Reading Massachusetts

Advisory Committee on Cities for Climate Protection Program (ACCCP)

Reading Neighbors' Climate and Energy Campaign (Reading NCEC)

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Reading Massachusetts Climate Action Plan

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Links to Sections in this Document

ACCCP Mission Statement

The Advisory Committee on the "Cities for Climate Protection Program" is an official town advisory committee, comprised of concerned citizen volunteers seeking to achieve environmental, economic and societal sustainability by raising public awareness and influencing the community, including its government, to reduce detrimental environmental impacts and energy expenditures.

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Global Warming

This Action Plan has been written to outline many opportunities for Reading and its citizens to minimize their contribution to Climate Change. It will take the concerted efforts of many people, not just in Reading, but also across the nation and the world to address this issue. But as we work together, city by city, town by town, these actions can make a difference.

Climate change is a topic that has been in the news a lot recently, but the issues and the concern have been building over several decades. Climate is affected by many complex variables, and some of those variables include gases in our atmosphere. If you look at a satellite picture of earth at night, you see millions upon millions of lights, lit up around the globe. All of those lights and, indeed, much of human activity, contribute gases to the atmosphere because we burn fuels to light the lights (and run our cars, and heat and cool our homes, etc.). Two of the major components of the gases our activities generate are carbon dioxide and methane. By burning fuels (from coal and oil, or "fossil fuels"), we are taking stored carbon and releasing it into the atmosphere in the form of carbon dioxide in quantities unseen for hundreds of thousands of years.

Carbon dioxide and methane are part of a group of compounds known as greenhouse gases (GHGs) because they have an effect in the atmosphere of capturing the sun's heat and re-emitting it back into the atmosphere, like a greenhouse that turns the sun's shortwave radiation into longer heat waves that are trapped in the greenhouse and help to warm the plants. But greenhouses have vent windows that let any extra heat out, whereas the gases in our atmosphere are trapped and so continue to emit the heat they have trapped. The warming buildup of greenhouse gases is called the greenhouse effect. The burning of fossil fuels to power human activity has contributed extra greenhouse gases to such an extent that the result appears to be changing the climate conditions that we have been familiar with for the past couple hundred years.

The predicted result of climate change, for a temperate climate such as Reading's, is to warm our average temperature so that our climate may be more like that of North Carolina, with a vast dying off of existing flora and fauna as these conditions are not conducive to the types of plants and animals that live here now. An additional effect predicted is bigger storms and longer droughts; in short: less stability of weather conditions. Our infrastructure has not been designed to handle these large storms, nor the long droughts predicted in between. Therefore, we seek to minimize our emissions of greenhouse gases to avert the most severe effects of climate change by finding ways to use less fossil fuels.

The recent co-recipient of the Nobel Peace Prize, the Intergovernmental Panel on Climate Change, claims that we can avert the most serious consequences of climate change with the mitigation of approximately 50-85% of year 2000 level greenhouse gases by 2050.[3]

Origin of the ACCCP

Recognizing this issue and seeking a program to help the Town develop actions to address our impacts, Reading Town meeting passed an instructional motion in April 2005 to ask the Board of Selectmen (BoS) to investigate a program sponsored by the ICLEI organization (Local Governments for Sustainability, formerly the International Council for Local Environmental

Initiatives) called Cities for Climate Protection. An ad hoc committee was set up, and upon its recommendation, the BoS created the Reading Advisory Committee on Cities for Climate Protection (ACCCP) and joined ICLEI's program.

The Board of Selectmen (BoS) Policy established the Advisory Committee on Cities for Climate Protection in March of 2006 to advise on implementation of ICLEI's CCP Campaign including:

- Advising the BoS on matters of policy related but not limited to the CCP Program for use with the Town of Reading,
- The 5 milestones of the CCP Program, and to make recommendations to the BoS, the Town Manager and other bodies of the Town on measures appropriate to implement such a program.

After forming, the ACCCP developed our Mission Statement and the following goals and methods:

Goals set by the Committee include:

- Reduce Green House Gas Emissions in order to slow global climate change.
- Improve air quality to enhance public health.
- Foster responsible stewardship of the local and global ecosystem to ensure its longevity
- Foster the conservation of energy sources to preserve them for future generations.
- Reduce the energy expenses of the town, residents and businesses to improve our standard of living and meet our goals.

Methods - to be used to meet goals include:

- Implement the 5-milestone program of ICLEI's Cities for Climate Protection Program to organize and formalize our efforts.
- Encourage the use of sustainable energy sources and modes of transportation to reduce our reliance on fossil fuels.
- Educate our citizenry with a strong public awareness campaign that involves town government, the schools, the media, and various public forums.
- Influence the town's bylaws, including zoning, the town's master plan and other proceedings to formalize sustainable improvements.
- Encourage state and federal officials to take a more active role in climate protection.
- Partner with local business to increase effectiveness and cooperation.
- Reach out to neighboring communities to assist them to establish similar efforts.

ICLEI's CCP Campaign

The Cities for Climate Protection Campaign (CCP) is a program sponsored by the ICLEI organization that enlists municipalities to enact Local Climate Action Plans to reduce energy consumption and associated greenhouse gas emissions.

The 5 Cities for Climate Protection Program Milestones are:

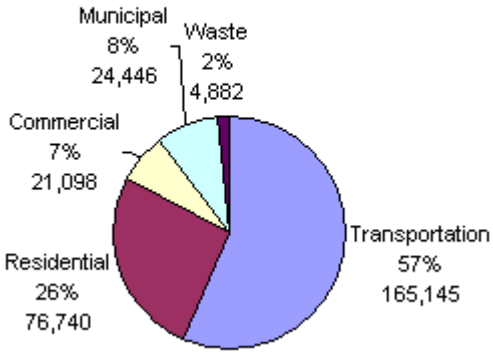
1. *Conduct a Greenhouse Gas Emissions Analysis*

   This analysis and inventory is used to inform this Action Plan.

   The Greenhouse Gas (GHG) Emissions Inventory and Analysis is an audit of the activities causing or releasing GHGs, and a projection of how much these activities are likely to grow by a target year, using ICLEI software for the data entry and analysis. The full analysis

consists of a baseline inventory and a target year forecast of GHG emissions for both community wide sources and local government facilities and operations. ICLEI's software performs the analysis on commercial, residential and municipal energy use, fuel use, transportation and waste. Knowing where the bulk of emissions are coming from – whether it's vehicles, streetlights, commercial electricity use, residential heating, or landfill waste, for example – allows the targeting of projects and programs to reduce emissions effectively.

Reading's analysis indicated that the transportation sector (cars and other vehicles traveling in and through Reading) is the major source of emissions for the Town of Reading accounting for 57% of emissions generated in town, or 165,145 tons annually (See Figure 1). These findings were based on data spanning from 2000 to 2005 and were generated using the ICLEI CCP software.



Total: 292,311 tons CO_2

Figure 1
CCP Emissions Inventory
Annual Reading CO_2 Emissions (tons)

Transportation is such a large contributor mainly because there is very little manufacturing in Reading and because Reading lies at the juncture of two major highways, Routes 93 and 95, and suffers from cut-through traffic. Reading also has a train station, which draws commuters near to the center of town.

2. *Set a Reduction Target*

   The reduction target is the specific GHG emissions reduction goal that the Town of Reading should aim to achieve by a designated year. It is usually expressed as a percentage reduction below the quantity of emissions released in the baseline year.

   In early 2007, the ACCCP recommended a target of 10% reduction by 2012, based on review of the Regional Greenhouse Gas Initiative[2].

3. *Develop a Local Climate Action Plan*

   This document is the Reading Climate Action Plan, containing recommendations to the Town of Reading, on Actions town government and citizens can take aimed at reducing Reading's contribution to Green House Gas emissions responsible for anthropomorphic climate change.

4. *Implement the Local Action Plan*

5. *Monitor Progress and Report Results*

Organization of this Action Plan

The Actions in this document are broken up into the following sections:

Modes of Transportation – Actions that promote modes of transportation other than single occupancy vehicles

Vehicle Fuel Efficiency – Actions that promote vehicle fuel efficiency either through vehicle selection or operation

Energy & Buildings – Actions that promote energy efficiency and the use and development of renewable energy

Education & Outreach – Actions that educate people about climate change and steps they can take to reduce their contribution emissions.

Lawns, Trees & Water Conservation – Actions that educate people about the benefits of trees and water conservation and promote environmentally sustainable practices for maintaining lawns and trees.

Awards & Recognition – Actions to reward and promote local environmental business leaders.

Each of the above sections is further broken up into the following two subsections:

Municipal Any action through which Municipal emissions are reduced (via town buildings, vehicles or employees) or by which the town has an opportunity to set an example as an environmental leader. In addition, any action that is completed by a Municipal product, such as a by-law or ordinance, even if the action does not reduce Municipal emissions but instead reduces emissions in the residential, commercial or school sectors. Below is a complete list of all Municipal Actions.

Community Any action through which residential, commercial or school-generated emissions are reduced. Below is a complete list of Community Actions.

A table is included at beginning of each grouping indicating which town groups are needed for the implementation of each action. For instance, the Non motorized Transport to School Program needs involvement from the Town of Reading, in this case the Police Department, the ACCCP and from the schools.

Each action in this Action Plan is introduced with a summary table listing the key implementers, emissions assumptions, related actions and target audience. The action descriptions begin with a short description of why the action is proposed, particularly what the link is to emissions reduction. Background information sometimes accompanies the motivation to clarify ongoing efforts, or past history. Specific recommendations are included, and emissions reductions will be calculated. Implementation steps are listed along with the departments, committees or positions that the ACCCP envisions would be key to implementing the actions. Because transportation contributes such a large percentage to emissions, the motivation for transportation emissions reductions is presented in the following section.

Webpage references are cited using the Council of Science Editors style (CSE)[1].

References:

1. Council of Science Editors. Publications; Citing the Internet: Formats for Bibliographic Citation [Internet]. Council of Science Editors [cited 2008 JAN 16]. Available from: http://www.councilscienceeditors.org/publications/citing_internet.cfm .

2. Memorandum of Understanding, Scheduled Reductions [Internet]. 2005 Regional Green House Gas Initiative [cited 2008 Jan 29] 3 p. Available from: http://www.rggi.org/docs/mou_12_20_05.pdf .

3. Climate Change 2007: Synthesis Report. Summary for Policy Makers. Table SPM.6., Category I [Internet]. 2007 Intergovernmental Panel on Climate Change. Fourth Assessment Report [cited 2008 Jan 30] 21p. Available from: http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf .

Status	**Municipal** *How the Town Can Reduce Emissions & Set An Example*	Town	RMLD	ACCCP	School
In-Process	Police Units on Bicycles	x		M	
Pending Funding	Municipal Employee Commute Program	x		x	
Future	Increased Safety for Bicyclists and Pedestrians	x		x	
Future	Mixed Use and Transit Oriented Development	x		x	

Status	**Community** *How Schools, Residents and Business Owners Can Reduce Emissions*	Town	RMLD	ACCCP	School	Other
In-Process	Non-motorized Transport to School Program	x		x	x	
In-Process	Walkable Reading			x		x
In-Process	Local and Regional Trails	x		x		x
Pending Funding	Looped Bus Service	x		x		
Pending Funding	Community Ride-Share Program			x		
Future	Public Transportation Expansion			x		

Introduction to Modes of Transportation

Motivation for Transportation Emissions Reduction

As noted in Figure 1 (Emissions Inventory), transportation makes up by far the largest chunk of GHG emissions in Reading. The freedom, convenience and affordability of vehicle travel have made use of the automobile a standard way of life in all of America. The extensive highway and roadway system created in our country in the 20th century allows people to travel from their front door to nearly any destination in the country. But such reliance on the automobile comes with some serious consequences.

- "Today, the U.S. transportation sector accounts for one-third of all U.S. end-use sector CO2 emissions, and if projections hold, this share will rise to 36 percent by 2020"[1].
- World oil prices are increasing and we have a growing dependence on insecure oil imports.
- Traffic congestion and even gridlock have become a part of our daily lives. It is estimated that 2.3 billion gallons of gas are idled away by each year while people are stuck in traffic[2]. Time spent stuck in traffic wastes not only time but fuel and money.

- The automobile contributes to a society of social isolation, since people tend to commute individually in their own cars. People who are unable to drive, such as the elderly or infirm, have particular challenges to commuting, which can lead to their immobility and feelings of social isolation[3].

Transportation in Reading

In Reading, transportation accounts for 57% of Green House Gas emissions (see Figure 1) (this number does not include the I-93/95 Interchange itself).

Traffic in Reading is comprised of:

- Town Traffic — Reading residents traveling around town for business, recreational or social purposes
- Local Traffic — Residents of neighboring towns traveling around or thru Reading for business, recreational or social purposes
- Thru Traffic — Non Residents traveling through town to get to or from the highway or to avoid traffic at the interchange
- Regional Traffic — Reading Residents & Non Residents going from town to town. (Reading shares borders with Woburn, Wilmington, North Reading, Lynnfield, Wakefield and Stoneham.
- Highway Traffic — People traveling alongside Reading on I93 or I95 – (not included in the analysis)

Motivation for Public Transportation

This plan acknowledges that Reading will not be able to solve transportation emissions by itself. Solving gridlock in one location generally pushes it somewhere else. State highway funds tend to be allocated to highway infrastructure that does not help solve the number of cars generating emissions, although it can sometimes alleviate traffic jams. However, in the last decade, traffic jams have grown more prolonged and extend further along the highways bordering Reading. There are at least two ways to decrease emissions from traffic including switching to automobiles with lower emissions and increased use of public transportation.

New automobile designs that use cleaner burning and alternative fuels can help solve the problems we face with emissions from automobiles but increasing public transportation is key to our transportation solution. Commuter rail trains and subway cars require far less infrastructure per commuter than do automobiles. Furthermore, public transportation can help improve the social infrastructure of our town by enabling people to congregate as they wait for the train or bus and converse during their travel.

Unfortunately, the current state of public transportation in our country does not represent a realistic alternative to automobile use. Public transportation routes are not extensive enough to allow people easy access to the system and fare hikes have excluded many would-be commuters. The schedules for commuter rail, subways and buses can be an inconvenience that excludes would-be-users as well. Improvements are needed to our public transportation system so that people will consider it a practical alternative to the automobile. Affordable, extensive, reliable and clean public transportation can reduce our reliance on the automobile and can strengthen our social infrastructure.

In Reading, scheduled commuter rail and bus service is infrequent except during commuting hours, making this mode of travel impractical for many would-be users of public transportation.

Transportation Emissions Reduction Strategy

As noted, Reading alone cannot mitigate Reading's transportation emissions. Reliance on the automobile as the primary source of transportation is a national issue and therefore requires national and regional solutions. Although Reading cannot mitigate all the emissions from transportation that affect it, there are some measures the town can take, and recommendations are linked from the following bullets.

- Municipal Actions: Those aimed at reducing the emissions of town vehicles and employees in order to set an example for the rest of the town (or to facilitate Community Actions).
- Community Actions: Those aimed at reducing the transportation related emissions of town residents, schools and businesses:
- Outreach: Reading must reach out to other groups who may be struggling with the same issues that we are, in order to better understand regional problems and brainstorm for large-scale solutions.
    - CCP Network – ICLEI's Cities for Climate Protection Program Towns
    - MCAN - Massachusetts Climate Action Network
    - MAPC - Metropolitan Area Planning Council
    - MBTA MAPC Awareness for Regional Traffic Problems – Massachusetts Bay Transportation Authority
- Advocacy: Reading must make appeals to our state and federal representatives to bring about the regional solutions needed.

References:

1. Greene, David L (Oak Ridge National Laboratory); Schafer Andreas (Massachusetts Institute of Technology). Reducing Green House Gas Emissions from U.S. Transportation [Internet]. Pew Center on Global Climate Change; May 2003 [cited 2008 Jan 31]. iii p. Available from: http://www.pewclimate.org/docUploads/ustransp.pdf .
2. Dow, Kirstin and Thomas Downing. The Atlas of Climate Change. Berkeley, California: University of California Press, 2006.
3. Bailey Linda (Surface Transportation Policy Project April 2004). Aging Americans: Stranded Without Options [Internet]. Public Transportation: Wherever Life Takes You [cited 2008 Jan 30]. Available from: http://www.publictransportation.org/reports/asp/aging_stranded.asp .

Municipal Modes of Transportation Actions

Police Units on Bicycles

Key Implementers	Police Department, ACCCP	
eCO2 Savings per Unit	TBD	Modes of Transportation
eCO2 Savings in 2012	TBD	Municipal

Related Actions	Increased Safety for Bicyclists and Pedestrians Non-motorized Transport to School Program Walkable Reading Local And Regional Trails	Bicycles
Target Audience	Police Department	

Motivation for Action:
The Reading Police Department's Bike Patrol, established in 1991, has resulted in many benefits for the town. Moving police out of cars and onto bicycles reduces municipal fuel use and harmful emissions. Police bicycle patrols also cut down on crime because bicycles are more difficult for criminals to spot than cruisers or motorcycles, and can access areas that are inaccessible to cars. Bike Patrols are good for public relations at sporting events and special town celebrations such as Friends and Family Day. Police on bikes are more approachable and provide visible evidence that bicycling is a legitimate option for transportation. In addition, police cyclists lead by example, promoting helmet use and bike safety to the community and its children.

Recommendations:
The Reading Police Department should continue and augment their use of bicycles for regular patrols any time that weather permits.

In addition, the police department should plan to have officers on bicycles during visible town events such as Friends and Family Day, the annual Tree Lighting, summer concerts and parades.

Emissions Reduction Assumptions:
TBD

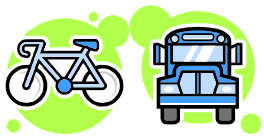
Implementation Strategy:
Recognize Existing Efforts, Encourage Increased Efforts

Implementation Steps:

	Key Implementer	Implementation Step	Time Frame
1.	ACCCP	Contact Police Dept. to see how the program is going. Offer to help if needed.	TBD
2.	ACCCP	Publicize efforts made by Police Dept. in ACCCP Communication Tools.	Ongoing

References:
1. Local Action Plan on Climate Change, Hybrid Gas/Electric Vehicles in the Town Fleet [Internet]. 2002 Feb. Town of Brookline MA [cited 2005 Mar 1]. Available from: http://www.townofbrooklinemass.com/Conservation/PDFs/ClimateActionPlanTOB.pdf .

Municipal Employee Commute Program

Key Implementer	Town of Reading	
eCO2 Reduction per Unit	TBD	Modes of Transportation Municipal Employee Rideshare
eCO2 Reduction in 2012	TBD	
Related Actions	Internet-Based Rideshare Program Looped Bus Service Walkable Reading Increased Safety for Bicyclists and Pedestrians	
Target Audience	Municipal Employees	

Motivation for Action:
"Today, the U.S. transportation sector accounts for one-third of all U.S. end-use sector CO2 emissions, and if projections hold, this share will rise to 36 percent by 2020"[1]. Based on our Emissions Inventory, we know that transportation emissions account for 57% of the total emissions generated in Reading.

Although it's likely that some Reading municipal employees already use means other than single-occupancy-vehicle commuting to get to work, establishing a formal program will encourage more employees to find ways for "green" commuting. In addition, the town has an opportunity to set an example to residents and businesses by enabling and rewarding its employees who choose means other than single occupancy vehicles to commute to work.

The Metropolitan Planning Organization (MPO) has funding for a grant to develop transportation demand management programs (e.g., a commuter carpool program). These funds are available for FY 09.

Recommendations:
The Town of Reading should implement a "Green Commuter Program" in Reading in an effort to educate its employees about the financial and environmental benefits of commuting using means other than single-occupancy-vehicles, such as ride-sharing, walking or biking. A "Green Commuter" should be an employee who uses these modes of travel for commuting at least 25% of the time.

The town should develop and submit an application to the MPO to develop a Transportation Management approach to help with employee commuting. This can be combined with a community program.

