

Town of Andover, Massachusetts



Fire Services Organizational Analysis

October 2006

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EXECUTIVE SUMMARY

The Andover Fire Department has served the community well because of the dedication of its personnel. However, as demonstrated during our visits, by reputation, and well documented through history, the Department has a hardened Union environment typical of eastern Massachusetts' communities. Through a long history of events, labor/management relations have fluctuated, but could best be described as strained. The Department has a strong labor contract that has evolved such that past practices and union involvement, rather than elected and appointed leaders, seem to establish the primary oversight and direction for the Fire Department. The erosion of management rights and prerogatives could severely impede thoughtful and comprehensive responses to existing challenges and future needs. This situation is exacerbated because the Deputy Chiefs are also members of and represented by the Firefighters' Union. This situation, while not unusual in the fire service, creates obvious and difficult management challenges, particularly in a situation where the Fire Chief is the only firefighter in the Department who is not a member of the Union.

On the other hand, the Department has been fortunate to have enjoyed significant support from the Town. Examples of this support are evidenced by exceptional facilities, above average equipment in terms of quantity, quality and age, and excellent equipment maintenance. Although we heard some discussion relative to a need for a fourth station, it is not clear that a fourth station is needed and suggest that through relocation of the existing Ballardvale Station and renovation of the West Fire Station, overall response times throughout the Town could well be improved.

We have made a number of individual recommendations for the Town and the next Fire Chief to consider towards improving fire and EMS delivery to the citizens of Andover.

PURPOSE, SCOPE AND METHODOLOGY

The purpose of this study was to provide an overview and an external perspective regarding the operations, practices, and culture of the Andover Fire Department. Hopefully, the issues addressed in more depth will be helpful in focusing discussions during the selection process for the next Chief of the Department.

During this effort we have particularly appreciated the assistance of Chief Murnane and Executive Secretary Elizabeth Kochakian for developing extensive background data, for

their invaluable historic perspectives, and for their valiant (if not always successful) efforts to schedule key appointments.

As Chief Murnane prepares to retire, we would be remiss if we did not recognize his passion for, contribution to, and love of the Andover Fire Department.

The Municipal Resources Team was retained to review data and observe operations in order to provide an informed and objective perspective regarding key aspects of the Department, and to develop a summary report and “challenge statement” that will be useful in interviewing and evaluating Fire Chief candidates, as well as assisting the successful candidate in charting a future course for the Department.

OUR OBJECTIVES

- To help municipalities and agencies obtain maximum value for limited tax dollars;
- To raise public awareness of the value and professionalism of their municipal resources; and
- To help local leaders develop and execute plans that best meet their community’s needs, given the resources available.

MRI has been in the municipal consulting business for more than a decade. The list of satisfied clients speaks for itself. (See Appendix V for itemized Fire Department assessments carried out by MRI.)

Our objective is to also provide Andover with a series of recommendations and alternatives that form a blueprint for the future success of the Andover Fire Department and ensure a high quality of service and value for the community.

SCOPE

1. Assess and evaluate the Department’s current management/administration, training, and fire prevention functions
2. Identify existing strengths, weaknesses, efficiencies, and inefficiencies in these areas.
3. Present potential options, recommendations, and implementation strategies for structural and procedural improvements in these areas

METHODOLOGY

There were eight major work elements involved in this review:

1. A review of compiled data regarding key operational aspects of the Department.
2. A thorough tour of the community to gain a sense of the physical environment, the primary fire and life safety risk exposures, and the location of population and commercial centers in relationship to facilities.
3. Interviews with key individuals including the Board of Selectmen, Town Manager, Assistant Town Manager, Personnel Director, Fire Chief, Deputies, Dispatchers, Fire Prevention, Police Chief, and Police Commander, as well as occasional informal interviews with firefighters.
4. A review of facilities and equipment.
5. Informal conversations with firefighters while on station tours. (The Firefighters Union provided a letter, but was unwilling or unable to meet as a Union leadership team with the MRI team.)
6. An emergency response ride-along.
7. A review of response time statistics.
8. A summary comparative analysis using National norms and practices of other Massachusetts communities.

BACKGROUND AND DEMOGRAPHICS

The Town of Andover, located in Essex County, Massachusetts, was incorporated in 1646. Andover has a historic past, with a community heritage dating back to the Colonial era. While the Town is home to many high-tech and other large corporations, it also offers a rural dynamic that has attracted nearly 10,000 additional residents since 1970. Andover has a total area of 32 square miles, and is located approximately 20 miles north of the City of Boston, and 10 miles east of Lowell. State Routes 28, 133, and 125 traverse through Andover, as do Interstates 495 and 93. According to the Massachusetts Highway Department, traffic counts in 2005 showed 24,500 daily trips along Route 28 south of I-495, 15,047 trips on Route 125 south of Route 28, 18,500 trips on Route 133 east of I-93, 109,900 trips on I-495 south of I-93, and 134,462 on I-93 north of Route 125. This traffic volume clearly demonstrates the added life-safety responsibility Andover's public safety personnel must address daily. Other modes of transportation in Andover include Commuter Rail service provided by the MBTA.

Andover is bordered by seven communities: Tewksbury and Dracut to the west, Methuen and Lawrence to the north, North Andover to the east, and North Reading and Wilmington to the south. The make-up of these communities ranges from a largely rural flavor in North Reading to a significant urban environment in Lawrence.

One additional dynamic within Andover is the presence of two rivers of significance, the Shawsheen and the much larger Merrimack. The concern of river flooding along these rivers is a very real threat as evidenced by the major flooding event that occurred in the Spring of 2006.

DEMOGRAPHICS

According to U.S. Census Bureau estimates, Andover ranked 46th out of Massachusetts’ cities & towns in 2005 with a population of 33,042. As the chart below indicates, Andover’s growth in the 1970s and 1980s far outpaced the overall County. That trend reversed itself beginning in the 90s.

Population Growth

	<u>Andover</u>	<u>%+/-</u>	<u>Essex County</u>	<u>%+/-</u>
1970	23,695		637,887	
1980	26,370	11.29%	633,632	-0.67%
1990	29,151	10.55%	670,080	5.75%
2000	31,247	7.19%	738,301	10.18%
2005 Est.	33,042	5.74%	783,262	6.09%
TOTAL 35-yr CHANGE	+9,347	39.45%	+145,375	22.79%

Source: US Department of Commerce, Bureau of Census, 2005 Internet Site

In terms of population comparison, the following chart shows similar sized communities with 2005 population estimates comparable to Andover:

RANK	TOWN	2005 EST.
41	Amherst	34,047
42	Chelmsford	33,759
43	Braintree	33,681
44	Falmouth	33,644
45	Shrewsbury	33,174
46	Andover	33,042
47	Chelsea	32,518
48	Watertown	32,303
49	Natick	31,943
50	Dartmouth	31,389
51	Franklin	30,893

According to the 2000 US Census, the population age distribution shows that the largest segment of Andover's population is between 25 and 54:

Population Age Distribution

Age	Number	%
Under 5	2,052	6.6%
5-19	7,513	24.1%
20-24	885	2.8%
25-44	8,603	27.5%
45-64	8,363	26.8%
65 and over	3,831	12.2%

Source: US Department of Commerce, Bureau of Census, 2000

The age distribution of the Town, as indicated above, shows a Town in which 61% of the population in 2000 was under the age of 45. In fact, only 12.2% of the population is over 65 years of age, while school age children (5-19) account for 24.1% of Andover's total population.

Andover's median household income in 1999 was \$87,683. Compared to Essex County's which was \$51,576 or Massachusetts's at \$50,502, it is considerably higher in both cases. Also, the economic characteristics of the Town measured in terms of families below the poverty line, shows a rate of 2.5% compared with the County at 6.6%, the State at 6.7%, and the USA at 9.2%.

ECONOMIC DEVELOPMENT

Calendar year 2005 data reported by the US Census indicates 1,075 establishments employing 34,528 individuals in the community. In comparison, neighboring Wilmington totaled 18,183 employees in 815 establishments.

Employers (Establishments) & Employees

<u>Year</u>	<u>Employers</u>	<u>Employees</u>
2001	1,075	34,528
2002	1,094	32,846
2003	1,108	31,769
2004	1,148	31,600
2005	1,104	31,907

Job stability has fluctuated during the last five-year period, with a noticeable drop occurring in 2001 and 2002, a time that coincided with the most recent economic downturn in the Commonwealth. Yet the creation of 907 new jobs from 2004 to 2005 may be a sign of positive things to come. At the same time, however, it is important to note that increases in population and workforce development within any community often results in increased service demands on all facets of Town services, including public safety departments.

On the labor front in Andover, the unemployment rate among Andover residents, as reported by the Commonwealth's Workforce Development internet site, has dropped steadily since 2002, down from 5.0% in CY02 to 4.1% in 2005.

HOUSING

According to the Massachusetts Department of Revenue, the average property value increased by 7.53% from FY05 to FY06. The FY06 average value in Andover was \$561,362. In terms of neighboring communities, this increase was fairly consistent with others and lower than the actual State average. Wilmington's average value increased by 8.05%, Tewksbury's by 8.30%, and North Andover's by 7.56%. The average increase statewide was 9.26%. In FY06, Andover's tax rate was \$11.40 per thousand, with an average property tax bill of \$6,400, ranking the Town 29th of the 338 communities reporting.

GOVERNMENT

Like many Massachusetts communities, the Town of Andover has a Board of Selectmen/Open Town Meeting form of government like many Massachusetts communities. The day-to-day operations of the Town are the responsibility of the Town Manager.

EDUCATION

Andover's public school system is managed by an elected five-member school committee and appointed Superintendent of Schools. The district serves students from preschool through grade twelve, and is made up of ten schools, with six elementary schools, three middle schools, and one high school. School enrollment figures provided by the Massachusetts Department of Education show a FY07 foundation enrollment in the district of 5,880 students, an increase of 1.5% from FY06. Andover is also a member of the Greater Lawrence Regional Vocational Technical High School, located in Andover, and according to Department of Education, has 19 students enrolled there for FY07.

MANAGEMENT/ADMINISTRATION

The administration of the Andover Fire Department has evolved over time in a civil service environment promoting candidates from within the Department. Management rights in a collective bargaining atmosphere have been eroded throughout the years so that critical areas of budgetary control (overtime, training, staffing) either are spelled out in the bargaining agreement or are assumed to be a certain way through the past practices of the Department.

The Fire Chief is the only non-Union employee in the uniformed ranks. The four Deputy Chiefs are members of the same Union as supervisors (Lieutenants) and firefighters. A reduction in Fire Department strength several years ago eliminated the administrative Deputy Chief, who also coordinated all Fire Prevention program efforts.

From a Fire Department tactics (emergency management) vantage point, the Department can handle very well the "routine" fires and rescues that occur on a daily basis. The Department is hamstrung, however, in the collective bargaining arena, due to years of pro-active labor pressure resulting in contracts which limit management's ability to control spending with respect to overtime, employee benefits, time off, productivity, etc.

The Deputy Fire Chiefs need to function more as managers and not as mere agents of the labor Union. Arranging a meeting with the four (4) Deputies as a group (considering them as a senior management team) with the MRI team was nearly impossible. Eventually a meeting was arranged with three (3) of the four (4), who all requested overtime pay for the time spent. This is not the attitude one would expect from the senior operations managers of the agency (Appendix O).

The new Fire Chief needs to be a strong, seasoned leader who is capable of implementing positive change gradually while working with labor in a strong Union environment.

The position of a non-Union Assistant Fire Chief needs to be created outside of the confines of Civil Service, with a competitive compensation package. Creating a strong management team is essential to support a new Fire Chief who will be expected to implement positive change, as well as to bolster the Fire Prevention Program which badly needs additional resources.

Establishing the position of Training Officer is also important in order to ensure that the administrative team has the resources to provide the full range of administrative functions for the Department.

THE TOP FIVE CHALLENGES FOR THE NEXT CHIEF

1. Working collaboratively with Union leadership to create constructive change in a strong Union environment.
2. Developing a consistent, expanded, and productive structure for daily activities of all members of the Department (Appendix U).
3. Developing and gaining approval of the positions of Assistant Chief and Training Officer in order to provide much needed administrative support (Appendices B, C, E, & F).
4. Creating stronger community outreach and operational efficiency through significantly increased shift involvement in fire prevention, fire inspection, and education (Appendices U and K).
5. Evaluating Emergency Medical Services, and in particular, the option of providing Advanced Life Support (ALS).

OUR TOP FIVE RECOMMENDATIONS FOR THE NEXT CHIEF

1. Work within the Union contract to create a reasonable pace of proactive change to adapt to opportunities and service delivery methodologies that exist within the Massachusetts Fire Service and are needed to meet future challenges.
2. Develop a comprehensive and consistent training program and create the position of daytime Training Captain (Appendix D).

3. Develop a strategy for prioritizing and implementing the actions needed to move the Department towards total compliance with the OSHA Two In/Two Out Standard, as well as assuring maximum use of the existing capability. This will require hiring four firefighters as soon as possible to add one firefighter per shift at the Ballardvale Station. The West Station eventually will need full staffing of an ambulance and a pumper in this growing area of the Town to comply with OSHA Two In/Two Out and to insure that there are sufficient-arriving forces to begin firefighting operations in this hotel/residential/commercial district. This will require the hiring of four additional firefighters later in the decade. Even though Massachusetts is not an OSHA state, lawsuits across the country are being decided with the OSHA and NFPA standards as the maxim relied upon for meeting minimum guidelines of staffing and assignment (Appendices D, G, and Q).
4. When the additional firefighter is on staff at the Ballardvale Station, deploy the third ambulance to Ballardvale and staff it with two members of the engine company on a first come/first serve call basis. In partnership with the Town, the Union, and the area hospitals, evaluate the potential of providing Advanced Life Support (ALS) services at the Intermediate or Paramedic level.
5. Enhance community outreach by immediately developing increased shift involvement in preplanning, fire prevention inspections, and public education efforts.

MANAGEMENT/ADMINISTRATION RECOMMENDATIONS

- 1-1** Recommendation: The Town needs to bargain back core management rights to control overtime expenses and be able to assign staff to increase productivity. Specifically, controlling the number of personnel allowed time off simultaneously will assist with controlling spiraling overtime costs.
- 1-2** Recommendation: The Town must select a qualified successor Fire Chief who has the ability to partner with the Union and the Town administration to forge partnerships to move the Fire Department into the 21st century.
- 1-3** Recommendation: The Town must add the non-Union position of “Assistant Fire Chief” to be an integral part of the management team. This position functionally will supervise the Fire Prevention program, but also will assist the Fire Chief in overall Department administration and be the clear #2 person in the Fire Department (Appendices B, C, and K).
- 1-4** Recommendation: The four Deputy Fire Chiefs must be integrated into the overall management team. They can be assigned major program areas (maintenance, pre-planning, EMS, research, and development) besides the

management of their work shift. Their focus needs to be tailored to the overall good and welfare of the Fire Department in total and the citizens of Andover; not protecting the *status quo*.

- 1-5** Recommendation: A “daily schedule” of activities needs to be created and adhered to for the improvement of productivity, especially if the Town is going to move towards satisfying OSHA staffing standards (Appendices G and U).
- 1-6** Recommendation: OSHA's “Two In/Two Out” rule should be complied with. To do so, four (4) new positions should be added in FY08 and assigned to the Ballardvale station (Appendix G).
- 1-7** Recommendation: Continue to utilize NFPA 1710 as the on-scene resource management tool to attain a 12 person assignment, 90% of the time, in 8 minutes. The new Chief should evaluate and report compliance relative to NFPA 1710 on an annual basis (Appendix G).
- 1-8** Recommendation: Formalize the “training” function of the Department by adding a Training Captain to coordinate all fire, rescue, EMS, physical fitness, and fire safety education training Department-wide (Appendix F).
- 1-9** Recommendation: Institute a structured physical fitness and back safety program through the Training Officer. This will reduce the injured on duty statistics we observed, saving wear and tear on firefighters and the overtime budget (Appendix M).
- 1-10** Recommendation: After four staff is assigned around the clock in Ballardvale, assign an ambulance to that Station. Currently an ambulance must come from Headquarters or West Station into this District, and sometimes, depending upon the nature of the emergency, the pumper is dispatched along with it. Immediate dispatch of EMS from Ballardvale will improve service delivery to citizens and improve the efficiency of personnel assigned.
- 1-11** Recommendation: Institute Incident Command System (ICS) practices on all Fire Department operations.
- 1-12** Recommendation: Evaluate the current apparatus replacement program to ascertain whether the acquisition of another quint in FY12 to replace the aerial tower and the 1988 pumper makes sense operationally for the West Station.
- 1-13** Recommendation: Evaluate whether staffing the ladder function in Headquarters utilizing the ambulance crew is wise considering the deployment activities of the ambulances. The importance of fully staffing the aerial out of Headquarters is critical for search, rescue, and ventilation operations, especially if one or two ambulances are committed to EMS emergencies and a working fire occurs.

- 1-14** Recommendation: At some point (perhaps FY11 or FY12), four (4) more firefighters, one (1) per shift, should be added to the West Station so that a complete engine company and a two (2) person ambulance can be staffed simultaneously. Growth here will keep the ambulance engaged more often, leaving the current three (3) person engine company to handle firefighting duties in this high density hotel and commercial district.
- 1-15** Recommendation: Evaluate the possibility of moving EMS from Basic Life Support to Advanced Life Support. Create a partnership from administration, labor, citizens, and the hospital to investigate the cost/benefits to the Town and ascertain the long-term reliability of hospital-based ALS (many of these services are shutting down).
- 1-16** Recommendation: Currently the bargaining agreement allows up to fourteen (14) personnel per shift to be off at one time. This creates overtime on a grand scale and needs to be negotiated downwards.
- 1-17** Recommendation: A system for quick re-call of personnel in emergency situations needs to be created (radio or alpha-numeric pagers).

COMPARISON TO MASSACHUSETTS AND NATIONAL STANDARDS

Andover is fairly close to the mean in terms of most operational aspects. As an example, in terms of shift staffing, the Massachusetts average is 2.25 firefighters per 1,000 residents. Using this formula, Andover falls exactly on the mean when compared to staffing for comparable Massachusetts communities with a population range of 28,000 to 40,000, and is more than twice the Northeast average for similar-sized communities (based upon NFPA figures for all six New England states which include many combination career/volunteer Fire Departments in Connecticut, Maine, New Hampshire, and Vermont).

Other pertinent comparative analysis observations include:

- The National average of 3 fire stations for a community of Andover's size is consistent with current levels and for Massachusetts peer communities.
- The National average for the number of pumpers is 4; exactly the number Andover has.
- Most Massachusetts Fire Departments of Andover's size have an administrative senior officer second in command to the Fire Chief, pointing out the need for an Assistant Fire Chief's position (Appendices B and C).

- Approximately half the Massachusetts Fire Departments have full-time training officers. The others assign that function to a line Deputy Chief or shift supervisor (Captain or Lieutenant) (Appendix F).
- The majority of Massachusetts Fire Departments have a line supervisor (Captain or Lieutenant) oversee EMS. The more sophisticated a program is (ALS and/or heavy community CPR/defibrillator programs), the more likely one is to find a full-time EMS Director as well.
- The number of fire and EMS emergencies Andover encounters annually is comparable to other Massachusetts peer communities.
- Approximately 65% of peer Massachusetts Fire Departments offer ALS EMS service.

The data detailed above was developed by a comparative analysis, surveying Massachusetts Fire Departments in communities of 28,000 – 40,000 persons, including Lexington, Gloucester, Stoughton, Amherst and 20 others.

Andover provided us with a list of six peer communities. These communities include Acton, Arlington, Belmont, Billerica, Lexington, and North Andover. A twenty-six (26) point analysis comparing Andover to its peer communities is integrated and shown in Appendix A.

FACILITIES AND EQUIPMENT

The public safety complex is one of the best that we have seen and the security measures incorporated into this facility are excellent. The apparatus fleet was found to be above average in terms of total units, type of equipment, age, and maintenance. Assuming that a new pumper is being procured for the Department in FY07 to replace the aging 1986 unit, future consideration for the next capital purchase should be given to acquiring a quint for the West Station by replacing the 1988 engine and the 1999 aerial platform together, leaving the 1996 pumper in reserve. The apparatus program currently in place reflects obvious support and capital investment on the part of the Town.

A concern exists relative to minimizing response time given the current deployment pattern. As mentioned previously, we do not believe that a fourth station is needed if the Ballardvale Station is relocated and the West Station is renovated. This recommendation is made considering the response patterns and future growth of the community. Fleshing out these options (or perhaps developing better options to achieve the same goals) should be a high priority activity for the new Chief.

- 2-1** Recommendation: The Ballardvale Station needs to be replaced minimally with a modern three bay facility (for future growth), diesel exhaust removal system, and a physical fitness room.
- 2-2** Recommendation: The West Station should be renovated for modernization, a diesel exhaust removal system, a physical fitness room, and to reduce energy consumption.
- 2-3** Recommendation: We do not recommend a fourth station at this time. The new Ballardvale Station should be located to try, as much as possible, to attain a maximum six (6) minute response time to that District.
- 2-4** Recommendation: Replacement of capital equipment has been good. An evaluation is needed to determine if the next piece of fire equipment should be a quint assigned to the West Station, trading in the 1988 pumper and the 1999 aerial ladder. The 1996 pumper then would be held in reserve status. With the future growth in West Andover, having an aerial/pumper combination immediately available for the hotels and commercial structures lends operational flexibility.
- 2-5** Recommendation: The oldest ambulance should not be traded when the next new ambulance is purchased so a spare unit can be retained when the third ambulance is assigned to Ballardvale.

TRAINING

Training immediately surfaced as an area of concern, as well it should be. An aggressive, consistent, and well-documented training program is essential to maximize firefighter safety and reduce potential liability for the Town. We heard that despite the efforts of personnel assigned to training, no substantive and comprehensive internal program exists other than to send new firefighters to the Massachusetts Firefighting Academy Recruit Program. As it stands now, the responsibility for developing the training program is assigned to a Deputy Chief and delivery of the training is the responsibility of all the duty Deputy Chiefs. This training delivery program, by its nature, has produced inconsistent results and should be a continuing concern to both the firefighters and management until improved.

Impressions taken from interviews suggest that training was minimal on three shifts and the perception is that it is excessive on the remaining shift. This inconsistency affects the ability and effectiveness of the Department. Therefore, a coordinated training program based upon NFPA and Massachusetts Firefighting Academy standards, delivered and well-documented with records kept on each employee, is highly recommended. This training should include firefighting, rescue, EMS, physical fitness, fire prevention inspections, and fire safety education delivery programs.

An Administrative Captain's position should be developed to take full responsibility for developing and managing this enhanced training program on a full-time, day shift, with provisions for some night and weekend work.

- 3-1** Recommendation: Design and implement a complete Department training program to include an annual review of all NFPA Firefighter I/II skills, including Incident Command and OSHA HAZWOPER (Appendix D).
- 3-2** Recommendation: All staff should receive other annual training as required by the Town of Andover (Sexual Harassment, Right to Know, etc).
- 3-3** Recommendation: Design and implement an officer's training program including tactics and strategy sessions for operations and supervisory skill proficiency. Attendance at the Massachusetts Firefighting Academy for such coursework should be encouraged.
- 3-4** Recommendation: Design and implement an EMS training program that includes the bi-annual State refresher course, annual CPR and defibrillator certification, First Responder, and CEUs from Department instructors and guest lecturers.
- 3-5** Recommendation: Add a full-time Captain to manage and oversee a comprehensive training program. This position would be required to vary his schedule to present or supervise training on all shifts, including some nights and possibly weekends (Appendix F).
- 3-6** Recommendation: Continue to send new firefighters to the Massachusetts Firefighting Academy Recruit Program.
- 3-7** Recommendation: Daily physical fitness training must become part of a comprehensive training program to improve firefighter strength, durability, and health and to reduce overtime for injured-on-duty claims (Appendix M).
- 3-8** Recommendation: Conducting fire prevention inspections for line personnel will be required if all firefighters are expected to perform fire prevention duties on shift. The Fire Prevention staff, in conjunction with the Training Officer, can provide this training.
- 3-9** Recommendation: Fire safety education in the schools (SAFE) and for the elderly may be conducted from time-to-time by line personnel. We recommend that only firefighters who wish to conduct fire safety education be trained for this duty, as it is not for everyone and it is too important not to do it well (Appendix K).
- 3-10** Recommendation: Encourage members to attend specialized training at the Massachusetts Firefighting Academy, other institutions, and courses by certified

instructors in subject matter such as technical rescue, hazardous materials technician, confined space, instructor methodology, etc.

- 3-11** Recommendation: Officers seeking promotion to chief officer or fire prevention specialization should be encouraged to attend the National Fire Academy in Maryland where high level coursework prepares one for the demands and rigors of these positions.
- 3-12** Recommendation: All training needs to be recorded on individual member's training records annually.
- 3-13** Recommendation: The Deputy Chiefs must enforce training program requirements for everyone.

DATA MANAGEMENT AND PLANNING

Response time data analysis was compromised by the inability of the Dispatch Center's computerized record-keeping to provide a specific breakdown of situational responses. Furthermore, the Department provided fire prevention activities in the subset of emergency responses which skewed the zero to 1 minute response times heavily in favor, complicating any reasonable data analysis.

Analysis of the existing data reveals that over 17% of all responses exceed nine minutes, but the inclusion of non-emergency incidents here makes the 17% number suspect.

