

# Eco-Mobility: Aiding the Development of the Assabet River Rail Trail

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## I. Introduction

The car is the preferred method of transportation for citizens of the United States. And while cars can conveniently carry us from one place to another in a timely manner, they are also the leading cause of carbon dioxide emissions ( $\text{CO}^2$ ), a greenhouse gas and the number one contributor to anthropogenic climate change. Cars also emit Particulate Matter (PM), Nitrogen Oxides ( $\text{NOx}$ ), Hydrocarbons (HC), Carbon Monoxide (CO), Sulfur Dioxide ( $\text{SO}^2$ ), and Hazardous Air Pollutants (HAP) such as Benzene and Acetaldehyde, all pollutants which are hazardous to both human health and the environment (UCS,2008). With these unnerving facts in mind, communities have sought ways to reduce the harmful effects of automobile transportation.

Large cities have taken the approach of developing and promoting the increased use of public transportation. Some have even begun to switch their fleet of public vehicles to those which run on less polluting fuel sources such as natural gas, biodiesel, and even electricity.

Smaller towns without the large population or tax revenue to support wide-scale public transportation face greater challenges to reducing their inhabitant's automobile dependency. One of the best ways for such communities to achieve this goal is by providing safe routes for people wishing to walk or bike as a form of transportation. Trails and greenways provide interconnected corridors through communities, specifically designed to suit transportation by means of walking and biking. By providing "car free" transportation infrastructure, trails and greenways are vital instruments for cities and towns seeking to promote sustainable transportation. Most importantly, establishing a community trail system yields benefits in three distinct areas; social, economic, and environmental. Over the past decade support for trails and greenways has grown immensely at the local, state, and national level. Massachusetts has been particularly supportive of these projects and now hosts an extensive trail system including the Minute Man Bikeway, the most

heavily trafficked bike trail in the United States, accommodating some two million passengers each year (Della Penna, 2006).

## **I. Background**

The Assabet River Rail Trail (ARRT) is a multi-use recreational trail, built along the abandoned rail bed of the former Marlborough Branch Rail Road. The trail passes through the communities of Marlborough, Hudson, Stow, Maynard, and Acton. The group which oversees the trail's development is ARRT Inc., a non-profit group dedicated to seeing the completion of the trail through all five communities. Currently there is a 5.8 mile section of the trail which is paved and open for public use (ARRT, 2009). In Stow, work is under way to purchase the necessary land and compose the proper route to complete the trail through town.

ARRT has been able to secure funding at the federal, state and town level to aid in the trail's completion. During February of 2008, the town of Stow received a Massachusetts Smart Growth / Smart Energy Grant, a portion of which has been allocated to trail construction. In July of 2009, the MPO (Metropolitan Planning Organization) approved the inclusion of uncompleted portions of the ARRT in the 2011 – 2015 Regional Transportation Plan. This action makes available a portion of the \$20,348,520 Regional Transportation Plan Budget to AART.

### **A. Problem to be Addressed**

With the necessary funds in place to complete the ARRT through Stow, ARRT Inc. developed a proposed trail through the town. This envisioned trail route utilized the abandoned railroad tracks which run through the southeastern part of the town. Easements were purchased on the land through which most of the tracks ran and it seemed the trail would be able to be built along this route. However, the ARRT group in Stow has recently encountered a problem which threatens to derail (no pun intended) the trails completion. In the southern end of



town, the abandoned tracks run through the Honey Pot Hill Apple Orchard. The owner of the apple orchard has objected to the development of the trail through his property and denied ARRT Inc. the ability to purchase the land that would be required to route the trail through the orchard. The owner has elicited several issues of concern which form the basis of his objections. These concerns are; increased

crime along the trail (grand theft apple), trail maintenance, liability, and personal property rights. In regards to trail maintenance and personal property rights, the owner's specific concerns are that the trail's establishment would hinder his preferred method of pest control (ie. eliminating them with a shotgun). The map on the right shows the trail as originally envisioned. The section in

red is the portion which has been objected to.