Some aspects of the plan could include but are not limited to:

- Each town building should have its own appointed commuter transportation contact who would oversee the implementation strategies among building employees.
- Each building should have a commuter bulletin board that would display commuter transportation needs. The board should contain tips for Green Commuters, such as insurance company rate reductions for motorists who drive fewer miles during rush hours.
- Where possible, establish a "work from home" program for those employees who have jobs that can be done remotely (e.g. once every 2 weeks implemented on a trial basis).
- A ride home should be guaranteed to Green Commuters who may need to work late.
- Each town department or building should provide a means of transportation that Green Commuters can use during the workday for errands. Such a vehicle could perhaps be a ZipCar type option.
- Encourage employees to make use of the Community Ride-Share Program when it becomes available.

The town should explore ways to reward for Green Commuters, for example:

- Privileged parking, where possible (e.g. Reading High School)
- A free town compost sticker for employees who live in town
- Other

Implementation Strategy:
Education, Incentives, Support Program

Implementation Steps:

	Key Implementer	Implementation Step	Time Frame
1.	Town of Reading	Develop and Implement a Green Commuter Program	TBD

References:

1. Greene, David L (Oak Ridge National Laboratory); Schafer Andreas (Massachusetts Institute of Technology). Reducing Green House Gas Emissions from U.S. Transportation [Internet]. Pew Center on Global Climate Change; May 2003 [cited 2008 Jan 31]. iii p. Available from: http://www.pewclimate.org/docUploads/ustransp.pdf .

Increased Safety for Bicyclists and Pedestrians

Key Implementers	Town Manager, Town Engineer, Town Planner, Police Department, DPW, ACCCP	
Potential Proponents	Walkable Reading PTOs, Department of Public Works, civic associations, local politicians, and businesses	Modes of Transportation Municipal
eCO2 Reduction per Unit	TBD	Walking & Biking

eCO2 Reduction in 2012	TBD	Safety
Related Projects	Non-motorized Transport to School Program Walkable Reading Local And Regional Trails Police Units on Bicycles	
Target Audience	Town Residents, Area Residents	

Motivation for Action:
A major barrier to increasing bicycle and pedestrian travel is a perceived lack of safety for these travel modes. Removing this barrier will make pedestrian and bicycle travel a practical alternative to vehicle travel for daily business and recreation. Reducing vehicular travel will reduce harmful emissions and air pollution.

Increasing safety will assist the Safe Routes to School program sponsored by the school and police departments.

Increasing safety for alternate means of transportation also supports the town's Master Plan, (dated 2005, Chapter 10, page 117-118) which recommends promoting alternate transportation and facilitating employee non-automobile access to and from Downtown and the Depot. Goal 4, of Chapter 10 of the Master Plan calls for improving and extending curbs and sidewalks and bicycle paths, where appropriate and consistent with town standards. "Develop a comprehensive network of foot, bicycle, and open-space pathways ("greenways") throughout the town, providing adequate levels of safety and convenience; develop a sidewalk improvement priority list, complete all needed sidewalk extensions and improve crossings in areas where children safety is a concern; and develop the town's bicycle network and make the map broadly available to Reading residents."

Recommendations:

- The town should continue efforts to increase bicycle and pedestrian safety and security including:
  - Marked bike routes throughout the town designating the safest routes to key destinations such as schools, retail centers, and the train station.
  - New or improved bicycle routes on all town road construction projects.
  - Multi-modal** accessible sidewalks and crosswalks and upgraded pedestrian signals and timing at controlled intersections on all town road construction projects.
  - Countdown signals with a leading pedestrian interval where appropriate (special consideration for longer pedestrian intervals should be given near the senior center, senior housing, schools, and intersections with long pedestrian crossings such as Main/Lowell/Pleasant Streets).
- Audible signals should be considered during upgrades to accommodate the visually impaired.
- Secure bicycle parking should be made available where demand exists, and when possible, in visible and convenient locations relative to building entrances and other key destinations at multi-modal exchange points.

- Safe and convenient access and amenities for bicyclists and pedestrians should be required on all new development projects. Existing businesses should be encouraged to improve amenities.
- Expansion of the town's sidewalk and crosswalk network with Thermoplastic[1] Traffic Stripes should be completed where possible. The sidewalk master plan includes plans for new sidewalks, gap infill, handicap access and reconstruction.
- Town policy should be reviewed to ensure that requirements exist for snow and vegetation clearance on all sidewalks, with enforced monetary penalties. A phone number should be publicized for reporting sidewalk issues such as snow, ice, encroaching vegetation, and "vertical displacement" (such as when tree roots push up the sidewalk).

The town should take the following steps to calm traffic:

- Follow up on Master Plan (Chapter 10) recommendations in Goal 2 to promote traffic calming in residential neighborhoods and to protect Reading's civic identity. Use traffic calming as a means of promoting safety and relieving significant cut-through traffic on neighborhood streets.
- Engineer roads during reconstruction projects to reduce traffic speeds, improve traffic safety, and retain pedestrian-scale and child-friendly neighborhoods.
- Use municipal tree planting programs to increase shading on streets, a well know traffic calming measure.
- Consider raised crosswalks at sidewalk level (vertical displacement) in areas of heavy pedestrian traffic as drainage patterns allow. Use patterned asphalt for crosswalks that contrast with the street and/or use vertical streetscape elements (trees, etc) to make streets look narrower.

To encourage multi-modal travel and cooperative relationships between bicyclists, pedestrians, and drivers, the town and Police Department should educate people about the rights and responsibilities of each mode of travel through the following channels:

- Town-sponsored and private driver education training programs.
- Excise tax mailings, high school parking permits, and resident permit renewals.
- Town sponsored programs for local employees and employers.
- MBTA publications on "Bikes on the T"

The town should provide GIS support to assist ACCCP and Walkable Reading efforts to create biking and walking maps.

Definitions:
*Thermoplastic- a compound extruded or mechanically sprayed on the pavement that cools to pavement temperature. When combined with glass spheres, it produces a reflective pavement marking.[1]

**Multi-modal travel refers to pedestrian, bicycle, American Disability Act (ADA) and vehicle.

Implementation Strategy:
Infrastructure, Information Campaign, Signage

Implementation Steps:

	Key Implementer	Implementation Steps	Time Frame
1.	ACCCP Town Engineer	Propose ways that a redesigned West Street could best accommodate bikers and pedestrians as well as vehicles. Consult with the West Street District Historic Commission and Walkable Reading.	TBD
2.	ACCCP	Become familiar with the state code on multi-modal safety requirements and look for opportunities to improve the town's level of safety.	TBD
3.	ACCCP	Review the Master Plan and find out more about this process and see how we can be helpful.	TBD
4.	ACCCP	Work with the School and Police Departments' Safe-Routes-To-School program to publicize their efforts in ACCCP Communication Tools	Ongoing
5.	ACCCP, Town Planner	Work with the town and Walkable Reading to create a map showing the safest bike routes in town.	TBD
6.	ACCCP, Town Manager	Investigate the possibility of a volunteer bike route signage effort.	TBD
7.	Town Manager, DPW, Town Engineer, Town Planner	Work with appropriate departments to implement bicycle and pedestrian safety improvements and traffic calming measures.	Ongoing
8.	Police Department, ACCCP	ACCCP should offer assistance in developing a safety information sheet for the Police Department to disseminate to the public about bike and pedestrian safety and multi-modal travel.	TBD
9.	ACCCP, Town Manager	ACCCP should draft a letter for submittal by the Town Manager, to the T asking for more bike racks at the train station depot.	TBD

References:

1. The Source, Online Construction Information for Georgia DOT, Section 653—Thermoplastic Traffic Stripe [Internet]. Georgia Department of Transportation [cited 2008 Jan 14]. Available from: http://tomcat2.dot.state.ga.us/thesource/pdf/specs/ss653.html .

Mixed Use and Transit Oriented Development

Key Implementers	Town of Reading, ACCCP	
Potential Proponents	CPDC (Community Planning & Development Commission)	Modes of Transportation

eCO2 Savings per Unit	TBD	Municipal
eCO2 Savings in 2012	TBD	Zoning
Target Audience	Town of Reading, Building Contractors, Local Businesses	
Related Action	Town By-Law & Master Plan Review	

Motivation for Action:
There are many connections that can be made between land use patterns and climate change. Development and zoning can be designed to minimize climate impact by permitting a variety of community activities, locales and services to co-exist in close proximity. This reduces the use of single occupancy vehicles to run errands and commute. Transit oriented development brings potential riders closer to transit facilities rather than building away from population centers and making people more dependent on roads and automobiles. Put simply, if people live in close proximity to employment, retail, services, public transportation depots and entertainment, they won't need to drive as much. Fewer miles driven results in less greenhouse gas emissions.

Two ways to decrease the need for driving are both addressed in the town's master plan – mixed use zoning in the downtown/depot area and small commercial nodes in neighborhoods to meet local needs. The first of these is addressed in one of the 20 objectives listed in the introduction to the Master Plan, objective 5, "to introduce mixed-use zoning in the Downtown and around the Depot". This is further described in Chapter 5, goal 4: "*Mixed-use developments in downtown can maximize the use of valuable space by allowing for compact developments. These developments of increased density are easier to sustain themselves by providing for various options of marketable units, from low rent to high end. In addition, the downtown itself can be revitalized after business hours, with downtown residents in less need of a second car due to the proximity of the Depot*."

Another beneficial aspect of mixed use and transit-oriented development is to reduce the need for excess parking, associated with the following benefits:

- increased visual and acoustic privacy
- decrease in local temperature from decreasing the heat island effect, which is a side effect of parking lots
- increased adjacent property values where there is more green space
- decrease in water pollution and storm water flooding from parking areas
- increase in the potential for amenities such as open space

On a larger scale, excess parking contributes to traffic congestion and, ironically, encourages more car ownership. Generous parking requirements encourage automobile dependency and urban sprawl.

The second way to reduce the need to drive in town is addressed by Chapter 6 of the Master Plan, Goal 4, which encourages small commercial nodes in neighborhoods. The Master Plan states: "such nodes should, however, be considered so as to not disrupt the neighborhoods or detract from the central downtown vitality".

Background:
According to Reading's Master Plan, downtown Reading is characteristic of the network of compact, walk-able, mixed-use centers and neighborhoods in older cities and towns scattered

throughout New England. Many of these centers were historically connected by rail transit and still reflect land use patterns that were enabled by these strong connections. Reading's overall land use pattern could contribute to the goals of a sustainable community and region by supporting a variety of transportation choices; creating walk-able, close knit neighborhoods and links to transit options of bus and train. Reading's system of neighborhood schools also reduces the need for more driving since the schools are close to residences. Numerous studies have shown that higher land use densities are essential to reduce rates of car ownership and miles driven.[1]
The town currently has two Smart Growth grants, one for the Addison Wesley site and one for the downtown redesign project. A consultant has been hired to scope out 500 housing units in mixed use zoning within the downtown area.

Reading is considering a rewrite of zoning by-laws in FY09 to improve their readability.

Recommendations:
Additional improvements should be made with future development in Reading to encourage a mode shift. Zoning in neighborhoods further from Reading center should encourage neighborhood convenience stores, when commercially viable, to reduce driving for small shopping trips. In concert with the Master Plan, additional multi-unit housing should be developed in existing mixed-use neighborhoods and near the transit station.

Large retail and commercial development should provide attractive, safe, and convenient bicycle and pedestrian access from nearby residential areas. Development should be concentrated to preserve existing open space. Open space in Reading provides a variety of environmental and aesthetic benefits including more opportunity for landscaping with woody plants to promote the absorption of CO_2.

The Town of Reading and the Planning Department should continue to promote mixed use and transit-oriented development. A commitment should be made to incorporate climate change concerns into the planning process so that future policies do not contradict the goals of sustainability and emissions reductions as is currently being done in accordance with 40R.

Progressive Zoning Regulations should rewrite town regulatory and non-regulatory objectives to encourage sustainable development friendly to the environment.

Use zoning performance standards and other regulations Use public investment and tax programs.

Implementation Strategy:
Zoning Policy

Implementation Steps:

	Key Implementer	Implementation Step	Time Frame
1.	ACCCP	Review Master Plan for suggestions regarding transit	TBD
2.	ACCCP	Meet with Proponents	TBD
3.	ACCCP	Identify Further Steps	TBD

Community Modes of Transportation Actions

Non-motorized Transport to School Program

Key Implementers	School Department, Police Department, Town of Reading, ACCCP	
Potential Proponents	Walkable Reading. Parent-Teacher Orgs, Department of Public Works, civic associations, local politicians, and businesses	Modes of Transportation
eCO2 Reduction per Unit	TBD	Community
eCO2 Reduction in 2012	TBD	Walking & Biking
Related Actions	School-wide No Idling Policy Increased Safety for Bicyclists and Pedestrians Walkable Reading Local And Regional Trails Police Units on Bicycles	
Target Audience	Students, Parents	

Motivation For Action:
The majority of vehicle idling in school areas occurs during drop-off and pick-up time, resulting in harmful emissions and air pollution. Increased student walking and biking to school will decrease these emissions.

Safe-Routes-to-School (SR2S)[2] is a state sponsored community-based program that aims to:

- Encourage children to walk and bicycle to and from school.
- Increase awareness of the importance of regular physical activity for children.
- Improve pedestrian and bicycle safety.
- Mobilize communities to work together to create safe routes to school.

Anticipated benefits of the Safe-Routes-to-School program include:

- Fewer cars traveling through the neighborhoods and therefore less congestion at school pick-up and drop-off points and fewer emissions and air pollutants.
- Increased likelihood that children and adults will choose to walk or bike for other short distance trips.
- Improved neighborhood safety.
- Friendlier neighborhoods as people get out and about interacting with one another.
- The reduction of vehicle exhaust fumes will benefit children who are more vulnerable than adults to air pollutants because they have higher inhalation rates, narrower airways, and less mature immune systems.
- Healthy and walkable community environments.

Background:

Safe-Routes-to-School School Reading would use the following 5 E steps: Environment, Engineering, Enforcement, Education, and Encouragement. These 5 Es can be applied to the two most often cited barriers to non-motorized transport - Distance and Traffic:

The Environment Approach
Educates the public about the environmental benefits of reduced vehicle usage: reduced emissions and air pollution.

The Encouragement Approach
Uses events and contests to entice students to try walking and biking.

The Education Approach
Teaches students important safety skills and launches driver safety campaigns (See Increased Safety for Bicyclists and Pedestrians Action).

The Engineering Approach
Focuses on creating physical improvements to the infrastructure surrounding the school, reducing speeds and establishing safer crosswalks and pathways (See Increased Safety for Bicyclists and Pedestrians Action).

The Enforcement Approach
Uses local law enforcement to ensure drivers obey traffic laws.

Recommendations:
The schools and the Police Department should proceed with their plans to pilot the Safe-Routes-To-School program at Parker Middle School and Eaton Elementary School and then expand the program to more schools until all Reading schools are at a high participation level.

An attempt should be made to measure how many children begin walking or biking to school as well as to estimate the reduction in vehicle trips or number of miles traveled by automobiles.

ACCCP should
- Link the benefits of this Action to the School-wide No Idling Policy Action
- Assist and publicize the progress and success of the program.
- Display the environmental benefits of this program at Safe Routes events.

Emissions Reduction Assumptions:
TBD

Implementation Strategy:
Pilot Project, Surveys, Roll out town wide program

Implementation Steps:

	Key Implementer	Implementation Step	Time Frame
1.	ACCCP School Department Police Department	Actively seek ways in which to assist the schools, Reading Safety Officer and Police Liaison with their planned programs.	Ongoing
2.	ACCCP	Publicize the program's progress and successes using ACCCP Communication Tools and link this program to	Ongoing

		the School-wide No Idling Policy program.	
3.	ACCCP	Keep abreast of Safe-Routes-To-School's planned events and provide a display table with information on the environmental benefits of the program.	Ongoing

References:

1. Center for Disease Control and Prevention. KidsWalk-to-School [Internet]. US Department of Health and Human Services. [cited 2008 Jan 16]. Available from: http://www.cdc.gov/nccdphp/dnpa/kidswalk/index.htm .
2. National Highway Traffic Safety Administration. Safe Routes to School Overview [Internet]. US Department of Transportation. [cited 2008 Jan 16]. Available from: http://www.nhtsa.dot.gov/people/injury/pedbimot/bike/Safe-Routes-2002/overview.html#4 .

Walkable Reading

Key Implementers	Walkable Reading, ACCCP	
Potential Proponents	Friends of Reading Recreation, Conservation Commission, Northern Area Greenway Task Force	Modes of Transportation
eCO2 Reduction per Unit	TBD	Community
eCO2 Reduction in 2012	TBD	Walking & Biking
Related Projects	Increased Safety for Bicyclists and Pedestrians Non-motorized Transport to School Program Municipal Shade Tree Program Community Shade Tree Program Local And Regional Trails Police Units on Bicycles	
Target Audience	Reading Residents, Local Area Residents	

Motivation for Action:

Transportation is responsible for the largest portion of Reading's emissions. To reduce transportation emissions, vehicular travel must be decreased. One way to achieve this goal is to develop a walking- and bicycling-friendly atmosphere in Reading.

There is a group of citizens working on a Walkable Reading program in coordination with the Town Manager. "Walkable Reading" is a pedestrian advocacy and walking safety group that works with residents, community groups, and town officials to promote walking in Reading.

The mission of Walkable Reading is to encourage neighborhood walk-ability and wheel-ability throughout town, and include walk-to-school, bicycle lanes, traffic calming and associated

improvements that will ultimately bring about a healthier, safer, walkable town while reducing the dependence on the automobile.

There are multiple benefits to a "Walkable Reading" including

- Decreased pollution and carbon dioxide emissions as the result of decreased dependence on automobiles.
- Improved health and wellbeing.
- Improved neighborhood and community awareness and sociability as residents begin to walk and bike throughout the town.
- Decreased crime, deterred by the increased visibility of residents out and about the town.

A Walkable Reading also supports the town Master Plan (Chapter 10, Page 117 of 199) that calls for improving and extending curbs and sidewalks and bicycle paths, where appropriate and consistent with town standards. "Develop a comprehensive network of foot, bicycle, and open-space pathways ("greenways") throughout the town, providing adequate levels of safety and convenience; develop a sidewalk improvement priority list, complete all needed sidewalk extensions and improve crossings in areas where children safety is a concern; and develop the town's bicycle network and make the map broadly available to Reading residents."

Recommendations:
The ACCCP should work with and support Walkable Reading to help create "Walk-able, Wheel-able Reading".

ACCCP should coordinate efforts with Walkable Reading and the Reading GIS employee to create maps for bicyclists and pedestrians with the following information: bicycle rack locations, bike and walk routes, key destinations, and restroom locations. The information could be posted at the Town Hall, Reading Public Library, Police Station, the Senior Center, in the public schools and Friends of Reading Recreation Post Boards and on information boards located at the train station and town parks.

Relevant goals from the town Master Plan (Goal 3 from Chapter 10) should be implemented into the Downtown Redesign Project:

- Develop a comprehensive Downtown Program to promote traffic and pedestrian safety, improved vehicular, transit, and pedestrian connections between major commercial areas, and increase regional accessibility to these areas and associate action items with Goal-1.
- Implement the Downtown Traffic and Signalization Study
- Examine the feasibility of pedestrianizing certain portions of Downtown Streets and associate with Goal-4 and Open Space Chapter objectives
- Reduce permissible travel speeds on South Main Street, and reconfigure the traffic flow patterns within the existing Right-Of-Way to promote traffic safety, smoothness of traffic flow, and carrying capacity; over time, reduce the number of separate curb-cuts and expand the landscaping features throughout the corridor

Emissions Reduction Assumptions:

Implementation Strategy:
Collaboration, Education, Infrastructure Recommendations, Map Development

Implementation Steps:

Key	Implementation	Time

	Implementer	Step	Frame
1.	ACCCP	Coordinate this Action with all those listed under 'Related Actions'.	Ongoing
2.	ACCCP	Publicize the program's progress and successes using ACCCP Communication Tools.	Ongoing
3.	ACCCP, Town Planner, Town GIS Person	Work with the town and Walkable Reading to create a map showing the safest bike routes in town.	TBD

References:

1. Walking in Arlington, Summary of Pedestrian Issues in Arlington [Internet]. Arlington MA [cited 2007 May 10]. Available from: http://walking_in_arlington.tripod.com/complete.htm .