Regardless, the NFPA 1710 (Appendix G) standard requires Fire Departments to assemble a minimum of twelve (12) personnel on fire/rescue incident scenes, in 8 minutes, 90% of the time.

- 4-1** Recommendation: The new Chief should improve the Department's records management and reporting capabilities.
- 4-2** Recommendation: An integrated fire prevention, permitting, and pre-planning module should be added to facilitate tracking fire prevention activities and sharing data during emergency responses.
- 4-3** Recommendation: The system should segregate or separate the fire and EMS response data, and eliminate the inclusion here of fire prevention statistics.
- 4-4** Recommendation: The Chief should provide a monthly activity report to the Town Manager and Department members.

- 4-5 Recommendation: The Department needs to provide for the development of a credible data set that can be used as a foundation for strategic planning efforts, as well as community-based master planning.
- 4-5 Recommendation: Within one (1) year the new Chief should develop a draft strategic plan (Appendix Q).
- 4-6 Recommendation: Within five (5) years, the Town Manager should appoint a community-based Fire and EMS Master Planning Committee.

FIRE PREVENTION

Massachusetts General Laws Chapter 148 and the State Fire Prevention Regulations 527 CMR (Appendix G) dictate the frequency and type of inspections that a municipality needs to undertake. The law requires quarterly inspections of health care facilities, hotels/motels, and theaters. Furthermore, annual inspections of multi-family residences, commercial buildings, and hazardous operations are called for in the State fire prevention regulations.

Massachusetts General Laws also require Fire Departments to approve smoke detector systems and carbon monoxide protection in all residences constructed and sold. The State also calls for Fire Departments to review and approve all fire protection systems installed in any building in the Commonwealth.

Andover is not in compliance with all these laws and regulations, as not enough resources are committed to this functional area, especially with the reduction of two personnel several years ago.

Line firefighters do perform some inspection services; however, more of this work should be added to the daily shift activities. Firefighters need to be involved in fire prevention inspections so they become familiar with the occupancies they may have to fight fires or encounter other emergencies within. Not only should they visit new buildings under construction or old ones under renovation, they should perform required MGL Chapter 148 inspections in schools, health care facilities, and theaters. If the Fire Prevention function is to continue to be understaffed, line firefighting companies also should be performing Chapter 148, Section 26E, smoke detector and carbon monoxide detector inspections for sale of properties.

We were informed that the turn-around time on plans review and required inspections often exceed forty (40) days in some cases, or approximately four (4) times what is allowed by the State Building Code. More resources must be dedicated to this function. The loss of the Administrative Deputy Chief and a Fire Inspector in recent budgets, without corresponding increases in activity by the shift personnel, has had a

major impact on this function of the Department. It is critical that this area be addressed first as the rebuilding of resources for the Department is contemplated.

The addition of Mobile Data Terminals in Department vehicles that can be programmed with building and utility information would go a long way towards improving the capability of the Department to manage information for inspections and emergency responses in a more effective and efficient manner (Appendix S).

Locating Fire Prevention in Town Hall instead of the Public Safety Complex was initially required because of space challenges while the new station was being constructed. However, this arrangement seems to function well in association with the other inspection services of the Town and the team approach to plan review works well for the citizens. It is imperative though, that an Assistant Fire Chief assigned to Fire Prevention spend ample time at the Public Safety Complex for administrative duties there as well.

- 5-1** Recommendation: Adding a non-Union Assistant Fire Chief to oversee Fire Prevention is important, but as this position will also be the #2 person in the Fire Department, he will need an office both in Town Hall and at Fire Headquarters (Appendix B).
- 5-2** Recommendation: The turn-around on plans submitted to the Fire Department should be reduced to the code-required ten (10) business days, unless the Building Commissioner is requested (in writing) to extend the time (for a specific reason).
- 5-3** Recommendation: MGL Chapter 148 required inspections and fire drills in Health Care facilities, theaters, and hotels must be performed quarterly.
- 5-4** Recommendation: 527 CMR 25 annual inspections in multi-family, commercial and hazardous materials operations probably will need to be conducted by the line companies. Such a program needs to be rotated among the four work groups so that all firefighters see all occupancies in the Town over a finite period of years (Appendices G and R).
- 5-5** Recommendation: MGL Chapter 148, Section 26, series inspections of smoke detectors and carbon monoxide detectors in residences upon sale probably will need to be done by line companies.
- 5-6** Recommendation: Fire Prevention personnel need to track new and renovated building projects for code compliance and perform fire protection system acceptance testing after the engineers/architects of record submit affidavits attesting to code-conformance.
- 5-7** Recommendation: Assist the new Department Training Officer with developing and delivering a fire inspection training program for line firefighters (Appendix F).

- 5-8** Recommendation: Continue the Team approach to building safety with the Building Department, health, and zoning staff. It is one-stop shopping for the public and makes plan review much more efficient for the Town.
- 5-9** Recommendation: Add Mobile Data Terminals to all Fire Department vehicles and link them to files to provide building plans and utility information, including fire hydrant locations, hazardous materials locations, infirmed persons locations, and fire prevention inspection data. This will be important for emergencies and for routine complaint and inspection duties.
- 5-10** Recommendation: A comprehensive fire safety education program needs to be developed involving Fire Prevention staff. SAFE (Student Awareness of Fire Education) in the public schools, elderly fire safety, specialized training (i.e., Fire Prevention Week/Open Houses, smoke detectors, chimney fire safety, holiday fire safety, and water safety), and juvenile fire setter intervention are examples of programs that can be stressed.

EMERGENCY MEDICAL SERVICES (EMS)

An ambulance should be assigned to the Ballardvale Station as soon as possible with the addition of a fourth fire fighter. Currently the engine company there responds on certain EMS calls awaiting the arrival of an ambulance from one of the other stations to respond. This inconsistent delivery of EMS should be rectified. Staffing an ambulance out of Ballardvale eventually could lead to station move-up of other resources upon ambulance dispatch, but this is a decision for Fire Administration to make if and when an ambulance is moved into Ballardvale.

ALS services are presently delivered by hospital-based units and not the Fire Department, which provides a BLS transport service. It should be noted that Lawrence General Hospital does an exceptional job providing this service and that the comments in this report are aimed at the development of enhanced service delivery strategies that would work in concert with the second tier response from Lawrence General Hospital. It is our observation that most Massachusetts communities similar in size to Andover have developed ALS capability. Although the second tier provided by Lawrence General serves as an exceptional resource, Andover should actively engage in planning to provide ALS in the future. This recommendation is based upon the following four factors:

- Most Massachusetts communities similar to Andover provide or contract ALS services. This level of service has become the standard of care.
- An aging population will increase ALS call volume and increase the percentage of time that a regional unit is dedicated to other communities.

- The changing reimbursement and insurance environment could lead to service reconfiguration.
- Response time and ALS therapy could be enhanced if that capability was provided by the responding ambulance crew. We witnessed two medical calls where the second tier unit responded into Andover and followed the ambulance by approximately ten (10) to twelve (12) minutes.

Approximately 65% of Massachusetts Fire Departments in Andover's peer range of 28,000-40,000 population who provide EMS are operating at the ALS level. The new Fire Chief, in consultation with the Town Manager, Board of Selectmen, the Union, and the hospitals, may want to investigate the possibility of gradually introducing in-house capability. This would require a substantial investment by the Town, but the experience of other departments suggests that a substantial increase in the annual EMS revenue stream can be anticipated, in some instances enough to offset the cost of implementation and operation.

We would recommend that Andover continue to work with and support the second tier response from Lawrence General Hospital. However, concurrently, the Town should work with the Union to see if reasonable interest exists in forging a partnership to gradually develop an internal ALS capacity. A reasonable first step in this process would be to determine the level of interest in providing pre-hospital care at the intermediate level. This would allow Andover to enhance the level of care offered and provide for a strong foundation for both future development and working with the existing resources provided through Lawrence General Hospital.

- 6-1** Recommendation: As soon as the Ballardvale Station is staffed at four personnel, transfer an ambulance there so there are three (3) ambulances in service in Town, minimizing response times to Andover citizens and increasing the efficiency of Andover's firefighters.
- 6-2** Recommendation: Maximize EMS rates to collect as much as possible to defray EMS expenses from taxpayers to those who use the service.
- 6-3** Recommendation: Insure there is a fair abatement policy for those who cannot pay (elderly and destitute).
- 6-4** Recommendation: Increase ambulance vehicles to four (4) so there is a spare along with three (3) in service.
- 6-5** Recommendation: Insure the Department training program provides for appropriate EMS re-certification opportunities, including refreshers, CPR, defibrillator, First Responders, and CEUs. Keep accurate records for each employee.

- 6-6** Recommendation: Many hospital-based ALS services are discontinuing. In some cases, this leaves a void in communities now unable to react and provide their own ALS. Andover should pro-actively assemble a focus group of administration, labor, hospital, outside physician, and citizen input to study this issue. It may result in a plan to prepare to assume ALS in the Fire Department. Initially it will cost money, but the payback will be increased fees for the Town, better efficiency for the Town's firefighters, and citizen appreciation and approval.
- 6-7** Recommendation: The Department's EMS Coordinator and the new Training Officer must work closely to effectively administer EMS training and recordkeeping.

DISPATCH OPERATIONS

Currently civilian dispatchers provide fire and EMS communications services for the Fire Department. They are located on the Police side of the Public Safety Complex and supervision is provided by the Police Department. We recommend that there be more Fire Department involvement in supervision and training. Dispatchers receive less than minimal training now on Fire Department operations (Appendix J).

- 7-1** Recommendation: There should be a joint Police/Fire Department Committee or working group that oversees training and quality assurance of dispatch operations (Appendix T).
- 7-2** Recommendation: All dispatchers should be EMD (Emergency Medical Dispatch) trained and consideration should be given to making it mandatory for new dispatchers to attend the Regional Training Academy held at the Milford Fire Department from time to time (Appendices H and T).
- 7-3** Recommendation: Staffing seems to be adequate, but more training in fire operations and Incident Command is essential to improved dispatch activities (Appendices H and P).
- 7-4** Recommendation: There needs to be a technology-based re-call system for Fire Department personnel in an emergency situation (radio or alpha-numeric pagers).
- 7-5** Recommendation: A formal fire radio transmitter failure contingency plan needs to be developed (Appendix T).
- 7-6** Recommendation: With only two (2) dispatchers on-duty, a 911 telephone should be installed in the bathroom which is compatible with the new 911

technology being deployed by the Massachusetts State Emergency Telecommunications Board (SETB) (Appendix I).

- 7-7** Recommendation: As Mobile Data Terminals are added, building site plans and schematic drawings should be entered into CAD for reference by dispatchers (Appendices N and S).
- 7-8** Recommendation: A formal ride-along program for new dispatchers should be established in the Fire Department so they can understand the nuances of fire and ambulance communications at emergency scenes first-hand. This better enables them to function as emergency dispatchers (Appendix I).

PUBLIC SAFETY RELATIONSHIPS

The current Public Safety Department Heads cooperate very well. There is some concern within the mid-level echelons of both Departments about the perceived lower level of accountability of the other's Department. This is not unusual; it seems that almost all public safety agencies suffer from the "we work harder than them" syndrome. However, closer working relationships and better understanding in these areas need to be fostered in order to insure efficiency when emergencies occur, especially in disaster scenarios. It would be beneficial to conduct regular inter-agency meetings and training sessions where managers from both Departments are afforded an opportunity to interact and become better acquainted in a relatively relaxed atmosphere.

COMMUNITY RELATIONS/PERCEPTION

The Fire Department seems to be well liked within the community. However, many departments deliver more to their communities. These additional services include involvement with community based fire safety education programs, such as SAFE, elderly fire protection, smoke detector give-aways, etc. More can be done with the Town's website and cable TV.

The Union leadership is consistently embroiled in labor disputes with the Town and, although no judgment is made here about the legitimacy of individual issues, we note that the Union was unwilling or unable to assemble its leadership team and a representative from each shift to meet with members of the MRI team as requested.

With a new Fire Chief coming aboard, it is critical that all parties recognize that the existence of the Fire Department is to provide crucial fire, EMS, code enforcement, and educational services to the citizens of the Town of Andover. That is the basic premise of providing public safety services to the community. Anything less than that should not be acceptable.

- 8-1** Recommendation: Improve and formalize fire safety education in the community, schools, and focus groups like the elderly and fire setters.
- 8-2** Recommendation: Utilize all media outlets (newsprint, community TV, Town web, community events) to get the fire safety message out.
- 8-3** Recommendation: Use on-line technology as much as possible to streamline the Permit process.
- 8-4** Recommendation: The new Fire Chief situation should be seized upon by labor and management to forge a new cooperative relationship to improve fire, rescue, and EMS services to the citizens of Andover. Confrontation is a lose/lose situation for all parties concerned, especially the citizens of Andover who pay for the service.

EMERGENCY MANAGEMENT

As the response to the recent floods demonstrated, it is important that emergency management be a shared and cooperative function by all community organizations. These situations require continuous communication and coordination between the various first responders, municipal operating departments, Town officials, and the Emergency Management Director, as well as establishment of an EOC and forward command posts, with all being supported by a well-coordinated, central administrative team. It would be helpful to document the lessons learned from the flooding response (as well as any future significant emergency responses) through a facilitated interagency post-incident critique involving those who were involved in any element of the incident. This information should be integrated into Departmental plans so that future responses to emergency situations, whether natural or man-made, reflect the intelligence of past experience. Additionally, practice exercises (both planned and spontaneous) that involve all those who need to communicate and take coordinated action in emergency response situations should be scheduled on a regular basis.

- 9-1** Recommendation: Andover must develop and adopt a Plan whereby the types of incidents that would activate the EOC and Town-wide operations under EOC control are identified.
- 9-2** Recommendation: All emergency services need to practice in an EOC environment after a Plan is developed and training is completed. Tabletop exercises should follow.
- 9-3** Recommendation: After training to the Plan is completed, apply to MEMA or the Regional Homeland Security Council for grant funding to stage an actual emergency drill to test the Plan and inter-agency cooperation. Develop an after-

action document that identifies the problem issues raised and correct the Plan accordingly. Re-train all personnel.

CONCLUSION

We appreciate the opportunity to be of service, especially at this critical time in the long and proud history of the Andover Fire Department. We have endeavored to provide a professional perspective, identify the challenges facing the Department and the Town of Andover, and provide recommendations relating to the opportunities for positive, constructive change that could be pursued. We believe that the next Chief of the Department, in conjunction with the Town Manager, should consider incorporating these recommendations into the goals and objectives for near term advancement of the Department.



The 2008 Andover Citizens Survey: Final Report

Submitted by Russell K. Mayer, PhD
Director of the Center for Public Opinion Research at Merrimack College
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Jenna Ware, and Molly Warren

February 1, 2009

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Introduction

This project represents collaboration between the Town of Andover and the Center for Public Opinion Research at Merrimack designed to help town government and citizens better understand the opinions of resident regarding their community. In many respects, the survey instrument and methodology is a replication and extension of the 2004 Andover Citizens Survey, and the information obtained from that project formed the baseline from which the 2008 survey was designed.

The 2008 survey contains question on two main topics: Community Life and Local Government. Within these areas, the survey collected detailed opinions on the quality of life in Andover, community characteristics, problems in Andover, important factors in the decision to move to or stay in Andover, Andover's current mix of property use, citizen participation in community life, town services, contact with town officials, the performance of town boards and committees, and sources of news and information about Andover.¹ In addition a range of demographic information was collected about survey participants to facilitate a better understanding of the sources of these beliefs and opinions.

The analysis contained in the report is divided as follows. The first two sections of the report examine basic frequencies for each of the closed-ended questions asked in the survey. In the next two sections of the report, a trend analysis that looks at changes in attitudes from the 2004 to the 2008 citizen survey is presented. In addition, Appendix 1 presents complete frequency breakdowns, including missing values. Appendix 2 contains a comparison between survey demographics and census demographics. Appendix 3 shows the exact question wording and formatting of the survey. Finally, Appendix 4 (available in a separate file from the Town of Andover) provides a crosstabulation of attitudinal measures by demographics.

The results of this are intended to be used by the town for such things as: measuring municipal service performance and citizen satisfaction, identifying community-wide issues and problems, strategic planning and goal-setting, improving programs and services, setting budgetary priorities, and enhancing communications.

¹ In addition, the survey contained two open ended questions on improvements in the conduct of Town Meeting and how the town could better serve citizens which were not analyzed as part of this report.

Survey Methodology

Survey Administration

Following the mailing of a pre-survey notification postcard to a random sample of 1,200 households, surveys were mailed to the same residences approximately one week later. A reminder letter and a new survey were sent to the same households after two weeks. Completed surveys were received from 672 residents for a response rate of 56%. Typically, the response rates obtained on citizen surveys range from 25% to 40%.

Sample Accuracy

All surveys that rely on a sample of the population of interest, in this case the citizens of the Town of Andover, have some level of error associated with them. This is because we can never be completely sure that the sample of individuals we collect data from is perfectly representative of the broader population of the town. However, given the initial random selection of households and response rate 56%, the sampling error associated with this survey is +/- 5 percent, with a 95% confidence level.

There are two parts to this measure of sampling error. First, the statistical data obtained from the sample is an accurate representation of the true population within a margin of +/- 5%. For instance, 53% of our sample respondents rate Andover as an excellent place to live. What this means is that in reality somewhere between 48% (- 5%) and 58% (+5%) of the whole population of the town rank Andover as an excellent place to live. Our data from the sample still makes 53% our best estimate of what percentage of the entire population of Andover ranks the town as an excellent place to live, but because we did not collect data from every single resident of the town (an extremely expensive undertaking) we must admit that there is some possibility that the true population percent varies from the percent in our sample.

The second part of the measure of sampling error considers the possibility that our sample estimates are "way off", i.e. the true population percentage falls outside our +/-5% margin of error. It is certainly possible that we ended up with a skewed sample of individuals to collect data from and that the 672 people in our sample have views that are very different from the rest of the population of the town. What is the chance of that happening? Well the confidence level

associated with this, our sample procedure (random selection), our response rate (56%), and our sample size (672) is 95%. What this means is that if we were to take a random sample of individuals from the Town of Andover, following the sample procedures and yielding the same response rate as we did here, 100 times, that in 95 of these 100 samples we would get answers to our questions that were representative of the entire population of the town, to within our margin of +/- 5%, and in only 5 of these 100 samples would we get unrepresentative data.

Thus, we are 95% confident that our sample estimates represent the true population views to within a margin of +/- 5%. This margin of error applies to the analyses that consider the whole sample. In those cases where the data are broken by sub-groups, sampling error increases because we are considering fewer individuals within each sub-group. Therefore, we have less confidence that these sub-groups in our sample represent the opinions of all of the individuals in Andover in that particular sub-group.

The Questionnaire

For the exact question wording and formatting of the questionnaire, please see Appendix 3.

Survey Scaling

For the most part the survey employed four point Likert scales. Respondents were, in general, asked to rate stimuli a symmetric scales, and provided with a not sure option. Depending on the question, respondents were asked to choose from excellent, good, fair, or poor; strongly agree, somewhat agree, somewhat disagree, or strongly disagree; or essential, very important, somewhat important, or not at all important. All of these scales contained four options in an attempt to force respondents to differentiated positive from negative rating, while still providing a not sure option for respondents who were truly uninformed about or held no opinion on the stimulus in question.

The mix of property use question employs a scale of not enough, just about right, or too much (along with a not sure option) to capture attitudes about the current supply of various types of property in Andover. The question on civic participation asks if residents participated in various civic activities in the last 12 months many times, a number of times, once or twice, or none. The question on how often residents use various news sources to keep up on town related news provides the options of daily, weekly, occasionally, seldom or

never. For these last two questions, which ask respondents to self-report on the frequency of certain behaviors, a not sure option is not needed, and ordinal level measurement appropriately captures differences among respondents.

In frequency counts reported in the preliminary report to the town (delivered November 19, 2008) and in the body of this report, only substantive responses are included. The appendices and raw data provided along with this report, however, include the not sure responses, so that any questions for which large numbers of respondents chose not sure as an option can be identified.

Adjusting Survey Data

All of the data presented in this report are unweighted. Appendix 2 shows a reasonable correspondence between survey demographics and census demographics, and so there is no need to adjust survey data to correspond to census information. Given the time between the 2000 US Census and the 2008 Andover Survey, the demographics in the survey may in fact be a more accurate representation of Andover's population circa 2008 than the census data.

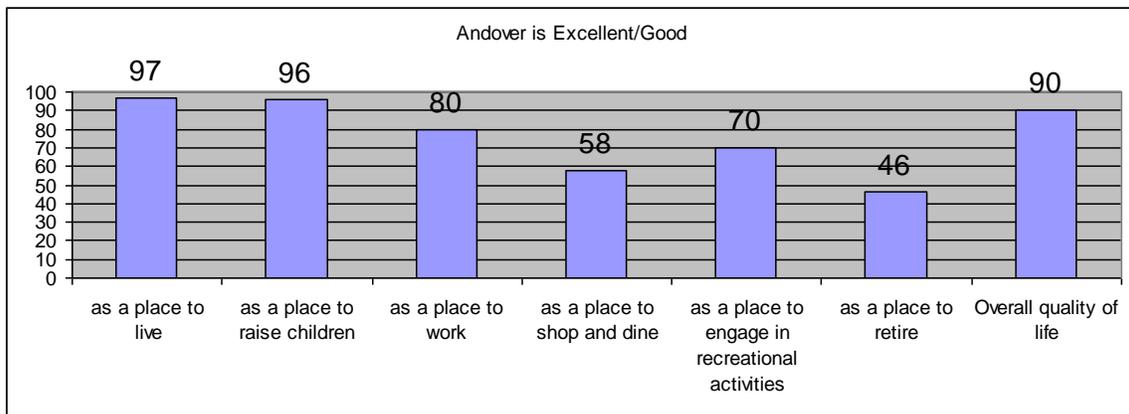
Furthermore, a weighting factor, adjusting survey results to census information on age, gender and education was calculated and the adjusted frequencies were examined. However the results of this weighted analysis were essentially identical to the unweighted analysis presented in this report. Thus for simplicity and ease of interpretation unweighted statistics are reported. The raw data and weighted factor examined are available upon request from the Center for Public Opinion Research at Merrimack College.

Community Life

The survey questions on community life contain information on five areas: the quality of life in Andover, community characteristics, problems in Andover, important factors in the decision to move to or stay in Andover, and Andover’s current mix of property use. For areas in which community life was examined, frequency tables and corresponding graphics are presented that highlight the key statistical findings. In addition, a narrative description of these findings is presented at the end of subsection. A narrative summary of all findings on community life is included at the end of this section.

Quality of Life

Please rate the quality of quality of life in Andover in each of the following categories				
	Excellent	Good	Fair	Poor
as a place to live	53	44	3	0
as a place to raise children	57	39	4	0
as a place to work	31	49	17	3
as a place to shop and dine	12	36	40	3
as a place for recreation	19	51	25	5
as a place to retire	13	33	28	26
Overall quality of life	30	60	8	1

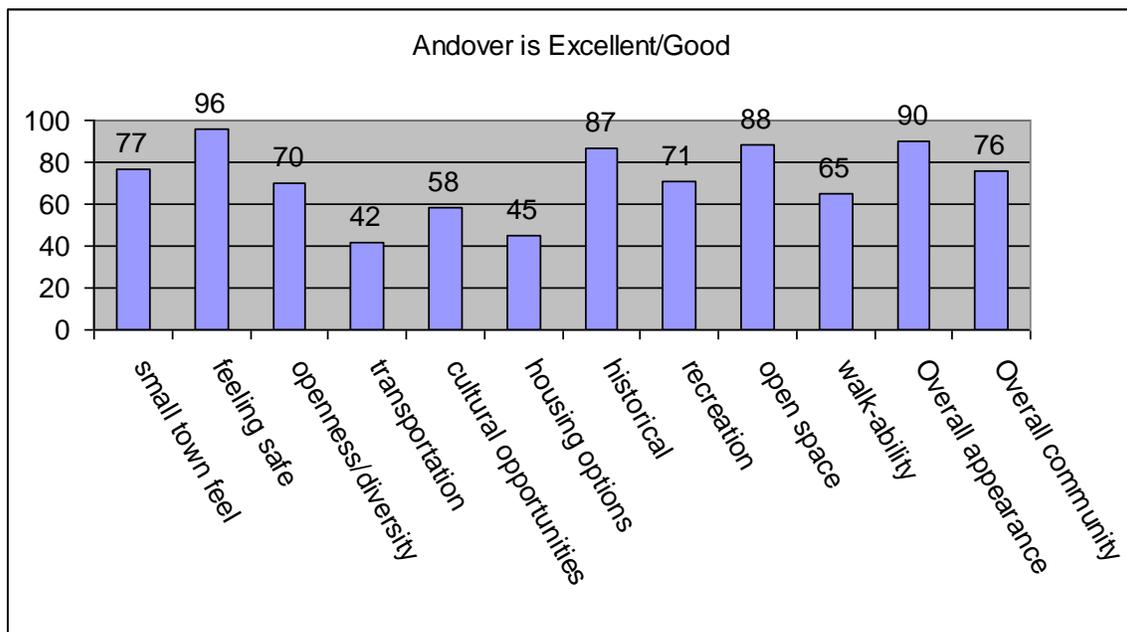


The Town of Andover is rated as an excellent place to live and raise children, with 97% and 96% of respondents rating the town as excellent or good in these two categories respectively. In addition, overall quality of life receives a 90% excellent/good rating. The areas of weakness in the town appear to be

shopping and dining (40% rate this as fair) and as a place to retire (54% rate this as fair or poor). In addition, a quarter of respondents indicated they were unsure about quality of Andover as a place to retire (see Appendix 1 for more details on the percentages unsure on all questions).

