

- Climate Change... What does it mean for NH?
- Climate change is real; it is already occurring and is caused by human activity. More than 99.9% of all climate scientists agree ...99.9%! This is even greater than the percentage of physicians, cardiovascular scientists, and public health experts who agree that cigarette smoking causes lung cancer.
- Now, you might be thinking, we live in New Hampshire, and as the saying goes: If you don't like the weather...wait 5 minutes. Well, let's clarify. Weather is what we experience minute to minute, day to day or even year to year.
- Climate, on the other hand, describes the average weather for a region over an extended period of years. A region's climate is measured by averaging weather conditions of a 30-year period.
- There is solid evidence that climate change is already occurring. We are witnessing an increase in average temperatures, more extreme weather events, heavier rains for longer durations that lead to flooding, and severe winter storms that cause power outages and roofs to collapse. Recovery from these events can take time and be very costly.
- This graph shows the millions of dollars spent to recover from federally declared disasters that have happened in New Hampshire since 1986. As the graph demonstrates, these disasters were more frequent and severe over the past ten years than they were during earlier periods. These dollar values have been normalized to the value of 2015 dollars so you can directly compare costs.
- As for global warming trends, 13 of the 15 hottest years on record have all occurred since the year 2000. 2014 had been the warmest year on record until 2015 significantly surpassed that, becoming the warmest year ever recorded. In New Hampshire, since 1970 our average annual temperature has risen by 2.6 degrees Fahrenheit. Winter temperatures have risen by an average of 4.5 degrees Fahrenheit. So, yes, our winters are definitely much warmer than they were even a few decades ago.
- But now, you might be thinking, winters still seem really cold. Remember the polar vortex of some recent winters past? It was cold here in New Hampshire! But that

didn't mean the earth's overall temperature stopped warming. Most of the planet was warmer. Much warmer.

- Here is what happened during the polar vortex. The jet stream, which is the high level river of air that circles the poles, began to weaken and, rather than circling the globe just below the Arctic in a tight circle, the jet stream developed bends that were so severe they locked an unusual winter weather pattern in place for a long time. When the jet stream dipped down it brought cold arctic air into New Hampshire while Alaska was very warm and experienced so little snowfall (a mere 20 inches) that organizers were forced to move the Iditarod dogsled race farther north and they had to truck in snow for the start. So in looking at this image of the temperature patterns in February 2015, we can see that while the northeast was much colder than normal, most of the rest of the Earth was much warmer than normal.
- The warming of the planet not only affects the weather, it also affects human health and our surrounding environment. Portions of NH had been in a moderate drought for most of 2015. This took its toll on our surface waters and groundwater, which are our sources of drinking water. We are also witnessing more ticks and tick-borne diseases. In fact, in 2008 and 2012, New Hampshire had the highest reported incidence of Lyme disease in the nation. Allergy seasons are now longer and more severe. And, due to more days in the summer with temperatures in the 90s, heat related illnesses are more prevalent.
- There are detrimental economic impacts, too. Local farmers' crops suffer due to either drought or intense, prolonged rainfalls. Ocean temperatures are rising as a result of climate change. This has caused a huge reduction in the Gulf of Maine's native shrimp population and has forced Atlantic cod to move farther north to colder waters. Lobsters, a New England specialty, once abundant in southern New England, are now moving north due to warmer ocean temperatures.
- With warmer winters the ski industry has already had to diversify. For example, many ski areas now offer canopy tours and mountain biking. In the past, southern New Hampshire has averaged 105 snow covered days. By 2070 there could be as few as 52 snow covered days. This could force ski areas to spend more money and use more energy for snowmaking. But even if ski areas install additional snowmaking systems, they are of no help if temperatures are not cold enough for those systems to make snow that will last.

- The National Weather Service declared that the winter of 2015/2016 was the warmest winter recorded in New Hampshire history.
- As a result of the Earth's ice sheets melting, as well as the oceans expanding as they warm, sea level is continuing to rise. In Portsmouth Harbor, sea level has risen by 6" since 1926. This rise, along with bigger storm surges, threatens our coastal communities.
- So...you get the picture...climate change is real and we are already experiencing its effects. BUT, we do have a choice.
- One choice is to do nothing, continue with business as usual, and hope for the best.
- OR, we can take steps to reduce the causes of climate change by reducing emissions of carbon dioxide and other greenhouse gases by decreasing our use of fossil fuels.
- We can do our part by using energy efficiently, purchasing energy efficient appliances, and insulating our homes and commercial buildings. We can drive fuel efficient vehicles and invest in alternative energy sources. We can do our part to slow the rate and extent of change that we will experience.
- We can also begin to adapt. We have choices on how to move forward and prepare for our "new normal".
- We can (again) do nothing and hope for the best...
- Or, in some instances, we can protect and fortify. We can keep sand dunes intact to protect coastal communities and build barriers to protect critical infrastructure.
- We can also accommodate future flooding by using wetlands and vegetated stream buffers, which act like giant sponges and absorb flood waters.
- We can install culverts and build bridges that accommodate higher rainfalls.
- Buildings can be constructed to have basements designed to flood, housing all utilities on upper floors so they are not inundated by rising waters.

- And, in some instances we may have to consider the possibility of retreat. We may be faced with not re-building in areas that experience repeated losses.
- These adaptation strategies will lessen some of the impacts both physically and economically of our changing climate.
- So, we can all agree that doing nothing is NOT a good option...We can take steps together to decrease the amount of climate change to which we must adapt.
- And let's all remember, we have met environmental challenges in the past!
- For instance, 40 years ago, we were faced with the issue of air pollution and smog. Using technological solutions, like catalytic converters on vehicles, we were able to reduce smog by 30 to 50%.
- Similarly, 35 years ago, the ozone layer was being depleted. Remember the ozone hole? Through an international agreement, chlorofluorocarbons, or CFCs, were phased out and they have been almost completely eliminated, so now the ozone layer is recovering.
- And, 30 years ago, acid rain was threatening eastern forests and lakes. Using a market-based solution, known as "cap and trade", utilities were able to reduce their sulfur dioxide emissions, which cause acid rain, by 50%. As a result, our forests are rebounding and our lakes are recovering.
- These examples should give us all the confidence that by working together with our communities, businesses and government, we CAN meet the challenge to reduce the amount of climate change and its impacts!
- Every individual can make a difference...Let's do our part for our generation and future generations to come...