Worcester and Middlesex Counties (portions of each) Massachusetts

Ashburnham
Ashby
Athol
Ayer
Clinton
Fitchburg
Gardner
Groton
Harvard
Hubbardston
Lancaster
Leominster
Lunenburg
Petersham
Phillipston
Royalston
Shirley
Sterling
Templeton
Townsend
Westminster
Winchendon
and Devens

MONTACHUSETT REGION ENERGY PLAN

PHOTO COURTESY OF DANA ARMSTRONG/MWCC

10/21/2011

Prepared by the Montachusett Regional Planning Commission (MRPC) in partnership with Worcester Polytechnic Institute (WPI)

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Economic Development Administration (EDA)

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1. INTRODUCTION AND OVERVIEW

In October 2010, the Montachusett Regional Planning Commission (MRPC) was awarded a one year financial assistance award in the amount of $66,000 from the U.S. Department of Commerce's Economic Development Administration's Philadelphia Office to conduct a Regional Energy Plan for the Montachusett Region. The MRPC served as lead applicant for this project. MRPC is a unit of regional government created under the General Laws (MGL Chapter 40B, Sections 1-8). Regional planning commissions (agencies) provide planning advisory services and technical assistance to its 22 member communities. MRPC partnered with Worcester Polytechnic Institute (WPI) to develop the plan and the Montachusett Energy Advisory Committee, formed in January 2010, provided oversight of the project.

The entire Montachusett Region is the location and beneficiary of this plan. The Montachusett Region is located in Northern Central Massachusetts and consists of portions of both Worcester and Middlesex Counties. The region is comprised of Devens, the cities of Fitchburg, Leominster and Gardner and the towns of Ashburnham, Ashby, Athol, Ayer, Clinton, Groton, Harvard, Hubbardston, Lancaster, Lunenburg, Petersham, Phillipston, Royalston, Shirley, Sterling, Templeton, Townsend, Westminster and Winchendon. Population ranges widely from 1,234 persons in the Town of Petersham to a high of 40,759 in the City of Leominster, according to the 2010 U.S. Census.

It is a well-known fact that energy and fuel costs derived from fossil fuels are quickly sent out of our regional economy but, in contrast, renewable energy and energy efficiency keep more of those dollars in our local communities and regional economy. By reducing the total energy requirements in the region, improved energy efficiency will make increased reliance on renewable energy sources more practical and affordable. Moreover, renewables are not subject to fossil fuel price volatility – energy prices in a region with both efficiency and renewable energy are likely to see less volatility and lower average power prices, since price spikes will be reduced.

Efficiency and renewable energy also provide complementary economic development benefits by generating investment and employment in different sectors, which expands the total economic stimulus effect. Additionally, renewable energy also has a high job growth rate and there is an effort at Fitchburg State College and Mount Wachusett Community College to educate and train people in the skill areas necessary to fuel the clean energy transition.

The goal of this Regional Energy Plan is to promote the reduction of electricity used, energy used for transportation, and non-electric energy used for heating; replacement of fossil fuels with renewable sources, and reduce global climate change emissions. It is also hoped that this Regional Energy Plan will help the Commonwealth of Massachusetts meet its clean energy goals, as expressed in the Green Communities Act, the Global Warming Solutions Act and the policies of the Patrick Administration and result in sustainable green enhancements to energy efficiency and production within the Montachusett Region.

The scope of this project entailed the completion of seven tasks (see Appendix A). Tasks included

quarterly meetings of the Montachusett Advisory Committee to provide oversight of the project, a renewable energy regional inventory, energy model simulation forecasting that formulated by a team of WPI students along with faculty and a System Dynamics Consultant, design and construction of energy educational exhibits displayed at the 2011 American Planning Association National Conference in Boston, six community workshops, a wrap-up event, and of course this final report that includes both regional and local energy related recommendations.

A. Acknowledgements

The Montachusett Regional Planning Commission would like to thank the following contributors:

- The Montachusett Region Energy Advisory Committee who provided valuable input and oversight throughout study in its entirety. Special thanks to Sean Hamilton, manager of the Sterling Municipal Light Department, for continuing to chair this committee.

- **Worcester Polytechnic Institute (WPI)** and Professor Michael Radzicki along with a team of students that worked on energy model simulations as part of this project (pictured on right). Students included Michael P. Vaudreuil, Daniel R. Guerin, Mark R. Arnold, and Benjamin S. Timms.

- Presenters at the six regional workshops for their time and efforts to educate and inform the regions businesses, students, municipal leaders, and the general public. Speakers included: State Representative Stephen DiNatale, State Representative Dennis Rosa; Kelly Brown, MA Department of Energy Resources; Noreen Piazza, Lancaster Planning Director; Michael Radzicki, Professor, WPI and Sterling Planning Board Member; Donald McCauley of McCauley Lyman LLC and Minutemen Wind; John Fitch of Princeton Municipal Light; Joel Lindsay, Program Manager for Weston Solutions, and; Amy Barad, Project Manager with the Clean Energy Center. We would also like to thank our Chairman, Victor Koivumaki, for moderating the Regional Energy Plan Press Conference and Wrap-up Event.

- Participating residents, business owners, and public officials and all other stakeholders who participated in the Press Conference, the six workshops, and the Wrap-Up Celebration in October 2011. Moreover, events such as these need to be held in suitable locations. The support received from communities (Lancaster, Athol, and Clinton), Evergreen Solar, the Doyle Conservation Center, the Cosgrove Intake Facility, Mount Wachusett Community College (Gardner Campus), the Harvard Public Library and the Red Apple Farm in Phillipston was considerable.

2. THE PLANNING TEAM

A. Montachusett Region Energy Advisory Committee

The Montachusett Region Energy Advisory Committee (EAC) was formed in January 2010 prior to this grant award and it will remain intact indefinitely. This Committee has incorporated members over time leading to additional activities and accomplishments while serving as a model to others. In fact, the Energy Advisory Committee played a role in obtaining grant funds from the U.S. Department of Commerce, Economic Development Administration (EDA) in October 2010 to devise an energy plan for the Montachusett Region.

The Advisory Committee is comprised of representatives of both the private and public sectors including, among others, National Grid, Unitil, Planning Board Members, municipal planning staff, municipal light plants, MassDevelopment, Heywood Hospital, municipal emergency management directors, and environmental groups i.e. Nashua River Watershed Association. A complete listing of those serving on the Montachusett Energy Advisory Committee can be found in Appendix **B**.

MARCH 11, 2011 ENERGY ADVISORY COMMITTEE MEETING

Since the beginning of this particular project, the Energy Advisory Committee met a total of four times (November 19, 2010, March 11, 2011, May 13, 2011, and September 16, 2011) to provide oversight of grant activities. During these meetings, significant contributions and accomplishments were made ranging from the interview of the consultant responsible for oversight of WPI students to ensure a quality product, reviewing and providing input on the inventory of renewable energy facilities throughout the region, and commenting on the final draft report at the September meeting. In short, all meetings were well attended and significant input and contribution towards the project were realized. Agendas and meeting minutes can be found in Appendix **C.**

B. Worcester Polytechnic Institute

MRPC Staff collaborated with Michael Radzicki, Associate Professor of Social Science and Policy Studies at Worcester Polytechnic Institute and Sterling Planning Board Member, to form a team of four students. Student in-kind services were utilized to develop a System Dynamics computer simulation Regional Energy Model to forecast the energy demands for the Montachusett Region under a variety of simulations and scenarios.

Throughout the duration of the project, MRPC Staff was in regular contact with Professor Radzicki and the student team to assist their efforts. WPI Students presented initial work to the Energy Advisory Committee in March 2011 to obtain input and guidance. The students' final product was presented in May 2011**.** As part of the presentation, model runs were used for a number of situations such as increases in oil price, electrical demand, and green production of energy. Consultant Jennifer Andersen further refined the model during the summer months. The model simulation was available on MRPC's website for public use in October 2011.

C. System Dynamics Consultant

As part of the Regional Energy Plan project, a consultant was hired to provide oversight of WPI students facilitating and assuring the development of a quality product. MRPC staff worked to put together the Request for Qualifications (RFQ) and carefully adhered to federal and state procurement laws. Proposals were due on or before November 3rd at 1pm. MRPC received one proposal from Jennifer Andersen from Lancaster, Pennsylvania. MRPC's review committee, which included two MRPC staff members and Mike Radzicki (WPI Associate Professor), reviewed and ranked the proposal and recommended that Jennifer Andersen be interviewed by the Montachusett Region Energy Advisory Committee.

The Energy Advisory Committee met on November 19, 2010 where the consultant was interviewed. The Committee voted to recommend to MRPC Commission Members to hire Consultant Jennifer Andersen to provide WPI Student Oversight and ensure a quality product. Based on the recommendation of the Montachusett Regional Energy Advisory Committee, MRPC Commission Members voted to hire Jennifer Andersen at the monthly MRPC Meeting held on November 30, 2010. A contract was signed between MRPC and Jennifer Andersen on December 1, 2010.

The consultant worked diligently with the student team throughout the duration of the project and further refined the student's model during the summer months after the students work was completed in May. The model simulation is available on MRPC's website for public use as of October 2011.

3. PUBLIC PARTICIPATION AND INVOLVEMENT

From the beginning of the project, MRPC and its partners realized that, to be successful, the project must involve a large constituency. Broad-based public support would result in a plan that meets the needs and desires of the region and provide the groundwork for implementing recommendations.

Public participation and involvement, outlined below, included a widely publicized Press Conference to announce federal funding, six regional workshops, educational materials and exhibits, and a Wrap-Up event at the conclusion of the project. These events were widely advertised, well attended, and received much media attention. MRPC staff also presented updates on the study to MRPC Planning Commissioners and guests on a monthly basis at regularly scheduled Commission Meetings.

A. Press Conference

On October 22, 2010 MRPC held a widely publicized press conference at Evergreen Solar in Devens to announce federal funding for the project. The intention of the Press Conference was to raise awareness of the planning effort and engender stakeholder buy-in. Invited guests included local and state officials, town administrators, emergency management directors, utility providers, the business community and others.

More than 50 people attended. Speakers included: Victor Koivumaki, MRPC Chairman; Glenn Eaton, MRPC Executive Director; Sean Hamilton, Montachusett Region Energy Advisory Committee Chairman; State Representative Jennifer Benson; State Representative Stephen Dinatale; State Representative Dennis Rosa; John Hume, MRPC Director of Planning and Development and; Linnea Palmer Paton, a student at Worcester Polytechnic Institute. All speakers indicated the importance of renewable energy, energy conservation, and conducting this study. It received coverage from the Gardner News, Worcester Telegram, and Nashoba Publications. **(See Appendix D,** Outreach Efforts, Agenda, Press Coverage).

OCTOBER 22, 2010 REGIONAL ENERGY PLAN PRESS CONFERENCE AT EVERGREEN SOLAR, DEVENS

B. Six Community Workshops

Adhering to the scope of services within MRPC's contract with EDA, the MRPC hosted six energy related workshops that took place throughout various locations within the Montachusett Region. All six were widely publicized and open to the general public. Anyone interested was highly encouraged to attend including citizens, local and state officials, students, the regional business community and others. Attendance at all workshops was impressive, indicating much interest and importance throughout the region in energy related topics. Agendas and press coverage can be found in **Appendix E**. A description of each workshop follows. Moreover, PowerPoints and audio MP3 files can be found on MRPC's website at the following link http://www.mrpc.org/energyplan.htm.

- The **first** workshop was held on December 1, 2010 at Mount Wachusett Community College in Gardner. Professor Mike Radzicki and the students at WPI ran a Regional Energy Cafe to gather input from stakeholders to develop a system dynamics simulation model for future energy demands and needs within the Montachusett Region.

HELP FORMULATE A REGIONAL ENERGY FORECASTING MODEL WORKSHOP AT MOUNT WACHUSETT COMMUNITY COLLEGE, GARDNER

- The **second** workshop for this project was held in the Town of Lancaster's Town Hall on January 14th. A Massachusetts Department of Energy Resources staff member (Kelly Brown, Central MA Green Community Coordinator) presented initiatives and services to cities and towns on the path to becoming Green Communities. Lancaster, one of the first communities to become a designated Green Community, also provided valuable input.

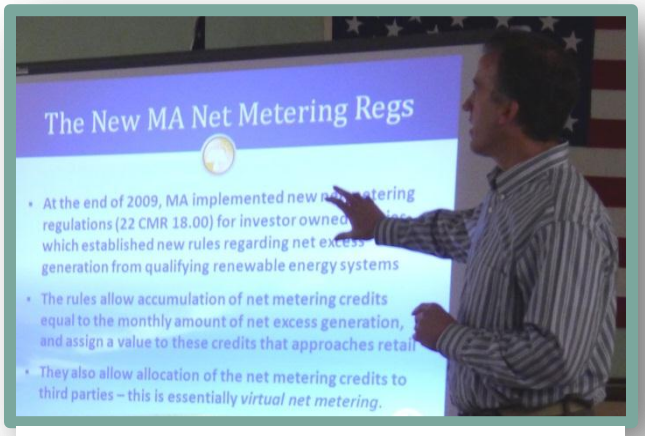
GREEN COMMUNITIES PROGRAM WORKSHOP AT LANCASTER TOWN HALL

- We had our **third** of six workshops on March 22, 2011 at the Doyle Conservation Center in Leominster. State Representative Dennis Rosa gave a legislative update on energy-related issues and Donald McCauley of McCauley Lyman LLC and Minutemen Wind and John Fitch of Princeton Municipal Light gave separate presentations on wind turbine siting.

  Guided tours of the Doyle Conservation Center were also available for attendees of the workshop. This facility provides a unique opportunity to demonstrate the importance and practicality of sustainable design. Photovoltaic panels, high-efficiency lighting and controls, a displacement ventilation system, high performance windows, a high performance building envelope, geothermal wells and carbon dioxide monitoring systems are all part of the building's sustainable design.

WIND TURBINE SITING WORKSHOP AT DOYLE CONSERVATION CENTER. LEOMINSTER

- We had our **fourth** workshop on May 5, 2011 at the Athol Town Hall. State Representative Stephen DiNatale gave a legislative update on energy-related issues and Joel Lindsay, Program Manager for Weston Solutions, gave a presentation on virtual net metering: how municipalities and businesses can generate renewable energy and sell it. New net metering rules for investor owned utilities in Massachusetts allow Towns or private developers to build renewable energy projects on private or public land, and credit the energy to their own facilities or sell it to third parties at close to a retail rate. It was discussed that these provisions were enacted in 2010 and have generated significant interest in new renewable energy development in the State.



NET METERING WORKSHOP HELD AT ATHOL TOWN HALL

- The fifth workshop took place in Clinton Town Hall on June 20. The workshop was about "Hydropower". Clinton Town Administrator Michael Ward opened the Workshop that included a tour of the Cosgrove Intake Facility at Wachusett Reservoir, an Update on Energy Related Legislation by Representative Stephen Dinatale, and a presentation by Amy Barad, Project Manager with the Clean Energy Center.

HYDRO POWER WORKSHOP AT CLINTON TOWN HALL AND COSGROVE INTAKE FACILITY TOUR

- The **sixth and final** workshop was held at the Harvard Public Library on September 29th. The "Solar in September" featured many speakers and was well attended. Senator Jamie Eldridge and Representative Stephen DiNatale gave legislative updates on energy issues. Kelly Brown of the MA Department of Energy and Environmental Affairs discussed incentive opportunities to help communities save money. Massachusetts Clean Energy Center representatives spoke about solar incentive programs. Members of the Harvard Energy Advisory Committee shared their experiences regarding becoming a Green Community and the selection of Solarize Mass solar installation discounts. New England Breeze Solar Installation President Mark Durrenberger discussed the project in Harvard. Real Estate Broker Victor Normand addressed relationships between solar installations, real estate property values and neighborhood desirability.

SOLAR IN SEPTEMBER WORKSHOP AT HARVARD PUBLIC LIBRARY

C. Energy Educational Exhibits

An educational exhibit was created and featured by MRPC staff members at the National American Planning Association (APA) Conference held in Boston, Massachusetts on April 9th through April 12th, 2011. Materials were also featured at all six scheduled workshops undertaken as part of this study. Materials development such as project descriptions, a renewable energy inventory and associated maps and other energy related information along with a web link on MRPC's website (http://www.mrpc.org/MREnergyPlan/index.htm) was initiated, distributed, and displayed. Additionally, this further assisted to help capture municipal and business decision-makers interest in committing to this study and the resulting recommendations.

APA CONFERENCE EXHIBIT, BOSTON, MA – APRIL 9 – 12, 2011

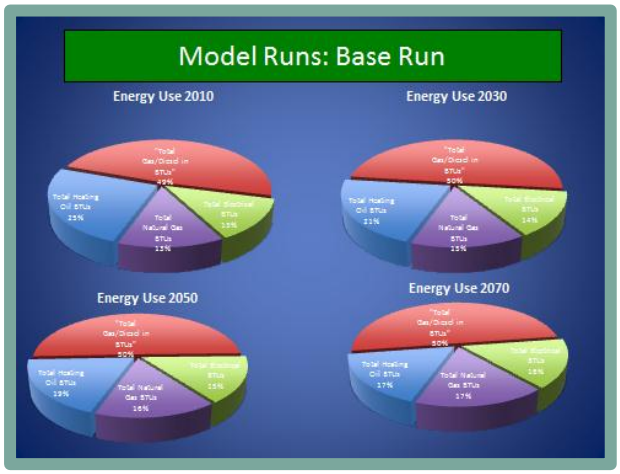
D. Wrap-Up Event

MRPC prepared for and conducted a Wrap-Up Event on Friday, October 21, 2011 at the Red Apple Farm in Phillipston, MA. The Red Apple Farm is 100% powered by sun and wind making it an ideal setting for this event (see www.redapplefarm.com). There were discussions of collaborative outreach and education, all work completed, and recommendations included in the report. Speakers included Congressman John Olver, Representative Stephen DiNatale, Representative Anne Gobi, Jim Barry from the Department of Energy Resources, Professor Michael Radzicki, Worcester Polytechnic Institute, Victor Koivumaki, Montachusett Regional Planning Commission, and Sean Hamilton, Montachusett Region Energy Advisory Committee. Also, staff from the MRPC and consultant Jennifer Andersen gave a PowerPoint on the Regional Energy Plan. Press releases were submitted to local newspapers throughout the region, and the event was advertised on cable television. Invitations were forwarded to businesses, federal, state, and local politicians, educational institutions including Fitchburg State College and Mount Wachusett Community College, public and private sector economic development practitioners, community volunteers, planning boards, conservation commissions, zoning boards, selectmen and city councilors throughout the Montachusett Region. In short, invitations were extended to anyone with interest in the project. Outreach efforts can be found in Appendix **F.**

4. ENERGY MODEL FORECASTING

As part of the development of the Montachusett Region Energy Plan, a simulation model was built based upon the system dynamics modeling methodology. This methodology evolved from the work of MIT Professor Jay W. Forrester in the 1950s. Forrester was an engineer by training and gradually adapted engineering principles to the study of social systems. System dynamics models are therefore feedback-rich, borrowing from the principles of control theory, which itself has evolved as an interdisciplinary field combining engineering and mathematics. Forrester applied his methodology to problems in industrial management[1] before turning his attention to the growth and stagnation of urban areas[2]. His work forms the theoretical basis of the model built for this project.