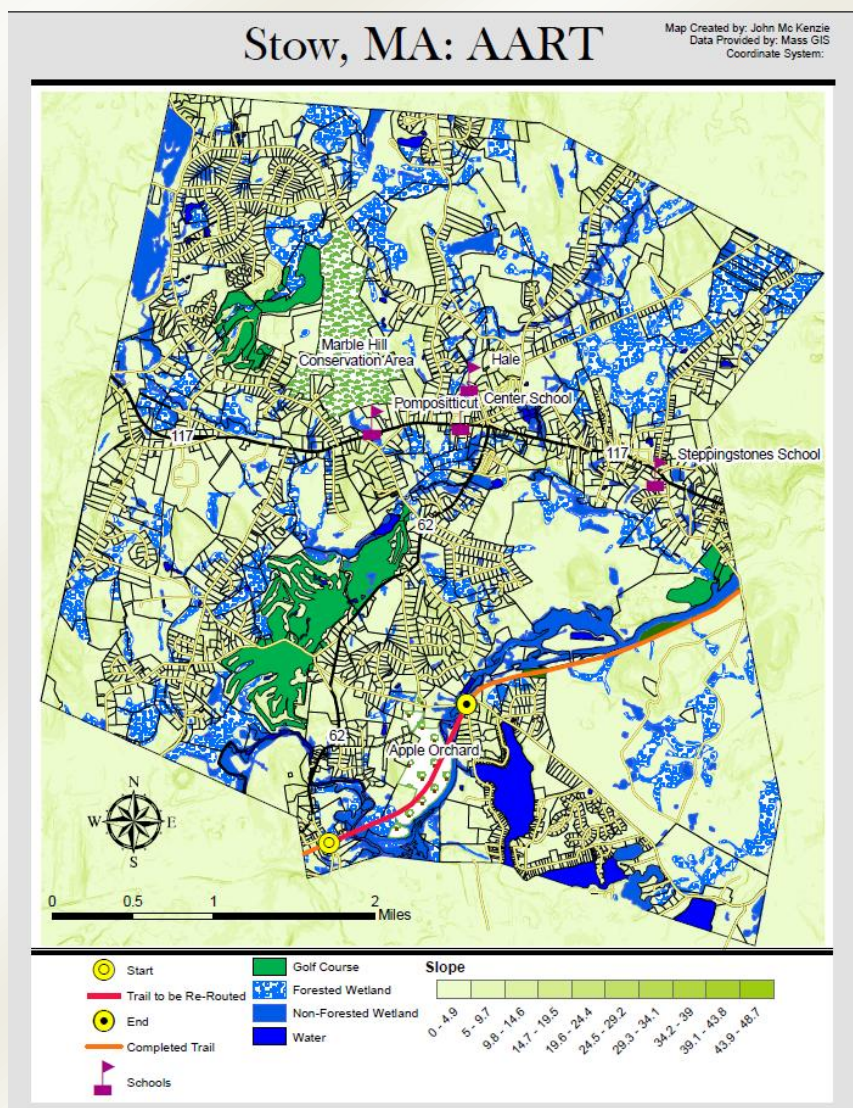


Figure 1: Stow Map

AART inc. is now faced with the challenge of finding a new route to complete the ARRT through the town of Stow. In considering new options the group is concerned with devising a route that will provide a safe, non-strenuous, aesthetic, and enjoyable ride through the town. AART inc. is also interested in creating a route which minimizes the trail's construction costs. Furthermore, the organization is in need of specific research to address any future objections landowners may have to the development of the trail along their property.

## **II. Recommendations / Implementation Tools**

The completion of the ARRT through Stow is a vital step towards reducing the environmental impact of transportation within the town. In the interest of achieving this goal and keeping in line with the desires of AART inc., the Clark University Eco-Mobility Team makes two recommendations:

1. Utilize GIS (Geographic Information Systems) technology to devise the optimal ARRT route through the town of Stow.
2. Gain an in depth knowledge of the impacts of existing trail systems.

GIS is a computer technology which links data to a spatial location. This technology is used extensively in mapping and allows users to conduct sophisticated spatial statistical analyses. Of particular relevance to the issue facing AART inc., is GIS' ability to consider numerous parameters as they pertain to a specific area of land. By assigning weights to these parameters, the pixels which represent specific sections of the land can be given a value. When these value assigned pixels are combined, the result is a map depicting the land area in terms of the weighted parameters. Having spoken with AART inc. to determine relevant weights and parameters for the Town of Stow, the Eco-Mobility team has created a bike path suitability map for the town of Stow which can be used by ARRT inc. to determine the best possible route options for the

Assabet River Trail. The methodology for this analysis is described in greater detail later on in this report and recommended ARRT route based upon the GIS analysis is provided as part of the suitability map located in Appendix A.

Objections to bike trails occur every time an organization seeks to establish one. Many of the objections overlap amongst the individual cases as communities have similar concerns about the impact of bike trails. As a result hundreds of case studies have been conducted on bike trails and their effects on the communities through which they run. By gaining an in depth knowledge about the results of these case studies ARRT inc., will be well prepared to overcome objections by individual landowners and the community at large as they continue trail development. To aid in this effort, the Eco-Mobility team has researched and reported on several trail case studies. These case study reports are included in this report under the Case Studies section.

