

Potential Climate Change Projects
Submitted by Members of the Green Needham Collaborative Group
(Listed in alphabetical order by category)

Project Concepts	Votes and comments from the 11/15 meeting
Town of Needham Related Projects	
<p>1. Conduct a feasibility study related to the placement of wind turbines at the RTS or other locations in Needham.</p> <p>Study the suitability of the RTS and/or Needham High School for wind power generation, potential human and environmental impacts (<i>including animals and birds</i>), and cost-benefit analysis. NHS, The League, and Olin would play a key roles in helping ensure that the Olin-Town group meets credibility standards that would be required by the town before action would be taken upon the study's recommendations.</p>	<p><i>12 green dots</i> <i>12 pink dots</i></p> <p>Olin SCOPE project? Olin's renewable energy class is also looking at the feasibility of putting one on Olin's campus</p>
<p>2. Create a water wheel/generator at Rosemary Lake at one or more of several points where lake empties under Rosemary St.</p> <p>Rosemary Lake is naturally fed from 3 spring-fed streams. The lake is maintained at a specific level to equalize the same water level in Rosemary Pool. That equalization is accomplished through the use of two drains – a sluiceway that allows for the constant overflow from the streams and a gateway that allows for the emptying of the lake and surrounding surface water drains. There is an excess water flow that occurs 24/7 except for a period of approximately two months in April and May when a gate is opened and the water is drained from the lake to allow for the flushing and refinishing of the Rosemary Pool Complex. The constant electricity generated from this hydropower could supply a percentage of electrical needs for the pool complex in the summer and when the complex closes for the season, it could supply some of the electrical needs of the Needham Library which is located just up the hill from the lake.</p> <p>Group Involvement:</p> <p>Olin college students would be extremely useful in helping to calculate the feasibility of this project and the engineering concepts and designs. Other groups could help to determine information needed for the project: amount of flow and a determination if there is enough flow to warrant the implementation, the best location for the wheel itself to take advantage of the point of maximum output, since there are 5 dams located in Needham, determine if there are other locations that may lend themselves to similar installations, there will likely be a need for contact and processing of permits and surveys involving not only the town of Needham, but the state as well (and possibly the Federal Gov. – the Army Corps of Engineers?) Calculation of the cost of the equipment and the installation</p> <p>Benefits:</p> <ol style="list-style-type: none"> 1) Reduces energy costs to town on a continuing and unlimited basis (except for the two months the lake is emptied, 2) The energy generated could be connected to the grid, similar to a wind turbine , where the generated energy actually turns an electric meter in reverse to reflect the energy entering the grid 3) The location of the project would allow for easy connection and benefit to two town-owned facilities – Pool Complex and Library 4) Project is within easy walking distance of the high school for involvement of science classes there 	<p><i>14 green dots</i> <i>2 pink dots</i></p> <p>Olin SCOPE project?</p>

Project Concepts	Votes and comments from the 11/15 meeting
<i>Town of Needham Projects, continued.</i>	
<p>3. Explore ways to reduce auto emissions in Needham-- primarily through reductions in idling and the use of bio-diesel fuels in cars with diesel engines and the use of hybrids.</p> <p>Reductions in idling should include auto, bus and school bus idling and trucks such as delivery trucks to schools. Explore how changing traffic light timing patterns at key intersections could affect the amount of CO₂ produced at busy intersections (e.g. Chapel and Chestnut Streets at Great Plain Avenue; Highland Ave. and Rte 128; West St. and Highland Ave.; and Rte 135). Using data from past studies conducted by M.I.T. could be useful in illustrating increasing CO₂ levels within the Town. This project might also include determining how much CO₂ could be reduced by having the town adopt hybrid vehicle use by employees, and a town-wide “idling law”.</p>	<p><i>5 Green dots</i> <i>1 Pink dot</i></p>
<p>4. Look into energy harvesting from methane in Needham sewage or at the RTS.</p> <p>To our knowledge, the RTS burns the excess methane produced by decomposing trash. Is there a way to harvest this energy? Sewage is another potential source of methane gas.</p>	<p><i>3 Green dots</i></p> <p>MTC may have resources to determine whether the RTS site is feasible (has to do with size, density, extent of landfill) An Olin student has experience doing this in Africa</p>
<p>5. Public Building Energy/Water use website (and/or display information in another public place)</p> <p>Ideally, this project would raise awareness about how much resources public buildings use and compel people to think about their own energy usage. In the best case, this project is accompanied by a drive to reduce energy consumption within that public building.</p>	<p><i>2 green dots</i></p>
<p>Public School-Related Concepts</p>	
<p>6. Challenge a School (e.g. NHS, Pollard M.S.) to reduce its CO₂ emissions to zero.</p> <ul style="list-style-type: none"> ▪ Perform a student-led energy audit of the school ▪ User smaller projects, like retrofitting or devising new technologies to promote energy savings such as motion detectors, the use of biodiesel fuel for furnaces, heat sensors, sun tubes for lighting, etc. ▪ Have daily/weekly energy use information displayed in a public place ▪ Students, teachers and parents could engage in and track the impact of shifting patters of use (e.g. such as turning off lights, using fluorescent lights, adjusting temperatures of classrooms, etc.) ▪ Changes in landscaping and alternative energy sources such as solar panels could also be explored. ▪ Fundraise carbon credits for the remaining CO₂ use <p>This project will teach students about energy use and show them that they can make a difference. It’s a flexible project with lots of room for Olin to be actively involved in helping run sub-projects. It raises awareness in the community about energy conservation and it has the potential to save the school money in energy costs.</p>	<p><i>13 green dots</i> <i>4 pink dots</i></p>

