversions. On-time performance is of critical importance for Advance Transit, because delays on one route can create delays and missed connections throughout the coordinated system.

Timing is especially critical for the Red route segment between downtown Lebanon and West Lebanon. In 2008, timing for the Red route was changed to help address delays experienced by buses operating through the Route 12A plazas. Five minutes of layover time previously allotted to the westbound Lebanon to West Lebanon segment was shifted instead to the West Lebanon-Plaza segment. Because of this situation, Advance Transit cannot consider shifting the Red route to Mascoma Street.

Two future sets of changes may impact Red route scheduling. The Route 12A / Interstate 89 interchange is being reconstructed. And Advance Transit is investigating possible strategies for developing a new transit hub in West Lebanon. Both changes could impact Red route travel times. Whether they will free up enough minutes to allow Advance Transit to consider changes to the Lebanon-West Lebanon segment is unknown at this time.

2.2.3 Federal and Local Funding Issues

Advance Transit receives FTA 5311 rural operating assistance from NHDOT and VTrans. The Upper Valley has been very successful in obtaining these allocations from both states. It is important to remember, however, that there is a twofold limit on the future use of 5311 subsidies. First, each state receives a limited apportionment from the nationwide rural transit program. Second, these funds must be shared with the other public transit programs in each state. Advance Transit already receives a large percentage of the 5311 funding allocated to New Hampshire. It may be difficult for the Upper Valley to obtain more 5311 dollars, unless the overall national funding levels are increased.

In addition, any new federal grants will need to be matched by local contributions. Advance Transit is currently working to stabilize long-term local funding for expanded Red route service. In 2009, a second Red route bus was funded through the use of 80% CMAQ funding. This grant is available for three years. When it runs out, the local share requirement for the second Red route bus will increase from 20% to 50%. Advance Transit wants to ensure continued local support for this existing service, before submitting requests to the city of Lebanon for money to pay for new service.

2.2.4 2008 Passenger Survey Results

In a 2008 onboard passenger survey, 69% of Advance Transit riders gave “work” as their primary trip purpose. Eighty-two percent of Blue route trips were work related. This was true of 54% of Red route trips.

Nine percent of Advance Transit riders gave “shopping” as their primary trip purpose. Twenty-one percent of Red route riders said their primary trip purpose was “shopping.” The Red route accounted for 57% of Advance Transit shopping trips.

Four percent of Advance Transit riders gave “medical” as their primary trip purpose. This was true of four percent of Blue route riders and four percent of Red route riders. Five percent of Green route riders gave “medical” as their trip purpose. This was true of eight percent of Orange route riders.

Twenty-six percent of regular route riders said their trip involved a transfer between bus routes. Eighty-two percent said they use the bus service three or more days a week.

Fifty-three percent of Advance Transit survey respondents indicated that they had a car available for their trip. The percentage of Advance Transit riders who chose to ride instead of drive increased from 25% in 1999 and 43% in 2004 to 53% in 2008. Sixty percent of Advance Transit riders indicated that they have a valid drivers license.

2.3 ADA Paratransit Service

Advance Transit provides curb-to-curb bus service for people who cannot use regular route buses because of a disability. Advance Transit's *Access AT* program complies with the requirements of the Americans with Disability Act by serving locations within three-quarters of a mile of regular midday bus routes. Individuals must be certified to be eligible for the service. Participants arrange rides with the program administrator at least one day in advance of their trip.

Advance Transit uses three small lift-equipped buses to provide ADA paratransit service. One bus operates from 6:30 a.m. to roughly 2:30 p.m. A second bus goes into service at 8:30 or 9:00 a.m. and sometimes operates until as late as 6:00 or 7:00 p.m. The third bus is called into service on days when demand is heavy. It typically operates from 9:00 a.m. until 1:00 or 2:00 p.m.

The Advance Transit staff member responsible for scheduling ADA rides estimates that the program currently transports 3 or 4 people per week to Alice Peck Day Memorial Hospital, three or four people per week to the VA Hospital, two or three people per week to a dialysis center on Etna Road, and between 10 and 15 people per week to DHMC. He estimates that the program has about twenty certified users who are residents of Quail Hollow, five or six who are residents of Windsor Hollow, and three who are residents of Kendal. He said there are four certified users who live in downtown Lebanon in residential neighborhoods adjacent to Mascoma Street, and one user who lives along Bank Street.

Advance Transit struggles to meet ADA transportation needs throughout an extensive service area with a limited vehicle fleet. A new flexible-route service in downtown Lebanon could relieve some of the pressure on Advance Transit's ADA program, especially if this new service transports residents of downtown Lebanon to DHMC and the Etna Road dialysis center.

2.4 Transportation for Harvest Hill Residents

Harvest Hill is an independent and assisted living retirement community with on-site medical services. Harvest Hill residents may remain in their apartments and receive services, up to nursing home level care, without moving from their home. Harvest Hill is located on the campus of Alice Peck Day Memorial Hospital.

Harvest Hill includes sixty-seven independent living apartments, plus seven special care units. There are currently 72 Harvest Hill residents. Alice Peck Day plans to develop an

additional 66 independent living apartments at Woodlands, on a site behind Harvest Hill. Woodlands will accommodate up to 120 additional residents on the Alice Peck Day campus.

