



Tackling Climate Change IN Decatur

This Environmental Sustainability Report details the new reality we're in, highlights action the Decatur community is already taking, and offers ways you can get involved.

It's here. Changing growing seasons in your garden. Hotter summers. Prolonged droughts. Higher electricity bills. Aspects of life in Decatur are already under pressure.

Climate change is here. The scientific community agrees that human activity, primarily the burning of fossil fuels, is altering our atmosphere and climate at an unprecedented rate. The news of climate change focuses on western wildfires and melting ice caps. Still, impacts are being felt – and will continue to be felt – here in Decatur.

Human activity drives the changes in our climate. We can also slow, stop and potentially reverse the problems we're creating. Along the way, we can build healthier, more equitable, and more resilient communities. Climate action will help us better handle future pandemics and economic downturns like the ones our nation currently faces.

HOW'S THE CLIMATE OUT THERE?

KNOW THE DISTINCTION BETWEEN WEATHER AND CLIMATE

Weather is the way the atmosphere behaves over short periods of time. Recently (as of April 24) Decatur's weather has been rather windy. Two strong storm events have passed through the area. High daily temperatures have ranged from about 56°F to 78°F. Our climate, though, is the accumulation of all those weather events, daily temperatures, precipitation totals and more, over long periods of time (typically more than 30 years).

When we talk about climate, we're talking about our average weather. Understanding this distinction is key to understanding just how our climate. It helps us anticipate average weather patterns next year and 30 years from now.

LIFE IN THE GREENHOUSE

SLIGHT TEMPERATURE CHANGES MAKE BIG IMPACTS ON OUR CIVILIZATION

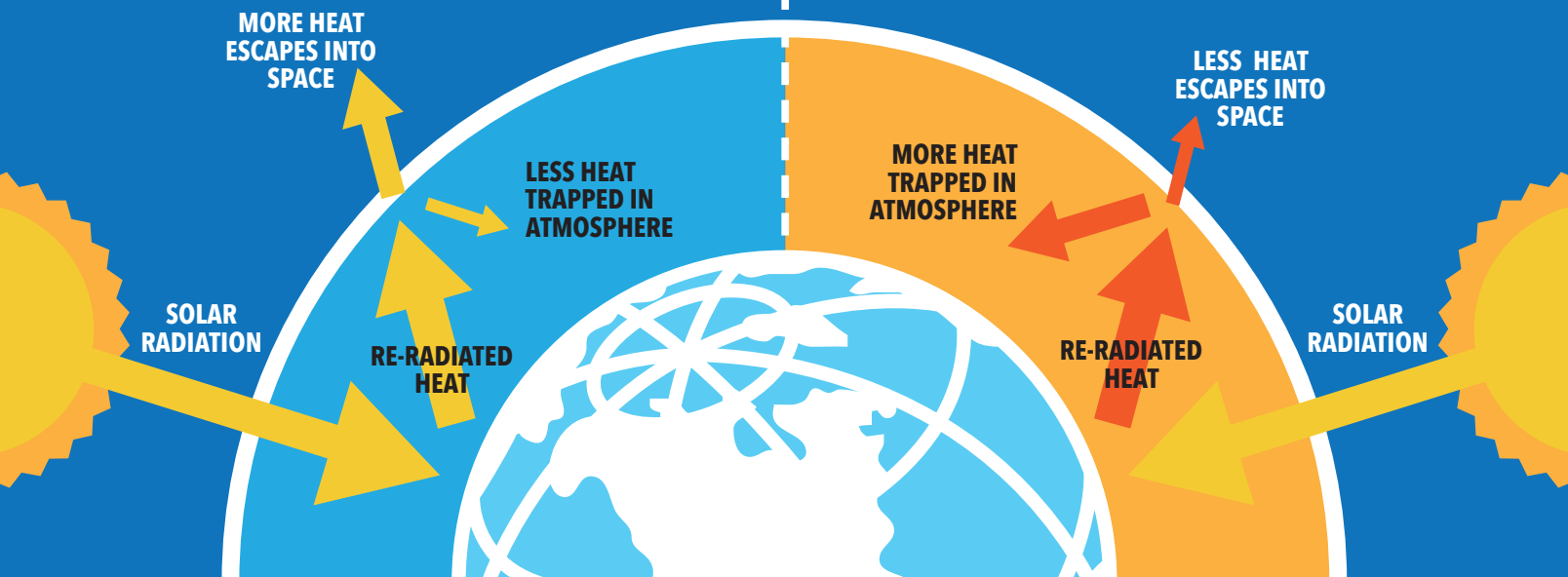
Life on Earth is made possible by the greenhouse effect. Like a blanket trapping your body heat to keep you warm, the greenhouse gases – carbon dioxide, methane, and water vapor – retain solar radiation reflected by the Earth and warm the globe. Without this retained solar energy, it's likely there would be no life on this planet. Human activity, however, has increased the atmospheric concentration of these greenhouse gases to a point where we are changing the Earth's climate on a massive scale.