Community Characteristics

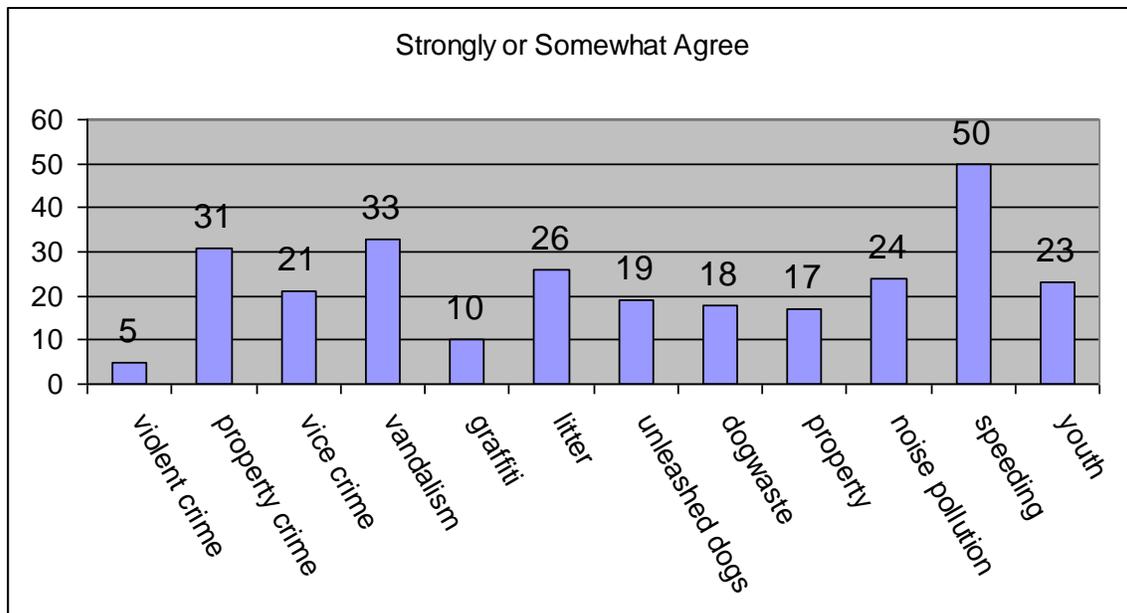
Please rate each of the following community characteristics in Andover				
	Excellent	Good	Fair	Poor
small town feel	27	50	19	4
feeling safe	51	45	4	1
openness/acceptance of diversity	24	46	23	7
public transportation options	9	33	32	26
cultural opportunities	13	45	35	7
range of housing options	7	38	40	14
historical preservation	24	63	11	2
recreational opportunities	17	54	25	5
open space/conservation land	37	51	10	2
walk-ability	21	44	27	9
Overall appearance	30	60	9	2
Overall sense of community	20	56	21	3



The Town of Andover receives extremely high marks for safety and appearance, with 96% of respondents rating it as excellent or good in terms of feeling safe, and 90% rating its overall appearance as excellent or good. Public transportation and range of housing options received the lowest overall ratings.

Problems in Andover

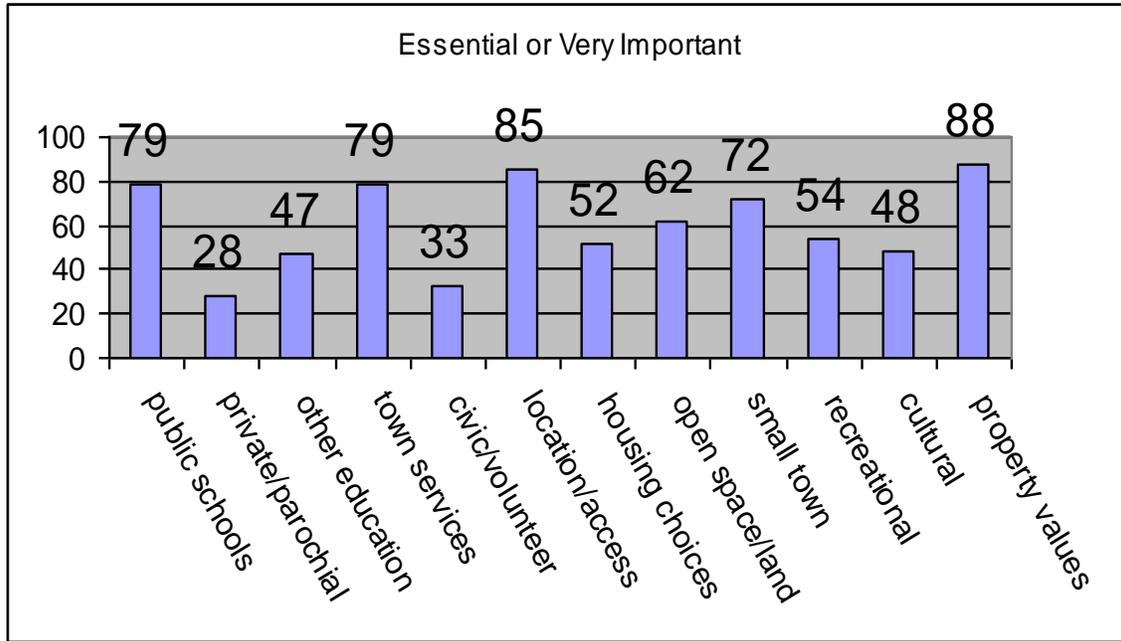
To what degree do you feel the following things are problems in Andover				
	strongly agree	somewhat agree	somewhat disagree	strongly disagree
violent crime	1	4	19	76
property crime	4	27	36	32
vice crime (drugs, prostitution, etc.)	2	19	32	47
vandalism	4	29	38	30
graffiti	1	9	34	56
litter	4	22	38	38
unleashed dogs	5	14	31	51
dog waste on sidewalks	5	13	32	51
poorly maintained property	2	15	40	43
noise pollution	4	20	31	44
automobile speeding	13	37	28	22
unsupervised youth	5	18	42	35



Violent crime is not perceived as a problem in Andover, with 76% of respondents strongly disagreeing and 19% somewhat disagreeing that this issue is concern for them in their community. On the other hand, property crime and vandalism (though not graffiti) are seen as the more relevant problems in the community. Overall, however, most of the potential problems that respondents were asked about did not seem to be major issues for the town. The one exception to this generalization appears to be automobile speeding, where half of the respondents strongly or somewhat agreed that this was problem in Andover.

Decision to Move to/Stay in Andover

Please rate the level of importance of the following items in relation to their influence on your decision to move to and/or remain in Andover				
	essential	very important	somewhat important	not at all important
public schools	56	23	9	12
private/parochial schools	11	17	25	47
other educational opportunities	16	31	26	27
town services	29	50	19	2
civic/volunteer opportunities	7	26	45	23
Geographic location/accessibility	35	50	14	1
variety of housing choices	15	37	36	13
open space/land conservation	20	42	29	9
small town ambiance and lifestyle	22	50	25	3
recreational opportunities	16	39	38	8
cultural opportunities	11	37	39	13
property values/investment	45	43	10	2



The public schools are seen as one of the most attractive features of the community, with three quarters of the respondents rating it as essential or very important in their decision to move to and/or stay in Andover. Private/parochial schools and other educational opportunities were much less likely to be seen as critical in this decision. Town services, location, and property values were also rated as extremely important in attracting respondents to Andover and keeping them there.

Andover’s Current Mix of Property Uses

What is your opinion of Andover’s current mix of property uses			
	not enough	just about right	too much
single family houses	6	85	8
residential subdivisions	4	70	26
multi-family housing	17	60	22
rental housing	24	57	18
office buildings	7	80	12
large retail stores	22	70	9
small shops and businesses	31	65	4
open space/farmland	41	58	1

There is a strong consensus that Andover's stock of single family housing is appropriate for the community, with 85% rating it as just about right. Opinion on the amount of multi-family and rental housing is more divided, with approximately 20% of residents feeling there is too much of these types of housing, and another 20% feeling there is too little of these types of housing. Only 1% of residents feel there is too much open space/farmland, while a substantial number (40%) feel there is not enough of this type of property in Andover's current mix.

Community Life Summary

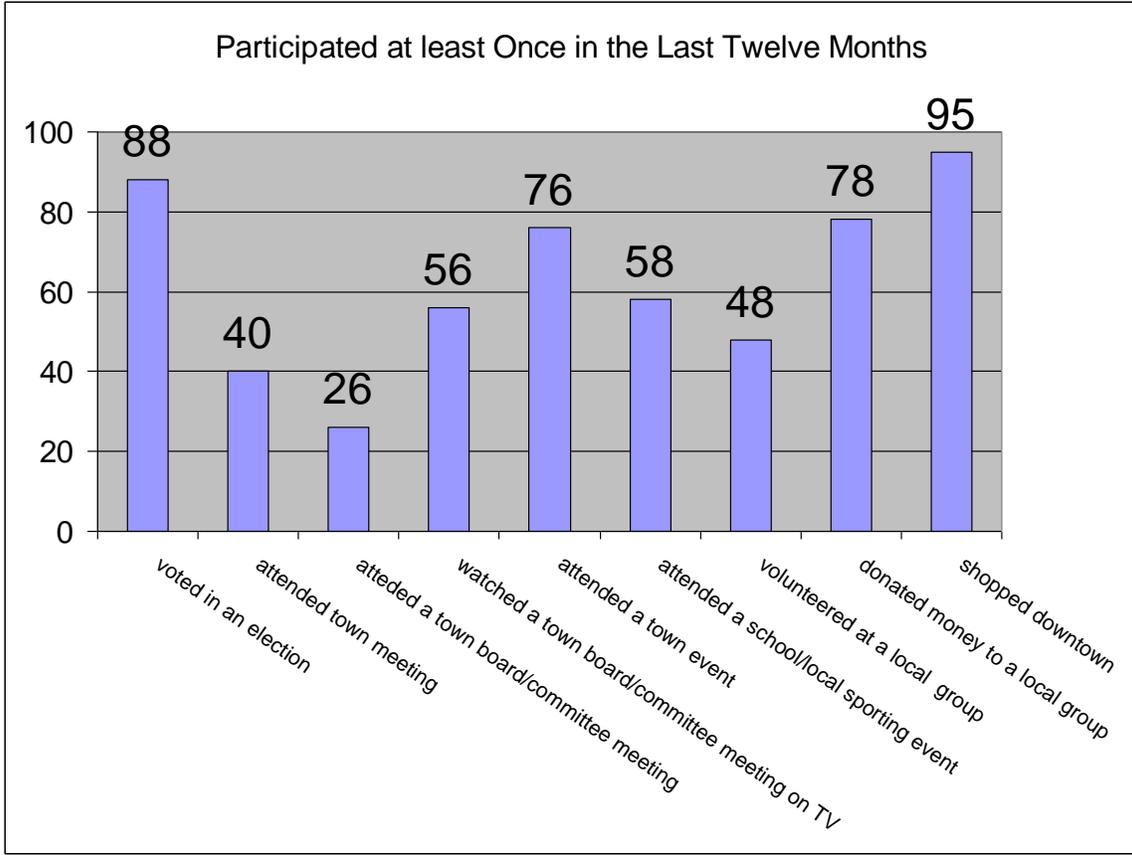
In general Andover is perceived by its residents to have an excellent quality of life. It is seen as a safe and attractive place to live. Housing, dining, and shopping options are seen as areas of concern. It is the community's schools, services, location and property values that make it attractive to its residents.

Local Government

The survey questions on local government contain information on five areas: citizen participation in community life, town services, contact with town officials, the performance of town boards and committees, and sources of news and information about Andover. For areas in which local government was examined, frequency tables and corresponding graphics are presented that highlight the key statistical findings. In addition, a narrative description of these findings is presented at the end of subsection. A narrative summary of all findings on local government is included at the end of this section.

Citizen Participation in Community Life

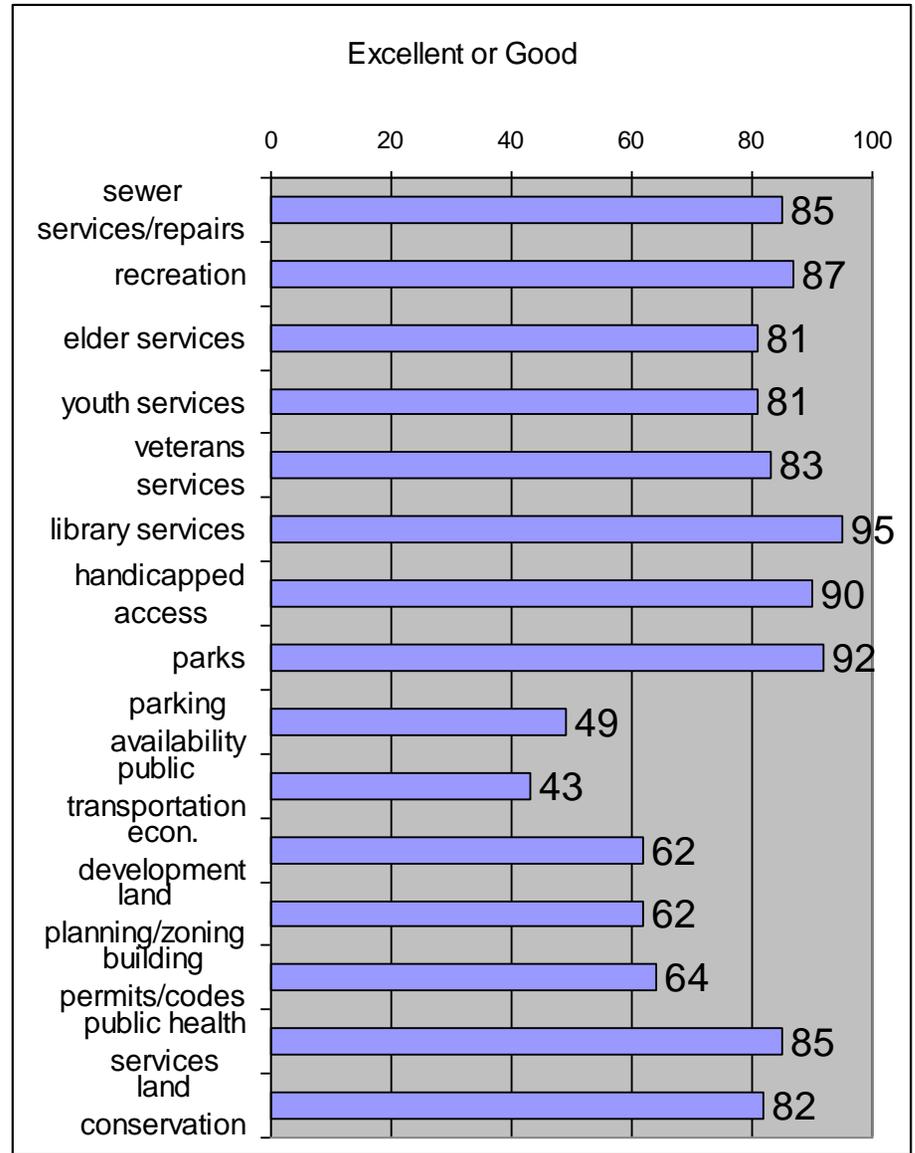
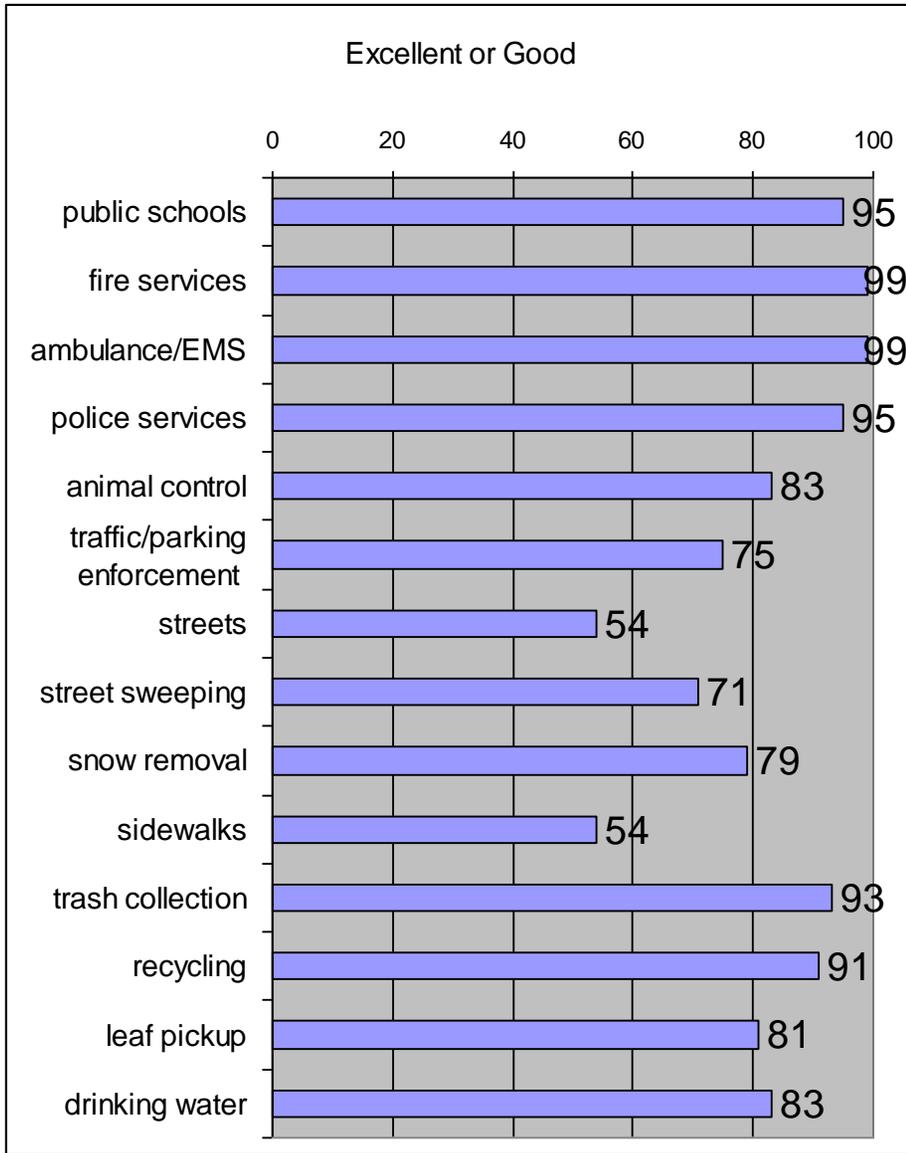
In the last 12 months, about how many times have you participated in the following civic/community activities				
	none	once or twice	a number of times	many times
voted in an election	12	50	18	20
attended town meeting	60	27	6	6
attended a meeting of a town board or committee	74	17	4	4
watched a town board or committee meeting on television	44	34	14	8
attended a town event (e.g. July 4th, Andover Days, etc.)	24	40	24	11
attended a school/local sporting event	42	18	16	25
volunteered at a local non-profit or civic group	52	19	11	18
donated money to a local non-profit or civic group	22	34	25	19
shopped in the downtown business district	5	13	32	51



In terms of civic and community participation, voting rates are much higher than rates of attendance at Town Meeting. Almost 90% of respondents said they had voted at least once in the past twelve months, while only 40% claimed to have attended the Annual Town Meeting. In a separate question 43% of respondents reported attending Town Meeting at least once in the past three years. In addition, large numbers of residents attend town events (76%), donate money to local groups (78%), and shop in the downtown district (95%) at least once a year.

Town Services

How do you rate the quality and performance of each of the following town services				
	excellent	good	fair	poor
public schools	45	50	4	2
fire services	59	40	1	0
ambulance/EMS	62	37	1	0
police services	49	45	5	1
animal control	32	51	13	4
traffic/parking enforcement	25	50	18	6
street maintenance/repair	14	40	34	12
street sweeping	19	52	24	4
snow removal	28	53	14	5
sidewalk maintenance	12	42	33	12
trash collection	41	52	6	1
Recycling	43	48	7	2
curb-side leaf pickup	31	50	15	4
drinking water quality	38	46	13	4
sewer services/repairs	27	58	13	2
recreation programs/classes	30	57	11	2
elder services	28	53	16	3
youth services	31	50	14	5
veterans services	30	53	13	4
library services	53	42	5	0
handicapped accessibility of facilities	31	59	8	2
maintenance/appearance of parks	33	59	7	1
public parking availability	10	39	34	16
public transportation	9	34	37	20
economic development	9	53	32	6
land use planning, regulation and zoning	12	50	30	8
building permits and code enforcement	13	51	27	9
public health services	19	66	13	2
land conservation and wetlands protection	27	55	14	4



Most town services were ranked quite positively with nearly all being rated as excellent or good by at least 70% of survey respondents. Superior services (with excellent/good scores in the 90+ range) were: schools, police, fire, EMS, trash collection, recycling, library services, parks, and handicapped access. Services that received less positive ratings were: street repair and maintenance, sidewalk maintenance, public parking availability, and public transportation, which were ranked as fair or poor by 45-50% of citizens.

Contact with Town Officials

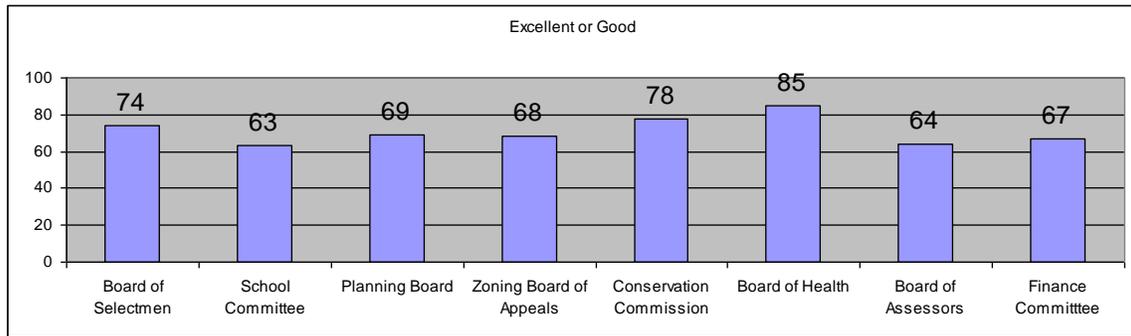
63% of Respondents Reported Having Had Contact with a Town of Andover Employee or Official within the Last Year.
That Contact was Rated as



Contact with town officials was rated very positive, with 85% of survey respondents ranking their experience as excellent or good across all criteria. Not surprisingly, the lowest ranking was in the category of responsiveness and resolution.

Performance of Town Committees and Boards

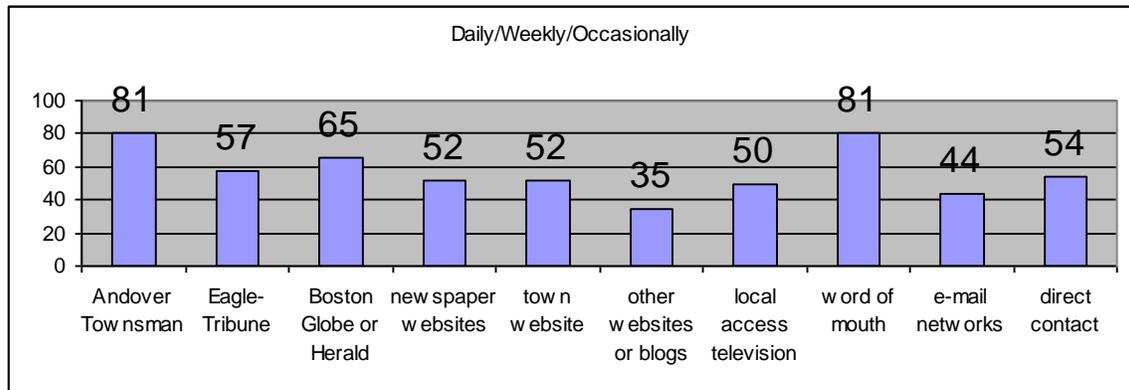
How would you rate the performance and actions of the following Town Boards and Committees				
	excellent	good	fair	poor
Board of Selectmen	14	60	21	4
School Committee	13	50	26	11
Planning Board	13	56	26	6
Zoning Board of Appeals	13	55	25	7
Conservation Commission	21	57	16	5
Board of Health	22	63	12	2
Board of Assessors	13	51	30	6
Finance Committee	19	48	26	8



The highest profile boards and committees – the Board of Selectmen – and the lowest profiles boards and committee – the Conservation Commission and the Board of Health receive the most positive rating, with combined excellent/good scores in the 70-90% range. The School Committee and the Board of Assessors receive less positive scores, the later not surprisingly due to their natural linkage to property taxes.

Sources of Andover News and Information

How often do you rely on the following sources to obtain Town of Andover related news and information					
	daily	weekly	occasionally	seldom	never
Andover Townsman	2	65	14	9	10
Eagle-Tribune	33	7	17	15	28
Boston Globe or Boston Herald	36	13	16	13	22
newspaper websites	16	10	26	18	31
town website	2	8	42	20	27
other websites or blogs	7	7	21	19	46
local access television	7	9	34	22	29
word of mouth	12	28	41	11	8
e-mail networks	9	14	21	15	41
direct contact	6	11	37	23	23



The Andover Townsman and word of mouth are the primary sources of local news and information for residents with over 80% of residents reporting they use these sources at least occasionally to keep up on local town news. Electronic media, including newspaper websites, the town website, other websites or blogs, local access television, and email networks, were less frequently used by respondents as a source of local information and news.

