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SUSTAINABLE ENERGY STUDY #25

New England Can Cut Energy Use 18 Percent With "Ready to Use" Energy Solutions:

Massachusetts can relieve many of the problems that plague its energy infrastructure by reducing energy waste and tapping local sources of renewable energy. By using technologies that are available today, New England could shave energy consumption by at least 18 percent and reduce the region's emissions of carbon dioxide by at least 20 percent, according to "Tomorrow's Energy Today," a report released September 18, 2007 by the Environment Massachusetts Research & Policy Center and Clean Water Fund, accompanied by Worcester Mayor Lukes and City Councilor Haller.

While Massachusetts experiences the symptoms of an energy crisis, from high and volatile energy prices to strained infrastructure and supply to global warming pollution, Tomorrow's Energy Today underscores the availability and feasibility of solutions to state and regional energy problems. The report was unveiled at the Kilby/Gardner affordable housing project site where the Main South CDC is installing solar panels on the roof of 10 homes.

"When it comes to energy policy, we've been on auto-pilot for too long," said Diana Connett of the Environment Massachusetts. "We need to steer our state to a new energy future. We are starting to see this kind of leadership in Worcester, but because our electric grid is region-wide and pollution doesn't stay in one place, we need the rest of the state and the region to begin implementing these ready-to-use solutions."

According to the new report from the Massachusetts Climate Coalition, a scenario that takes advantage of the region's near-term energy efficiency and renewable energy potential could:

- Cut gasoline consumption by 21 percent;
- Cut diesel fuel consumption by 13 percent;
- Cut natural gas consumption by 22 percent;
- Cut nuclear power production by 26 percent;
- Cut coal consumption by 28 percent; and
- Reduce the region's emissions of carbon dioxide by nearly 20 percent.

"Our research shows that the solutions exist to curb global warming pollution and can put our state on track to address our energy crisis. We want to see energy efficiency triple or quadruple in the coming decade and get at least 20 percent of our energy in Massachusetts from new clean, renewable sources," said Lilah Glick of the Clean Water Fund.

“There is so much we can do right now, and the technology is already available to do it, said Peggy Middaugh, Executive Director of the Regional Environmental Council. “Installing energy efficiency measures, such as efficient appliances, insulation, and efficient lighting, should be a no-brainer.

These things save money and improve comfort while protecting the environment. Renewable energy products, like the solar panels being installed as part of the Kilby/Gardner project, prove that this technology is ready for residential use. The homeowners here will benefit by generating 66% of their electricity right on their rooftops, and paying that much less on their energy bills.”

The report uses recent US Department of Energy data to look at fuel use and sector for each state in New England. For each of the largest end uses of that energy, the analysis probed the best existing technologies to reduce energy waste and replace dirty energy with clean, homegrown sources.

Taking advantage of available energy efficiency will ease the pressure to build new or expand old dirty energy infrastructure, including liquefied natural gas terminals, fossil fuel-fired power plants and nuclear power plants. Additionally, Massachusetts and the region will experience better price stability, a boost in local energy investment, and more local jobs, considering that 90 percent of New England’s energy currently comes from outside of the region.

By implementing technologies available today, New England can significantly reduce energy use and global warming emissions, including:

- Technological improvements to cars and light trucks that would enable vehicles to achieve average fuel economy of at least 33 miles-per-gallon over the next decade, and much better fuel economy in the years to come;
- Improvements to heavy-duty trucks that can reduce their fuel consumption per mile by 29 percent;
- Weatherizing homes in New England to reduce their use of fuel for space heating during the cold winter months and reduce air conditioning demand in the summer;
- Improved water heaters and other major appliances for homeowners that achieve significant reductions in energy consumption;
- More energy-efficient space heating, cooling and lighting equipment in commercial buildings;
- More efficient motors in industrial facilities, along with smarter integration of motors into industrial processes; and
- Combined heat-and-power technology that allows business and industry to create heat and electricity at the same time – resulting in a large improvement in overall energy efficiency.