The Eco-Mobility Team has also researched potential funding sources for the trail's development. Although most of the funding for the ARRT has been secured, this information is important if the currently allocated funds are insufficient in the face of the current challenges and if there is a desire to increase the extent of the trail in Stow at a later date. The funding sources that have been identified can be found in Appendix B.

### A. GIS Methodology

The GIS methodology used to calculate the suitability of the land area in Stow for ARRT development was MCE (Multi-criteria Evaluation). The use of MCE requires obtaining data in a vector format and converting it to raster. The vector data sets collected were those which were to be included as parameters in the analysis. Specifically, data for parcels, land use, elevation, and roads was collected. These vector layers were then rasterized using the spatial analyst tool and the convert option. Once the data had been converted to raster format, weights could be assigned



to each data set so as to designate them as parameters in suitability calculation. The weighting process is two tiered system. First, weights are assigned to the specific parameters included in each category. Second, weights are given to the categories. Once weights have been determined for both categories and parameters, they can be assigned to their corresponding raster files. These files are then placed in the raster calculator as an equation. This particular equation reads as follows;  $[(\text{Land Use} * 0.5) + (\text{Slope} * 0.25) + (\text{Roads} * 0.25) * (\text{Parcels})]$ . The product of this equation is the ARRT Suitability Map for the town of Stow. Listed below are the category weights and their explanations followed by the individual parameter weights for each category.

1. Parcels: 1.0 – The parcels raster file was given a weight of 1, effectively designating this file as a constraint. This was done so to ensure that the Honey Pot Hill Apple Orchard parcel received the lowest possible suitability rating.
2. Land Use: 0.50 – The Land Use file was given the highest weight of any parameter not considered a constraint. The land use file indicates the type of land found in a particular parcel. This information is vital to the understanding of where a rail route should be cited and therefore received a weight of 0.5.
3. Slope: 0.25 – The slope parameter is intended to eliminate very steep hills from locations determined to be suitable for ARRT establishment. Since a trail which does not require rigorous effort is more likely to attract casual bikers and commuters it is important that areas with small slopes are more suitable than those with large ones.
4. Roads: 0.25 – The roads parameter was created to limit the output of suitability on roads that are heavily trafficked. While sighting the trail along roads is not ideal it may be necessary at times and therefore it was important to assign levels of suitability to them.



<b>Parcels:</b> _____	<b>1.0</b>	Orchard: _____	5
Orchard: _____	1.0	Participation Recreation: _____	1
All Others: _____	No Data	Pasture: _____	7
<b>Landuse:</b> _____	<b>0.5</b>	Transitional: _____	5
Brushland / Successional: _____	8	Urban Public / Institutional: _____	10
Cemetery: _____	1	Water: _____	1
Commercial: _____	1	Water-Based Recreation: _____	1
Cropland: _____	7	<b>Slope:</b> _____	<b>0.25</b>
Forest: _____	8	0 – 4.9%: _____	10
Forested Wetland: _____	2	5 – 9.7%: _____	9
Golf Course: _____	1	9.8 – 14.6%: _____	8
Very Low Density Residential: _____	8	14.7 – 19.5%: _____	7
Low Density Residential: _____	6	19.6 – 24.4%: _____	6
Medium Density Residential: _____	4	24.5 – 29.2%: _____	5
High Density Residential: _____	2	29.3 – 34.1%: _____	4
Industrial: _____	6	34.2 – 39%: _____	3
Junkyard: _____	7	39.1% - 43.8%: _____	2
Mining: _____	7	43.9 – 48.7%: _____	1
Multi-Family Residential: _____	8	<b>Roads:</b> _____	<b>0.25</b>
Non-Forested Wetland: _____	1	Route 62: _____	2
Nursery: _____	7	Route 117: _____	2
Open Land: _____	10		

## B. Case Studies

As part of the effort to assist ARRT inc., in their development of the ARRT, the Eco-Mobility Team was asked to research existing bike trails in the US. The goal was to be able to provide ARRT Inc., with a set of summarized case studies that highlight the experiences of other communities and organizations in regards to the establishment of a bike trail system. These case studies illuminate how trail development yields rewards for communities in the social, environmental, and economic realms. These case studies may be used by the ARRT Inc. members to gain a broader knowledgebase of the impacts of developing trails within their community. Furthermore, intricate knowledge of trail development will allow ARRT to be sufficiently prepared to respond to objections to trail development by land owners and the community as a whole. Several case studies, researched by the team are highlighted below.