Local and Regional Trails

Key Implementers	Town of Reading, ACCCP, Conservation Commission, Northern Area Greenway Task Force
Potential Proponents	Walkable Reading, Friends of Reading Recreation, Neighboring Towns, Regional Bike Route Planning Groups
eCO2 Reduction per Unit	TBD
eCO2 Reduction in 2012	TBD
Related Actions	Non-motorized Transport to School Program Walkable Reading Police Units on Bicycles Increased Safety for Bicyclists and Pedestrians
Target Audience	Reading Residents, Area Residents

Modes of Transportation

Community

Walking & Biking

Motivation for Action:

A well maintained and marked system of town trails will encourage people to enjoy the town's forests and open spaces by enabling them to more easily access and spend more time in them. If people value the forests and trails then they will continue to support their conservation. Along with providing an aesthetic and renewing backdrop and recreational area, our town conservation lands and forests provide us with a means of carbon emission sequestration and habitat for other species.

Extensive and complete trails will encourage people to use them as a practical alternative to motor vehicle travel. Decreased use of motorized transport will decrease greenhouse gas emissions. Whether by walking, biking or cross-country skiing, people could use trails to travel about town

for errands or to get to town events or through town as a commute path. The town's Master Plan[11] recommends developing a bicycle network on the existing green infrastructure and path system.

Extending regional bike paths through Reading will provide more safe and practical route options for bicycle commuters. Fewer commuters in motorized transport means lower emissions.

Extending trails and bike paths also supports the town Master Plan, specifically, Chapter 10 of the Master Plan calls for improving and extending curbs and sidewalks and bicycle paths, where appropriate and consistent with town standards.

Background:
The Town of Reading Conservation Commission, as well as the Town Forest Committee and the Open Land Trust, have done wonderful work over the years to protect green areas of town and residents have stepped forward to donate adjacent lots, extending the conserved town area. As a result, Reading is home to over 900 acres of protected conservation lands.

The Northern Area Green Way Ad Hoc Task Force was created by the Reading Board of Selectmen in August of 2006 (amended 5-15-07) to create a plan and implementation strategy to improve public access, more fully utilize these lands through interconnection and trails, enhance passive and active recreation uses, and to protect and preserve the natural environment and the quality which makes the town-owned conservation areas on the north side of town such as Bare Meadows, the Town Forest and North Cedar Swamp lands unique. Plans are in place to make pervious pathways made from recycled asphalt, as recommended by the Appalachian Mountain Club. Such pathways could be usable for pedestrians, bikes, strollers and wheelchairs. Efforts are underway to create an Adopt-a-Trail program.

Examples of Eagle Scout, Stream Team, and Conservation Commission cooperative projects that have improved the town's trails include:

- The Mill Street canoe launch and picnic area
- Trail in the Maillet Conservation area
- Trail and bridge in the Higgins Conservation area
- Boardwalk crossings through the marshy passes in the Town Forest.

Efforts have been made to develop regional trails in the following local areas:

- Along the Ipswich River in North Reading
- Along the Reedy Meadow Trail connecting Wakefield to Lynnfield and points east
- From the corner of Grove and Lowell Streets (Route 129) to the Birch Meadow Area

Recommendations:
ACCCP should:

- Encourage residents to use trails and pathways instead of vehicles where possible.
- Encourage further Eagle Scout projects and suggest projects that might be helpful.
- Connect to bike and pedestrian maps efforts being done in Walkable Reading.
- Work with the Northern Area Green Way Task Force and the Adopt-a-Trail program, as needed.
- Help to map out regional trails and determine where connections can be made in Reading.

The town should:

- Implement the recommendations made by the Northern Area Greenway Task Force.
- Provide GIS support to Adopt-a-Trail, ACCCP and Walkable Reading mapping efforts.
- Work with surrounding communities to ensure that funds are provided at the state level.

Town Master Plan Recommendations should be implemented (from Chapter 10):

- Develop a comprehensive network of foot, bicycle, and open-space pathways ("greenways") throughout the town, providing adequate levels of safety and convenience;
- Develop a sidewalk improvement priority list, complete all needed sidewalk extensions and improve crossings in areas where children safety is a concern; and
- Develop the town's bicycle network and make the map broadly available to Reading residents."

Implementation Strategy:
Fundraising, Collaboration, Infrastructure

Implementation Steps:

	Key Implementer	Implementation Steps	Time Frame
		Reading Trail Connectivity	
1.	Northern Area Greenway Task Force	Make recommendations to town.	Complete
2.	CPDC	Determine which recommendations to implement	TBD
3.	Town of Reading	Implement new measures	
4.	ACCCP Town of Reading	Look for Eagle Scout projects opportunities.	TBD
5.	ACCCP Walkable Reading	Connect paths to town bike and pedestrian map.	TBD
6.	ACCCP	Use ACCCP Communication Tools to promote the trails.	TBD
		Regional Bike Path	
1.	ACCCP Walkable Reading	Review consultant's (Weston) work on regional bikeways, map out regional bike paths and work with area groups to designate connectivity opportunities.	TBD
2.	ACCCP	Contact State Representatives and communities included on the path to ensure that funds are provided at the state level to connect these paths and bikeways.	TBD
3.	Conservation Commission Town Forest Committee	Coordinate on grant proposals to fund completion of trails.	TBD
4.	Trail Program Town of Reading	Complete Trails	TBD

Looped Bus Service

Key Implementers	Town Manager, Town Planner, MPO Representative, ACCCP
Potential Proponents	Local Businesses, Schools & Churches
eCO2 Reduction per Unit	TBD
eCO2 Reduction in 2012	TBD
Related Actions	Community Ride-Share Program Municipal Employee Commute Program Public Transportation Expansion
Target Audience	Commuters, Town Residents, Elders, Teens

Modes of Transportation

Community

Shuttle Bus

Motivation for Action:
"Today, the U.S. transportation sector accounts for one-third of all U.S. end-use sector CO2 emissions, and if projections hold, this share will rise to 36 percent by 2020"[1]. Based on the ACCCP Emissions Inventory, we know that transportation emissions account for 57% of the total emissions generated in Reading.

Public transportation reduces automobile usage and emissions. A town-wide shuttle bus service would encourage people to leave their cars at home by providing a low-emissions commute option.

Implementing a transit service for local travel supports the town's 2005 Master Plan (Chapter 10, page 112) which states that there is "substantial automobile dependency among Reading residents, following the national trend, thus generating traffic congestion at all levels: town, suburban and regional. This traffic can be perceived under the term "local traffic."" The Master Plan continues, "A local type of transit service, facilitating certain intra-town trips and linking areas such as South Main Street to/from Downtown would alleviate the impact of "local traffic" to the town. To pursue this, focus needs to turn on shuttle bus services. For a town the size of Reading, shuttle buses are relatively inexpensive to operate/maintain and flexible to adapt to the changing needs of the town's population."

Background:
The ACCCP is working with the Town Planner and MAPC to research the possibility of developing a town-wide shuttle bus service. The bus would travel continuously around its route with designated stops throughout town. The concept includes providing access to frequented locations throughout town and connections to other transit hubs such as the bus stop, the train depot and the Anderson Logan Express station[2].

A Suburban Mobility Grant to fund a town shuttle is available through the Metropolitan Planning Organization (MPO)[3]. The MPO has assessed the viability of demand responsive transit in Reading (the focus of the FY08 Grant Request for Proposals). Their findings are encouraging, and the MPO will work with Reading to complete the work necessary for the grant.

ACCCP has begun the process of designing routes and surveying potential customers in concert with a group of students from the Parker Middle School eighth grade class of 2007. The students created and distributed a survey to all Parker and Coolidge school families. They created a separate survey for train commuters. Survey results to be developed shortly.

Recommendations:
The Town of Reading should apply for the Suburban Mobility Grant for a local shuttle bus to be used by residents of Reading (and possibly surrounding towns) for transportation in and around town. To maximize fuel efficiency and minimize emissions, the town should investigate using a hybrid, bio-diesel or other alternative fueled bus. In addition, the shuttle bus driver should be trained and instructed to drive in a fuel-efficient manner.

Potential Funding:
The Boston Metropolitan Planning Organization (Boston MPO) Suburban Mobility Program[3]

Implementation Strategy:
Fundraising, Research, Survey, Application, Shuttle Bus Service

Implementation Steps:

	Key Implementer	Implementation Step	Time Frame
1.	ACCCP School Students	Develop and implement a survey on potential users	Complete
2.	Town Manager	Submit letter of interest to MAPC for transit demand	Complete
3.	ACCCP	Summarize the transit survey results.	TBD
4.	ACCCP	Review previous successful proposal from MAPC	TBD
5.	ACCCP	Talk with Lexpress about their successful service	TBD
6.	Town Planner, MPO Rep.	Develop data required for MPO grant package	TBD
7.	Town Manager	Submit final proposal	TBD
8.	ACCCP	Pending grant approval, solicit further funding from local businesses.	TBD

References:

1. Greene, David L (Oak Ridge National Laboratory); Schafer Andreas (Massachusetts Institute of Technology). Reducing Green House Gas Emissions from U.S. Transportation [Internet]. Pew Center on Global Climate Change; May 2003 [cited 2008 Jan 31]. iii p. Available from: http://www.pewclimate.org/docUploads/ustransp.pdf .
2. Reading Green Transit [Internet]. Reading Advisory Committee on Cities for Climate Protection [cited 2008 Jan 18]. Available from: http://home.comcast.net/~tsopchak/RNCEC_ReadingGreenTransit.htm .

3. Suburban Mobility Program [Internet]. Boston Metropolitan Planning Organization [cited 2008 Jan 18]. Available from: http://www.bostonmpo.org/bostonmpo/resources/Suburban_Mobility/index.html .

Community Ride-Share Program

Key Implementers	ACCCP	
eCO2 Reduction per Unit	TBD	Modes of Transportation
eCO2 Reduction in 2012	TBD	Community
Related Actions	Looped Bus Service Public Transportation Expansion Municipal Employee Commute Program	Rideshare
Target Audience	Town Residents	

Motivation:
"Today, the U.S. transportation sector accounts for one-third of all U.S. end-use sector CO2 emissions, and if projections hold, this share will rise to 36 percent by 2020"[1]. Based on our Emissions Inventory, we know that transportation emissions account for 57% of the total emissions generated in Reading.

The roads that once easily brought Reading residents to and from Boston and the surrounding communities are choked with traffic. Rush hour gridlock and driver frustration are standard parts of life in Metropolitan Boston. Car-pooling and ride-sharing seem to be commonsense solutions to minimize the dilemma. Each car-pool and ride-share vehicle takes at least 1 car off the road. Those vehicles with more than 2 people remove a car for each additional person.

Car-pooling and ride-sharing reduce gasoline consumption, harmful emissions, traffic congestion and driver frustration.

Background:
Privately funded ride-share and van-pool services are becoming increasingly popular. One Transportation Management Association company, for example, is already providing ridesharing assistance for Cambridge, Framingham, Norwood, and Westwood as well as the Town of Londonderry, New Hampshire. In addition, the company provides transportation assistance to many of the top corporations in the Metropolitan Boston area such as, General Electric, Verizon, Teradyne, Fidelity, and Genzyme among others. They also oversee a private corporate bus service from North Reading to Boston.

The Town Master Plan, in Chapter 10, page 117 recommends, "Examine the feasibility of establishing a Reading Transportation Authority or a Department within Town government that can address the forthcoming increased transportation needs of retiring boomers and coordinate with Goal-6."

Recommendations:

The town and ACCCP should investigate and recommend to the town and to town businesses, the most feasible community ride-sharing solutions available for implementation. The town should apply to the MPO for a grant to start up a transportation management program similar to those provided in other referenced communities. Such a solution may also be appropriate for the Municipal Employee Commute Program. Some options are:

- A town-wide internet-based, ride-share program. Individuals could easily register online providing pertinent information (departure time, destination, return time, smoking accommodations, gender, etc…) The database would match residents with similar transportation needs. The participants would then contact their matches to make final arrangements for ride-sharing to work, school, or other driving destinations. The ride-share and car-pool program could utilize an existing commercially-available software program procured by the town on an annual fee basis (e.g., VivaCommute, http://transaction.vivacommute.com/community.shtml) or the town or MAPC could develop its own system.
- Privately funded van-pools
- Transportation Management Associations (TMA) services. (e.g. Boston's ABC)

Emissions Reduction Assumptions:
TBD

Potential Funding:
Metropolitan Area Planning Council (MAPC)'s Transportation Demand Management (TDM) grant.

Implementation Strategy:
Research

Implementation Steps:

	Key Implementer	Implementation Step	Time Frame
1.	Town Planner ACCCP	Research ride-share options and make recommendations to the Town Manager and town businesses	TBD

References:

1. Greene, David L (Oak Ridge National Laboratory); Schafer Andreas (Massachusetts Institute of Technology). Reducing Green House Gas Emissions from U.S. Transportation [Internet]. Pew Center on Global Climate Change; May 2003 [cited 2008 Jan 31]. iii p. Available from: http://www.pewclimate.org/docUploads/ustransp.pdf .

Public Transportation Expansion

Key Implementer	ACCCP	
eCO2 Reduction per Unit	TBD	Modes of Transportation
eCO2 Reduction in 2012	TBD	Community

Related Actions	Looped Bus Service Community Ride-Share Program Municipal Employee Commute Program	Public Transit
Target Audience	Commuters, Town Residents, Local Area Residents	

Motivation for Action:
"Today, the U.S. transportation sector accounts for one-third of all U.S. end-use sector CO2 emissions, and if projections hold, this share will rise to 36 percent by 2020".[1] Based on our Emissions Inventory, we know that transportation emissions account for 57% of the total emissions generated in Reading.

Public transportation reduces automobile use and emissions. Improvements are needed to our public transportation system so that people will consider it a practical alternative to the automobile.

Background:
Reading alone cannot solve nationwide transportation problems or even regional transportation problems. However, if we communicate our predicament to a regional audience and look for others in similar situations, we could use our collective clout to make region wide changes. We can also contact our representatives.

The following MBTA public transportation options are locally available:

- Commuter rail train depot in Reading connecting North Station and Haverhill
- Commuter rail train depot in Woburn (Anderson) connecting North Station and Lowell
- Bus Lines 136 & 137 connecting the Train Depot in Reading to Oak Grove Station in Malden via Wakefield. The Oak Grove Orange Line Subway station connects Malden to Boston.

Recommendations:
As recommended in Reading's 2005 Master Plan (Chapter 10), Reading should work toward regional solutions to the transportation dilemma. The ACCCP should also continue to attend the MBTA Rider Oversight Committee meetings and work with the Town Manager to advocate to the MBTA for increased commuter options, for example:

- Extending the double track of the Haverhill line
- Adding a transverse public transit route that connects routes leading into the city along the Route I95/128 route.
- Providing direct bus service to Boston
- Increasing public transportation options in the most cost effective manner possible
- Extending the Orange Line further north

ACCCP should raise public awareness and generate advocacy to support increased public transportation. Some avenues include:

- CCP Regional Meetings to enlist the support of other CCP participating towns
- MCAN (Mass. Climate Action Network) Meetings and Conferences
- MAPC (Metro. Area Planning Council) and other regional planning agency meetings

- ACCCP Communication Tools
- Public officials

Emissions Reduction Assumptions:
TBD

Implementation Strategy:
Education, Research, Collaboration, Advocacy

Implementation Steps:

	Key Implementer	Implementation Step	Time Frame
1.	ACCCP, Town Manager	Continue to Write Letters to MBTA asking for increased public transit options	Ongoing
2.	ACCCP	Raise awareness of and generate advocacy for increased public transit options	Ongoing

References:

1. Greene, David L (Oak Ridge National Laboratory); Schafer Andreas (Massachusetts Institute of Technology). Reducing Green House Gas Emissions from U.S. Transportation [Internet]. Pew Center on Global Climate Change; May 2003 [cited 2008 Jan 31]. iii p. Available from: http://www.pewclimate.org/docUploads/ustransp.pdf .

Vehicle Fuel Efficiency

Status	**Municipal** *How the Town Can Reduce Emissions & Set An Example*	Town	RMLD	ACCCP	School
Complete	Municipal Purchasing Policy Modification	x		M	
In-Process	Municipal No Idling Policy	x		x	
Future	Municipal Vehicle Maintenance and Low-Impact Driving Program	x		M	

Status	**Community** *How Schools, Residents and Business Owners Can Reduce Emissions*	Town	RMLD	ACCCP	School	Other
In-Process	School-wide No-Idling Policy	x		x	x	
In-Process	Community No-Idling Campaign	x		x		
Future	Community Fuel Efficient Car Choice Campaign	x		x		
Future	Community Vehicle Maintenance & Low-Impact Driving Program	x		x		

Introduction to Vehicle Fuel Efficiency
Many vehicles available on the market today emit far fewer harmful emissions into the atmosphere and require far less fuel than standard models, resulting in both money savings and reduced greenhouse gas emissions. Purchase of fuel-efficient vehicles should be encouraged. Idling a vehicle produces unnecessary emissions and adversely affects engine life resulting in additional maintenance and fuel costs. Idling of vehicles should be discouraged.

Municipal Vehicle Fuel Efficiency Actions

Municipal Purchasing Policy Modifications

Key Implementers	Town Manager, Town Department Heads
eCO2 Savings per Unit	20 pounds per gallon gasoline, products TBD
eCO2 Savings in 2012	TBD

Vehicle Fuel Efficiency

Municipal

Related Action	Community Fuel Efficient Car Choice Campaign LED Light Replacement Program Municipal Energy Efficient Buildings	Purchasing
Target Audience	Municipal Employees	

Motivation for Action:
Procurement policies that advocate purchasing products with the lowest life cycle cost are not only environmentally beneficial, but they save money. The manufacture, distribution and use of products, as well as their resulting waste, contribute to pollution and greenhouse gas emissions. Waste prevention and recycling reduce greenhouse gases associated with products by reducing carbon dioxide and methane emissions, saving energy, and increasing forest carbon sequestration.

One purchase that has a major impact on greenhouse gas emissions is the purchase of fleet vehicles. Environmentally preferable purchasing policies that advocate for purchase of one of the many vehicles available on the market today that emit far fewer harmful emissions into the atmosphere and require far less fuel than standard models can result in both money savings and reduced greenhouse gas emissions. These vehicles include engines that are designed for efficiency or hybrid vehicles that generate electricity to offset fuel usage. A more fuel-efficient fleet will save the town money in fuel costs and will reduce air pollution. In addition, by purchasing vehicles with the lowest environmental impact, the town has the opportunity to set an example for its citizens to do the same.

Background:
Alternatives to gasoline and diesel fuels ("clean fuels" are so defined if they create less pollution than traditional gasoline or diesel) include bio-diesel, electric, ethanol, hydrogen, methanol, natural gas, propane and solar among others. Alternative fuel vehicles (AFVs) are one means to lower climate change causing pollutants. In fact, the Commonwealth of Massachusetts mandates that 75% of new light-duty vehicles purchased for the State are AFVs.[1] For AFVs to gain acceptance, there is a need to increase the access to the alternative fuels (other than solar or electric).

Recommendations:
Town Procurement Policies should include a requirement for Fuel Efficient Vehicles, as well as part of an environmentally preferable purchasing (EPP) policy. In addition to Fuel Efficient Vehicles, the policy should include purchasing only Energy Star products (when available), LED exit and holiday lights and products that are reusable or have high recycled content.

Reading should keep its environmental procurement policy up to date for all town department procurement procedures, to address municipal purchasing decisions.[1]

The policies should include that all town purchases of energy-consuming products such as computers will, at a minimum, meet U.S. EPA ENERGY STAR(r) criteria standards, where applicable. The town should use its policy to publicize the concept of EPP to residents, keep and periodically publish a current list of categories of commonly used appliances and their energy consumption ranges and undertake periodic energy audits to evaluate existing levels of energy efficiency and identify new steps that could be taken to improve efficiency. By replacing older equipment and appliances with more efficient ones, Reading will continually reduce energy usage.

The town municipal fleet should incorporate vehicles that emit the lowest GHGs and air pollutants per mile while simultaneously obtaining the highest miles per gallon of fuel. The policy should require that vehicles be selected that emit the least amount of greenhouse gases per year based on expected miles driven. Vehicles considered will come from an investigation of the latest vehicles offered and the ease in refueling them.

