

I've entitled my presentation "The Fierce Urgency of Now." I've taken this title from a sermon that Dr. Martin Luther King Jr. gave in April 1967 entitled "Beyond Vietnam: A Time To Break Silence."

It is time that we, in like manner, break our silence about global warming, climate change and the "fierce urgency of now" that we are facing. I'd like to say that I am anything but a scientist. I've always been a community organizer, a manager and an artist. I label myself as an "emotional intuitivist." I'm not going to present anything about the science of climate change or about massive changes where agricultural land of the future might be, of the salt infiltration of our fresh water systems and all the other effects of global warming and climate change. I'm going to focus on human wealth, human suffering and migration. But first I want to talk briefly about a concept related to the presentation. Our dear friend and fellow UU, Joyce Carlson, has taken this concept to heart and turned me on to it. It's called the Systems Theory. My understanding of the theory is that everything is a system that works together and that a change here or there will generate other changes which will generate more changes and that goes on and on. For us, so often it results in the Law of Unintended Consequences. An example of the Systems Theory and unintended consequences came out of the wonderful wake up call that Rachel Carson's book of 1962, *Silent Spring*, produced. Her work caused

the banning of the insecticide DDT. Widespread DDT use had led to many problems. One of which was DDT has decimated the duck and geese population of North America. It had caused their eggs to be so fragile that they mostly broke when the goose or hen would lay on them. The results were the near extinction of the duck and geese migration. DDT became banned and the birds made an amazing recovery. But the hunting and trapping of the coyotes, fox and hawks had all but eliminated the geese and duck natural prey which had kept them in balance and now they have the status of a nuisance. Golfers know this more than many of us as the golf courses are so often overrun with the birds today.

Another example of Systems and how they work came out of Paul Ehrlich's 1968 book Population Bomb and the 1798 work of Reverend Robert Malthus titled "An Essay on the Principle of Population." Malthus' essay defined how food surpluses were the basis of population enlargement. The world's population at that time was 1 billion people. Ehrlich's book proclaimed that the population of the world, 3.5 billion, had exploded to a point where there would no longer be sufficient food to feed the population. The outcomes of these writings were not the decrease in population of the world but the development of new approaches to agriculture and massive clearing of additional forest so that they were available for food production. Land that had never been needed and often not appropriate for agriculture came into use for

food production. Much of agriculture changed from a diversified farm to a mono crop farm. From farms that served the local markets, they moved to being factory farms that served giant regions and the extraction of more and more carbons to meet the needs of the burgeoning population. I cited the above examples to demonstrate that we often do things with good intent that have bad unintended consequences.

The problems we are talking about today are not the result of evil intentions. They are a result of a society that believes that it is the driving force of our planet and that we can manipulate and master the planet through force, science and development.

Unfortunately those concepts fail to recognize the most important part of our existence on Mother Earth.....the systems of the Earth are what are in control and are in a inter-related balance. Giant things happen when we create giant changes. Humankind is now showing that it has the power of the Asteroids of ancient days....of the giant volcanic eruptions that have had such impacts on our Earth.

I always fear that people will think that I am exaggerating....making things sound worse than they are. The election of Donald Trump has made me realize that my fear of exaggerating is not founded. This is not about calling wolf. It is about the greatest crisis humanity has ever faced...extinction.

In spite of all the hard data and widespread scientific

evidence that we are in a time of crisis, one of the major polluters of the environment, the USA, has just elected a president who denies global warming and the related climate change it causes. Trump has pledged to withdraw from the Paris Climate Accord adopted 1 year ago. Many feel that the Accord was not nearly enough to prevent climate changes as it did not do nearly enough to mediate global warming. However, it was a wonderful advance to get the majority of the countries of the world on board to attempt to do things that would help. The USA is the producer of 17% of the world's CO₂, one of the major contributors to the greenhouse of atmospheric gases that trap the sun's heat and warms our planet. For the last several years, it has been believed that the CO₂ levels need to not exceed 350 parts per million which hopefully would limit the temperature rise to just 2 degrees. This year we have averaged 400 plus parts per million and it is still rising. If Trump leads the USA to withdraw from the Paris Accords it will be nearly impossible for the other nations of the world to meet the needed expectations to even come close to not more than a 2 degree increase.