Local Government Summary

Andover is a town where levels of voting and community engagement are high. In terms of town services, the schools and essential services (fire, police, EMS, trash collection) are highly rated. The primary areas of weakness in service delivery are streets and transportation. Overall, contact with town officials is seen as very positive. The highest and lowest profile board and committees received the most favorable rating from citizens. Finally, in general, residents use local sources for local information.

Trends in Community Life

Because the 2008 Andover Citizens Survey replicated certain questions from the 2004 Andover Citizens Survey, it is possible to identify any substantial changes in attitudes in those areas in which questions were repeated. The analysis presented in this and the next section identifies those areas in which there were the largest positive and negative changes in attitudes. Where questions were essentially identical, with only minor wording variations, the trend analysis was performed, but these instances are noted in the tables. Exact question wording and formatting for the 2004 survey is available on the Town of Andover’s website, so that question comparability can be verified.

Furthermore, the positive and negative changes identified in these sections need to be interpreted cautiously, as the particular circumstances and timing – rather than broader trends – may be in part responsible for the observed changes. In addition, over a four year period, the interpretation of terminology and the contextual factors that respondents bring to bear in answers question may also have shifted. Further replication of these survey questions going forward (i.e., a repeated time-series with additional data points) would significantly enhance the ability to identify important changes in citizens perceptions of their community and local government.

Andover rated as excellent or good	2004	2008	Change
as a place to live	97	97	0
as a place to raise children	95	96	1
as a place to retire	43	46	3
Overall quality of life	94	90	-4
sense of community*	76	76	0
openness/diversity	65	70	5
Overall appearance	89	90	1
cultural opportunities	71	58	-13
recreational opportunities	72	71	-1
walkability*	71	65	-6

** minor wording changes from 2004 to 2008*

Essential or very important in decision to move to/stay in Andover	2004	2008	Change
public schools	77	79	2
private/parochial schools	27	28	1
other educational opportunities	44	47	3
town services	74	79	5
civic/volunteer opportunities	28	33	5
geographic location/accessibility	77	85	8
variety of housing choices	42	52	10
natural resources/open space*	66	62	-4
small town ambiance and lifestyle	75	72	-3
recreational opportunities	54	54	0
cultural opportunities	44	48	4
property values/investment	87	88	1

** minor wording changes from 2004 to 2008*

The two areas of substantial change in citizens' perceptions of their community were in terms of cultural opportunities and variety of housing choices. Citizens perceptions of the availability of cultural opportunities declined between 2004 and 2008, while the variety of housing choices become more important as reason to move to and or stay in Andover.

Trends in Local Government

Andover services rated as excellent or good	2004	2008	Change
Police	93	95	2
Fire	97	99	2
EMS	98	99	1
traffic enforcement	79	75	-4
street repair	42	54	12
street cleaning	62	71	9
snow removal	79	79	0
sidewalk maintenance	49	54	5
public parking*	37	49	12
transportation*	56	43	-13
recreation programs/classes	81	87	6
appearance/maintenance of parks	84	92	8
library services	95	95	0
garbage collection	92	93	1
Recycling	91	91	0
yard waste pickup*	71	81	10
sewer service*	78	85	7
land use, planning, zoning	53	62	9
economic development	67	62	-5
elder services*	69	81	12
youth services	66	81	15
public schools	85	95	10

** minor wording changes from 2004 to 2008*

Impression of Town employee/officials with whom you had contact excellent or good	2004	2008	Change
knowledge*	90	88	-2
responsiveness*	85	83	-2
courtesy*	86	90	4
overall impression*	86	85	-1

** minor wording change from 2004 to 2008*

Of the ratings of town services that changed between 2004 and 2008, six areas were rated more highly in 2008: street repair, public parking, yard waste pick up, elder services, youth services, and public schools, while only transportation received a less favorable rating in 2008. The impressions of town officials with whom citizens had contact did not change in any notable way across the two surveys.

Appendix 1 Frequencies Including Missing Data

Andover as a Place to Live

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	353	52.5	52.8	52.8
	Good	292	43.5	43.7	96.6
	Fair	22	3.3	3.3	99.9
	Not Sure	1	.1	.1	100.0
	Total	668	99.4	100.0	
Missing	Missing	4	.6		
Total		672	100.0		

Andover as a Place to Raise Children

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	360	53.6	54.7	54.7
	Good	250	37.2	38.0	92.7
	Fair	22	3.3	3.3	96.0
	Poor	2	.3	.3	96.4
	Not Sure	24	3.6	3.6	100.0
	Total	658	97.9	100.0	
Missing	Missing	14	2.1		
Total		672	100.0		

Andover as a Place to Work

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	128	19.0	19.9	19.9
	Good	203	30.2	31.6	51.5
	Fair	72	10.7	11.2	62.7
	Poor	11	1.6	1.7	64.4
	Not Sure	229	34.1	35.6	100.0
	Total	643	95.7	100.0	
Missing	Missing	29	4.3		
Total		672	100.0		

Andover as a Place to Shop and Dine

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	79	11.8	11.9	11.9
	Good	238	35.4	35.9	47.8
	Fair	262	39.0	39.5	87.3
	Poor	78	11.6	11.8	99.1
	Not Sure	6	.9	.9	100.0
	Total	663	98.7	100.0	
Missing	Missing	9	1.3		
Total		672	100.0		

Andover as a Place to Engage in Recreational Activities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	120	17.9	18.3	18.3
	Good	317	47.2	48.4	66.7
	Fair	155	23.1	23.7	90.4
	Poor	33	4.9	5.0	95.4
	Not Sure	30	4.5	4.6	100.0
	Total	655	97.5	100.0	
Missing	Missing	17	2.5		
Total		672	100.0		

Andover as a Place to Retire

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	70	10.4	10.5	10.5
	Good	165	24.6	24.8	35.3
	Fair	143	21.3	21.5	56.8
	Poor	134	19.9	20.2	77.0
	Not Sure	153	22.8	23.0	100.0
	Total	665	99.0	100.0	
Missing	Missing	7	1.0		
Total		672	100.0		

Overall Quality of Life

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	204	30.4	30.6	30.6
	Good	404	60.1	60.7	91.3
	Fair	51	7.6	7.7	98.9
	Poor	5	.7	.8	99.7
	Not Sure	2	.3	.3	100.0
	Total	666	99.1	100.0	
Missing	Missing	6	.9		
Total		672	100.0		

Small Town Feel

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	178	26.5	26.8	26.8
	Good	330	49.1	49.8	76.6
	Fair	126	18.8	19.0	95.6
	Poor	25	3.7	3.8	99.4
	Not Sure	4	.6	.6	100.0
	Total	663	98.7	100.0	
Missing	Missing	9	1.3		
Total		672	100.0		

Feeling Safe

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	338	50.3	50.7	50.7
	Good	296	44.0	44.4	95.1
	Fair	28	4.2	4.2	99.3
	Poor	3	.4	.4	99.7
	Not Sure	2	.3	.3	100.0
	Total	667	99.3	100.0	
Missing	Missing	5	.7		
Total		672	100.0		

Openness/Acceptance of Diversity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	149	22.2	22.7	22.7
	Good	282	42.0	43.0	65.7
	Fair	142	21.1	21.6	87.3
	Poor	41	6.1	6.2	93.6
	Not Sure	42	6.2	6.4	100.0
	Total	656	97.6	100.0	
Missing	Missing	16	2.4		
Total		672	100.0		

Public Transportation Options

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	51	7.6	7.8	7.8
	Good	182	27.1	27.9	35.7
	Fair	179	26.6	27.5	63.2
	Poor	141	21.0	21.6	84.8
	Not Sure	99	14.7	15.2	100.0
	Total	652	97.0	100.0	
Missing	Missing	20	3.0		
Total		672	100.0		

Cultural Opportunities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	76	11.3	11.7	11.7
	Good	273	40.6	41.9	53.5
	Fair	210	31.2	32.2	85.7
	Poor	42	6.2	6.4	92.2
	Not Sure	51	7.6	7.8	100.0
	Total	652	97.0	100.0	
Missing	Missing	20	3.0		
Total		672	100.0		

Range of Housing Options

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	44	6.5	6.7	6.7
	Good	234	34.8	35.5	42.2
	Fair	246	36.6	37.3	79.5
	Poor	88	13.1	13.4	92.9
	Not Sure	47	7.0	7.1	100.0
	Total	659	98.1	100.0	
Missing	Missing	13	1.9		
Total		672	100.0		

Historical Preservation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	153	22.8	23.4	23.4
	Good	395	58.8	60.3	83.7
	Fair	68	10.1	10.4	94.0
	Poor	10	1.5	1.5	95.6
	Not Sure	29	4.3	4.4	100.0
	Total	655	97.5	100.0	
Missing	Missing	17	2.5		
Total		672	100.0		

Recreational Opportunities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	104	15.5	15.9	15.9
	Good	337	50.1	51.4	67.2
	Fair	154	22.9	23.5	90.7
	Poor	32	4.8	4.9	95.6
	Not Sure	29	4.3	4.4	100.0
	Total	656	97.6	100.0	
Missing	Missing	16	2.4		
Total		672	100.0		

Open Space/Conservation Land

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	236	35.1	36.1	36.1
	Good	320	47.6	48.9	85.0
	Fair	62	9.2	9.5	94.5
	Poor	14	2.1	2.1	96.6
	Not Sure	22	3.3	3.4	100.0
	Total	654	97.3	100.0	
Missing	Missing	18	2.7		
Total		672	100.0		

Walk-ability

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	136	20.2	20.6	20.6
	Good	289	43.0	43.7	64.3
	Fair	176	26.2	26.6	90.9
	Poor	56	8.3	8.5	99.4
	Not Sure	4	.6	.6	100.0
	Total	661	98.4	100.0	
Missing	Missing	11	1.6		
Total		672	100.0		

Overall Appearance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	192	28.6	29.2	29.2
	Good	395	58.8	60.1	89.3
	Fair	60	8.9	9.1	98.5
	Poor	10	1.5	1.5	100.0
	Total	657	97.8	100.0	
Missing	Missing	15	2.2		
Total		672	100.0		

Overall Sense of Community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	130	19.3	19.7	19.7
	Good	361	53.7	54.8	74.5
	Fair	132	19.6	20.0	94.5
	Poor	22	3.3	3.3	97.9
	Not Sure	14	2.1	2.1	100.0
	Total	659	98.1	100.0	
Missing	Missing	13	1.9		
Total		672	100.0		

Violent Crime

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	5	.7	.8	.8
	Somewhat Agree	25	3.7	3.8	4.6
	Somewhat Disagree	119	17.7	18.3	22.9
	Strongly Disagree	470	69.9	72.1	94.9
	Not Sure	33	4.9	5.1	100.0
	Total	652	97.0	100.0	
Missing	Missing	20	3.0		
Total		672	100.0		

Property Crime

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	26	3.9	4.0	4.0
	Somewhat Agree	160	23.8	24.7	28.7
	Somewhat Disagree	217	32.3	33.5	62.2
	Strongly Disagree	195	29.0	30.1	92.3
	Not Sure	50	7.4	7.7	100.0
	Total	648	96.4	100.0	
Missing	Missing	24	3.6		
Total		672	100.0		

Vice Crime (Drugs, Prostitution, etc.)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	12	1.8	1.8	1.8
	Somewhat Agree	109	16.2	16.7	18.5
	Somewhat Disagree	181	26.9	27.7	46.2
	Strongly Disagree	272	40.5	41.6	87.8
	Not Sure	80	11.9	12.2	100.0
	Total	654	97.3	100.0	
Missing	Missing	18	2.7		
Total		672	100.0		

Vandalism

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	22	3.3	3.4	3.4
	Somewhat Agree	173	25.7	26.6	30.0
	Somewhat Disagree	229	34.1	35.2	65.2
	Strongly Disagree	181	26.9	27.8	93.1
	Not Sure	45	6.7	6.9	100.0
	Total	650	96.7	100.0	
Missing	Missing	22	3.3		
Total		672	100.0		

Graffiti

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	5	.7	.8	.8
	Somewhat Agree	54	8.0	8.3	9.1
	Somewhat Disagree	203	30.2	31.3	40.4
	Strongly Disagree	331	49.3	51.0	91.4
	Not Sure	56	8.3	8.6	100.0
	Total	649	96.6	100.0	
Missing	Missing	23	3.4		
Total		672	100.0		

Litter

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	22	3.3	3.4	3.4
	Somewhat Agree	136	20.2	20.8	24.2
	Somewhat Disagree	236	35.1	36.1	60.3
	Strongly Disagree	234	34.8	35.8	96.2
	Not Sure	25	3.7	3.8	100.0
	Total	653	97.2	100.0	
Missing	Missing	19	2.8		
Total		672	100.0		

Unleashed Dogs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	28	4.2	4.3	4.3
	Somewhat Agree	83	12.4	12.7	17.0
	Somewhat Disagree	191	28.4	29.2	46.2
	Strongly Disagree	313	46.6	47.9	94.0
	Not Sure	39	5.8	6.0	100.0
	Total	654	97.3	100.0	
Missing	Missing	18	2.7		
Total		672	100.0		

Dog Waste on Sidewalks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	28	4.2	4.3	4.3
	Somewhat Agree	79	11.8	12.1	16.4
	Somewhat Disagree	191	28.4	29.3	45.7
	Strongly Disagree	306	45.5	46.9	92.6
	Not Sure	48	7.1	7.4	100.0
	Total	652	97.0	100.0	
Missing	Missing	20	3.0		
Total		672	100.0		

Poorly Maintained Property

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	13	1.9	2.0	2.0
	Somewhat Agree	92	13.7	14.1	16.1
	Somewhat Disagree	250	37.2	38.3	54.4
	Strongly Disagree	272	40.5	41.7	96.0
	Not Sure	26	3.9	4.0	100.0
	Total	653	97.2	100.0	
Missing	Missing	19	2.8		
Total		672	100.0		

Noise Pollution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	25	3.7	3.8	3.8
	Somewhat Agree	128	19.0	19.7	23.5
	Somewhat Disagree	199	29.6	30.6	54.1
	Strongly Disagree	281	41.8	43.2	97.2
	Not Sure	18	2.7	2.8	100.0
	Total	651	96.9	100.0	
Missing	Missing	21	3.1		
Total		672	100.0		

Automobile Speeding

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	82	12.2	12.5	12.5
	Somewhat Agree	236	35.1	35.9	48.3
	Somewhat Disagree	181	26.9	27.5	75.8
	Strongly Disagree	138	20.5	21.0	96.8
	Not Sure	21	3.1	3.2	100.0
	Total	658	97.9	100.0	
Missing	Missing	14	2.1		
Total		672	100.0		

Unsupervised Youth

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	31	4.6	4.7	4.7
	Somewhat Agree	107	15.9	16.2	20.9
	Somewhat Disagree	251	37.4	38.1	59.0
	Strongly Disagree	205	30.5	31.1	90.1
	Not Sure	65	9.7	9.9	100.0
	Total	659	98.1	100.0	
Missing	Missing	13	1.9		
Total		672	100.0		

Public Schools

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Essential	362	53.9	55.4	55.4
	Very Important	147	21.9	22.5	77.8
	Somewhat Important	57	8.5	8.7	86.5
	Not Important At All	80	11.9	12.2	98.8
	Not Sure	8	1.2	1.2	100.0
	Total	654	97.3	100.0	
Missing	Missing	18	2.7		
Total		672	100.0		

Private/Parochial Schools

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Essential	69	10.3	10.6	10.6
	Very Important	108	16.1	16.6	27.3
	Somewhat Important	156	23.2	24.0	51.3
	Not Important At All	292	43.5	45.0	96.3
	Not Sure	24	3.6	3.7	100.0
	Total	649	96.6	100.0	
Missing	Missing	23	3.4		
Total		672	100.0		

Other Educational Opportunities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Essential	97	14.4	14.9	14.9
	Very Important	190	28.3	29.2	44.2
	Somewhat Important	161	24.0	24.8	68.9
	Not Important At All	164	24.4	25.2	94.2
	Not Sure	38	5.7	5.8	100.0
	Total	650	96.7	100.0	
Missing	Missing	22	3.3		
Total		672	100.0		

Town Services

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Essential	190	28.3	28.8	28.8
	Very Important	325	48.4	49.3	78.1
	Somewhat Important	122	18.2	18.5	96.7
	Not Important At All	15	2.2	2.3	98.9
	Not Sure	7	1.0	1.1	100.0
	Total	659	98.1	100.0	
Missing	Missing	13	1.9		
Total		672	100.0		

Civic/Volunteer Organizations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Essential	42	6.2	6.5	6.5
	Very Important	157	23.4	24.4	30.9
	Somewhat Important	277	41.2	43.1	74.0
	Not Important At All	139	20.7	21.6	95.6
	Not Sure	28	4.2	4.4	100.0
	Total	643	95.7	100.0	
Missing	Missing	29	4.3		
Total		672	100.0		

Geographic Location/Accessibility

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Essential	224	33.3	34.4	34.4
	Very Important	323	48.1	49.6	84.0
	Somewhat Important	90	13.4	13.8	97.8
	Not Important At All	5	.7	.8	98.6
	Not Sure	9	1.3	1.4	100.0
	Total	651	96.9	100.0	
Missing	Missing	21	3.1		
Total		672	100.0		

Variety of Housing Choices

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Essential	91	13.5	14.1	14.1
	Very Important	227	33.8	35.1	49.1
	Somewhat Important	224	33.3	34.6	83.8
	Not Important At All	79	11.8	12.2	96.0
	Not Sure	26	3.9	4.0	100.0
	Total	647	96.3	100.0	
Missing	Missing	25	3.7		
Total		672	100.0		

Open Space/Conservation Land

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Essential	127	18.9	19.6	19.6
	Very Important	271	40.3	41.9	61.5
	Somewhat Important	187	27.8	28.9	90.4
	Not Important At All	54	8.0	8.3	98.8
	Not Sure	8	1.2	1.2	100.0
	Total	647	96.3	100.0	
Missing	Missing	25	3.7		
Total		672	100.0		

Small Town Ambiance and Lifestyle

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Essential	143	21.3	21.9	21.9
	Very Important	322	47.9	49.4	71.3
	Somewhat Important	159	23.7	24.4	95.7
	Not Important At All	22	3.3	3.4	99.1
	Not Sure	6	.9	.9	100.0
	Total	652	97.0	100.0	
Missing	Missing	20	3.0		
Total		672	100.0		

Recreational Opportunities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Essential	102	15.2	15.6	15.6
	Very Important	252	37.5	38.7	54.3
	Somewhat Important	242	36.0	37.1	91.4
	Not Important At All	49	7.3	7.5	98.9
	Not Sure	7	1.0	1.1	100.0
	Total	652	97.0	100.0	
Missing	Missing	20	3.0		
Total		672	100.0		

Cultural Opportunities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Essential	73	10.9	11.2	11.2
	Very Important	236	35.1	36.1	47.2
	Somewhat Important	246	36.6	37.6	84.9
	Not Important At All	83	12.4	12.7	97.6
	Not Sure	16	2.4	2.4	100.0
	Total	654	97.3	100.0	
Missing	Missing	18	2.7		
Total		672	100.0		

Property Values/Investment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Essential	289	43.0	44.1	44.1
	Very Important	280	41.7	42.7	86.7
	Somewhat Important	61	9.1	9.3	96.0
	Not Important At All	15	2.2	2.3	98.3
	Not Sure	11	1.6	1.7	100.0
	Total	656	97.6	100.0	
Missing	Missing	16	2.4		
Total		672	100.0		

Single Family Houses

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Enough	38	5.7	5.9	5.9
	Just About Right	513	76.3	79.2	85.0
	Too Much	50	7.4	7.7	92.7
	Not Sure	47	7.0	7.3	100.0
	Total	648	96.4	100.0	
Missing	Missing	24	3.6		
Total		672	100.0		

Residential Subdivisions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Enough	22	3.3	3.4	3.4
	Just About Right	390	58.0	60.1	63.5
	Too Much	145	21.6	22.3	85.8
	Not Sure	92	13.7	14.2	100.0
	Total	649	96.6	100.0	
Missing	Missing	23	3.4		
Total		672	100.0		

Multi-Family Housing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Enough	90	13.4	13.8	13.8
	Just About Right	317	47.2	48.7	62.5
	Too Much	118	17.6	18.1	80.6
	Not Sure	126	18.8	19.4	100.0
	Total	651	96.9	100.0	
Missing	Missing	21	3.1		
Total		672	100.0		

Rental Housing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Enough	116	17.3	17.8	17.8
	Just About Right	273	40.6	42.0	59.8
	Too Much	87	12.9	13.4	73.2
	Not Sure	174	25.9	26.8	100.0
	Total	650	96.7	100.0	
Missing	Missing	22	3.3		
Total		672	100.0		

Office Buildings

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Enough	40	6.0	6.2	6.2
	Just About Right	454	67.6	70.2	76.4
	Too Much	68	10.1	10.5	86.9
	Not Sure	85	12.6	13.1	100.0
	Total	647	96.3	100.0	
Missing	Missing	25	3.7		
Total		672	100.0		

Large Retail Stores

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Enough	125	18.6	19.4	19.4
	Just About Right	405	60.3	62.9	82.3
	Too Much	50	7.4	7.8	90.1
	Not Sure	64	9.5	9.9	100.0
	Total	644	95.8	100.0	
Missing	Missing	28	4.2		
Total		672	100.0		

Small Shops and Businesses

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Enough	196	29.2	30.0	30.0
	Just About Right	403	60.0	61.7	91.7
	Too Much	21	3.1	3.2	94.9
	Not Sure	33	4.9	5.1	100.0
	Total	653	97.2	100.0	
Missing	Missing	19	2.8		
Total		672	100.0		

Open Space/Farmland

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Enough	233	34.7	35.9	35.9
	Just About Right	328	48.8	50.5	86.4
	Too Much	8	1.2	1.2	87.7
	Not Sure	80	11.9	12.3	100.0
	Total	649	96.6	100.0	
Missing	Missing	23	3.4		
Total		672	100.0		

Voted in an Election

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	76	11.3	11.6	11.6
	Once or Twice	331	49.3	50.4	61.9
	A Number of Times	118	17.6	18.0	79.9
	Many Times	132	19.6	20.1	100.0
	Total	657	97.8	100.0	
Missing	Missing	15	2.2		
Total		672	100.0		

Attended Town Meeting

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	394	58.6	60.4	60.4
	Once or Twice	176	26.2	27.0	87.4
	A Number of Times	42	6.2	6.4	93.9
	Many Times	40	6.0	6.1	100.0
	Total	652	97.0	100.0	
Missing	Missing	20	3.0		
Total		672	100.0		

Attended a Meeting of a Town Board or Committee

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	481	71.6	74.2	74.2
	Once or Twice	113	16.8	17.4	91.7
	A Number of Times	27	4.0	4.2	95.8
	Many Times	27	4.0	4.2	100.0
	Total	648	96.4	100.0	
Missing	Missing	24	3.6		
Total		672	100.0		

Watched a Town Board or Committee Meeting on Television

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	287	42.7	44.4	44.4
	Once or Twice	219	32.6	33.8	78.2
	A Number of Times	92	13.7	14.2	92.4
	Many Times	49	7.3	7.6	100.0
	Total	647	96.3	100.0	
Missing	Missing	25	3.7		
Total		672	100.0		

Attended a Town Event (e.g. July 4th, Andover Days, etc.)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	157	23.4	24.1	24.1
	Once or Twice	263	39.1	40.4	64.5
	A Number of Times	158	23.5	24.3	88.8
	Many Times	73	10.9	11.2	100.0
	Total	651	96.9	100.0	
Missing	Missing	21	3.1		
Total		672	100.0		

Attended a School/Local Sporting Event

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	267	39.7	41.5	41.5
	Once or Twice	113	16.8	17.5	59.0
	A Number of Times	103	15.3	16.0	75.0
	Many Times	161	24.0	25.0	100.0
	Total	644	95.8	100.0	
Missing	Missing	28	4.2		
Total		672	100.0		

Volunteered at a Local Non-Profit or Civic Group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	338	50.3	52.3	52.3
	Once or Twice	124	18.5	19.2	71.5
	A Number of Times	68	10.1	10.5	82.0
	Many Times	116	17.3	18.0	100.0
	Total	646	96.1	100.0	
Missing	Missing	26	3.9		
Total		672	100.0		

Donated Money to a Local Non-Profit or Civic Group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	145	21.6	22.1	22.1
	Once or Twice	224	33.3	34.2	56.3
	A Number of Times	162	24.1	24.7	81.1
	Many Times	124	18.5	18.9	100.0
	Total	655	97.5	100.0	
Missing	Missing	17	2.5		
Total		672	100.0		

Shopped in the Downtown Business District

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	33	4.9	5.0	5.0
	Once or Twice	84	12.5	12.7	17.6
	A Number of Times	211	31.4	31.8	49.5
	Many Times	335	49.9	50.5	100.0
	Total	663	98.7	100.0	
Missing	Missing	9	1.3		
Total		672	100.0		