A. Why Model?



Setting up a computer simulation model can be time-consuming, even tedious. Along the way, many decisions have to be made regarding what should be included in the model, what can reasonably be left out, how much detail should be used to represent what is to be included, and so on. In the end, the model is always a simplification of reality. A legitimate question is "Why should we invest this time and effort?" The statistician George E.P. Box is credited with the words "All models are wrong, but some are useful." Forrester took this idea even further, pointing out that everyone uses models every day; after all, we don't have a school system in our heads, nor a company or a family. We have mental representations of these systems, and we make decisions based on them. These "mental models," just like any simulation model, are incomplete and subject to bias. Most significantly, however, is that mental models are difficult for others to discern; they are hidden from view.

One advantage to putting assumptions into a computer is that they are defined and available for examination. A group of people can use the process of building the model, as well as the model itself, to provoke conversation. Differences of opinion can be tested by simulating the model first with one viewpoint represented, and then with another, to see whether or not either make significant difference in the simulated outcome. When differences do occur, the structure of the model can help

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[1] Forrester JW. 1961. *Industrial Dynamics* MIT Press: Cambridge, MA. (Now available from Pegasus Communication, Waltham, MA).

[2] Forrester JW. 1969. *Urban Dynamics*. MIT Press: Cambridge, MA. (Now available from Pegasus Communication, Waltham, MA).

explain why one outcome is so much different from another. The value lies not in finding "the best" outcome, but in understanding what generates a particular desirable behavior pattern. Such controlled experimentation is not possible in real life, but a simulation model offers a convenient and risk-free laboratory to examine many plausible scenarios.

B. Scenario Planning for Energy Management

There are many approaches available to an organization wanting to create an energy plan, or any type of strategic plan. Planning for the future involves making assumptions about how the past and the present will influence and shape the future. Out of many possible paths, managing the future involves concentrating on a few desirable paths, while being aware of probable obstacles that will be on those paths. This too is part of our everyday lives. When we spy a dark cloud and take an umbrella along "just in case" or check the clock and take another route home because we know the normal route is most likely moving slowly due to traffic, we are performing a quick assessment of what could happen and then taking steps to counter any "glitches" we think we may encounter.

Using a simulation model, we can set up a formalized process of assessing possible future paths towards our goals. In the case of managing energy demand, the Montachusett region will be expected to do its part in meeting state-wide targets for lower greenhouse gas emissions in the coming decades. This is in response to the Global Warming Solutions Act signed by the Governor in 2008. Projecting what could happen over several decades involves much more uncertainty, and therefore more risk, than planning for tomorrow's weather or traffic situation. Scenario planning can be thought of as a specialized form of forecasting. Rather than point prediction ("Tomorrow's high temperature will be 82 degrees"), the focus is on understanding the various trajectories that energy demand could follow in the coming years, and how to influence them for the better.

C. Our Process for Building the Model

The simulation model has been built through a collaborative effort between the Montachusett Regional Planning Commission, Worcester Polytechnic Institute and a system dynamics consultant. The MRPC has provided domain knowledge about the region and its inhabitants, has gathered citizens to participate in a "World Café" facilitation session specifically to give input to the model building process, and has aided in gathering data for the model. Worcester Polytechnic Institute students have worked as a team, under the guidance of a system dynamics Professor serving as project advisor, to build the simulation model. WPI has a strong commitment to project-based student work and requires all students to complete several hands-on projects as part of their Bachelor degree education. Prior to the project, the students completed two courses in system dynamics modeling. This prepared them for building the model, but was not sufficient time to turn the model into a working application, complete with a user interface. This last task was handled by the consultant, who extended the students' work to create an interactive planning tool.

The World Café facilitation session was open to interested individuals of the Montachusett Region.

Participants were invited to react to a series of questions regarding energy demand in the region as well as what makes the region attractive (and unattractive). In small groups, they were asked to brainstorm ideas for each topic; groups dispersed and reformed for each topic to maximize the diversity of ideas. At the end of the brainstorming session, the facilitators (WPI Professor, assisted by the students and consultant) presented the ideas to the group as a whole. The discussion that followed focused on emerging patterns and themes that the students could use to prioritize their work in building the model. As stated earlier, model building involves deciding what to include and what to exclude from the model; the World Café session was the first step in that process.

D. The Paradox of Attraction

The questions at the World Café concerned the factors that will influence energy demand for the next 50 years and the factors that contribute to the attractiveness of the region. These ideas are closely intertwined. The state of Massachusetts seeks to build clean energy industries as a way of attracting jobs to the state and reducing dependence on energy sources located outside the state's borders. Simultaneously, the state wishes to lower greenhouse gas emissions by encouraging changes in energy use (conservation) and greater utilization of renewable energy sources. The Montachusett Region will participate in achieving these goals.

The "paradox of attraction" is an idea stemming from Forrester's work in Urban Dynamics. Given freedom of movement, the pursuit of progress in areas we would naturally like to see improve (better schools for our children, low unemployment, preserved natural areas, etc.) will eventually lead to more people moving into an area, until the pressures created by the new growth will counteract what made the place attractive in the first place. This is not to say that growth is bad, but rather that an area cannot remain more attractive than surrounding areas over the long term. The flow of people seeking to better their own situation, into and out of a city, town, state, or region, will eventually "even things out" so that the overall attractiveness of a particular place is not significantly different than neighboring areas.

It is important to note that absolute attractiveness cannot be quantified. The issue at hand is one of relative attractiveness. Assumptions can be made about what makes a place more or less attractive, including what appeals to particular age groups. As the various factors that contribute to attractiveness improve or decline over time, people move into or out of the area *in relatively greater or lesser quantities* than they would have done had these factors not changed.

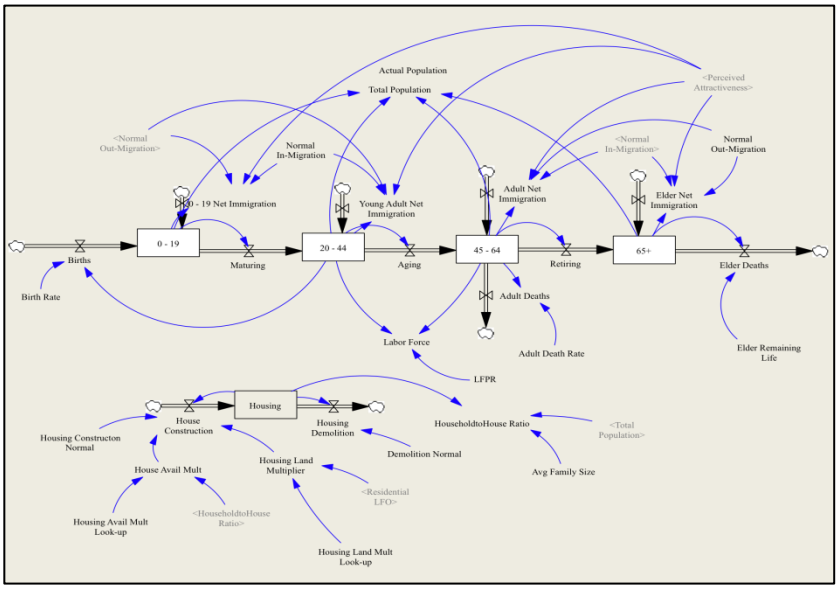
In terms of energy planning, if the Montachusett Region captures some of the job growth assumed to result from the Massachusetts Clean Energy and Climate Plan, the economy of the region will likely benefit. There will also be unintended consequences stemming from the new growth. People tend to move to areas of job creation. They build houses, enroll their children in their local schools and commute to work. They also add to the energy demand of the region. Using less energy per person helps to achieve the State goals, but what if there are many more people? The model built for this

project helps to investigate these concerns.

E. Model Sectors

The Montachusett Region physically consists of 22 communities. To examine energy demand for the region as a whole, the model aggregates all 22 communities into one virtual community. It does not distinguish between people living in Gardner or Fitchburg; they are all part of the same region. Similarly, migration of people between towns is not considered in this version of the model. The following is a brief overview of each sector of the model.

Demographics - The Flow of People



The population of the region is divided into four age groups, Children (0 – 19), Young Adults (20 – 44), Adults (45 – 64) and Elders (65+). The region has a birth rate by which Children are added to the population. Adults and Elders lose people to death. As time progresses in the model, people "age" by moving from one age group to the next.

The region experiences migration in each age group. A constant fraction of each age group is assumed to move into and out of the region at all times. This base level of migration is modified by the attractiveness of the region to each age group. For example, Young Adults are assumed to be concerned with school quality, so their attractiveness component has a higher emphasis on this factor.

The labor force is assumed to be comprised of the Young Adults and Adults age groups; although 16 – 18 year-olds often hold part-time jobs, their presence would be insignificant to the labor force of the region as a whole.

Houses, Businesses and Land Use

The region encompasses housing structures and businesses (both commercial and industrial), all of which occupy land and are assessed for tax purposes. Housing structures are assumed to be constructed when population outstrips available supply, but is also limited to the amount of land zoned for residential use.

Businesses can move into or out of the region, just as people can, but the factors driving such migration (factors of business attractiveness) are different than those affecting the migration of

people. The presence of businesses affects the migration of people through job creation.

Public Services (Schools, Fire Protection, Police Protection, Public Works)

The population of the region depends on public services just as any individual community would. Each of these areas is aggregated for the region. Budget requests that go unfulfilled can negatively affect the region's attractiveness. Schools are funded through a combination of local property taxes and state aid (Chapter 70 aid). Because the state ensures a per-student funding level closely on par with the national average, the model uses the ratio of local funding to state aid in the attractiveness calculation. Over time, if the region is prospering, the region would presumably shoulder more of the burden for educating its students and become less reliant on Chapter 70 aid.

Fire and police services are calculated according to the size of the region's population and national averages for ratios of service people to the population. The effectiveness of these services is also due to the equipment at their disposal. Unfunded requests for new hires and equipment purchases can therefore negatively affect the attractiveness of the region.

Changes in population also affect the level of spending for public works in the region. Over time, public works spending per person tends to grow, as new technology and/or methodologies are incorporated into residential and business expansion. Growing populations also stress the region's services by requiring more roads to be plowed, more trash to be picked up, and so on.

Budgeting of Scarce Resources

The budgeting calculations in the model allocate scarce resources according to a set of priorities. School funding is considered to have top priority, with all other needs equally weighted. This part of the model essentially closes the loop between population growth, which drives energy demand, and the attractiveness of the region. When an area is unable to fund the services its population considers important, the overall attractiveness will be lower than it would be if all services were fully funded.

Attraction to people and businesses

The components of attractiveness for people and businesses are largely derived from the other sectors of the model. A weighted average calculation is used to determine each composite attraction factor, which then drives the migration of people and businesses. It is assumed that children and young adults migrate according to the same factors; the adult age group is not considered to be of child-bearing age.

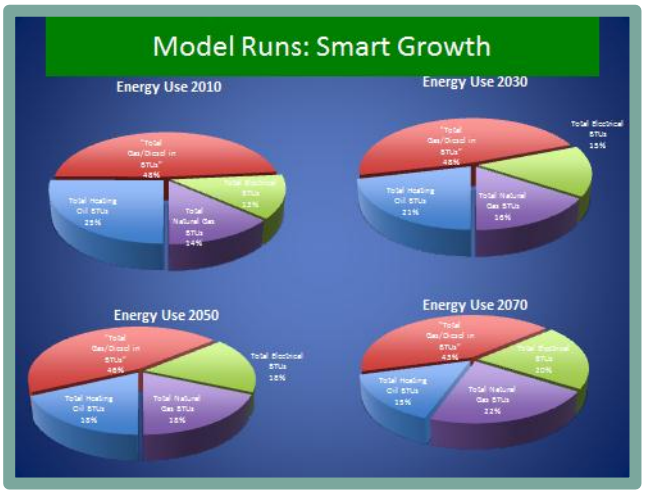
Energy demand

Energy demand is tracked for heating oil, natural gas, electricity and gas/diesel fuel. The increase or decrease in energy demand per capita for such non-renewable energy sources can be used as a metric for judging relative success or failure for various scenarios aimed at achieving energy conservation goals.

F. Results

The model has been used to run various scenarios concerning job growth, changes in the population age groups, energy use by homes and businesses, and others. Policies concerning "smart growth," whereby the region preserves open space and avoids sprawl, are very encouraging. The public may view more information about the model structure and see graphs showing scenario runs on the MRPC website (www.mrpc.org). Please keep in mind that upon request and at the conclusion of this study, MRPC can run additional model scenarios for MRPC communities. Here we present a brief overview of conclusions we have been able draw.

- Preserving open space and avoiding sprawl conserves energy (see Smart Growth model run) but can lead to less total energy savings, in the long term, than expected. This is because these measures also make a region more attractive to live and work, and therefore can spur migration of people into the area. So, even if energy-per-person drops, if enough people move into the area, the energy savings will be less overall. However, from a national, state, regional and local level it makes sense to work together to preserve open space and encourage smart growth leading to energy savings.



- Encouraging the use of hybrid and electric vehicles saves fuel such as gasoline and diesel but the region would see an increase in electricity demand (see Hybrids vs. Electric Cars model run). This version of the model does not include energy supply, so the assumption is that needed electricity could be supplied on demand. How the region would want to address supplying more electricity, through traditional or renewable means, would be a topic of further study. For example, an electric grid must be able to handle the sporadic input from solar or wind power without compromising reliability of power to end users.
- The Oil Embargo model run analysis underscores the fact that there would be long-lasting economic consequences to any extended interruption of the region's supply of imported oil. The model does not include energy prices, but we can assume that the price of oil would increase dramatically if world supply suddenly drops. Demand for other sources of energy, such as natural gas, would increase as a result, as consumers sought to maintain their living standard by retrofitting homes and businesses to use other types of fuel. A region that has other sources of supply readily available may do better than areas of the country wholly dependent on imported oil.
- Implementing changes such as those outlined in the Pickens Plan model run (based on ideas

from T. Boone Pickens, an oil and gas executive) is also supposed to address the problem of the country's dependence on imported oil, but proactively rather than reactively. Pickens advocates adapting the electrical grid for distributed wind and solar power generation. This would allow more natural gas to be diverted to the transportation sector. The full implications of the Pickens Plan are beyond the scope of this work, but similarly to the Smart Growth run, changing from traditional to renewable energy sources requires the same (or better) reliability in the experience of the end consumer in order to be feasible. Whether or not Massachusetts has the natural ability to generate the needed power using wind and solar supplies is an area for further study.

WPI's Report entitled "System Dynamics Computer Simulation Modeling to forecast the Energy Demands of the Montachusett Region Under a Variety of Simulations and Scenarios" as well as WPI's Power point presentation on the region's energy model are hereby incorporated into this report by reference and can be viewed at http://www.mrpc.org/MREnergyPlan/WPIReports.pdf

5. RENEWABLE ENERGY INVENTORY

An inventory of exiting renewable energy development throughout the Montachusett Region was conducted to identify and map renewable sources of electricity and heat that would contribute to the power generated in the region. The inventory consists of wind energy, solar photovoltaic energy, geothermal, landfill gas, hydro, and Biomass. This information was used in-part to support educational events that highlight and showcase existing renewable energy projects to educate the public. This information has been and will continue to be used for enhanced materials development such as fact sheets, rapid response articles, and websites to help capture municipal decision-makers interest in committing to a portion of our region's renewable energy program. This inventory has been formatted to facilitate its update on a yearly basis.

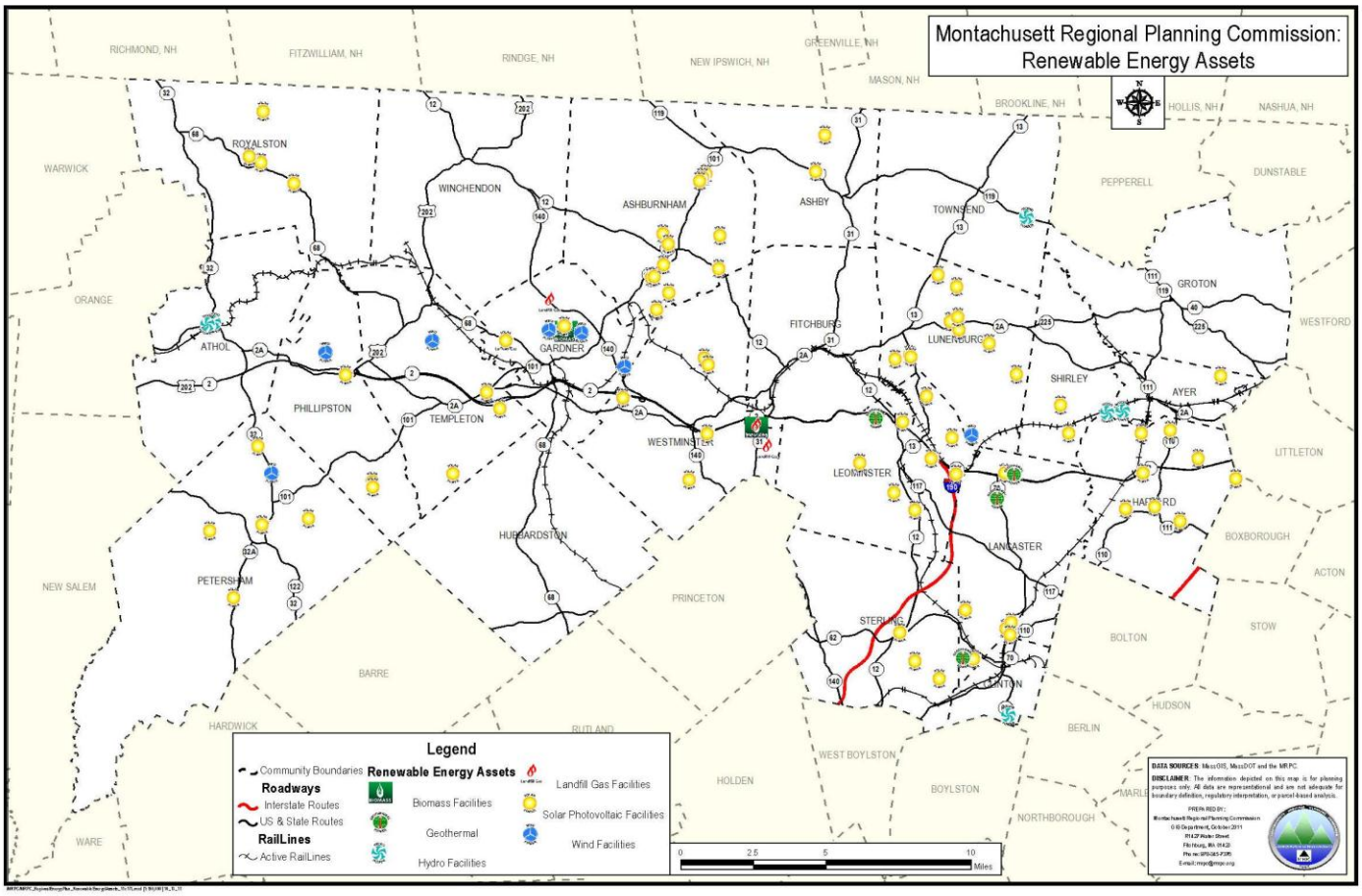
MRPC obtained locations for renewable energy by reaching out to the Building Departments in each of the 22 communities in the Montachusett Region. Letters were mailed out in February 2011 to the municipal building staff that asked if they were aware of any solar panels, wind energy systems (large or small), geothermal, landfill gas, hydro or biomass systems in their community since a home, commercial or industrial building would need a building permit to install many of these systems. MRPC provided a self-addressed stamped envelope with a form to fill out to provide a list of any renewable system in their community. If the community didn't respond a phone call was made in March 2011 and then a second letter was mailed in July 2011. MRPC was able to obtain information regarding local renewable energy systems within 18 of its 22 communities. To view these renewable energy systems, see map that follows on the next page. The communities that we did not have data from are Fitchburg, Groton, Hubbardston and Winchendon.

