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SIERRAN

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Message from the Chapter Chair

by Roxanne Eigenbrod Zak, *Chapter Chair*

Welcome to the fall issue of the Sierran! This is the time of year when we reflect on summer and wonder where it went while looking forward to the demands of fall. And so it is at the Massachusetts Sierra Club. On the one hand we can look back and reflect with



pride on the many achievements of our organization while looking forward to what we are going to do in the future.

Since our founding in 1970 as the New England Chapter and then in 1993 as the Massachusetts Chapter, we have made significant contributions that are consistent with John Muir's original vision of conservation and its modern-day counterpart, environmentalism. We can look back with pride at our many achievements: conserving land and habitat, acting to preserve species and natural resources, helping to pass or block significant environmental or anti-environmental bills in the state legislature, as well as supporting the work of our national organization headquartered in San Francisco.

But for all this good work we are now at a major turning point with our environment where we must look forward to the things that need to be done in the future and not linger on the past. *Continued on page 22*

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Ice and Sun: Antarctica and Provincetown

By Michael Bedford

Spending a recent wonderful May week in Provincetown, I pondered the impact of global climate change on this unusual place, a place I have known and loved for 50 years. On the outer Cape, life seemed to be different, slower. Over the decades, the meeting of cultures - fishing community, gays, tourists and wealthy landowners - somehow magically worked.

My visit this year happened at a time when the signs of global climate change were clearly affecting the outer Cape. The weather was unusually warm and sunny. Discussion among residents focused on rumors of the soon-to-be announced revised flood insurance rates, that promised to affect thousands of businesses and homeowners. Biking to Herring Cove beach, I discovered sea wave erosion of the peninsula already annually eats at a significant part of the Cape Cod National Seashore. The US Geological Survey reports the sand dunes along the National Seashore annually erode three feet, with much sand being drawn out to sea. The outer Cape has always had erosion from wave action redrawing the coastline, but now the changes are being escalated by the effects of climate change on sea storms. Rising seas dramatically increase the odds of dam-



aging floods from storm surges, drawing more and more of the sand dunes back to the sea.

Flood Insurance

The flood insurance model is based on a "1 percent standard"; that is, the land area that has a one percent chance of being flooded (often described as happening, on average, once every one hundred years).

Unfortunately, those models are based on past sea levels and storms, and do not take into account the changes to them caused by climate change.

Even so, under prior conditions, much of the major Provincetown business thoroughfare, Commercial Street, falls into an "A Zone" which could be hit by storm waves up to 2.9 feet high. The coastal zone - "V" - includes hazards associated with storm-induced wave action over 3 feet. By law, owners holding a mortgage on buildings within the A and V zones must purchase flood insurance.

In a report on Provincetown from the Surging Seas project [SurgingSeas.org], one fifth of town residents live at elevations of five feet or less above the local mean high tide. Twenty-seven percent of housing units are at this elevation.

The risk assessment from the Federal Emergency Management Administration took effect on June 16, 2014. The financial impact of the new assessment is only now being felt, as businesses and homes along the coast face painful flood insurance increases. One man told me the flood insurance on his efficiency condo that once was a motel room would go from \$300 annually to nearly \$5,000. Although there is a "grandfather" clause so that existing policies will retain their old premium rates, new higher premiums will radically change businesses and residences along waterfront Commercial Street.

And that's before predicted sea level rises are taken into account. Much of Commercial Street lies ten feet above (the old) sea level. While current estimated global warming trends currently do not foresee a sea rise above that height, the increase in stronger sea surges from storms will flood these areas.

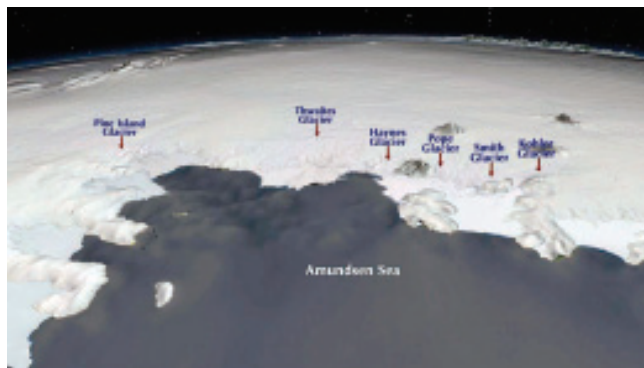


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Ice and Sun: Antarctica and Provincetown

The Antarctic Connection

The southern continent of Antarctica lies 8,900 miles south of Provincetown, but risks of ice melting make the projections of the Provincetown Flood Hazard Mapping obsolete. Recent reports on the rapid melting of the West Antarctic ice sheet have shocked science forecasters, who say ice sheet loss "appears unstoppable." Nearby vulnerable glaciers (Pine Island and Thwaites) have both seen



rapidly and accelerating retreats. Since 1973, the region's overall annual ice discharge has increased by 77 percent.

According to NASA, the at-risk western Amundsen region has enough ice to raise sea level four feet, while a melted Western Antarctic ice sheet would raise global sea level by 16 feet. These figures need to be added to the earlier accepted UN estimates that by 2100, sea level will rise between one and three feet.

Throughout time, Provincetown has always been easily affected by water environmental factors. Waves alter beaches, and currents change the shape of the outer Cape. But the future forecast for the Cape changes everything. Higher insurance rates are merely a brief momentary response to the warning of the trends ahead. If the Antarctic west ice sheet separates and melts and more powerful super storms hit the vulnerable peninsula, what will be left? ❖

Michael Bedford has worked in international economic development programs across Asia-Pacific for over 40 years, always with an eye toward sustainability. He now lives in the Berkshire Mountains in western Massachusetts.

Climate Change: Sea Level Rise

Climate change is no longer a projection or theory. As the climate changes, communities are facing extreme weather, higher tides, increasing heat, and other weather changes. These are just a few of the events that have taken place.

The sea level has risen globally 8 inches in 130 years. In Boston, sea level has risen 13 inches in the same time period.

The Organization for Economic Co-operation and Development (OECD) ranked Boston the 8th highest metropolitan area worldwide in expected economic losses – estimated \$237 million per year between now and 2050, due to coastal flooding.

Climate Ready Boston quotes the National Climate Assessment that there is a greater than 90% chance that average global sea level will rise between 8 inches and 6.5 feet by the end of this century.

Faneuil Hall and Blackstone Block (including

Ebenezer Hancock House and the Union Oyster House) are both in the 100-year tidal flood zone.

Official tidal records have been kept since 1921; according to a 2014 report, since then extreme high tides (more than 3 feet above average high tide) have occurred 20 times; half of those occurred in the 10 years from 2004 to 2014.

The Boston Harbor Association in 2013 noted if Hurricane Sandy had hit 5-6 hours later (high tide) more than 6% of the city would have been under water.

During the winters of 2013-14, nor'easters caused storm tides higher than Sandy but luckily for Boston those were during low tides, not high tides; had it been high tide, the water would have gotten to City Hall and part of the North End.

Rising sea levels and higher storm surges are threatening coastal birds such as the Saltmarsh Sparrow, Seaside Sparrow, Piping Plover, American Oystercatcher, and several species of Terns (Massachusetts Audubon).

The Myths of Natural Gas

by Edward Woll, Jr., Chapter Vice Chair

We have heard that natural gas promises to be cleaner and cheaper. Both appear to be myth.

The myth that natural gas is clean or “1 plus 1 makes 81, more or less?”