Harvest Hill provides transportation services for residents with a van that operates two half days a week. The van provides transportation to off-site doctor appointments, grocery stores, drug stores, the library, hair appointments, and other shopping and errands. Demand for van transportation varies from four people a day to as many as fifteen people a day. Alice Peck Day also owns two private automobiles that are available for use by Harvest Hill residents.

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Chapter 3: Target Markets and Estimated Demand

This chapter identifies different types of users that might benefit from improved transportation access to Alice Peck Day Memorial Hospital and other neighborhoods in downtown Lebanon. It provides estimates of anticipated demand from each market group.

The chapter addresses people receiving out-patient care at the hospital and community care center, current and future residents of Harvest Hill and Woodlands, commuting Alice Peck Day employees, and downtown Lebanon residents who live in neighborhoods that are not directly served by fixed route Advance Transit buses.

The chapter is structured as follows:

- Section 3.1 Hospital, Outpatient, and Community Care Visits
- Section 3.2 Harvest Hill and Woodlands Residents
- Section 3.3 Alice Peck Day Employees
- Section 3.4 Residents of Other Downtown Lebanon Neighborhoods
- Section 3.5 Downtown Lebanon Residents with Disabilities
- Section 3.6 Estimated Demand

3.1 Hospital, Outpatient, and Community Care Visits

Alice Peck Day Memorial Hospital has over one hundred physicians in more than twenty specialties providing Upper Valley residents with a wide range of medical services. Facilities and services include a birthing center, an extended care nursing facility, emergency services, general surgery, occupational health services, an orthopedic clinic, a Center for Community Care featuring family practice, internal medicine, and pediatrics, radiology and mammography services, a sleep center, rehabilitation services, and a women's care center.

Alice Peck Day includes 25 hospital rooms and 20 skilled nursing rooms. It has 450 employees, including 37 staff physicians, plus another 70 contracted providers. In 2009 Alice Peck Day had approximately 195,000 patient visits. This number is increasing as surgical and clinic volumes grow, and as out-patient and in-patient services continue to expand.

Alice Peck Day Memorial Hospital and the United Valley Interfaith Project carried out a survey of hospital visitors in November of 2009. The survey was designed to obtain information about travel modes and related transportation issues for patients of APD Hospital and the Community Care Center.

Surveys were completed by 421 visitors on November 6, 2009 and November 9, 2009. Surveys were distributed at the Robert A. Mesropian Community Care Center, the Women's Care Center, the upper hospital main entrance, the lower hospital main entrance, radiology, and rehab.

Survey findings included the following:

- The Community Care Center and the Women's Care Center accounted for nearly two-thirds of completed surveys. The distribution by location was the Robert A Mesropian Community Care Center (44.7%), Women's Care Center (21.1%), Upper Hospital Main Entrance (13.8%), Lower Hospital Main Entrance (7.4%), Radiology (6.2%), and Rehab (6.7%).
- Cars were the overwhelming mode of transportation (96.0%). This included driving oneself (75.1%), driven by a family member (16.2%), driven by a non-family member (4.3%) and taxi (0.5%).
- Buses and vans were used by 2.4% of survey participants, with 1.2% riding AT and walking through the underpass, 0.2% riding AT and walking from the green in Lebanon, and 1.0% using a Senior Center bus.
- 12.6% of survey participants said they use Advance Transit for other transportation needs. Eleven percent of Advance Transit users said they used Advance Transit to get to APD the day of the survey, with most walking through the underpass from Mechanic Street.
- Transportation problems were encountered by 3.6% of participating patients the day of the survey, while 7.1% cited transportation problems generally. Thirty-two percent of Advance Transit users cited problems generally in arranging transportation to Alice Peck Day.
- Desire to use Advance Transit to get to APD, assuming a convenient schedule, was expressed by 43.2% of the total sample. Interest in Advance Transit service to APD was twice as high among Advance Transit riders, as well as among those with transportation problems generally
- Medical appointments had been missed in the past year due to transportation problems by 6.0% of the patients. One quarter of Advance Transit users said they had missed appointments in the past year due to a lack of transportation.

The Alice Peck Day campus could be served by a bus stop on Mascoma Street. Alternatively, buses could offer front door stops at the hospital emergency entrance and at the community care center. While a Mascoma Street stop would benefit some hospital patients and visitors, walking distances will be too great for people with limited mobility. Front door service should result in significantly higher bus ridership, especially among senior citizens. Front door bus stops will also make the service more useful for families with young children.

3.2 Harvest Hill and Woodlands Residents

Harvest Hill includes sixty-seven independent living apartments, plus seven special care units. There are currently 72 Harvest Hill residents. Alice Peck Day plans to develop an additional 66 independent living apartments at Woodlands, on a site behind Harvest Hill. Woodlands will accommodate up to 120 additional residents on the Alice Peck Day campus.

Harvest Hill residents currently take advantage of two-day-a-week van service for travel to grocery stores, drug stores, the library, hair appointments, off-site medical appointments, and other shopping and errands. Demand for van transportation varies from four people a day to as many as fifteen people a day.

Van transportation for Harvest Hill residents is limited to two one-half days per week. Residents would benefit from more days of service and from a wider choice of travel times. Residents of Harvest Hill and a future Woodlands complex would also benefit from improved access to the region's community transportation system.