MRPC's Geographic Information Systems (GIS) Staff created a data set indicating locations of renewable energy sources that MRPC's Comprehensive Planning Department assembled based on the information provided by the Building Departments. The categories include Biomass Facilities, Geothermal, Hydro Facilities, Landfill Gas Facilities, Wind Facilities, and Solar Photovoltaic Facilities (this category includes private residencies using solar panels as well as business entities). Each record in the renewable energy sources data set survey results had an address associated with it. Using the address data, points were created through GIS analysis to create a spatial location associated with that renewable energy location/resource. The GIS process used is a method referred to as Geocoding. The geocoding tool takes a spreadsheet of address data and cross references it with a GIS location address matching data set resulting in automaticity of point locations spatially.

However geocoding is not always able to provide a 100% match for every record with an address data set. Sometimes there are addresses that do not match and need to be located manually. Therefore the combination of both parcel data and aerial imagery was utilized to create a manual spatial location for remaining renewable energy records that were not matched using the geocoding analysis tool. The address was located within the parcel data and then the aerial image was used to create the location

point directly on the exact building or location of the particular renewable energy resource. Once every renewable energy resource location within the Montachusett Region was created, the symbology was assigned to each of the categories (Biomass Facilities, Geothermal, Hydro Facilities, Landfill Gas Facilities, Wind Facilities, and Solar Photovoltaic Facilities) in order to make the map easily readable to all users. The final product resulted in a Montachusett Region-wide map indicating all sources of renewable energy. This map will be periodically updated.

A. Renewable Energy Assets Map



B. Renewable Energy Assets Address List

The table that follows depicts the addresses of the renewable energy assets shown in the map on the previous page.

Type	*Size (Kw)*	*Street Address*	*Community*	*Property*
Solar	10.6	24 Williams Road	Ashburnham	Ashburnham Municipal Light
Solar	16.8	10 Oakmont Drive	Ashburnham	Oakmont Regional High School
Solar	16.8	99 Central Street	Ashburnham	Ashburnham Public Safety Building
Solar	5	Jewell Hill Road	Ashburnham	Residence
Solar	10	Cushing Street	Ashburnham	Residence
Solar	10	Ashby Road	Ashburnham	Residence
Solar	6.3	Ashby Road	Ashburnham	Residence
Solar	10	Ashby Road	Ashburnham	Residence
Solar	4	Cashman Hill Road	Ashburnham	Residence
Solar	5	Hastings Road	Ashburnham	Residence
Solar	4.5	Russell Hill Road	Ashburnham	Residence
Solar	3.37	Cushing Street	Ashburnham	Residence
Solar		Frost Road	Ashby	Residence
Solar		692 Main Street	Ashby	Residence
Hydro		121 Crescent Street	Athol	LS Starrett Company
Hydro		134 Chestnut Hill Ave	Athol	LP Athol Cresticon Hydroelectric Rehabilitation
Solar		Doe Valley Road	Athol	Residence
Solar		Yale Avenue	Athol	Residence
Solar		Laurel Street	Athol	Residence
Solar		Miles Road	Athol	Residence
Solar	5.6	Orchid Lane	Ayer	Residence
Hydro		323 West Main Street	Ayer	Grady Research
Hydro		301 Boylston Street	Clinton	Cosgrove Intake Facility
Solar		444 Green Street	Gardner	MWCC
Landfill Gas		744 West Street	Gardner	Transfer Station
Biomass		444 Green Street	Gardner	MWCC
Wind		444 Green Street	Gardner	MWCC
Wind		500 Colony Road	Gardner	No. Central Correctional Institution
Solar	152	325 Ayer Road	Harvard	Retail/Office Development
Solar	5	15 Elm Street	Harvard	Senior Center
Solar		Slough Road	Harvard	Residence
Solar	5	Old Mill Road	Harvard	Residence

Solar	5	Old Shirley Road	Harvard	Unknown
Solar	5	Madigan Lane	Harvard	Residence
Solar	5	Littleton Country Road	Harvard	Unknown
Solar	5	Quarry Lane	Harvard	Residence
Solar		Fort Pond Road	Lancaster	Residence
Solar		Nicholas Drive	Lancaster	Residence
Solar		Mill Street	Lancaster	Residence
Solar		Bolton Road	Lancaster	Residence
Solar		South Meadow Road	Lancaster	Residence
Solar		Carter Street	Lancaster	Residence
Geothermal		Moffett Street	Lancaster	Residence
Geothermal		Fort Pond Inn Road	Lancaster	Unknown
Geothermal		Lunenburg Road	Lancaster	Unknown
Solar	5	Avon Street	Leominster	Residence
Solar	3.69	Farm Hill Road	Leominster	Residence
Solar		925 Mechanic Street	Leominster	Gove Farm
Solar	4.8	Pheasant Run Circle	Leominster	Residence
Solar		92 Wildflower Road	Leominster	Residence
Solar	307.9	115 Erdman Way	Leominster	BJs Warehouse
Solar		25 Mohawk Drive	Leominster	Mohawk Drive Corporation
Solar		42A Terrace Drive	Leominster	Litchfield Terrace Apts.
Geothermal		325 Lindell Avenue	Leominster	North County Land Trust
Solar		325 Lindell Avenue	Leominster	North County Land Trust
Solar	100	Northfield Rd	Lunenburg	Residence
Solar	4.2	Pleasant Street	Lunenburg	Residence
Solar		Arbor Street	Lunenburg	Residence
Solar		Burrage Street	Lunenburg	Residence
Solar		Main Street	Lunenburg	Residence
Solar		Valley Road	Lunenburg	Residence
Wind	0.4	Lancaster Ave	Lunenburg	Residence
Solar		308 Electric Ave	Lunenburg	Lakeview Nurseries
Solar	5.7	Whiting Street	Lunenburg	Residence
Solar	3.78	Holman Street	Lunenburg	Residence
Solar	4.3	324 Electric Ave	Lunenburg	Retail Development
Solar		Sunset Lane	Petersham	Residence
Solar		Maple Lane	Petersham	Residence
Solar		324 N. Main Street	Petersham	Fisher Museum
Solar		West Road	Petersham	Residence
Solar		Hardwick Road	Petersham	Residence
Wind		North Main Street	Petersham	Residence
Solar	0.285	Narrow Lane	Phillipston	Residence
Solar	0.22	Narrow Lane	Phillipston	Residence
Solar		35 State Road	Phillipston	King Phillip Restaurant
Solar	9.84	455 Highland Ave	Phillipston	Red Apple Farm
Wind	15	455 Highland Ave	Phillipston	Red Apple Farm

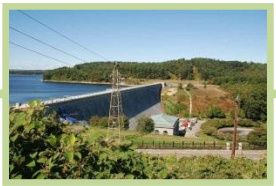
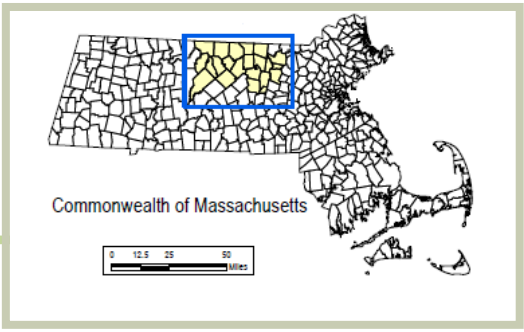
Solar	200	North Fitzwilliam Road	Royalston	Residence
Solar	210	North Fitzwilliam Road	Royalston	Residence
Solar	250	122 North Fitzwilliam Road	Royalston	Royalston Custom Oak Timber Frames
Solar	3.6	South Royalston Road	Royalston	Residence
Solar	65	2 Shaker Road	Shirley	Phoenix Park
Solar	4.83	Benjamin Road	Shirley	Residence
Solar		109 Chace Hill Road	Sterling	Rocky Acres Farm
Solar	220	Kendall Hill Road	Sterling	Residence
Solar		2 Leominster Road	Sterling	Unknown
Solar		12 South Main Street	Templeton	Unknown
Solar		Turner Lane	Templeton	Residence
Solar		White Circle	Templeton	Residence
Wind		464 Baldwinville Road	Templeton	Naragansett Regional School District
Hydro		72 Main Street	Townsend	Townsend Historical Society
Landfill Gas	3200	101 Fitchburg Rd.	Westminster	Fitchburg Landfill
Solar	4.5	Narrows Road	Westminster	Residence
Biomass	18000	2 Rowtier Drive	Westminster	Fitchburg Power Station
Landfill Gas		2 Rowtier Drive	Westminster	Fitchburg Power Station
Solar	4	South Ashburnham Rd	Westminster	Residence
Solar	5.67	South Ashburnham Rd	Westminster	Unknown
Solar	3.52	Sunset Road	Westminster	Residence
Solar	5.5	West Princeton Rd	Westminster	Residence

6. REGIONAL ENERGY ISSUES, RECOMMENDATIONS, AND NEXT STEPS

The Montachusett Region

Recommendations for a clean-energy future



A:Overview: For the Montachusett Region to have a prosperous and sustainable future, effort should be taken on the local level to ensure that integration of renewable energy sources is encouraged, supported, and made easy through municipal intervention. There are many reasons why utilization of renewable energy is necessary on the national, state, regional and local level. First and foremost, traditional fuel sources are expensive, and as international supply declines and demand rises, prices will have negative effects on internal and external regional investment. Second, renewable energy sources are clean, abundant and accessible here in our region. Thirdly, as renewable energy replaces fossil fuel consumption, air quality for Greater North Central Massachusetts will increase as harmful emissions decline. Lastly, and of significant importance to our Region, renewable energy can create new industries, revive manufacturing, and bring about new opportunities for municipal revenue.

Renewable energy can create new industries, revive manufacturing, and bring about new opportunities for municipal revenue.

There are many steps cities and towns within the Montachusett Region can take to ensure renewable energy is "made easy". First, local governments should maintain and update land use regulations relating to wind energy placement, solar permitting, geothermal processes, hydropower, and so on. Even if some of these sources of electricity do not seem attractive to your particular city or town, it is best to plan ahead, as often times conditions do change. To ensure renewable energy sources are integrated into local specific strategic and scenario plans, each city and town should have an Energy Advisory Committee. Energy Advisory Committees play an important role utilizing research, analysis and providing recommendations regarding energy

WHAT IS NET METERING? MA state regulation allows customers to receive value during periods when their eligible on-site distributed generation (such as a wind turbine, solar array or geothermal) generates more electricity than they use. That is, the electric meter runs backward whenever a customer's net metered facility is producing more power than is being consumed and their account gets net metering credits for net excess generation at the end of the customer's monthly billing period.

conservation, energy efficiency, and allow for an easier conversion to renewables. Energy Advisory Committees can work on the local level to implement new policies, determine cost benefits and gain public support and participation for green energy projects.

Aside from Energy Advisory Committees, each town should make it easy for residents to learn more about renewable energy opportunities by using their town websites. On each website, there should be a link specifically for energy resources, a link to the state of Massachusetts' Renewable Energy Toolkit, and any local events or public hearings regarding site placement of renewable projects. The more residents are educated about the necessary and inevitable conversion to renewable energy, the greater opportunities for real public participation to occur. Residents should also be educated about net metering, which provides the financial incentive to use renewable energy sources, especially in a region with statistically high utility rates. As the Montachusett Region moves forward with plans for a future with renewable energy, public participation will make the process easy, transparent and rewarding for all parties involved.

Become a Green Community: Of the 22 cities and towns in the Montachusett Region, five are considered a "green community" by the Massachusetts Department of Energy Resources. Becoming a DOER green community is a title awarded to accepted applicants of the States Green Communities Grant Program. The goal of the program is to help cities and towns maximize energy efficiency in public buildings, including schools, city halls, and public works and public safety buildings as well as generate clean energy from renewable sources; and manage rising energy costs. To be an eligible grant recipient, cities and towns must carry out all or a portion of the tasks covered by the program.

Become a Massachusetts DOER Green Community by:

- studying, designing, constructing and implementing energy efficiency activities;
- procuring energy management services;
- installing energy management systems;
- adopting demand-side reduction initiatives or energy efficiency policies; and,
- siting activities and construction of a renewable energy generating facility on municipally- owned land.

Created in 2008 by the Green Communities Act, the Green Communities Division's charge is to guide all 351 cities and towns along a path of enhanced energy efficiency and renewable energy toward zero net energy. Whether they are advanced energy savers or newcomers to this field, each municipality will be well served by the energy experts in the Green Communities Division.

A. Recommendation Highlights

For the Region

1.) Continue energy education/outreach/workshops. The need for renewable energy should been seen as a high priority across the region and be supported by municipalities and elected officials, business leaders, residents, utility companies and others.

2.) MRPC, the Comprehensive Economic Development Strategy (CEDS) Committee, and the Montachusett Regions' Energy Advisory Committee (EAC) should move forward with planning and implementation strategies by continually seeking and securing additional energy related state and federal funding opportunities.

3.) Energy conservation and efficiency in the regional and local transportation sector should be promoted through effective land use planning, investments targeted to encourage use of alternative transportation modes (bicycle and pedestrian,

public transportation, rail), and funding for infrastructure to support alternative fueled vehicles.

4.) Businesses and projects that will increase the use of renewable energy and smart grid technology across the region should be supported. MRPC and the CEDS Committee could assist with this recommendation.

5.) Identify ways renewables can assist communities to reach broader climate changes, environmental and sustainability goals.

6.) Identify how solar can contribute to community revitalization through placement on Brownfields and vacant industrial space to enhance economic competitiveness.

On the Local Level

1.) Municipalities should take the lead on renewable energy integration into existing day to day operations by establishing a municipal energy committee to oversee development of energy plans and implementation projects.

2.) Identify specific strategies for reducing municipal energy consumption (buildings, vehicles, machinery and equipment, lighting and operations) by developing a comprehensive municipal energy plan.

3.) Municipalities should have a complete energy audit to identify short and long term actions that will save energy. An energy audit will establish where and how energy is being used in your buildings and facilities. It identifies opportunities and provides recommendations for energy and cost savings.

4.) Become a Green Community. A designated Green Community demonstrates a commitment to reducing energy consumption, pursuing clean renewable and alternative energy projects, and providing economic development in the clean energy sector.

5.) Explore net metering and how it will benefit your community.

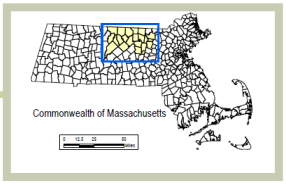
6.) Make sure your community has renewable energy bylaws/ordinances in place.

7.) Projects or policies that encourage regionalization, relocalization, and sustainable development practices promoting smart growth should be supported.

8.) Municipalities should encourage residents to take action on the individual level by creating pamphlets that educate about renewable energy options.

9.) Forge public/private partnerships for renewable energy.

10.) Consider solar placement on vacant buildings to attract business. Determine the feasibility of municipal intervention for renewable placement on privately owned buildings through local renewal/revitalization planning. Consider utilizing these energy incentives for businesses that create jobs.



B. Recommendations for Action

Regionally

1. ***Continue energy education/outreach/workshops. The need for renewable energy should been seen as a high priority across the region and be supported by municipalities and elected officials, business leaders, residents, utility companies and others.***

As part of this project, MRPC worked to organize a series of energy related workshops throughout the Montachusett Region (see page 7). All workshops were well attended by a broad spectrum of attendees indicating value to the region.


COSGROVE INTAKE FACILITY AT WACHUSETT

MRPC should continue to organize and sponsor energy related workshops to underscore the importance of renewable energy to the Montachusett Region, facilitate contacts with experts in the field of energy while providing educational opportunities to enhance energy conservation and development.

2. *MRPC, the Comprehensive Economic Development Strategy (CEDS) Committee, and the Montachusett Regions' Energy Advisory Committee (EAC) should move forward with planning and implementation strategies by continually seeking and securing additional energy related state and federal funding opportunities.*

There was consensus among CEDS and EAC Members, at March and April 2011 meetings respectively, that MRPC Staff should seek funding for a study concerning the Siting of Renewable Energy Facilities including wind, geothermal, hydropower, solar, and renewable energy manufacturing. This would help to facilitate private sector development of such facilities while assisting municipalities in the decision making process in terms of siting renewable energy projects in appropriate locations (including brownfields sites) and streamlining the permitting process. This study will also enhance job opportunities in the region.

Educational partnerships in any future study are highly encouraged. Public education on the need for renewable energy in schools and community centers across the Montachusett Region should be supported. Energy issues should be integrated in the curriculum through all grade levels. Specific training in skills needed in energy-efficient building construction (weatherization/insulation, design, installation, and repair of solar and other renewable energy systems) should be taught in vocational programs. Colleges should offer opportunities to develop expertise and experience in energy conservation/efficiency and sustainable economies.

3. ***Energy conservation and efficiency in the regional and local transportation sector should be promoted through effective land use planning, investments targeted to encourage use of alternative transportation modes (bicycle and pedestrian, public transportation, rail), and funding for infrastructure to support alternative fueled vehicles. The regional and local transportation sector should:***

NORTH LEOMINSTER RAIL

a. Support a land use pattern that directs development to established growth centers which locates residential neighborhoods close to business and service centers.
b. Encourage ridesharing and carpooling through education efforts.
c. Maintain sidewalks and make available bike paths that connect important destinations. Maintain roadways that serve, or could serve as important bicycle commuting or travel routes so that they are safe for bicyclists.
d. Establish educational programs, possibly coordinated by local governments, and health care organizations that will encourage people to walk or bicycle to local destinations.
e. Encourage consumers to purchase needed goods locally whenever possible and avoid travel to shopping centers located outside the region.
f. Encourage drivers to heed speed limits and avoid rapid accelerations and other behaviors that reduce fuel efficiency.
g. Support development of alternative fuel vehicles and local infrastructure needed for their widespread use. For example, development of bike paths to support bicycle and other human powered vehicle use, as well as public education to increase awareness and understanding of the needs of these users. Municipalities should provide safe storage spaces for these vehicles.

4. ***Businesses and projects that will increase the use of renewable energy and smart grid technology across the region should be supported. MRPC and the CEDS Committee could assist with this. Businesses should also be encouraged to:***

a. Conduct an energy audit and every five years thereafter and then implementing all feasible recommendations of your energy audit within two years.
b. Participate in their municipality's energy conservation and efficiency programs and supporting green buildings, energy efficiency, smart growth, public transportation, clean fuels, efficient vehicles and sustainable development.

c. Donate money to support local energy efficiency efforts, including but not limited to compact fluorescent bulb sales, clean energy home tours, home installation workshops, home energy audits, weatherizing, idling reduction programs, and solar hot water heater sales.
d. Incorporate clean energy systems into all operations including siting a clean energy system in or on your building(s) or property and purchasing clean energy.
e. Include energy conservation measures (Commercial Building Energy Standards) on new buildings, additions, and reconstruction of existing buildings and incorporate solar, biomass, and other renewable energy technologies as appropriate.

5. *Identify ways renewables can assist communities to reach broader climate changes, environmental and sustainability goals*

a. Work to align regional energy recommendations with Massachusetts state benchmarks and establish measurable to track the progress of the Montachusett Region's dependence away from traditional energy sources.