Natural gas is touted as being clean because it produces half as much carbon dioxide as burning coal for the same amount of energy. That’s just the tip of the natural gas iceberg. What is unseen and less well known is that from well head to combustion chamber in some systems, up to 20% of the natural gas leaks into the atmosphere. And molecule for molecule, methane, which is about 95% of natural gas, is at least 80 times more powerful a greenhouse gas than carbon dioxide. So the math is simple: one molecule of methane is equivalent to 80 or more molecules of carbon dioxide. And for every additional cubic foot of natural gas we burn, that up to 20% never gets to the combustion chamber but leaks into the air. This is a national problem for which legislation has been proposed.

The industry includes drillers, gas fields, producers, pipelines, tank trucks and rail cars, and your electric utility and local gas distribution companies. Each contributes to overall leakage. In Massachusetts the leakage has been estimated at up to 4% over parts of these systems.

Let’s apply these numbers to the planned conversion of the Salem coal plant to a gas plant. That will produce about twice the electricity of the coal plant. Therefore the conversion does not reduce overall carbon dioxide emissions from combustion. With system leakage, simple math shows that

carbon dioxide equivalent emissions will increase by many factors more – and we are paying for it nonetheless in our energy bills and polluted air. Whatever numbers you use, a clean energy future based on natural gas is a myth.

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The economic myth of price containment

Currently the Massachusetts economy is trending to 60% dependence on natural gas. This growing dependence to generate electricity, heat homes and

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The Threat of More Natural Gas Pipelines to Our Past and Our Future

by Edward Wöll, Jr., Chapter Vice Chair

Kinder Morgan has proposed cutting a 173-mile swath across northern Massachusetts for a 36-inch natural gas pipeline. The proposed Tennessee Gas Pipeline (TGP) has catalyzed a public discussion of the need for it and the threats it poses to our pristine lands and clean energy future. The threats include:

- Global warming methane gas leaks
- Environmental destruction
- Threats to public safety
- Increased dependency on fossil fuels
- Increased natural gas prices
- Financial drain on the region's economy

Natural gas is used mainly for electricity generation, home heating, industrial feedstock and for natural gas byproducts. Given the threat of climate change, our long term energy strategy should view natural gas as the backstop for solar, wind, heat pumps, geothermal, and other renewable sources. In the shorter term, we should promote energy efficiency and conservation, Energy Savings Companies (ESCOs) to produce *negawatts* (a negative watt, an indication of saved energy), and as much local energy generation as possible.

We therefore should be asking and answering the following hard questions ignored by the fossil fuel industry as we advance to a clean energy future.

Question 1: Do we need pipeline infrastructure in addition to the Kinder Morgan 36" pipeline and the Algonquin/Spectra 42" pipeline that will increase our state's dependence on natural gas, now trending to 60% of our energy needs?

Question 2: Do we need a 36-inch pipeline whose 9.2 gigawatt capacity could be as much as 40 times more than the 400 to 700 MW shortfall that was projected in the ISO New England Nov. 2013 report?

Question 3: Do we need a pipeline to carry gas through Massachusetts for export as LNG in Canada or elsewhere?

Question 4: Do we need to continue to export even more dollars to buy fossil fuels when those dollars can be used to

create local jobs, and to develop renewable technology and to produce new local industries?

Question 5: Do we need a pipeline that will subject our cost of gas to the volatility of a global gas market where prices are two to three times more than what we pay now? Remember, Kinder Morgan has no control over the price of gas its pipes carry.

Question 6: Do we need a pipeline that will destroy parks and conservation areas that are now protected by Article 97 of our state's Constitution?

Question 7: Do we need a pipeline that will undo land and conservation restrictions to be kept in perpetuity over 1000s of acres donated or financed by well-meaning charitable donations to land trusts and tax-exempt organizations?

Question 8: Do we need a pipeline that will make it not possible to reach our green house emissions goals under the Global Warming Solutions Act?

Question 9: Do we need a pipeline that will employ a land area bigger than 263 of our towns and cities with a permanent clear cut area possibly bigger than 161 of them?



Gas pipeline repair specifications should mandate zero leakage, as should any new pipeline construction or extension.

Our policy should be:

To oppose increased infrastructure for the import of natural gas to Massachusetts, which includes the proposed Tennessee Gas pipeline.

To contain and then reduce the demand for natural gas in Massachusetts by encouraging more renewable energy sources, more implementation of energy efficiency and repairing and updating the grid to accommodate those sources.

To reduce the amount of natural gas leaks in our aging pipelines and to repair or replace existing pipelines.

To support our state's laudable and farsseeing greenhouse gas emission reduction goals and to persuade our legislators to pass a carbon tax. ❖

Ten Things You Can Do To Help Curb Climate Change

Responsible Choices

The choices we make and the products we buy test our commitment to maintain a healthy planet. When we burn fossil fuels such as oil, coal, and natural gas to run our cars and light our homes, we pump carbon dioxide (CO₂) into the air. This thickens the heat-trapping blanket that surrounds the planet, causing global climate change.

Choosing modern technology can reduce our use of fossil fuels and help protect the planet. These ten steps will help curb global



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warming, save you money, and create a safer environment for the future.

Drive Smart

A well-tuned car with properly inflated tires burns less gasoline—cutting pollution and saving you money at the pump.

If you have two cars, drive the one with better gas mileage whenever possible. Better yet, skip the drive and take public transit, walk, or bicycle when you can.



Write your leaders now. Urge them to raise fuel economy standards to 40 miles per gallon

Modern technology can make our cars and trucks go farther on a gallon of gas. It's the biggest single step we can take to curb global warming. The less gasoline we burn, the less

CO₂ we put into the air. Taking this step would also save nearly 4 million barrels of oil a day; more oil than we currently import from the Persian Gulf and could ever extract from the arctic national wildlife refuge combined. And by saving gas, you save nearly \$2,000 at the pump over the life of your car.

Support Clean, Renewable Energy

Renewable energy solutions, such as wind and solar power, can reduce our reliance on coal-burning power plants, the largest source of global warming pollution in the United States. Call your local utility and sign up for renewable energy. If they don't offer it, ask them why not?

Replace Incandescent Light Bulbs with Compact Fluorescent (CFL) or LED Bulbs

Especially those that burn the longest each day. Compact fluorescents produce the same amount of light as normal bulbs, but use about a quarter of the electricity and last ten times as long. Each switch you make helps clean the air today, curb global warming, and save you money on your electricity bill.



Saving Energy at Home is Good for the Environment and for Your Wallet.

Start with caulking and weather-stripping on doorways and windows. Then adjust your thermostat and start saving. For each degree you lower your thermostat in the winter, you can cut your energy bills by 3 percent. Finally, ask your utility company to do a free energy audit of your home to show you how to save even more money.

Become a Smart Water Consumer

Install low-flow showerheads and faucets and you'll use half the water without decreasing performance. Then turn your hot water heater down to 120°F



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Path to a Clean Energy Future



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Continued from the previous page

and see hot-water costs go down by as much as 50 percent.

Buy Energy-Efficient Electronics and Appliances



Replacing an old refrigerator or an air conditioner with an energy-efficient model will save you money on your electricity bill and cut global warming pollution. Look for the Energy Star label on new appliances or visit www.energystar.gov to find the most energy-efficient products.

Plant a Tree, Protect a Forest

Protecting forests is a big step on the road to curbing global warming. Trees “breathe in” carbon dioxide, but slash-and-burn farming practices, intensive livestock production, and logging have destroyed 90% of the native forests in the United States. And you can take action in your own backyard — planting shade trees around your house will absorb CO₂, and slash your summer air-conditioning bills.

Reduce! Reuse! Recycle!

Producing new paper, glass, and metal products from recycled materials saves 70 to 90% of the energy and pollution, including CO₂, that would result if the product came from virgin materials. Recycling a stack of newspapers only 4 feet high will save a good-sized tree. Please...buy recycled products!