Harvest Hill and Woodlands residents are unlikely to utilize a bus stop on Mascoma Street. Future bus or van service should operate through the circle at the Harvest Hill main entrance. Front door stops may not be needed at Woodlands. Front door stops at Woodlands will require an adequate circle for a bus to reverse directions. It does not appear to be unreasonable to expect Woodlands residents to walk between their residences and the Harvest Hill entrance to gain access to transit service.

3.3 Alice Peck Day Employees

Alice Peck Day Memorial Hospital currently has about 450 employees. Some workers might benefit from improved commuter transportation options. APD workers can currently utilize Advance Transit Red route bus stops on Mechanic Street. These commuters are required to walk through a narrow railroad underpass to reach Mascoma Street and the hospital. The distance involved may be an impediment for some employees. More significantly, the narrow underpass is unsafe for pedestrians.

Advance Transit bus stops near the underpass are currently used by an average of four people per day in each direction. More workers might ride the bus to and from work if the stop were moved closer to the Alice Peck Day campus, or if safer pedestrian access is provided between the bus stop and Mascoma Street.

3.4 Residents of Other Downtown Lebanon Neighborhoods

There are several neighborhoods near Alice Peck Day and elsewhere in downtown Lebanon that are not directly served by Advance Transit buses. Some of these neighborhoods might be considered to be within walking distance of a bus stop for some physically fit riders. For other neighborhoods, the distance to the nearest bus stop is too great to allow reasonable pedestrian access. A fixed-route transit service from Alice Peck Day Memorial Hospital could operate through some of these areas. A “flex route” that offers route deviations on request could extend the benefits of an APD bus route to even more neighborhoods.

Buses from Alice Peck Day should offer stops at Advance Transit’s transfer hub adjacent to the Lebanon Green. This will give people served by the new route access to Red route buses serving West Lebanon and the Route 12A plazas, and to Blue route buses serving DHMC, Hanover, and Dartmouth College.

In addition, it should be possible to extend an APD route to serve the Co-op at Centerra, as suggested in the Advance Transit 2008 Transit Development Plan. This would provide improved shopping access for new and existing Advance Transit bus riders.

3.5 Downtown Lebanon Residents with Disabilities

A new “flex route” service for downtown Lebanon could provide increased capacity for Advance Transit’s ADA paratransit service. This route could reduce pressure on Advance Transit’s limited ADA fleet, especially if it offers downtown Lebanon residents access to medical appointments at both Alice Peck Day and DHMC. It would also offer greatly improved convenience for people with disabilities, by allowing them to request same-day rides. The current program requires ADA riders to request service 24 hours in advance.

3.6 Estimated Demand

3.6.1 Methodology

The basic methodology for estimating transit demand involves comparing proposed new markets with actual results experienced by transit programs offering similar services in similar locations. It is difficult to come up with comparable measures for Advance Transit from the wider transit community, because Advance Transit provides a level and quality of transit service that is very unusual for a non-urban area.

The closest operation in northern New England may be Marble Valley Regional Transit in Rutland, Vermont. However, because Advance Transit’s productivity levels are higher, using Rutland as a standard will likely result in projections that understate the potential in Lebanon.

To estimate demand for new Advance Transit service, the consultants used productivity measures generated elsewhere in the Advance Transit system. Advance Transit serves two other hospitals in the Upper Valley, Dartmouth-Hitchcock Medical Center and the VA Hospital in White River Junction. Actual Advance Transit productivity measures for these two hospitals can be applied to Alice Peck Day Memorial Hospital. They can be scaled according to various measures of size, including number of employees, number of patient visits, and number of hospital beds.

Advance Transit provides regularly scheduled service to the Kendal retirement community in Hanover. Ridership results at Kendal can be applied to Harvest Hill and Woodlands, based on the number of dwelling units and the number of residents.

Average boardings at individual bus stops in other Lebanon neighborhoods can be utilized to predict average boardings in new neighborhoods. Boardings at other shopping locations can be used to estimate boardings at the Centerra Co-op. Projected ADA boardings can be based on current usage of ADA service by downtown Lebanon residents.

Estimated demand for individual market groups is summarized in Figure 3.1.

Figure 3.1 *Estimated Demand for APD / Centerra Bus Service*

	All-Day	Midday Fixed	Midday Flex
New neighborhoods served	3	3	6
Daily boardings per neighborhood	2.5	2.5	2.5
Daily ADA rides to APD	0	0	1
Daily ADA rides to DHMC	0	0	3
Daily neighborhood boardings	8	8	15
Daily APD commuters	7	0	0
Daily APD visitors	5.5	5.5	5.5
Daily retirement boardings	5	5	5
Daily Co-op shoppers	12	12	12
Daily ADA boardings	0	0	4
Total daily round trips	37	30	42
Total daily one-way trips	74	60	83
Monthly riders	1,554	1,260	1,743
Annual riders	18,500	15,000	20,750
Annual service hours	3,000	2,000	2,000
Riders per hour	6.2	7.5	10.4

It should be noted that Advance Transit has been providing regularly scheduled transit service to DHMC, the VA Hospital, and Kendal for many years. It may take some time for ridership on a new APD route to reach comparable levels experienced by these relatively mature services.

3.6.2 Commuting Workers

DHMC reports 6,841 employees. Advance Transit currently transports about 1,200 round trip commuters each month between downtown Lebanon and DHMC. This translates into 0.176 monthly round trip Lebanon commuters per DHMC employee.