6. *Identify how solar can contribute to community revitalization through placement on Brownfields and vacant industrial space to enhance economic competitiveness.*

a. Many municipalities across the country are considering how to take advantage of emerging incentives to support placement of renewables on their underutilized Brownfields properties. Development of solar projects on these sites offers a great solution to the collective challenge of developing renewable energy sources and reusing Brownfields sites at the same time. Examples across the nation have featured the development of renewables on closed landfills. This technique has resulted in one of the largest solar developments in the Northeast.

For Municipalities

1. *Municipalities should take the lead on renewable energy integration into existing day to day operations by establishing a municipal energy committee to oversee development of energy plans and implementation projects.*

a. Collaboration with municipal planning and building departments and boards to develop and adopt bylaws or

ENERGY PLAN PRESS CONFERENCE: COLLABORATION IS KEY FOR PROGRESS!

ordinances, to require or give incentives to encourage green buildings, energy efficiency, renewable energy production, public transportation, smart growth, clean fuels, efficient vehicles, and sustainable development.

b. Work with municipal government to conduct energy audits, implement recommended improvements and build renewable energy systems.
c. Seek funding to support appropriate siting and installation of renewable energy systems on municipal property and in the community.
d. Collaborate with energy committees throughout the region to share ideas, lobby elected officials to assure prompt adoption and implementation of this plan's policy recommendations, and continue the development of a clean energy future for the region.
e. Provide public education regarding clean energy in collaboration with non-profits, advocacy groups, planning commissions, and educational institutions. Larger communities should consider hiring a part or full-time energy/sustainability coordinator to lead energy conservation and efficiency efforts within local government and to develop local energy education programs.
f. An energy committee could also work to create a regional list of resources for renewable energy incentives, manufacturers, suppliers and installers. This list could be made available and accessible through each city/town website.

2. *Identify specific strategies for reducing municipal energy consumption (buildings, vehicles, machinery and equipment, lighting and operations) by developing a comprehensive municipal energy plan. Such a plan could include:*

a. An inventory of existing municipal assets, energy use, and locally available energy resources; Specific strategies for reducing municipal energy consumption (buildings, vehicles, machinery and equipment, lighting, and operations);
b. Policies, regulations, and incentives to encourage energy conservation in site planning and building design;
c. A resource guide to assist local residents and businesses in obtaining advice and assistance in improving energy conservation and efficiency.

3. *Municipalities should have a complete energy audit to identify short and long term actions that will save energy. An energy audit will establish where and how energy is being used in your buildings and facilities. It identifies opportunities and provides recommendations for energy and cost savings.*

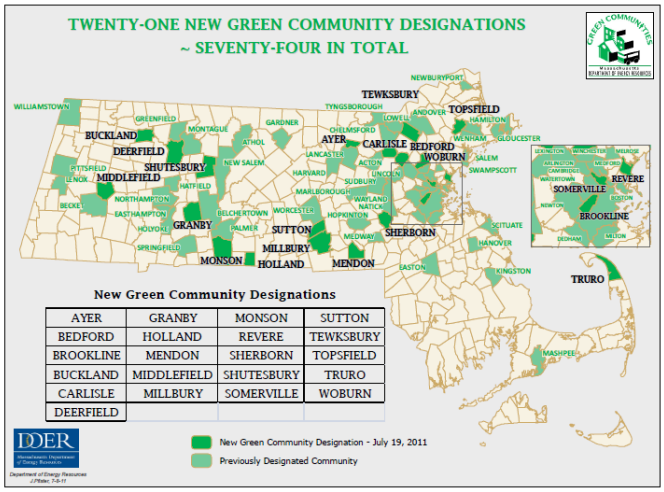
a. Calculating your municipality's energy footprint is a necessary step in identifying

opportunities to reduce energy use and costs. The benefits of an energy audit are lower electrical, natural gas, steam and water costs; reducing greenhouse gas emissions and air pollution and addressing indoor air quality and lighting quality.

b. Energy conservation measures should also be undertaken during the siting, design and construction or reconstruction of buildings. Contact the MA Department of Energy Resources to learn more about their energy audit programs for municipalities.

4. ***Become a Green Community. To date, five municipalities throughout the Montachusett Region are designated as "Green Communities". The Green Communities Designation and Grant Program, an initiative of the Green Communities Division, works with municipalities toward qualification as a Green Community and provides funding to qualified municipalities for energy efficiency and renewable energy initiatives.***

Aligning municipal energy plans with active state programs will catalyze more opportunities on the local level.



The five communities in the Montachusett Region that are designated as Green Communities are: *Athol, Ayer, Gardner, Harvard and Lancaster*. By meeting five rigorous qualification criteria, a designated Green Community demonstrates a commitment to reducing energy consumption, pursuing clean renewable and alternative energy projects, and providing economic development in the clean energy sector. More information can be found on the states website for energy and environmental affairs at www.ma.gov.eoeea

MAP OF 2011 MASSACHUSETTS GREEN COMMUNITIES

5. ***Explore Net Metering. MRPC held a workshop on Net Metering in Athol Town Hall in April 2011.***

a. Net Metering is a MA state regulation allowing customers to receive value during periods when their eligible on-site distributed generation (such as a wind turbine, solar array or geothermal) generates more electricity than they use. That is, the electric meter runs

backward whenever a customer's net metered facility is producing more power than is being consumed. In addition, the customer's account gets net metering credits for net excess generation at the end of the customer's monthly billing period. *A power point presentation can be found at www.mrpc.org/MREnergyPlan/epw4bpowerpoint050511.PDF* .This document explains net metering in greater detail.

6. *Make sure your community has renewable energy bylaws/ordinances in place. Currently, just 9 out of a total of 22 Montachusett communities have Wind Energy Conversion System Bylaws.*

a. Upon request, MRPC can also assist municipalities in the development of bylaws. Keep in mind that there have been many recent technological advances in development of renewable energy – your current bylaw may need to be updated.

Sustainable Development: Development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

Relocalization: Relocalization is an essential adaptation to the depletion of non-renewable resources (oil, natural gas, coal, and even water), and a solution to global warming and other ecological crises. It focuses on local and sustainable production of food, energy, and goods, in tune with the ecological bounds of each region. It is a logical and inevitable replacement for the failing religion of perpetual economic growth.

Regionalization: Encouraging municipalities to collaborate on a regional level to reduce costs and save energy.

7. *Projects or policies that encourage regionalization, relocalization, and sustainable development practices promoting smart growth should be supported.*

a. Moreover, new zoning regulations to allow more compact development that require fewer streets, less infrastructure and more open space will save developers installation costs and save municipality's maintenance costs.

8. *Municipalities and local energy committees should encourage their residents to:*

a. Complete a home energy audit and make cost effective weatherization improvements.
b. Consider energy use and costs when making decisions about vehicle purchases and use as well as where to live (i.e. proximity to work, school, services).

c. Buy local products and support local economic progress wherever possible and even plant a vegetable garden at home or as part of a community garden and learn to store and prepare home grown produce. Residents should also be encouraged to patronize local farmers'

markets.

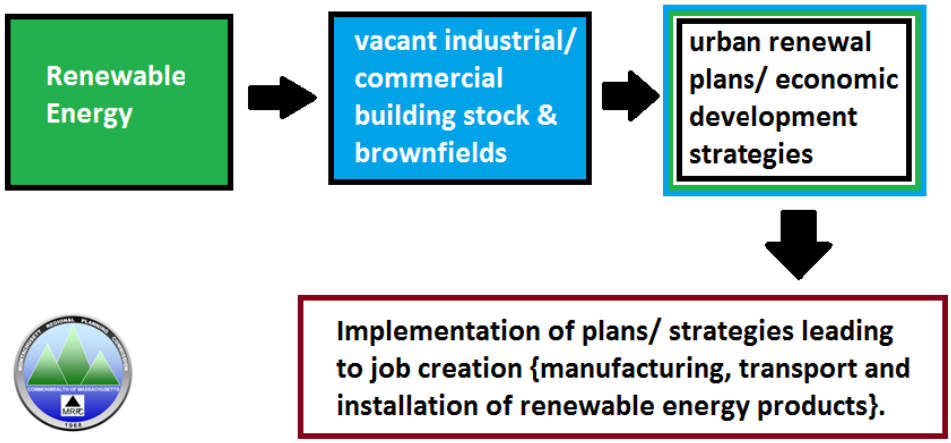
d. Participate and volunteer with local groups that are working on energy conservation and local food/economy projects.

e. Municipalities should encourage residents to take action on the individual level by creating pamphlets that educate about renewable energy options.

9. Forge public/private partnerships for renewable energy.

a. Utilize Massachusetts DOER financial incentives that may supply funds to cities/ towns to power municipal buildings with renewable energy and partner with a private agency for placement/ installation, creating jobs etc.

10. Consider solar placement on vacant buildings to attract business. Determine the feasibility of municipal intervention for renewable placement on privately owned buildings through local renewal/revitalization planning. Consider utilizing these energy incentives for businesses that create jobs.



7. APPENDICES

APPENDIX A

TASK SUMMARY

Task Summary

Project Title: Montachusett Region Energy Plan.

Task 1. Montachusett Energy Advisory Committee Meetings: The Montachusett Energy Advisory Committee was formed in January 2010 and has proven to be instrumental in the success of MRPC's Disaster Mitigation Plan. This committee will meet quarterly or as needed to provide oversight and policy guidance to the MRPC staff during its implementation of this grant program. The Steering Committee is comprised of 20 members representing a cross section of the region's energy stakeholders, local government, consumers and suppliers. Both the private and public sectors are represented by Local and State Elected Officials, Municipal Government Staff including but not limited to planners (professional and volunteer), Department of Public Works staff, Building Inspectors, School Officials, Entrepreneurs, Advocates, Educators, Farmers, Opinion leaders, Consumers, Emergency government personnel, Environmentalists, Business Owners, MassDevelopment, and Chambers of Commerce. Of critical importance, Area Utility Companies and local Emergency Management Directors serve on the Energy Advisory Committee and have regularly attended meetings.

This diverse, cohesive regional network of organizations that deals with issues concerning energy will not only provide oversight of this project, but it will continue to operate beyond the funding period with an ability to incorporate additional partners into the network over time leading to additional activities and accomplishments while serving as a model to others.

Task 2. Renewable Energy Regional Inventory. An inventory of existing and proposed renewable energy development throughout the Montachusett Region will be conducted to identify and map renewable sources of electricity and heat that will contribute to the power generated in the region. The inventory will consist of wind energy, solar photovoltaic energy, geothermal, landfill gas, hydro, and Biomass. This information will be used in-part to support educational events that highlight and showcase existing renewable energy projects that educate the public about proposed renewable energy projects in the community. This information will also be used for enhanced materials development such as fact sheets, rapid response articles, and websites to help capture municipal decision-makers interest in committing to a portion of our regions renewable energy program. This inventory will be formatted to facilitate its update on a yearly basis.

Task 3. Energy Model Forecasting: MRPC will provide an evaluation of trends and projection of future energy demands for the area encompassed by the 22 communities of the Montachusett

Region. Objectives will also be formulated to guide the region toward the goal of an energy efficient future.

Task 3. Energy Model Forecasting: Worcester Polytechnic Institute (WPI) has agreed to provide student in-kind services to be utilized for implementation of this in-depth analysis. The amount of student person-power is estimated to be approximately 1071 hours of hands-on project work, for which they will receive academic credit. There is also the potential for long-term, close cooperation in the future, whereby the MRPC and WPI seek joint funding for projects relating to sustainable municipal planning.

An assessment and analysis of the Montachusett Region Current Energy Needs/Demands (by end-user) will be conducted, including transportation (gallons of gas, cost of gas and alternative resources – biofuels, etc.), Commercial/Industrial (usage and costs of oil, gas, electricity), and Residential (usage and costs of oil, gas, electricity). Based upon this information, a WPI student team consisting of 3 students will build a system dynamics simulation model of future energy demands and needs within the Montachusett Region. The model will be used to simulate a variety of path-altering scenarios relating to oil, gasoline, natural gas, wind, landfill gas, hydropower, solar, biomass, and bio-fuels.

A possible use of the completed computer simulation would be to develop an interactive computer "sustainability game" that will enable policymakers and the public to understand the complexities of energy demand planning. Such a game would serve to inform, educate and create awareness of both short- and long-term implications of traditional and alternative sources of energy.

The students will be expected to build the simulation model for academic credit, but it is anticipated that outside consulting expertise will be needed to ensure a quality product. Specifically, we will contract a system dynamics modeling expert to provide modeling oversight, facilitation and conceptualization at the beginning of the project, and assistance in the dissemination of project results. In addition, the creation of the user interface will be the responsibility of the consultant. The consultant will also be required to attend the community outreach meetings to disseminate project results to the public.

Task 4. Design and Construction of Energy Educational Exhibits. Utilizing information collected in Task 2 and Task 3, educational exhibits will be constructed by MRPC with assistance from WPI students concerning model forecasting. They will be featured at planning conferences including the American Planning Association National Conference (to be held in Boston, MA April 2011) and the Massachusetts APA Chapter conferences. Exhibits will also be featured at scheduled workshops and exhibited at WPI, and other educational institutions

including Mount Wachusett Community College, and the Doyle Conservation Center. Additionally, this will further assist to help capture municipal and business decision-makers interest in committing to this study and the resulting recommendations.

Task 5. Prepare and Conduct a Minimum of Six Community Workshops. Some locations for workshops include Mount Wachusett Community College (MWCC has gained numerous awards and national recognition for its renewable energy initiatives including a biomass heating system and photovoltaics - the college also intends to install a large scale wind turbine on campus.), Narragansett Regional High School where a 383 ft. Windmill was just recently constructed to provide energy to the community and serve as a renewable energy educational model. A workshop will also be held at the Doyle Conservation Center. Photovoltaic panels, high-efficiency lighting and controls, a displacement ventilation system, high performance windows, a high performance building envelope, geothermal wells and carbon dioxide monitoring systems are all part of the building's sustainable design. Deliverables include opportunities to learn about a wide array of renewable/sustainable topic workshop handouts, videos of each workshop, marketing materials including press releases, cable television advertising, flyers, mailings, and presentation materials.

The tentative dates and preliminary agenda items for these meeting are as follows:

Tentative Date/ Preliminary Agenda: An introduction to some of the various tools and resources available to local communities to assist in their energy planning efforts.

Tentative Date/ Preliminary Agenda: Examples of projects that resulted in more efficient housing, municipal, and business real estate assets while minimizing environmental impacts through a range of green building strategies including innovative approaches to heating and cooling, low impact development techniques, etc.

Tentative Date/ Preliminary Agenda: Alternatives available to municipalities to heat and cool structures and/or water through the use of various renewable energy technologies including biomass, bio-heat, solar hot water, and geothermal.

Tentative Date/ Preliminary Agenda: Ways to reduce consumption of foreign petroleum and enhance efficiency through bio-fuels including bio-diesel, Ethanol E85, and other bio-fuels.

Tentative Date/ Preliminary Agenda: Strategies to reduce greenhouse gas emissions, implications of Massachusetts Environmental Policy Act (MEPA) requirements concerning greenhouse gas emissions, and incorporating renewable energy and minimizing greenhouse gas emissions through smart growth.

Tentative Date/ Preliminary Agenda: Wind and Solar Photovoltaic Renewable Electricity Generating Technology Options to cut costs and serve as an educational opportunity to help decide if pursuing these technologies makes sense; assessing the economics; outlining steps from planning to installation, and ideas for technical and financial resources to make the project work.

Tentative Date/ Preliminary Agenda: Energy Performance Contracting: cost savings from reduced energy consumption to repay the cost of installing energy conservation measures; How communities and organizations have used performance contracts to implement their energy efficiency projects.

Task 6. Final Report. Energy use in the region has significant effects on the economy, environment and quality of life. The Regional Energy Plan final report will provide a framework of specific actions needed to achieve reliable, affordable and environmentally sound future desired by the region. It will identify significant energy issues for the region, offer a portfolio of preferred energy resources, and objectives and an action plan for implementation.

MRPC will prepare a final report by providing all text and maps, including the analysis, and recommendations made concerning energy within the region. All marketing materials utilized as part of this project will also be included in the report. The report will be forwarded to EDA and then copies will be widely distributed throughout the 22 towns and cities and Devens in the Montachusett Region including but not limited to state and local government, educational institutions, utility companies, local libraries, and targeted businesses.

Task 7. Wrap-Up Event. Besides a Press Conference to be held after EDA Grant Award Announcement, MRPC will prepare for and conduct a Wrap-Up Event as well. There will be discussions of collaborative outreach and education, all work completed, presentations by state and local government leaders and businesses from the private sector. A key-note speaker will also be scheduled. Press releases will be submitted to local newspapers throughout the region, the event will be advertised on cable television. Invitations will be forwarded to businesses, federal, state, and local politicians, educational institutions including WPI, Fitchburg State College and Mount Wachusett Community College, public and private sector economic development practitioners, community volunteers, Planning Boards, Conservation Commissions, Zoning Boards, Selectmen and City Councilors throughout the Montachusett Region. In short, invitations will be extended to anyone with interest in the project.

APPENDIX B

MONTACHUSETT ENERGY ADVISORY COMMITTEE

Montachusett Energy Advisory Committee

Victor Koivumaki, MRPC Chairman, Lancaster Planning Board

Doug Wheeler, Phillipston Fire Chief/Emergency Management Director

Ann Pierce, Mass Development

Marion Benson, Lunenburg Planning Director

Trevor Beauregard, Gardner Economic Development Coordinator

Lenny Laakso, Fitchburg DPW Commissioner

Sean Hamilton, Sterling Municipal Light and Water General Manager

Himanshu Bhatnagar, HB Software Solutions

Larry Williams, Heywood Hospital Community Relations and Development

Charlie Coggins, Leominster Emergency Management Director

Stan Herriott, Ashburnham Municipal Light Manager

Mark Archambault, Nashua River Watershed Association

Robert Pendrake, National Grid Manager of Field Engineering

James Wright, Athol Fire Chief/Emergency Management Director

John Bonazoli, Unitil Manager of Distribution Engineering

David Ames, Athol Town Manager

APPENDIX C

MEETING AGENDAS AND MINUTES

MONTACHUSETT
REGIONAL PLANNING COMMISSION
R1427 Water Street Fitchburg, Massachusetts 01420
(978) 345-7376 Fax: (978) 348-2490 Email: mrpc@mrpc.org

ENERGY ADVISORY COMMITTEE
MONTACHUSETT REGION EMERGENCY BACK UP POWER SOURCES STUDY

AGENDA

FRIDAY, NOVEMBER 19, 2010
12:30 PM
(Please note: Sorry, we will no longer be serving lunch)
at
MONTACHUSETT REGIONAL PLANNING COMMISSION (MRPC) OFFICES
1427R WATER STREET,
FITCHBURG, MA 01420

I. Welcome and Introduction

II. Approval of August 20, 2010 Minutes

III. **PRESENTATION OF DRAFT EMERGENCY BACK UP POWER SOURCES MITIGATION PLAN** – John Hume, Jennifer Siciliano and Jason Stanton, MRPC and Guillermo Weyer, Consulting Engineers Group (CEG)

III. Interview of Consultant for Regional Energy Plan for WPI Student Oversight

IV. 2011 Regional Transportation Plan Status and Discussion – Brad Harris, MRPC Transportation Project Director

V. Wrap Up Event! - December 13, 2010

VI. Adjournment

RSVP to Linda Parmenter at lparmenter@mrpc.org or (978) 345-7376 x301.

C: City & Town Clerks: Please post this notice pursuant to MA General Laws, Chapter 30A, Sections 18-25.