Mount a Local Campaign Against Global Warming

Educate your community about how it can cut global warming pollution. Support measures at the national, state, and local level that:

- Make automobiles go further on a gallon of gas;
- Accelerate the use of clean, renewable energy sources, such as solar and wind
- Increase energy efficiency and conservation
- Preserve forests around the world. ❖

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Let's Step Into a Clean Energy Future

by Ed Woll, Jr., Chapter Vice Chair

Massachusetts can maintain its leadership in clean and renewable energy technology. That future creates good jobs at all levels (e.g. research, management, construction, and administration), assures energy security, and reduces greenhouse gases to meet our Global Warming Solutions Act goals. A principal focus is to reduce the spikes in energy demand that drive the compulsion to build more natural gas infrastructure and subject our economy to the risk of overdependence on natural gas, trending to become the source of 60% of our energy. To reduce those spikes takes planning to prioritize clean and renewable energy's access to the grid, expanding the opportunities for distributed and roof top solar and for wind, raising the solar energy credit to 1,600 megawatts, aggressively implementing the recently passed thermal energy credit bill with heat pump and solar thermal technology, closing all methane gas leaks, increasing energy efficiency, and developing energy storage.

Coal is on its way to extinction in Massachusetts. Natural gas consumption is growing. As our dependence on natural gas grows, the risk to our economy grows. We need first to accelerate steps to stem its growth and then to relegate it to supplying backup power. There is no one solution. However, our energy policy must give priority to clean energy systems.

Step into Heat Pumps to Deflate the Demand for Natural Gas and Oil and Your Energy Bills. Most heating in Massachusetts is by oil and natural gas. A viable alternative is heat pumps, both ground loop and air source. The recent passage of thermal credit laws in Massachusetts makes them more affordable and opens up the market for both air source and ground loop heat pumps to replace oil and gas fired heating systems. And investing in heat pumps keeps energy dollars here and creates even more local jobs.

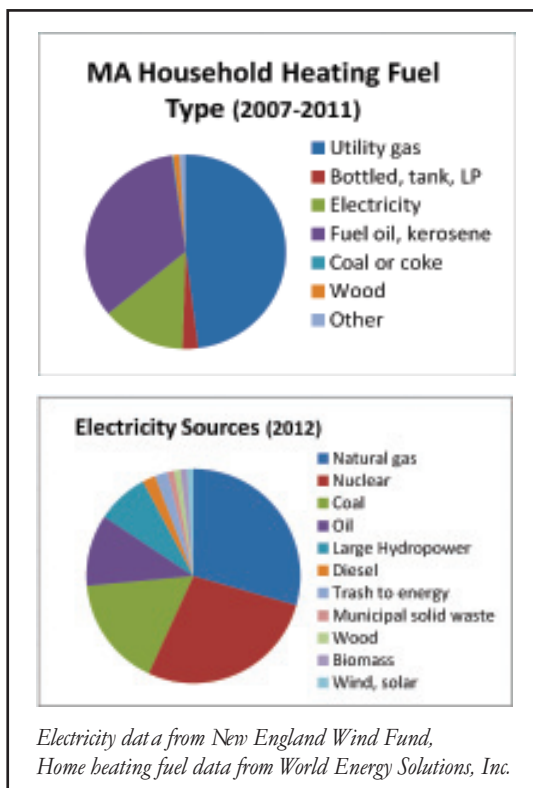
More heat pumps and solar thermal reduce the market for gas and oil. In sum, investing in heat pump and solar thermal research and development makes more sense than spending billions on new fossil fuel pipelines. Moreover, geothermal systems are primarily capital improvements with minimal marginal costs for maintenance and electricity to operate them, thereby fixing most of the energy cost for the life of the system.

Step on Natural Gas Expansion by Investing in Solar Energy and Wind. Solar and wind facilities that produce electricity are also primarily capital improvements with minimal marginal costs for maintenance. The cost of energy is thus fixed and amortized over the life of such a system. Most of these systems still benefit from a 30% federal tax credit, as well as state tax credits and other mandated programs that are intended to displace the need to construct more fossil fuel powered plants.

Cape Wind is making history with our first off-shore wind farm. We also need to focus on right sized and located wind energy land based facilities. Solar energy growth has exceeded all expectations. The next step is to quadruple the goal from 400 MW to 1600 MW of solar in the next legislative session.

Stem Natural Gas Use with Energy Efficiency. Our state leads the nation in energy efficiency for the third year in a row. Conservation plays its part too as well as net zero construction (*designing buildings with no net emissions; see our website for additional information*). This is another step to stem the flow of natural gas into Massachusetts.

Let's Step up to Lock up the Methane Leaks. A new law has finally breached industry's secrecy around gas leaks by passing "An Act Enhancing Natural Gas Pipeline Safety." The next step is to adopt limits on greenhouse gas emissions to eliminate all gas pipeline leaks owned by the local distribution companies. Gas leaks may account for roughly 2 to 4% of all gas imported into the state, and closing them will reduce the need by that amount.



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Eliminating pipeline leaks will also reduce emissions of methane which is 80 or more times more powerful a greenhouse gas than carbon dioxide.

Step up to the Plate and Fully Cost Carbon. A modest carbon tax should be implemented. A revenue neutral, environmentally just carbon tax has received widespread support. Let Massachusetts lead the nation in a carbon tax, which will stimulate new products and services.

Now Step by Step Replace Natural Gas's Dominance as an Energy Source. Once the growth is stemmed, we do all of the above and more. For example, there is a \$1.9 billion market (over 500 gigawatt hours) for roof top solar for multi-family dwellings and condos. That market is shuttered by outmoded utility regulations that preclude sub-metering solar systems in condos and apartments and restrictive local zoning. Moreover, most apartment building owners require their renters, especially low income families, to pay energy bills directly so that the owners have no incentive to install renewable clean energy or improve energy efficiency. Those incentives must be reversed.

Step up the Electric Grid's Capability. Make the grid's ability to collect and carry renewables and clean energy as the primary design factor. In other words change the way ISO New England now does business. Expand the ability to build and connect distributed energy systems to the grid. Permit the utilities to sell and build residential and small commercial solar system, which collectively are equivalent to a virtual multi-megawatt power plant.

We Are at the Last Step When Natural Gas Steps Back to Play Back-up. Natural gas will have a transitional but an ever decreasing, not expanding, role. As we move to a smarter grid, quick startup gas turbines can fill the gaps of intermittent solar and wind energy, and energy storage. Gas turbines will "firm-up" the

energy but not be the primary provider. It will play a necessary but secondary temporary and transitional role.

We just need to do everything. ❖

The advertisement features a blue background with a white leaf logo containing a four-dot grid. Below the logo, the text reads "next step living™ home energy solutions". The main headline is "Proud of Our Alliance with Massachusetts Sierra Club". A sub-headline states: "Complete a no-cost home energy assessment and we will contribute \$15 to the Massachusetts Sierra Club. Learn more at GoodEner.gy/SierraClub". Below this, it says "Since 2008, Next Step Living has helped Mass. homeowners:" followed by two bullet points: "Prevent the emission of 70,000 metric tons of carbon dioxide" and "Remove the equivalent of 15,000 fossil fuel-burning cars from roadways". The bottom section shows a row of colorful houses and a dark brown footer with the text "Ask about our newest offering: community solar". At the bottom of the footer are two icons: a phone icon with "Toll-Free: 866-867-8729" and a computer icon with "NextStepLiving.com".