Bill McKevinn states..... "The irony here is that the Paris accords aren't even very strong. They represent a lowest-common-denominator effort, one that will allow the world's temperature to keep climbing dangerously. They were passed in no small part to allow the world's leaders to strenuously pat themselves on the back for having done something.

But at least the pact keeps the process moving – and there are mechanisms that might allow the world to ratchet up its efforts as the temperature climbs. It's a tissue of compromise and gesture, a flimsy bulwark against the climbing mercury and rising sea. But wrecking it would be an act of political vandalism, one that would define Trump's legacy before he has even taken office.”

The population of the World has gone from 300 million people at 1AD....just think about that for a moment....the world in just 2100 years has gone from a population of 300 million to 7.4 billion today. From 1.7 billion in 1916 exploding to 7.4 billion people on this small planet, Earth, that we call home. In just the last 100 years we've grown 5.7 billion more people. It seems unbelievable, but it is true.

Now I want to talk about the real subject of this presentation. Sea level rise, Miami-Dade County, economics and migration.

The oceans and gulfs are rising for two reasons. The melting of glaciers and ice sheets and the warming of the ocean. The melting accounts for 50% of the rise. The warming of the oceans account for 40%. I could not find out what accounts for the remaining 10%. I suspect it is do to the land under the ice sheets rising after the enormous weight of the sheets is gone.

22,000 years ago the Earth was 4 degrees colder. Glaciers reached as far south as NYC. Boston's area was under almost 1 mile of ice. It wasn't until 13,500 BC that ice withdrew from NYC. In 6500 BC the final collapse of the North American ice sheet occurred. It was followed by a 2 to 4 meter rapid rise in the sea level. This rise cut Britain off from the mainland of Europe. That was caused by the collapse of just one ice sheet. Think about what happened to the ocean levels when the Arctic and Antarctica ice sheets collapse.

I was shocked when I came to realize how much of our world's population lives at less than 10 meters (33ft) above sea level. 710 million people of the world's population live less than 10 meters above the sea level. 1.3 billion of the world's population lives at lower than 25 meters (82 ft) above sea level. When studying this I found out, that 2/3rds of the world's largest cities (cities with 5 million people or more) are located, at least in part, at less than 10 meters (33 feet) above sea level.....and more people are moving to these cities everyday.

Several of these cities are located in the United States. I decided to look at Miami-Dade and was shocked to find that average elevation is 6 feet (1.8 meters). The highest point in Miami-Dade County is 40 ft. Over 5.5 million residents of Miami-Dade live at less than 6' above sea level. The 2015 tax value of taxable real property in Miami-Dade is 230 billion

dollars. The \$230 billion is only based on private real property. Think about the values of the public buildings, the roads, sidewalks and bridges, the water and sewer systems, the health care facilities, the airports, the parks, the athletic facilities and the many public universities found in Miami-Dade County. Add those values to the financial values of the 5.5 million people living at 6 feet or less of the sea level. It will be a massive destruction of wealth.

The wealth of most Americans is found in their homes. In like manner, the debt of most Americans is found in the mortgage of their homes. For the rich, most of their wealth is in equities and other investments. For the poor, it is only their personal property that is their wealth. As individuals in the zones that will be affected by sea level rise begin to realize the risks they are facing, they will start liquidating their real property. As people see that their neighbors are selling their homes, they too will want to sell their property. More houses on the market means falling prices. As more panic evolves, the value of their home goes down. Houses will be worth less than their mortgages and will be what mortgage bankers ironically call "under water." Soon the house will have no value as there will be no market. The ripple effect caused under this scenario is endless. Many of the hedge funds and mutual funds include bundled housing loans. Most of these loans are secured by the property that the loan is for. If the house has no value, then the funds are a loss and the

investment value is gone. The same is true for municipal bonds and other government securities that are based on infrastructure development.