The VA Hospital has 703 employees. Advance Transit currently transports about 208 round trip VA commuters per month. This translates into 0.296 monthly round trip VA commuters per VA employee.

Applying these productivity measures to Alice Peck Day's 450 member workforce suggests that regularly scheduled commuter bus service is likely to generate between 4 and 7 round trip riders per day, or between 167 and 292 one-way commuter boardings per month. This in turn translates to between 2,000 and 3,500 commuter boardings per year. Figure 3.1 assumes 7 hospital boardings per day, which is the high end of the 4-7 range.

3.6.3 Outpatient Hospital Visitors

DHMC reports 416,108 outpatient visits per year. Advance Transit currently experiences about 3,972 Lebanon-bound non-commuter boardings per year at DHMC, or about 16 per day. This translates into 0.00955 annual non-commuter hospital boardings per outpatient visit.

The VA Hospital reports 185,415 outpatient visits per year. Advance Transit currently has about 768 annual non-commuter boardings per year at the VA Hospital, or about 3 boardings per day. This translates into 0.00414 annual non-commuter boardings per outpatient visit.

Applying these productivity measures to Alice Peck Day's 185,000 annual patient visits suggests that regularly scheduled bus service is likely to generate between 3 and 8 boardings per day, or between 1,500 and 4,000 one-way bus trips per year. Figure 3.1 assumes 5.5 boardings per day, which is the middle of the 3-8 range.

3.6.4 Hospital Beds

Another way to predict non-commuter hospital ridership is to look at Advance Transit boardings per hospital bed. DHMC generates 4.06 monthly hospital boardings per hospital bed. The VA Hospital generates 4.53 monthly hospital boardings per hospital bed. Applying these measures to the 25 hospital beds at APD yields a projection of 5-6 hospital boardings per day, or between 2,400 and 2,700 one-way bus trips per year.

Figure 3.1 assumes 5.5 boardings by hospital visitors per day, which is the midpoint of the 5-6 range.

3.6.5 Retirement Community Apartments and Residents

The Kendal retirement community in Hanover has 250 apartments and 410 residents. Advance Transit's Brown route bus stops at the front of the Kendal driveway 16 times per day. The service operates roughly every 45 minutes, with some variation to accommodate commute times and connections in Hanover with other Advance Transit bus routes.

Recent Advance Transit ridership records show an average of 198 boardings at Kendal per month. This translates into 0.792 monthly boards per residential unit, or 0.483 monthly boardings per resident.

Applying these measures to the projected 133 residential units and 192 residents at Harvest Hill and Woodlands suggests that the APD retirement communities will generate between 4.6 and 5.3 transit boardings per day. This translates to between 2,225 and 2,500 one-way bus rides per year. Figure 3.1 assumes 5 retirement community boardings per day, which is the middle of the 4.6-5.3 range.

3.6.6 Neighborhood Bus Stops

Comparisons with other Advance Transit neighborhood bus stops suggest that bus stops in new residential neighborhoods are likely to generate an average of between 2 and 3 round trip boardings per day. This translates to between 1,000 and 1,500 one-way bus trips per neighborhood per year.

Fixed-route service between APD and Advance Transit's Lebanon transit hub would likely serve three new neighborhoods. Assuming 2.5 round trip boardings per stop per day, this translates to a combined total of 3,750 one-way passenger boardings per year. A "flex route" service might add six new neighborhoods, for a combined total of 7,500 one-way boardings per year.

3.6.7 Centerra Co-op

The Shaws supermarket on Route 12A generates an average of 592 boardings per month, or 28 boardings per day. With less frequent service and more limited operating hours, a new APD-Lebanon-Centerra bus route might attract 12 round trip Lebanon bus riders per day, not including new Advance Transit riders boarding in newly served neighborhoods. This translates to 6,000 Centerra Co-op one-way riders per year.

3.6.8 ADA Rides to Alice Peck Day and DHMC

Advance Transit's ADA program coordinator estimates that a new Lebanon-based "flex route" bus would serve an average of 3 Lebanon residents per day traveling to DHMC and 1 Lebanon resident per day traveling to Alice Peck Day. Regular fixed-route service would not generate ADA trips, because the ADA program is limited to people who cannot access regular fixed-route buses.

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Chapter 4: Service Design Alternatives

This chapter presents five alternative strategies for improving transportation access to Alice Peck Day Memorial Hospital. It addresses dedicated paratransit service; flex route transit service; new Advance Transit fixed-route service; adjustments to Advance Transit's Red route; and construction of a pedestrian tunnel near an existing railroad underpass.

The strengths and weaknesses of the alternatives described in this chapter are summarized in Figure 5.1. Chapter four is structured as follows:

- Section 4.1 Dedicated Alice Peck Day Paratransit Service
- Section 4.2 New Flex Route Service
- Section 4.3 New Fixed Route Service
- Section 4.4 Adjustments to the Advance Transit Red Route
- Section 4.5 New Pedestrian Tunnel

4.1 Dedicated Alice Peck Day Paratransit Service

Alice Peck Day Memorial Hospital could arrange for a dedicated paratransit service to transport patients between their residences and the hospital campus in Lebanon. A small lift-equipped bus would be needed for this service. The same vehicle could be used to provide transportation for Harvest Hill and Woodlands residents.