Legislative Report: 2013-2014 Session

VICTORIES

Natural Gas Leaks Protection Bill (H.4164, Rep. Ehrlich). *Passed*. Addresses the growing issue of natural gas leaks from aging pipes. The bill's genesis was gas explosions, e.g., safety. However, besides being a significant threat to public safety, natural gas, being about 95% methane, contributes significantly to global warming as a green house gas (GHG). That is because methane is 70 times more potent a global warming gas than CO2

in the near term, and it is estimated that up to about 4% of natural gas is wasted by pipeline leaks yet still paid for by customers. Natural gas also kills trees, which is how the utilities discover many gas leaks; they look for dead trees. There are 20,000 known gas leaks in Massachusetts that fall into three classes. This bill creates a mandatory gas leaks repair procedure for the relatively small percentage of leaks that are the most serious. GHG reduction is the next step in the war against the gas industry's wasteful practice of using our air as a dump for their failure to fix all leaks.

The Massachusetts Sierra Club has a significant presence on Beacon Hill. The Chapter's *Legislative Action Committee*, made up of both staff and volunteers, works to pass key environmental bills.

Unfortunately, the 2013-2014 session will not be known as the "Year of the Environment." Despite media attention to urgent issues such as global climate change, increased toxins, and threats to the state's forests, the legislature failed to pass most bills. In many cases, the committee that heard the bill unanimously recommended passage, but leadership failed to act (quite intentionally) before the end of the legislative session.

Thermal Renewable Energy Credits (S.2214, Sen. Finegold). *Passed*. This bill establishes thermal renewable energy credits (similar to solar renewable energy credits) to stimulate the development and deployment of non-carbon intensive sources of thermal energy such as air source and ground loop heat pumps, solar thermal for hot water heating for example, and certain biomass, biogas and liquid bio-fuel gas thermal sources. The bill is therefore a potential job creator

and catalyst for renewable energy technology development. It continues in effect existing law regarding CHIP facilities. During the legislative consideration of the bill, the Massachusetts Sierra Club was effective in removing provisions that would have extended such credits to oil, petroleum coke and coal fired cogeneration facilities and also successfully opposed provisions that would have permitted the violation of sustainable forestry practices to harvest a bio source fuel beyond existing regulations.

SUCCESSFULLY DEFEATED:

Gut the Mass Endangered Species Act (S1854, Sen. Candaras) Developers have been trying to gut the state's Endangered Species Act in order to maximize development profits. The bill would have limited the authority of MESA by taking away their ability to protect endangered species and their habitats, except in very limited circumstances.

MIXED:

Mercury Protection (Rep. Smizik, Rep. Story). *See page 14, "Mercury Protection."*



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Legislative Report: 2013-2014 Session

UNSUCCESSFUL:

Updated Bottle Bill (Rep. Hecht/Sen. Creem) Once again, the legislature failed to take up the bottle bill. *See below.*

Plastic Bag Ban (H.3434 was H.696, H.787, S.359, Sen. Eldridge/Rep. Ehrlich/Rep. Provost) Plastic bags litter our landscape, and even when properly disposed of, they blow into our waterways, parks, beaches, and streets, and kill countless millions of animals per year. While the state legislature failed to take action, the following communities now have a ban in place: Nantucket, Marblehead, Manchester, Brookline, Great Barrington, and Newburyport.

Producer Take-Back for Electronics ("E-Waste") (Rep. Smizik, Sen. Eldridge, Sen. Pacheco, H803, S357, S386) This bill placed the responsibility for collection, reuse, recycling or safe disposal of discarded electronics on manufacturers, relieving municipalities of the burden of these costs. The bill provided consistent, reliable and convenient drop-off of e-waste by consumers for appropriate environmental management of these materials to augment the patchwork of voluntary programs in place today. Many discarded toxin-laden electronics too often end up in landfills or incinerators, polluting our air, land and water.

Shifting From Carbon Emissions to Transportation Investment (Carbon Tax) (H2532, Rep Conroy, Sen. Barrett) This bill would have encouraged energy efficiency and faster transition to clean, renewable energy sources to reduce emissions related to climate change. Increases in the cost of carbon-based fuels would be mitigated through a system of rebates and reduction of other taxes. Society pays the hidden costs of carbon emissions that have degraded the environment, public health and safety. Pricing carbon to reflect its true cost to society is demonstrably one of the most effective and efficient approaches to addressing the serious threat that carbon-

based emissions pose on society. This was the first time that this proposed legislation was heard, and the primary goal was to gather support and educate the legislature. In the next session, this bill will be redrafted and become a high priority.

Continued on the next page



Bottle Bill Update

The Massachusetts Sierra Club and our allies have been trying to pass an update to the state's successful Bottle Bill. The Bottle Bill is the Massachusetts State Law that places nickel deposits on carbonated beverages and beer. Since its inception in 1983, over 35 billion beverage containers have been redeemed. The Bottle Bill, if passed, would add non-carbonated beverages like bottled water, iced teas, sports drinks, and fruit juices to the existing deposit system.

As consumer tastes change, we're seeing ever-increasing litter in our ballfields, floating in our lakes and rivers, and strewn in our parks. Passing this bill would reduce the water bottle and sports drinks litter that turns our streets and parks into an eyesore. It would increase recycling rates: right now, more than 80% of bottles with deposits are redeemed/recycled, compared with less than 23% of bottles without deposits. The rest of those containers, like water and sports drink bottles, become trash or litter. It would save our cities and towns up to \$7 million a year in litter cleanup and trash disposal costs. The proposed law would also re-establish the Clean Environment Fund to receive voluntarily forfeited deposits, just as it used to. These funds would be targeted to help fund recycling efforts, and help clean up our parks.

During this session, the bill passed in the State Senate. Although the bill had overwhelming support in the House (and among the public), it was stalled in committee and never came up for a vote.

Although the legislature failed to pass the Bottle Bill Update during their 2013-2014 session, the Massachusetts Sierra Club was part of an enormous statewide coalition to place this on the November 2014 ballot.

As of press time, large out-of-state big bottlers have donated \$5.4 million to defeat this proposal. We're relying on you, our members, to help launch a grassroots effort.

To volunteer, please visit <http://j.mp/bottlebill2014>

Comprehensive Siting Reform for Land Based Wind Projects. (Wind Siting Reform) (H2980, S1591, Rep. Smizik, Sen. Finegold) For siting purposes, current law discriminates in favor of fossil-fueled facilities. This bill would have facilitated the siting of land-based wind energy projects, eliminating redundancies in the permitting process .

Electric Vehicles (EV) Omnibus Bill (H.2594, Rep. Hecht) This would have provided incentives for the purchase of EVs, added incentives for EV charging stations, and enacted charging station requirements in parking lots. Massachusetts lags behind many other states, despite the fact that the dense population pattern makes electric vehicles more practical. In the next session, this bill will be redrafted and a high priority.

Regulate "Fracking" (H.3796, was H.788, H.695, H.707) Reps. Ehrlich, Garballey, Provost, Kocot). Although the geology of the shale in the Connecticut River Valley doesn't pose an immediate threat of fracking, as technology progresses, it's likely that this will soon become an issue. Although fracking is already banned by 'regulation,' all regulations can too easily be changed by the administrative branch (Governor). We have been seeking a legislated ban, which would become law.

Save our Public Lands - The Public Lands Protection Act (PLPA) (Rep. Balsler, Sen. Eldridge, H657/S361) Our public parks are often threatened with development, as dense communities use public space for worthwhile projects. The

Mercury Protection (Rep. Smizik, Rep. Story)

We could write a book about the intrigue over this session's mercury bills.

Mercury is a persistent, bio-accumulative neurotoxin. Even in very small doses, mercury can cause neurological and developmental damage to fetuses and young children. In most cases, mercury attacks the brain and the nervous system. However, mercury is easily recyclable, and when handled properly, does not pose a significant threat.