MINUTES OF THE MEETING
OF THE
ENERGY ADVISORY COMMITTEE (EAC)

Regional Emergency Back Up Power Sources
Disaster Mitigation Plan

November 19, 2010

PRESENT:

Marion Benson	Planning Director/Town of Lunenburg
Victor Koivumaki	MRPC Chairman/Lancaster Planning Board
Jennifer Siciliano	MRPC Regional Planner
John Hume	MRPC Planning and Development Director
Jason Stanton	MRPC GIS Director
Eric Smith	MRPC Regional Planner
Glenn Eaton	MRPC Executive Director
Brad Harris	MRPC Transportation Director
Chantell Fleck	MRPC Regional Planner
Mike Radzicki	Worcester Polytechnic Institute/Sterling Planning Board
Ann Pierce	Mass Development
Trevor Beauregard	Gardner Economic Development
Guillermo Weyer	Consulting Engineers Group
Chris Christie	Groton
Ryan McNutt	Fitchburg Mayors Office
Mary Krapf	Ashby
Lillian Whitney	Ashby
Sean Hamilton	Templeton Municipal Light and Water

I. Welcome and Introduction

S. Hamilton called the meeting to order at 12:30 p.m. He announced that he is will be taking over the position of the General Manager for the Sterling Municipal Light Plant effective November 20, 2010. All present introduced themselves.

II. Approval of August 20, 2010 Minutes

A motion was made that the Energy Advisory Committee approve the August 20, 2010 minutes as printed. The motion was seconded and passed unanimously.

III. PRESENTATION OF DRAFT EMERGENCY BACK UP POWER SOURCES MITIGATION PLAN – John Hume, Jennifer Siciliano and Jason Stanton, MRPC and Guillermo Weyer, Consulting Engineers Group(CEG)

A power point presentation was made by Jennifer Siciliano regarding the Draft Emergency Back Up Power Sources Mitigation Plan. The plan is divided into the following sections: Introduction and Overview; Forming the Planning Team; The Public Process; Inventory and

Survey of Regional Assets; Analysis of Emergency Back Up Power Sources' Analysis of the Electric Grid Structure; Recommendations and Next Steps and Appendices.

The December 13, 2008 Ice Storm was the impetus for this plan. MRPC was successful in receiving a grant from the Economic Development Administration to develop this plan. A wrap up event will be held on December 14, 2010 at 9:00 a.m. at the Four Points in Leominster.

J. Siciliano further explained that an inventory of all critical assets in the region was mapped by our GIS Department. We developed a 23 question survey regarding back up power and distributed to all critical assets in the region. Our GIS Department then mapped the critical assets that provided a response to our survey; the assets that had generators and renewable energy resources in the region.

MRPC surveyed 963 critical assets and there were 805 unique assets - meaning it is the same building. We received 267 responses. Survey results were as follows: the most common answer for what type of fuel was used was diesel (32%), gasoline (24%); the most common testing schedule for back up generators was weekly at (33%); 43% of those surveyed had contingency plans for outages; 34% had hazard plans; 17% of critical assets were interested in updating their current back up systems but cost made it prohibitive.

From the responses received all the following categories had generators: police stations, hospitals, nursing homes, pharmacies and colleges. Categories that did not have generators included shipping facilities; home improvement, cable television and general medical facilities. Most supermarkets had generators powering life safety systems only. Some informed us that during the ice storm they rented generators. The majority of schools have generators. Many of them serve as emergency shelters. We also surveyed major employers in the region with only nine responses. Of those responding, seven had generators. Only 33 of the 47 emergency shelters/centers have generators. The only public water/wastewater facility that responded was from Fitchburg and they do have a generator. Most highway departments and cell towers have generators. The majority of gas stations do not have generators.

Recommendations were developed by both MRPC and CEG. Recommendations include: 1) on site generation for primary and secondary shelters, fire stations and police stations, departments of public works, and critical care facilities. 2) Communities should review and maintain their Hazard Mitigation Plans; 3) Communities should review and communicate their risks and evaluate the needs to improve the areas with high risk; 4) Update and populate GIS map with critical assets; 5) Emergency Management Directors should work to create life line lists for residents requiring emergency power; 6) Create a database of emergency generators for public use along with their location and maintenance schedule; 7) Create communication protocol for all communities to provide needed information to all residents during emergency situations; 8) Establish a local emergency management director in each town; 9) Examine the use of de-energize restoration for future storm related emergencies; 10) Should seek funding opportunities to implement a roll up generator "Feasibility Report" to investigate the installation of generator plugs at various critical buildings in each town; 11) Prioritize and rank needs for generators in the region so that we can apply for funding for generators through the Central MA Homeland Security Council**;** 12)
The Commonwealth of Massachusetts should be encouraged by applicable entities throughout the region, to develop programs to help supplement the cost of emergency back-up power systems, especially for gas stations; 13) Encourage major employers to acquire generators; and 14) Communities should consider having clean energy generating systems.

S. Hamilton commented that Templeton just used the Community Preservation Act funds for generators for elderly housing.

R. McNutt stated regarding communities having a clean energy system the problem that he has run into in Fitchburg is that there is cap on how much utilities have to get from clean energy (1% of peak load). Fitchburg has Unitil and Unitil is already at seven-tenths. Even if Fitchburg had solar or wind Unitil doesn't have to take it because it is already at the cap.

M. Benson commented that she thought Unitil had raised that cap.

S. Hamilton commented now is a good time for public/private partnerships.

G. Weyer indicated that CEG partnered with Source One to put together the analysis of the electric grid structure. He informed the committee of his educational background and experience. CEG undertook several tasks: 1) Met with MRPC stakeholders, municipals and utilities to develop a consensus on data that we could use to develop this report. 2) Reviewed the existing system; 3) Surveyed the local emergency management directors to see what their experiences were; and 4) Identified beneficial methods to improve reliability.

G. Weyer commented that he located a table in the MA State Hazard Mitigation Plan which identified Worcester County and Middlesex County as having the most ice storms in the last 28 years. Ice Storms are a problem in this area. He indicated that National Grid is the largest electrical provider in the region. Unitil covers four communities. Some other communities are covered by municipal plants. Mr. Weyer explained in detail how power generation systems work. Transmission lines have the highest level of reliability. They have large maintained right of ways. Distribution lines are what you see no your streets and have the lowest level of reliability because of their proximity to vegetation and public traffic. If your town is supplied solely off of distribution lines, the probability that you are going to suffer a sustained power outage is higher. The number of customers and the reliability statistics were also considered when we developed our priorities. Our high priority areas are Ashby, Athol, Fitchburg, Gardner Harvard, Hubbardston, Lancaster, Lunenburg, Leominster, Petersham, Phillipston, Royalston and Townsend. They are highly vegetated and for the most part are highly reliant on distribution voltage lines to supply electricity. Distribution comes from a substation. So therefore there is more exposure, more lines and more trees to pick up.

G. Weyer indicated that Jennifer already talked about the recommendations earlier in the meeting. He reiterated that one of the recommendations is for a rollup generation feasibility report which was geared toward facilities that don't have generation. That would look at what needs to be done for a quick connect system.

IV. Interview of Consultant for Regional Energy Plan for WPI Student Oversight

J. Hume explained that MRPC received a grant for $66,000 from the Federal Economic Development Administration to develop a regional energy plan for the region. On this plan, we will work with Worcester Polytechnic Institute students under Professor Michael Radzicki. Due to the amount of work involved in the project, we budgeted $15,000 for a consultant to provide oversight to the students. In October we advertised the availability of Request for Qualifications in the Goods and Services Bulletin. The deadline was November 3rd and we

received one proposal from Jennifer Andersen from Lancaster, Pennsylvania. MRPC staff and Professor Radzicki ranked her proposal.

J. Siciliano indicated that Jennifer had a master's degree in modeling. Professor Radzicki indicated that Jennifer is an alumni from WPI and is familiar with the type of projects the students will be doing.

J. Hume indicated we would interview Jennifer over the phone and provided the Committee with sample questions.

V.Koivumaki asked if she would be working from Pennsylvania.

M. Radzicki responded yes but she will travel to Massachusetts as necessary. She will participate by the web with students.

The Committee then interviewed Jennifer Andersen.

S. Hamilton opened the cost proposal from Jennifer Andersen. The total cost was $15,000.

M. Benson asked about Jennifer Anderson's interaction with the Committee and how that would be accomplished.

J. Hume replied she should come to at least two of our Energy Advisory Committee Meetings.

A motion was made to recommend to the MRPC that Jennifer Andersen be hired as the consultant to provide oversight of the WPI students for a cost of $15,000. The motion was seconded and passed unanimously.

V. 2011 Regional Transportation Plan Status and Discussion – Brad Harris, MRPC Transportation Project Director

B. Harris presented a brief overview of the Regional Transportation Plan Update currently ongoing. He indicated the need for public input and is reaching out to the Energy Advisory Committee as part of the consultations process required for the plan. He encouraged all to visit MRPC's website for further updates and provide any feed back they deem appropriate.

VI. Wrap Up Event! - December 14, 2010

J. Siciliano invited all those to the Wrap Up Event for this project on Tuesday December 14, 2010 at the Four Points in Leominster.

VII. Adjournment

The meeting adjourned at 230 p.m.

MONTACHUSETT
REGIONAL PLANNING COMMISSION
R1427 Water Street Fitchburg, Massachusetts 01420
(978) 345-7376 Fax: (978) 348-2490 Email: mrpc@mrpc.org

ENERGY ADVISORY COMMITTEE
MONTACHUSETT REGION ENERGY PLAN

AGENDA

FRIDAY, MARCH 11, 2011
12:30 PM
LUNCH WILL BE PROVIDED!

at

MONTACHUSETT REGIONAL PLANNING COMMISSION (MRPC) OFFICES
1427R WATER STREET,
FITCHBURG, MA 01420

1230 pm- 1240 pm	I.	Welcome and Introduction A. Introduction of Consultant (Jennifer Andersen) for Regional Energy Plan and Worcester Polytechnic Institute (WPI) Oversight
1240 pm- 1245 pm	II.	Approval of November 19, 2010 Minutes
1245 pm – 115 pm	III.	Regional Energy Plan Update A. Montachusett Regional Energy Model Forecasting – WPI Faculty and Students will be presenting progress to date and seeking input from the Energy Advisory Committee and General Public
115pm – 125 pm	IV.	Discussion of federal Economic Development Administration Funding Opportunities - *John Hume, MRPC Planning and Development Director*
125 pm - 130 pm	V.	Announcement of the next Energy Workshop – *Liz Garner, MRPC Consultant*
130 pm – 140 pm	VI.	Administrative Matters
140 pm -145 pm	VII.	Adjournment

RSVP to Linda Parmenter at lparmenter@mrpc.org or (978) 345-7376 x301.

C: City & Town Clerks: Please post this notice pursuant to MA General Laws, Chapter 30A, Sections 18-25.

MINUTES OF THE MEETING
OF THE
ENERGY ADVISORY COMMITTEE (EAC)

Regional Emergency Back Up Power Sources
Disaster Mitigation Plan

March 11, 2011

PRESENT:

Marion Benson	Planning Director/Town of Lunenburg
Victor Koivumaki	MRPC Chairman/Lancaster Planning Board
Jennifer Siciliano	MRPC Regional Planner
Trevor Beauregard	Gardner Economic Development
Mark Arnold	WPI Student, Town of Lunenburg
Daniel Guerin	WPI Student, Town of Groton
Michael Vaudreuil	WPI Student, City of Worcester
Benjamin Timms	WPI Student, City of Worcester
David Ames	Town Manager, Town of Athol
Noreen Piazza	Town Planner, Town of Lancaster
John Hume	MRPC Planning and Development Director
Eric Smith	MRPC Regional Planner
Glenn Eaton	MRPC Executive Director
Professor Mike Radzicki	Worcester Polytechnic Institute/Sterling Planning Board
Sean Hamilton	Templeton Municipal Light and Water
Jennifer Andersen	Consultant, MRPC
Liz Garner	Consultant, MRPC
Kelly Brown	Department of Energy Resources

I. Welcome and Introduction

S. Hamilton called the meeting to order at 12:45 p.m. All present introduced themselves.

A. Introduction of Consultant (Jennifer Andersen) for Regional Energy Plan and Worcester Polytechnic Institute (WPI) Oversight

J. Andersen stated that she has been working with the students since the project began back in December. The students are working on data collection and she has been available to work with them and help out with whatever they need. They are looking at modeling and at the software. They will be asking for feedback about the software interface once they get to that point.

II. Approval of November 19, 2010 Minutes

A motion was made that the Energy Advisory Committee approve the November 19, 2010 minutes as printed. The motion was seconded and passed unanimously.

III. Regional Energy Plan

A. Montachusett Regional Energy Model Forecasting – WPI Faculty and Students

M. Radzicki stated that the students are working very diligently. He meets with them once a week. The students also meet at least once a week themselves to coordinate activities. Part of the process at WPI is learning to work as a team and to delegate tasks among their team members. He is very pleased to date with the progress. The students also work with J. Andersen who is going to be very crucial to the model interface and making it user friendly. Recently the team has been working on a presentation for today's meeting.

The floor was then turned over to the students of WPI for their presentation.

B. Timms introduced the WPI Modeling Team (Mark Arnold, Daniel Guerin, Michael Vaudreuil, Benjamin Timms, Mike Radzicki, and Jennifer Andersen).

B. Timms, referring to a handout, continued stating that the team has been working on designing a model that looks at how different policies and trends affect energy demands in the Montachusett Region. To do this we have been looking at historical data from the region, current data, other models and surveys. We held a workshop on December 1st to get some ideas from the communities. We were looking at factors that contribute to the attractiveness of the region. With the data that was gathered we then built a survey that helped us figure out where to put the different factors in the model (physical attractiveness, open space, economic status, policy and education etc.). This will all be represented in the model.

D. Guerin, showing a model, stated that there is a theory, the Theory of Relative Attractiveness, this theory states that *given the free migration no place can remain more attractive than any other place.* This is because if you have one region that is more attractive than the regions around it, people are going to move into that region. All those people move in the region and start putting up houses and flooding the school systems and in time they will make it less attractive. Given enough time all the regions will even out and the attractiveness will be the same. There is also the Perception Delay*, it doesn't really matter how attractive the region is, what really counts is how attractive the people think it is*. There is a Community Domino Affect, this is where *one community doesn't control itself but is influenced and moved along by the communities around it.* If one town has a lot of jobs in their area the towns surrounding it will get a boom in population because people want to live near the jobs. The communities have to pick and choose what pieces of attractiveness they want to keep. They can't keep it all attractive.

D. Guerin reviewed the model with the committee stating that input and direction is needed.

V. Koivumaki asked about the idea of "perceived attractiveness"….how do you get people to perceive your area as attractive?

M. Radzicki replied that people are slowly becoming more aware to what is taking place around them. There is a delay and a time factor on that information. What if some resources were devoted to accelerating that perception process, to making perceptions more inline with reality through advertising and marketing? These are some policies that can be put in the model.

V. Koivumaki commented that he noticed in one of the charts that the regional effort was not ranked very high. There is not a lot of cache in regional efforts in Massachusetts.

B. Timms replied that it is the way the questions were asked. Policy and education seem to out weigh regional effort. The model looks at the region as a whole. Instead of 22 individual towns it is looked at as one town.

There was a discussion concerning what information the committee would like to see and in what format would they like to see the information (chart types etc.).

N. Piazza asked if the goal here is to come up with a regional energy plan that states that we would like to regionalize services.

D. Guerin stated that our goal is to be able to give the MRPC a model that they can use to look at different scenarios. We won't be necessarily advising but giving guidance. If we can model the region correctly we can give MRPC a tool to help them see what is going to happen to the region so they can plan ahead.

M. Benson asked why they are looking at roadways. Are you looking at what we presently have and what condition the roads are in?

B. Timms replied that our current model shows where the roadways currently are and what affect it would have on people's perceived attractiveness, personal and business, if they are fixes or cleaned up.

M. Radzicki asked the students to speak about the database they are compiling.

D. Guerin we have started to look at different data for the project, lots of numbers and census data. We are trying to put together numbers and spreadsheets that are easy for the MRPC to use in the future.

M. Radzicki asked that if anyone has any comments or ideas to please get them to Jennifer Siciliano.

J. Hume asked about the software that will be used.

J. Andersen stated that the students are using modeling software that allows us to create an interface that will connect with the model as well as excel. It will allow people access to some of the insight used for the project. We want the audience to understand that if they have the understanding they can manage the future that much better.

IV. Discussion of Federal Economic Development Administration Funding Opportunities

J. Hume commented that MRPC is looking into the possibility of applying for another grant from the Economic Development Administration. The grant deadline is June 10th. We can give them a draft for them to review in May. The topic would be "Sighting of Renewable Energy Facilities". Does the committee think that this is something we should pursue? We would be looking at things like wind, geothermal, photovoltaic, mapping the landfills, land use issues, lead neighborhood development etc. This committee would provide oversight.

D. Ames stated that the town of Athol has gone through this process. Identifying sites is important.

M. Benson said that they are also looking for smaller wind projects in this area. It is difficult to find the funds to do this type of project. We would welcome this type of grant.

S. Hamilton the towns can't get in that arena right now because they don't have access to these types of grants. The DEP is a big concern. I think it is a great thing to go after sighting and renewables. We have to be creative and innovative.

J. Hume stated that we are also looking at Renewable Energy Manufacturing Lands Inventory Assessments.

K. Brown stated that they ask each community to submit a letter from their legal counsel stating that these types of facilities we want to look at fit under the general policy by right. Then we move forward from there. You have to have at least 50,000 square feet of available space in order to comply.

V. Announcement of the Next Energy Workshop

L. Garner commented that the next Energy Workshop will be held March 22, 2011 from 5:00 p.m. – 7:00 p.m.

VI. Administrative Matters

There were no administrative matters.

VII. Adjournment

S. Hamilton adjourned the meeting at 1:45 p.m.

MONTACHUSETT
REGIONAL PLANNING COMMISSION
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ENERGY ADVISORY COMMITTEE MEETING
MONTACHUSETT REGION ENERGY PLAN

WORCESTER POLYTECHNIC INSTITUTE (WPI) STUDENTS WILL PRESENT DRAFT MODEL RUNS (REGIONAL ENERGY MODEL FORECASTING)

HOPE YOU CAN JOIN US!!!

AGENDA
FRIDAY, MAY 13, 2011
12:30 PM
LUNCH WILL BE PROVIDED!
at
MONTACHUSETT REGIONAL PLANNING COMMISSION (MRPC) OFFICES
1427R WATER STREET,
FITCHBURG, MA 01420

I. Welcome and Introduction

II. Approval of March 11, 2011 Minutes

III. Regional Energy Plan Update
A. Montachusett Regional Energy Model Forecasting – WPI Faculty and Students will be presenting a draft model to the Energy Advisory Committee and General Public

V. Energy Workshop Update – *Liz Garner, MRPC Consultant*

VI. Administrative Matters

VII. Adjournment

Please rsvp no later than May 9th to lparmenter@mrpc.org or (978)345-7376 extension 301.

