



## Miami-Dade County and Climate Change: What every South Floridian needs to know!

### Climate Change and the Community

#### Why should you care about climate change?

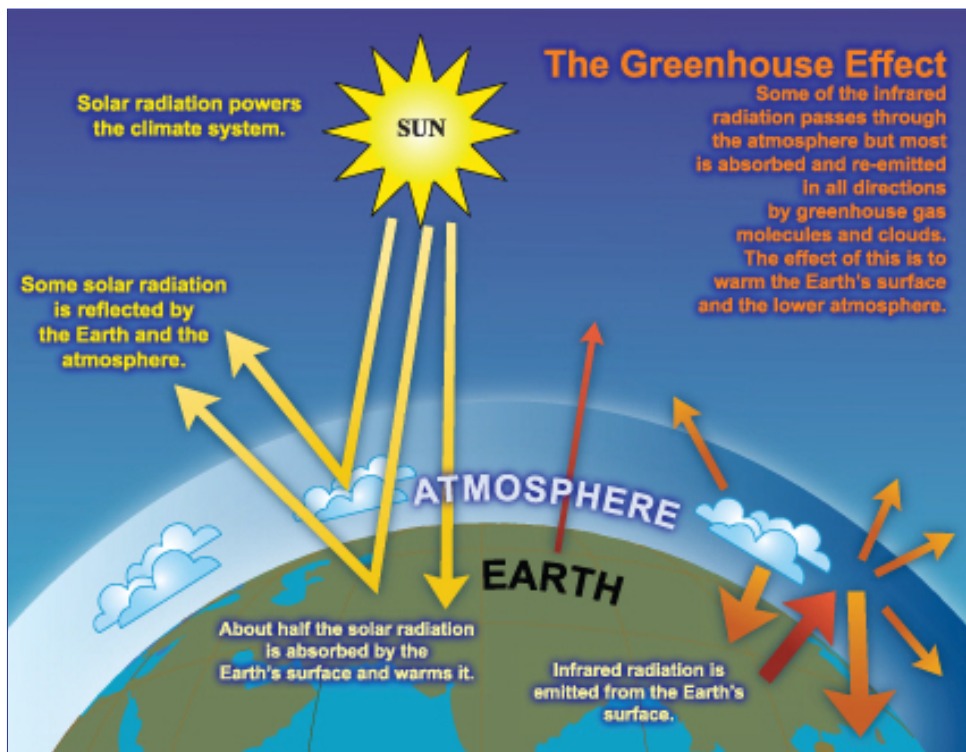


Figure 1. An idealized model of the natural greenhouse effect. Intergovernmental Panel on Climate Change 2007.

The well-being and sustainability of any community is dependent on a vibrant economy, a healthy environment, and an equitable and supportive community fabric. These three facets of sustainable communities (our natural, human and economic capital) are interdependent. If any one element is out of balance, the other two suffer. To ensure a healthy and prosperous future for ourselves, our children, and fellow residents, we must be good stewards of all three.

Climate change will cause the world's environments to change and will present many challenges and some opportunities to our human, natural and economic systems. We will all experience climate change in one way or another. We must work together to address and prepare for all aspects of climate change to ensure that our communities continue to prosper and support future generations to come.

#### What is Climate Change?

"Global Climate Change" refers to a changing of the earth's environment as we know it today due to the scientifically documented warming of the earth. Increasing levels of greenhouse gas emissions are causing this warming.

Atmospheric "greenhouse gases" occur naturally in the earth's atmosphere. These gases capture a portion of the sunlight that reaches the earth to warm the planet and support life. Greenhouse gases are also produced by the human use of fossil fuels such as coal, oil, and natural gas to run our cars, cool and power our homes, schools, and businesses, and in the production and transportation of the goods and services that support our economy.

Based on historic and current greenhouse gas emissions levels, scientific research by the Intergovernmental Panel on Climate Change, a team of climate science experts from all over the world, predicts a worldwide increase in global temperature of 3.1 to 7.2 degrees Fahrenheit (1.8 to 4.0 degrees Celsius) by the end of the century. It may not sound like a lot, but a few degrees increase in overall global temperature will have dramatic impact not only on Miami-Dade County, but the world, changing our natural environment and the way of life we have come to know. Sea level rise, increasing droughts and floods, warmer temperatures in some places, colder temperatures in others, changing habitats and impacts to the plants and animals that currently inhabit them are a few of the changes we may begin to experience.