### 1. **Bicycling and Walking in the United States**

The Thunderhead Alliance, with a mission to create and strengthen bicycle and pedestrian advocacies, conducted a case study on bicycling and walking trends in the United States. Most cities and states surveyed have considerable goals for increasing cycling and walking and for increasing facilities for the purpose of cycling and walking. However, most cities and states answered “no” to whether or not they had spending targets for bicycle and pedestrian projects and most are yet to adopt a complete streets policy. This reflects a common goal of increasing cycling and walking, but also a common trend of not being proactive on the subject. In fact, states spend just 1.54% of their federal transportation dollars on bicycle and pedestrian projects, with the newest federal funding source being “Safe Routes to School” which is completely dedicated to bicycle and pedestrian safety. Cities average 1.23 miles of cycling facilities for every square mile of land, with denser cities generally having higher levels of

cycling and walking. Cities with more miles of cycling facilities per square mile generally have higher levels of cycling. (ABW, 2010)

The Thunderhead Alliance case study provided several interesting facts about cycling and walking that pertain to the case of Stow, Ma. Studies show that the lowest income levels represent the highest number of walkers and that walking levels steadily decline in higher income brackets. This is strongly related to the lack of transportation in low income brackets. With Stow being a relatively high income city, the level of walking is estimated to be low. To the contrary, there is almost no difference in *cycling* rates among different income levels. This suggests that cycling is generally a universal activity in which all income levels participate. Therefore, the number of cyclists is not likely to be low in Stow just because of its income level. There is a gap between non-white vs. white walking commuters. About 95% of residents in Stow are white and generally use transportation to commute. Also, male cyclists outnumber female cyclists 3 to 1 in the United States. Stow is about 50% male and 50% female.

In terms of safety, cyclists represent only 1.7% of all traffic fatalities in the United States. Walkers and pedestrians represent 11% of all traffic fatalities. With these rates and with Stow being a lightly populated city, safety is not an exaggerated concern. However, cities with the highest levels of walking also had the lowest pedestrian fatality rates. This statistic is relative to the fact that a higher level of walking typically means lower levels of driving, which reduces the number of pedestrian deaths. (ABW, 2010)

This study concluded with main points that can be related to Stow. There was a positive correlation between the built environment and the level of biking and walking. This concludes that if cycling and walking facilities are built, people will typically use them. Where levels of cycling and walking are higher, pedestrian safety is greater. Cycling and walking facilities allow



for less vehicle use and less chance of vehicular accidents. Also, higher levels of cycling and walking coincide with lower levels of obesity, high blood pressure, and diabetes. (ABW, 2010)

## **2. Rail Trails and Safe Communities**

Four separate studies between 1979 and 1997 concluded that rail-trails have an excellent public safety record and that they do not increase crime. Although crime is not prevalent in Stow, Ma., this is still an important issue regarding the construction of a trail. Most residents surveyed did not experience any problems adhering to the trail, and residents generally experienced much less crime than anticipated. Studies found that the rate of vandalism and burglary adjacent to the property was in fact well below average, and that the most significant problems were litter and noise. Most trails that prohibited motor vehicle use on the trails reported little to no crime at all. (Trace & Morris, 1998)

Out of 372 trails, only 11 trails in 1995 and 10 trails in 1996 experienced any type of major crime. The national rate of suburban muggings on rail-trails was found to be 102 per 100,000 inhabitants in 1995, and only one mugging was reported in 1996. The national rate of suburban aggravated assaults was found to be 293 per 100,000 inhabitants; three assaults in 1995 and two assaults in 1996. The national rate of suburban rape was 29 per 100,000 persons. No suburban trails reported rape in 1995 and 1996. There were no reports of murder on suburban trails in 1995 and 1996. Only one suburban trail reported a break-in to adjacent property in 1996. 3% of the suburban trails reported trespassing, 17% reported graffiti, 24% reported littering, and 22% reported damage. (Trace & Morris, 1998)

This study provided several recommendations for successful trails. First, the trail must be effectively designed. There should be minimal hiding places, especially with the elimination of overgrown vegetation. Security lighting and emergency phone in certain areas may be

necessary. Also, the trail must be kept clean in order to discourage irresponsible behavior and represent the trail as a safe place. Trail patrols are necessary in most cases. Clean-up and maintenance crews should be used regularly to keep the trail intact. The study suggested daily police patrols equipped to alert emergency services in case the unexpected happens. (Trace & Morris, 1998)

### 3. Pinellas Rail Trail Community Impact Study

The Pinellas County Rail Trail is a pedestrian and bicycle greenway that runs from



Tarpon Springs in northwestern Pinellas County, Fl to St. Petersburg in southeastern Pinellas County, Fl. The Metropolitan Planning organization (MPO) is planning an extension to the trail but there have been objections because of perceived problems

with property values, neighborhood privacy, and crime. After bringing in an outside consultant to conduct research about the problems that go along with extending the trail, the MPO concluded that none of the objections held any substantial weight, and in fact extending the trail would only further benefit the community. (PCMPO, 2001)