The hospital could own and operate the paratransit service. Or it could contract with the Grafton County Senior Citizen Council or Advance Transit to operate the service on behalf of the hospital, its patients, and retirement community residents.

The hospital would probably prefer to contract with a transportation agency to operate the service. By doing this, the hospital will avoid the need to employ a dispatcher, to recruit drivers with commercial licenses, and to assume responsibility for drug testing, insurance, and vehicle maintenance. In addition, regional transportation agencies have access to 80% Federal Transit Administration grants to purchase vehicles.

This type of transportation service is currently available in the Littleton region. The Little Regional Hospital contracts with North Country Transit to operate five-day-a-week "Care-A-Van" service, providing the hospital's patients with free rides to the hospital, affiliated clinics, physical therapy centers, and "other places deemed necessary by LRH."

Fees collected by North Country Transit from Medicaid and elderly and disabled programs cover a small portion of the operating cost. The hospital pays the regional

transportation provider for the balance of the cost of operating this service. The hospital also paid 20% of the purchase cost of the vehicle. This was used to match an 80% Federal Transportation Administration capital grant. The hospital pays the transit agency approximately \$67,000 per year to operate this service. The contract price is based on a combined hourly rate, per mile rate, and per passenger fee. In 2009, the hospital van provided 3,151 trips. Medicaid funded 8% of these trips, and elderly and handicapped program dollars paid for 21% of the total trips provided. The remaining 71%, or 2,237 trips were covered by Littleton Regional Hospital.

The Care-A-Van vehicle uses a paint scheme that clearly identifies the van as a Littleton Regional Hospital service. The van is used by in-town Littleton residents, and also by people who live in outlying communities. Passengers sign up for rides one day in advance.

A dedicated paratransit vehicle could display an Alice Peck Day paint scheme. Patients could be required to submit service requests at least one day in advance. When scheduling conflicts arise, it might be possible for an agency like Grafton County Seniors to supplement the APD vehicle by providing some rides with other agency buses. The need for extra service will depend to a large extent on whether the new paratransit service is set up to serve outlying towns.

A dedicated paratransit service offers some benefits:

- It allows service to be scheduled to match specific requests for rides, avoiding nonproductive trips and unnecessary mileage.
- It will result in expanded visibility for Alice Peck Day Memorial Hospital in the wider community.
- Depending on the level of demand for the service, it may be possible to use the same bus to provide shopping and cultural outings for residents of APD retirement housing.

There are also some negative considerations:

- Demand may be too limited to justify the cost of paying a full-time driver.
- Demand may be spread out over a wide geographic area, resulting in limited productivity and possible scheduling conflicts.
- The service is likely to have little impact on Advance Transit's ADA program, unless the bus also serves DHMC and the dialysis center on Etna Road. If it is limited to Alice Peck Day, it may not qualify for a FTA New Freedom grant.
- The hospital will need a community outreach effort to inform area residents about the service. Some community members may perceive the service as intended for low-income people, and for this reason they may be reluctant to take advantage of the service.
- Planning and budgeting for the service may be difficult, because demand and service patterns may vary widely from week to week.

A dedicated paratransit service would be quite similar to the program currently operated by Grafton County Seniors. It would be different because the bus would say “Alice Peck Day,” the service would be available for anyone to ride, and it would include Harvest Hill and Woodlands among its primary markets.

4.2 New Flex Route Service

A new Advance Transit “flex route” service could link the Alice Peck Day campus with downtown Lebanon and the Co-op at Centerra. The service could operate from 9:00 a.m. until 4:00 p.m. It could be structured around a variable route, with fixed bus stop locations limited to the end points and the middle of the route. Intermediate stops and the roadways traveled would vary depending on pick-up and drop-off requests. The bus would deviate on request a minimum of one-quarter mile, but might deviate a greater distance, as suggested in Figure 4.2 on page 4-5.

Riders who wish to board at intermediate points could be required to request service at least one hour in advance of their desired departure time. Deviations for drop offs could be requested by passengers after they board the bus. Advance Transit’s ADA dispatcher would handle telephone requests for off-route pick-ups and forward this information to the bus driver.

A timetable would show scheduled front door pick ups at APD hospital, the Community Care Center, and the main entrance at Harvest Hill. The timetable should show scheduled departure times from Advance Transit’s downtown Lebanon transit hub. And it should show scheduled departure times from the Centerra Co-op.

A route map should clearly identify areas in Lebanon served by this bus. The map and timetable should include a message that says: “The route traveled varies from trip to trip. For pick-ups between designated time points, notify the Advance Transit dispatcher at least one hour before your trip.”

A sample timetable is presented in Figure 4.1. A sample service map is presented in Figure 4.2.