Public Schools

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	263	39.1	40.2	40.2
	Good	296	44.0	45.2	85.3
	Fair	22	3.3	3.4	88.7
	Poor	10	1.5	1.5	90.2
	DK	64	9.5	9.8	100.0
	Total	655	97.5	100.0	
Missing	Missing	17	2.5		
Total		672	100.0		

Fire Services

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	321	47.8	48.4	48.4
	Good	216	32.1	32.6	81.0
	Fair	4	.6	.6	81.6
	Poor	1	.1	.2	81.7
	DK	121	18.0	18.3	100.0
	Total	663	98.7	100.0	
Missing	Missing	9	1.3		
Total		672	100.0		

Ambulance/EMS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	292	43.5	44.1	44.1
	Good	176	26.2	26.6	70.7
	Fair	3	.4	.5	71.1
	Poor	1	.1	.2	71.3
	DK	190	28.3	28.7	100.0
	Total	662	98.5	100.0	
Missing	Missing	10	1.5		
Total		672	100.0		

Police Services

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	295	43.9	44.8	44.8
	Good	273	40.6	41.5	86.3
	Fair	28	4.2	4.3	90.6
	Poor	5	.7	.8	91.3
	DK	57	8.5	8.7	100.0
	Total	658	97.9	100.0	
Missing	Missing	14	2.1		
Total		672	100.0		

Animal Control

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	151	22.5	23.0	23.0
	Good	241	35.9	36.7	59.8
	Fair	63	9.4	9.6	69.4
	Poor	19	2.8	2.9	72.3
	DK	182	27.1	27.7	100.0
	Total	656	97.6	100.0	
Missing	Missing	16	2.4		
Total		672	100.0		

Traffic/Parking Enforcement

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	145	21.6	22.3	22.3
	Good	289	43.0	44.5	66.8
	Fair	106	15.8	16.3	83.1
	Poor	37	5.5	5.7	88.8
	DK	73	10.9	11.2	100.0
	Total	650	96.7	100.0	
Missing	Missing	22	3.3		
Total		672	100.0		

Street Maintenance/Repair

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	94	14.0	14.3	14.3
	Good	261	38.8	39.7	54.0
	Fair	223	33.2	33.9	87.8
	Poor	75	11.2	11.4	99.2
	DK	5	.7	.8	100.0
	Total	658	97.9	100.0	
Missing	Missing	14	2.1		
Total		672	100.0		

Street Sweeping

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	123	18.3	18.8	18.8
	Good	326	48.5	49.7	68.4
	Fair	148	22.0	22.6	91.0
	Poor	27	4.0	4.1	95.1
	DK	32	4.8	4.9	100.0
	Total	656	97.6	100.0	
Missing	Missing	16	2.4		
Total		672	100.0		

Snow Removal

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	182	27.1	27.5	27.5
	Good	342	50.9	51.7	79.2
	Fair	93	13.8	14.0	93.2
	Poor	31	4.6	4.7	97.9
	DK	14	2.1	2.1	100.0
	Total	662	98.5	100.0	
Missing	Missing	10	1.5		
Total		672	100.0		

Sidewalk Maintenance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	76	11.3	11.7	11.7
	Good	257	38.2	39.5	51.2
	Fair	202	30.1	31.1	82.3
	Poor	76	11.3	11.7	94.0
	DK	39	5.8	6.0	100.0
	Total	650	96.7	100.0	
Missing	Missing	22	3.3		
Total		672	100.0		

Trash Collection

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	264	39.3	40.1	40.1
	Good	333	49.6	50.6	90.7
	Fair	38	5.7	5.8	96.5
	Poor	9	1.3	1.4	97.9
	DK	14	2.1	2.1	100.0
	Total	658	97.9	100.0	
Missing	Missing	14	2.1		
Total		672	100.0		

Recycling

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	277	41.2	42.0	42.0
	Good	307	45.7	46.6	88.6
	Fair	48	7.1	7.3	95.9
	Poor	14	2.1	2.1	98.0
	DK	13	1.9	2.0	100.0
	Total	659	98.1	100.0	
Missing	Missing	13	1.9		
Total		672	100.0		

Curb-side Leaf Pickup

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	138	20.5	21.5	21.5
	Good	224	33.3	34.8	56.3
	Fair	68	10.1	10.6	66.9
	Poor	20	3.0	3.1	70.0
	DK	193	28.7	30.0	100.0
	Total	643	95.7	100.0	
Missing	Missing	29	4.3		
Total		672	100.0		

Drinking Water Quality

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	241	35.9	36.5	36.5
	Good	291	43.3	44.1	80.6
	Fair	82	12.2	12.4	93.0
	Poor	24	3.6	3.6	96.7
	DK	22	3.3	3.3	100.0
	Total	660	98.2	100.0	
Missing	Missing	12	1.8		
Total		672	100.0		

Sewer Services/Repairs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	107	15.9	16.6	16.6
	Good	229	34.1	35.4	52.0
	Fair	53	7.9	8.2	60.2
	Poor	9	1.3	1.4	61.6
	DK	248	36.9	38.4	100.0
	Total	646	96.1	100.0	
Missing	Missing	26	3.9		
Total		672	100.0		

Recreation Programs/Classes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	159	23.7	24.4	24.4
	Good	304	45.2	46.7	71.1
	Fair	61	9.1	9.4	80.5
	Poor	10	1.5	1.5	82.0
	DK	117	17.4	18.0	100.0
	Total	651	96.9	100.0	
Missing	Missing	21	3.1		
Total		672	100.0		

Elder Services

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	95	14.1	14.6	14.6
	Good	180	26.8	27.6	42.2
	Fair	55	8.2	8.4	50.6
	Poor	10	1.5	1.5	52.1
	DK	312	46.4	47.9	100.0
	Total	652	97.0	100.0	
Missing	Missing	20	3.0		
Total		672	100.0		

Youth Services

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	136	20.2	20.9	20.9
	Good	223	33.2	34.3	55.2
	Fair	62	9.2	9.5	64.8
	Poor	22	3.3	3.4	68.2
	DK	207	30.8	31.8	100.0
	Total	650	96.7	100.0	
Missing	Missing	22	3.3		
Total		672	100.0		

Veterans Services

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	68	10.1	10.6	10.6
	Good	118	17.6	18.4	29.0
	Fair	29	4.3	4.5	33.5
	Poor	9	1.3	1.4	34.9
	DK	418	62.2	65.1	100.0
	Total	642	95.5	100.0	
Missing	Missing	30	4.5		
Total		672	100.0		

Library Services

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	326	48.5	49.5	49.5
	Good	262	39.0	39.8	89.2
	Fair	31	4.6	4.7	93.9
	Poor	2	.3	.3	94.2
	DK	38	5.7	5.8	100.0
	Total	659	98.1	100.0	
Missing	Missing	13	1.9		
Total		672	100.0		

Handicapped Accessibility of Facilities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	113	16.8	17.3	17.3
	Good	216	32.1	33.0	50.3
	Fair	28	4.2	4.3	54.6
	Poor	9	1.3	1.4	56.0
	DK	288	42.9	44.0	100.0
	Total	654	97.3	100.0	
Missing	Missing	18	2.7		
Total		672	100.0		

Maintenance/Appearance of Parks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	214	31.8	32.4	32.4
	Good	386	57.4	58.5	90.9
	Fair	48	7.1	7.3	98.2
	Poor	7	1.0	1.1	99.2
	DK	5	.7	.8	100.0
	Total	660	98.2	100.0	
Missing	Missing	12	1.8		
Total		672	100.0		

Public Parking Availability

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	67	10.0	10.3	10.3
	Good	254	37.8	38.9	49.2
	Fair	220	32.7	33.7	82.8
	Poor	105	15.6	16.1	98.9
	DK	7	1.0	1.1	100.0
	Total	653	97.2	100.0	
Missing	Missing	19	2.8		
Total		672	100.0		

Public Transportation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	45	6.7	6.9	6.9
	Good	167	24.9	25.8	32.7
	Fair	181	26.9	27.9	60.6
	Poor	100	14.9	15.4	76.1
	DK	155	23.1	23.9	100.0
	Total	648	96.4	100.0	
Missing	Missing	24	3.6		
Total		672	100.0		

Economic Development

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	43	6.4	6.7	6.7
	Good	243	36.2	37.7	44.3
	Fair	145	21.6	22.5	66.8
	Poor	25	3.7	3.9	70.7
	DK	189	28.1	29.3	100.0
	Total	645	96.0	100.0	
Missing	Missing	27	4.0		
Total		672	100.0		

Building Permits and Code Enforcement

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	54	8.0	8.3	8.3
	Good	204	30.4	31.4	39.7
	Fair	109	16.2	16.8	56.5
	Poor	37	5.5	5.7	62.2
	DK	246	36.6	37.8	100.0
	Total	650	96.7	100.0	
Missing	Missing	22	3.3		
Total		672	100.0		

Public Health Services

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	75	11.2	11.5	11.5
	Good	254	37.8	39.0	50.5
	Fair	52	7.7	8.0	58.4
	Poor	6	.9	.9	59.4
	DK	265	39.4	40.6	100.0
	Total	652	97.0	100.0	
Missing	Missing	20	3.0		
Total		672	100.0		

Land Conservation and Wetlands Protection

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	147	21.9	22.5	22.5
	Good	302	44.9	46.2	68.7
	Fair	77	11.5	11.8	80.4
	Poor	19	2.8	2.9	83.3
	DK	109	16.2	16.7	100.0
	Total	654	97.3	100.0	
Missing	Missing	18	2.7		
Total		672	100.0		

Contact with Town Employee/Official in Last 12 Months?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	411	61.2	63.0	63.0
	No	241	35.9	37.0	100.0
	Total	652	97.0	100.0	
Missing	Missing	20	3.0		
Total		672	100.0		

Impression: Courtesy/Politeness

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	222	33.0	53.1	53.1
	Good	151	22.5	36.1	89.2
	Fair	24	3.6	5.7	95.0
	Poor	18	2.7	4.3	99.3
	Not Sure	3	.4	.7	100.0
	Total	418	62.2	100.0	
Missing	Missing	254	37.8		
Total		672	100.0		

Impression: Knowledge/Understanding

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	204	30.4	48.8	48.8
	Good	159	23.7	38.0	86.8
	Fair	33	4.9	7.9	94.7
	Poor	17	2.5	4.1	98.8
	Not Sure	5	.7	1.2	100.0
	Total	418	62.2	100.0	
Missing	Missing	254	37.8		
Total		672	100.0		

Impression: Responsiveness/Resolution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	192	28.6	46.2	46.2
	Good	148	22.0	35.6	81.7
	Fair	36	5.4	8.7	90.4
	Poor	34	5.1	8.2	98.6
	Not Sure	6	.9	1.4	100.0
	Total	416	61.9	100.0	
Missing	Missing	256	38.1		
Total		672	100.0		

Impression: Overall

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	195	29.0	46.5	46.5
	Good	158	23.5	37.7	84.2
	Fair	40	6.0	9.5	93.8
	Poor	23	3.4	5.5	99.3
	Not Sure	3	.4	.7	100.0
	Total	419	62.4	100.0	
Missing	Missing	253	37.6		
Total		672	100.0		

Board of Selectmen

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	61	9.1	9.4	9.4
	Good	249	37.1	38.3	47.7
	Fair	152	22.6	23.4	71.1
	Poor	40	6.0	6.2	77.2
	DK	148	22.0	22.8	100.0
	Total	650	96.7	100.0	
Missing	Missing	22	3.3		
Total		672	100.0		

School Committee

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	60	8.9	9.5	9.5
	Good	233	34.7	36.9	46.4
	Fair	122	18.2	19.3	65.8
	Poor	53	7.9	8.4	74.2
	Not Sure	163	24.3	25.8	100.0
	Total	631	93.9	100.0	
Missing	Missing	41	6.1		
Total		672	100.0		

Panning Board

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	46	6.8	7.3	7.3
	Good	206	30.7	32.9	40.2
	Fair	94	14.0	15.0	55.2
	Poor	22	3.3	3.5	58.7
	Not Sure	259	38.5	41.3	100.0
	Total	627	93.3	100.0	
Missing	Missing	45	6.7		
Total		672	100.0		

Zoning Board of Appeals

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	40	6.0	6.4	6.4
	Good	169	25.1	27.0	33.3
	Fair	77	11.5	12.3	45.6
	Poor	21	3.1	3.3	49.0
	Not Sure	320	47.6	51.0	100.0
	Total	627	93.3	100.0	
Missing	Missing	45	6.7		
Total		672	100.0		

Conservation Commission

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	82	12.2	13.1	13.1
	Good	215	32.0	34.2	47.3
	Fair	62	9.2	9.9	57.2
	Poor	18	2.7	2.9	60.0
	Not Sure	251	37.4	40.0	100.0
	Total	628	93.5	100.0	
Missing	Missing	44	6.5		
Total		672	100.0		

Board of Health

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	71	10.6	11.3	11.3
	Good	204	30.4	32.5	43.9
	Fair	39	5.8	6.2	50.1
	Poor	5	.7	.8	50.9
	Not Sure	308	45.8	49.1	100.0
	Total	627	93.3	100.0	
Missing	Missing	45	6.7		
Total		672	100.0		

Board of Assessors

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	43	6.4	6.9	6.9
	Good	167	24.9	26.9	33.8
	Fair	95	14.1	15.3	49.1
	Poor	20	3.0	3.2	52.3
	Not Sure	296	44.0	47.7	100.0
	Total	621	92.4	100.0	
Missing	Missing	51	7.6		
Total		672	100.0		

Finance Committee

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	72	10.7	11.5	11.5
	Good	185	27.5	29.6	41.1
	Fair	99	14.7	15.8	56.9
	Poor	29	4.3	4.6	61.5
	Not Sure	241	35.9	38.5	100.0
	Total	626	93.2	100.0	
Missing	Missing	46	6.8		
Total		672	100.0		

Andover Townsman

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Daily	13	1.9	2.0	2.0
	Weekly	426	63.4	65.2	67.2
	Occasionally	94	14.0	14.4	81.6
	Seldom	58	8.6	8.9	90.5
	Never	62	9.2	9.5	100.0
	Total	653	97.2	100.0	
Missing	Missing	19	2.8		
Total		672	100.0		

Eagle-Tribune

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Daily	213	31.7	33.0	33.0
	Weekly	42	6.2	6.5	39.5
	Occasionally	112	16.7	17.3	56.8
	Seldom	98	14.6	15.2	72.0
	Never	181	26.9	28.0	100.0
	Total	646	96.1	100.0	
Missing	Missing	26	3.9		
Total		672	100.0		

Boston Globe or Boston Herald

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Daily	226	33.6	35.5	35.5
	Weekly	84	12.5	13.2	48.7
	Occasionally	103	15.3	16.2	64.8
	Seldom	83	12.4	13.0	77.9
	Never	141	21.0	22.1	100.0
	Total	637	94.8	100.0	
Missing	Missing	35	5.2		
Total		672	100.0		

Newspaper Websites

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Daily	99	14.7	15.9	15.9
	Weekly	59	8.8	9.5	25.3
	Occasionally	161	24.0	25.8	51.1
	Seldom	110	16.4	17.6	68.8
	Never	195	29.0	31.2	100.0
	Total	624	92.9	100.0	
Missing	Missing	48	7.1		
Total		672	100.0		

Town Website

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Daily	9	1.3	1.4	1.4
	Weekly	51	7.6	8.1	9.5
	Occasionally	267	39.7	42.4	52.0
	Seldom	131	19.5	20.8	72.8
	Never	171	25.4	27.2	100.0
	Total	629	93.6	100.0	
Missing	Missing	43	6.4		
Total		672	100.0		

Other Websites or Blogs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Daily	44	6.5	7.2	7.2
	Weekly	44	6.5	7.2	14.5
	Occasionally	126	18.8	20.7	35.2
	Seldom	114	17.0	18.8	53.9
	Never	280	41.7	46.1	100.0
	Total	608	90.5	100.0	
Missing	Missing	64	9.5		
Total		672	100.0		

Local Access Television

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Daily	42	6.2	6.7	6.7
	Weekly	55	8.2	8.7	15.4
	Occasionally	212	31.5	33.7	49.0
	Seldom	141	21.0	22.4	71.4
	Never	180	26.8	28.6	100.0
	Total	630	93.8	100.0	
Missing	Missing	42	6.2		
Total		672	100.0		

Work of Mouth

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Daily	77	11.5	12.1	12.1
	Weekly	178	26.5	27.9	39.9
	Occasionally	262	39.0	41.0	80.9
	Seldom	69	10.3	10.8	91.7
	Never	53	7.9	8.3	100.0
	Total	639	95.1	100.0	
Missing	Missing	33	4.9		
Total		672	100.0		

E-mail Networks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Daily	58	8.6	9.2	9.2
	Weekly	86	12.8	13.7	22.9
	Occasionally	134	19.9	21.3	44.2
	Seldom	91	13.5	14.5	58.7
	Never	260	38.7	41.3	100.0
	Total	629	93.6	100.0	
Missing	Missing	43	6.4		
Total		672	100.0		

Direct Contact

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Daily	39	5.8	6.2	6.2
	Weekly	67	10.0	10.7	17.0
	Occasionally	230	34.2	36.9	53.8
	Seldom	143	21.3	22.9	76.8
	Never	145	21.6	23.2	100.0
	Total	624	92.9	100.0	
Missing	Missing	48	7.1		
Total		672	100.0		

Attended Town Meeting within the Last Three Years?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	279	41.5	43.1	43.1
	No	369	54.9	56.9	100.0
	Total	648	96.4	100.0	
Missing	Missing	24	3.6		
Total		672	100.0		

Appendix 2 Survey Demographics

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18 to 24 Years	1	.1	.2	.2
	25 to 34 Years	26	3.9	3.9	4.1
	35 to 44 Years	129	19.2	19.4	23.5
	45 to 54 Years	175	26.0	26.4	49.8
	55 to 64 Years	155	23.1	23.3	73.2
	65 to 74 Years	111	16.5	16.7	89.9
	75 to 84 Years	53	7.9	8.0	97.9
	85 Years or Older	14	2.1	2.1	100.0
	Total	664	98.8	100.0	
Missing	Missing	8	1.2		
	Total	672	100.0		

Sex

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	371	55.2	57.4	57.4
	Male	275	40.9	42.6	100.0
	Total	646	96.1	100.0	
Missing	Missing	26	3.9		
	Total	672	100.0		

Years Lived in Andover

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less Than 2 Years	37	5.5	5.6	5.6
	2 to 5 Years	76	11.3	11.5	17.1
	6 to 10 Years	96	14.3	14.5	31.6
	11 to 20 Years	153	22.8	23.1	54.8
	More Than 20 Years	299	44.5	45.2	100.0
	Total	661	98.4	100.0	
Missing	Missing	11	1.6		
	Total	672	100.0		

Children (12 or Under) in Household

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	196	29.2	29.4	29.4
	No	471	70.1	70.6	100.0
	Total	667	99.3	100.0	
Missing	Missing	5	.7		
	Total	672	100.0		

Teenagers (13-17) in Household

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	140	20.8	21.1	21.1
	No	525	78.1	78.9	100.0
	Total	665	99.0	100.0	
Missing	Missing	7	1.0		
	Total	672	100.0		

Self or Any Other Members of Household 65 or Older

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	208	31.0	31.2	31.2
	No	458	68.2	68.8	100.0
	Total	666	99.1	100.0	
Missing	Missing	6	.9		
Total		672	100.0		

Highest Level of School Completed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less Than 12 Years	8	1.2	1.2	1.2
	High School (Diploma/GED)	23	3.4	3.5	4.7
	Some College, No Degree	49	7.3	7.4	12.1
	Associates Degree	39	5.8	5.9	18.0
	Bachelors Degree	232	34.5	35.1	53.1
	Graduate or Professional Degree	310	46.1	46.9	100.0
Total		661	98.4	100.0	
Missing	Missing	11	1.6		
Total		672	100.0		

Number of Adults in Household, Including Self, Worked for Pay in Past Year

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	92	13.7	13.8	13.8
	1	188	28.0	28.2	42.0
	2	350	52.1	52.6	94.6
	3 or More	36	5.4	5.4	100.0
	Total	666	99.1	100.0	
Missing	Missing	6	.9		
Total		672	100.0		

Income Category

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less Than 30,000	36	5.4	6.0	6.0
	30,000 to 59,999	51	7.6	8.5	14.6
	60,000 to 89,999	80	11.9	13.4	28.0
	90,000 to 119,999	84	12.5	14.1	42.0
	120,000 to 149,999	77	11.5	12.9	54.9
	150,000 to 179,999	72	10.7	12.1	67.0
	180,000 to 209,999	53	7.9	8.9	75.9
	210,000 or more	144	21.4	24.1	100.0
Total		597	88.8	100.0	
Missing	Missing	75	11.2		
Total		672	100.0		

How Likely to Move from Andover within Next 5 Years

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Likely	71	10.6	10.7	10.7
	Somewhat Likely	151	22.5	22.7	33.4
	Not Very Likely	255	37.9	38.4	71.8
	Not At All Likely	187	27.8	28.2	100.0
	Total	664	98.8	100.0	
Missing	Missing	8	1.2		
Total		672	100.0		

Type of Building Live In

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single Family House	566	84.2	85.5	85.5
	Duplex or Townhouse	29	4.3	4.4	89.9
	Multi-Unit Condominium	40	6.0	6.0	95.9
	Multi-Unit Apartment	17	2.5	2.6	98.5
	Apartment Within A House	10	1.5	1.5	100.0
	Total	662	98.5	100.0	
Missing	Missing	10	1.5		
Total		672	100.0		

**A Comparison of Demographics between the 2008 Andover Citizens Survey
and the 2008 US Census Data for Andover**

	Frequency 2008 Andover Citizens Survey	Frequency 2000 US Census Data for Andover
<u>Age</u>		
18 to 24	< 1%	7%
25 to 34	4%	13%
35 to 44	19%	26%
45 to 54	26%	23%
55 to 64	23%	13%
65 to 74	16%	9%
75 to 84	8%	6%
85 or older	2%	2%
 <u>Sex</u>		
Female	57%	52%
Male	43%	48%
 <u>Education</u>		
< 12 years	1%	4%
High School	3%	14%
Some College	7%	14%
Associates	6%	6%
Bachelors	34%	33%
Graduate	46%	30%

Appendix 3 Andover Citizens Survey 2008

2008 TOWN OF ANDOVER CITIZENS SURVEY

Dear Andover Resident:

You have been randomly selected to participate in the 2008 Town of Andover Citizens Survey. We want to know what you think about your community and municipal government. Please take a few minutes to fill out this survey and then mail it back to us. Your participation is very important. The survey responses will help the Town better understand how a representative sampling of the community feels on a wide variety of issues and topics.

You will receive this survey twice in the mail over a two week period. The second mailing is a reminder. Please only respond to and mail back one copy of the survey. You may dispose of the other copy. Please mail back the completed survey in the enclosed return envelope (and remember to apply a first class postage stamp). If you have misplaced the return envelope, you can mail the completed survey back in a plain stamped business size envelope addressed to: 2008 Citizens Survey, Office of the Town Manager, 36 Bartlet Street, Andover, MA 01810. Thank you for your participation.

The Andover Board of Selectmen

Please complete this questionnaire if you are the adult (age 18 or older) in the household who most recently had a birthday. The adult's year of birth does not matter. **Please circle the response that most closely represents your opinion for each question.** Your responses are anonymous and will be reported in group form only.

1. Please rate the quality of life in Andover in each of the following categories:

	<i>excellent</i>	<i>good</i>	<i>fair</i>	<i>poor</i>	<i>not sure</i>
Andover as a place to live.....	1	2	3	4	5
Andover as a place to raise children.....	1	2	3	4	5
Andover as a place to work.....	1	2	3	4	5
Andover as a place to shop and dine.....	1	2	3	4	5
Andover as a place to engage in recreational activities.....	1	2	3	4	5
Andover as a place to retire.....	1	2	3	4	5
Overall quality of life in Andover.....	1	2	3	4	5

2. Please rate each of the following community characteristics in Andover:

	<i>excellent</i>	<i>good</i>	<i>fair</i>	<i>poor</i>	<i>not sure</i>
Small town feel.....	1	2	3	4	5
Feeling safe.....	1	2	3	4	5
Openness/acceptance of diversity.....	1	2	3	4	5
Public transportation options.....	1	2	3	4	5
Cultural opportunities.....	1	2	3	4	5
Range of housing options.....	1	2	3	4	5
Historical preservation.....	1	2	3	4	5
Recreational opportunities.....	1	2	3	4	5
Open space/conservation land.....	1	2	3	4	5
Walk-ability.....	1	2	3	4	5
Overall appearance.....	1	2	3	4	5
Overall sense of community.....	1	2	3	4	5

3. To what degree do you feel the following things are problems in Andover:

	<i>strongly agree</i>	<i>somewhat agree</i>	<i>somewhat disagree</i>	<i>strongly disagree</i>	<i>not sure</i>
Violent crime.....	1	2	3	4	5
Property crime.....	1	2	3	4	5
Vice crime (drugs, prostitution, etc.).....	1	2	3	4	5
Vandalism.....	1	2	3	4	5
Graffiti.....	1	2	3	4	5
Litter.....	1	2	3	4	5
Unleashed dogs.....	1	2	3	4	5
Dog waste on sidewalks.....	1	2	3	4	5
Poorly maintained property.....	1	2	3	4	5
Noise pollution.....	1	2	3	4	5
Automobile speeding.....	1	2	3	4	5
Unsupervised youth.....	1	2	3	4	5

4. Please rate the level of importance of the following items in relation to their influence on your decisions to move to and/or remain in Andover:

	<i>essential</i>	<i>very important</i>	<i>somewhat important</i>	<i>not at all important</i>	<i>not sure</i>
Public schools.....	1	2	3	4	5
Private/parochial schools.....	1	2	3	4	5
Other educational opportunities.....	1	2	3	4	5
Town services.....	1	2	3	4	5
Civic/volunteer opportunities.....	1	2	3	4	5
Geographic location/accessibility.....	1	2	3	4	5
Variety of housing choices.....	1	2	3	4	5
Open space/conservation land.....	1	2	3	4	5
Small town ambiance and lifestyle.....	1	2	3	4	5
Recreational opportunities.....	1	2	3	4	5
Cultural opportunities.....	1	2	3	4	5
Property values/investment.....	1	2	3	4	5

5. What is your opinion of Andover's current mix of property uses:

	<i>not enough</i>	<i>just about right</i>	<i>too much</i>	<i>not sure</i>
Single-family houses.....	1	2	3	4
Residential subdivisions.....	1	2	3	4
Multi-family housing.....	1	2	3	4
Rental housing.....	1	2	3	4
Office buildings.....	1	2	3	4
Large retail stores.....	1	2	3	4
Small shops and businesses.....	1	2	3	4
Open space/farmland.....	1	2	3	4

6. In the last 12 months, about how many times have you participated in the following civic/community activities in Andover?