Current vehicles in every department should be evaluated to determine if the size and the fuel type of the vehicle is appropriate for its usage. Where feasible, the town should purchase the smallest, cleanest, and most fuel-efficient vehicle in its class for the job.

In concert with the above, the town should establish an early retirement program for the least efficient vehicles in the fleet, replacing them with more efficient vehicles.

Emissions Reduction Assumptions:
TBD

Emissions Reduction Measurement Strategy:
TBD

Implementation Strategy:
Policy, Education

Implementation Steps:

	Key Implementer	Implementation Step	Time Frame
1.	ACCCP	Draft a proposed policy to be used town wide in the municipal procurement of vehicles as well as environmentally preferable products in general. The policy will include websites and other tools which can be used to evaluate and compare vehicle choices.	May 2007
2.	ACCCP	Present draft policy to the Town Manager.	June 2007
3.	Town Manager	Review draft with other Town Departments and RMLD board for review if necessary	TBD
4.	ACCCP	Measure results.	TBD

References:

1. Climate Action Plan 2001. Additional Municipal Reduction Measures. [Internet]. 2001. City of Medford Massachusetts [cited 2008 Jan 18]. Available from: http://www.massclimateaction.org/pdf/MedfordPlan2001.pdf .
2. Warrant Article #22: Procurement of Fuel-Efficient Town Vehicles [Internet]. Massachusetts Climate Action Network [cited 2008 Jan 18]. Available from: http://www.massclimateaction.org/MCANdocspdf/ArlFuelEfficSummary2.pdf .
2. Driving the Prius Hybrid [Internet]. Arkansas Economic Development Commission [cited 2005 22 April]. Available from: www.1800arkansas.com/energy/index.cfm?page=transportation-driving_the_prius .

Municipal No-Idling Policy

Key Implementers	Town Manager, Health Dept., Police Dept., ACCCP	
eCO2 Savings per Unit	TBD	Vehicle Fuel Efficiency
eCO2 Savings in 2012	TBD	Municipal
Related Action	School No-Idling Policy	No-Idling
	Community No-Idling Campaign	
Target Audience	Municipal Employees	

Motivation for Action:
Vehicle idling gets zero miles per gallon; unnecessary idling wastes fuel and causes pollution. These pollutants include nitrogen oxide, carbon dioxide, particulate matter, and volatile organic compounds. Carbon dioxide, a green house gas, contributes to global warming.

Running an engine at low speed (idling) also causes twice the wear on internal parts compared to driving at regular speeds. The break-even point for shutting off and restarting gasoline engines or leaving it to idle is 10-30 seconds – from the point of view of both emissions and fuel consumption[4]. Idling creates significant maintenance and fuel costs for residents and the town.

By limiting idling time of municipal vehicles, Reading can reduce its greenhouse gas emissions, improve community health and save money by prolonging municipal vehicle life. In addition, this action provides an opportunity for Reading to set an example for its residents.

Background:
Massachusetts has enacted an anti-idling law[3] that prohibits the idling of any vehicle for longer than five minutes. "The only exceptions are if: a. the vehicle is being serviced and running the engine is required for repair, b. the vehicle is engaged in delivering goods where engine-assisted power is necessary, or c. the vehicle is engaged in an operation for which associate power is needed provided that this action does not cause air pollution."

Recommendations:
The Town of Reading should educate employees regarding its No-Idling Policy for municipal operations *[attach copy of town no-idling policy from Peter]* as well as the town as a whole, which endorses minimum idling, and refers to the 5-minute idling time mandated by the Commonwealth of Massachusetts[3]. The primary method of enforcement should be through educational programs.

Emissions Reduction Assumptions:
TBD

Emissions Reduction Measurement Strategy:
TBD

Implementation Strategy:
Policy, Educational Programs, Signage

Implementation Steps:

	Key Implementer	Implementation Step	Time Frame
1.	ACCCP	Draft a Municipal No-Idling Policy	Complete
2.	ACCCP	Present draft policy to the Town Manager for review.	Complete
3.	ACCCP Town Manager	Upon acceptance, if directed by the Town Manager, review draft with other Town Departments for input, such as the Police Dept., DPW and the RMLD.	Complete
4.	ACCCP DPW RMLD	Create signage including bumper stickers for appropriate town vehicles (does not include police vehicles): "This vehicle does not idle", dash board stickers "Policy ## Do Not Idle".	TBD
5.	ACCCP	Measure Results	

References:

1. Truck and Bus Operators to Study Idle Emissions Controls [Internet]. Environmental News Network [cited 2005 March 12]. Available from: http://www.enn.com .
2. Document #1419, Diesel Idling [Internet]. 1989. American Trucking Association [cited 2005 11 March]. Available from: http://www.greentruck.com/air_emissions/1419.html .
3. Massachusetts General Law, Chapter 90, Section 16A Stopped motor vehicles; operation of engine; time limit; penalty. [Internet]. The Commonwealth of Massachusetts [cited 2005 February 28]. Available from: http://www.mass.gov/legis/laws/mgl/90-16a.htm .
4. Consumer Energy Center; Energy Myths & Fallacies; Should I shut off my motor when I'm idling my car? [Internet]. California Energy Commission. [cited 2008 Jan 30]. Available from: http://www.consumerenergycenter.org/myths/idling.html .

Municipal Vehicle Maintenance and Low Impact Driving Program

Key Implementers	ACCCP, Town of Reading
Potential Proponents	Local Auto Parts Suppliers, MA DEP US Post Office
eCO2 Reduction per Unit	TBD
eCO2 Reduction in 2012	TBD
Related Projects	Community Vehicle Maintenance Program
Target Audience	Municipal Employees

Vehicle Fuel Efficiency

Municipal Maintenance and Operation

Motivation for Action:

This strategy would provide ongoing training & education to improve vehicle maintenance at both municipal fleet operations and maintenance and vehicle service facilities in Reading as well as to

provide drivers with information on how to drive conservatively to attain maximum mileage from vehicles.

Recommendations:
Work with MA DEP or the US Post Office to develop a workshop to Reading Town Fleet Maintenance and private vehicle service providers.

The Town of Reading should educate its vehicle maintenance providers with seminars that include but not be limited to changing ignition components such as spark plugs and wires, replacing the air filter, cabin filter, and fuel filter at the proper intervals, as well as the weekly check of tire air pressure. Employees should be provided with educational materials on conservative driving practices (and reminders on no-idling policies). Good maintenance practices along with conservative driving will ensure the maximum mileage for the particular vehicle. These programs can also be used to inform the public.

Background:
A vehicle maintenance facility is needed for Reading.

Emissions Reduction Assumptions:
TBD

Implementation Strategy:
Information Campaign via Media and Workshops, Improve Vehicle Maintenance Program.

References:

1. Energy Efficiency and Renewable Energy, Energy Savers, Tips of Saving Energy and Money at Home; Driving and Car Maintenance [Internet]. US Department of Energy [cited 2008 Jan 31]. Available from: http://www1.eere.energy.gov/consumer/tips/driving.html .

Community Vehicle Fuel Efficiency Actions

School-wide No-Idling Policy

Key Implementers	School Superintendent, School Principles, Police Dept., DPW
Involved Groups	Students, PTO, Board of Health
eCO2 Savings per Unit	TBD
eCO2 Savings in 2012	TBD
Related Action	Municipal No-Idling Policy Community No-Idling
Target Audience	Parents, School Bus Drivers

Vehicle Fuel Efficiency

Community

No-Idling

Motivation for Action:

Vehicle idling gets zero miles per gallon; unnecessary idling wastes fuel and causes pollution. These pollutants include nitrogen oxide, carbon dioxide, particulate matter, and volatile organic compounds. Carbon dioxide, a green house gas, contributes to global warming.

Running an engine at low speed (idling) also causes twice the wear on internal parts compared to driving at regular speeds. The break-even point for shutting off and restarting gasoline engines or leaving it to idle is 10-30 seconds – from the point of view of both emissions and fuel consumption[2]. Idling creates significant maintenance and fuel costs for residents and the town.

Children are particularly vulnerable to the air pollution caused by vehicle emissions because children breathe faster than adults and inhale more air per pound of body weight. "Exhaust from school buses and other diesel-powered vehicles contains particulate matter, including fine particles that can penetrate deep into the lungs and even enter the blood stream, posing serious health problems for children, the elderly, and people with respiratory ailments[5]. Fine particles can cause lung damage, aggravate respiratory conditions such as asthma and bronchitis, increase heart disease, lead to cancer, and even result in premature death."[1]

"Children and drivers can be exposed to diesel fumes when getting on and off school buses, and even while on board when the engines are running. Diesel exhaust from idling buses and cars accumulates in and around school yards, and if air intake vents are located near bus stops or where cars are idling, even the air inside school buildings can become polluted and pose health risks to children and teachers during the day".[1]

Background:
Massachusetts has enacted an anti-idling law[3] that prohibits the idling of any vehicle for longer than five minutes. "The only exceptions are if: a. the vehicle is being serviced and running the engine is required for repair, b. the vehicle is engaged in delivering goods where engine-assisted power is necessary, or c. the vehicle is engaged in an operation for which associate power is needed provided that this action does not cause air pollution."

Recommendations:
In order to be consistent with the Municipal No-Idling Policy, the Town of Reading should also implement the No-Idling Policy within the school district. A program to address parents dropping off or picking up their children at school each day should also be developed. This program should include educational materials and signage at the schools. School principals and teachers should be enlisted to educate the children and parents about the pollution from idling vehicles and the associated health and environmental risks. Pilot the program at least at one school at the start of the school year in the fall and then implement the revised program throughout the school system.

Emissions Reduction Assumptions:
TBD

Emissions Reduction Measurement Strategy:
TBD

Implementation Strategy:
Policy, Educational Program, Signage

Implementation Steps:

Key Implementer	Implementation Step	Time Frame

1.	ACCCP, School Super.	Meet with School Superintendent	Complete
2.	ACCCP	Draft letter and pledge for students to bring home and provide to Superintendent.	Complete
3.	ACCCP, School Dept.	Upon acceptance, review draft with committees/council in the School Dept. for input.	TBD
4.	ACCCP or Superintendent	Present final letter to School Dept.	TBD
5.	ACCCP	Develop an awareness campaign aimed at the student population. Pilot the program.	TBD
6.	DPW, schools	Develop and install appropriate signage.	TBD
7.	School Dept. Police Dept.	Expand program to entire school system	TBD
8.	ACCCP, School Dept.	Measure results.	TBD

References:

1. Air & Climate; School Bus Idling Reduction [Internet]. Massachusetts Department of Environmental Protection [cited 2008 Jan 30]. Available from: http://www.mass.gov/dep/air/community/schbusir.htm .
2. Consumer Energy Center; Energy Myths & Fallacies [Internet]. California Energy Commission [cited 2008 Jan 30]. Available from: http://www.consumerenergycenter.org/myths/idling.html .
3. Massachusetts General Law, Chapter 90, Section 16A Stopped motor vehicles; operation of engine; time limit; penalty [Internet]. The Commonwealth of Massachusetts [cited 2005 February 28]. Available from: http://www.mass.gov/legis/laws/mgl/90-16a.htm .

Community No-Idling Campaign

Key Implementers	Town Manager, ACCCP
Involved Groups	MBTA, Board of Health, Chamber of Commerce, Police Department, DPW
eCO2 Savings per Unit	TBD
eCO2 Savings in 2012	TBD
Related Action	Municipal No-Idling Policy School No-Idling Policy
Target Audience	Town Residents, Any Motorist in town

Vehicle Fuel Efficiency

Community

No-Idling

Motivation for Action:

Vehicle idling gets zero miles per gallon; unnecessary idling wastes fuel and causes pollution. These pollutants include nitrogen oxide, carbon dioxide, particulate matter, and volatile organic compounds. Carbon dioxide, a green house gas, contributes to global warming.

Running an engine at low speed (idling) also causes twice the wear on internal parts compared to driving at regular speeds. The break-even point for shutting off and restarting gasoline engines or leaving it to idle is 10-30 seconds – from the point of view of both emissions and fuel consumption[2]. Idling creates significant maintenance and fuel costs for residents and the town.

Background:
Massachusetts has enacted an anti-idling law[3] that prohibits the idling of any vehicle for longer than five minutes. "The only exceptions are if: a. the vehicle is being serviced and running the engine is required for repair, b. the vehicle is engaged in delivering goods where engine-assisted power is necessary, or c. the vehicle is engaged in an operation for which associate power is needed provided that this action does not cause air pollution."

Recommendations:
In keeping with the Municipal No-Idling policy, a Community-wide No-Idling campaign should be developed to educate residents about the health and environmental risks associated with vehicle idling exhaust. The educational campaign should include a 1-2-3 action pledge, Green Sense newspaper articles, a cable television program and signage for the train station, downtown and business districts. Local businesses with drive-thru windows could be approached to put up signs alerting motorists to the fact that their emissions jeopardize the health of employees, and of the Massachusetts no-idling law.

To reap the full benefits of the No-Idling educational campaign, the town should promote the campaign widely and thoroughly.

Emissions Reduction Assumptions:
TBD

Emissions Reduction Measurement Strategy:
TBD

Implementation Strategy:
Educational Campaign, Signage

Implementation Steps:

	Key Implementer	Implementation Step	Time Frame
1.	ACCCP Town Manager	<u>Community Campaign:</u> Include a No-Idling Step in the 2007 1-2-3 Pledge Write No-Idling Green Sense columns Engage Civic Groups in getting the word out Include No-Idling sticker in RMLD utility bills.	Ongoing and TBD
2.	ACCCP	<u>Business Campaign:</u> a) Send letter to local Chamber of Commerce regarding No-idling campaign.	TBD

		b) Solicit largest businesses with letter to managers (such as: Jordan's - The Home Depot complex, Mandarin Reading/ REI, Atlantic, CVS/Rite-Aid/Walgreens, and drive-throughs such as Dunkin Donuts, McDonalds and Burger King) to join in No-idling campaign. c) Provide information to gas stations and repair shops on No-idling campaign.	
3.	ACCCP	Transit Campaign Contact the MBTA to request no-idling signs at the train station. Begin with a letter drafted from Town Manger to General Manager of MBTA. Copy local representatives.	TBD

1. Massachusetts Department of Environmental Protection [Internet] Air & Climate; School Bus Idling Reduction [cited 2008 Jan 30] Available from: http://www.mass.gov/dep/air/community/schbusir.htm.
2. California Energy Commission [Internet] Consumer Energy Center; Energy Myths & Fallacies [cited 2008 Jan 30] Available from: http://www.consumerenergycenter.org/myths/idling.html
3. The Commonwealth of Massachusetts [Internet] Massachusetts General Law, Chapter 90, Section 16A Stopped motor vehicles; operation of engine; time limit; penalty. [cited 2005 February 28]. Available from: http://www.mass.gov/legis/laws/mgl/90-16a.htm.

Community Fuel-Efficient Car Choice Campaign

Key Implementers	ACCCP, Town of Reading	
eCO2 Savings per Unit	TBD	Vehicle Fuel Efficiency
eCO2 Savings in 2012	TBD	Community
Related Actions	Municipal Purchasing Policy Modifications Community Vehicle Maintenance Program Student & Youth Group Projects	Purchasing
Target Audience	Reading Residents	

Motivation for Action:
Automobiles with improved fuel efficiency emit less air pollution and fewer GHGs while saving their owners money in fuel costs.

People can make choices within the existing vehicle market to increase their fuel efficiency and decrease their harmful emissions. In many cases, they can do this without sacrificing their perceived needs in a car, such as comfort, number of passengers carried, or cargo space. There can

be substantial variation in miles per gallon (MPG) between models even within the same vehicle classes, or between classes that provide the same functional utility.

By rewarding commuters who show environmental responsibility, Reading can show what can be done locally to have a positive impact on the environment and to diminish greenhouse gas emissions while reducing dependency on fossil fuel.

Recommendations:
The ACCCP should educate the public about energy efficient and clean energy car choice options available to them and provide them with resources so that they can make knowledgeable decisions when in the market for new or used vehicles.[1] Such resources should include the EPA online tools that individual consumers can use to rate cars in terms of fuel efficiency, air pollution and GHG emissions.

The Town of Reading should develop a revenue-neutral excise tax structure for vehicle tax rebates. Vehicles with EPA ratings significantly better than the fleet average receive a rebate, cars with an average EPA rating are not impacted, and those with significantly worse than average ratings pay an extra tax which offsets the rebates paid for the more efficient vehicles.

The town should encourage energy-efficient vehicles by increasing the cost of parking for less efficient vehicles and by strict enforcement and administrative practices. A parking management team should develop proper ordinances, ordinance revisions, and policies to support these strategies.

One aspect of this program could give hybrid and alternative fuel vehicle owners several monetary benefits. These benefits could be modeled after a program in Huntington NY and would include free unlimited time parking at town parking spaces and in town lots, free commuter parking at the town's train station and free compost stickers. The status would be acknowledged by an official "Keep Reading Green" window sticker. The town offices would need a copy of the vehicle registration form and a written confirmation of the vehicle's bill of sale (window sticker) or car insurance policy stating that the automobile being registered is in fact a hybrid or alternative fuel vehicle.

Emissions Reduction Assumptions:
TBD

Implementation Strategy:
Social Marketing Campaign, Tax Policy, Fees, Enforcement, Incentive, Ordinance, Policy

Implementation Steps:

	Key Implementer	Implementation Step	Time Frame
1.	ACCCP Appropriate Town Dept.	Canvas current car population in Reading by make and model with help from RMV and an Appropriate Town Dept.	TBD
2.	ACCCP	Design social marketing campaign. Ideas include: RCTV show that includes interviews from hybrid owners, Peter H., Ron D'Addario, Ben Tafoya. Include Honda/Toyota/Other Dealerships? Create car flyers for distribution.	TBD

3.	ACCCP Town Mgr	Determine how a tax policy can be implemented.	TBD

References:

1. Find and Compare Cars [Internet]. U.S. Department of Energy; U.S. Environmental Protection Agency. Available from: http://www.fueleconomy.gov/feg/findacar.htm .

Community Vehicle Maintenance and Conservative Driving Tips Program

Key Implementer	ACCCP, Town of Reading
Potential Proponents	Local Auto Parts Suppliers, MA DEP US Post Office
eCO2 Reduction per Unit	TBD
eCO2 Reduction in 2012	TBD
Related Projects	Municipal Vehicle Maintenance Program Community Fuel Efficient Car Choice Campaign
Target Audience	Reading Residents

Vehicle Fuel Efficiency

Community Maintenance and Operation

Motivation for Action:

This strategy would provide ongoing training & education to improve vehicle maintenance at vehicle service facilities in Reading and provide hand out materials for service facilities to provide customers with tips on conservative driving that saves mileage.

Recommendations:

The Town of Reading should work through local parts suppliers to provide seminars for local repair shops as well as separate seminars to consumers. The seminars will concentrate on fuel-efficient practices for auto owners. These practices should include but not be limited to changing ignition components such as spark plugs and wires, replacing the air filter, cabin filter, and fuel filter at the proper intervals, as well as the weekly check of tire air pressure and conservative driving practices. Such practices along with conservatively driving the car will ensure the maximum fuel efficiency for the particular vehicle.

Signage around town could remind motorists to keep their cars well maintained. For example, signs at gas pumps that read “Have you checked your air tire pressure lately?”.

Emissions Reduction Assumptions:

TBD

Implementation Strategy:

Information Campaign, Improve Vehicle Maintenance Program

Implementation Steps:

	Key Implementer	Implementation Step	Time Frame
1.	ACCCP	Include Vehicle Maintenance in Green Sense columns (some have already included this topic)	Ongoing
2.	ACCCP	Include maintenance tips in Reading Earth Day outreach	TBD
3.	ACCCP	Form a sub-committee to develop a brochure to be provided to Vehicle Maintenance Facilities (VMFs)	TBD
4.	ACCCP	Work with MA DEP or the US Post Office to develop a workshop for private vehicle service providers	TBD

Status	**Municipal** *How the Town Can Reduce Emissions & Set An Example*	Town	RMLD	ACCCP	School
In-Process	Municipal Energy Efficient Buildings	x	x	M	x
Future	Municipal Renewable Energy Generation and Purchase Program	x	x	x	
Future	LED Light Replacement Program	x		x	x
Future	Green Building Program	x		x	
Future	Town By-Law & Master Plan Review	x		x	

Status	**Community** *How Schools, Residents and Business Owners Can Reduce Emissions*	Town	RMLD	ACCCP	School	Other
In-Process	Community Energy Conservation Program		x	x		
Future	Community Renewable Energy Generation and Purchase Program		x	x		

Introduction to Energy & Buildings

Heating and electricity are the two major components in municipal buildings that contribute to CO_2 emissions. To reduce energy consumption, energy conservation measures must be implemented. Renewable energy and energy efficiency technologies must also be explored since they have a far smaller impact on the environment than standard energy generation methods and are thus key to creating a clean energy future.