Figure 4.1 APD / Lebanon / Centerra Flex Route Timetable

FLEX SERVICE: ALICE PECK DAY / LEBANON / CENTERRA										
ALLICE PECK DAY							ALLICE PECK DAY			
Harvest Hill	Community Care	Hospital Entrance	arrive Lebanon	depart Lebanon	Centerra Co-op	arrive Lebanon	depart Lebanon	Community Care	Hospital Entrance	Harvest Hill
							8:45 a	D	D	8:55 a
9:00 a	9:02 a	9:03 a	9:10 a	9:15 a	9:25 a	9:35 a	9:45 a	D	D	9:55 a
10:00 a	10:02 a	10:03 a	10:10 a	10:15 a	10:25 a	10:35 a	10:45 a	D	D	10:55 a
11:00 a	11:02 a	11:03 a	11:10 a	11:15 a	11:25 a	11:35 a	11:45 a	D	D	11:55 a
12:30 p	12:32 p	12:33 p	12:40 p	12:45 p	12:55 p	1:05 p	1:15 p	D	D	1:25 p
1:30 p	1:32 p	1:33 p	1:40 p	1:45 p	1:55 p	2:05 p	2:15 p	D	D	2:25 p
2:30 p	2:32 p	2:33 p	2:40 p	2:45 p	2:55 p	3:05 p	3:15 p	D	D	3:25 p
3:30 p	3:32 p	3:33 p	3:40 p	3:45 p						

D indicates drop off on request.

The route traveled varies from trip to trip. For intermediate pick-ups between designated time points, notify the Advance Transit dispatcher at least one hour before your trip.

A flex route service could offer considerable benefits for Alice Peck Day and for downtown Lebanon residents:

- It includes scheduled front door stops on the Alice Peck Day campus.
- Structured service should be fairly easy for people to understand.
- It should be possible to limit potential scheduling conflicts by allowing adequate time for each route segment.
- Flex route service will offer increased convenience for people who must now walk long distances to Advance Transit bus stops.
- Flex route service will provide transit access to neighborhoods that currently have no service.
- The service will likely have more appeal than a paratransit service that might be perceived by some as a social service program.
- As designed, the flex route service will accommodate certified ADA riders, reducing pressure on Advance Transit’s ADA program.
- ADA participants who utilize the flex service will not be required to reserve their ride one day in advance, resulting in a higher level of convenience for disabled people who live in downtown Lebanon.
- For the above two reasons, the service should qualify for a New Freedom grant from the Federal Transit Administration.
- Because it will serve more neighborhoods, a flex route service is likely to generate more riders and to operate more efficiently than a regular fixed-route service linking APD, downtown Lebanon, and Centerra.

Figure 4.2 Map of Proposed APD / Centerra Flex Route



There are some drawbacks to a flex route approach:

- The service requires an on-duty dispatcher to handle pick-up requests.
- If many requests are received for individual time slots, scheduling conflicts and timing issues may arise.
- Flex route services can be more difficult to market and to explain to people who are unfamiliar with this type of service.

4.3 New Fixed Route Service

A new Advance Transit fixed route could serve Alice Peck Day Memorial Hospital. At least two sets of design choices need to be addressed.

Should an APD route operate all day, or midday only? All day service will provide improved travel opportunities for commuters. However, anticipated ridership gains do not appear to justify the cost of adding four additional service hours per day.

Should an APD route continue to Centerra?

If an APD route is limited to linking Alice Peck Day and downtown Lebanon, the service could operate every 30 minutes. If the route is extended to include the Co-op at Centerra, headways will be lengthened to every 60 minutes. In general, more frequent service is better. But ridership generated by Centerra shoppers may play an important role in ensuring the viability of an APD route. A route that includes Centerra is projected to generate 7.9 riders per hour. A route limited to the APD-Lebanon segment is projected to generate 3.8 riders per hour.

A regular fixed route service offers some advantages:

- Fixed route service is simpler and easier to operate than a flex route or paratransit service.
- This type of service requires no dispatcher to handle pick-up requests.
- Fixed route service eliminates the potential for scheduling conflicts and related time pressures.
- Fixed route service is easier for the public to understand.

But fixed route service also has some disadvantages for Alice Peck Day:

- A fixed route will serve fewer downtown Lebanon neighborhoods.
- A fixed route will generate fewer riders and result in lower productivity (7.9 riders per hour for fixed route, versus 10.8 riders per hour for flex route service).
- A fixed route will not reduce pressure on Advance Transit's ADA program.
- A fixed route will offer no improvements for ADA-qualified riders.
- For these reasons, the service is unlikely to qualify for New Freedom grant funding.

4.4 Adjustments to Advance Transit's Red Route

Another strategy for adding Alice Peck Day Memorial Hospital to the Upper Valley's community transportation network might be to reroute Advance Transit Red route buses via Mascoma Street. While this may appear on the surface to be the simplest approach, it has serious obstacles and shortcomings.

4.4.1 Mascoma Street Stop

Red route service to Alice Peck Day would be limited to a curbside bus stop on Mascoma Street. The Red route requires full sized transit buses. These large buses cannot be routed through the APD campus. While a Mascoma Street stop would provide a significant improvement for Alice Peck Day commuters, it would provide only limited benefits for individuals and families traveling to medical appointments. Many seniors and other people with mobility limitations would be unable to walk between the bus stop and the hospital entrance. Relatively few Harvest Hill and Woodlands residents would be expected to walk from their homes to a Mascoma Street bus stop.

4.4.2 Impact on Mechanic Street Riders

Moving all Red route buses to Mascoma Street would eliminate service to the existing Rivermill bus stop. This location currently generates an average of 104 boardings per month, or approximately 5 boardings per day. It might be possible to preserve the Rivermill stop by alternating buses via Mechanic Street and Mascoma Street. This would result in hourly headways for each of these two route segments. In general, this type of arrangement is a bad idea, because it adds a measure confusion and uncertainty, and because it results in a lower quality of service for both locations.