Carbon dioxide is emitted primarily through the burning of fossil fuels in transportation and electricity generation. CO₂ has reached an atmospheric concentration not seen for hundreds of thousands of years. At 415 ppm (parts per million), atmospheric CO₂ is significantly over the 350 ppm threshold that most scientists agree to be the limit for "normal" climate functioning. These additions of carbon dioxide, methane (which is released largely by agriculture), and the other greenhouse gases have resulted in an estimated warming of 1°C from preindustrial (pre-1800s) levels. While this may not seem like much, even slight changes in average temperatures over long periods of time can have large impacts on human society and our environment.

THE GREENHOUSE EFFECT

Normal CO₂

Rampant CO₂



THROW SOME SHADE – IT’S GETTING HOT IN HERE

CLIMATE CHANGE AND THE URBAN HEAT ISLAND EFFECT

Decatur is going to get warmer. By how much depends on several things, including what we do here at home. Over the past 30 years, Decatur has averaged around 20 days annually with temperatures above 95 degrees Fahrenheit. Projections show that number increasing to around 45 days per year by midcentury (2018 National Climate Assessment). Extreme heat, the leading cause of weather-related death in the United States, is something that has an outsized effect on the most vulnerable among us, from the very young and elderly to those without adequate housing and air conditioning.

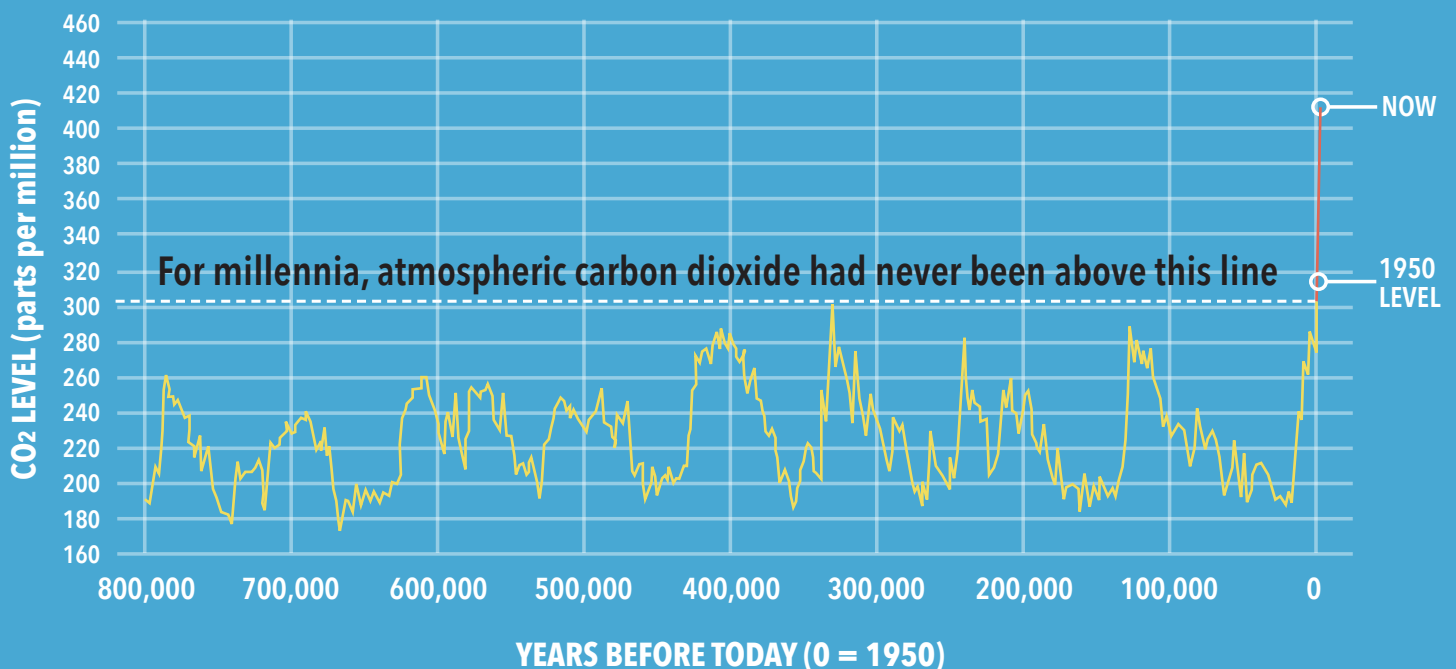
Research shows that developed urban areas can warm at rates two to three times the global average. Why? Think