MINUTES OF THE MEETING
OF THE
ENERGY ADVISORY COMMITTEE (EAC)

Regional Energy Plan

May 13, 2011

PRESENT:

Marion Benson	Planning Director/Town of Lunenburg
Jennifer Siciliano	MRPC Regional Planner
Trevor Beauregard	Gardner Economic Development
Mark Arnold	WPI Student
Daniel Guerin	WPI Student
Michael Vaudreuil	WPI Student
Benjamin Timms	WPI Student
David Ames	Town Manager, Town of Athol
John Hume	MRPC Planning and Development Director
Eric Smith	MRPC Regional Planner
Professor Mike Radzicki	Worcester Polytechnic Institute/Sterling Planning Board
Sean Hamilton	Sterling Municipal Light
Jennifer Andersen	Consultant, MRPC
Liz Garner	Consultant, MRPC
Stephen DiNatale	State Representative
Ann Pierce	Mass Development
John Jackson	Chairman, Athol Energy Committee
Chantell Fleck	MRPC Regional Planner
Dan Proctor	Sierra Club
Bob Protano	Sterling Planning Board

I. Welcome and Introduction

S. Hamilton called the meeting to order at 12:30 p.m. All present introduced themselves.

II. Approval of March 11, 2011 Minutes

M. Benson moved to approve the March 11, 2011 minutes as printed. The motion was seconded and passed unanimously.

III. Representative Stephen DiNatale – Energy Planning

Representative Stephen DiNatale congratulated MRPC for having their Regional Energy Plan grant application approved by the Economic Development Administration. He also recognized David Ames and John Jackson from the Town of Athol for the great work the town is doing in terms of energy.

In 2008, the legislature passed legislation to move Massachusetts towards a nonpolluting and sustainable direction by goals outlined by the Green Communities Act and the Global Warming Solutions Act. Our goal is to hopefully encourage the constituents of the MRPC communities to reduce overall energy consumption, promote energy efficiency at home and in the work place and encourage the installation of clean, renewable energy projects. We are now working on achieving a 25% greenhouse gas emissions reduction below 1990s levels by 2020 and 80% reduction by 2050. The Energy and Environmental Act states that we will be able to meet the 2020 goals with any additional

costs to the state. There is a lot to be done to reach the 2050 goals. Clean energy future will not only reduce our green house gas emissions but will improve public health and provide green jobs. There are a number of ways we can reduce our total energy consumption – from appliances and insulation we have in our homes to the way we commute to school.

Representative Dinatale stated as Vice Chair of the House Committee on Global Warming and Climate Change, house member of the committees on economic development and emerging technologies, as well as Telecommunications, Energy and Utilities, he looks forward to working with his peers on these energy issues as they come up for public debate. He thanked the Energy Advisory Committee for inviting him to speak.

IV. Regional Energy Plan Update

A. Montachusett Regional Energy Model Forecasting – WPI Faculty and Students will be presenting a draft model to the Energy Advisory Committee and General Public

B. Timms introduced WPI Professor Radzicki, Jennifer Anderson WPI Alumni (MRPC student), WPI students Mark Arnold, Daniel Guerin, and Michael Vaudreuil.

B. Timms presented a power point presentation. He explained that WPI has been working on an energy model for the region. The model will simulate future energy needs in the region. To design the model, WPI looked at historical data from the region, as well as current data, surveys and other models. Using the data from the surveys that we collected, we have been able to waive all the variables in the model based on what we believed people thought would be effective In addition to the model, the data that we have collected will be put into a data base for MRPC's use.

B. Timms indicated MRPC and WPI held a workshop in December to brainstorm ideas. We were looking to obtain from the attendees factors that contributed to attractiveness of the region. In March WPI provided an updated to the MRPC on the status of the model.

D. Guerin explained that formulation of the Database. The data categories include general demographics, social, economic, housing characteristics, and land use. He explained a chart that depicted that total square meters and acres for regional land use by different categories. Hopefully, MRPC can build from this database.

M. Vaudreuil explained that when conducting research for this project, we came across a lot of research papers. One we thought was important, was entitled "Using Scenario Visioning and Participatory System Dynamics Modeling to Investigate the Future: Lessons from Minnesota 2050. This research paper looked at different methodologies: They found that scenarios and modeling complemented one another. The goals that the Minnesota project researches spell out for the stakeholders are the goals that WPI wishes to achieve with the MRPC stakeholders. The first goal would be to assist the MRPC in making strategic decisions that would make the region sustainable, is obtainable through the use of the model. The second goal would be to work with MRPC to identify research gaps that may impede planning for the future. One of the lessons learned by the Minnesota 2050 process was that it provided a means for stakeholders to identify controllable actions in the context of highly uncertain set of future states.

B.Timms stated that the model was built from three components, stock, flow and influence arrow. He explained the sectors of the model which included: demographics, attractiveness, business attractiveness, businesses, land use and energy use. The main point of the project – to figure out how much energy was being used by residents and businesses. We broke it into the following areas: gasoline, diesel, electricity, heating oil and natural gas. Each one is then broken down into three users, housing, commercial and industrial business and municipal vehicles. All units were converted to BTUs so we would have a common unit. From that we can get a total regional energy demand.

The students then presented the base run model. They explained land use using growth four snapshots 20 years apart starting from 2010 to 2070. By 2070, there was still an abundance of open land, residential remained the largest land use, industry land use doubled and commercial land used increased. The same process was undertaken with energy use. The percentage of gas and diesel use remained virtually the same. Natural gas and electricity increased slightly but heating oil. Even though there will be more homes in 2070, there will be technology improvements, which may lead to the decrease in heating oil use.

The base runs and validity for population, energy, residential and commercial comparison was then explained. The students then presented in detail each simulated model run by category: Hybrids vs. Electric Vehicles; Oil Embargo; Increase in Green energy production (T. Boone Pickens Plan); Smart Growth; Business Taxes, Population Influx and Road Improvements and Expansion.

The students then discussed recommendations that could be incorporated into the model. They indicated that one thing that would be helpful is the disaggregation of regional services into more specific areas; cost of living could also be incorporated; and disaggregating attractiveness for age groups. Also, another important thing is to expand on the data collection for the region. Finding data for the region, such as how many businesses are located in the region, how many vehicles, municipal vehicles, etc. was extremely difficult. They recommended that municipalities collaborate with MRPC to gather this data.

WPI's report will be completed by May 30th. The database and model will be turned over to Jennifer Anderson and MRPC. Jennifer will work on the interface which will be completed by October 2011.

S. Hamilton commented that it would be interesting if the model could show what would happen with energy prices in the future.

The students responded they could run that simulation.

M. Radzicki indicated that although the students' project ends now, Jennifer Anderson, MRPC's consultant will continue to work on the project. Most importantly, we incorporated what you wanted into the model as users of the model. We want folks to use it.

A comment was made regarding the replacement of main transformers when towns reach total capacity. Every community will face that at some time or another. It would be of interest to model spending that money to replace transformers vs. spending that money to help businesses/residences to install solar panels to reduce the load.

Discussion took place amongst the group regarding solar panel installation in communities.

S. Dinatale indicated other renewable energy alternatives that should also be focused on is geothermal and hydropower.

Student from WPI commented that there are a lot of dams in Massachusetts that remain underused for energy production. Hydropower is 90% to 95% efficient compared to solar which at best around 50%. It is an economical source but there are environmental concerns.

S. Dinatale recommending possibly studying hydropower as an alternative energy source in the region to obtain some numbers and facts, and how to deal with the environmental aspects.

M Radzicki responded WPI are always looking for projects and that he would mention that to his students.

S. Hamilton thanked the WPI for the great job they did.

J. Anderson indicated she would be meeting with MRPC about the next steps in the near future. We will have another meeting to get more feedback from all of you on the model. After that, she would then put together the interface for the model.

B. Announcement of the Next Energy Workshop

L. Garner stated that the next workshop will be a Hydropower Workshop to be held mid-June. Workshop notice will be sent to all in a couple weeks. The workshop after that will focus on solar.

C. Administrative Matters

It was the decision of the Committee to hold its next EAC meeting on Friday, August 12th. We hope to provide a draft of Regional Energy Plan.

D. Adjournment

There being no further business the meeting adjourned at 2:00 p.m.

LIST OF HANDOUTS/EXHIBITS DISTRIBUTED AT MEETING

May 13, 2011 Agenda
March 11, 2011 Energy Advisory Committee Minutes
WPI Powerpoint Presentation on Energy Model
WPI Energy Plan Final Presentation Outline

MONTACHUSETT
REGIONAL PLANNING COMMISSION
R1427 Water Street Fitchburg, Massachusetts 01420
(978) 345-7376 Fax: (978) 348-2490 Email: mrpc@mrpc.org

ENERGY ADVISORY COMMITTEE MEETING
MONTACHUSETT REGION ENERGY PLAN

PRESENTATION OF DRAFT REPORT

HOPE YOU CAN JOIN US!!!

AGENDA

FRIDAY, SEPTEMBER 16, 2011
12:30 PM
LUNCH WILL BE PROVIDED!
at
MONTACHUSETT REGIONAL PLANNING COMMISSION (MRPC) OFFICES
1427R WATER STREET,
FITCHBURG, MA 01420

I. Welcome and Introduction

II. Approval of May 13, 2011 Minutes

III. Presentation of DRAFT Regional Energy Plan
- A. The Planning Team and Public Participation/Involvement – John Hume, MRPC
- B. Energy Model Forecasting – Jennifer Andersen – MRPC Consultant
- C. Renewable Energy Inventory – Renee Marion, MRPC
- D. Energy Issues, Recommendations, and Next Steps – Jeff Andersen, MRPC Consultant

IV. Energy Workshop Update

V. Wrap-Up Celebration, October 21st at 9 AM at Red Apple Farm in Phillipston

VI. Administrative Matters

VII. Adjournment

C: Cities and Town Clerks: Please post this notice pursuant to MGL Chapter 30A Sections 18-25.

MINUTES OF THE MEETING
OF THE
ENERGY ADVISORY COMMITTEE (EAC)

Regional Energy Plan

September 16, 2011

PRESENT:

Marion Benson	Planning Director/Town of Lunenburg
Jennifer Siciliano	MRPC Regional Planner
John Hume	MRPC Planning and Development Director
Linda Parmenter	MRPC Administrative Director
Professor Mike Radzicki	Worcester Polytechnic Institute/Sterling Planning Board
Sean Hamilton	Sterling Municipal Light
Jennifer Andersen	Consultant, MRPC
Mike Gerry	Workforce Investment Board
Jeff Anderson	MRPC Planning Intern
Larry Williams	Heywood Hospital
Jay Weiner	Leominster
Renee Marion	MRPC GIS Analyst
Victor Koivumaki	MRPC Chairman/Lancaster Planning Board

I. Welcome and Introduction

S. Hamilton called the meeting to order at 12:30 p.m. All present introduced themselves.

II. Approval of May 13, 2011 Minutes

M. Benson moved to approve the May 13, 2011 minutes as printed. The motion was seconded and passed unanimously.

III. Presentation of Draft Regional Energy Plan

A. The Planning Team and Public Participation/Involvement

J. Hume indicated that the draft Regional Energy Plan (REP) was emailed to all members at the beginning of the week. We are looking for comments and input to the plan no later than October 7, 2011. Comments can be sent to Linda Parmenter. He asked those present if they had any comments to the draft plan. The final report will distributed at a Wrap up Celebration on October 21st. The final report is due to the federal Economic Development Administration by October 31, 2011.

J. Hume briefly explained the first three chapters of the Plan: the Introduction and Overview; the Planning Team and Public Participation and Involvement.

B. Energy Model Forecasting

Jennifer Andersen explained the evolution of the regional energy model. New sectors and scenarios have been added. We would like this model to be used as a planning tool. She then presented power point slides. Phase 1 of the forecasting included the WPI Student Team holding a workshop to gather information from the community. In May they presented to the Committee scenario runs and a database. The team's model sectors included demographics, housing, industrial and commercial

business, land use, attractiveness and energy use. Energy use was then divided into natural gas, heating oil, gasoline and diesel and electricity.

J. Andersen indicated the student's then ran a number of scenarios including Smart Growth, Hybrids and Electric Cars, Oil Embargo, Pickens Plan, Business Tax, Population Growth, Building Roads. She explained the one she found to be of great interest was smart growth. Smart growth refers to clustering development to preserve open space. This allows people to enjoy a somewhat better quality of life. The idea includes driving less by being close to your home and employment as well as being close to commercial centers. You get a better result in terms of energy use, but you also attract more people. So in terms of energy savings the result is lower.

Hybrids and electric cars was another interesting model run scenario. The electrical grid is assumed to be able to handle these changes. If you put more electrical cars on the road you will use more electricity. Questions that need to be answered are what will happen to the grid and will the grid be able to handle it.

She further explained each scenario.

Phase 2 focused on expansion to the model. Additional structures that were added to the model included school funding, fire protection, public works spending, budgeting and attractiveness for each age group.

J. Andersen stated that regarding energy use the model run shows that from 1990 to 2050 energy use increased overall due to population increase. Heating oil is assumed to be decreasing over time. Gasoline, natural gas, and electricity demand increased.

Regarding attracting clean energy jobs to the area one thing that has to be considered is how Massachusetts as a whole competes with other states to attract energy jobs. Many states offer incentives to attract businesses. She cited the Pollina report. The report does not give Massachusetts a high ranking in terms of attracting business. Business Facilities 2010 ranks Massachusetts as a number 4 in biotechnology strength and a number 2 in workforce healthy and safety, but did not place in twelve other categories. One could assume that based on these rankings, Massachusetts is not on the fast growth track.

J. Andersen further explained that the MA Clean Energy and Climate Plan indicates that the State hopes to create 50,000 jobs in the clean energy industry. Those jobs will trickle down to this region.

J. Andersen stated that she ran model scenarios to see if she could affect business attractiveness using certain factors to see if this region could capture new job growth. She explained that she reduced the regional tax rate, changed the land use for transportation build out and loosened the regulatory environment. The model runs showed that you get a stacking effect on how you impact business attractiveness. Job creation increases from 2010 to 2050. Business begets business. More jobs and businesses will cause the regional energy demand to increase. That is one thing to think about with development and growth. One counteracts the other.

She explained she also ran a model simulation for conservation measures. The results were that the impact on energy demand through 2050 shows that electricity consumption reduces slightly, a huge jump with miles per gallon savings, and natural gas consumption is slightly reduced.

J. Andersen indicated that she would be working with MRPC on parameters for this model. There are many parameters that can be changed and we can create different ways of running the scenarios either prebuilt or from scratch scenarios. Final presentation will be made on October 21st at the Red Apple Farm in Phillipston.

S. Hamilton asked if she could do a model run on what happens when gas prices increases.

J. Anderson replied prices are not included and supply is not included. We assume that everything that is demanded is supplied. But what could be done is take that information and assume that increase in prices is going to impact demand by a particular amount and then make changes with the parameters.

S. Hamilton thanked J. Andersen for putting the electric car analysis in her report. It is great idea but the effect on the grid needs to be looked at. There are pros and cons to the electric car.

Larry Williams added that you also have to look at what will be done with the batteries as they are hazardous waste.

C. Renewable Energy Inventory

R. Marion stated that MRPC surveyed every community in the region to gather all the renewable energy assets in the region. The GIS department mapped all those renewable assets by category, solar, wind, biomass, landfill, hydro and geothermal. The map and addresses are included in the report.

L. Parmenter added that if members were aware of any renewable assets that were not included in this report, to please let her know by October 7th.

D. Energy Issues, Recommendations and Next Steps

Jeff Anderson presented a PowerPoint. He indicated renewable energy is not going to run out and it is clean. It has the potential to create jobs. As we try to decrease our energy consumption, we want to look at how to create renewable energy jobs as well.

Regional recommendations follow:

1.) Continue energy education/outreach/workshops. The need for renewable energy should been seen as a high priority across the region and be supported by municipalities and elected officials, business leaders, residents, utility companies and others.

2.) MRPC, the Comprehensive Economic Development Strategy (CEDS) Committee, and the Montachusett Regions' Energy Advisory Committee (EAC) should move forward with planning and implementation strategies by continually seeking and securing additional energy related state and federal funding opportunities.

3.) Energy conservation and efficiency in the regional and local transportation sector should be promoted through effective land use planning, investments targeted to encourage use of alternative transportation modes (bicycle and pedestrian, public transportation, rail), and funding for infrastructure to support alternative fueled vehicles.

4.) Businesses and projects that will increase the use of renewable energy and smart grid technology across the region should be supported. MRPC and the CEDS Committee could assist with this recommendation.

Local recommendations follow:

1.) Municipalities should take the lead on renewable energy integration into existing day to day operations by establishing a municipal energy committee to oversee development of energy plans and implementation projects.

2.) Identify specific strategies for reducing municipal energy consumption (buildings, vehicles, machinery and equipment, lighting and operations) by developing a comprehensive municipal energy plan.

3.) Municipalities should have a complete energy audit to identify short and long term actions that will save energy. An energy audit will establish where and how energy is being used in your buildings and facilities. It identifies opportunities and provides recommendations for energy and cost savings.

4.) Become a Green Community. A designated Green Community demonstrates a commitment to reducing energy consumption, pursuing clean renewable and alternative energy projects, and providing economic development in the clean energy sector.

5.) Explore net metering and how it will benefit your community.

6.) Make sure your community has renewable energy bylaws/ordinances in place.

7.) Projects or policies that encourage regionalization, relocalization, and sustainable development practices promoting smart growth should be supported.

8.) Municipalities should encourage residents to take action on the individual level.

S. Hamilton agreed that educating the public is a great idea. Maybe one of the things the town's or the MRPC could do is to put together a packet to be available to the public to educate them about renewable energy options. There may be different rules and regulations for municipals but could be tailored to fit in one box.

S. Hamilton added public/private partnerships for solar may be a way to get towns involved. For example, if DOER or some other agency could supply funds to the towns to put in a solar field to supply power to municipal owned buildings and partner with a private agency that would not only put people to work but it would reduce energy costs for the towns.

M. Radicizki stated that the creating green jobs recommendation is vague. Who will create green jobs?

S. Hamilton added the recommendation about conducting energy audits is good. However, most do not do anything with the results of the audit as there is no money to implement the improvements.

Discussion followed about how to attract jobs and keep jobs in Massachusetts.

S. Hamilton commented that maybe towns can put solar on top of a vacant buildings to attract business. Business would be allowed to take the benefits of what the solar panels produce. That brings jobs to the area. What would need to be worked out is how does a town put a solar field on a private building.

M. Benson added how many towns can afford to make buildings pad ready.

IV. Energy Workshop Update

J. Hume mentioned that the next energy workshop will be focusing on solar energy and will be held on September 29th at the Harvard Public Library at 4:00 p.m.

V. Wrap Up Celebration – October 21st

J. Hume indicated that the Regional Energy Plan wrap up celebration will be held on October 21, 2011 at 9:00 a.m. at the Red Apple Farm.

VI. Administrative Matters

J. Hume stated that MRPC will be submitting a grant application to the Economic Development Administration regarding a Regional Renewable Energy Facility Siting Plan in partnership with Northern Middlesex County of Governments.

VII. Adjournment

There being no further business the meeting adjourned at 2:30 p.m.

LIST OF HANDOUTS/EXHIBITS DISTRIBUTED AT MEETING

September 16, 2011 Agenda
May 13, 2011 Energy Advisory Committee Minutes
Regional Energy Plan Draft Report
Solar Workshop Flyer
Regional Energy Plan Wrap Up Celebration Save the Date Flyer

APPENDIX D

PRESS CONFERENCE – OUTREACH EFFORTS, AGENDAS, PRESS COVERAGE

Installation of Wind Turbine at Narragansett Regional Middle High School – Templeton – May 2010

Press Conference
To Announce Federal Funding for a Regional Energy Plan

The Montachusett Regional Planning Commission (MRPC) would like to invite you to a press conference at ***Evergreen Solar, 112 Barnum Road, Devens on Friday, October 22 at 9:00 a.m.***

The federal Department of Commerce's Economic Development Administration has approved the Montachusett Regional Planning Commission's (MRPC) grant application for $66,000 to develop a Regional Energy Plan (REP) for the Montachusett Region.