The good news is that the magnitude of the changes we will experience in the coming years can be made less severe. The stabilization and reduction of greenhouse gases in the atmosphere is possible through a comprehensive approach and partnership of residents, the private sector, and government to become more energy efficient, to become less wasteful of our resources, and to adopt "greener" and "smart" development practices.

Small changes by Miami-Dade's 2.4 million residents can add up to big reductions in greenhouse gas emissions! But we must act now. Scientists predict that we have a decade or so to make the necessary changes that will lead to a meaningful decrease in the rate of climate warming.

**The good news is that the magnitude of the changes we will experience in the coming years can be made less severe by everyone working together to become more energy efficient, less wasteful of our resources, and adopting "greener" and "smart" development practices.**

#### How is Climate Change likely to impact Miami-Dade County's Communities?

Climate change will impact the quality of life in our communities in many ways. The physical, economic, environmental, and social aspects of communities will change.

Scientists tell us that likely impacts to Miami-Dade County's built environment and community include:

**Sea Level Rise.** The Intergovernmental Panel on Climate Change predicts that, on average, worldwide sea levels will rise between one-half to two feet by 2100. Recent scientific observations indicate that actual sea level rise may be higher and occur more quickly. In Southeast Florida, local factors will affect the rate and impact of sea level rise.

- **Saltwater intrusion into coastal water wells.** Climate change will increase the likelihood of drought conditions and cause sea levels to rise, making it easier for saltwater to seep into coastal water supplies. The 2006-2007 drought has shown the vulnerability of our drinking water sources to saltwater intrusion. As the freshwater barrier that holds the saltwater back from the sea shrank due to drought conditions, several wells in Broward County were closed due to the threat of saltwater intrusion.

- **Coastal properties and infrastructure will be at greater risk to flooding and damage.** With sea level rise, more homes and infrastructure will be in the coastal flood plain, increasing their vulnerability to increased flooding due to storm surge from hurricanes, wind and waves. With increased beach erosion, the natural protective capacity of the coast is diminished, exposing properties to greater damage from storms and waves. In Florida, 79% of properties are in coastal areas. The insured value of coastal properties vulnerable to hurricanes is \$1.937.4 billion.

- **Beach erosion will occur at a faster rate.** In their natural undeveloped condition, Southeast Florida's islands and coastlines have the ability to shift and change in relation to sea level rise, storms and hurricanes. The development of large portions of the coastline and the construction of buildings, roads, and seawalls prevent the natural regeneration of our coastline and lead to beach erosion. Continued development of Miami-Dade County's coastline compounds these effects. With increasing sea levels, coastal erosion will increase, depleting the County's beaches and natural coastal defenses more rapidly. Efforts to replenish the beaches through beach renourishment are currently very costly and complex. Increasing coastal erosion from sea level rise and climate change will make these projects more difficult to complete in the future.



Source: South Florida Water Management District



Source: South Florida Water Management District

**The economic impacts on communities from hurricanes will be more costly.** Increases in coastal insurance rates by private insurance companies to reflect increasing risk to storm surge and coastal erosion are probable. Some insurance companies may withdraw coverage. Additionally, the State would need to spend more to insure homeowners through government programs.

**Additional pressure on regional water supplies.** Under climate change scenarios, there is an increased likelihood of chronic droughts, which will affect the availability of water in Miami-Dade County and South Florida. South Florida's drinking water today comes largely from the Biscayne Aquifer. However, the Biscayne Aquifer must be replenished by waters from the Everglades ecosystem, which may dry out during periods of drought. This makes the County's current and future planning and investment in alternative water supplies even more important.

**Increased Stresses on Drainage Infrastructure.** Precipitation patterns (when and how much rainfall a place receives) are likely to shift under climate change.

Scientists expect that more annual rainfall will fall in heavy rain events, potentially straining Miami-Dade's stormwater and flood control systems.

**Increase in the number, duration and intensity of urban heat waves.** Because the County is highly urbanized, there is a lot of concrete absorbing and radiating heat, and fewer green, open areas to offset sweltering summer temperatures. As summers get hotter due to climate change, the built environment will amplify these effects, unless changes are made. Heat stress is hard on all members of the population, particularly low income, young, and elderly residents.