of stepping outside shoeless onto the pavement during the summer. Dark surfaces like asphalt absorb the solar energy released by the sun and can reach temperatures as much as 50 degrees Fahrenheit higher than that of the surrounding air. At the same time dark surfaces are being added, vegetation is being removed and the ground is being sealed by impervious surface, reducing the cooling effects of evapotranspiration.

This phenomenon is called the Urban Heat Island Effect. Experts like Brian Stone of the Georgia Tech Climate Institute refer to it as local climate change. Cities, which are accumulations of pavement and buildings, absorb solar energy during the day and release it over the late afternoon and early evening. During those times, cities can be up to 10 degrees warmer than surrounding rural areas.

As Decatur warms from both global and the local climate change created by how we develop, the health impacts will multiply. **See the next pages for steps we can take** to reduce our heat island temperature, cool our city, and provide shade.

ATMOSPHERIC CARBON DIOXIDE (CO₂)



NASA, The relentless rise of carbon dioxide”

TREES AND STREAMS OFFSET SWELTERING SUMMER TEMPS

Eighty percent of all Americans live in urban areas. As density increases, so do impervious surfaces – more streets, parking lots, rooftops and driveways – causing drainage problems to intensify. While many cities treat runoff with conventional piping, stream

channelization, and storage basins, others – including Decatur – are creating green drainage systems to manage stormwater more efficiently. This prevents flooding, improves water quality, and reduces the heat island effect on city temperatures.

Last year was the hottest on record for Georgia and this year is already on course to bring even greater sweltering temperatures.. Studies suggest that a well-vegetated stream buffer can reduce temperatures up to 10 degrees during hot summer days.



“ The shade of a single tree can provide welcome relief from the hot summer sun. But when that single tree is part of a small forest, it creates a profound cooling effect.”

— *Proceedings of the National Academy of Sciences, March 25, 2019*

CREATE A THERMAL REFUGE IN YOUR OWN BACKYARD

With more than 80 percent of trees and streams in private ownership in Decatur, many residents can create “thermal refuges” in their own backyards. A natural stream connected

to its floodplain slows down water flow to reduce erosion; allows water to percolate into the ground; and provides habitats for wildlife, including birds, bees, amphibians, and fish.

If every Decatur landowner whose property includes a natural stream plants and maintains trees along the stream corridor, they help create a linear urban forest with a cooler

microclimate. They also help our city maintain its 40 percent tree canopy target.