In short, there were originally two bills; one covered thermostats, the other covered lamps. The House approved the thermostats bill, seeing that the current mercury-added lamps law was already adequate (but needed enforcement). The enforcement would have cost the mercury industry \$1,000,000 per year in fines since 2009, so they pushed to change the lamps legislation, and succeeded in adding a 'jubilee' clause, absolving them of all past fines. The legislature refused to pass a thermostat producer-responsibility clause that would have required manufacturers to offer a small bounty on old thermostats which would have kept them out of the trash.

The end result is that Massachusetts has a weak mercury bill that is unlikely to keep this potent toxin out of the state's incinerators. This failure puts the state's residents at risk.

PLPA would provide important protection for these public lands in our communities. This is already administrative policy; this bill would have just affirmed it and made it permanent.

Incineration Moratorium and Phaseout (Sen. DiDomenico/Rep. Garballey, H706, S1004) Massachusetts burns half of its trash. Mercury and other toxic compounds are released into our air resulting in dangerous pollution harmful to the environment and our health. This bill would have placed a legislated, permanent moratorium on increasing trash incineration and would have phased-out incineration over the next 11 years.

Transition to a Clean Energy Commonwealth (Rep. Ehrlich, H2935) Would phase out coal in Massachusetts, help retrain workers, and help transition communities that host a coal plant. A clean energy future will

make Massachusetts a leader in the world clean energy economy.

Hazardous Air Pollutants (HAPs) (Rep. Ehrlich H1944). Hazardous air pollutants are toxic chemicals that are known or suspected to cause cancer, to cause birth defects, to cause serious health effects, or to cause adverse environmental effects. This provides a small pollution mitigation fee from HAPs producers; the proceeds would fund research and health studies on the health impacts from air pollutants. ❖



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Climate Change: Temperature Increases

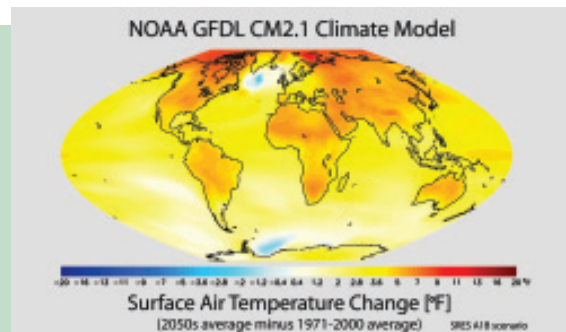
In the Northeastern United States, average winter temperatures increased 3.8° F between 1970 and 2000. That makes our winters like those typical of Pennsylvania 40 years ago. Summer temperatures rose about 1° F during those years.

Dates of first blooming for many plants are 4 to 8 days earlier than in the 1960s.

Owners of cranberry bogs are moving their operations out of the state; among other consequences, are that their lands may become available for development. *(MassAudubon)*

Since some birds time their migration by length of day, not temperature, they may no longer arrive when swarms of insects emerge due to warmer springs.

Apple orchards suffer from swings in temperatures that cause trees to bloom too early (no pollinators active yet) and then cold snaps freeze the buds or even developing fruit. *(MassAudubon)*



Sugar Maple sap starts flowing 2 weeks earlier than before and the season is shorter. *(MassAudubon)*

Longer growing seasons and increased moisture may allow invasive plants that currently can't live in the North East to grow here; kudzu has already been found in New York state.

Introduced pests in our forests (such as Hemlock Woolly Adelgid) spread without restraint from cold weather. Other pests – such as the Southern Pine Beetle – may be able to live in Massachusetts soon. *(MassAudubon)* ❖

The Massachusetts Sierra Club's 2014 Electoral Endorsements

The Sierra Club works to elect pro-environment candidates at the local, state, and national levels. For many months preceding an election, our team of volunteers studies and tracks candidates, their records, public positions, and votes. We use lengthy questionnaires, interviews, and position papers, as well as input from other Sierra Club members and organizations in our endorsement process. The goal of our work is to provide our members with a list of those candidates who can be counted on to protect the environment and uphold our environmental policies.

Governor Martha Coakley
Attorney General Maura Healey
US Senate Ed Markey

US Congress

1st District Richard Neal
 2nd District Jim McGovern
 3rd District Niki Tsongas
 4th District Joseph Kennedy III
 5th District Katherine Clark
 7th District Mike Capuano
 9th District Bill Keating

For State Representative

5th Barnstable Matthew Terry
 1st Berkshire Gail Cariddi
 2nd Berkshire Paul Mark
 3rd Berkshire Tricia Farley-Bouvier
 2nd Bristol Paul Heroux
 3rd Bristol Keavin Duffy
 1st Essex Ed Cameron
 8th Essex Lori Ehrlich
 15th Essex Linda Dean Campbell
 1st Franklin Stephen Kulik
 2nd Franklin Denise Andrews
 5th Hampden Aaron Vega
 2nd Hampshire John Scibak
 3rd Hampshire Ellen Story
 3rd Middlesex Kate Hogan
 6th Middlesex Chris Walsh
 8th Middlesex Carolyn Dykema
 12th Middlesex Ruth Balsler
 13th Middlesex Carmine Gentile
 15th Middlesex Jay Kaufman
 21st Middlesex Kenneth Gordon
 23rd Middlesex Sean Garballey
 24th Middlesex David Rogers
 25th Middlesex Marjorie Decker
 26th Middlesex Timothy Toomey
 27th Middlesex Denise Provost
 29th Middlesex Jonathan Hecht
 31st Middlesex Mike Day

33rd Middlesex Steven Ultrino
 34th Middlesex Christine Barber
 37th Middlesex Jennifer Benson
 10th Norfolk Jeffrey Roy
 13th Norfolk Denise Garlick
 15th Norfolk Frank Smizik
 6th Plymouth Josh Cutler
 10th Plymouth Michelle DuBois
 8th Suffolk Jay Livingstone
 9th Suffolk Byron Rushing
 12th Suffolk Dan Cullinane
 17th Suffolk Kevin Honan
 12th Worcester Harold Naughton
 15th Worcester Mary Keefe
 16th Worcester Dan Donahue
 17th Worcester Doug Belanger

For State Senator

Cape & Islands Daniel Wolf
 First Essex Katy O'Connor Ives
 2nd Essex & Middlesex Barbara L'Italien
 Second Middlesex Patricia Jehlen
 Third Middlesex Michael Barrett
 Fourth Middlesex Kenneth J. Donnelly
 Fifth Middlesex Jason Lewis
 1st Middlesex & Norfolk Cynthia Creem
 2nd Middlesex & Norfolk Karen Spilka
 Middlesex & Worcester Jamie Eldridge
 Plymouth & Barnstable Matthew Patrick
 Second Suffolk Sonia Chang-Diaz
 First Worcester Harriette Chandler

Ballot Questions

1 - Repeals 2013 law that automatically increases gas taxes according to inflation.

The Sierra Club endorses a NO vote.

2 - Updates the Bottle Bill, stops litter, increases recycling, saves money for our cities and towns.

The Sierra Club endorses a YES vote.

KEY RACES, HOUSE

Denise Andrews, 2nd Franklin

Denise Andrews is a candidate who understands the importance of supporting clean renewable energy sources and advocating for reduced consumption. In her tenure as a state representative, Denise has been a strong supporter of critical environmental issues and recognizes that if Massachusetts is to be a leader, then we must focus attention on a smarter infrastructure, both power and transportation. She has called for alternative fuel vehicles and an infrastructure that supports them. Denise wants to see a pilot program to encourage development of electric car charging stations. She also supports ensuring that non-renewable energy resources are carefully monitored. At the same time, she has been a strong advocate of increased recycling through an Updated Bottle Bill and has taken measures to protect the public's health.