“These common-sense, ready-to-use measures can tackle multiple big problems such as energy supply, price stability and global warming, all that the same time. This is why we need to set goals of quadrupling energy efficiency and getting 20% of our energy from new, clean renewable sources in Massachusetts by the year 2020,” added Connett.

In addition, Tomorrow’s Energy Today reviewed New England’s solar and wind energy resources, which are sufficient to power the entire region several times over. Currently, very

little of New England's energy comes from within the region. According to the report, native New England power is only enough to power our homes, vehicles and businesses for 2 hours and 15 minutes of every day. Taking advantage of only a small share of our renewable resources could enable us to replace 10 percent of the region's electricity generation with new renewable energy in the near future.

Some such scenarios include:
• Building five offshore wind energy facilities of the same size as the proposed Cape Wind project off Massachusetts;
• Installing 1,860 wind turbines in onshore locations in New England, requiring temporary disruption of less than 0.03 percent of the region's land area and permanent impacts on only a small fraction of that area;
• Installing solar photovoltaic panels on less than one-half percent of New England's homes or 1.5 percent of its businesses; and
• Using cost-effective biomass resources from mill wastes and low-quality wood from our forests.

"If we do all of these feasible things, we'll be heading toward more secure and reliable energy while meeting our global warming pollution reduction goals," said Glick.

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Executive Summary: Tomorrow's Energy Today - How to Ease New England's Energy Crisis and Curb Global Warming Pollution, Starting Now

New England is heading for an energy crisis. Indeed, it may have already begun. Energy prices are high and increasingly volatile. The region's energy infrastructure is strained. The long-term outlook for oil and natural gas supplies is questionable. And our use of energy contributes to a variety of environmental and public safety problems, not the least of which is global warming.

A clean energy strategy that maximizes our region's near-term potential to use energy more efficiently and generate more of our power from clean, home-grown renewable resources can address New England's energy problems and dramatically reduce emissions of global warming pollutants – providing a "win-win" path forward for the region.

In this report, we describe some of the many opportunities New England has to reduce its use of energy and tap local sources of renewable energy. We focus on addressing the biggest sources of energy use in New England, using technologies that are feasible today.

Achieving the region's near-term energy efficiency and renewable energy potential could shave our energy consumption by at least 18 percent and reduce the region's emissions of carbon dioxide – the leading global warming pollutant – by at least 20 percent.

Achieving New England's clean energy potential will not happen all at once. And it will take investment, creativity and hard work. But the availability of vast amounts of energy efficiency opportunities and renewable energy potential suggests that New England's energy problems are

solvable – and that they can be addressed in ways that reduce our contribution to global warming and preserve the region's environment, public health and economy.

New England's energy challenges are real and they are serious.

• New England imports about 90 percent of our energy from other nations and other regions of the United States. If the region were forced to rely only on native resources we use today, our homes would be dark, our streets empty of cars and our businesses shut down for all but 2 hours and 15 minutes of every day.

• Energy prices have been rising and are extremely volatile. Natural gas prices have fluctuated by a factor of four over the last four years, New Englanders paid record (nominal) gasoline and heating oil prices in 2005 and 2006 and electricity prices have spiked as well. Long-term trends in the oil, natural gas, and electricity markets suggest that higher and more volatile energy prices could become more common in the future.

• New England's traditional energy supply alternatives each come with significant drawbacks:

• Coal burning is a major contributor to global warming as well as local environmental harm. In 2004, coal accounted for 6 percent of New England's energy use, but 10 percent of its carbon dioxide pollution.

• Nuclear power has proven to be very expensive and poses long-term challenges related to public safety, waste storage, terrorism and weapons proliferation.

• Importation of liquefied natural gas from overseas poses potential public safety problems and would make New England more dependent on foreign nations for another major source of energy.

Energy efficiency and renewable energy can address the region's energy problems while reducing emissions of global warming pollution.

By implementing technologies available today, New England can significantly reduce energy use and global warming emissions. Such technologies include:

• Technological improvements to cars and light trucks that would enable vehicles to achieve average fuel economy of 33 miles-per-gallon over the next decade, and much better fuel economy in the years to come.

• Improvements to heavy-duty trucks that can reduce their fuel consumption per mile by 29 percent.