4.4.3 Infrastructure and Intersection Obstacles

At the present time, Advance Transit buses cannot operate through the railroad underpass on Slayton Hill Road. Physical improvements will be needed to make this possible.

The intersection of Mascoma, Mechanic, and High Street also presents an obstacle to Red route buses. Intersection improvements will be needed to allow eastbound buses to travel from Mascoma Street to Mechanic Street without extensive delays. This will be particularly important during evening commute times.

4.4.4 Red Route Timing and Scheduling Constraints

Operating staff at Advance Transit indicated that they cannot commit at this time to moving Red route buses to Mascoma Street, even if improvements are made at both ends of Mascoma Street.

- They explained that they cannot add even a minute of additional time to the Lebanon-West Lebanon portion of the Red route. In the past, westbound buses were allotted 15 minutes for travel from downtown Lebanon to West Lebanon. In the last round of schedule adjustments, five of these minutes were transferred to the Route 12A portion of the Red route to address delays in the plaza area.
- The Red route faces additional near term uncertainties. NHDOT is beginning a major reconstruction of the Route 12A / I-89 interchange. This project may introduce construction delays. The net impact on Red route of a completed project is currently unknown.
- Advance Transit is exploring options for establishing a new transfer hub in West Lebanon. It is unknown what impact a new hub location might have on Red route schedule times.

Advance Transit operating personnel indicate that it may be possible to reroute buses to Mascoma Street in the future, but that it is impossible to determine the feasibility of such a change until the I-89 construction project is complete, and until the future of the West Lebanon transit hub has been determined.

4.5 New Pedestrian Tunnel

An alternative to moving Red route buses to Mascoma Street would be to improve pedestrian access between Mechanic Street and the Alice Peck Day campus. This would involve construction of a pedestrian tunnel adjacent to the Slayton Hill Road railroad underpass. This would allow APD commuters and others to walk safely between Advance Transit's Mechanic Street bus stops and the Alice Peck Day campus.

This may prove to be a better and more affordable option for accommodating APD commuters. Most Advance Transit routes operate twelve hours a day to accommodate commuting workers at the start and end of their workday. Expanding a new Alice Peck Day flex route or fixed route service from eight hours to twelve hours a day would increase operating costs by 50%. Ridership projections suggest that there is unlikely to be sufficient demand to justify this extra expense.

Chapter 5: Recommendations

This chapter presents the consultant's recommendations for providing cost effective and productive transportation access to Alice Peck Day Memorial Hospital. The chapter includes a table that summarizes the alternatives described in Chapter 4. It offers a brief discussion of capital and operating costs, along with possible strategies to pay for the service.

The chapter is structured as follows:

- Section 5.1 Summary of Alternative Strategies
- Section 5.2 Anticipated Costs and Program Revenues
- Section 5.3 Consultant's Recommendations

5.1 Summary of Alternative Strategies

The five alternatives described in this report are summarized in Figure 5.1.

5.2 Anticipated Costs and Program Revenues

The direct cost for midday paratransit or flex route service is expected to total about \$100,000 per year, regardless of who operates the service. A new Advance Transit fixed route may cost more, because fully allocated costs for Advance Transit's fixed route operations are higher than the incremental cost for on-demand ADA service.

The flex route option appears to have the best chance of qualifying for New Freedom funding from the Federal Transit Administration. It will offer a higher level of convenience for people with disabilities, because ADA riders who use this new service would be able to make same-day requests for transportation. This service will also reduce pressure on Advance Transit's existing ADA program, resulting in improved service for people with disabilities throughout the Advance Transit service area.

The Federal Transit Administration circular for the New Freedom program states clearly that the "incremental cost" of providing same-day ADA service can be funded through the New Freedom program. It is likewise clear that Advance Transit cannot offer same-day ADA service in downtown Lebanon without adding another bus. In other words, the "incremental cost" for same-day service for people with disabilities who live in downtown Lebanon is equal to the marginal cost of adding one new flex-route bus.