Michelle Dubois, 10th Plymouth

Michelle Dubois is an environmental superstar and candidate for the State House of Representatives. In the past decade, Michelle has been involved in major environmental political action in her community. In Brockton during 2002, she led an initiative to remove a trash transfer station near the drinking water supply in the neighboring town of Avon. In 2004, she helped citizens from East Bridgewater block the re-opening and expansion of landfill that had previously been closed. As a member of Citizens for a Better Brockton (CBB), Michelle led the prevention of permitting a gas-based power plant in Brockton. City Councilor Dubois supported the successful emergence of a Brightfields Development, an organization promoting energy-efficient constructed schools. She supports a carbon tax, but only one that doesn't encourage placement of polluters in low-income, high-minority areas. She opposes fracking. Michelle plans to work with the broader community and fellow legislators to see solutions encouraging green and renewable energy.

Endorsements

Martha Coakley for Governor

Protecting the environment and confronting climate change is a top priority for Martha Coakley. As Attorney General, she established a strong record as an environmentalist; and as governor, Coakley promises to build on her previous successes. She has published an in-depth plan to address climate change and protect the environment, outlining her strategies to meet the 2020 and 2050 green house gas reduction goals, protect natural resources, and bring environmental issues to the forefront. As Attorney General, she mobilized the Environmental Crime Strike Force to aggressively investigate and prosecute crimes that threatened the environment, while partnering with the Patrick Administration to create some of the most comprehensive energy efficiency plans in the nation. She has held utilities accountable for maintaining a commitment



to renewable energy, and has also worked with them to extend renewable options to consumers. As governor, Coakley plans to continue Massachusetts' leadership in the reduction of greenhouse gasses by expanding public transportation, and implementing an energy audit on homes and businesses. She hopes to encourage clean technology innovation by doubling funding for the Massachusetts Clean Energy Center, and promises to dedicate at least 1% of the state budget to environmental protection. Lastly, Coakley promises to lead the way by making state government the model of sustainability and energy efficiency. Through these efforts, Coakley promises to ensure access to clean water, clean air, and open spaces to everyone. ❖

Matthew Terry, 5th Barnstable

As a candidate for the House of State Representatives, Matthew Terry is a supporter of the Updated Bottle Bill, and a ban on plastic bags. Matthew believes that Massachusetts should be a national leader on curbing the production of industrial products that contribute to climate change. Linking beach erosion on Cape Cod to climate change, he has pledged to preserve marine and marsh habitats. Matthew is also dedicated to the critical issue of improving wastewater and clean water management on Cape Cod. As a supporter of renewable energy, Matt has advocated for the reduction in the use of fossil fuels. During his term as a state representative, Terry will support the expansion of existing commuter rail lines, increased bicycle lanes and pedestrian options across the Commonwealth. As a strong environmental advocate, Matthew Terry is a stellar candidate for the House of State Representatives.

Kenneth Gordon, 21st Middlesex

Ken Gordon has achieved a stellar environmental reputation in his community and in the Massachusetts State Legislature. Ken is the chairman of the Bedford Cultural Council, which has always funded environmentally important activities including cleaning polluted waterways. He supports

progressive candidates who work to address global warming and pollution in the environment. His environmental ideas are innovative; he would like to improve public transportation by increasing parking availability in MBTA stations, such as those at the end of subway and rail lines. Ken would also increase the number of bicycle paths, lanes and places to put bikes in MBTA stations. Mostly importantly, Ken believes we need to truly address climate change. He will encourage green energy and reduce our carbon footprint. He is a proponent of using tax credits to increase renewable energy production. Ken Gordon has been and will continue to be an environmental advocate.

SENATE

Barbara L'Italien, 2nd Essex & Middlesex

Having previously served as a state representative, Barbara L'Italien has created a lengthy record of commendable environmental stewardship. During her time in the legislature, she supported both the Toxic Waste Reduction Act, as well as being a co-sponsor of the Bottle Bill update. She has successfully advocated for restrictions on ATV (all-terrain vehicle) use in the Georgetown State Forest. As a strong supporter of public transit, Barbara has pro-

posed improving train frequency in Boston's outer suburbs. She has supported the development of renewable transportation fuels, co-sponsoring a bill that would create the "Fuel Cell Partnership" to spur the development of fuel cell and related technology. Barbara has a past of worthy environmental leadership as a state representative, and will again do so if elected.

Matt Patrick, Plymouth & Barnstable

Matt Patrick is committed to supporting environmental issues. During his tenure as a state representative, Matt worked tirelessly on countless critical environmental issues. More recently, as chair of a local non-profit led collaborative effort, Matt led an effort to save 380 acres of the Quashnet River valley in Mashpee from imminent development. He used his position as a co-chair of an ad-hoc coalition to successfully create the Cape Cod Commission, a regulatory land use agency. He is also a supporter of the elimination of coal and oil fossil fuel generation plants, and backs a carbon tax. During his term as a representative, Matt will advocate for properly sited turbines and the eventual elimination of the Pilgrim Nuclear Plant. He plans to increase home-based wind production and supports alternative clean energy. If elected, Matthew Patrick will be a leading example of an environmentally conscious legislator. ❖

Massachusetts Chapter and Group Elections

Chapter Executive Committee

Cathy Buckley

Cathy Ann Buckley, a Sierra Club member since 1996 and currently serving on the Massachusetts Sierra Club Chapter's Transportation Committee, requests your vote to serve on the Chapter's Executive Committee. Cathy began studying climate change as a Boston regional transportation planner. Cathy, now a full-time activist, is a Climate Reality Speaker, an Environmental Defense Fund Lead Ambassador, and a committee member for 350MA and Westwood Environmental Action. Cathy has participated in numerous climate events, and testified at governmental hearings. Cathy's main interest is climate action. Business-as-usual, while compelling and convenient, would be at this time in history, catastrophic. The Sierra Club, and each of us, through determined, confident, and intelligent action, must accomplish what heretofore seemed impossible but is now necessary.

Elisa Campbell

I have been involved in this chapter of the Sierra Club for about 40 years, at various times being chair of the chapter or the local group. I edited the Sierran for five years. I am running for re-election to the Chapter's Executive Committee, where I bring a perspective from beyond the Boston metropolitan area. For more than 20 years I've concentrated on protection and management of Massachusetts' public lands. More recently I've added efforts to keep our privately-owned forests as forests, not developments, as part of the Wildlands and Woodlands partnership. I'm also concerned about population, consumption, and accepting responsibility for our own ecological footprints. I would appreciate your vote.

Jerry Frenkil

Jerry is an avid outdoorsman, and has canoed many of the Northeast's wildest

ivers. He has taught canoeing and rescue skills for the Appalachian Mountain Club, where he is a senior leader. He has also been active in local (Concord, MA) environmental issues and is currently the Chairman of the White Pond Advisory Committee charged with protecting White Pond, Walden's twin. An engineer and entrepreneur, Jerry is a noted expert on energy efficient design, has founded startups, and served on international boards. He is deeply interested in energy policy, leveraging broad fundamental knowledge of energy and power issues. He asks for your vote so that he can aid the Sierra Club in guiding sound and insightful policies for our delicate environment and complex energy relationships.

David Heimann

I have extensive experience serving for many terms on the Executive Committee. Over the last two years, I have been Chapter Secretary and in charge of our issue-based, administrative, correspondence, and other records, as well as meeting minutes. I also participated in the 2013 Chapter Director hiring committee and have participated on the Energy Committee dealing with solar and wind, for example. I have also served on the Greater Boston Group Executive Committee, involving significant local transportation issues. In the coming term I plan to move these issues forward, especially on energy such as solar power, fracking and natural gas pipelines and to increase Massachusetts's reliance on energy efficiency and renewables. I also plan to work closely with our eventual Director on Chapter strategic planning issues.