	<i>none</i>	<i>once or twice</i>	<i>a number of times</i>	<i>many times</i>
Voted in an election.....	1	2	3	4
Attended Town Meeting.....	1	2	3	4
Attended a meeting of a Town board or committee.....	1	2	3	4
Watched a Town board or committee meeting on television.....	1	2	3	4
Attended a Town event (e.g. July 4 th , Andover Days, etc.).....	1	2	3	4
Attended a school/local sporting event.....	1	2	3	4
Volunteered at a local non-profit or civic group.....	1	2	3	4
Donated money to a local non-profit or civic group.....	1	2	3	4
Shopped in the Downtown Business District.....	1	2	3	4

7. How do you rate the quality and performance of each of the following Town of Andover services and programs:

	<i>excellent</i>	<i>good</i>	<i>fair</i>	<i>poor</i>	<i>don't know</i>
Public schools.....	1	2	3	4	5
Fire services.....	1	2	3	4	5
Ambulance/EMS.....	1	2	3	4	5
Police services.....	1	2	3	4	5
Animal control.....	1	2	3	4	5
Traffic/parking enforcement.....	1	2	3	4	5
Street maintenance/repair.....	1	2	3	4	5
Street sweeping.....	1	2	3	4	5
Snow removal.....	1	2	3	4	5
Sidewalk maintenance.....	1	2	3	4	5
Trash collection.....	1	2	3	4	5
Recycling.....	1	2	3	4	5
Curb-side leaf pickup.....	1	2	3	4	5
Drinking water quality.....	1	2	3	4	5
Sewer services/repairs.....	1	2	3	4	5
Recreation programs/classes.....	1	2	3	4	5
Elder services.....	1	2	3	4	5
Youth services.....	1	2	3	4	5
Veterans services.....	1	2	3	4	5
Library services.....	1	2	3	4	5
Handicapped accessibility of facilities.....	1	2	3	4	5

7. (continued)

	<i>excellent</i>	<i>good</i>	<i>fair</i>	<i>poor</i>	<i>don't know</i>
Maintenance/appearance of parks.....	1	2	3	4	5
Public parking availability.....	1	2	3	4	5
Public transportation.....	1	2	3	4	5
Economic development.....	1	2	3	4	5
Land use planning, regulation and zoning.....	1	2	3	4	5
Building permits and code enforcement.....	1	2	3	4	5
Public health services.....	1	2	3	4	5
Land conservation & wetlands protection.....	1	2	3	4	5

8. Have you had any contact with a Town of Andover employee or official within the last 12 months?

Yes (go to question #9) No (skip to question #10)

9. What was your impressions of the Town employee or official you had contact with:

	<i>excellent</i>	<i>good</i>	<i>fair</i>	<i>poor</i>	<i>not sure</i>
Courtesy/politeness.....	1	2	3	4	5
Knowledge/understanding.....	1	2	3	4	5
Responsiveness/resolution.....	1	2	3	4	5
Overall experience.....	1	2	3	4	5

10. How would you rate the performance and actions of the following Town boards and committees:

	<i>excellent</i>	<i>good</i>	<i>fair</i>	<i>poor</i>	<i>not sure</i>
Board of Selectmen.....	1	2	3	4	5
School Committee.....	1	2	3	4	5
Planning Board.....	1	2	3	4	5
Zoning Board of Appeals.....	1	2	3	4	5
Conservation Commission.....	1	2	3	4	5
Board of Health.....	1	2	3	4	5
Board of Assessors.....	1	2	3	4	5
Finance Committee.....	1	2	3	4	5

11. How often do you rely on the following sources to obtain Town of Andover related news and information:

	<i>daily</i>	<i>weekly</i>	<i>occasionally</i>	<i>seldom</i>	<i>never</i>
Andover Townsman.....	1	2	3	4	5
Eagle-Tribune.....	1	2	3	4	5
Boston Globe or Boston Herald.....	1	2	3	4	5
Newspaper websites.....	1	2	3	4	5
Town website.....	1	2	3	4	5
Other websites or blogs.....	1	2	3	4	5
Local access television.....	1	2	3	4	5
Word of mouth.....	1	2	3	4	5
E-mail networks.....	1	2	3	4	5
Direct contact.....	1	2	3	4	5

12. Have you attended a Town of Andover Annual Town Meeting within the last three years?

Yes (go to question #13) No (skip to question #14)

13. Do you have any suggestions on how the Town could improve upon the conduct of its Annual Town Meeting?

14. How can the Town better serve you as a resident, taxpayer and citizen?

Demographic Questions (please check one response only for each question)

15. What age range do you fall in?

- 18 to 24 years
- 25 to 34 years
- 35 to 44 years
- 45 to 54 years
- 55 to 64 years
- 65 to 74 years
- 75 to 84 years
- 85 years or older

16. What is your sex?

- Female Male

17. How many years have you lived in Andover?

- Less than 2 years
- 2-5 years
- 6-10 years
- 11-20 years
- More than 20 years

18. Are there any children 12 or under in your household?

- Yes No

19. Are there any teenagers aged between 13 and 17 in your household?

- Yes No

20. Are you or any other members of your household aged 65 or older?

- Yes No

21. What is the highest degree or level of school you have completed?

- Less than 12 years
- High School (diploma/GED)
- Some college, no degree
- Associates degree
- Bachelors degree
- Graduate or professional degree

22. How many adults in your household, including yourself, worked for pay in the past year?

- None
- 1
- 2
- 3 or more
- Don't know

23. What is the total annual income of your household?

- Less than \$30,000
- \$30,000 to \$59,999
- \$60,000 to \$89,999
- \$90,000 to \$119,999
- \$120,000 to \$149,999
- \$150,000 to \$179,999
- \$180,000 to \$209,999
- \$210,000 or more

24. How likely are you to move from Andover within the next 5 years?

- Very likely
- Somewhat likely
- Not very likely
- Not at all likely

25. Which best describes the type of building you live in?

- Single family house
- Duplex or townhouse
- Multi-unit condominium
- Multi-unit apartment
- Apartment within a house

Thank you for completing the 2008 Town of Andover Citizens Survey. Please mail back the completed survey in the enclosed return envelope (and remember to apply a first class postage stamp).

If you have misplaced the return envelop, you can mail the completed survey back in a plain stamped business size envelope addressed to: *2008 Citizens Survey
Office of the Town Manager
36 Bartlet Street
Andover, MA 01810*

Appendix 4

Crosstabulations

A printout of crosstabulations of question responses by each demographic variable is available in pdf format from the Town of Andover.

*Traffic Impact and
Access Study*

*Proposed
Ballardvale
Fire Substation
Replacement
Project*

*Woburn Street
Andover, Massachusetts*

*Proponent
Andover Fire Rescue
Andover, MA*

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TRAFFIC IMPACT AND ACCESS STUDY

Proposed Fire Ballardvale Substation Replacement Project

Woburn Street

Andover, Massachusetts

Proponent

Andover Fire Rescue

Andover, MA

October 14, 2010

Prepared by

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EXECUTIVE SUMMARY

The Fire Department Deployment Study prepared for the Andover Fire Department (AFD) by Manitou Incorporated dated October 19, 2007 recommended that the Ballardvale Substation should be relocated to the an area within a quarter mile of Woburn Street/Andover Street intersection since the existing Substation is too small to accommodate necessary equipment such as an ambulance. This study also recommended that an ambulance be stationed at the relocated Substation. These recommendations would add ambulance coverage to the south and southeast areas of Andover and improve overall response times for both fire and medical emergency calls. As a result, the AFD has identified four locations that should be evaluated along Woburn Street from a traffic flow and traffic operations perspective.

PROJECT DESCRIPTION

The new 12,000 to 14,000 square foot Fire Substation would be designed with 3 bays and would accommodate a 30 foot long single unit fire truck, a 20 foot long ambulance and one trailer for other equipment such as a rescue boat and/or a backhoe. The new Fire Substation would be adequate enough to ultimately accommodate five full time employees and it would allow the town to provide additional ambulance coverage for the southern section of Andover. The new Fire Substation would improve the overall fire and ambulance response times.

ALTERNATIVE STUDIES

According to the AFD, the replacement Substation could be relocated at one of four potential locations:

- 55 Woburn Street (at the corner of Andover Street)
- 24 Woburn Street
- 17 Woburn Street
- 9 Woburn Street

EXISTING CONDITIONS

Analysis of the September 2010 weekday traffic counts indicates that Woburn Street south of Andover Street (adjacent to 55 Woburn Street) carries an average of 4,279 vehicle-trips per day (vpd) during the traffic counting period. During the weekday morning and evening peak travel demand periods, an average of 519 vph (vehicle-trips per hour) and 451 vph were observed along Woburn Street, respectively. The peak travel demand period generally occurs between 7:00 and 9:00 AM and between 4:00 and 6:00 PM. Traffic volumes along Woburn Street north of Andover Street are less than the volumes south of Andover Street.

SITE-GENERATED TRAFFIC VOLUMES

Based on the current AFD operations with one bay and 3 employees, the existing Ballardvale Substation generates approximately 24 vehicle-trips per day (vpd). In the future, the new Substation under full operations with three bays and enough interior space to accommodate five employees would ultimately generate approximately 38 vpd, an increase of 14 vehicle-trips per day.

RECOMMENDATIONS

The final phase of the analysis process is to identify the recommendations necessary to minimize the impact of the project on the adjacent transportation system:

- The access/egress driveway(s) and the adjacent roadway serving the New Fire Substation should be appropriately marked and signed to prohibit parking in the area of the Fire Substation independent of which location is eventually chosen for the new Fire Substation.
- It is suggested that Fire/Rescue personnel continue to only use the emergency vehicle sirens on an as needed basis to minimize the impact to the adjacent neighborhood, again independent of which location is eventually chosen for the New Fire Substation.
- To enhance the overall sight distance at the intersection of the proposed driveway(s) with Woburn Street (and Andover Street if the 55 Woburn Street site is developed), it is recommended that roadside vegetation and topographic ground elevations adjacent to the access/egress driveway(s) and across the project parcel frontage should be maintained such that sufficient safety sight lines are provided in both directions throughout the life of the project. This triangular area across the project parcel frontage should extend 20 feet back from the existing edge of the roadway (representing an existing vehicle) and extend 305 feet along Woburn Street (and Andover Street if the 55 Woburn Street site is developed) representing an approaching vehicle. It should be noted that the 20-foot distance into the driveway(s) exceeds the normal position of a driver's eye, which is generally 8 feet or less from the front of the vehicle. Furthermore, the 305 feet along Woburn Street (and Andover Street) represent adequate sight distance for a speed of 40 mph, which is 10, 15 or 20 mph above the posted speed limit of 30, 25 or 20 mph, respectively.

- Independent of the development of a new Fire Substation along Woburn Street, the queuing from the pick-up area in front of South School could be better managed to prevent queuing onto Woburn Street. Additionally, with the development of 55 Woburn Street, Option A or B, and with the circulation Ring Road reversed to allow a counterclockwise circulation around the 55 Woburn Street parcel, a second pick-up and drop-off area could be developed at the northwest corner of the school to prevent queuing from occurring onto either Woburn Street or Andover Street.
- It is suggested that the 55 Woburn Street parcel be chosen for the new Fire Substation since it satisfies the principal recommendation of the Fire Department Deployment Study. Additionally, the 55 Woburn Street site provides the greatest visibility for exiting fire/emergency vehicles since roadside vegetation in this area is located off the edge of the adjacent roadway. Furthermore, the adjacent roadway is the most conducive for fire/emergency vehicles compared to the section of Woburn Street north of Andover Street since the roadway is well defined, wider, level and tangent. With the 55 Woburn Street site, Option A should be developed with the Ring Road traffic flow reversed to allow counterclockwise traffic flow around the parcel.
- When and if the 55 Woburn Street site is developed, the AFD should work with the adjacent South School to develop solutions to the existing queuing problem in front of the School. Part of the solution could involve the use of the Ring Road to accommodate a second pick-up/drop-off area. The Ring Road could also be designed to accommodate additional parking which has been identified as a need by officials at the South School.

SUMMARY/CONCLUSION

The following are the conclusions that can be drawn from the relocation of the Ballardvale Substation to the 55 Woburn Street parcel:

- The relocated Substation will satisfy the principal recommendation of the Fire Department Deployment Study,
- Medical emergency coverage would be added to the south and southeast section of Andover,
- The fire and medical emergency response times to the south and southeast section of Andover will be improved, i.e., the response times will be quicker,
- Overall AFD will be able to increase the number fire/medical emergency employees which will enhance the overall fire and medical emergency response time and services to the town,
- Overall Fire/emergency equipment space for the town will be increased,
- The development of the 55 Woburn Street site will provide an opportunity resolve an existing queuing problem along Woburn Street in front of the South School,

- The development of the 55 Woburn Street site will provide an opportunity to add available parking for the school which has been identified as a need by the officials from the South School,
- The increase in traffic to the Woburn Street area would be less than ½ of one percent which will not be noticeable to the adjacent residences,
- Exiting traffic volumes in the Clark Road/Andover Street/River Street area will decrease in an area of traffic congestion due commuter traffic accessing the Ballardvale Industrial area.

INTRODUCTION

The Andover Fire Recue Department (AFD) is a full service agency providing fire, emergency medical and special operation services to the entire Town of Andover. The Town is covered by three stations:

- Station 1 – Central Fire Headquarters located at 32 North Main Street,
- Station 2 – Ballardvale Fire Substation located at 1 Clark Road (at the intersection of Andover Street) and
- Station 3 – West Fire Substation located at 200 Greenwood Road.

The Central Station accommodates Engine 1, Ladder 2 and Ambulance 91. The Ballardvale Substation accommodates Engine 2 and no ambulance. The West Substation accommodates Engine 3 and Ambulance 92. The Fire Department Deployment Study prepared for the Andover Fire Department (AFD) dated October 19, 2007 recommended that the Ballardvale Substation should be relocated to the an area within a quarter mile of Woburn Street/Andover Street intersection since the existing Substation is too small to accommodate necessary equipment such as an ambulance. This study also recommended that an ambulance be stationed at the relocated Substation. These recommendations would add ambulance coverage to the south and southeast sections of Andover and improve overall response times for both fire and medical emergency calls. As a result, the AFD has identified four locations that should be evaluated along Woburn Street from a traffic flow and traffic operations perspective.

Consequently, DJK Associates, Inc. has conducted a Traffic Impact Study for the proposed replacement of the Ballardvale Fire Substation to be relocated at one of four potential locations. Those four locations are as follows:

- 55 Woburn Street (at the corner of Andover Street)
- 24 Woburn Street
- 17 Woburn Street
- 9 Woburn Street

The new Fire Substation is intended to replace the existing Fire Substation located at the corner of Andover Street and Clark Road. The existing Ballardvale Fire Substation consists of the following:

- It is 114 years old building, it was originally built in 1896,
- It has a single bay with one Fire Truck and a boat/trailer,
- It is not large enough to house standard current modern day fire equipment,
- It does not have a sprinkler system,
- It is located in the middle of a substandard “Y” type intersection making access/egress difficult,
- It can only accommodate three fire fighters and
- It cannot accommodate an additional ambulance that is needed for the south Andover area.

The new 12,000 to 14,000 square foot Fire Substation would be designed with 3 bays and would accommodate a 30 foot long single unit fire truck, a 20 foot long ambulance and one trailer for other equipment such as a rescue boat and/or a backhoe. The new Fire Substation would be large enough to ultimately accommodate five full time fire fighters/EMS personnel and would allow the town to provide additional ambulance coverage for the southern section of Andover. The 55 Woburn Street site is the only site that would allow two-way access. For example, emergency vehicles could exit onto Woburn Street and return via Andover Street or visa-a-versa. The new Fire Substation would improve the overall fire and ambulance response times.

The Google and tax assessor maps for all four sites are reproduced in the appendix of this report. Conceptual Plans for the 55 Woburn Street parcel have been developed with Option A and Option B also reproduced in the appendix. Option A shows the Fire Substation exit to be on Woburn Street and Option B shows the exit to be on Andover Street. Both Options A and B show the existing baseball field to be replaced with a new baseball field located southwest of the South School.

The purpose of this study is to evaluate the potential traffic related impacts of the relocated Fire Substation at all four locations. In conjunction with the potential new Fire Substation at 55 Woburn Street, which is immediately north of the entrance to the drop-off and pick-up area for the students at South School, this study also evaluates the existing queuing from the South School drop-off and pick-up areas, which backs up onto Woburn Street.

EXISTING CONDITONS

A comprehensive field inventory of the adjacent roadway system was conducted during June and September 2010. The field inventory included collection of existing roadway geometrics, traffic volumes and vehicle speeds data for the Woburn Street area.

Traffic volumes were measured by means of automatic traffic recorder (ATR) counts. Safety inventories included vehicle speed observations and an evaluation of the safety sight lines along Woburn Street at the four potential Fire Substation locations.

Geometric – Woburn Street

Woburn Street in the area adjacent to the four potential Fire Substation sites is a two lane roadway with opposing traffic separated by a double yellow centerline. The four potential sites are located within 0.4 miles of each other between 55 Woburn Street and 9 Woburn Street. Woburn Street in this area varies from a relatively tangent/level section adjacent to 55 Woburn Street to a winding, rolling alignment adjacent to 9 and 17 Woburn Street. Indicative of this roadway alignment, the speed limit varies along Woburn Street with the roadway posted for 30 miles per hour adjacent to South School (except for when school is in session) to 25 miles per hour adjacent to 17 Woburn Street to 20 miles per hour adjacent to 9 Woburn Street. Additionally, roadway vegetation along Woburn Street north of Andover Street is generally located along the roadway edge. Vegetation along Woburn Street in the area of the South School is located off the roadway edge providing better visibility. Similarly, north of Andover Street, Woburn Street becomes narrower compared to the section of Woburn Street adjacent to the 55 Woburn Street site.

Traffic Volumes

Existing traffic volumes were recorded by an Automatic Traffic Recorder (ATR) over a forty-eight hour period along Woburn Street south of Andover Street adjacent to 55 Woburn Street parcel. The actual data is reproduced in the appendix of this report. These traffic volumes were

reviewed to determine average daily and peak-hour traffic volumes on Woburn Street. Table 1 summarizes the existing traffic volume data collected for this study.

Analysis of the September 2010 weekday traffic counts indicates that Woburn Street south of Andover Street carries an average of 4,279 vpd during the traffic counting period. During the weekday morning and evening peak travel demand periods, an average of 519 vph (vehicle-trips per hour) and 451 vph were observed along Woburn Street, respectively. The peak travel demand period generally occurs between 7:00 and 9:00 AM and between 4:00 and 6:00 PM. Traffic volumes along Woburn Street north of Andover Street are less than the volumes south of Andover Street.

**TABLE 1
EXISTING TRAFFIC VOLUME SUMMARY**

Location/ Time Period	Daily Traffic (24 hour) (vpd)^a	Peak Hour	Peak-Hour Traffic Volume (vph)^b
<i>Woburn Street south Andover Street:</i>			
Wednesday 9/15/10	4,273	8:00-9:00 AM 5:00-6:00 PM	516 437
Thursday 9/16/10	4,284	7:45-8:45 AM 5:00-6:00 PM	521 465
Average Daily	4,279	Morning Evening	519 451

^a Vehicle-trips per day.

^b Vehicle-trips per hour.

Vehicle Speeds

Speed measurements were taken by a standard traffic engineering procedure called the floating car method. Vehicle speeds were measured by means of an observation car traveling through the study area at a speed consistent with the flow of traffic on the roadway.

Limited numbers of these observations were made over the field inventory period along Woburn Street south of Andover Street adjacent to 55 Woburn Street parcel. The limited numbers of speed observations were obtained to gain a meaningful value of an average and typical vehicle traveling through the area. The results of the speed measurements are summarized in Table 2. As shown, the average speed varied along Woburn Street with speeds recorded in the range of 25 to 35 mph in both the northbound and southbound directions. The posted speed limit is 30 mph in this area except when school is in sessions.

**TABLE 2
OBSERVED VEHICLE SUMMARY**

Location/ Direction of Travel	Posted Speed Limit (mph)^a	Observed Travel Speed (mph)
<i>Woburn Street south Andover Street:</i>		
Northbound	30	25 to 35
Southbound	30	25 to 35

^a mph = miles per hour.

Spot speeds were also recorded by an automatic traffic recorder (ATR) placed along Woburn Street south of Andover Street adjacent to the 55 Woburn Street parcel over a 48-hour period. The results of the speed measurements are summarized in Table 3. As shown, the mean speed along Woburn Street northbound is 28 mph with the 85th percentile speed recorded at 33 mph. Southbound, the mean speed is 27 mph with the 85th percentile speed recorded at 31 and 32 mph. The pace speed was 25 to 34 mph northbound and 20-29 mph southbound. The actual vehicle speed data is reproduced in the appendix of this report.

**TABLE 3
SPOT SPEED OBSERVATION SUMMARY**

Location/ Direction of Travel	Posted Speed Limit (mph)^a	Mean 50th Percentile Speed (mph)	85th Percentile Speed (mph)	10 mph Pace Speed	Total Number of Observations
<i>Woburn Street south Andover Street:</i>					
Northbound					
Wednesday, 9/15/10	30	28	33	25-34	2,061
Thursday, 9/16/10	30	28	33	25-34	<u>2,078</u>
Total	--	--	--	--	4,139
Southbound					
Wednesday, 9/15/10	30	27	32	20-29	2,212
Thursday, 9/16/10	30	27	31	20-29	<u>2,206</u>
Total	--	--	--	--	4,418

^a mph = miles per hour.

SOUTH SCHOOL QUEUING STUDY

On Friday, June 4, 2010, between 2:18 and 2:58 PM a queuing study was completed at the South School along the Ring Road that provides access to and egress from the drop-off and pick-up area for the South School students. At 2:18 PM, there were 4 vehicles waiting in the pick-up area. At 2:36 PM vehicles started to leave the pick-up area when there was a total of 19 vehicles queued. At 2:56 PM, the last queued vehicle exited the Ring Road. A total of 48 vehicles entered the Ring Road/Parking Lot entrance driveway with 44 vehicles entering the Ring Road and 4 vehicles entering the Parking Lot. The maximum queue occurred between 2:47 and 2:51 PM when up to 4 vehicles were queued on Woburn Street. During this period, northbound vehicles drove over the adjacent curbing along the east side of Woburn Street to pass oncoming southbound vehicles and the southbound facing queued vehicles. It is our understanding that at other times when certain activities occur at the school, the queue extends further along Woburn Street toward Andover Street than the observed queues on June 4, 2010.

BALLARDVALE FIRE SUBSTATION AVERAGE WEEKDAY TRAFFIC GENERATION

The relocated Fire Substation would ultimately generate slightly more traffic than the existing Fire Substation once the ambulance and two new employees are assigned to the replacement Fire Substation.

Existing Traffic Generation

The existing Fire Substation operates with three fire fighters that arrive prior to 8 AM to relieve the three fire fighters that are on duty every day. The relieved fire fighters leave the Fire Substation shortly after 8 AM every day. There is an average of 3.7 fire truck calls per day that the existing Ballardvale Fire Substation responses to and there is an average of 3 fire truck trips for inspections/training every weekday. There is one post office delivery and one interoffice mail delivery per weekday. The existing average daily weekday traffic generation (entering and exiting) is calculated as follows:

- 3 employees per day for one 24 hour shift x 2 = 6 trips/day
- 3.7 average fire truck calls per day x 2 = 8 trips/day (rounded up)
- 3 inspection/training calls per day x 2 = 6 trips/day
- 1 post office delivery per day x 2 = 2 trips/day
- 1 interoffice delivery per day x 2 = 2 trips/day

- **Total existing average weekday trips/day = 24 vehicle-trips/day**

The above estimate is conservative because some fire truck calls are answered from inspection/training locations.