Figure 5.1 Summary of Alternative Strategies

<i>Option</i>	<i>Likely Operator</i>	<i>Riders per Day</i>	<i>Riders per Hour</i>	<i>Strengths</i>	<i>Weaknesses</i>
Dedicated APD paratransit service	GCSCC or Advance Transit			<ul style="list-style-type: none"> • Service can be scheduled to match needs. • An APD bus will offer expanded visibility. • Offers customized service for individuals with special needs. 	<ul style="list-style-type: none"> • Demand may be limited. • Depending on the area served, scheduling conflicts may arise and productivity may be low. • Limited impact on AT's ADA program. • May be perceived as a service for low-income people.
APD / Lebanon / Centerra flex route service	Advance Transit	83	10.4	<ul style="list-style-type: none"> • Offers scheduled front door stops on the APD campus. • Increased convenience for some current AT riders. • New AT service for several Lebanon neighborhoods. • New access to shopping at Centerra. • Will help meet demand for AT's ADA service. • Should qualify for New Freedom grant because it offers increased convenience for ADA riders. 	<ul style="list-style-type: none"> • A dispatcher is required to handle trip requests. • Requires ongoing coordination between the AT dispatcher and driver. • Depending on demand, scheduling conflicts and timing issues may arise. • A new service concept may be difficult for some riders to understand. • Requires public outreach and education effort.
APD / Lebanon / Centerra fixed route	Advance Transit	60 (74 with all day service)	7.5 (6.2 with all day service)	<ul style="list-style-type: none"> • Simpler and easier to operate than a flex route or paratransit service. • Requires no dispatcher to handle trip requests. • Eliminates the potential for scheduling conflicts. • Easier for the public to understand. 	<ul style="list-style-type: none"> • Serves fewer Lebanon neighborhoods. • Generates fewer riders and lower productivity than flex service. • Has no impact on AT's ADA program, and will likely not qualify for a New Freedom grant.
Move Red route to Mascoma Street	Advance Transit			<ul style="list-style-type: none"> • Involves no additional operating cost. • Offers improved access for commuters and some hospital visitors. 	<ul style="list-style-type: none"> • Offers few benefits for APD visitors with mobility limitations. • Requires infrastructure improvements at both ends of Mascoma Street. • Cannot be considered until Red route issues in West Lebanon and on Route 12A have been resolved. • The long term feasibility of this change remains unknown. • Negative impact on riders who currently use the Rivermill bus stop on Mechanic Street.
New Underpass				<ul style="list-style-type: none"> • No impact on transit operating costs. • Has no impact on Red route schedules. • Has no impact on Rivermill bus riders. • Provides increased safety for APD commuters and some APD visitors. • Offers increased safety for other pedestrians and bicycle riders. 	<ul style="list-style-type: none"> • Less convenient for commuters than a Mascoma Street stop. • Offers little or no benefit for APD visitors with mobility limitation. • Does not provide a meaningful transit alternative for APD retirement community residents.

If flex route service qualifies for a New Freedom grant, this could generate an estimated \$50,000 per year to offset the incremental cost of adding this service. Operating expenses are eligible for 50% New Freedom funding.

The local share cost for Alice Peck Day Memorial Hospital and its supporters is likely to total \$50,000 per year. This assumes that Advance Transit can add the service without requiring additional dollars to cover overhead costs that could be assigned to this service. Fully allocated costs could increase the local share requirement by \$70,000.

Without New Freedom funding, the local share incremental cost is likely to total \$100,000. The fully allocated cost could be \$170,000. There does not appear to be FTA Section 5311 funding available to help subsidize new Alice Peck Day service at the present time. Advance Transit cannot be expected to ask the Lebanon City Council for municipal funding for this service until long term funding for the second Red route bus has been secured.

A new bus for an Alice Peck Day route is likely to cost between \$100,000 and \$150,000. Assuming 80% FTA funding and 10% state funding, the local share capital cost is likely to total between \$10,000 and \$15,000.

5.3 Consultant's Recommendations

1. Alice Peck Day Memorial Hospital and its partners should work with Advance Transit toward implementation of flex route service between the Alice Peck Day campus and downtown Lebanon.

- Flex route service is likely to generate more riders per hour than fixed route service.
- Flex route service will qualify for a New Freedom grant, while a fixed route will not.
- Because of the timing of regular Advance Transit buses in downtown Lebanon and the need to provide connections with these buses, flex route deviations can be offered while providing a service pattern for Alice Peck Day that is essentially the same as fixed route service.

2. The Alice Peck Day-Lebanon flex route should be extended to the Co-op at Centerra to attract more riders, and to increase the appeal of the service for current and future residents of Harvest Hill and Woodlands.

- This will result in service every 60 minutes instead of every 30 minutes. More frequent APD-Lebanon service has some appeal, but ridership projections suggest that there is insufficient demand to support this shorter service.

3. The flex route schedule should include timed departures at three locations on the Alice Peck Day campus: the Community Care Center, the hospital emergency entrance, and the Harvest Hill main entrance. Buses arriving from downtown Lebanon should offer drop offs at these locations on request, so that arriving passengers can travel directly to their destinations, without waiting for the next scheduled departure.

4. The flex route service should offer pick-ups and drop-offs on request at Dartmouth-Hitchcock Medical Center for people who have boarded the flex route bus at Alice Peck Day or elsewhere along the route. This will provide an important benefit for ADA riders, many of whom travel to DHMC for medical appointments.

5. Flex route service should operate from 9:00 a.m. to 4:00 p.m. There is unlikely to be enough demand from Alice Peck Day commuters to justify the cost of expanding bus operations from seven hours a day to twelve hours a day.

- Peak-hour service for Centerra commuters is a separate question. The bus purchased for midday flex route service could be used to provide Centerra commuter service at the start and end of the day – if sufficient funding becomes available for this purpose in the future.

6. Off-route pick-ups should be available with one-hour advance notice. Off-route drop offs should be available on request. This means that sufficient time must be built into the flex route schedule. It also requires that the service area be clearly defined and that drivers stay within the defined area.

7. Advance Transit should not shift Red route buses from Mechanic Street to Mascoma Street.

- There is insufficient time in Red route schedules for this change, even if the railroad underpass is reconstructed.
- Timing remains uncertain, even if improvements are made at both ends of Mascoma Street.
- A Mascoma Street bus stop will benefit commuters and some hospital visitors, but this will not meet the needs of senior citizens and people with mobility limitations. These groups need front door stops with a smaller bus suitable for the Alice Peck Day campus.

8. NHDOT should not rebuild the Slayton Hill Road underpass to accommodate buses, but instead should construct a pedestrian tunnel and an associated walkway to facilitate pedestrian access between Mechanic Street bus stops and Alice Peck Day and neighboring residences.