Residents along the trail all filed out a survey in order for the MPO to get the communities perception of the trail. All but five percent of people surveyed have used the trail, and most use the Pinellas Trail at least once a week. And those are using the trail all indicated

that they are walking now more than before the trail was open for use. Also recreation and fitness were the primary uses people gave for the trail. The most negative perceptions of the trail came from those who claimed to have never used it but because there were so few who said they have never used the trail, the overall perception of the trail is a positive one that brings both economic and social benefits. (PCMPO, 2001)

Economic benefits such as rise in property values, home values, and value of other homes within neighborhoods adjacent to the Pinellas Trail are all trends that continue to happen as trails and greenways open across the United States. In Pinellas County since the opening on the greenway in 1990 sales price for single-family homes near the trail rose faster than any other place in the county. Property data for Pinellas County indicates that trailside residential property values have increased by two to three percent more annually than any other countywide residential properties. The Pinellas Rail Trail has single handedly boosted the housing economy and allowed for more residents to the county to gain millions of dollars in tax revenues each year since the opening of the trail. (PCMPO, 2001)

Social benefits of the Pinellas Rail Trail include accessibility to many places in amongst the community, for example restaurants, stores, and natural resources like oceans, lakes, and rivers. Most homeowners when asked about social concerns the most noted was landscaping maintenance for the trail. Often crime, which was a big problem for the community when discussing expanding the trail, was never even mentioned. Crime data from Pinellas County indicated that crime rates along the trail were no higher than anywhere else in the county. Recently crime rates along the trail had actually been lower than county wide rates. The only areas along the trail that had higher than average crime rates were those near shopping malls. But the increased shoplifting rate at shopping centers along the trail is no different than shoplifting at



any other shopping centers in the county, it has no direct relationship to the trail its self.  
(PCMPO, 2001)

#### **4. The Virginia Creeper Trail**

The Virginia Creeper Trail (VCT) is a thirty-four mile trail that stretches across southern Virginia. It goes through several towns, including Demascus, VA, which is nicknamed “Trail Town, USA” because many major American trails, such as the Appalachian Trail, pass through it. The trail, named after a flowering vine, has had an immense impact on the region of southern Virginia. Supporters of the Virginia Creeper Trail claim it to be the best rail trail on the east coast. Our research of the VCT revealed some of the preferences of rail trail visitors while also highlighting some of the costs and benefits (including economic) of having a rail trail in your town. (VCT, 2009)



While the ARRT has been approved in most areas many residents still have concerns about the project. These issues include but are not limited to questions about land ownership, crime, and maintenance. The VCT has dealt with these very concerns from residents for years and was able to shed some light on the issues. (VCT, 2009)

In terms of land ownership, the VCT corridor, the thin strip of land which the rail trail is physically on, is owned partially by local governments and partially by the national government. The land which the corridor passes through is owned primarily by private landowners, which is similar to the ARRT. Another similarity I noticed between the VCT and the proposed AART

would be the demographic of expected users. One report I read detailed the results of surveys given to local users of the Virginia Creeper Trail. The demographic of the people who said they used the VCT regularly are very similar to the type of people living in Stow who would probably be using the trail. The study found that most trail users were people between the ages of 35-55 who came from a middle or upper middle class household. The population of Stow is generally older people and a new generation of upper-middle class families. The conclusion drawn here is that a rail trail in the Assabet river area, particularly Stow, could turn out to be very successful and popular. (VCT, 2009)

In a study of the VCT, local residents expressed their concerns about having the trail in their town. The most common concerns were “the 4 S's” as they put it, scenery, safety, structures, and surfaces. These are issues that many communities face at the proposal of building a trail. Residents want to know what kind of scenery and attractions the trail will offer, how safe the trail is in terms of both injuries and crime, and what surfaces will the trail be made of. In the case of the VCT all of these issues were successfully dealt with, but only after periods of turmoil.

In response to the concern of scenery the group overseeing the VCT has made numerous improvements. They have renovated the old train stations along the trail, in some places turning them into bathroom and refreshment destinations. This has worked well as it pays homage to the rail and its history while also providing important amenities that trail patrons want. The trail is also rich in terms of natural scenery as the VCT stretches through mountains and forests, at some points running along rivers and lakes.

Safety, another major concern for citizens, has been addressed by maintainers of the VCT. In terms of combating crime, which has not been a prominent problem on the VCT, two

interns from the Student Conservation Association of Virginia patrol the trail on bikes and help with maintenance. Trail maintenance is a huge concern for any rail trail group. The trails, including bridges and facilities, must be up kept for both function and safety. These concerns are exactly what VCT residents referred to as “structures” and “surfaces.” The VCT deals with maintenance with a variety of methods including government funding, volunteers, and donations. The trail has a large group of supporters, some of whom started the Virginia Creeper Trail Club. The club is a nonprofit group which gains donations in the form of memberships and provides extensive trail maintenance. In terms of members benefits the club hosts various functions and sends out newsletters and trail maps.