Future Traffic Generation

The replacement Fire Substation is anticipated to ultimately (within 5 years) accommodate two additional employees. The average fire trucks call per day are expected to increase to 5 calls per day. The replacement Fire Substation will also ultimately accommodate an ambulance that is anticipated to average 5 calls per day. The future average daily weekday traffic generation (entering and exiting) is calculated as follows:

- 5 employees per day for one 24 hour shift x 2 = 10 trips/day
- 4 average fire truck calls per day x 2 = 8 trips/day (rounded up)
- 5 average ambulance calls per day x 2 = 10 trips/day (rounded up)
- 3 inspection/training calls per day x 2 = 6 trips/day
- 1 post office delivery per day x 2 = 2 trips/day
- 1 interoffice delivery per day x 2 = 2 trips/day

- **Total existing average weekday trips/day = 38 vehicle-trips/day**

Again, the above estimate is conservative because some fire truck calls are answered from inspection/training locations.

TRAFFIC VOLUME INCREASE COMPARISON SUMMARY

The future relocated site-generated traffic volumes were compared to the existing traffic volumes along Woburn Street south of Andover Street adjacent to the 55 Woburn Street parcel. The directional distribution of the 38 vehicle-trips per day generated by the replacement Substation is assumed to be 50% to/from the north and 50% to/from the south along Woburn Street. Consequently, the existing average daily traffic would increase by up to 19 vehicles per day or +0.44%. This calculation is conservative since some existing trips already use Woburn Street today.

TABLE 4
TRAFFIC VOLUME INCREASE SUMMARY

Location/ Time Period	Existing Traffic ^a	Woburn Street
<i>Woburn Street south Andover Street:</i>		
Average Daily Weekday (vpd) ^b	4,279	+19 (+0.44%)

^a Source: The existing traffic is an average of the traffic volume recorded during Wednesday and Thursday, September 15 and 16, 2010 as shown on Table 1.

^b Vehicle-trips per day.

ALTERNATIVE SUBSTATION LOCATIONS

The Fire Department Deployment Study prepared by Manitou Incorporated dated October 19, 2007 prepared for the AFD recommended that the Ballardvale Substation should be relocated to an area within a quarter mile of Woburn Street/Andover Street intersection since the existing Substation is too small to accommodate necessary equipment such as an ambulance. This study also recommended that an ambulance be stationed at the relocated Substation. These recommendations would add ambulance coverage to the south and southeast areas of Andover and improve the overall response times for both fire and medical emergency calls. As a result, the AFD has identified four locations that should be evaluated along Woburn Street from a traffic flow and traffic operations perspective. Those four locations are as follows:

- 55 Woburn Street (at the corner of Andover Street)
- 24 Woburn Street
- 17 Woburn Street
- 9 Woburn Street

55 Woburn Street (at the corner of Andover Street)

Two Conceptual Plans, Option A and Option B were developed for the 55 Woburn Street parcel. Both Options locate the Fire Substation where the current baseball field is located and a new baseball field would be located southwest of the South School. Both Options also show a clockwise circulation along the Ring Road around the parcel connecting Woburn Street with Andover Street. The difference between the two Options is that Option A has the fire/emergency vehicles egress from the Substation on Woburn Street with the parking lot access located off of Andover Street. Option B is the reverse, fire/emergency vehicles egress onto Andover Street with the parking lot access on Woburn Street. Vegetation along Woburn Street in the area of the baseball field is either not present or located off the roadway edge providing good visibility in both directions. The Woburn Street alignment adjacent to this parcel is generally tangent/level/wide with good visibility in both directions. Woburn Street is also well defined with curbing located along the edge of the roadway. Woburn Street adjacent to the 55 Woburn Street parcel is wider than the section of Woburn Street north of Andover Street.

Sidewalks are also present along both side of the roadway. This site is the optimal location and satisfies the principal recommendation of the Fire Department Deployment Study which states that Substation 2 should be relocated to the intersection of Andover Street and Woburn Street. The Town of Andover Fire Primary Response Areas With Proposed Relocated Fire Station plan is shown in the appendix of this report.

24 Woburn Street

Woburn Street adjacent to this parcel is generally tangent/level and narrower than the section of Woburn Street south of Andover Street. Roadway vegetation adjacent to this parcel and immediately to the north and south is located along the roadway edge inhibiting good visibility. In the immediate area of this site the roadway edge is undefined with no curbing or sidewalk. This site is approximately 500 feet away from the recommended location identified in the Fire Department Deployment Study.

17 Woburn Street

Woburn Street adjacent to 17 Woburn Street parcel exhibits a winding, rolling type of alignment with a 25 mile per hour speed limit sign located directly opposite the parcel facing northbound traffic. This section of Woburn Street is narrower then the section of Woburn street south of Andover Street. Adjacent to this parcel and immediately to the north and south, vegetation is located along the roadway edge inhibiting visibility. The roadway edge is undefined with no curbing or sidewalk. This site is approximately 0.2 miles from the recommended location identified in the Fire Department Deployment Study, which would add approximately 30 seconds in travel/response time for those calls oriented to the south along Woburn Street.

9 Woburn Street

Similar to the 17 Woburn Street site, Woburn Street adjacent to this parcel exhibits a winding, rolling type of alignment. A curve ahead warning sign and a 20 mile per hour advisory sign is located directly opposite the parcel facing northbound traffic. Also similar to 17 Woburn Street, this section of Woburn Street is narrower then the section of Woburn street south of Andover Street. Roadway vegetation adjacent to this parcel and immediately to the north and south is located along the roadway edge inhibiting visibility. This site is actually 0.3 miles from the Andover Street/Woburn Street intersection which is slightly greater than the 0.25 miles recommendation contained in the Fire Department Deployment Study. This location would add approximately 38 seconds to the response time for those calls oriented to the south along Woburn Street.

RECOMMENDATIONS

The final phase of the analysis process is to identify the recommendations necessary to minimize the impact of the project on the adjacent transportation system:

- The access/egress driveway(s) and the adjacent roadway serving the New Fire Substation should be appropriately marked and signed to prohibit parking in the area of the Fire Substation independent of which location is eventually chosen for the new Fire Substation.
- It is suggested that Fire/Rescue personnel continue to only use the emergency vehicle sirens on an as needed basis to minimize the impact to the adjacent neighborhood, again independent of which location is eventually chosen for the New Fire Substation.
- To enhance the overall sight distance at the intersection of the proposed driveway(s) with Woburn Street (and Andover Street if the 55 Woburn Street site is developed), it is recommended that roadside vegetation and topographic ground elevations adjacent to the access/egress driveway(s) and across the project parcel frontage should be maintained such that sufficient safety sight lines are provided in both directions throughout the life of the project. This triangular area across the project parcel frontage should extend 20 feet back from the existing edge of the roadway (representing an existing vehicle) and extend 305 feet along Woburn Street (and Andover Street if the 55 Woburn Street site is developed) representing an approaching vehicle. It should be noted that the 20-foot distance into the driveway(s) exceeds the normal position of a driver's eye, which is generally 8 feet or less from the front of the vehicle. Furthermore, the 305 feet along Woburn Street (and Andover Street) represent adequate sight distance for a speed of 40 mph, which is 10, 15 or 20 mph above the posted speed limit of 30, 25 or 20 mph, respectively.
- Independent of the development of a new Fire Substation along Woburn Street, the queuing from the pick-up area in front of South School could be better managed to prevent queuing onto Woburn Street. Additionally, with the development of 55 Woburn Street, Option A or B, and with the circulation Ring Road reversed to allow a

counterclockwise circulation around the 55 Woburn Street parcel, a second pick-up and drop-off area could be developed at the northwest corner of the school to prevent queuing from occurring onto either Woburn Street or Andover Street.

- It is suggested that the 55 Woburn Street parcel be chosen for the new Fire Substation since it satisfies the principal recommendation of the Fire Department Deployment Study. Additionally, the 55 Woburn Street site provides the greatest visibility for exiting fire/emergency vehicles since roadside vegetation in this area is located off the edge of the adjacent roadway. Furthermore, the adjacent roadway is the most conducive for fire/emergency vehicles compared to the section of Woburn Street north of Andover Street since the roadway is well defined, wider, level and tangent. With the 55 Woburn Street site, Option A should be developed with the Ring Road traffic flow reversed to allow counterclockwise traffic flow around the parcel.
- When and if the 55 Woburn Street site is developed, the AFD should work with the adjacent South School to develop solutions to the existing queuing problem in front of the School. Part of the solution could involve the use of the Ring Road to accommodate a second pick-up/drop-off area. The Ring Road could also be designed to accommodate additional on street parking which has been identified as a need by officials at the South School.

SUMMARY/CONCLUSIONS

The following are the conclusions that can be drawn from the relocation of the Ballardvale Substation to the 55 Woburn Street parcel:

- The relocated Substation will satisfy the principal recommendation of the Fire Department Deployment Study,
- Medical emergency coverage would be added to the south and southeast section of Andover,
- Overall fire and medical emergency response times to the south and southeast section of Andover will be improved, i.e., the response times will be quicker,
- The AFD will be able to increase the number fire/medical emergency employees which will enhance the overall fire and medical emergency response time and services,
- Overall Fire/emergency equipment space for the town will be increased,
- The development of the 55 Woburn Street site will provide an opportunity resolve an existing queuing problem along Woburn Street in front of the South School,
- The development of the 55 Woburn Street site will provide an opportunity to add available parking for the school which has been identified as a need by the officials from the South School,
- The increase in traffic to the Woburn Street area would be less than ½ of one percent which will not be noticeable to the adjacent residences,

Exiting traffic volumes in the Clark Road/Andover Street/River Street area will decrease in an area of traffic congestion due commuter traffic accessing the Ballardvale Industrial area.

APPENDIX

- Google and Tax Maps
- 55 Woburn Street, Option A – Preliminary Plan
- 55 Woburn Street, Option B – Preliminary Plan
- Existing Traffic Volume Data
- Vehicle Speed Data
- Town of Andover Fire Primary Response Areas With Proposed Relocated Fire Station



55 WOBURN ST.



FOR ASSESSMENT PURPOSES ONLY
NOT TO BE USED FOR CONVEYANCE

NOTE: THE DATA ON THIS MAP
BEEN COMPILED FROM A VARIETY
OF SOURCES AND IS NOT TO BE
CONSIDERED A LEGAL LOCATION
BOUNDARY LINES. THE TOWN
ANDOVER ASSUMES NO
RESPONSIBILITY FOR THE
ACCURACY OF THE INDIVIDUAL
PARCELS.

Legend

- TOWN LINE
- PROPERTY LINE
- RAILROAD RW
- RIGHT-OF-WAY
- PRIVATE ROAD
- WATER BODY
- EASEMENT
- GREEN AREA
- PARCEL-ID NUMBER
- #72 SITE ADDRESS
- CONDOMINIUM BLDG
#100-101-102-103-104-105-106-107-108-109-110-111-112-113-114-115-116-117-118-119-120-121-122-123-124-125-126-127-128-129-130-131-132-133-134-135-136-137-138-139-140-141-142-143-144-145-146-147-148-149-150-151-152-153-154-155-156-157-158-159-160-161-162-163-164-165-166-167-168-169-170-171-172-173-174-175-176-177-178-179-180-181-182-183-184-185-186-187-188-189-190-191-192-193-194-195-196-197-198-199-200-201-202-203-204-205-206-207-208-209-210-211-212-213-214-215-216-217-218-219-220-221-222-223-224-225-226-227-228-229-230-231-232-233-234-235-236-237-238-239-240-241-242-243-244-245-246-247-248-249-250-251-252-253-254-255-256-257-258-259-260-261-262-263-264-265-266-267-268-269-270-271-272-273-274-275-276-277-278-279-280-281-282-283-284-285-286-287-288-289-290-291-292-293-294-295-296-297-298-299-300-301-302-303-304-305-306-307-308-309-310-311-312-313-314-315-316-317-318-319-320-321-322-323-324-325-326-327-328-329-330-331-332-333-334-335-336-337-338-339-340-341-342-343-344-345-346-347-348-349-350-351-352-353-354-355-356-357-358-359-360-361-362-363-364-365-366-367-368-369-370-371-372-373-374-375-376-377-378-379-380-381-382-383-384-385-386-387-388-389-390-391-392-393-394-395-396-397-398-399-400-401-402-403-404-405-406-407-408-409-410-411-412-413-414-415-416-417-418-419-420-421-422-423-424-425-426-427-428-429-430-431-432-433-434-435-436-437-438-439-440-441-442-443-444-445-446-447-448-449-450-451-452-453-454-455-456-457-458-459-460-461-462-463-464-465-466-467-468-469-470-471-472-473-474-475-476-477-478-479-480-481-482-483-484-485-486-487-488-489-490-491-492-493-494-495-496-497-498-499-500-501-502-503-504-505-506-507-508-509-510-511-512-513-514-515-516-517-518-519-520-521-522-523-524-525-526-527-528-529-530-531-532-533-534-535-536-537-538-539-540-541-542-543-544-545-546-547-548-549-550-551-552-553-554-555-556-557-558-559-560-561-562-563-564-565-566-567-568-569-570-571-572-573-574-575-576-577-578-579-580-581-582-583-584-585-586-587-588-589-590-591-592-593-594-595-596-597-598-599-600-601-602-603-604-605-606-607-608-609-610-611-612-613-614-615-616-617-618-619-620-621-622-623-624-625-626-627-628-629-630-631-632-633-634-635-636-637-638-639-640-641-642-643-644-645-646-647-648-649-650-651-652-653-654-655-656-657-658-659-660-661-662-663-664-665-666-667-668-669-670-671-672-673-674-675-676-677-678-679-680-681-682-683-684-685-686-687-688-689-690-691-692-693-694-695-696-697-698-699-700-701-702-703-704-705-706-707-708-709-710-711-712-713-714-715-716-717-718-719-720-721-722-723-724-725-726-727-728-729-730-731-732-733-734-735-736-737-738-739-740-741-742-743-744-745-746-747-748-749-750-751-752-753-754-755-756-757-758-759-760-761-762-763-764-765-766-767-768-769-770-771-772-773-774-775-776-777-778-779-780-781-782-783-784-785-786-787-788-789-790-791-792-793-794-795-796-797-798-799-800-801-802-803-804-805-806-807-808-809-810-811-812-813-814-815-816-817-818-819-820-821-822-823-824-825-826-827-828-829-830-831-832-833-834-835-836-837-838-839-840-841-842-843-844-845-846-847-848-849-850-851-852-853-854-855-856-857-858-859-860-861-862-863-864-865-866-867-868-869-870-871-872-873-874-875-876-877-878-879-880-881-882-883-884-885-886-887-888-889-890-891-892-893-894-895-896-897-898-899-900-901-902-903-904-905-906-907-908-909-910-911-912-913-914-915-916-917-918-919-920-921-922-923-924-925-926-927-928-929-930-931-932-933-934-935-936-937-938-939-940-941-942-943-944-945-946-947-948-949-950-951-952-953-954-955-956-957-958-959-960-961-962-963-964-965-966-967-968-969-970-971-972-973-974-975-976-977-978-979-980-981-982-983-984-985-986-987-988-989-990-991-992-993-994-995-996-997-998-999-1000-1001-1002-1003-1004-1005-1006-1007-1008-1009-1010-1011-1012-1013-1014-1015-1016-1017-1018-1019-1020-1021-1022-1023-1024-1025-1026-1027-1028-1029-1030-1031-1032-1033-1034-1035-1036-1037-1038-1039-1040-1041-1042-1043-1044-1045-1046-1047-1048-1049-1050-1051-1052-1053-1054-1055-1056-1057-1058-1059-1060-1061-1062-1063-1064-1065-1066-1067-1068-1069-1070-1071-1072-1073-1074-1075-1076-1077-1078-1079-1080-1081-1082-1083-1084-1085-1086-1087-1088-1089-1090-1091-1092-1093-1094-1095-1096-1097-1098-1099-1100-1101-1102-1103-1104-1105-1106-1107-1108-1109-1110-1111-1112-1113-1114-1115-1116-1117-1118-1119-1120-1121-1122-1123-1124-1125-1126-1127-1128-1129-1130-1131-1132-1133-1134-1135-1136-1137-1138-1139-1140-1141-1142-1143-1144-1145-1146-1147-1148-1149-1150-1151-1152-1153-1154-1155-1156-1157-1158-1159-1160-1161-1162-1163-1164-1165-1166-1167-1168-1169-1170-1171-1172-1173-1174-1175-1176-1177-1178-1179-1180-1181-1182-1183-1184-1185-1186-1187-1188-1189-1190-1191-1192-1193-1194-1195-1196-1197-1198-1199-1200-1201-1202-1203-1204-1205-1206-1207-1208-1209-1210-1211-1212-1213-1214-1215-1216-1217-1218-1219-1220-1221-1222-1223-1224-1225-1226-1227-1228-1229-1230-1231-1232-1233-1234-1235-1236-1237-1238-1239-1240-1241-1242-1243-1244-1245-1246-1247-1248-1249-1250-1251-1252-1253-1254-1255-1256-1257-1258-1259-1260-1261-1262-1263-1264-1265-1266-1267-1268-1269-1270-1271-1272-1273-1274-1275-1276-1277-1278-1279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24 WOBURN ST.

CONDOMINIUM
NAME TOTAL
FLOOR AREA
COMMON
PROPERTY
DIMENSIONS
TAX MAP

5
5
6
100

ADJACENT S
115 118 96
116
138 117
139 119
158 140 1
160 141

SEE MAP FOR UNIT NUMBER



1" = 2'

COMPLETION DATE:
DATE OF REVISION:

MAP

Date Plotted:

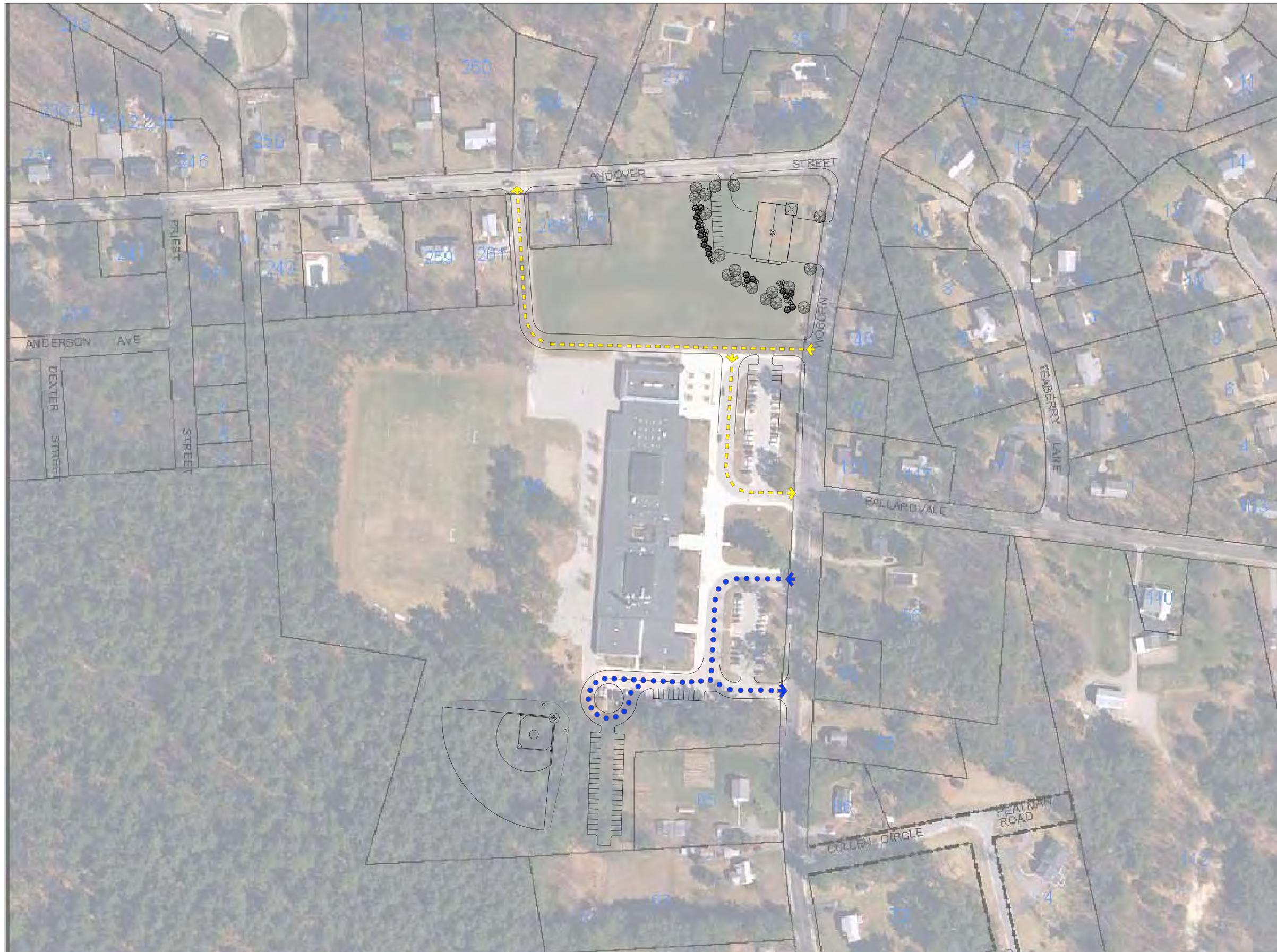




17 WOBURN ST.



9 WOBURN ST.



Huntress Associates, Inc.

Landscape Architecture & Land Planning

17 Tewksbury Street
 Andover, Massachusetts 01810
 978 470 8882 FAX 978 470 8890

Project:

**Ballardvale
 Fire Station**

Andover, Massachusetts

Drawing Title:

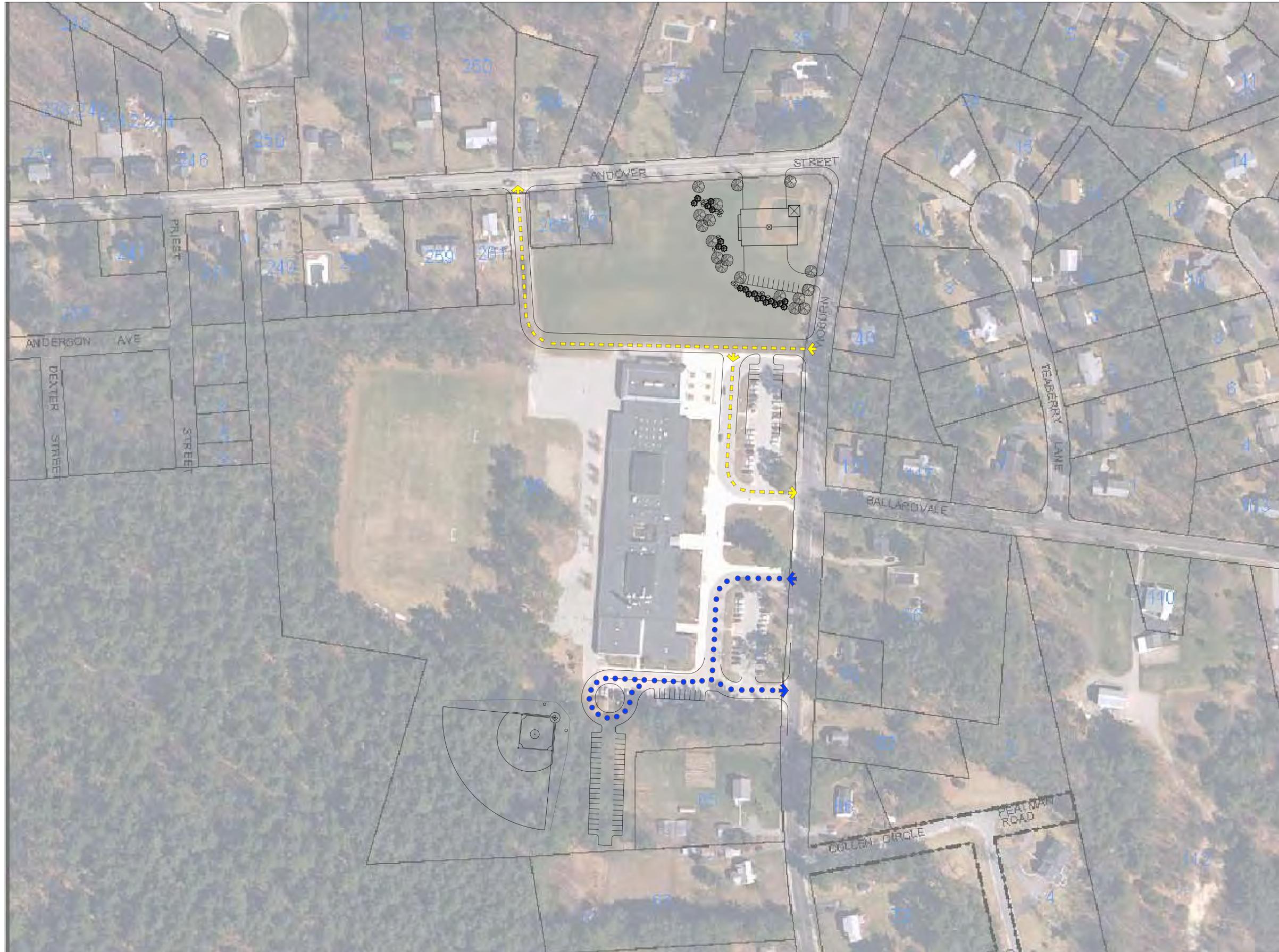
**Existing Conditions
 South School**

Option A

Revision	Date

Scale:	1" = 80'	Drawing No.	L-1
Date:	11.9.10	of	
Job:	00-107		
File:	PR-det		
Drawn:	CCH		
Checked:	--		2