Alison Leary

Alison's long history with the environmental movement and political activism started as a grassroots canvasser, field manager and lobbyist for Clean Water Action, and continued with community positions on the Newton Conservators

and the League of Women Voters-Newton Boards. Alison was elected to the Newton Board of Alderman in November 2013. Alison sees getting pro-environmental candidates elected to office as critical to successful of environmental action and a great strength of the Sierra Club. As a city official and co-chair LWV-Newton Environmental Committee, Alison has led the fight against new trash incinerators, enforcing waste bans, advocating for better public transportation, pedestrian friendly sidewalks, and safe, well-marked bike lanes. Alison would like your vote to continue her work on the Massachusetts Sierra Club Executive Committee.

John Lewis

My particular interest is environmental politics involving conversion of parkland to non-park uses. Almost every city and town in this Commonwealth has land that is restricted to passive recreational park use. This land, whether large or small, famous or unknown, is all protected parkland. Often, such protected land is viewed as empty development parcels, regardless of its legal status. One Sierra Club role is to make an otherwise unnoticed park conversion into a much larger statewide issue affecting everyone who cares. Massachusetts has good, important legislation protecting parks and the environment. The big crunch is enforcing such good intentions. The Sierra Club makes sure that such conversions do not go quietly unnoticed. I also serve on the Marine Committee which focuses on vanishing fish stocks except for scallops.

Greater Boston Group

Keith Burrows

I was born in Western Massachusetts and developed a love of nature while exploring the Pioneer Valley's forests and rivers. After 18 years living in Bos-

Continued on page 20

Chapter Executive Committee Elections - Ballots and Voting Instructions

Mail ballots to: Mass Sierra Club Elections, 10 Milk Street, Suite 417, Boston, MA 02108-4600

Membership number must appear on the outside of envelope for ballot to be valid (Your eight-digit membership number appears above your name and address on the back page of the Sierran).

A second ballot is provided for households with joint memberships so each member may vote.

Ballots must be received by 5:00pm, Saturday, December 13, 2014 to be counted.

If you have questions, contact ewoll@sierraclubmass.org

OFFICIAL BALLOT

VOID

The primary member whose name is on the top line of the address label should use this ballot.

**Part 1: All Massachusetts Chapter Members:
Chapter Executive Committee**
Vote for a maximum of four.

- Cathy Buckley
- Elisa Campbell
- Jerry Frenkil
- David Heimann
- Alison Leary
- John Lewis

Part 2a: Members in the Greater Boston Group. *Next to your name, look for "GBG" on the address label. Vote for a maximum of five.*

Greater Boston Group Executive Committee

- Keith Burrows
- Susan Butler
- David Heimann
- Blossom Hoag
- Benjamin Pignatelli

Part 2b: Members in the Thoreau Group. *Next to your name, look for "THO" on the address label.*

Thoreau Group Executive Committee

- Michael B. Olex

Part 2c: Members in the Cape Cod & Islands Group. *Next to your name, look for "CCI" on the address label. Vote for a maximum of three.*

Cape Cod & Islands Group Executive Committee

- Billie Bates
- David Dow
- Robert Murphy

OFFICIAL BALLOT

VOID

The joint member of your household should use this ballot.

**Part 1: All Massachusetts Chapter Members:
Chapter Executive Committee**
Vote for a maximum of 4

- Cathy Buckley
- Elisa Campbell
- Jerry Frenkil
- David Heimann
- Alison Leary
- John Lewis

Part 2a: Members in the Greater Boston Group. *Next to your name, look for "GBG" on the address label. Vote for a maximum of five.*

Greater Boston Group Executive Committee

- Keith Burrows
- Susan Butler
- David Heimann
- Blossom Hoag
- Benjamin Pignatelli

Part 2b: Members in the Thoreau Group. *Next to your name, look for "THO" on the address label.*

Thoreau Group Executive Committee

- Michael B. Olex

Part 2c: Members in the Cape Cod & Islands Group. *Next to your name, look for "CCI" on the address label. Vote for a maximum of three.*

Cape Cod & Islands Group Executive Committee

- Billie Bates
- David Dow
- Robert Murphy



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Student	\$ 25	\$ 35
Limited Income	\$ 25	\$ 35

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Massachusetts Chapter and Group Elections

ton, I still spend as much time as possible outdoors. A long-time environmentalist, my growing concern with climate change led me to complete a Master's degree in Sustainable Design. My education and experience help me appreciate the complex systems that threaten our planet and I firmly believe in the Sierra Club's approach of addressing environmental issues from both grassroots and policy levels. I've been a Club member since 2004 and an active volunteer in our Inner City Outings program. With your vote, I'll do my best to ensure we maximize our impact on environmental issues in greater Boston and beyond.

Susan Butler

I have enjoyed serving on the Massachusetts Sierra Club Greater Boston Group Executive Committee for the last two terms and hope to serve one more. In that time I have helped with energy policy, bicycle advocacy, planning, sustainability and soil conservation and other issues. I admire the work GBG does and look forward to participating in the next term and beyond

David Heimann

I have plenty of experience on the GBG Executive Committee. Over the past two years, my current term, I have focused on GBG energy issues, especially solar and wind power, and transportation issues. In addition, since I am currently serving on the Chapter Executive Committee, I am coordinating activities between the GBG and the Chapter. In the coming term I plan to move these issues forward, especially on energy such as solar power, fracking and natural gas pipelines and to increase Massachusetts's reliance on energy efficiency and renewables. I also plan to work closely with our eventual Director on GBG planning issues.

Blossom Hoag

I am asking for your vote to the Greater Boston Group executive committee. I have been a member of the Sierra Club since 1982 and have held various group,

chapter, regional and national positions. I care deeply for the environment, to listen and work with members on their issues and to help make the MA Chapter strong within the organization.

Benjamin Pignatelli

I have been a Sierra Club member since 2005, but an environmentalist my entire life. I was an active member at Lake Tahoe working through highly controversial land use issues where we helped established more sustainable outcomes. Now, as an energy efficiency professional in Massachusetts, I see an opportunity for the Sierra Club to take a leadership role in this developing industry. We can and must invest our energy efficiency money more wisely. I am not hearing the needed perspectives in the current dialogue to do so. It would be my pleasure to explore bringing my experience and enthusiasm in this field and in general management to the Greater Boston Group.

Cape Cod and Islands Group

Billie Bates

Billie Bates is a Life member of the Sierra Club, She has long supported the conservation values of the Sierra Club (SC) and is now reviewing and drafting a response to the Monomoy National Wildlife Refuge (NWR) Comprehensive Plan for the Cape Cod SC Group. It was rewarding when US Fish & Wildlife took our previous comments, which were drafted by Billie, for the Nantucket NWR very seriously. Billie asks for your vote, as she plans to continue this and other projects on behalf of SC members.

David Dow

David Dow is a retired oceanographer from the Fisheries Lab in Woods Hole and is the current Treasurer of the CC&I Group. He has been active in the wastewater mitigation dialog on Cape Cod and represented the Sierra Club on the Upper Cape Section 208 report Working Group which is operated by the Cape Cod Com-

Continued on the next page

Electric Vehicles Slash Emissions — and Just Got Cheaper in Massachusetts!

By Gina Coplon-Newfield, Sierra Club's Director of Green Fleets & Electric Vehicles Initiative

Obviously, walking, biking, and using transit are the cleanest ways to get around. But if you're an environmentalist with a car, then you probably know that oil extraction, transport, refining, and use constitute more than 40% of US carbon emissions. We consume most of that oil for our cars and trucks, and we need to find ways to slash our oil consumption.