Not only has the VCT answered most of its doubter’s questions, it has provided locals with a variety of benefits, including economic. Locals named health benefits as one of the most important. Having free access to a well maintained scenic trail can be a huge incentive for residents to get outside and exercise. Related benefits named on the survey were enjoying nature and having a nice place to walk pets. A less tangible benefit described by residents along the VCT was the sense of community felt by participating in creating and especially in enjoying the rail trail. People, from all over have to come to use the VCT, bringing together a community to enjoy the natural benefits of the trail. (VCT, 2009)

Economically several communities and businesses have enjoyed success as a result of the VCT. Along the trail there are numerous eating establishments, historical attractions, bicycle rental companies, and campgrounds. Profits from each of these businesses are fed into the local economy. People living near the rail trails said they found these outdoor attractions very important to both the overall experience of the rail trail and the local economy.



## 5. Economic Benefits of Trails & Greenways

The evidence supporting the conclusions that trails and greenways improve local economies is growing more substantial by the day. All across the United States, trails and greenways are stimulating recreation and in turn increasing tourism spending. Systems of trails and greenways have become the focus of small communities tourist activities and have been able to jump start even the most stagnant economies. (RTC, 2010)

The San Antonio Riverwalk in Texas is a sought after example of how geographic resources such as unique urban environments can boost an economy. In this community they find that the Riverwalk greenway provides them with a key focal point to attract new residences and businesses. By linking you to popular stores, restaurants and other destinations the Riverwalk greenway in San Antonio is the anchor of the cities tourist economy. (RTC, 2010)

Social benefits of trails and greenways are increases in the natural beauty of communities, for instance New York's green space, Central Park. In addition to the increase in natural beauty trails and greenways have been able to raise property values, within 15 years of Central Park's completion, property values doubles and the city was able to raise millions of dollars in tax revenues. (RTC, 2010)

Trails and greenways also play an important role in preserving the environment. Benefits such as improved water quality and decreased flood damage have been linked directly to trails and greenways. By providing natural buffer zones greenways are able to protect streams, rivers and lakes from pollution run-off caused by fertilizers and pesticides used on farms and in local resident's yards. This attribute should not be understated given the ARRT proposed location

along the Assabet River. By using trails and greenways as a means of conservation, communities may prevent future environmental remediation expenses. (RTC, 2010)

### C. Case Studies Overview

The case studies highlighted above provide a glimpse at the enormous benefits cities and towns can expect with the establishment of a community trail system. These benefits are both tangible and intangible and occur in the social, economic and environmental realms, affecting not just those individuals who choose to use the trails but the entire community. Growth in revenue for local businesses, increased property values and decreased time spent on the housing market are a few of the economic benefits which accompany trail development. Promotion of healthy recreation, the averting of traffic related stress and accidents, and a greater appreciation for the natural beauty of the community are examples of the social implications of trail development. And finally, the protection of natural ecosystems and reduction of transportation related pollutants can be expected as positive environmental attributes associated with installing a trail system through a community.

### **III. Recommendations to Promote Sustainable Behavior**

Promoting sustainable behavior is a key factor behind the efforts to develop the ARRT. In fact the development of the trail itself is an act sustainable behavior promotion, as it eases facilitates the use of non automotive transportation within the town of Stow. However, in order to truly promote sustainable transportation, it is important to encourage citizens to use the trail for transportation once it has been established. Fortunately, there are numerous resources available to aid in trail use promotional efforts.

MassRIDES is an organization that promotes environmentally friendly transportation throughout the state of Massachusetts. They have numerous programs for a variety of situations

with one of their most popular programs being Safe Routes to School. This initiative is very well suited to towns like Stow and help to encourage trail use for practical purposes. The program works within schools to educate students, parents, and communities about the benefits of children biking or walking to school. By promoting the use biking and walking, these efforts would in effect promote the use of the ARRT. The program has multiple benefits which are described in the program's goals. "The Massachusetts Safe Routes to School program aims to reduce congestion, air pollution, and traffic conflicts newer participating schools, while increasing the health and mobility of school-aged children." These goals clearly align with those AART and the Eco-Mobility team. The MassRIDES Safe Routes to School program has been successfully implemented in dozens of towns across the state, including towns the size of Stow.

Another excellent source for methods to promote bike trail usage is the Metropolitan Area Planning Council. The MAPC in 2007, produced a regional bicycle plan to assist communities in promoting and planning for the increased use of bicycle within their towns. According to this plan, one of the best ways to ensure sufficient use of a trail, is to provide extensive bike parking along the trail and in the adjacent areas. This simple but effective technique can be vital to trail usage and can also receive funding support of up to \$3,000 through the MAPC Regional Bike Parking Program.