PLOT # 15-100007



Huntress Associates, Inc.
Landscape Architecture & Land Planning

17 Tewksbury Street
Andover, Massachusetts 01810
978 470 8882 FAX 978 470 8890

Project:

**Ballardvale
Fire Station**

Andover, Massachusetts

Drawing Title:

**Existing Conditions
South School**

Option B

Revision	Date

Scale:	1" = 80'	Drawing No.	L-2
Date:	11.9.10		
Job:	00-107		
File:	PR-det		
Drawn:	CCH	of	
Checked:	--		2



PRECISION
DATA
INDUSTRIES, LLC

PRECISION DATA INDUSTRIES, LLC

Office: 508.481.3999 Fax: 508.545.1234

Email: datarequests@pdillc.com

Traffic Counts with Precision



Imagery Date: Jun 19, 2010

© 2010 Google
42°37'40.34" N 71°08'56.24" W elev. 0 ft

© 2009 Google
Eye alt 3697 ft

Client: DJK Associates	Engineer: D. Kelly	Site Code: 802	Date: Wed 9/15 thru Thurs 9/16/10	PDI Job Number: 102322	City, State: Andover, MA
----------------------------------	------------------------------	--------------------------	---	----------------------------------	------------------------------------



PRECISION
D A T A
INDUSTRIES, LLC

P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

Woburn Street
south of Andover Street
City, State: Andover, MA
Client: DJK Associates/ D. Kelly

102322 A volume
Site Code: 802

Start Time	NB		SB		Combined		15-Sep-10 Wed
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	
12:00	0	27	3	31	3	58	
12:15	0	15	1	23	1	38	
12:30	0	21	3	23	3	44	
12:45	0	20	83	3	10	23	100
01:00	1	23	1	23	2	46	
01:15	0	33	1	23	1	56	
01:30	0	21	0	21	0	42	
01:45	0	27	104	0	2	29	96
02:00	0	30	1	21	1	51	
02:15	1	26	0	40	1	66	
02:30	0	35	0	47	0	82	
02:45	0	56	147	0	1	46	154
03:00	0	44	0	43	0	87	
03:15	0	45	1	40	1	85	
03:30	1	45	0	46	1	91	
03:45	0	37	171	0	1	35	164
04:00	0	35	0	36	0	71	
04:15	1	40	0	29	1	69	
04:30	1	44	1	39	2	83	
04:45	2	59	178	0	1	30	134
05:00	4	60	3	45	7	105	
05:15	5	60	3	53	8	113	
05:30	4	43	8	56	12	99	
05:45	4	66	229	7	21	54	208
06:00	8	48	8	57	16	105	
06:15	7	39	14	40	21	79	
06:30	12	34	19	38	31	72	
06:45	20	31	152	25	66	40	175
07:00	54	25	55	32	109	57	
07:15	45	21	50	35	95	56	
07:30	42	29	55	36	97	65	
07:45	38	18	93	70	230	21	124
08:00	43	20	76	27	119	47	
08:15	57	16	84	30	141	46	
08:30	87	16	59	14	146	30	
08:45	75	10	62	35	254	22	93
09:00	28	7	46	13	74	20	
09:15	17	8	22	21	39	29	
09:30	24	6	14	16	38	22	
09:45	23	3	24	23	105	6	56
10:00	17	11	18	8	35	19	
10:15	17	8	17	10	34	18	
10:30	26	4	27	3	53	7	
10:45	18	6	29	15	77	5	26
11:00	11	5	23	4	34	9	
11:15	36	1	29	4	65	5	
11:30	28	1	26	4	54	5	
11:45	25	0	7	19	97	5	17
Total	782	1279	865	1347	1647	2626	
Percent	47.5%	48.7%	52.5%	51.3%			
Day Total		2061		2212		4273	
Peak Vol.	08:00	05:00	07:45	05:15	08:00	05:00	
P.H.F.	0.753	0.867	0.860	0.965	0.884	0.910	



PRECISION
D A T A
INDUSTRIES, LLC

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Email: datarequests@pdillc.com

Woburn Street
south of Andover Street
City, State: Andover, MA
Client: DJK Associates/ D. Kelly

102322 A volume
Site Code: 802

Start Time	NB		SB		Combined		16-Sep-10 Thu
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	
12:00	2	21	2	25	4	46	
12:15	2	28	1	30	3	58	
12:30	0	30	3	24	3	54	
12:45	4	33	4	26	8	59	217
01:00	2	24	0	20	2	44	
01:15	0	31	2	26	2	57	
01:30	0	22	0	27	0	49	
01:45	0	28	0	19	0	47	197
02:00	0	24	0	23	0	47	
02:15	0	26	0	43	0	69	
02:30	0	42	1	50	1	92	
02:45	0	58	0	37	0	95	303
03:00	0	35	0	40	0	75	
03:15	1	31	1	34	2	65	
03:30	1	66	1	24	2	90	
03:45	0	30	0	37	0	67	297
04:00	0	45	1	36	1	81	
04:15	0	55	0	46	0	101	
04:30	3	36	2	39	5	75	
04:45	0	45	0	45	0	90	347
05:00	3	62	5	54	8	116	
05:15	3	74	2	64	5	138	
05:30	6	56	4	42	10	98	
05:45	4	52	6	61	10	113	465
06:00	7	47	8	54	15	101	
06:15	11	41	14	39	25	80	
06:30	8	30	15	46	23	76	
06:45	21	44	25	38	46	82	339
07:00	52	34	50	53	102	87	
07:15	51	40	57	30	108	70	
07:30	47	14	61	23	108	37	
07:45	38	10	87	18	124	28	222
08:00	37	14	86	22	123	36	
08:15	70	12	92	17	162	29	
08:30	64	6	47	10	111	16	
08:45	48	13	45	35	64	28	109
09:00	27	16	33	27	60	43	
09:15	26	4	25	14	51	18	
09:30	22	8	15	12	37	20	
09:45	19	8	36	19	67	22	103
10:00	30	7	15	3	45	10	
10:15	20	4	15	6	35	10	
10:30	20	3	24	6	44	9	
10:45	16	8	22	19	35	9	38
11:00	18	6	23	7	41	13	
11:15	21	1	27	2	48	3	
11:30	22	2	21	2	43	4	
11:45	22	4	13	23	45	8	28
Total	748	1330	871	1335	1619	2665	
Percent	46.2%	49.9%	53.8%	50.1%			
Day Total	2078		2206		4284		
Peak Vol.	08:00 219	05:00 244	07:30 326	05:00 221	07:45 521	05:00 465	
P.H.F.	0.782	0.824	0.886	0.863	0.804	0.842	



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102322 A speed
Site Code: 802

NB

Start Time	14	15	19	20	24	25	29	30	34	35	39	40	44	45	49	50	54	55	59	60	64	65	69	70	9999	Total	85th % ile	Ave Speed		
9/15/10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*		
01:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	25	25		
02:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	25	25		
03:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	35	35		
04:00	0	0	0	0	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	30	30		
05:00	0	0	0	2	6	6	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	34	30		
06:00	0	2	6	24	11	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	47	33	28		
07:00	3	5	22	79	56	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	179	33	28		
08:00	5	13	83	127	31	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	262	29	25		
09:00	2	3	14	37	28	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	92	33	28		
10:00	0	1	11	46	14	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	78	32	28		
11:00	0	6	17	55	20	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	31	27		
12 PM	1	0	10	47	18	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	83	33	28		
13:00	1	4	9	45	37	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	104	33	29		
14:00	7	9	43	53	28	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	147	32	26		
15:00	0	3	24	74	53	16	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	171	34	29		
16:00	1	1	8	73	78	16	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	178	34	30		
17:00	0	3	12	89	102	22	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	229	34	30		
18:00	0	4	12	55	63	16	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	152	34	30		
19:00	0	1	5	35	37	13	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	93	35	30		
20:00	0	0	10	26	21	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	62	33	29		
21:00	0	0	2	11	9	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	33	29		
22:00	1	1	6	15	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	31	27		
23:00	0	0	0	1	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	34	32		
Total	21	56	296	902	622	148	15	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2061				
%	1.0%	2.7%	14.4%	43.8%	30.2%	7.2%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%					
AM Peak	08:00	08:00	08:00	08:00	07:00	07:00	04:00	06:00																			08:00			
Vol.	5	13	83	127	56	14	1	1																			262			
Midday Peak	14:00	14:00	14:00	11:00	13:00	13:00	12:00																					14:00		
Vol.	7	9	43	55	37	7	1																					147		
PM Peak	16:00	18:00	15:00	17:00	17:00	17:00	18:00																					17:00		
Vol.	1	4	24	89	102	22	2																					229		
% ile				15th Percentile :			23 MPH																							
				50th Percentile :			28 MPH																							
				85th Percentile :			33 MPH																							
				95th Percentile :			37 MPH																							

Stats
 10 MPH Pace Speed : 25-34 MPH
 Number in Pace : 1524
 Percent in Pace : 73.9%
 Number of Vehicles > 25 MPH : 1507
 Percent of Vehicles > 25 MPH : 73.1%
 Mean Speed(Average) : 28 MPH



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102322 A speed
Site Code: 802

NB

Start Time	14	15	19	20	24	25	29	30	34	35	39	40	44	45	49	50	54	55	59	60	64	65	69	70	9999	Total	85th % ile	Ave Speed
9/16/10	0	0	0	0	5	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	35	30	
01:00	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	31	30	
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*	
03:00	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	31	30	
04:00	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	31	30	
05:00	0	0	1	5	7	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	35	30	
06:00	1	2	6	13	20	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	47	34	29	
07:00	12	6	32	70	58	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	188	33	27	
08:00	0	6	77	108	24	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	219	29	26	
09:00	0	2	6	44	32	8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	94	34	29	
10:00	0	2	12	38	28	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	86	33	28	
11:00	0	0	14	42	24	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	83	32	28	
12 PM	2	2	17	56	27	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	112	33	28	
13:00	0	3	12	54	28	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	105	33	28	
14:00	3	5	33	65	37	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	150	32	27	
15:00	1	0	22	85	46	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	162	33	28	
16:00	1	0	19	78	74	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	181	33	29	
17:00	1	3	29	119	75	16	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	244	33	28	
18:00	1	1	18	82	46	10	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	162	33	29	
19:00	0	0	15	55	19	8	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	98	33	28	
20:00	0	0	6	20	16	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	45	33	29	
21:00	0	0	1	20	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36	33	29	
22:00	2	0	2	6	7	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	36	28	
23:00	1	0	1	3	5	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	35	29	
Total	25	32	323	969	595	119	14	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2078			
%	1.2%	1.5%	15.5%	46.6%	28.6%	5.7%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%				

AM Peak	07:00	07:00	08:00	08:00	07:00	07:00	09:00	06:00																		08:00		
Vol.	12	6	77	108	58	10	2	1																		219		

Midday Peak	14:00	14:00	14:00	14:00	14:00	12:00	14:00																			14:00		
Vol.	3	5	33	65	37	7	2																			150		

PM Peak	22:00	17:00	17:00	17:00	17:00	17:00	18:00																			17:00		
Vol.	2	3	29	119	75	16	4																			244		

% ile			15th Percentile :	23 MPH																									
			50th Percentile :	28 MPH																									
			85th Percentile :	33 MPH																									
			95th Percentile :	36 MPH																									

Stats	10 MPH Pace Speed :	25-34 MPH
	Number in Pace :	1564
	Percent in Pace :	75.3%
	Number of Vehicles > 25 MPH :	1504
	Percent of Vehicles > 25 MPH :	72.4%
	Mean Speed(Average) :	28 MPH



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102322 A speed
Site Code: 802

SB

Start Time	14	15	19	20	24	25	29	30	34	35	39	40	44	45	49	50	54	55	59	60	64	65	69	70	9999	Total	85th % ile	Ave Speed
9/15/10	0	0	0	0	4	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	33	30	
01:00	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	25	24	
02:00	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	35	35	
03:00	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	30	30	
04:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	30	30	
05:00	0	0	4	7	8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21	33	29	
06:00	0	4	16	27	15	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	66	32	27	
07:00	0	13	66	115	34	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	230	30	26	
08:00	5	63	123	56	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	254	27	22	
09:00	2	8	33	47	11	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	105	29	25	
10:00	0	8	19	43	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	77	29	25	
11:00	0	3	46	38	9	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	97	29	25	
12 PM	0	8	34	50	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	29	25	
13:00	1	4	26	52	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	96	29	26	
14:00	13	19	55	43	20	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	154	30	23	
15:00	0	10	32	67	52	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	164	32	27	
16:00	0	0	15	61	49	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	134	33	29	
17:00	0	1	15	93	89	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	208	33	29	
18:00	0	2	20	83	62	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	175	33	29	
19:00	0	1	13	66	38	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	124	33	28	
20:00	0	0	13	48	27	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	93	33	28	
21:00	0	2	7	27	15	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	56	33	28	
22:00	0	1	4	15	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	30	27	
23:00	0	0	1	11	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	31	28	
Total	21	147	543	954	478	65	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2212			
%	0.9%	6.6%	24.5%	43.1%	21.6%	2.9%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%				
AM Peak	08:00	08:00	08:00	07:00	07:00	09:00	06:00																			08:00		
Vol.	5	63	123	115	34	4	1																			254		
Midday Peak	14:00	14:00	14:00	13:00	14:00	14:00																				14:00		
Vol.	13	19	55	52	20	4																				154		
PM Peak		15:00	15:00	17:00	17:00	17:00	18:00																			17:00		
Vol.		10	32	93	89	10	1																			208		
% ile			15th Percentile :		21 MPH																							
			50th Percentile :		27 MPH																							
			85th Percentile :		32 MPH																							
			95th Percentile :		34 MPH																							
Stats		10 MPH Pace Speed :		20-29 MPH																								
		Number in Pace :		1497																								
		Percent in Pace :		67.7%																								
		Number of Vehicles > 25 MPH :		1310																								
		Percent of Vehicles > 25 MPH :		59.2%																								
		Mean Speed(Average) :		26 MPH																								



PRECISION
D A T A
INDUSTRIES, LLC

P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
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Woburn Street
south of Andover Street
City, State: Andover, MA
Client: DJK Associates/ D. Kelly

102322 A speed
Site Code: 802

SB

Start Time	14	15	19	20	24	25	29	30	34	35	39	40	44	45	49	50	54	55	59	60	64	65	69	70	9999	Total	85th % ile	Ave Speed
9/16/10	0	0	0	2	6	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	29	28	
01:00	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	25	24	
02:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	20	20	
03:00	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	26	26	
04:00	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	30	28	
05:00	0	0	0	4	5	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	33	29	
06:00	0	2	15	26	14	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	62	33	27	
07:00	0	20	74	105	53	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	255	31	26	
08:00	4	41	124	78	10	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	260	28	23	
09:00	0	0	23	43	23	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	92	32	27	
10:00	0	2	20	35	14	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	73	31	27	
11:00	0	2	30	44	13	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	94	31	26	
12 PM	0	3	24	49	27	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	105	32	27	
13:00	0	2	19	44	23	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	92	32	27	
14:00	0	4	44	73	31	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	153	31	26	
15:00	0	3	27	74	25	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	135	32	27	
16:00	1	3	23	82	50	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	166	33	28	
17:00	0	7	45	124	41	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	221	31	27	
18:00	0	1	41	109	23	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	177	29	27	
19:00	0	3	30	67	23	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	124	30	27	
20:00	0	3	10	36	12	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	64	31	27	
21:00	0	0	14	31	16	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	67	33	28	
22:00	0	0	2	7	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	33	29	
23:00	0	0	3	7	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	32	28	
Total	5	96	577	1049	416	57	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2206			
%	0.2%	4.4%	26.2%	47.6%	18.9%	2.6%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%				
AM Peak	08:00	08:00	08:00	07:00	07:00	06:00	06:00																			08:00		
Vol.	4	41	124	105	53	4	1																			260		
Midday Peak		14:00	14:00	14:00	14:00	11:00	11:00																			14:00		
Vol.		4	44	73	31	4	1																			153		
PM Peak	16:00	17:00	17:00	17:00	16:00	16:00	18:00																			17:00		
Vol.	1	7	45	124	50	7	1																			221		
% ile			15th Percentile :		21 MPH																							
			50th Percentile :		27 MPH																							
			85th Percentile :		31 MPH																							
			95th Percentile :		34 MPH																							
Stats		10 MPH Pace Speed :		20-29 MPH																								
		Number in Pace :		1626																								
		Percent in Pace :		73.7%																								
		Number of Vehicles > 25 MPH :		1318																								
		Percent of Vehicles > 25 MPH :		59.7%																								
		Mean Speed(Average) :		26 MPH																								



PRECISION
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Woburn Street
south of Andover Street
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Client: DJK Associates/ D. Kelly

102322 A class
Site Code: 802

NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
9/15/10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
05:00	1	12	2	0	1	0	0	0	1	0	0	0	0	17
06:00	0	34	12	0	1	0	0	0	0	0	0	0	0	47
07:00	9	142	24	1	2	1	0	0	0	0	0	0	0	179
08:00	13	221	20	4	2	2	0	0	0	0	0	0	0	262
09:00	5	69	17	0	1	0	0	0	0	0	0	0	0	92
10:00	1	61	9	1	5	1	0	0	0	0	0	0	0	78
11:00	1	72	20	2	3	0	0	1	0	1	0	0	0	100
12 PM	1	66	15	0	1	0	0	0	0	0	0	0	0	83
13:00	3	75	19	2	3	0	0	2	0	0	0	0	0	104
14:00	2	116	26	2	1	0	0	0	0	0	0	0	0	147
15:00	4	131	27	6	3	0	0	0	0	0	0	0	0	171
16:00	5	135	31	1	4	2	0	0	0	0	0	0	0	178
17:00	6	186	35	0	2	0	0	0	0	0	0	0	0	229
18:00	8	127	14	0	2	0	0	1	0	0	0	0	0	152
19:00	0	80	13	0	0	0	0	0	0	0	0	0	0	93
20:00	0	55	6	0	1	0	0	0	0	0	0	0	0	62
21:00	0	24	0	0	0	0	0	0	0	0	0	0	0	24
22:00	2	24	3	0	0	0	0	0	0	0	0	0	0	29
23:00	0	6	1	0	0	0	0	0	0	0	0	0	0	7
Total	61	1643	294	19	32	6	0	4	1	1	0	0	0	2061
Percent	3.0%	79.7%	14.3%	0.9%	1.6%	0.3%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	08:00	08:00	07:00	08:00	07:00	08:00			05:00					08:00
Vol.	13	221	24	4	2	2			1					262
Midday Peak	13:00	14:00	14:00	11:00	11:00			13:00		11:00				14:00
Vol.	3	116	26	2	3			2		1				147
PM Peak	18:00	17:00	17:00	15:00	16:00	16:00		18:00						17:00
Vol.	8	186	35	6	4	2		1						229



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102322 A class
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NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
9/16/10	1	7	0	0	0	0	0	0	0	0	0	0	0	8
01:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
04:00	0	2	0	0	1	0	0	0	0	0	0	0	0	3
05:00	1	14	1	0	0	0	0	0	0	0	0	0	0	16
06:00	3	33	10	0	1	0	0	0	0	0	0	0	0	47
07:00	4	155	24	1	2	2	0	0	0	0	0	0	0	188
08:00	6	181	18	7	7	0	0	0	0	0	0	0	0	219
09:00	0	79	12	0	3	0	0	0	0	0	0	0	0	94
10:00	2	69	14	0	1	0	0	0	0	0	0	0	0	86
11:00	0	65	12	2	1	1	0	2	0	0	0	0	0	83
12 PM	4	85	17	1	2	1	0	2	0	0	0	0	0	112
13:00	2	84	13	1	4	0	0	1	0	0	0	0	0	105
14:00	3	111	27	5	2	1	0	1	0	0	0	0	0	150
15:00	0	125	30	5	2	0	0	0	0	0	0	0	0	162
16:00	2	144	31	0	4	0	0	0	0	0	0	0	0	181
17:00	6	200	35	0	2	1	0	0	0	0	0	0	0	244
18:00	1	138	22	0	1	0	0	0	0	0	0	0	0	162
19:00	0	86	11	0	1	0	0	0	0	0	0	0	0	98
20:00	0	39	6	0	0	0	0	0	0	0	0	0	0	45
21:00	0	32	4	0	0	0	0	0	0	0	0	0	0	36
22:00	2	18	2	0	0	0	0	0	0	0	0	0	0	22
23:00	1	9	3	0	0	0	0	0	0	0	0	0	0	13
Total	38	1680	292	22	34	6	0	6	0	0	0	0	0	2078
Percent	1.8%	80.8%	14.1%	1.1%	1.6%	0.3%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	08:00	08:00	07:00	08:00	08:00	07:00								08:00
Vol.	6	181	24	7	7	2								219
Midday Peak	12:00	14:00	14:00	14:00	13:00	11:00		11:00						14:00
Vol.	4	111	27	5	4	1		2						150
PM Peak	17:00	17:00	17:00	15:00	16:00	17:00								17:00
Vol.	6	200	35	5	4	1								244



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SB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
9/15/10	0	9	1	0	0	0	0	0	0	0	0	0	0	10
01:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	0	1	0	0	0	0	0	0	0	0	0	0	1
05:00	0	19	2	0	0	0	0	0	0	0	0	0	0	21
06:00	1	55	7	1	2	0	0	0	0	0	0	0	0	66
07:00	2	185	35	4	2	2	0	0	0	0	0	0	0	230
08:00	2	206	33	5	6	2	0	0	0	0	0	0	0	254
09:00	0	82	17	0	5	0	0	1	0	0	0	0	0	105
10:00	0	60	12	1	3	0	0	1	0	0	0	0	0	77
11:00	0	77	16	1	1	2	0	0	0	0	0	0	0	97
12 PM	1	74	19	0	4	0	0	2	0	0	0	0	0	100
13:00	0	74	18	1	2	1	0	0	0	0	0	0	0	96
14:00	0	118	28	6	2	0	0	0	0	0	0	0	0	154
15:00	5	142	14	2	1	0	0	0	0	0	0	0	0	164
16:00	0	101	32	0	1	0	0	0	0	0	0	0	0	134
17:00	4	178	21	0	4	1	0	0	0	0	0	0	0	208
18:00	0	152	17	1	4	1	0	0	0	0	0	0	0	175
19:00	1	104	18	0	1	0	0	0	0	0	0	0	0	124
20:00	0	82	10	0	1	0	0	0	0	0	0	0	0	93
21:00	0	52	4	0	0	0	0	0	0	0	0	0	0	56
22:00	0	23	2	0	1	0	0	0	0	0	0	0	0	26
23:00	0	12	5	0	0	0	0	0	0	0	0	0	0	17
Total	16	1809	312	22	40	9	0	4	0	0	0	0	0	2212
Percent	0.7%	81.8%	14.1%	1.0%	1.8%	0.4%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	08:00	07:00	08:00	08:00	07:00		09:00						08:00
Vol.	2	206	35	5	6	2		1						254
Midday Peak	12:00	14:00	14:00	14:00	12:00	11:00		12:00						14:00
Vol.	1	118	28	6	4	2		2						154
PM Peak	15:00	17:00	16:00	15:00	17:00	17:00								17:00
Vol.	5	178	32	2	4	1								208



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Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
9/16/10	0	9	1	0	0	0	0	0	0	0	0	0	0	10
01:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
04:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
05:00	0	15	2	0	0	0	0	0	0	0	0	0	0	17
06:00	1	45	14	1	1	0	0	0	0	0	0	0	0	62
07:00	4	202	38	5	2	2	0	2	0	0	0	0	0	255
08:00	2	223	26	6	2	0	0	1	0	0	0	0	0	260
09:00	1	70	16	0	4	0	0	1	0	0	0	0	0	92
10:00	1	53	18	1	0	0	0	0	0	0	0	0	0	73
11:00	0	72	13	1	6	1	1	0	0	0	0	0	0	94
12 PM	0	78	20	1	5	0	0	1	0	0	0	0	0	105
13:00	1	72	14	0	4	0	0	0	1	0	0	0	0	92
14:00	0	112	33	7	0	0	0	0	1	0	0	0	0	153
15:00	1	102	27	2	3	0	0	0	0	0	0	0	0	135
16:00	0	140	23	0	2	1	0	0	0	0	0	0	0	166
17:00	3	193	22	0	3	0	0	0	0	0	0	0	0	221
18:00	0	157	19	0	1	0	0	0	0	0	0	0	0	177
19:00	0	111	10	0	3	0	0	0	0	0	0	0	0	124
20:00	0	58	6	0	0	0	0	0	0	0	0	0	0	64
21:00	0	61	5	0	1	0	0	0	0	0	0	0	0	67
22:00	0	12	4	0	0	0	0	0	0	0	0	0	0	16
23:00	0	12	3	0	0	0	0	0	0	0	0	0	0	15
Total	14	1805	314	24	37	4	1	5	2	0	0	0	0	2206
Percent	0.6%	81.8%	14.2%	1.1%	1.7%	0.2%	0.0%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	08:00	07:00	08:00	09:00	07:00		07:00						08:00
Vol.	4	223	38	6	4	2		2						260
Midday Peak	13:00	14:00	14:00	14:00	11:00	11:00	11:00	12:00	13:00					14:00
Vol.	1	112	33	7	6	1	1	1	1					153
PM Peak	17:00	17:00	15:00	15:00	15:00	16:00								17:00
Vol.	3	193	27	2	3	1								221