Municipal Energy & Buildings Actions

Municipal Energy Efficient Buildings

Key Implementers	Town of Reading, Town Manager, Facilities, RMLD, ACCCP, School Department
eCO2 Reduction per Unit	TBD
eCO2 Reduction in 2012	TBD
Related Actions	Community Energy Conservation Program School Climate Change Educational Program

Energy & Buildings

Municipal

Energy Efficiency

	Municipal Purchasing Policy Modification	
Target Audience	Town of Reading	

Motivation for Action:
In joining the Cities for Climate Protection in 2005, Reading has taken on the task of reducing its CO_2 emissions 10% by 2012. Heating and electricity are the two major components in municipal buildings that contribute to CO_2 emissions. To reduce energy consumption in the municipal buildings, energy conservation measures should continue to be assessed and implemented.

Background:
The town's Energy and Facilities Services Manager (EFSM) has benchmarked all municipal buildings through the EPA ENERGY STAR program (which is based on energy consumption, operating characteristics, and management practices of buildings in the US). By benchmarking municipal buildings, the town can quantify results from strategies implemented in its efforts to reduce energy usage and costs. The town has also established an Energy Committee comprised of employees that work in the individual municipal buildings. Each committee member oversees the progress of various conservation measures put into action in their respective building to monitor the savings.

The Town Meeting of April 28th, 2008 will consider the adoption of a $1,000,000 Energy Conservation Bond which would allow the energy efficiency improvements, currently planned for the next 10 years, to be done in the coming year such that energy conservation might sooner be realized. Planned improvements include window replacements and boiler upgrades.

Recommendations:
The town should strive to exceed the 75th percentile of the EPA's ENERGY STAR benchmark database for each building wherever possible. The Energy and Facilities Services Manager should monitor the town's energy usage to ensure efficiency measures are working, and note any escalation in usage. Building managers should be supplied with monthly energy usage and cost data and should track use to ensure that energy management systems are functioning properly.

The town should continue to take advantage of the RMLD's Commercial Energy Audits, as well as any rebate programs to help mitigate the cost of energy efficiency upgrades.

The town should investigate the feasibility of co-generation technology in all municipal buildings.

As soon as possible, the town should commit to installing the most energy efficient technology available, such as ENERGY STAR products, compact fluorescent light bulbs and room occupancy sensors. See the Municipal Purchasing Policy Modification for more details.

The education program devised by Reading's Energy Committee should be implemented to increase town employees' awareness of energy conservation issues and practices. The link between the implementation of energy-saving measures and CO_2 reduction will be highlighted. By providing an educational forum and highlighting specific measures, employees will be empowered to modify their individual energy use and identify financial and environmental savings to the town. For example, employees would be encouraged to turn off office, restroom, and other lights when not in use or when natural lighting is sufficient. Turning off desktop computers during lunch breaks and at the end of day, as well as setting them to hibernate mode when appropriate, would also be encouraged. Education, along with corresponding action, will help maximize the town's

energy savings and cut costs. These same strategies are to be applied to the schools by teaching children energy conservation practices.

The School Department Energy Manager and Facilities Director should implement the energy efficiency upgrades and improvements recommended by the Energy Committee to municipal buildings and schools.

The ACCCP should coordinate efforts with the School Climate Change Educational Program and investigate the possibility of raising public funds to be used for co-generation equipment on town buildings.

Emissions Reduction Assumptions:
TBD

Implementation Strategy:
Energy Efficiency Improvements, Energy Audits, Equipment and Lighting Upgrades, Building Usage Improvements, Education, Information Technology Improvements

Implementation Steps:

	Key Implementer	Implementation Step	Time Frame
1.	Energy & Facilities Services Manager	Provide feedback to the Energy Committee members about the results of their conservation measures.	Ongoing
2.	Town Manager and Town Employees	Implement EFSM recommended conservation measures.	Ongoing
3.	RMLD	Continue to work with town on energy conservation measures.	Ongoing
4.	ACCCP	Publicize efforts using our ACCCP Communication Tools	Ongoing
5.	ACCCP	Advise the town on affordable energy conservation measures it might take as part of the upcoming Energy Conservation Bond Issue.	First Quarter 2008

Municipal Renewable Energy Generation & Purchase Program

Key Implementers	Town of Reading, RMLD, ACCCP	
eCO2 Reduction per Unit	TBD	Energy & Buildings
eCO2 Reduction in 2012	TBD	Municipal

Related Actions	Community Renewable Energy Generation and Purchase Program	Renewable Energy
Target Audience	Town of Reading	

Motivation for Action:
Renewable energy and energy efficiency technologies are key to creating a clean energy future. Solar, wind, biomass and geothermal powered energy generation have the least impact on the environment. In efforts to reduce $C0_2$ emissions, these technologies need to be explored by the town and the RMLD as viable resources to meet future energy requirements.

Background:
Photovoltaics (PV) quietly generate electricity from sunlight. During operation, PV systems produce neither air pollution nor hazardous waste and don't require liquid or gaseous fuels to be transported or combusted. In addition, sunlight is free and abundant and can guarantee access to electric power especially at high summer peaks when fossil fuel generated electricity may face shortages.[1]

Biomass energy or "bioenergy" is energy derived from plants and plant-derived materials. Wood is still the largest biomass energy resource today, but other sources of biomass can also be used. These include food crops, grassy and woody plants, residues from agriculture or forestry, and the organic component of municipal and industrial wastes. Even the fumes from landfills (which are methane, a natural gas) can be used as a biomass energy source.[2]

Wind turbines can be used as stand-alone applications; they can be connected to a utility power grid or even combined with a photovoltaic (solar cell) system. At 100 feet (30 meters) or more aboveground, they can take advantage of the faster and less turbulent wind. [3]

Geothermal energy is technology that takes the heat from the earth. This heat can be drawn from several sources: hot water or steam reservoirs deep in the earth that are accessed by drilling; geothermal reservoirs located near the earth's surface, mostly located in western states such as Alaska, and Hawaii; and the shallow ground near the earth's surface that maintains a relatively constant temperature of 50°- 60° F. This variety of geothermal resources allows them to be used on both large and small scales.[4]

Recommendations:
The installation of a renewable energy source should be investigated for school or municipal buildings, which could provide many environmental, economic and educational benefits to the town.

Generation:

1. The Town of Reading should contact other towns in Massachusetts that have invested in renewable energy systems to determine how they were funded.
2. ACCCP and RMLD should investigate the possibility that donations from residents could be used to create renewable energy generation in Reading.
3. The Town of Reading should determine the best locations for renewable energy generation such as photovoltaics on the roofs of school buildings.
4. RMLD should research the feasibility of renewable energy technology (e.g. PV) installed at 230 Ash St to reduce their carbon footprint and as an educational tool.

5. RMLD should continue its efforts to evaluate renewable energy installation opportunities.
6. By 2012, the Town of Reading should do one or a combination of the following
   - Generate 15% of its required energy from renewable sources
   - Purchase 15% of its required energy from renewable sources
   - Invest in energy efficiency measures using the money that would otherwise be spent generating or purchasing renewable energy
7. By 2050, the Town of Reading should generate or purchase 50% of its required energy from renewable sources or use that money to invest in energy efficiency measures.

Purchase:

8. RMLD should continue to look for renewable sources of electricity to purchase.

Emissions Reduction Assumptions:
TBD

Implementation Strategy:
Fundraising, Financial Assistance, Technology and Site Research, Survey, Infrastructure

Implementation Steps:

	Key Implementer	Implementation Step	Time Frame
1.	ACCCP, Town of Reading, RMLD	Call other towns to find out what renewable infrastructure they are installing and financial assistance they are pursuing.	TBD
2.	ACCCP, Town of Reading	Investigate the possibility of a resident donation system for renewable energy infrastructure.	TBD
3.	Facilities Dept. Town of Reading	Determine an appropriate site for infrastructure, either on a town building or land parcel.	TBD
4.	RMLD	Continue to look for sources of renewable energy for purchase.	Ongoing
5.	Town of Reading	Generate or purchase renewable energy or use the money to invest in energy efficiency measures.	TBD
6.	ACCCP	Publicize renewable energy efforts of the town and RMLD in our ACCCP Communication Tools.	Ongoing

References:
1. Solar Energy Technologies Program [Internet]. U.S. Department of Energy, Energy Efficiency and Renewable Energy [cited 2008 Jan 29]. Available from: http://www1.eere.energy.gov/solar/photovoltaics.html .

2. BioMass Energy Basics [Internet]. National Renewable Energy Laboratory, Learning About Renewable Energy [cited 2008 Jan 29]. Available from: http://www.nrel.gov/learning/re_biomass.html .
3. Wind Energy Basics [Internet]. National Renewable Energy Laboratory, Learning About Renewable Energy [cited 2008 Jan 29]. Available from: http://www.nrel.gov/learning/re_wind.html .
4. Geothermal Energy Basics [Internet]. National Renewable Energy Laboratory, Learning About Renewable Energy [cited 2008 Jan 29]. Available from: http://www.nrel.gov/learning/re_geothermal.html .

LED Light Replacement Program

Key Implementers	Board of Selectmen, Town Manager, DPW, Superintendent of Schools	
eCO2 Savings per Unit	TBD	Energy & Buildings Municipal
eCO2 Savings in 2012	TBD	Energy Conservation
Related Actions	Municipal Purchasing Policy Modification Municipal Energy Efficient Buildings	
Target Audience	Town of Reading	

Motivation for Action:
Light Emitting Diode (LED) lights are up to 90% more efficient than their incandescent counterparts and therefore require far less energy and expense to run and emit far fewer GHG emissions. LED lights are far more durable than their incandescent counterparts and require far less maintenance.

RMLD must periodically renegotiate its energy contract with its suppliers and rates are likely to increase dramatically. Upgrades to LED lights that may not have previously had a high enough return on investment may now meet those requirements.

Background:
"If all U.S. companies switched to ENERGY STAR label qualified exit signs, they would save $25 million in electricity costs. Exit signs that have earned the ENERGY STAR operate on five watts or less per sign compared to standard signs, which use as much as 40 watts per sign."[1] The difference of 35 watts adds to annual savings in eCO2 of over 150 pounds of electricity if produced by gas. "There are more than 100 million exit signs in use throughout the U.S. Typically lit by incandescent bulbs, these signs consume 30 – 35 billion kilowatt hours (kWh) of energy each year."[2] "Payback time for investing in new LED fixtures can range from 3 months to just over 4 years, depending on the fixture and electricity costs."[2]

Some improvements are already in the pipeline, Reading's downtown highway renovation will be incorporating LED traffic lights per state standards. The Chamber of Commerce has committed to LED lights for the holiday lighting as lights are replaced.

LIFE-CYCLE COST FACTORS OF EXIT SIGNS[2]

Lamp Type	Fixture Cost	Wattage	Lamp Life
Incandescent	$20 - $100	30 – 50 watts	3000 to 19000 hours
Compact Fluorescent	$125 - $200	10 – 16 watts	13000 hours
Light-emitting diode	$30 - $250	1 – 3 watts	10 years

Electricity Cost Per Exit Sign	Incandescent	Compact Fl	LED
Wattage	30 – 50 watts	10 – 16 watts	1 – 3 watts
Annual kWh	263 – 438 kWh	88 – 140 kWh	9 – 26 kWh
Annual Energy	$21 - $35	$7 - $11	$0.70 - $21

Lamp Replacement Cost Per Exit Sign in 10 years	Incandescent	Compact Fluorescent	LED
No. of bulbs	4 – 29	6	0
$ of bulb replacement	$40 - $280	$60	$0

Maintenance and Electricity Cost Over 10 Years	Incandescent	Compact Fluorescent	LED
Per Exit Sign	$390-490	$130 - $172	$7 – 21

The Reading Chamber of Commerce has committed that all new holiday light purchases will be LED.

The Town of Reading plans to follow the state standard on the downtown redesign project and use LED for all traffic signals include traffic lights and pedestrian crossing lights.

Recommendations:
The Town of Reading should:

- When purchasing new fixtures, select LED exit signs.
- When replacing incandescent lamps in existing fixtures, retrofit with LED lamps when cost effective.
- Replace all exit sign fixtures with LED fixtures.
- Recycle all fluorescent lamps appropriately.
- When specifying new buildings or fixtures, specify LED exit signs.

The Town of Reading should re-evaluate the return on investment of replacing the following types of lights with LED lights:

- Traffic lights — The red traffic lights should be the highest priority since it is the most used light in a traffic signal.
- Exit Signs — In all municipal buildings
- Holiday Lights — Continue to work with the Chamber of Commerce to replace the town center holiday lights with LED for the town center.

Emissions Reduction Assumptions:

TBD

Potential Funding:
Reading has submitted a grant proposal to secure funds for LED light replacement.

Implementation Strategy:
Building Codes, Lighting Upgrades, Purchasing Policy

Implementation Steps:

	Key Implementer	Implementation Step	Time Frame
1.	Town of Reading	See Recommendations Above	TBD

References:

1. ENERGY STAR, Products, Exit Signs [Internet]. U.S. Environmental Protection Agency; U.S. Department of Energy [cited 2007 June 26]. Available from: http://www.energystar.gov/index.cfm?c=exit_signs.pr_exit_signs .
2. Fact Sheets & Summaries; Purchasing for Pollution Prevention: Environmentally Preferable LED Exit Signs – Saving Money and Protecting the Environment Through Energy Efficiency [Internet]. Inform Inc. Archives [cited 2008 Jan 31]. Available from: http://informinc.org/fact_P3exit_signs.php .

Green Building Program

Key Implementers	Town Manager, ACCCP, Selectmen, Planning Dept.	
eCO2 Savings per Unit	TBD	Energy & Buildings
eCO2 Savings in 2012	TBD	Municipal
Related Actions	Low Impact Development Program Municipal Shade Tree Program Community Local Tree Program Green Yard Campaign Residential Water Conservation Program Green Professionals Recognition Program	Energy Conservation
Target Audience	Home Owners, Building Contractors, Business Owners	

Motivation for Action:
Buildings have a profound effect on the environment, which is why green building practices are so important to reduce and perhaps one day eliminate those impacts. “Buildings consume approximately 37% of the energy and 68% of the electricity produced in the United States annually, according to the U.S. Department of Energy.”[1]

The good news is that we have just begun to address these statistics with a view toward their reduction. With better planning, new technology, and little additional cost, these percentages can be greatly reduced. The result will reduce energy expenditures and consequently CO_2 emissions, conserve natural resources, and provide healthier living and working spaces.

Background:
Using a known system of requirements as a basis of green building design is advantageous because it provides a standard toward which everyone can work. The LEED (Leadership in Energy and Environmental Design) system is one such system by the United States Green Building Council (US GBC). Their ratings in ascendancy of efficiency are: certifiable, silver, gold and platinum.[4]

Recommendations:
For all references to LEED silver rating below, ACCCP recommends that all the standards for the silver rating be met or exceeded but that, due to the expense, attaining certification is not required.

- When financially feasible, mandate that all new construction and major renovation of municipal buildings meet or exceed the current criteria for LEED Silver rating as was done in Boston[2] and Arlington Massachusetts[3]. (See Appendix D for the Town of Arlington By-Law).
- When financially feasible, require LEED Silver rating for all town supported projects.
- Provide builders and homeowners a Green Design options sheet (prepared by ACCCP) along with their application for a building permit that provides suggestions for ways to include energy efficient design practices into the new building design. Make this sheet available on the building permit website as well.
- Provide ongoing training for town building staff on current green building practices when such training is relevant to their job.
- Assist ACCCP in advertising Green Design training seminars for developers, builders, contractors, and re-modelers on current green building techniques by including such information in appropriate town communications.
- Petition state legislators to change our present state building codes to include best green construction techniques.

Emissions Reduction Assumptions:
TBD

Implementation Strategy:
Mandate, Education, Petition

Implementation Steps:

	Key Implementer	Implementation Step	Time Frame
1.	ACCCP	Meet with the town manager to review the recommendations.	TBD
2.	ACCCP	Draft Green Sign-Off Sheet	TBD
3.	ACCCP	Meet with the selectmen to review the recommendations.	TBD
4.	Board of	Vote to make any changes they deem appropriate.	TBD

Selectmen

References:

1. Energy Use Backgrounder [Internet]. Greener Buildings [cited 2008 Jan 31]. Available from: http://www.greenerbuildings.com/backgrounders_detail.cfm?UseKeyword=Energy%20Use .
2. Green Building Initiative, Boston Zoning Commission. Public Hearing, January 10, 2007 [Internet]. City of Boston MA [cited 2008 Jan 31]. Available from: http://www.cityofboston.gov/bra/gbtf/documents%5CBoston%20Zoning%20Commission%20-%20Pres%2007-01-10.pdf .
3. Resources; Sustainability Best Practices [Internet]. Sustainable Step New England [cited 2008 Jan 31]. Available from: http://www.ssne.org/resources-NEcases.htm .
4. LEED [Internet]. U.S. Green Building Council. Available from: http://www.usgbc.org/DisplayPage.aspx?CategoryID=19 .

Town By-Law & Master Plan Review

Key Implementers	ACCCP, Town Manager, Town Meeting	
eCO2 Savings per Unit	TBD	Energy & Buildings
eCO2 Savings in 2012	TBD	Municipal
Related Actions		Energy Conservation
Target Audience	Town of Reading	

Motivation for Action:

Many ACCCP Actions may require modification to a town policy, by-law or guideline to be most effective. Working knowledge of relevant by-laws, as they currently stand, will assist ACCCP to best understand where modifications might be most effective in helping Reading to achieve its emissions reduction goal.

The town's 2005 Master Plan seeks to accomplish many of the things ACCCP is also seeking to accomplish, such as a walkable community in the downtown region. Working with the Master Plan will help promote Reading's goals while avoiding redundancy.

Background:

The town has advised ACCCP that inserting relevant text into existing by-laws is more effective than creating new by-laws which will require their own oversight.

Recommendations:

The ACCCP should review the existing by-laws and perhaps the by-laws of other towns to determine where modifications would be most effective to achieve emissions reduction.

Emissions Reduction Assumptions:
TBD

Implementation Strategy:
Research, Collaboration, Advocacy, Policy

Implementation Steps:

	Key Implementer	Implementation Step	Time Frame
1.	ACCCP	Review town by-laws and Master Plan to identify areas relevant to emissions reduction.	TBD
2.	ACCCP	Review finding with the Town Manager	TBD
3.	ACCCP	Collaborate with appropriate town committees on any proposed changes.	
4.	ACCCP	Advocate for improved education and enforcement of existing by-laws and modification of relevant by-laws through appropriate town channels.	TBD

Community Energy & Buildings Actions

Community Energy Conservation Programs

Key Implementers	RMLD, ACCCP
eCO2 Reduction per Unit	TBD
eCO2 Reduction in 2012	TBD
Related Actions	Municipal Energy Efficient Buildings School Climate Change Educational Program Public Education & Outreach
Target Audience	Reading Residents & Businesses

Energy & Buildings

Community

Energy Conservation

Motivation for Action:
Fossil fuel produced electricity and heating are the two major components in residential and commercial buildings that contribute to CO_2 emissions. Today most of our home and building necessities and comforts are plugged-in. Home electrical usage is averaging as high as 1000 kWh's per month and heating costs are escalating. While alternative renewable energies are being developed, an energy efficient lifestyle must become a community custom for the town to achieve its emission reduction goals.

With the rising cost of electricity and heating fuels, businesses will look to increase their conservation measures to save money by conserving energy.