Project Concepts <i>Public School Related Projects, continued</i>	Votes and comments from the 11/15 meeting
7. Encourage school-bus use. One thing that Needham students can easily do is ride the school bus to school. This program would have students calculate how much CO ₂ gets emitted by driving/riding individually to school and do calculations to see what difference riding the bust to school would have.	<i>1 green dot</i>
Citizen Awareness & Reductions in Energy Use	
9. Light Bulb Campaign: We will encourage Needham residents to replace their light bulbs with more energy efficient CF bulbs. Ideally, we would give bulbs away for free and could explore distribution by local businesses or through public buildings such as the library). We could also harness PTCs and other groups to distribute bulbs as a fundraiser.	<i>2 green dots</i> <i>1 pink dot</i>
10. Olin's IEEE chapter could work to help install motion-sensing switches into households and/or schools. Olin's IEEE chapter is looking for electronic projects that make a difference. One of the ideas they came up with was to help schools and households install motion-sensing lights. Simple ones can be purchased for \$15, and maybe we could find grants to reduce the cost further. Olin students would offer to help install lights for free.	<i>3 green dots</i> <i>3 pink dots</i> Might be more effective to make visible light switch reminders to turn off the lights. But it makes more sense to have motion sensors in low traffic areas What's the cost vs. energy saved?
11. Place recycling bins in public spaces: This project would encourage people to recycle by lowering the activation energy for recycling. Adding a few recycling bins in public spaces would be a relatively minor undertaking. Also, recycling bins in public spaces will hopefully raise awareness and encourage citizens to recycle more in private. However, we need to know about Needham's recycling system before we can know how difficult it would be to sustain the pick-up and maintenance of this project.	<i>7 green dots</i> <i>1 pink dot</i> Talk w/ DPW about collection practices How would they be maintained? Placement near schools as well.
Project Concepts <i>Citizen Awareness & Reductions in Energy Use continued</i>	Votes and comments from the 11/15 meeting
12. Encourage local businesses to sport bile racks. By placing bike racks around the town, we can encourage citizens to ride bikes instead of driving. This also increases the social image of Needham.	<i>0 dots</i>
13. Household energy reduction competition <ul style="list-style-type: none"> ▪ Make it a school project, get families involved. ▪ Measure/compare households by reading energy meters (with homeowner's permission) ▪ Highly publicized and prizes donated by local businesses <p>This is a similar project to the zero carbon school idea, (Project # 6), but it takes it to the household and family level, with similar benefits.</p> <p>Potential Obstacles: It might be difficult to keep households involved or committed The energy company may have a problem with us reading power meters.</p>	<i>3 green dots</i> Like the idea of having a contest with prizes Schools can have a remarkable impact on community behavior if students come home motivated. Linking this to efforts in the school/welcoming community parents to learn about the issues could help this competition grow.

Other Types of Projects:	
<p>14. Make automatic (solar-powered) controls for window blinds to increase heating efficiency.</p> <p>Lots of thermal energy is lost through windows in buildings. When window blinds are down, the windows are substantially more thermally insulating. The hope is to design, build, and distribute a product that would control the blinds either on a timer or with light sensor so that less thermal energy is lost through windows.</p>	<p><i>5 green dots</i></p> <p>I would like to investigate this as a sustainable business. It also seems like a relatively inappropriate use of the entire group's time –Joe Kendall, Olin</p> <p>Olin SCOPE project?</p>
<p>15. Calculate Needham's carbon footprint</p> <p>Comments from meeting: Would be interested in figuring out Pollar's carbon footprint w/PEAT members. We already do individual "ecological footprints" during Earth Week @ Pollard, i.e. 17 Earths to support your lifestyle – Meg Taylor</p> <p>I feel this would be a big springboard for town-wide awareness and commitment to reducing CO₂</p>	<p><i>2 green dots</i></p> <p>Good data gathering analysis project (other comments to the left)</p>