Switching from gasoline to plug-in electric vehicles (EVs) is one of the most important steps we can take to slash oil use and emissions. The Commonwealth of Massachusetts just launched a new program that will make you eligible for a rebate of \$1,500 to \$2,500 if you purchase or lease an EV. In addition to much lower fueling costs (electricity vs gasoline) and the federal tax credit of up to \$7,500 for the purchase of an EV, this new incentive will make EVs even more cost-competitive in the Commonwealth. Visit <https://mor-ev.org/> for information on eligibility and how to apply.



But what about the emissions from the electricity used to charge electric vehicles? According to a range of studies, the charging of an electric car leads to significantly less carbon dioxide pollution than that from a conventional car. Here in New England, a full battery electric car emits, on average, 71% less CO₂ than the best-selling gasoline-powered vehicle when you compare the emissions from electricity used to charge an EV to the emissions from the extracting, refining, transporting, and burning of oil to power a conventional car. And that's today. As we retire more coal plants and bring cleaner sources of power online, EVs become even cleaner over time.

There are more than a dozen plug-in vehicles currently on the market. For more information on EVs, visit the Sierra Club's interactive online EV Guide at www.sierraclub.org/evguide. ❖

Continued from the previous page

mission. He is the head of the Massachusetts Chapter's Marine & Coastal Committee and work on fisheries and national ocean planning issues. David is also a member of the national Toxics Activist Team and helped draft the contaminants of emerging concern fact sheet where the CC&I Group has been involved in the outreach campaign. He was a co-founder of the Cape Cod Group in 1990.

Robert Murphy

Bob Murphy is currently the chair of the Cape Cod and Islands Group. If elected, this will be my last term as an officer with the Cape Cod and Islands Group. I'll continue to work for environmental justice, with special attention given to climate change and other energy-related issues. I'm concerned, also, about hazardous chemicals and coastal protection matters.

Thoreau Group

Michael B. Olex

I have been a Sierran since 2001 and have been interested in conservation my entire life. My definition of a good day is one spent outside whether doing yard work, visiting parks or natural areas, or running, biking, and cross country skiing. I live in Bedford with my wife, Pat, and my stepdaughter, Kaitlin. Professionally, I am an Electrical Engineer who works as a manager at life science and medical device companies. I participate in the Club's Political Committee and Thoreau Group Executive Committee. My interest in environmental issues includes preserving the natural environment and sustainability. Protecting open spaces, improving energy efficiency, and developing renewable energy sources are ways we can achieve these aims. Working within the Club allows me to promote these objectives. ❖

Message from Roxanne Zak, Chapter Chair

Continued from page 2

Much of what the Sierra Club stands for, in Massachusetts and across the nation, is under threat from climate change. We have all worked hard in conserving whatever piece of our environment that we could. But now entire ways of living are threatened by changes in temperature. A piece of forest or coastline or a vulnerable plant or animal, once preserved, should be with us almost forever, or so we thought. But that is not really true anymore as temperatures creep up and the warmer climate is changing entire ecosystems. Our grand achievements of the past are under threat from the devastation of the future.

Climate change deniers point to long-term temperature ebbs and flows in the earth's history as they vehemently suggest that the changes that we are seeing today are a natural evolution. As Charles Mann points out in his recent article in *The Atlantic*, scientists and economists are now in agreement that there is a 5% chance that letting carbon dioxide rise much above its current level [of approximately 400 ppm] would set off a domino-style reaction leading to global devastation [sometime within the next 50 years or so]. If you were going to get on an air plane, would you do so knowing that there was a 5% chance that you wouldn't make it to your destination?

But what we need to be most concerned about is not the 5% probability of disaster but the surety that these insidi-

ous changes to our planet will have major negative impacts on life, now and in the future. As we are seeing the slow but destructive events such as melting glaciers, rising seas, methane releasing from vast melting tundra, desertification, dwindling fresh water, violent weather, disappearing species; life is changing and these changes will soon be irreversible.

As fall approaches, we need to acknowledge that the Massachusetts Sierra Club is approaching a turning point as well. We will maintain our work to conserve species and habitat and continue to push forward as ardent environmentalists. But it's time to move our fight against climate change to the highest point on our list of priorities. We need to seek out new ways to fight climate change and to confront those who deny it. Scientists are essentially certain that the single biggest cause of climate change is the increasing concentration of carbon in the atmosphere. It is my goal as Chapter Chair to steer us toward programs that can reduce that concentration and change the ways in which we consume carbon-based fuels.

I hope that you will join us in our efforts to do everything we can to raise awareness of climate change and work toward our goal to preserve life as we know it on this glorious planet. ❖

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PROCEEDS COME BACK TO SIERRA CLUB.



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Climate Change: Health

Longer growing seasons may lengthen the period of time that people allergic to pollen (40 million Americans) suffer. Specifically, researchers have found that the number of frost-free days, especially the delay of the first frost in the fall, since 1995 is extending the ragweed season. Ragweed is also growing larger, flowering earlier, and producing more pollen.

If greenhouse gas emissions continue to be high, by 2070-2099, it is projected that cities in the region will experience 24 days over 100°F (now it's 1 day) and 65 that are over 90°.

Since warmer air can hold more moisture, humidity will also be higher - expressed as higher "heat indexes" - dangerous to vulnerable people. Heat kills more people than cold.

Climate Change: Storm Severity

According to eco-RInews, the environmental online journal for southern New England (July 15, 2014), there has been a 74% increase in heavy precipitation over the past century.

According to University of Rhode Island professor of Oceanography Isaac Ginis (quoted in eco-RInews, July 28, 2014): "Numerous studies and models suggest the frequency of category 4 and 5 hurricanes are expected to increase by 81%, while the volume of rainfall is expected to increase 20% by 2100."

Superstorm Sandy did \$20.8 million worth of damage in Massachusetts – and it wasn't even a hurricane at the time. (Wikipedia)

Visit <http://www.mass.gov/eea/agencies/czm/program-areas/stormsmart-coasts/> to see how well your community will fare from a coastal storm, and what can your community do.

Visit <http://maps.massgis.state.ma.us> to find the Coastal Zone Management's online tool for learning about the potential hurricane storm surge near you.

The Myths of Natural Gas

Continued from page 5

businesses and manufacture products is a threat to our economic health quite apart from leakage. Every dollar increase in price increases by 20 to 25% the energy cost for a very large part of our economy. Four years ago, the United States natural gas market price was \$2 per mBTU. Within 2 years it doubled to \$4, and in 2013-2014 it peaked at \$6. Good business and home planning requires more stability.

The global market price for liquid natural gas (LNG) has ranged from \$11 to \$20 (per mBTU). Why is that important? Because today the United States does not export LNG, so our domestically produced natural gas is not subject to the global market. But

in 2015, the United States will begin exporting LNG and domestic producers can be expected to seek prices competitive with the global market. So when a gas pipeline heading toward Massachusetts forks, with the other branch feeding an LNG export terminal, the Massachusetts branch will be the road not taken even at our recent peak price of \$6 per mBTU. Under that scenario, the notion that new pipelines into our state are likely to contain, or reduce, energy prices is myth.



In 2012, Massachusetts consumed 416 billion cubic feet of natural gas, of which 27% was for residential heating and 43% for electricity. *Natural Gas Consumption by End Use, United States Energy Administration.*

Our mission is clear!

Methane gas leaks are a local and a national hazard and are neither good for our physical health nor for the climate. Moreover, if we do not stop them locally, we will never be able to reach the state's mandated green house gas limits under the Global Warming Solutions Act nor will our streets be safe. And expansion of our over dependence on natural gas is not good for our economy. Stopping that expansion will help stem the leakage here and elsewhere in the system, and reducing our dependence long term will turn the tide. ❖

This article, with full citations, is available at <http://sierraclubmass.org/wp/?p=1065>

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