Background:

RMLD offers several conservation programs which should be made use of:

- Fuel-blind Energy Audit Program to identify energy savings and cost effective measures.
- Rebate Programs to help mitigate the cost of purchasing appliances.
- Energy education and outreach to citizens and school children.

Recommendations:

RMLD should increase effort on their existing energy conservation programs, and consider expanding programs in both the residential and commercial sectors. RMLD should institute a campaign that encourages all customers to reduce their energy load 10% by 2012 (to meet Reading's goal). RMLD should extend the promotion of its fuel blind energy audit, lighting and ENERGY STAR appliance rebate programs and renewable energy opportunities. RMLD's programs will help identify energy reduction measures as well as mitigate some of the implementation costs. RMLD should take steps to accomplish the 10% energy reduction goal by:

Residential

Employing an Energy Efficiency Specialist (EES) who is experienced and trained in energy conservation applications and programs, and whose main focus will be to:

- Promote and use energy audits as a tool to aid customers to identify and implement energy conservation measures.
- Perform home efficiency evaluations and audits.
- Work with residential customers via phone, email and in the field on conservation issues.
- Supply informational materials that outline available resources, contacts and energy conservation measures.
- Utilize RCTV as an outreach tool by airing How-To shows and advertising RMLD's energy programs.
- Sponsor or hold workshops for homeowners, contractors and architects on implementing energy conservation measures.
- Involve the business community by partnering with a local home improvement center. The business could offer home energy efficiency courses and sell related products and they become a model in 'Green' design.
- Assess financing programs that might help fund residential energy improvements, for example, set up a revolving loan fund for energy efficiency and conservation efforts, paid back through billing of accounts at a rate reflective of energy savings (as Energy Service Companies (ESCo's) do).

Commercial/Industrial

RMLD's Key Account Managers should continue to promote and oversee Commercial/Industrial conservation initiatives by:

- Sponsoring or holding workshops for businesses on implementing energy conservation measures. These workshops could use vendors and/or partner with local home improvement centers.
- Continue marketing of energy audits, rebates, and demand side management programs.
- Continue supplying informational materials that outline available resources, contacts and how-to implement energy conservation measures.

General
The RMLD should:

- Maintain and upgrade their website with current conservation appropriate links (e.g. EPA sites) and interactive tools that aid customers in calculating energy savings and carbon footprint.
- Continue to promote the EPA's Change-A-Light Change-The-World Campaign.
- Promote the use of ENERGY STAR qualified products.

ACCCP should continue its outreach programs to further encourage energy reduction measures and support RMLD's campaign using our ACCCP Communication Tools.

Emissions Reduction Assumptions:
TBD

Implementation Strategy:
Education and Outreach, Staffing, Website Update

Implementation Steps:

	Key Implementer	Implementation Step	Time Frame
1.	ACCCP	Present plan to RMLD Manager and RMLD Board	TBD
2.	ACCCP	Modify plan as needed	TBD
3.	RMLD	Staff the EES position	TBD
4.	RMLD EES	Develop and implement a community energy efficiency information campaign.	TBD
5.	ACCCP	Support the program using ACCCP Communication Tools.	Ongoing

Community Renewable Energy Generation and Purchase Program

Key Implementers	ACCCP, RMLD	
eCO2 Savings per Unit	TBD	Energy & Buildings
eCO2 Savings in 2012	TBD	Community
Related Projects	Municipal Renewable Energy Generation & Purchase Program	Renewable Energy
Target Audience	Reading Residents & Businesses	

Motivation for Action:
Currently, most energy generated by utilities that use non-renewable resources for fuel, such as oil, natural gas and coal, produce green house gas emissions and other contaminants during the generation process. Here in the Northeast, renewable energy is not readily available; however,

residents can produce their own renewable energy at home. Solar, wind, geothermal, combined heat and power, and bio-mass technologies are currently available for home energy production.

Note:
The details of implementation of this Action are pending the results of the Technical Potential & Renewable Energy Study currently being completed for the RMLD.

Background:
Solar heating uses solar collectors which absorb the sun's energy to provide low-temperature heat used directly for hot water or space heating for residential or commercial buildings.

Photovoltaics (PV) quietly generate electricity from sunlight. During operation, PV systems produce neither air pollution nor hazardous waste and don't require liquid or gaseous fuels to be transported or combusted. In addition, sunlight is free and abundant and can guarantee access to electric power especially at high summer peaks when fossil fuel generated electricity may face shortages.[1]

Biomass energy or "bioenergy" is energy derived from plants and plant-derived materials. Wood is still the largest biomass energy resource today, but other sources of biomass can also be used. These include food crops, grassy and woody plants, residues from agriculture or forestry, and the organic component of municipal and industrial wastes. Even the fumes from landfills (which are methane, a natural gas) can be used as a biomass energy source. [2]

Wind turbines can be used as stand-alone applications; they can be connected to a utility power grid or even combined with a photovoltaic (solar cell) system. At 100 feet (30 meters) or more aboveground, they can take advantage of the faster and less turbulent wind.[3]

Geothermal energy is technology that takes the heat from the earth. This heat can be drawn from several sources: hot water or steam reservoirs deep in the earth that are accessed by drilling; geothermal reservoirs located near the earth's surface, mostly located in western states such as Alaska, and Hawaii; and the shallow ground near the earth's surface that maintains a relatively constant temperature of 50°- 60° F. This variety of geothermal resources allows them to be used on both large and small scales. [4]

The RMLD Green Choice program allows customers to purchase renewable energy certificates, (RECs), which support existing green energy production and encourages expansion.

Recommendations:
RMLD should employ a Renewable Energy Manager who is knowledgeable in renewable energy technologies such as solar, wind turbines, bio-mass, geothermal energy, and other feasible technologies for home and business installations.

The Renewable Energy Manager would:

- Seek out renewable energy grants, tax incentives and rebates available for RMLD customers.
- Market the financial and environmental benefits of renewable energy technology to encourage installation.
- Educate RMLD customers on the most current and feasible renewable energies available today, and stay current as new technologies become available.
- Evaluate the feasibility of such installations in any given location, and work with customers through the installation process.

- Sponsor or hold workshops for contractors, architects, businesses and homeowners to teach them how they may incorporate renewable energy technology into their work, businesses or homes. These workshops could use appropriate vendors.

ACCCP will continue its outreach programs to further encourage renewable energy installations and support RMLD's campaign.

Emissions Reduction Assumptions:
TBD

Emissions Reduction Measurement Strategy:
TBD

Implementation Strategy:
Education, Research, Staffing

Implementation Steps:

	Key Implementer	Implementation Step	Time Frame
1.	ACCCP	Review plan with the RMLD Manager	TBD
2.	ACCCP	Review plan with the RMLB	TBD
3.	RMLD	Staff the Renewable Energy Manager Position	TBD
4.	RMLD	Renewable Energy Manager develops and implements a community renewable energy generation information campaign.	TBD
5.	ACCCP	Support the RMLD's renewable energy programs and advertise progress using ACCCP Communication Tools.	Ongoing

References:

1. Solar Energy Technologies Program [Internet]. U.S. Department of Energy, Energy Efficiency and Renewable Energy [cited 2008 Jan 29]. Available from: http://www1.eere.energy.gov/solar/photovoltaics.html .
2. BioMass Energy Basics [Internet]. National Renewable Energy Laboratory, Learning About Renewable Energy [cited 2008 Jan 29]. Available from: http://www.nrel.gov/learning/re_biomass.html .
3. Wind Energy Basics [Internet]. National Renewable Energy Laboratory, Learning About Renewable Energy [cited 2008 Jan 29]. Available from: http://www.nrel.gov/learning/re_wind.html .
4. Geothermal Energy Basics [Internet]. National Renewable Energy Laboratory, Learning About Renewable Energy [cited 2008 Jan 29]. Available from: http://www.nrel.gov/learning/re_geothermal.html .

Status	Community *How Schools, Residents and Business Owners Can Reduce Emissions*	Town	RMLD	ACCCP	School	Other
Ongoing	Public Outreach & Education Programs			x		
In-Process	Solid Waste Reduction and Recycling Awareness					x
Future	Student and Youth Group Projects			x		
Future	School Climate Change Educational Program		x	x	x	

Introduction to Education & Outreach

Education raises the community's awareness of climate change and leads to actions that reduce energy use and associated emissions. ACCCP is using many avenues to reach all segments of the community to educate them about climate change and actions they can take to reduce their impact (e.g. newspaper articles, website, town events).

Global climate change will affect future generations for many years to come, therefore it is important that both young people and adults know about the issues and learn ways to mitigate their impacts. Childhood and adolescence are particularly opportune times to learn and develop environmental habits that are conducive to keeping the environment in good health.

Community Education & Outreach Actions

Public Outreach & Education Programs

Key Implementer	ACCCP
eCO2 Reduction per Unit	TBD
eCO2 Reduction in 2012	TBD
Related Projects	Business Annual 1-2-3 Pledge School Climate Change Educational Program
Target Audience	Reading Residents & Businesses

Education & Outreach

Community Programs

Motivation for Action:

There are a multitude of opportunities to reduce energy use and thereby reduce greenhouse gas emissions from Reading, including opportunities for businesses, individuals and for municipal operations. Education is an important means to help people take advantage of these opportunities. Ongoing education raises the community's awareness of climate change and leads to action that reduces energy use and associated emissions and will help to bring about the solutions we need.

Background:

Since its inception as an ad-hoc committee in 2005, ACCCP has been involved in education and outreach activities. In the coming years we plan to continue and expand these activities.

Ongoing Recommendations:

The ACCCP should continue to implement and further expand the following activities:

ACCCP Communication Tools

- "Green Sense" Articles – Weekly newspaper articles with an educational focus on ideas that help residents learn how to reduce their energy use and climate changing emissions and education on the topic of climate change. Topics range from describing the latest news and information on climate change science, and ways to decrease home energy use to energy saving landscaping practices.
- 1-2-3 Pledge – In 2006, ACCCP launched the first annual emissions reduction pledge. With the 1-2-3 pledge, residents are asked to pledge to take Actions to reduce their emissions. The overall goal for 2006 of 400 tons of CO_2 was achieved. Because of the impact from transportation measured with Milestone 1 (See Figure 1), the 2007 1-2-3 Pledge focused on options to decreasing emissions from vehicle use. A business pledge will be introduced in future years Business 1-2-3 Annual Pledge.
- Website – In 2006, ACCCP launched its website to educate residents about our committee and other environmental improvements happening in town. Green Sense columns are included for reference, Town Meeting actions, our CCP progress reports and our Action Plan are included on the ACCCP website.
- RCTV Programs – The ACCCP plans to take advantage of RCTV resources by developing climate change and energy efficiency educational programs. ACCCP should also investigation high school video classes that might assist with public service announcements.
- ACCCP works with RMLD to include articles in RMLD's *In Brief* publication.
- ACCCP has developed and will identify future opportunities for information displays at frequented town locations such as: the Reading Public Library, Town Hall and the RMLD. The Reading Public Library is one of the main means by which citizens obtain information. The ACCCP should discuss with the RMLD director and the RMLB whether an energy information stipend could be allocated to the four public libraries in towns served by the RMLD. Some ideas for library displays and information include:
    - An energy resource bank
    - Expert speakers on the subject of climate change and its ramifications.
    - An energy savings column in the library's monthly newsletter.
    - Displays on global warming, energy conservation, and remedies for climate change.

Other Town of Reading Communication Avenues

- Inserts in Town of Reading mailings
  - Town of Reading automobile excise tax bill (e.g. information about fuel efficient car choice), if permissible by law
  - Town of Reading Water and Sewer bill (subject to postage limits)
  - RMLD electricity bill
  - Community Connections Newsletter (a quarterly newsletter)
  - Edline, communication via schools' websites

ACCCP and Town of Reading Sponsored Community Events

- Earth Day – In 2007, ACCCP held its first annual Earth Day festival that included a movie night and a community fair. Community groups, including local businesses, school groups, watershed organizations and walking groups hosted tables at the fair. ACCCP intends to make this an annual event.
- Change-A-Light Campaign – In 2006 ACCCP promoted Congressman Tierney's Change-A-Light Campaign in Reading and encouraged residents to change over their incandescent bulbs to CFLs. RMLD has picked up this Campaign.
- Conversation on Climate – In 2007, ACCCP brought together community groups involved in local emissions reductions to participate in the National Conversation on Climate. Groups were able to compare notes and find ways to synergize their efforts by assisting each other and reduce redundancy. Continued town-wide forums of this kind are being considered on a bi-annual or annual basis.
- Town of Reading events, such as Friends and Family Day and the Holiday Tree Lighting day.

Other Opportunities to Support Action

- Instructional motions to ask for Town Meeting to sponsor actions. This will be an ongoing means of assessing support and promoting action
- Funding through various grant opportunities. The committee will continue to support grant applications and to look for outside funding opportunities.
- Warrant Articles and by-laws where appropriate.

Emissions Reduction Assumptions:
TBD

Implementation Strategy:
Education, Communication, Recognition

Implementation Steps:

	Key Implementer	Implementation Step	Time Frame
1.	ACCCP	Continue to implement and expand the activities	Ongoing

		listed above.	
2.	ACCCP	Develop an calendar of key dates and deadlines needed to support annual activities and introduce support for new activities.	2008

Solid Waste Reduction and Recycling Awareness

Key Implementers	ACCCP, Reading Recycles	
eCO2 Reduction per Unit	TBD	Education & Outreach
eCO2 Reduction in 2012	TBD	Community Solid Waste Reduction
Related Action	Green Yard Campaign	
Target Audience	Town Residents	

Motivation for Action:
Solid waste contributes to emissions from the town because Reading's waste is incinerated in a waste-to-energy plant that burns our trash and generates electricity and associated emissions. Much of our trash does not have high fuel value, and it is far more effective to recycle than to burn it. Transport of rubbish to the incinerator also generates emissions, which are part of the calculation in Reading's emissions totals (Figure 1). Re-use of items takes them out of the waste stream entirely, resulting in zero emissions.

According to the Reading town website, recycling is responsible resource management. Recycling reduces pollution, saves energy and saves the Town of Reading money. By recycling, we save on the cost of incinerating our trash, currently about $58/ton. Recycling one ton of paper saves 17 trees. The items that we recycle become other useful products."

Background:
The Reading Department of Public Works, Highway Division provides for solid waste collection and disposal of all household rubbish. "The collection and disposal of this material impacts the health and welfare of the entire community. The effectiveness of this operation depends greatly on the cooperation of residents in complying with the established rules and regulations."

Reading's program mandates recycling of newspapers including inserts, magazines, catalogs, phone books, junk mail, clean paperboard such as cereal / pasta boxes and egg cartons and flattened cardboard as well as metal cans, glass bottles and plastic containers labeled # 1 to 7. Click to view recycling calendar for additional items.

Last year, residents of Reading recycled more than 3.5 million pounds of material. By doing this Reading saved the equivalent of 22,700 trees. And recycled enough plastic bottles to make 9,200

fleece jackets, however, not all residents are participating in the recycling program and the DPW does not include programs for reduction or re-use, the first two arrows of the recycling symbol and the Pollution Prevention triangle (reduce-reuse-recycle)

In 2007, a group of citizens came to the ACCCP to suggest that recycling might be increased in town with a concept of setting up an organization – Reading Recycles**.** Their mission is "to provide the community with a complete and efficient recycling program to respond to today's environmental concerns" and they want to build upon and leverage the great work that has been done on recycling by the Reading DPW.

The approach consists of education via website and outreach to schools on recycling. Their plan is to develop a website (readingrecycles.org) to address options beyond what Reading already offers for municipal trash collection, such as where to donate goods, resell useful items, tips on composting, and details on recycling in town.

ACCCP has been liaison between Reading Recycles and the DPW to meet the challenge of increasing recycling in the town and in the schools.

Recommendations:
The ACCCP should continue to work with the DPW, Reading Recycles and concerned citizens to remove more material from the solid waste stream and to increase recycling rates for the town and in the schools as well as condominiums, apartments and businesses.

ACCCP and Reading Recycles should make us of MA DEP GreenTeam materials for the schools to the extent possible.

Emissions Reduction Assumptions:
TBD

Implementation Strategy:
Education, Communication

Implementation Steps:

	Key Implementer	Implementation Step	Time Frame
1.	ACCCP	Set up meeting with Reading Recycles and DPW to coordinate efforts	Complete
2.	ACCCP	Meet with Reading Recycles on action plan	Ongoing
3.	Reading Recycles	Develop materials, contact elementary schools, develop school program and provide outreach to teachers in elementary schools	TBD
4.	ACCCP	Use communication tools to further efforts	Ongoing

Key Implementers	ACCCP, School Department, Scouting Groups, Community Groups, Citizen Volunteers	
eCO2 Reduction Per Unit	TBD	Education & Outreach
eCO2 Reduction in 2012	TBD	Community
Related Actions	Public Outreach & Education Programs Community Fuel Efficient Car Choice Campaign Local & Regional Trails Municipal Shade Tree Program Looped Bus Service	Schools
Target Audience	Reading Youth, Town Residents, Businesses	

Motivation:
Children are the demographic most likely to be affected by climate change. They need to learn about what they can do, and take action themselves. Some of the programs that students enroll in require projects to be completed and this action item provides students with educational projects while enlisting them to assist with data gathering and analysis for actions in this plan. This would provide needed assistance to the town while providing excellent educational experiences for students (See Appendix A for the related application). The following projects have been identified to date:

Background:

The ACCCP can more quickly implement our Action Plan with the help of Reading students and youth, who in turn will benefit from hands-on experience in an environmentally related emissions reduction project. For best results, students must be responsible enough to effectively follow directions and complete any work that they begin. Youths participating in supervised programs or groups, who are seeking a badge or completion of a school project may be best suited to this task and include but are not limited to: Eagle Scouts, Gold Award Girl Scouts, Local School Senior Projects.

The following projects have been identified to date:

Project: Calculate Emissions Reductions

- The Climate Action plan has been developed to assist Reading and its citizens to reduce their climate changing emissions. For each action summarized in the plan, associated calculations need to be completed to estimate how much carbon dioxide will be reduced by taking the action.
- The project includes both determining carbon dioxide emissions numbers for each actionable item as well as an estimate of how many are likely to participate to contribute to emissions reductions. These calculations are needed to develop an estimation of potential emissions savings for implementing each individual action in the plan.

Project: Vehicle Fuel Efficiency

Related Action: Community Fuel Efficient Car Choice Campaign

- The Registry of Motor Vehicles (RMV) provides vehicle information to the Town of Reading for excise tax collection. The specific vehicle model (which is necessary to look up mileage statistics) is not specified in the Town's listing, however, the RMV calculates value based on year, make and model.
- This project would gather data on the type of vehicles owned in Reading over the years, beginning in 2003 as baseline, and look up mileage information to calculate whether vehicle mileage is increasing starting in 2007.
- The project should strive to set up a program that would make it straightforward to continue to gather this information for future years.
- A side, or associated, project would be to determine if the actual miles driven by Reading residents might be attainable - possibly from the registry of motor vehicles, insurance companies or census information.

Project: Tree Catalog

Related Action: Municipal Shade Tree Program

The town owns many trees along public rights-of-way and in parks, but has no catalogue of the trees. This project would take a census of town-owned trees to add to the town's Geographic Information Systems (GIS) map and database. The project would consist of at least two parts, Training and Cataloging, working in associations with the Reading Tree Warden and Parks and Forestry Department:

- First, training on identifying type, size and condition of trees; along with training on using Global Positioning System (GPS) would have to be organized. Likely trainer's would be the town Supervisor of Parks, Forestry and Cemetery and/or the town Forestry Foreman.
- Then, volunteers would be sent out to record all town trees, with the information on location, type, size and condition provided to the town GIS coordinator.
- An associated issue would be to determine if the health of any street trees is being affected by low-level gas leaks in the older parts of town.

Project: Trail Adoption

Related Action: Local and Regional Trails

An Adopt-a-trail program is envisioned by the town. This project would support that program by:

- Developing materials summarizing town-owned land,
- Mapping existing trails with GPS units and
- Describing the needs for each parcel.
- Outreach, education, and in some cases, land clean-ups need to be organized to help get the program up and running.