Finally, an innovative and highly effective way to promote bicycle use along rail trails is to provide the bikes themselves. Bike share programs are fully developed in several European countries, allowing everyone in the community access to bicycles. These programs provide public bikes and many parking stations. The bike's can be checked out by anyone and returned in any of the public parking stations. These systems can promote bicycle use on trails by locating

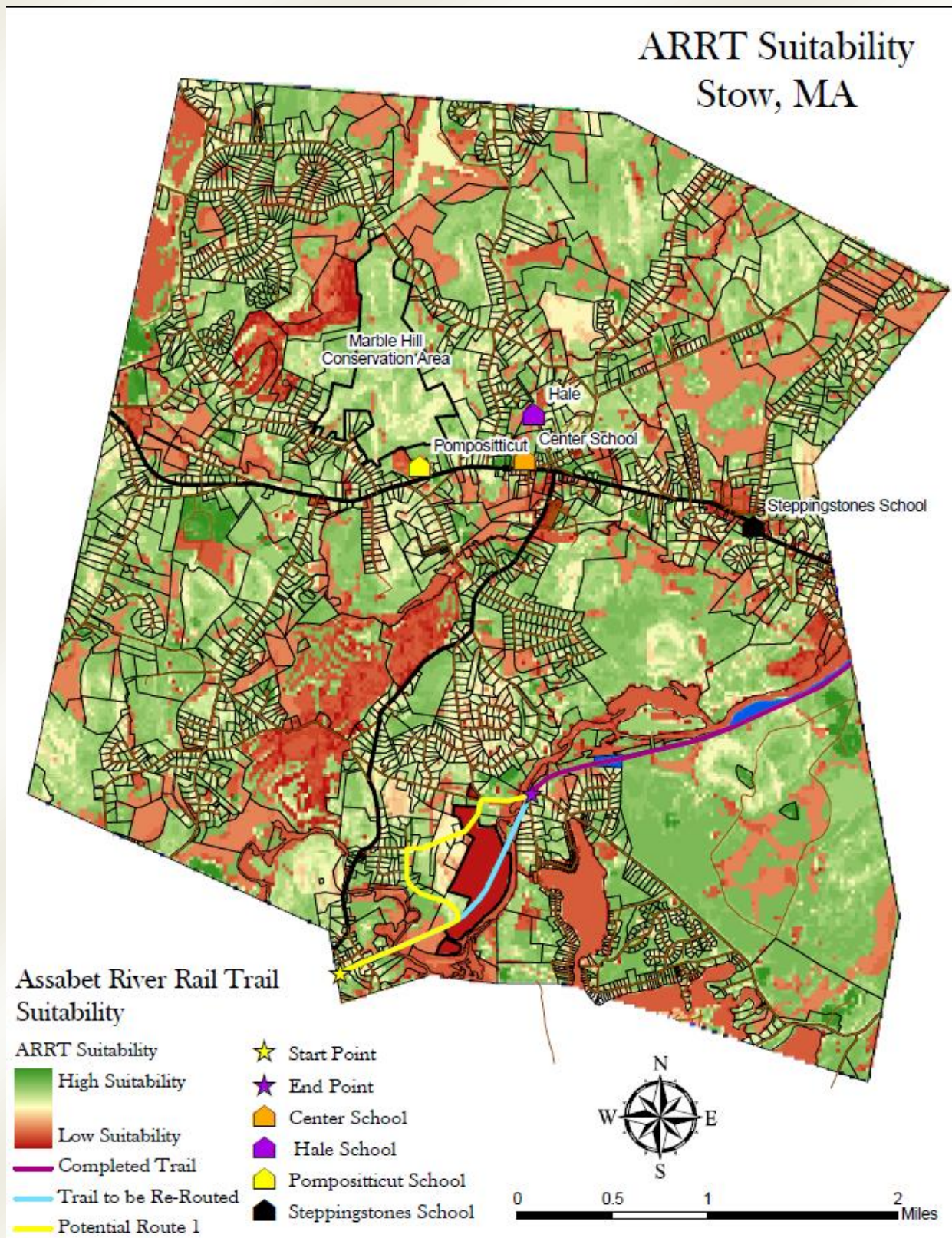


the stations along them. Most importantly, they eliminate the cost of owning and maintaining a bike, certainly encouraging many people otherwise would not use the trails to do so.