The goal of the plan is to make recommendations to MRPC's 22 communities to promote the reduction of electricity used, energy used for transportation, an non-electric energy used for heating; replacement of fossil fuels with renewable resources and the reduction of global climate change emissions. It is a well known fact that conventional energy and fuel costs are quickly sent out of our regional economy but, in contrast, renewable energy and energy efficiency keep more of those dollars in our local communities and regional economy. Efficiency and renewable energy also provide complementary economic development benefits by generating investment and employment in different sectors, which expands the total economic stimulus effect.

The scope of work for this project includes a renewable energy regional inventory, design and construction of energy educational exhibits, and series of community workshops. An assessment and analysis of the Montachusett Region Current Energy Needs/Demands (by end-user) will also be undertaken. Based upon this information, Worcester Polytechnic Institute students will work to build a system dynamics simulation model of future energy demands and needs within the Montachusett Region. The model will be used to simulate a variety of path-altering scenarios

Invited guests will include local and state officials, utility providers, the business community, Fitchburg State University and Mount Wachusett Community College, and public and private sector economic development practitioners among others.

Please join us to learn more about this project!
RSVP no later than October 15th to lparmenter@mrpc.org or (978)345-7376 extension 301.

MONTACHUSETT
REGIONAL PLANNING COMMISSION
1427R Water Street Fitchburg, Massachusetts 01420
(978) 345-7376 FAX (978) 348-2490 Email: mrpc@mrpc.org

Press Conference
To Announce Federal Funding
for a
Regional Energy Plan

FRIDAY, OCTOBER 22, 2010
9:00 AM
at
EVERGREEN SOLAR
112 BARNUM ROAD
DEVENS

AGENDA

9:00 – 9:10 AM	**Welcome: Victor Koivumaki, MRPC Chairman and Scott Gish, Evergreen Solar Vice President of Sales and Marketing**
	SPEAKERS
9:10 AM	**Sean Hamilton, Montachusett Region Energy Advisory Committee Chairman**
9:15 AM	**State Representative Harold Naughton**
9:20 AM	**State Representative Jennifer Benson**
9:25 AM	**Project Overview: John Hume, MRPC Director of Planning and Development and Linnea Palmer Paton, Worcester Polytechnic Institute**
9:35 AM	**Questions and Answers**
9:45 AM	**Conclusion: Glenn Eaton, MRPC Executive Director**

C: City and Town Clerks: Please post this notice pursuant to the Open Meeting Law.

SENTINEL & ENTERPRISE

MONDAY, MARCH 28, 2011

Commission to form regional energy plan

Panel to recommend green power, cost-saving measures for 22 communities

By Jack Minch
jminch@sentinelandenterprise.com

FITCHBURG — The Montachusett Regional Planning Commission is developing a regional energy plan to forecast which types of green energy the region will use in the future and how that will affect its consumption of traditional fuel sources.

"We don't have one and it's such an important topic," said commission Planning and Development Director John Hume. "Energy is an issue that's not going to go away for some time."

The energy plan will be used to make recommendations for the 22 communities the commission serves, on ways to reduce usage of electricity and gasoline as well as non-electric forms of energy used for heating.

The U.S. Commerce Department's Economic Development Administration is providing a $66,000 grant for the regional plan that is due by Oct. 1, Hume said.

The plan will include an inventory of renewable energy such as wind turbines, photovoltaic solar panels, geothermal and biomass, Hume said.

"We're going to look at all the projects going on now and map them

Please see **PANEL/8**

Commission to develop regional energy plan

PANEL/From Page 1

out," he said.

The commission plans to showcase the regional energy plan and survey at the American Planning Association National Conference in Boston in April.

"We are getting all that information together now," said Jennifer Siciliano, a regional planner with the commission.

The project includes an energy model simulation in order to forecast the needs of the area for the next five, 10 and 20 years, Hume said.

Four students from Worcester Polytechnic Institute are working on the simulation model under their associate professor of economics Michael Radzicki.

The forecast will look at multiple scenarios that would affect long-range consumption.

That will include such factors as increasing the number of renewable energy sources such as wind turbines and even increased usage of electric cars.

Town and city officials will be able to use the information for their energy consumption planning.

Lunenburg and Lancaster are working on developing solar farms which will be factors in the region's energy consumption, Eaton said.

A number of wind turbines have been built in North Central Massachusetts recently, he said.

There were no more than two wind turbines in the region five years ago but there are about eight now, said Glenn Eaton, the commission's executive director.

"Of all those communities ... many are addressing the issue of renewable energy facilities permitting process," he said.

He compared it to the learning curve around issuing building permits for cell towers when they first came on the scene a number of years ago.

Communities had difficulty establishing bylaws and regulations for the towers, Eaton said.

The Gardner News Online

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Newest Available Publication Date : Monday, October 25, 2010
Selected Publication Date : Friday, October 22, 2010

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Grant to help officials forecast region's energy needs

By Jean-Paul Salamanca
Published On Friday, October 22, 2010

Officials with the Montachusett Regional Planning Commission will announce today in Devens their plans to use a $66,000 federal grant to forecast the future energy needs of the region and hold a series of workshops about energy related topics in North Central Massachusetts.

Thanks to the grant provided through the Economic Development Administration of the federal Department of Commerce, the Montachusett Region Energy Advisory Committee will be able to partner with students from the Worcester Polytechnic Institute to create an energy model forecast for the Montachusett region, which encompasses North Central Massachusetts.

An energy model forecast shows the current energy usage for the region and makes a forecast of what the expected energy usage in the region will be 20 to 30 years from now, providing alternative scenarios on how to meet those needs, such as with solar and wind energy.

The energy forecast is expected to be conducted during the course of one year.

John Hume, the commission's planning and development director, thanked the commerce department for its recognition of the value of exploring renewable energy in the region.

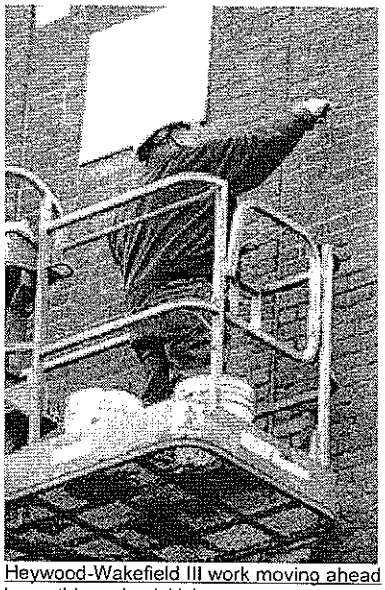
"They are realizing what a critical role energy plays throughout this region ... and the country and the world," he said. "Energy transports goods, powers machinery, heats homes ... they realize the importance of planning for the future."

The commission put together the grant application this summer in conjunction with the Worcester Polytechnic Institute.

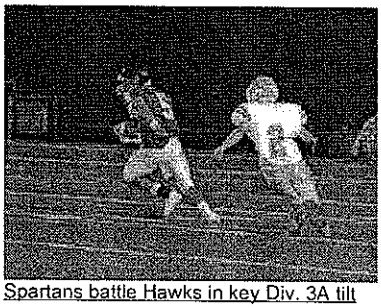
Another portion of the grant will pay for the advisory committee holding six workshops next year about energy related topics, including grant funds available to communities for renewable energy products.

The advisory committee is headed by Sean Hamilton, general manager of the Templeton Light and Water Department.

Another project Montachusett officials spoke of excitedly is



Heywood-Wakefield III work moving ahead 'smoothly and quickly'



Spartans battle Hawks in key Div. 3A tilt

Town holds program on Louisa May Alcott

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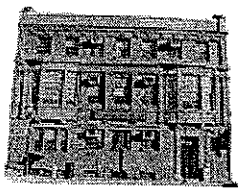

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a regionwide energy survey conducted across communities in North Central Massachusetts. Completed in August, the study was funded by a $125,000 grant — also from the commerce department — where 750 surveys were forwarded to businesses regionwide to determine how many businesses had emergency backup generators.

Mr. Hamilton, who conducted the survey for Templeton, said the lack of emergency power for area businesses — especially for gas stations — proved to be a major issue during the ice storm of 2008, which shut down power for several days in communities across North Worcester County.

While the report has not been finalized yet, Mr. Hume said the surveys indicated there were very few gas stations in the region that have an emergency power supply.

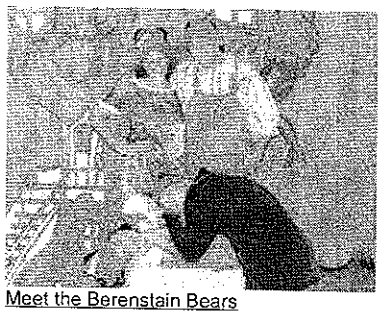
"There were no gas stations open during ice storm," said Mr. Hume. "That had a tremendous economic and safety impact in those areas. That's concerning, especially in winter months.

Where do you get gas then?"

The study allowed the commission to take a look at the utility grid structure in communities, and recommend improvements.

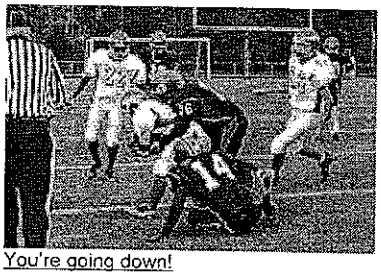
The commission is working on the final report, which is scheduled to be presented Nov. 19. The report will include recommendations concerning utility grid structure and emergency backup power supplies, and will indicate specific regional aspects that should have backup power and how to attain them.

jpsalamanca@thegardnernews.com



Meet the Berenstain Bears

A team effort



You're going down!

Regional energy plan in works for Nashoba Valley

By M.E. Jones, Correspondent
Updated: 10/23/2010 06:35:43 AM EDT

DEVENS – The Montachusett Regional Planning Commission has been awarded a $66,000 federal grant to develop a regional energy plan for 22 communities in the Nashoba Valley and Central Massachusetts.

The commission will work with Worcester Polytechnic Institute, WPI Professor Michael Radzicki and student interns to create an inventory of renewable energy sources, forecast future needs and coordinate workshops, Commission Director of Planning and Development John Hume said at a press conference yesterday morning.

Hume said the goal is to complete the project in one year. MRPC Chairman Victor Koivumaki said there are tentative plans to wrap the project with a regional exhibit.

The project includes:

* Listing existing and proposed facilities and map sites for renewable sources of electricity and heat in the region, including wind, solar, photovoltaic, geothermal, landfill gas, hydro and biomass. In part, the list will be used to educate the public about renewable energy projects in their communities.

* Assessing and analyzing of the region's needs, including transportation, commercial/industrial and residential. WPI students will use this data to simulate what the region may need next.

* Holding at least six community workshops, with discussions and presentations on energy-related topics and assistance with ongoing planning efforts aimed at finding alternative heating and cooling systems for structures and strategies to reduce greenhouse gas emissions.

Yesterday's press conference was held at Evergreen Solar's 450,000-square-foot solar-panel manufacturing facility. Plant Manager Scott Friends said Evergreen is the kind of renewal energy facility this project will envision.

The firm manufactures 760,000 solar panels a year, employs 800 people on site and 960 statewide. Citing its "low carbon footprint" as well as green output, Friends compared emissions savings to taking 25,000 cars off the road.

"We are the ultimate environment-friendly business," he said.

Sean Hamilton, who heads the Templeton's municipal utility and chairs the MRPC Energy Committee, said the advisory board grew out of a crippling ice storm that hit the region in December 2008, knocking out power in some communities for more than a week.

He said the storm offered many lessons. Many places that needed backup power didn't have generators, such as gas stations and grocery stores, he said. That meant staples were not available when the lights went out, he said. The board will soon issue a report on how to improve services when power goes out, including the need for emergency centers.

State Rep. Jennifer Benson, D-Lunenburg, whose term dates back to the ice storm aftermath, said she also learned how important it is to have a "regional collaborative" in place and for groups such as this to "work together as a team" to develop a "cohesive energy plan" that would be "daunting for a small community" to tackle alone.

State Rep. Stephen DiNatale, D-Fitchburg, said the grant-funded project should look at ways to help small businesses and homeowners deal with rising energy costs. State Rep. Dennis Rosa, D-Leominster, said he is a small business owner whose collision repair shop saved $200 a month after replacing its light bulbs with new, energy-efficient fluorescent lights. National Grid did an energy audit and recommended the change, he said. He suggested broadening the scope of the project to include more outreach to small businesses, whose growth will boost the regional economy.

"Help us and we will create jobs," he said.

MRPC's Glenn Eaton said the last thing planners want is for their plans to sit on a shelf. "The economy is important to us, too," he said.

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HEADLINES BY FEEDBURNER

MRPC's 22-community district includes Ayer, Groton, Shirley and Townsend. .

A project website is under construction. For information, call John Hume at MRPC at 978- 345-7376.

telegram.com

Article published Oct 23, 2010

Group to study future energy needs
WPI students to make demands model

By George Barnes TELEGRAM & GAZETTE STAFF
gbarnes@telegram.com

DEVENS — It really goes back to the 2008 ice storm, but moving forward, the Montachusett Regional Planning Commission not only wants the region's power needs protected from a similar storm, but wants to see northern Central Massachusetts cities and towns more involved with green energy.

At Evergreen Solar Co. in Devens yesterday, the planning commission and local officials announced the beginning of a yearlong effort to identify future energy needs in the region and make recommendations to the 22 communities served by the planning commission to reduce electricity, energy used for transportation and non-electric energy used for heating and identify renewable energy sources that can reduce the region's demand for fossil fuels.

The planning commission will be working with students from Worcester Polytechnic Institute to develop the plan, which is being paid for with a $66,000 matching grant from the U.S. Department of Commerce's Economic Development Administration.

"The December '08 storm thrust this on my agenda," said Glenn Eaton, executive director of the planning commission.

The storm knocked out power throughout the region. What was notable during the storm, however, was the region's lack of backup generating power. The MRPC formed a taskforce following the storm to review the region's back-up power needs and find ways to improve the situation for the future.

Beyond the backup power needs, Mr. Eaton said the planning commission began looking at the need to develop a comprehensive energy policy for the region. Since the storm, Templeton has erected a wind turbine, Mount Wachusett Community College is looking to put up two similar turbines and several other wind-to-energy projects are under way.

Mr. Eaton said these have pointed out the need for further energy planning, including looking at land use issues. To ensure the wind turbines and other green energy projects are compatible with the communities in which they are being built, he said the planning commission is working with cities and towns to update their zoning laws to address the new technology.

"Of the 22 Montachusett communities, only a handful have addressed the issues," he said.

John Hume, director of planning and development for the Montachusett Regional Planning Commission, said the grant will be used to conduct an inventory of existing renewable energy projects. The commission will also conduct at least six community energy workshops to talk about energy efficiency and renewable energy options. The WPI students will develop a model of future energy demands in northern Central Massachusetts and use the model to simulate a variety of scenarios of energy use based on increases or decreases in solar or other renewable energy use.

WPI senior Linnae Palmer Paton said students at the college must complete three projects to graduate. She said that for the students, the energy modeling project is a project that gives students an opportunity to have an impact on creating a more stable, energy-conscious and cost-effective future for the region.

"The collaboration benefits the students as well as the Montachusett region," she said, adding: "It's a wonderful opportunity to have an impact on the energy needs of this region."

APPENDIX E

WORKSHOPS – AGENDAS AND PRESS COVERAGE

MONTACHUSETT
REGIONAL PLANNING COMMISSION
1427R Water Street Fitchburg, Massachusetts 01420
(978) 345-7376 FAX (978) 348-2490 Email: mrpc@mrpc.org

HELP FORMULATE A REGIONAL ENERGY FORECASTING MODEL!!!
WORKSHOP TO BE FACILITATED BY MICHAEL RADZICKI, PROFESSOR, WORCESTER POLYTECHNIC INSTITUTE (WPI)

Please join us for this Regional Energy Plan Workshop!*

WE NEED YOUR INPUT!!! An assessment and analysis of the Montachusett Region Current Energy Needs/Demands (by end-user) will be conducted, including transportation (gallons of gas, cost of gas and alternative resources – biofuels, etc.), Commercial/Industrial (usage and costs of oil, gas, electricity), and Residential (usage and costs of oil, gas, electricity). Based upon this information, a WPI student team will build a system dynamics simulation model of future energy demands and needs within the Montachusett Region. The model will be used to simulate a variety of path-altering scenarios. In order to create a model that incorporates factors deemed important by its ultimate users, interested experts and stakeholder need to contribute to the model's formulation at the earliest stages of its development. This workshop will be the first opportunity for these individuals to participate in the modeling process.

This workshop is Open to the General Public - Anyone interested is highly encouraged to attend including citizens, local and state officials, students, utility providers, the business community, and others.

WEDNESDAY, December 1st, 2010
9:00 AM to 11:00 AM
at
Mount Wachusett Community College Gardner Campus
Murphy Room, 444 Green Street, Gardner, MA 01440

Michael Radzicki, Professor, Worcester Polytechnic Institute will facilitate this Workshop with student involvement. Public participation, including the provision of information, and involvement in decision is necessary in the formation of an Energy Forecasting Model for the region!

RSVP TO JENNIFER SICILIANO AT JSICILIANO@MRPC.ORG OR (978) 345-7376 X318 BY NOVEMBER 23, 2010.

***Funding provided to MRPC through grant funds from Federal Economic Development Administration, U.S Department of Commerce.**

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Green Communities Program - Presented by
Kelly Brown, Regional Coordinator,
Green Communities Division, Central Region
MA Department of Energy Resources

The Montachusett Regional Planning Commission is working to put together a Regional Energy Plan* for the Montachusett Region. PLEASE JOIN US FOR A REGIONAL ENERGY PLAN WORKSHOP! where Kelly Brown (MA DOER) will present initiatives and services to cities and towns on the path to becoming Green Communities. Ample time will be provided for Q&A so bring your questions! More info on Green Communities can be found at www.mass.gov/energy/greencommunities.

Friday, January 14, 2011
9:00 AM
at
LANCASTER TOWN HALL
LANCASTER, MA

9:00 - 9:10 AM	Introductions and Welcome: Victor Koivumaki, Chairman, MRPC
9:10– 10:10 AM	**The Green Communities Program**. Presented by Kelly Brown, Regional Coordinator, DOER.
10:10 – 10:25 AM	Green Community Designation and what it means to Lancaster: Noreen Piazza, Planning Director, Lancaster
10:25 -10:30 AM	Concluding Remarks: Glenn Eaton, Executive Director, MRPC

Please RSVP on or before January 11, 2011 to Linda Parmenter at Lparmenter@mrpc.org or (978) 345-7376 x301.

CC: City and Town Clerks: Please post this pursuant to MGL Chapter 30A, Section 11A and ½.

*Funding provided to MRPC through grant funds from Federal Economic Development Administration, U.S Department of Commerce.

MONTACHUSETT
REGIONAL PLANNING COMMISSION
1427R Water Street, Fitchburg, MA 01420
(978) 345-7376 FAX (978) 348-2490
Email: mrpc@mrpc.org

Do you have the perfect spot for a wind turbine?

Make the world a little greener and please your neighbors…Learn how to aesthetically site a wind turbine in the New England landscape!