Additional measures a homeowner can take for a “cooler” summer include installing rain gardens and/or green roofs, and planting more shrubs, trees, and under-story vegetation. Visit www.sustainableprinceton.org/yard for more information.

Think Outside that Little Box

TACKLE CLIMATE CHANGE AT THE ELECTRIC METER

As Decatur residents look for ways to reduce our individual carbon footprints, one place to begin is at the little box on the side of our homes. It measures how much electricity we consume each

day. Electricity usage matters because power generation accounts for roughly a third of our economy's total greenhouse gas emissions each year (Source: EIA). Below, see several ways Decatur residents can tackle climate change at the electric meter.

How is our electricity produced? Here in Decatur, Georgia Power supplies

electricity from a mix of resources, including company-owned power plants, power purchased from other producers, and demand-side management programs. As the figure on the next page shows, natural gas and coal account for about 70 percent of the energy resources we use. Carbon-free renewable energy such as solar power

[more](#) ▶

ROOFTOP SOLAR PANELS

Imagine producing your own carbon-free electricity, while saving money on your monthly power bill. You can, thanks to important policy changes at the state level that have spurred the rapid growth of Georgia's solar industry and lowered panel and installation costs. Georgia Power also has programs that compensate homeowners for excess solar power sent to the electric grid. Homeowners can purchase rooftop solar systems as a group through Solarize Decatur-DeKalb 2.0, reducing installation costs and speeding up the permitting process. See page 7 for more information.



COMMUNITY SOLAR

Interested in solar power, but unable to install your own rooftop system? Subscription-based community solar programs provide shares for purchase of the electricity produced from a local solar project at a fixed monthly fee. This share then appears on your monthly power bill as a credit against your electricity consumption. Community solar programs are a great way to support local renewable energy development while also reducing your carbon footprint.



RENEWABLE ENERGY CERTIFICATES (RECS)

A REC supports investment in renewable energy projects by selling credits based on units of electricity produced by wind farms, solar installations, or other clean energy projects. RECs are bought and sold separate from the electricity itself, so you can claim credit for this green energy even if you buy electricity from local utilities. Large companies rely on RECs as a practical and cost-effective strategy to meet their clean energy goals. Decatur residents can purchase RECs through the Georgia Power Simple Solar program that matches up to 100 percent of your monthly electricity usage with REC purchases from solar projects around the state. Another option is to contract with third parties such as Arcadia that match monthly energy usage with REC purchases from wind farms around the country.

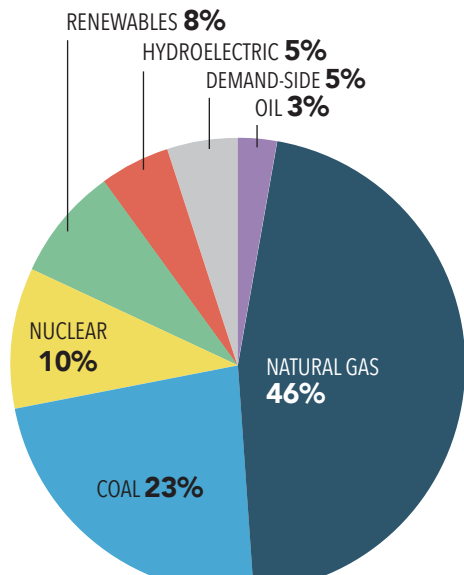


ENERGY EFFICIENCY

The cheapest and most effective ways to reduce your electricity usage are in your hands: home weatherization projects; switching to LED lightbulbs; heating and cooling system maintenance; replacing old appliances with Energy Star appliances; and programmable thermostats. A home energy audit can help you identify the best opportunities for cost and energy savings. Check out Georgia Power's Home Energy Improvement Plan, which offers a range of rebates and other incentives for qualified efficiency measures.