**Altered distribution of infectious diseases and human exposure to illness.** It is possible that climate change will cause tropical diseases, like malaria, to expand into the southern United States. Additionally, because climate change will increase run-off and pollutant loading into marine water bodies and warm their water temperatures, the growth of toxic organisms and algae that can cause harm to humans may increase. Finally climate change will increase the effects of smog and suspended pollution particles and negatively impact the quality of the air we breathe.

**The good news is that we can all do our part to reduce our carbon emissions.** Proactive planning and preparedness measures can be taken by government, the private sector and citizens to lessen the rate of climate change by cutting carbon emissions and to minimize its impacts. Scientists tell us that if we cut our emissions, we can stabilize levels of carbon in the atmosphere and prevent severe climate and weather shifts from occurring.

### What you and your family can do today to slow climate change

1. Use Fluorescent Light Bulbs: one fluorescent light bulb can last as long as thirteen regular light bulbs, and use only a fraction of the energy.
2. Drive Fuel Efficient Cars: Not only will you save money on gasoline, but you will reduce the level of carbon dioxide emissions from your car and help reduce global warming.
3. Air Dry Dishes: Instead of running the heated drying cycle on your home dishwasher, air drying your plates, bowls, utensils, etc. on a dish rack reduces the amount of energy being consumed.
4. Turn Down Your Hot Water Heater: Reducing the temperature on your hot water to 120 degrees saves energy, and energy-related costs.
5. Wash in Cold Water: If you use the proper detergent, washing in cold water instead of hot can get your clothes just as clean, while using less energy and reducing overall energy demand and costs.
6. Carpool: Carpooling to work or school reduces the number of vehicles on the road, reduces carbon dioxide emissions, and saves gas. An alternative to carpooling is public transportation. Another option is to walk or ride a bicycle if your destination is nearby.
7. Regulate Home Temperature: Setting your home thermostat comfortably low during cooler months and comfortably high during warmer months can greatly reduce energy demand and energy emissions.
8. Only Do Full Loads: Washing only full loads of dishes or clothes reduces the overall number of cycles, thus reducing the overall demand for energy.
9. Consider a Hybrid or Alternative Fuel Vehicle: Hybrids and alternative fuel vehicles are more efficient and require less energy, thus causing less damage to the environment.
10. Finally, Use Renewable Energy Sources: Wind and solar energy sources are becoming more readily available and offer a more efficient means for energy production. Check with your local utility to see if any renewable energy sources are available near you.
11. Use reusable canvas bags instead of paper or plastic bags when shopping.

Sources include: Associated Content - The People's Media Company, 2007



## Positive changes come with small steps!

**Be a steward of your planet today and for future generations to come!** Miami-Dade County and the State of Florida are doing their parts. The County has appointed a Climate Change Advisory Task Force to plan for the future and recommend a climate action plan to the Board of County Commissioners. Florida Governor, Charlie Crist, is committed to addressing this issue at the State level. The Governor recently signed Executive Orders for action at the Climate Change Summit in Miami on July 13, 2007.

#### Useful Websites:

<http://www.myfloridaclimate.com/>

Learn more about Governor Charlie Crist's actions and commitments to address climate change.

<http://www.volunteerflorida.org/>

Join the *Serve to Preserve* initiative and volunteer to help the environment.

<http://www.southfloridaclimatechange.org/>

Learn more about climate change initiatives, actions and events in the Southeast Florida region.

<http://www.energystar.gov/>

Energy Star is a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy that helps Americans save money and protect the environment through energy efficient products and practices.

<http://www.responsiblepurchasing.org/>

Learn more about how you can make your purchases more socially responsible and environmentally sustainable.

<http://www.iclei.org/>

ICLEI—Local Governments for Sustainability is an international association of local governments and national and regional local government organizations that have made a commitment to sustainable

Please contact the South Florida Regional Planning Council with questions and comments related to this fact sheet: [sfadmin@sfrpc.com](mailto:sfadmin@sfrpc.com) or 954-985-4416



This fact sheet and the Climate Change Community Toolbox were made possible with the generous support of the Florida Department of Community Affairs.