Project: Support Local Transit

Related Action: Looped Bus Service

- Creating a public shuttle bus service will require financial support from the local business community. Students could help to reach out to businesses to create support and marketing materials for the program.

Other Projects:
Any student is welcome and encouraged to devise their own project that could help ACCCP and the Town of Reading reduce its CO_2 emissions.

Recommendations:
The ACCCP should develop and advertise an application for students interested in participating in these projects and oversee and assist with projects as they are implemented.

Emissions Reduction Assumptions:
TBD

Implementation Strategy:
Community Involvement, Education, Delegation

Implementation Steps:

	Key Implementer	Implementation Step	Time Frame
1.	ACCCP	Develop Student Application	TBD
2.	ACCCP	Advertise Positions	TBD
3.	ACCCP	Oversee and assist with project implementation.	Ongoing

School Climate Change Educational Program

Key Implementers	School Department, Assistant Superintendent, RMLD, Police Department, DPW, Citizen Volunteers, ACCCP	
eCO2 Reduction Per Unit	TBD	Education & Outreach
eCO2 Reduction in 2012	TBD	Community
Related Actions	Public Outreach & Education Programs Municipal No Idling Policy Community No Idling Campaign Non Motorized Transport to School Program Solid Waste Reduction and Recycling Awareness Student And Youth Group Projects	Schools
Target Audience	Students, Parents	

Motivation for Action:

Global climate change will affect future generations for many years to come, therefore it is important that young people know about the issues and learn ways to mitigate their impacts. Childhood and adolescence are opportune times to learn and develop environmental habits that are conducive to keeping the environment in good health. Reading should provide the tools and knowledge for our children to be good earth citizens for the sake of their future.

Students will need to be educated on the programs that are ongoing in town to reduce our green house gas emissions, so that they can participate as well as learn. By including and motivating students from kindergarten through high school, efforts will be more successful.

Climate change analysis and issues cross many disciplines. Thus, the topic is ideal for an integrated curriculum. Political Science and History, English (writing and speaking), Mathematics (calculations of emissions, impacts and mitigation), as well as, of course, Science (biology and ecology, earth science, glaciology, climate and weather, etc.) are all subjects that link to this topic.

Background:
There is much activity within the school department and individual schools addressing the environment, energy use and recycling.

The Human Services Department of the Reading Public Schools is responsible for maintenance of all municipal buildings. The School Department has established a municipal energy committee that has incorporated energy reducing measures into the school facilities. It is the committee's intent to involve students in the town's greenhouse gas mitigation efforts by allowing them to take the responsibility for turning off lights and equipment when not in use. A subcommittee is working on student involvement via a slogan campaign to engage students' awareness in the town's conservation efforts.

The ACCCP, with the support of the school department, superintendent, and town manager are promoting a No-Idling campaign at Reading's schools to reduce the emissions of cars, buses and delivery vehicles. As a part of the environmental education program, students would become aware of the polluting effects idling has on the atmosphere and encourage parents to stop idling their cars.

A group of volunteer citizens are working with the DPW and schools to incorporate a recycling education program for elementary grade levels.

The Assistant Superintendent of Schools is responsible for the curriculum taught in schools.
The District's Science Vertical Team (under the Assistant Superintendent) is currently assessing and revamping our K-12 science curriculum, including how it can and should address environmental protection, energy conservation, and climate change.

Recommendations:

<u>Reading's schools should:</u>

- Continue to assess where climate science and energy fit into the curriculum and incorporate as appropriate.
- Encourage teachers to join the MassDEP Greenteam[1].
- Partner with existing environmental education programs to help develop and implement education on climate change, environmental protection, and energy conservation. These topics should be incorporated into the public school curriculum at different grade levels and continually reinforced. School programs would provide resources that discuss specific climate change issues with a focus on positive solutions.

- Incorporate hands-on learning projects such as monitoring light or electricity usage in school or have students monitor automobile usage at home, provide a diversity of learning opportunities for children.
- Take advantage of other town resources such as the RMLD (electrical conservation), the DPW (water conservation and recycling) and the Police Department (Safe Routes to School program).

The ACCCP should:

- Continue to assist the schools in promoting no idling, recycling in the schools, and walking to school
- Develop (educational) project descriptions to help students identify ways they can assist the town in assessing and meeting its greenhouse gas emission reduction targets. Student & Youth Group Projects

Emissions Reduction Assumptions:
TBD

Implementation Strategy:
Education, Collaboration

Implementation Steps:

	Key Implementer	Implementation Step	Time Frame
1.	Reading Schools	See Recommendations Above	TBD
2.	ACCCP	See Recommendations Above	TBD

Resources:

1. The Massachusetts Department of Environmental Protection [Internet] The Green Team Available from: http://www.thegreenteam.org/
2. U.S. Environmental Protection Agency [Internet] Climate Change Kid's Site. Available from: http://epa.gov/climatechange/kids/links.html
3. National Oceanographic and Atmospheric Association [Internet] NOAA Education; Climate Change and Our Planet. Available from: http://www.education.noaa.gov/sclimate.html.
4. Green Team USA [Internet] Available from: http://www.greenteamusa.com/.
5. Climate Change Education .Org [Internet] Available from: http://climatechangeeducation.org/.

Status	**Municipal** *How the Town Can Reduce Emissions & Set An Example*	Town	RMLD	ACCCP	School
Future	Low Impact Development Program	x		x	
Future	Municipal Shade Tree Program	x		x	

Status	**Community** *How Schools, Residents and Business Owners Can Reduce Emissions*	Town	RMLD	ACCCP	School	Other
Future	Community Shade Tree Program		x	x		
Future	Green Yard Campaign			x		
Future	Residential Water Conservation Program	x		x		

Introduction to Lawns, Trees & Water Conservation
Ecological landscaping helps reduce water consumption and minimizes the use of non-renewable resources. Water conservation is linked to energy conservation because the production and treatment of water is an energy-intensive process. Ecological landscaping practices and water conservation should be encouraged. Trees and plants are a natural air cleaner absorbing carbon dioxide by removing and storing the carbon while releasing oxygen back into the air. Planting and preservation of trees and woody plants should be encouraged.

Municipal Lawns, Trees & Water Conservation Actions

Low Impact Development (LID) Program

Key Implementers	Selectmen, CPDC, Planning Dept., Town Meeting, ACCCP, ZBA
eCO2 Reduction per Unit	TBD
eCO2 Reduction in 2012	TBD
Related Actions	Municipal Shade Tree Program Green Building Program Community Shade Tree Program Green Yard Campaign

Lawns, Trees & Water Conservation

Municipal Development

	Residential Water Conservation Program Green Professionals Recognition Program	
Target Audience	Developers, Building Contractors	

Motivation for Action:
The best time to design water conservation into a commercial building or housing development is right at the beginning of the design phase. Water conservation is linked to energy conservation because the production and treatment of water is an energy-intensive process. Water must be pumped and sent through pressurized pipes to users. The treatment of water and waste water uses a significant amount of energy and therefore conservation of water resources results in energy conservation.

Use of the following Low Impact Development (LID) methods can help achieve energy reduction and produce a higher quality storm water run off which can assist a community in meeting Phase II Storm water requirements and water quality standards:

- Reduced water use in landscaping design
- Incorporation of green areas planted both to treat storm water run off and to shade buildings from summer sun and protect buildings from winter winds
- The use of green roofs which reduce energy used both for heating and cooling while retaining and/or treating storm water runoff.

Reading water and wastewater rates and rate increases can be minimized through water conservation measures.

Recommendations:
ACCCP should work to incorporate low impact development concepts into bylaws and policies (or rules and regulations, as appropriate) using existing laws as examples (EOEA version, State, other CCP towns, Plymouth) and then review with appropriate parties.

Emissions Reduction Assumptions:

Implementation Strategy:
Bylaw, Education

Implementation Steps:

	Key Implementer	Implementation Step	Time Frame
1.	ACCCP	Review LID model bylaw and meet with Selectman Tafoya.	Complete
2.	ACCCP	Review existing by-laws and policies to identify appropriate tools and language	TBD
3.	ACCCP, Town Planner, CPDC	Review bylaw with Planning Dept. and Associate CPDC	TBD
4.	ACCCP, Town	Review bylaw with full CPDC who will in turn set up	TBD

	Planner	hearings	
5.	ACCCP, CPDC	Review with Town Meeting, if needed.	TBD

Municipal Shade Tree Program

Key Implementers	Town Manager, ACCCP, Planning Dept., Selectman, Town Meeting, DPW, CPDC	
eCO2 Savings per Unit	TBD	Lawns, Trees & Water Conservation
eCO2 Savings in 2012	TBD	Municipal
Related Actions	Low Impact Development	Shade Trees
	Green Building Program	
	Community Local Tree Program	
	Green Yard Campaign	
	Residential Water Conservation Program	
	Green Professionals Recognition Program	
Target Audience	Town of Reading	

Motivation for Action:
The Town of Reading, as a member of the Cities for Climate Protection and an Arbor Day Foundation "Tree City USA", realizes the necessity of tree maintenance and the continual planting of new trees into the community.

Mature trees have aesthetic appeal, contribute to the character of the community, improve air quality, provide glare and heat protection, reduce noise, aid in the stabilization of soil, provide natural flood and climate-control, create habitats for wildlife, enhance property values and provide shade for a walk-able community. The tree canopy reduces the urban heat island effect[1], sequesters carbon, reduces gasoline evaporation from parked motor vehicles, and makes Reading more visually attractive.

Preserving existing trees is the key to increasing the canopy since mature trees provide significantly more canopy than recently planted trees. Most species of trees typically take many years to reach full capacity to sequester carbon. Trees are a natural air cleaner absorbing carbon dioxide by removing and storing the carbon while releasing oxygen back into the air.

Background:
Reading sets aside $4000 annually to fund a Municipal tree planting program.

Recommendations:
The Town of Reading should continue the maintenance of its older trees and the ongoing plantings of new trees wherever space allows (e.g. South Main Street). The town should be selecting

drought resistant locally appropriate species to both lower maintenance and increase survival. Good vegetation maintenance and on-site water management will lower storm drainage costs and prevent the loss of vegetation during droughts.

If not already underway, an official survey of shade trees located on town-owned land and right-of-ways should be performed with the use of the town's GIS system for documentation. The survey should collect the following information for each shade tree: type, health, location and size. Volunteer assistance could help offset the cost of the survey, although standards in data collection would then be needed to ensure consistency.

The Town of Reading should promote comprehensive shade tree preservation.

The tree preservation goals would include, but not be limited to:

- Reducing tree loss during development*
- Reducing damage to standing trees during construction*
- Providing for replacement of trees lost during construction*
- Planting trees where tree canopy is absent via a zoning bylaw.
- Requiring a number of trees per square footage for parking lot areas via a zoning bylaw.
- Providing for the maintenance of preserved trees after construction is completed

**already in place for CDPC approved projects*

Assess whether the town should join the Massachusetts public shade tree trust (related to assessing gas line tree damage).

The town should continue to seek grant money for new trees.

The town should set up a Municipal Tree Sponsorship Program that would include donations for new trees and adoption of newly planted trees. This would be a wonderful opportunity for families to adopt a tree and involve their children in its maintenance as it grows. A map and plaques could be kept in Town Hall to acknowledge donors.

Emissions Reduction Assumptions:
TBD

Implementation Strategy:
New tree planting, existing tree maintenance, Shade Tree survey, updated bylaws, funding

Implementation Steps:

	Key Implementer	Implementation Step	Time Frame
1.		<u>Tree Preservation in By-laws</u>	
	ACCCP Town Manager CPDC	Review by-laws and policies to see where shade tree preservation should be incorporated Work with staff to finalize by-law/policies and review with appropriate committee(s)	TBD
	Town Meeting	Conduct public hearings as necessary. Review and Vote on By-Law	

2.	Town Manager	GIS Shade Tree Survey Review with appropriate staff.	TBD
3.	ACCCP	Municipal Tree Sponsorship Program Work with Walkable Reading to draft a program and present to Town Manager.	TBD
4.	ACCCP	Contact participating towns about Massachusetts Public Shade Tree Trust (Gas Line Damage) to see if the towns recommend joining.	complete
5.	ACCCP & Town	Funding Work together to find new avenues for funding	Ongoing
6.	DPW	Plant Trees	Ongoing

References:

1. Global Warming – Actions; Heat Island Effect [Internet]. U.S. Environmental Protection Agency [cited 2008 Jan 31]. Available from: http://yosemite.epa.gov/oar/globalwarming.nsf/content/ActionsLocalHeatIslandEffect.html .

Community Lawns, Trees & Water Conservation Actions

Community Shade Tree Program

Key Implementers	ACCCP, RMLD
Involved Parties	TBD
eCO2 Reduction per Unit	TBD
eCO2 Reduction in 2012	TBD
Related Actions	Residential Water Conservation Program Low Impact Development Program Municipal Shade Tree Program Green Building Program Green Yard Campaign School Climate Change Educational Program
Target Audience	Reading Residents, Reading Businesses

Lawns, Trees & Water Conservation

Community Shade Trees

Motivation for Action:

"Trees absorb carbon dioxide by removing and storing the carbon while releasing oxygen back into the air. In one year, an acre of trees absorbs the amount of CO_2 produced by an average car driving 26,000 miles."[1] Strategically planting trees and shrubs around a home or business can reduce energy usage during the summer cooling months and winter heating months. Reducing

energy consumption for cooling and heating also reduces CO_2 emission from the burning of fossil fuels.

Well-placed deciduous trees can shade a building during hot summer months yet allow warming sunshine to enter a building when warmth is needed in the winter. "When shade trees cool a house such that one unit of air conditioning energy is avoided, 5 to 10 units of primary energy are avoided at the power plant."[3] This is not only an important economic savings, but also a very important environmental savings to the community. "The amount of savings can vary widely due to local circumstances but typical savings are on the order of 10-20% of a summer electric bill. Similar savings from a windbreak will be realized in winter during the heating season."[3]

"Trees, shrubs, and groundcover plants can also shade the ground and pavement around a home or business. This reduces heat radiation and cools the air before it reaches your home's walls and windows."[2]

Recommendations:
The ACCCP should:

Solicit the RMLD to fund and advertise an annual tree-planting matching-fund program for residents and business that will strategically plant drought resistant shade trees to reduce energy usages for cooling and heating. The RMLD can, in turn, solicit participation from local nurseries.

Develop a Tree Planting Education Campaign to promote the importance of local tree planting and maintenance of existing trees by educating residents and businesses of shade tree benefits through:

- Healthy Lawns and Landscapes Workshop
- RCTV Educational Program
- Green Sense newspaper articles
- 1 2 3 Pledge Campaign
- Tree City USA Program Promotion

Further and assist the efforts of the Rotary Arbor Day organization in their school tree donation program.

Part of the School Climate Change Educational Program can include information on native tree species, planting and maintenance.

Emissions Reduction Assumptions:
TBD

Implementation Strategy:
Education, Funding

Implementation Steps:

	Key Implementer	Implementation Steps	Time Frame
1.	ACCCP	RMLD Funded Tree Sponsorship Program	Fall 2007
	RMLD	ACCCP highlights this action for RMLD	
2.	ACCCP	Education Campaign Work with Walkable Reading, School tree donation program to develop program.	Starting in Fall 2007

Follow through with outreach and education.

References:
1. Get Involved; Why Trees? [Internet]. Tree People [cited 2008 Jan 31]. Available from: http://www.treepeople.org/vfp.dll?OakTree~getPage~&PNPK=59 .
2. A Consumer's Guide to Energy Efficiency and Renewable Energy; Your Home; Landscape Shading [Internet]. U.S. Department of Energy [cited 2008 Jan 31]. Available from: http://www.eere.energy.gov/consumer/your_home/landscaping/index.cfm/mytopic=11940 .
3. Landscaping Shade Trees and Windbreak [Internet]. EcoBroker International [cited 2008 Jan 31]. Available from: http://www.ecobroker.com/misc/articleview.aspx?ArticleID=10 .

Green Yard Campaign

Key Implementers	ACCCP	
eCO2 Savings per Unit	TBD	
eCO2 Savings in 2012	TBD	
Related Action	Residential Water Conservation Program	Lawns, Trees & Water Conservation
	Solid Waste Reduction & Recycling Awareness	
	Low Impact Development Program	Community
	Municipal Shade Tree Program	Landscaping
	Community Local Tree Program	
	Green Building Program	
	Green Professionals Recognition Program	
Target Audience	Reading Residents, landscapers, lawn suppliers, schools, garden clubs and other interested parties	

Motivation for Action:
"The objectives of an ecological landscaper are to reduce water consumption, preserve water quality, prevent soil erosion, protect biodiversity, diminish the use of toxic pesticides, and minimize the use of non-renewable resources. By striving toward these goals, the ecological landscaper can create gardens that are both environmentally responsible and enjoyable to experience."[3]

Ecological landscaping saves on fossil fuel use both through avoiding petrochemicals and by recycling yard and vegetative waste: using compost and other organic materials for soil amendments and mulch. Emissions can also be reduced by using either an electric mower or a push mower (due to modern pollution controls at power plants, an electric mower runs much cleaner than a comparable gasoline version). Catalytic converters found in cars are not found on small gasoline engines; therefore your mower creates more air pollution per gallon of gas than does your car. Hand mowers are zero emission vehicles and can also save you a trip to the gym.

Background:

The typical North American lawn requires a great deal of money, time, and energy to maintain. "A one-half acre lawn in New England produces over 3 tons or nearly 260 bags of grass clippings each year."[1] Methane, a green house gas, is produced in landfills when our grass clippings and leaves decompose without oxygen. Methane can also be created if compost is not kept aerated. Mulching and recycling grass clippings by well-aerated compost bins prevents the generation of methane during the composting process. Mulching and scattering clippings and leaves on the lawn eliminates methane from the decomposition process while providing nutrients for the lawn.[2]

Ecological landscaping takes into account the micro-climate and setting of the home and makes use of sun and shade to save on heating and cooling. It also avoids the use of petrochemicals and relies on organic methods to create a landscape that takes less energy to maintain. "Irrigated lawns strain our water supply, while fertilizers, pesticides and fungicides, used to maintain a picture-perfect turf, pollute our groundwater. Large lawns reduce biodiversity by replacing areas for wildlife habitat and forage with 'green pavement' which provides neither."[3]

Recommendations:

ACCCP should work with local garden clubs to develop the following educational programs (See Ecological Landscaping Material in Appendix B):

- Adult Educational classes offered through the Reading Recreation Department
- Healthy Lawns and Landscapes Workshop, presented by the Massachusetts Department of Environmental Protection on an annual basis
- Green Yards program for Reading Community Television.

Emissions Reduction Assumptions:
TBD

Implementation Strategy:
Education

Implementation Steps:

	Key Implementer	Implementation Step	Time Frame
1.	ACCCP	Develop educational materials with garden clubs.	TBD
2.	ACCCP	Present seminars to interested parties.	TBD
3.	ACCCP	Feature green yards for public viewing on RCTV	TBD
4.	ACCCP	Coordinate Healthy Lawns and Landscape Workshop with Mass DEP	TBD
5.	ACCCP	Use Green Sense articles, 1-2-3 pledge to educate.	Ongoing

References:

1. Department of Environmental Protection. Don't Trash Grass [Internet]. State of Connecticut [cited 2008 Jan 30]. Available from: http://www.ct.gov/dep/cwp/view.asp?a=2718&q=325364&depNav_GID=1645 .
2. Climate Change Quiz Question and Answers [Internet]. Scoop Independent News, Politics [cited 2008 Jan 30]. Available from: http://www.scoop.co.nz/stories/PO0411/S00146.htm .

3. Ecological Landscaping Association. Discover Ecological Landscaping. 2005 http://www.ecolandscaping.org/publication.html .