Where do people relocate? Where do their children go to school? Where do they find jobs to support their family? What housing will be available and how will they afford it.....the list goes on and on. Just think of the many major cities around the world that are at risk. All we have to do is to look at New Orleans, to look at Haiti and areas of Malaysia which were all devastated by storms to see how difficult it is to relocate. If tomorrow we had to relocate 5.5 million people from Miami that had lost all of their resources, where would they go? Just look at the problems that 1 million Syrians have in their attempts to migrate.

Now why would I think this might be possible?

According to Harvard scientist Jerry Mitrovica the paleoclimate record suggests that even a slight amount of global warming can produce a sea level rise of 7-10 meters...that's 25 to 32 feet. This can lead to long term sea level rises of 25 meters....82 feet. With 12% of the World's population, 710 million people, living within 10 meters...less than 33 feet... of sea level and 21% which is 1.3 billion people living within 25 meters....82 feet of the sea level, we have every reason to be concerned. The polar regions have enough water stored as ice sheets to raise the ocean 67 meters...that's 220 feet. As the ice

sheets melt, it causes a negative loop. The melting of the ice sheets cause a regional cooling of the ocean. That leads to an inversion where the cooler water sinks and the warmer water rises leading to more melting.

I had always thought that the concept of water rising to its own level was a given. I did not understand that when you study the planet and its oceans that you also have to factor in the gravitational effects of the ice and land mass on the distribution of the ocean water. The rapid melting of the ice sheets of the Arctic create a reduction of the gravitational effect. Areas closer to the equator will have a greater increase then areas closer to the Arctic and Antartica. In like manner, the rapid melting of the West Antarctic ice sheet will reduce the gravitational pull which has drawn substantial amounts of ocean water to the South Pole.

Now I had to ask myself just how did we get to such a place. Regardless of what political system has been in place, perpetual growth has always been part of the politic. Part of the reason has been the growing population and part has been greed. When we look at the population clock as it relates to evolving population growth we find that it took from the dawn of humankind until 1800 for there to be 1 billion people running around on Earth. It only took 130 years...until 1930 to reach 2 billion. It took 30 years, 1959, to reach 3 billion, 15 years more, 1974 to make it to 4

billion followed by 13 years, 1987, to make it to 5 billion. The 20th Century saw the world's population rise from 1.65 billion to 6 billion. The UN's population clock projects that there will be an increase of 50% to 9 billion by 2038 and 10 billion by 2056. So, in the first half of the 21st century it is projected that we will have increased from 6 billion to 10 billion people running around the Earth all looking for food and shelter.

Why am I less optimistic then I was a few weeks ago? It is because President Elect Trump has informed the World that the USA is going to remove itself from the Paris Climate Accords, is going to re open the coal mines, is going to permit the oil and gas pipelines, to crank up fracking and reward companies that extract more fossil fuels.

This presentation dealt with extremes. If only a portion of what is reflected here happens, the future still is very bleak. So much that has to happen lies within each of us. When Trish and I decided to install solar hot water and solar electric systems we did it because it was also cost efficient. We talked about that the other day and agreed that we weren't that good to do it if it had not been cost efficient. We should be that good.

There are 5.5 million people at risk just in Miami-Dade county, the number of people around the world who will be in equal straits is unbelievable and that is why I

chose Dr King's words for my presentation.....The Fierce Urgency of Now and I will ask Trish to close with a paragraph that from Dr King's "Fierce Urgency of Now.

" We are now faced with the fact that tomorrow is today. We are confronted with the fierce urgency of now. In this unfolding conundrum of life and history there is such a thing as being too late. Procrastination is still the thief of time. Life often leaves us standing bare, naked and dejected with a lost opportunity. The "tide in the affairs of men" does not remain at the flood; it ebbs. We may cry out desperately for time to pause in her passage, but time is deaf to every plea and rushes on. Over the bleached bones and jumbled residue of numerous civilizations are written the pathetic words: "Too late." There is an invisible book of life that faithfully records our vigilance or our neglect. "The moving finger writes, and having writ moves on..."

Dr Martin Luther King Jr. 1967