Join MRPC in a **free** workshop to address wind turbine siting considerations-- and we will treat you to a tour of the LEED "gold"-certified Doyle Center. You will learn about **wind energy, geothermal heating and cooling, photovoltaic lighting**…Bring your questions, enjoy a light supper with us and learn about the latest in sustainable energy solutions! Also, **Representative Rosa will give us a legislative update on energy issues** – straight from the State House to you.

5:15– 7:15 pm, MARCH 22, 2011
Doyle Conservation Center
464 Abbott Avenue, Leominster, MA

5:15 pm	Meet in the Doyle Center Lobby
5:25 pm	Tour of the Doyle Center
5:45 pm	Enjoy a light supper in the Conference Room
6:00 pm	**Presentations Begin** Representative Dennis Rosa will give us a legislative update on energy-related issues. Donald McCauley of Minuteman Wind and Jonathan Fitch of Princeton Municipal Light will discuss Wind Turbine Siting

RSVP BY MARCH 11TH TO JENNIFER SICILIANO AT JSICILIANO@MRPC.ORG OR (978) 345-7376 X318

***Funding provided to MRPC through grant funds from Federal Economic Development Administration, U.S Department of Commerce.**

5.15

The Gardner News Online

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Newest Available Publication Date : Thursday, March 24, 2011
Selected Publication Date : Wednesday, March 23, 2011

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Jean-Paul Salamanca

Back To News

Forum highlights wind power's local limits, possibilities

By Kerry O'Brien
Published On Wednesday, March 23, 2011

LEOMINSTER — Municipal officials, students and others gathered for an educational overview and legislative update on the expanding wind energy market during a wind turbine siting workshop held by the Montachusett Regional Planning Commission, Tuesday.

As the demand for renewable energy increases in the region, the planning commission held the program to give legislators and town officials with experience in the process a platform to explain the many facets and pros and cons of wind energy generation.

Officials from Athol, Sterling, Westminster and Fitchburg were in attendance, all stating that their main point of interest would be reviewing the town of Savoy's zoning bylaws regarding wind turbines. Each town is in the process of drafting such bylaws to accommodate wind turbines.

Don McCauley of Minuteman Wind noted that challenges exist to utilizing wind power.

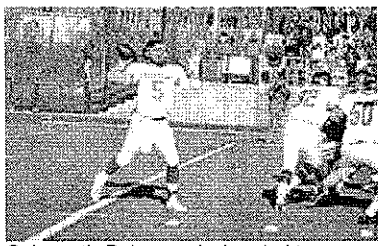
"Its not a natural resource intrinsic to New England," Mr. McCauley said "You have to be wary to adapt a model that fits into the physical and political reality of your town, and consider how it impacts your neighborhood and communities."

Mr. McCauley went on to detail the ongoing battle Minuteman Wind has had every step of the way in the creation of what he called a "wind garden." Even though approximately two-thirds of Savoy residents were in favor of erecting wind energy turbines in town, Minuteman still faced strong opposition from the town's planning board, which refused to draft needed bylaws.

In addition, getting National Grid to purchase the energy that the wind turbines generate is difficult in the natural gas and coal driven market.

Besides difficulties within town government and community impact, state Rep. Dennis A. Rosa of Leominster went on to explain that the legislation which will support the energy source is only at its beginning stages. There are currently 166 bills before the Joint Committee on Telecommunications, Utilities and Energy, and many have been continued from years past and will most likely be continued for years to come.

John Frederick Nolan



Oakmont's Bakanowsky headed to Merrimack

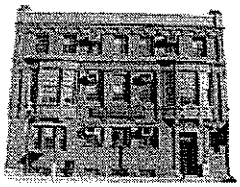
Daniel P. Dupuis

5, 5

12 Months

Home Delivery	$156.00
Mail	$228.00

The Gardner News Inc.



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"If you don't discuss and debate the issues thoroughly enough, you end up with a bad bill," Rep. Rosa said.

However, he also assured his continuing support for the evolving market.

"This is the future," Rep. Rosa said. "This is how we're going to save and create renewable energy."

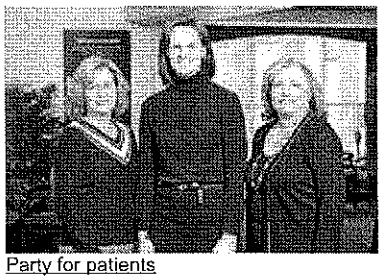
The event concluded with a presentation from Jonathan Fitch of Princeton Municipal Light, showing an accelerated video of wind turbine construction.

The educational event was hosted by the planning commission to address the growing interest in renewable energy throughout the region.

"Renewable energy has a vital role in the Montachusett regional planning area," said Glenn Eaton, the planning commission's executive director. "The decisions we make will greatly influence our future."

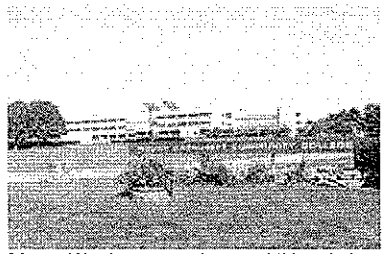
kobrien@thegardnernews.com

Making an impression



Party for patients

Pamela L. Dame



Mount Wachusett explores additional sites for new dormitory

Wind-turbine specialists give their spin on policy

By Emily Devlin
edevlin@sentinelandenterprise.com

LEOMINSTER — Local officials and residents interested in renewable energy resources got a lesson in the long, winding road to siting towering wind turbines during a workshop at the Doyle Conservation Center on Abbott Avenue Tuesday evening.

Two men who know what it takes to make energy-producing turbines a reality — John Fitch, of the Princeton Municipal Light Department, and Donald McCauley, a lawyer from Wellesley with an interest in renewable energy development — discussed the challenges and benefits of pursuing wind turbines.

The workshop was organized by the Montachusett Regional Planning Commission.

Though cities and towns are becoming more interested than ever in adopting zoning laws that allow for wind-turbine siting in designated areas, there are still many people who oppose them, which stalls the process.

"The opponents do have legitimate concerns. I mean, these are industrial facilities," said McCauley, who after seven years of working with the people of Savoy, was able to build a small cluster of turbines in the tiny western Massachusetts town.

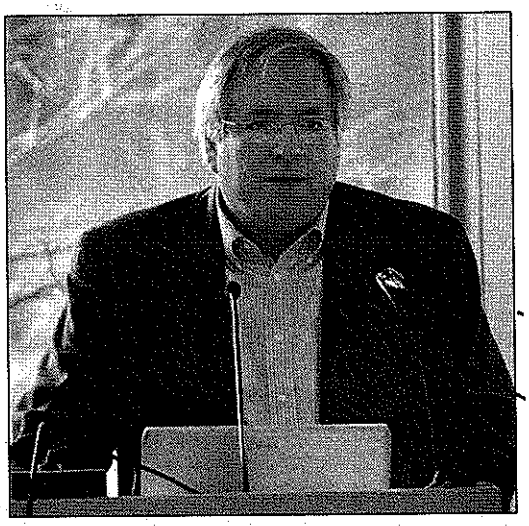
McCauley's project creates energy that his business, Minuteman Wind, sells to the grid. The Savoy Planning Board opposed the project, but Minuteman representatives were finally able to draft their own bylaw to get the project done, and the town ultimately supported it.

Communities considering wind turbines may want to capitalize on qualities McCauley believes are attractive to the public. He said it's the most economic way to produce renewable energy, and people like the idea of their community leading the way toward energy independence.

Fitch oversaw the installation of wind turbines near the summit of Mount Wachusett, which also took several years. He advised officials to be upfront with the public about some of the negative aspects, such as noise generated by blades that move at 200 mph, and shadows cast at certain times of the day.

The overarching concern, according to Fitch, is that people simply don't want to have to look at wind turbines, which in Princeton are more than 300 feet high. But honesty is the best policy, he said.

"That's the key thing you need to get across," Fitch said. "Yeah, you're going to see it."



SENTINEL & ENTERPRISE / BRETT CRAWFORD

Donald McCauley, of Minuteman Wind, talks about wind-turbine projects during a Montachusett Regional Planning Commission meeting at the Doyle Conservation Center in Leominster Tuesday evening.

In Princeton, wind turbines produce about 40 percent of the town's energy, according to Fitch.

Denis Meunier, water commissioner for the city of Fitchburg, said he's interested in siting turbines to power the city's water-treatment plant on Rindge Road. A feasibility study to measure the wind power proved the site viable. Although the project would cost an estimated $5 million, Meunier believes it's worth it.

"It would probably be a net gain over the first 20 years of at least $100,000," Meunier said.

The Fitchburg City Council amended the zoning ordinance more than two years ago to allow for wind turbine siting. Other communities, like Ashburnham and Princeton, have adopted similar laws, while communities like Leominster and Westminster are pursuing them.

In Leominster, Sholan Farms on Pleasant Street might be an ideal location for wind turbines, as the velocity up there is probably high enough to create power, said Conservation member Joanne DiNardo. Proposed changes to the zoning ordinance are on the horizon that would make the permitting process easier.

"We know where we would like to put them, but there's a whole permitting process you'd have to follow," DiNardo said.

May 5, 2011 find out if your town can generate renewable energy…and sell it!

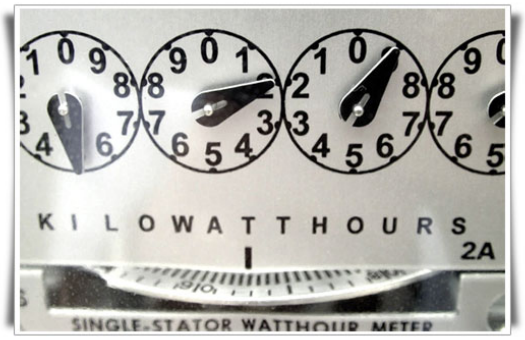
Virtual Net Metering:
Renewable Energy for Municipalities

Free workshop to benefit towns!

When: **Thursday, May 5, 11am - 1pm.**

Where: **Athol Town Hall**, **584 Main Street, Athol, MA**

Legislative update: Vice Chairman of the House Committee on Global Warming and Climate Change **Representative Stephen DiNatale** will give fresh news on energy issues…Learn what is happening on the Hill!



Joel Lindsey, Program Manager for Weston Solutions will lead the discussion on new net metering rules for investor-owned utilities that allow Towns and private developers to build renewable energy projects on private or public land, and credit the energy to their own facilities or sell it to third parties at close to a retail rate. These provisions were enacted in 2010 and have generated significant interest in new renewable energy development. Bring your questions!

A light lunch will be provided.

.

Please RSVP by May 2, 2011: lparmenter@mrpc.org or (978)345-7376, x. 301

Hosted by **Montachusett Regional Planning Commission** *with funding from the* Economic Development Administration/ Department of Commerce.

MONTACHUSETT
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(978) 345-7376 FAX (978) 348-2490 Email: mrpc@mrpc.org

Hydropower Workshop:

Renewable Energy for Municipalities

When: **Monday, June 20th from 2pm to 4:30pm**
Where: **Clinton Town Hall (Selectmen's Chamber)**

This event will include a tour of the Cosgrove Intake Facility at Wachusett Reservoir, an Update on Energy Related Legislation by Representative Dinatale, and Q & A with Amy Barad, Clean Energy Center Project Manager!

Agenda

2:00 Meet at the Clinton Town Hall Selectman's Chambers for refreshments and sign-in.
2:15 Clinton TA Michael Ward will open the workshop.
2:20 Adjourn to parking lot and carpool to Cosgrove Intake Facility.
Parking at the reservoir is limited; carpools are helpful.
2:45 Begin tour of the Cosgrove Intake.
Please NOTE: This is a secure facility. RSVP is required to tour inside the dam.
3:05 Carpool back to Clinton Town Hall Selectman's Chambers for refreshments and open discussion.
3:30 MRPC Planning and Development Director John Hume will re-open the workshop and introduce Representative Stephen DiNatale. Representative DiNatale will give an update on energy-related legislation.
3:45 Q & A.
4:00 Mr Hume will introduce Clean Energy Center Project Manager Amy Barad.
4:15 Q & A.
4:30 Mr Ward will close the workshop for refreshments and networking.

Please RSVP to Liz at MRPC by noon Thursday, June 16.
Phone: (919) 247-8123. E-mail: Liz.garner@yahoo.com

*Funding provided to the Montachusett Regional Planning Commission through grant funds from the Federal Economic Development Administration, U.S Department of Commerce.

WICKED LOCAL CLINTON
WITH NEWS FROM THE TIMES & COURIER

Reader callout Send us your 9/11 memories

Group examines renewable energy

By Bret Matthew
GateHouse News Service
Posted Jul 16, 2011 @ 11:53 AM

Clinton — In the conversation surrounding renewable energy sources, wind and solar power are the most talked-about topics. But to some, hydroelectric power isn't getting the attention that it is due.

Which is why Liz Garner, an organizer at the Montachusett Regional Planning Commission, recently put together a hydropower workshop in Clinton.

The workshop, titled: "Renewable Energy for Municipalities," was designed to inform interested entrepreneurs and local government officials from Clinton and the surrounding area about the benefits and difficulties of implementing this method.

"Hydropower is a lot cleaner than it used to be," said Garner, referring to past concerns that hydropower posed a danger to fish. But, she said, these problems have largely been solved recently.

"It will be a piece of the puzzle."

The main subject of study is the Wachusett Reservoir.

After a brief introduction in Clinton's Town Hall, workshop leaders and attendees filed into buses for a short trip to the reservoir, where they received a tour of the Cosgrove Intake and Power Station. Built in 1969, Cosgrove contains two turbines, each with 1.7 megawatts installed capacity.

David Coppes, director of Western Operations for the Massachusetts Water Resources Authority, led the tour. He said that Cosgrove produced 5,557-megawatt hours of power in fiscal year 2010, earning $700,000 in electrical sales.

To Bob Latini, chairman of the Clinton Alternative Energy Committee, the tour was informative.

"There are two ways to conserve," said Latini. "Not use energy, or find an alternative source." Latini said his committee was looking at all types of alternative energy sources for Clinton, which spends about $1 billion a year in energy costs.

After the tour, attendees returned to Town Hall to hear state Rep. Stephen DiNatale, D-Fitchburg, Vice-Chair of the Global Warming and Climate Change Committee and member of the Economic and Emerging Technologies Committee and the Telecommunications, Utilities and Energy Committee.

DiNatale claimed that incomplete legislation served as an obstacle for hydropower development in the state, which he is currently attempting to fix. He recently submitted a bill, alongside State Senator Benjamin Downing, that would include hydropower in the Green Communities Act, which for now only includes wind and solar power.

"We need to generate a dialogue on a number of different issues," said DiNatale. He told attendees that they should notify the chairs of the Telecommunications, Utilities and Energy Committee to help such bills go through. State Sen. Benjamin B. Downing, D-Pittsfield, is the Senate chair; Rep. John Keenan, D- Salem,s the House chair.

Later, Amy Barad, a project manager for Massachusetts Clean Energy Center, told attendees about towns that are trying to adopt conduit hydropower—meaning that they are taking existing structures that carry water and fitting them with electrical generators. Communities like Holyoke, Fitchburg, Northampton, Worcester, and Cambridge are all studying conduit hydropower, Barad said, though adding, "it's tough to make [conduit projects] financially viable."

"If you can get grants, it certainly helps a lot," she said. Barad told attendees about a program done by the Center that offers up to $40,000 for a conduit feasibility study and up to $600,000 for design and construction.

Clinton Town Administrator Michael Ward, who attended the workshop, said that it "allows people to see firsthand how these facilities are constructed and what they do."

Water, he continued, powered the mills in Clinton and effectively build the town. "The point," he said, "is to get people thinking about it."

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(978) 345-7376 FAX (978) 348-2490 Email: mrpc@mrpc.org

Solar in September Workshop:

Tips from town volunteers who won solar installation discounts for their town!

When: **Thursday, September 29 from 4:00 – 7:00 PM**

Where: **Volunteers Hall, Harvard Public Library**

4 Pond Road, Harvard, MA 01451. Volunteer's Hall is located on the 3rd floor, an elevator is available.

Get the news from the Hill on renewable energy legislative issues!
4:00 **MRPC Chairman Victor Koivumaki** will open the sixth and final workshop in this energy series.
4:10 **State Senator Jamie Eldridge** will address vital renewable energy issues and progress
4:17 Open to questions and discussion
4:30 **State Representative Stephen DiNatale** will give a legislative update on energy issues.
4:40 Open to questions and discussion

Get the scoop on state incentives for renewable energy in your town!
4:45 **Department of Energy and Environmental Affairs Regional Coordinator Kelly Brown** will discuss DOER incentive opportunities that may help your town save money and preserve our environment.
5:00 **Massachusetts Clean Energy Center.** MassCEC will discuss solar incentive programs and answer your questions to help you get incentives for your town.
5:15 Open to questions and discussion

Learn the secrets to success: What worked in Harvard and how you can make it work for your town!
5:30 **Harvard Energy Advisory Committee.** HEAC successfully led their town to Green Community membership and selection for SolarizeMass solar installation discounts for residents and businesses. Members will share team-building tips, processes and stages, lessons learned, and next steps.
6:15 **New England Breeze President Mark Durrenberger** will discuss what worked in Harvard, ideas from other towns and possibilities to lower costs of solar installations in your town.
6:35 **Broker/Owner Acton Real Estate Company Victor Normand** will address potential relationships between solar installations, real estate property values and neighborhood desirability.
6:45 Open to questions and discussion

7:00 **MRPC Executive Director Glenn Eaton** will close the workshop. Please feel free to stay a bit to mingle, brainstorm and collaborate with fellow regional municipal energy officials and volunteers.

Please RSVP to lparmenter@mrpc.org by noon Monday, September 26, 2011.

*Funding provided to the Montachusett Regional Planning Commission through grant funds from the U.S. Department of Commerce, Federal Economic Development Administration

APPENDIX F

WRAP UP EVENT– OUTREACH EFFORTS, AGENDAS, PRESS COVERAGE

Over the past year, the Montachusett Regional Planning Commission (MRPC) in partnership with Worcester Polytechnic Institute (WPI) has been developing an Energy Plan for the Montachusett Region. The

Montachusett Region Energy Plan

will be presented to all interested parties at a

WRAP-UP CELEBRATION!

WE HOPE THAT YOU CAN JOIN US. PLEASE MARK YOUR CALENDAR!

SAVE THE DATE!

Friday, October 21, 2011
at 9:00 a.m.

RED APPLE FARM
Phillipston, MA

Sponsored by MRPC *and*
U.S. Department of Commerce Economic Development Administration

MONTACHUSETT REGION ENERGY PLAN

WRAP UP CELEBRATION!

Friday, October 21, 2011
9:00 A.M. BREAKFAST
Red Apple Farm, Phillipston*

SPEAKERS

Congressman John Olver (tentative)
Representative Stephen DiNatale
Representative Anne Gobi
Jim Barry, MA Department of Energy Resources
Sean Hamilton, Montachusett Region Energy Advisory Committee
Victor Koivumaki, Montachusett Regional Planning Commission
Professor Michael Radzicki, Worcester Polytechnic Institute

A summary of the Regional Energy Plan will also be presented.

Please RSVP to lparmenter@mrpc.org or (978)345-7376 x301 no later than ***October 17th***

*take Route 2 to Exit 19-Phillipston, follow signs to Red Apple Farm.

Plan prepared by the Montachusett Regional Planning Commission in partnership with Worcester Polytechnic Institute/funded by the U.S. Department of Commerce Economic Development Administration

Photo Courtesy of the Red Apple Farm