Residential Water Conservation Program

Key Implementers	ACCCP, Town of Reading	
eCO2 Savings per Unit	TBD	Lawns, Trees & Water Conservation
eCO2 Savings in 2012	TBD	Community Water Conservation
Related Projects	Green Yard Campaign Low Impact Development Program Green Building Program	
Target Audience	Reading Residents	

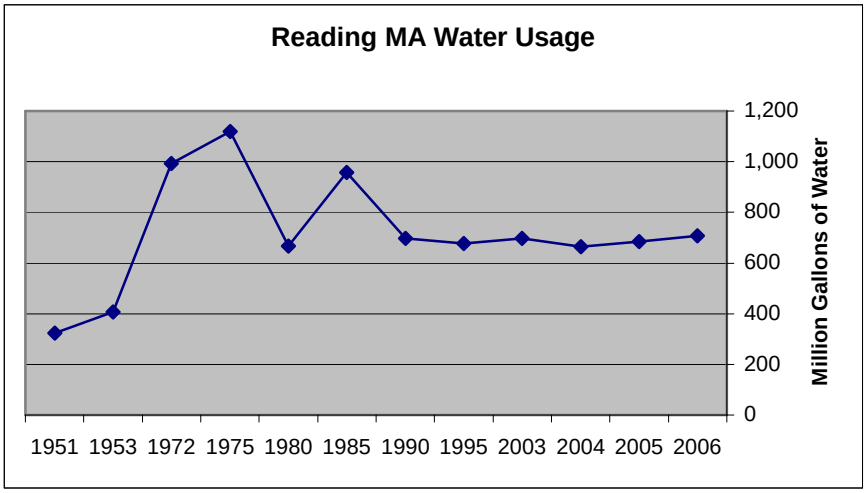
Motivation for Action:
"As we enter the 21st century, the management of water resources is emerging as one of humanity's most significant challenges. Population growth, economic development, and expansion of irrigated agriculture led to dramatic increases in water use during the 20th century… Between 2000 and 2050, the US population is projected to increase from 275 million to 403 million, while the global population is expected to increase from 6 billion to almost 9 billion. This population growth has serious implications for food and energy production and urban expansion, all of which will place increasing pressure on available fresh water supplies."[1]

Water conservation is linked to energy conservation because the production and treatment of water is an energy-intensive process. Water must be pumped and sent through pressurized pipes to users. The treatment of water and wastewater uses a significant amount of energy and therefore conservation of water resources results in energy conservation.

Background:
"The seriousness of the water management challenge is underscored by the fact that signs of water scarcity are already appearing around the globe... In the United States, water managers in 36 states anticipate that they will face local, regional, or statewide water shortages some time during the next 10 years."[1]

Our situation in the Northeast, for a time, may be less precarious than those of other regions; however, we should remember that one reason Reading joined the Massachusetts Water Resources Authority (MWRA[2]) was the near depletion of the Ipswich River, especially during periods of high water usage. With the warming of our climate, the reduction of snow fall, the erratic and often violent episodes of rain, the rising of sea levels that will bring salt water further up rivers, we may sooner than later experience strain on our water supplies. Water conservation will help us adapt to these elements of climate change.

Reading, long obtaining its water from local wells, now receives its water from the Massachusetts Water Resources Authority. Presented below is a selection of annual water consumption totals for Reading[3]:



For the last 17 years Reading's water consumption has been somewhat stable due to a stable population and town restrictions. Approximately 74% of our water supply goes to Reading households. Presently, Reading uses an average of just under 2 million gallons of fresh water daily.[3]

The selectmen, town manager, and DPW should be commended for instituting the Water Conservation Program[4]. The town government has strongly fostered a water conservation program in the home and yard. Cash rebates as incentives to conserve water have also been installed. Without these initiatives, Reading's water consumption could be significantly higher. We need to continue these initiatives and strengthen them as the situation warrants.

Recommendations:
The Town of Reading should continue and strengthen water conservation initiatives as the situation warrants.

ACCCP continue to support selectmen, town manager, and DPW on water conservation programs by coordinating our energy conservation efforts with the town's water conservation efforts.

Related Water Conservation Educational Material is found in Appendix C.

Emissions Reduction Assumptions:
TBD

Implementation Strategy:
Education

Implementation Steps:

	Key Implementer	Implementation Step	Time Frame
1.	Town of Reading	Continue and strengthen water conservation programs.	Ongoing
2.	ACCCP	Promote the town's water conservation program and educate residents about the need to conserve water and the relation to energy conservation.	Ongoing

References:

1. Fitzhugh, Thomas W., and Brian D. Richter. "Quenching Urban Thirst: Growing Cities and Their Impacts on Freshwater Ecosystems." BioScience August 2004: p 741 Available from: http://www.nature.org/initiatives/freshwater/files/fitzhugh_richter_bioscience.pdf .
2. Massachusetts Water Resources Authority [Internet]. Available from: http://www.mwra.state.ma.us/ .
3. Reading Massachusetts Annual Town Reports found at the Reading Public Library in the Reading History Room.
4. Department of Public Works. Water Conservation Program [Internet]. Town of Reading Massachusetts. Available from: http://www.ci.reading.ma.us/Pages/ReadingMA_Water/conservation/index .

Status	Community *How Schools, Residents and Business Owners Can Reduce Emissions*	Town	RMLD	ACCCP	School	Other
Future	Business 1-2-3 Annual Pledge			x		x
Future	Green Professionals Recognition Program	x		x		

Introduction to Awards & Recognition
Acknowledging local businesses and contractors who have demonstrated environmentally responsible practices promotes further such practices. Awards and recognition provide incentives for other business to incorporate green business practices. Recognition also provides customers with more information when choosing where to shop or which contractor to hire.

Community Awards & Recognition Actions

Business 1-2-3 Annual Pledge

Key Implementers	ACCCP, Town Businesses, Chamber of Commerce, Reading Rotary, Town of Reading Economic Development Commission
eCO2 Reduction Per Unit	TBD
eCO2 Reduction in 2012	TBD
Related Actions	Green Professionals Recognition Program Public Outreach & Education Programs
Target Audience	Local Businesses, Reading / North Reading Chamber of Commerce, town residents

Awards & Recognition

Community

Business Pledge

Motivation for Action:
With almost 5 million commercial buildings in the United States, retail buildings account for the largest energy bills and are responsible for the second largest percentage of greenhouse gas emissions.[1] According to the ACCCP Emission Inventory (Figure 1), Reading commercial properties account for 7% or approximately 24,000 tons of greenhouse gas emissions annually (excluding transportation such as employee and customer commute).

Background:
The 23 million small businesses in America account for 54% of all U.S. Sales. They provide 55% of all jobs and 66% of all net new jobs since the 1970s. In addition, the 600,000 franchised small businesses [alone] in the U.S. account for 40% of all retail sales and provide jobs for some 8 million people.[2] With these impressive statistics, small businesses, as an aggregate, consume a

significant amount of energy and as such can make major reductions in energy usage by conservation and green technology.

The 1-2-3 Business Pledge consists of 3 areas for emissions reduction for businesses to consider: transportation, energy, and waste. Businesses are asked to adopt 1 or 2 emissions reducing actions among a number of possibilities in each section. Selections range from becoming an Energy Star Partner to recycling 40% of business waste.

The Town of Reading Master Plan recommended that the town set up an Economic Development Commission to ensure that conditions in town are conducive to supporting robust small businesses in the community. The ACCCP 1-2-3 Business Pledge helps businesses save energy and money, learn green business practices and further promote their business.

Recommendations:

The ACCCP should:

- Publicize 1-2-3 Business Pledge to all Reading Businesses through the Reading / North Reading Chamber of Commerce, Reading Rotary and other available avenues.
- Educate local business as to the details and benefits of taking the 1-2-3 Business Pledge.
- Assist individual businesses in taking the pledge.
- List all qualifying businesses on the Green Professionals Recognition list as well as providing Pledge Decals for display in store windows.
- Seek out avenues to publish related information to residents, such as through Newcomers & Neighbors
- Use ACCCP Communication Tools to highlight businesses who have taken the 1-2-3 Business Pledge.
- Design an insert for the RMLD electricity bills that go out to the business community to advertise the program and encourage participation.

Emissions Reduction Assumptions:
TBD

Implementation Strategy:
Recognition, Communication, Signage, Education

Implementation Steps:

	Key Implementer	Implementation Steps	Time Frame
1.	ACCCP	Meet with the Economic Development Committee to lay out details of the plan	TBD
2.	ACCCP	Meet with Reading/North Reading Chamber of Commerce and the Reading Rotary to determine the most effective way to introduce the pledge to the Business community.	TBD
3.	ACCCP	Work with individual business to determine the specific initiatives they could adopt in order to take the pledge.	TBD
4.	RMLD	Provide audit services to help businesses	TBD

identify ways to reduce energy consumption and related emissions.

References:

1. EPA Newsroom; J.C. Penney Saved; Energy Star Earned – First Retail Buildings Earn the energy Star Label [Internet]. U.S. Environmental Protection Agency [cited 2007 Oct 30]. Available from:http://yosemite.epa.gov/opa/admpress.nsf/names/hq_2007-10-30_energy_star .
2. ENERGY STAR. Small Business Guide; Small Business Trends [Internet]. U.S. Environmental Protection Agency; Department of Energy [cited 2007 Dec 29]. Available from: www.energystar.gov/index.cfm?c=sb_guidebook.sb_guidebook_trends .

Green Professionals Recognition Program

Key Implementers	ACCCP, Town inspectors, Town permitting	
eCO2 Savings per Unit	TBD	Awards & Recognition
eCO2 Savings in 2012	TBD	Community
Related Actions	Public Outreach & Education Program	Professionals
	Business Annual 1-2-3 Pledge	
Target Audience	Local Building Contractors, Reading Residents, Businesses	

Motivation for Action:

Many home owners who are looking to build a new home or remodel an existing home would prefer to hire a contractor who is knowledgeable about Green Building methods and practices but have no reliable resource to reference when looking to hire a contractor. Creating a listing of local contractors who have completed an educational course and who have demonstrated use of Green Building practices would benefit the town, residents and contractors and lead to reduced emissions when the practices are put into use.

The benefit to the town is to increase the number of energy efficient and "green" homes, while the benefit to the builder is the additional promotion. The consumer benefits by living in an energy efficient home.

Recommendations:

ACCCP should work with the Town of Reading and appropriate departments to develop a Green Builder recognition process. Potential "Green Builders" will need to demonstrate how green building practices are incorporated into all of their projects, including in project support areas such as procurement and waste reduction.

Sample Processes:
http://www.cagreenbuilder.org/process.asp
http://www.builditgreen.org/guild/index.cfm?fuseaction=become_pro

Emissions Reduction Assumptions:

TBD

Implementation Strategy:
Recognition, Certification

Implementation Steps:

	Key Implementer	Implementation Steps	Time Frame
1.	ACCCP	Research existing Green Builder recognition programs. Ask Peter who in town we should work with.	TBD
2.	ACCCP/Town	Promote program and certified professionals	TBD

Appendix

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Appendix A

Student & Youth Group Projects

Reading Advisory Committee on Cities for Climate Protection (RACCCP) Youth Program and High School Projects

The RACCCP Youth Program and High School Projects Program aims to provide students with practical project experience as volunteers in the town of Reading. Working under the supervision of the committee, youth group leaders, town staff and/or teachers, students contribute to projects, gain insight into the functions of individual departments, and learn about the mission of the Cities for Climate Protection program.

RACCCP is looking for students who are able to establish priorities, are organized, can work independently and are committed to environmental stewardship.

Objectives
To help students learn about climate change mitigation while using math, science, and writing skills though hands-on projects
To provide students with valuable project experience related to environmental issues
To assist RACCCP in measuring our progress and achieving our goals
To encourage students to select careers in environmental policy, protection or education

Requirements
Be enrolled as a High School student in good academic standing with a grade point average of 3.0 or higher out of 4.0
Must be able to work independently when needed
Strong communication, organizational, and computer skills
Must be able to follow directions and complete projects on time

About the Youth Program and High School Projects Program
RACCCP created this program out of the need for assistance with the many actions Reading will need to take to address climate change, and because students may need to complete Projects for their graduation requirements or as part of their youth group program (e.g., badge or award requirement). Only a limited number of students will be accepted into the Youth Program and High School Projects Program each year. Acceptance will be based on the project topic, student experience, and interview.

Additional Projects
During your Youth Program or High School Project with RACCCP, students will be expected to work on projects independently while keeping in touch and providing progress reports to the committee. Projects are to be worked on in a timely manner, with all work being turned in to your project advisor for review. Any additional projects can also be used in your final Project Presentation at school or to your Youth Program.

Application Process
Students interested in applying for the Youth Program and High School Projects Program should submit their project proposal to RACCCP. Students will be asked to interview with RACCCP committee members.

Applications can be submitted to the RACCCP by e-mail to:

readingmassccp@hotmail.com

ATTN: Youth Program and High School Projects Coordinator

Include project proposal, name, address and phone number.

Once applications are received, committee members will evaluate the proposal and choose qualified candidates to be interviewed for the program.

Once candidates are selected for the program, they will be notified by telephone and a confirmation letter will be sent by e-mail.

Appendix B

Ecological Landscaping Educational Material

Green Yard Campaign

Promote ecological landscaping in Reading.

1. A yearly application of compost for established lawns applied on top of the lawn in the fall at a thickness of 1/8" to ¼" will provide organic matter and nutrients to the soil.
2. Produce your own compost with garden and kitchen waste.[4]
3. Mow lawns with a sharp blade at least 3" high, never cutting more than 1/3 of the blade length.
4. Leave the lawn clippings on the soil for added nutrients (nitrogen) and organic matter and a reduction in methane production.
5. Use an organic fertilizer made from blends of manure, feather meal, blood-meal, and kelp.
6. Watering of lawns can be greatly reduced or eliminated. Turf grasses will go dormant during periods of drought and then turn green again when natural rainfall returns.
7. Use hand tools and equipment whenever possible. A gas-powered mower emits the same amount of harmful emissions as 40 new automobiles running for an hour with catalytic converters. Electric tools and equipment will on average emit fewer pollutants (at the power plant) than a comparable gasoline version.

Plant trees wherever applicable especially around the home. Every tree absorbs approximately 13 pounds of CO_2 annually.[5] An acre of trees would absorb 2.6 tons of CO_2 annually. Trees also shade our homes. If properly planted, they can reduce air conditioning requirements by 30% thus reducing the amount of fossil fuel required to power our air conditioners.[5]

References (Continued from Green Yard Campaign):

4. Home Composting [Internet]. Massachusetts Department of Environmental Protection [cited 2007 June 18]. Available from: http://www.state.ma.us/dep .
5. The Forest Where We Live. Planting trees Around Your Home [Internet]. Louisiana Public Television [cited 2007 April 2]. Available from: http://www.lpb.org/programs/forest/plantguide.html .

Appendix C

Water Conservation Educational Material

Residential Water Conservation Program

(Courtesy of the Massachusetts Water Resources Authority[1] and the Reading DPW[2])

In the bathroom

- Turn off the tap while brushing teeth - save 4-10 gallons a day.
- Never use toilet as a wastebasket - save 3-7 gallons per flush.
- Don't take marathon showers - save 3-7 gallons per shower.
- Close your tub drain before turning on the water - save 3 gallons or more.
- Fill bathtub only ½ way – save 5 gallons or more. Also save hot water energy costs.
- Install low flow toilets – save 1 or more gallons per flush.
- Install low flow faucets – save 1.5 gallons per minute.
- Install low flow showerheads – save between 2 and 4 gallons per minute. Also save hot water energy costs.
- Apply leak detector survey to check for faucet, shower, and toilet leaks.

In the kitchen and laundry areas

- Fill your sink with dishes prior to hand washing. Save 8 – 15 gallons a day. Also save on hot water energy costs.
- Run dishwasher only when full – save up to 15 gallons per load. Also save on hot water energy costs.
- Buy Energy Star appliances for water and energy savings. Front loading Energy Star clothes washers can save up to 12 gallons per wash and reduce clothes dryer time. Saves water and energy.
- Wash vegetables and fruit in a basin. Use a vegetable brush to remove dirt.
- Save 2 – 4 gallons per day.
- Run garbage disposal only when necessary – save 2 –7 gallons per minute.
- Compost food scraps and eliminate electric disposal.
- Wash clothes only with a full load and adjust water level accordingly. Save water by eliminating 1 –2 loads per week – saving 22 – 25 gallons per load conventional top loader and 15 gallons for newer top load washer.

In the lawn and garden

- Lawns require only 1" of water per week. Water very early in the morning. After heavy rains, you may not need to water for 1- - 14 days.
- Instead of an entire area of lawn, substitute low water, native plants including ground cover. These plants will add color and variety to your landscape and reduce the need for water and fertilizers required for high maintenance lawns.
- Never water when its windy, rainy, or very hot.
- Raise the blade level of your mower to 2 – 3 inches or more. Longer grass retains more moisture because it shades the roots. It encourages deeper rooting, requires less fertilizer and competes better against weeks.
- Never water faster than your soil can absorb it. Avoid puddling and run-off.
- Be sure your hose has a shut-off nozzle. Hoses without a nozzle can spout 10 gallons or more per minute.
- If you have an automatic sprinkler system, make sure the timer or controller is set to water each landscape zone efficiently. Install a rain sensor or soil moisture sensor that turns off the system if it's raining or if moisture is present in the soil.

- Apply fertilizer in the early spring or fall. New growth in the summer requires more water.
- Aerate soil in April, September or October to aid water absorption and retention.
- Choose low water plants that can withstand dry summers, and thrive in drier soil.
- Mulch to keep roots moist. Mulch can serve as a ground cover that reduces water evaporation from the soil and reduces the number of weeds that would otherwise compete with the plant for available soil moisture.
- Add organic matter to help soil retain moisture. Peat moss, compost, composted manure, vegetable scraps and grass clippings will all improve soil structure and enhance moisture retaining capabilities.
- Employ drip irrigation and soaker hoses to more efficiently apply water. Drip irrigation is a highly efficient watering method consisting of a system of nozzles that deliver small quantities of water at low pressure directly to where it does the most good – the root zones of plants. It can save up to 70% of the water used by conventional methods.
- Form saucer-like basins around each plant to help retain water at plant roots.
- Utilize rain barrels under downspouts to collect rainwater to use for watering your garden. Use a lid, mesh fabric or several drops of baby oil to prevent mosquitoes from breeding.

For a free water audit and retrofit devices, call ENE Energy hotline toll free at 1-888-772-4242. Check Reading Department of Public Works for information on rebates for low-flow toilets, high-efficiency clothes washers, irrigation systems, and rain barrels. Call 781-942-0050.

References:

1. Massachusetts Water Resources Authority [Internet]. Available from: http://www.mwra.state.ma.us/ .
2. Department of Public Works. Water Conservation Program [Internet]. Town of Reading Massachusetts. Available from: http://www.ci.reading.ma.us/Pages/ReadingMA_Water/conservation/index .

Appendix D

Green Building Code Examples

Town of Arlington By-Law

Section 4. LEED[1]

It is the intent of the town to reduce the life-cycle operating costs and increase the environmental efficiency of town Buildings, by adopting the goal that all construction of new town buildings and major renovations and additions to existing town buildings meet or exceed a Silver Certification based on the most current criteria of the Leadership in Energy and Environmental Design (LEED) Green Building rating System promulgated by the United States Green Building Council, or comparable scoring system. The town shall include a minimum of LEED Silver Certification, or equivalent level in comparable building scoring system, as a required element in requests for proposal or bids it issues soliciting architectural design services for construction, major renovation, and addition to its buildings, unless the Permanent Town Building Committee makes the finding that such certification is not in keeping with the use or purpose of the building or is otherwise inappropriate. No building project shall be deemed complete until LEED Silver Certification or greater, or equivalent, has been confirmed, unless the PTBC makes the finding that such certification is not in keeping with the use of purpose of the building or is otherwise inappropriate.

Voluntary model specifications, (taken from "Building Green…" citation 1).

Contractors shall make their best efforts to:

- employ recycled, renewable, and previously used but structurally sound (reused building materials wherever feasible and permissible.
- minimize waste, spillage, pilferage, spoilage, and misuse of building materials.
- maximize energy and water use efficiency by exceeding local energy standards in building code for site planning thermal insulation and mechanical systems, and installing a mechanical home ventilation system.
- reduce indoor levels of Radon gas and formaldehyde emissions by following industry and US EPA guidelines on indoor environmental quality.
- provide consumer operating and maintenance information for best performance in this project.
- provide thoughtful environmental planning through specification, job site management, and labor supervision.

References:

1. LEED [Internet]. U.S. Green Building Council. Available from: http://www.usgbc.org/DisplayPage.aspx?CategoryID=19 .