#### **IV. Conclusion**

In conclusion, increased bicycling is an effective way to limit the environmental impact of transportation within communities, promote healthy lifestyles and get from one place to another. The ARRT, provides an exciting opportunity for the Town of Stow, MA to take advantage of the benefits of having bicycling as a primary form of transportation. Furthermore, the completion of the Assabet River Rail Trail through Stow will allow the town's citizens the experience the three tiered benefits of trail development, social, economic, and environmental. The combined efforts of AART Inc., and the tools and recommendations provided by the Clark University Eco-Mobility team, will help the Assabet River Rail Trail development to move forward in the near future.

# Appendix A.





## Appendix B.

### Federal Funding Sources

Transportation Enhancements Program – Ten percent of federal Surface Transportation Program funds are set aside for the Transportation Enhancements program, which may be used for provision of facilities for bicyclists and pedestrians and preservation of inactive railway corridors (including the conversion and use thereof for pedestrian or bicycle trails). (MRPC, 2007)

Congestion Mitigation and Air Quality (CMAQ) Program - May be used for either the construction of bicycle transportation facilities and pedestrian walkways, or non-construction projects (such as brochures, public service announcements and route maps) related to safe bicycle use. (MRPC, 2007)

Regional Transportation Demand Management Program (TDM) Funded under the Congestion Mitigation and Air Quality program, the TDM program provides funds for efforts to change the behavior of motorists, encouraging them to use alternatives to driving alone and supporting strategies that promote the use of these alternatives. (MRPC, 2007)

Safe Routes To School (SR2S) - SR2S is a new federal program inaugurated under SAFETEA-LU. States are required to hire an SR2S coordinator to fund projects to increase bicycling and walking to primary and middle schools. At least 70% of funds must be used for infrastructure projects, while 10-30% may be used for educational and promotional activities. (MRPC, 2007)

Recreational Trails Program (RTP) - RTP funds may be used to create trails for use by motorized and/or non-motorized users. This federal program is administered by DCR in partnership with the Massachusetts Recreational Trails Advisory Board and the Massachusetts Highway Department. (MRPC, 2007)

Scenic Byways Program - (Administered through MassHighway) may be used for planning activities and promotion of tourism on designated routes. (MRPC, 2007)

National Park Service Rivers and Trails Assistance Program - This program offers technical assistance (not direct funding) to communities in planning trails and greenway projects. (MRPC, 2007)

Intermodal Transportation Centers Capital Improvement Program – EOT provides funding leveraging federal, state, local, and private funding for the development of intermodal transportation centers. EOT contributes the 20% federal match required. Regional Transit Authorities are eligible to apply. (MRPC, 2007)

Community Development Block Grant Funds – These are Federal and State funds administered by the Department of Housing and Community Development (DHCD). Several

programs exist and eligibility varies from one community to another depending on the socio economic conditions of the municipality. However, DHCD will fund infrastructure projects. (MRPC, 2007)

### **Other Funding Sources**

Department of Conservation and Recreation (DCR) – DCR, under its responsibilities for the care and oversight of the natural resources, can directly acquire land and property interests for trail projects. (MRPC, 2007)

DCR Recreational Trails Grants Program – This program is administered by DCR and EOT. Grants up to \$50,000 are available for trail development activities. Larger grants may be available for projects of regional significance. (MRPC, 2007)

DCR Trails and Greenways Demonstration Grants Program - DCR provides grant awards to municipalities, non-profits and regional planning agencies to support innovative projects which advance the creation and promotion of greenway and trail networks throughout Massachusetts. Grants range from \$5,000 to \$10,000. (MRPC, 2007)

Transit Oriented Development Infrastructure and Housing Support Program – This program is a joint effort of EOT and the Office for Commonwealth Development. It provides grants of up to \$500,000 for bicycle and pedestrian improvements within 1/4-mile of a transit station. (MRPC, 2007)

Division of Conservation Services Self Help Program - reimburses up to 90% of the total project cost for the acquisition of land for conservation and recreation purposes. (MRPC, 2007)

Division of Conservation Services Urban Self Help Program - reimburses up to 90% of allowable costs towards the acquisition of land, undertaking of new construction or rehabilitation of land for park or outdoor recreation purposes. For communities with a population of at least 35,000. (MRPC, 2007)

Community Preservation Act – This program allows communities to collect a surcharge on local property taxes (if approved by local vote) to fund open space acquisition, affordable housing, historic preservation, and recreational projects. The CPA allows extensive local control and flexibility and can provide a considerable funding source in many communities. (MRPC, 2007)

Public Works for Economic Development (PWED) – Administered by EOT. This program funds infrastructure related to large-scale commercial development and can be a means of constructing bike and pedestrian facilities in conjunction with roadway work. Grants are normally limited to \$1,000,000. (MRPC, 2007)

Regional Transit Authority Capital Improvement Program – EOT provides funding through this program for equipment used by Regional Transit Authorities. (MRPC, 2007)



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