• Weatherizing homes in New England to reduce their use of fuel for space heating during the cold winter months and reduce air conditioning demand in the summer.

• Improved water heaters and other major appliances for homeowners that achieve significant reductions in energy consumption.

• More energy-efficient space heating, cooling and lighting equipment in commercial buildings.

• More efficient motors in industrial facilities, along with smarter integration of motors into industrial processes.

• Combined heat-and-power technology that allows business and industry to create heat and electricity at the same time – resulting in a large improvement in overall energy efficiency.

In addition, New England can begin to tap its vast potential for renewable energy development. New England's solar and wind energy resources are sufficient to power the entire region several times over. Taking advantage of only a small share of our renewable resources could enable us to replace 10 percent of the region's electricity generation with new renewable energy in the near future.

One scenario for near-term renewable energy development might include:

• Building five offshore wind energy facilities of the same size as the proposed Cape Wind project off Massachusetts.

• Installing 1,860 wind turbines in onshore locations in New England, requiring temporary disruption of less than 0.03 percent of the region's land area and permanent impacts on only a small fraction of that area.

• Installing solar photovoltaic panels on less than one-half percent of New England's homes or 1.5 percent of its businesses.

• Using cost-effective biomass resources from mill wastes and low-quality wood from our forests.

A clean energy strategy for New England would have major benefits for the region.

• A scenario that takes advantage of the region's full near-term energy efficiency and renewable energy potential could:

• Cut gasoline consumption by 21 percent.

• Cut diesel fuel consumption by 13 percent.

• Cut natural gas consumption by 22 percent.

• Cut nuclear power production by 26 percent.

• Cut coal consumption by 28 percent.

• In addition, such a scenario could reduce the region's emissions of carbon dioxide – the leading global warming pollutant – by nearly 20 percent, exceeding the near-term goals for emission

reductions set out in the New England Governors/Eastern Canadian Premiers' 2001 Climate Change Action Plan and the Regional Greenhouse Gas Initiative. Reductions of this scale would put the region on track to achieve its share of the emission reductions scientists say are necessary to avoid the worst impacts of global warming.

• Further opportunities for energy savings and renewable energy development exist in the region, including in technologies that exist today but were not included in this analysis (such as solar water heating and geothermal heat pumps) and technologies that could emerge over the next decade (like plug-in hybrid vehicles, biofuels from plant residues and energy crops, and small-scale wind energy).

New England should pursue a clean energy strategy to provide an environmentally sound, economically wise, and long-term solution to its energy challenges. Specifically:

• New England states should cap global warming pollution – and support a similar cap at the federal level – to achieve the emission reductions that scientists believe are needed to prevent dangerous, human-caused global warming. Global warming emissions in the United States must be stabilized at current levels by the end of the decade, reduced by at least 15 to 20 percent by 2020, and be reduced by at least 80 percent by 2050.

• Each New England state should set concrete goals for energy savings and develop plans and marshal the necessary resources to achieve those savings.

• New England states should remove remaining financial and bureaucratic obstacles to cost-effective energy efficiency improvements and the expansion of renewable energy production.

• New England states should require utilities to devise and implement long-term, least-cost plans for securing electricity that take full advantage of energy efficiency and renewable energy.

• New England states should impose aggressive codes and standards for new buildings and equipment and revise those standards frequently as technology improves.

• New England's leaders should use their influence to pursue necessary policy changes at the federal level and should involve the public in efforts to move the region toward a cleaner energy future.

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The Executive Summary of this report can be found at:
http://www.uspirg.org/home/reports/report-archives/new-energy-future/new-energy-future/tomorrows-energy-today-how-to-ease-new-englands-energy-crisis-and-curb-global-warming-pollution-starting-now

The accompanying news release "Environmental Groups, Mayor Lukes, and Councilor Haller Unveil Report Detailing 'Ready to Use" Energy Solutions'" can be found at:
http://www.uspirg.org/news-releases/new-energy-future/new-energy-future/environmental-groups-mayor-lukes-and-councilor-haller-unveil-report-detailing-ready-to-use-energy-solutions