Tackle Climate Change at the Electric Meter *continued*



DECATUR'S ENERGY MIX

If you'd like this mix to be different, let your Public Service Commissioners know, and vote for the Public Service Commissioner who represents your values. Source: Georgia Power 2019 Integrated Resource Plan. Note: This figure represents the estimated total capacity of all energy resources available to serve Georgia Power's retail customers during Summer 2019

accounts for only 8 percent of this resource mix.

Georgia Power has taken significant steps forward including the retirement of some coal-fired power plants, the conversion of other coal-fired plants to run on less carbon-intensive natural gas, and growing support for new solar power projects around the state. Looking ahead, Georgia Power plans for continued investment in solar power and other renewable resources, more coal plant retirements, and the completion of two low-carbon nuclear reactors.

Yes, these measures will help reduce our carbon footprints. But the sad reality is that we need to do more, and quickly, to decarbonize our economy enough to avoid the worst impacts of climate change.

The scale of this challenge requires bold action at the federal and state levels. What we do locally matters as well.

CLIMATE ACTION

Climate action generally falls into two complementary categories.

MITIGATION efforts reduce or eliminate the greenhouse gas emissions that cause climate change.

ADAPTATION efforts help prepare communities for the climate impacts that are coming.

The City of Decatur is already acting on both fronts to tackle the climate crisis, and its actions show how Decatur residents can get involved.

City of Decatur Actions

- **High Performance Building Standard** – approved in 2014, this ordinance requires all new and substantially renovated buildings to achieve green building certification, improving their energy efficiency and reducing their GHG emissions
- **Promoting Alternative Transportation** – Decatur supports walking, biking, and public transportation to reduce transportation-related GHG emissions
- **Public Greenspaces and Green Infrastructure** – Decatur owns and supports a number of greenspaces in the city, helping reduce our Urban Heat Island Effect, improving our air quality, and reducing the impacts of flooding

TAKE ACTION

Make your values known to your Public Service Commissioners

Get a home energy audit to save energy and money

Eat local and organic when possible, **reduce food waste**, and compost to reduce warming methane emissions (see page 4)

Create a climate-friendly yard with natives species and green infrastructure (see page 4)

Remove English ivy and other invasive species to keep our tree canopy functioning well

Buy an electric vehicle and receive a federal tax credit

Purchase solar for your home and receive a federal tax credit

Work with businesses and schools to increase energy efficiency and solar power

Offset with RECs (see page 5)

See more examples at drawdown.org

FROM A LOCAL: A BUNGALOW STORY

Renovation Results in Dramatic Heating and Cooling Efficiencies

In 2007, we decided to renovate our small two-bedroom one-bath 1920s bungalow in Decatur by opening up the kitchen and adding a second bathroom and a screened porch. At the same time, we planned to do several energy-efficiency upgrades. The two main upgrades were sealing and insulating the house better and upgrading the HVAC system to a newer higher-efficiency unit.



Sealing-and-insulation is the low hanging fruit of efficiency upgrades. We selected Bird Family Insulation to do the sealing and insulation work. First we needed to get a baseline for our house by doing a blower door test. This procedure involves installing a large fan in an exterior door opening and blowing air out of the house to create negative pressure inside the house. This allows leaks to be detected in the house by using a smoke pencil and

measuring the negative pressure inside the house.

This was quite a wake up call. Our house was very leaky. The team running the test joked that “living in our house was not much different from living outside it was so leaky.” The insulation team proceeded to seal the many leaks in our house, upgrade the cellulose ceiling insulation to

R-30 and added R-19 closed cell foam under the floor.

The closed cell foam under the floor seemed to make the biggest difference. The floor felt much warmer during the winter and kept out odors and humidity from the crawl space.

Next we upgraded the HVAC to a high efficiency 96 percent gas heater (in retrospect, I would install a heat pump for the higher efficiency) and an 18 SEER AC unit with all new ductwork. The post-sealing blower door test showed we’d sealed the leaks and

also tested out the air sealing on the new HVAC. We passed the test with flying colors. Our power bill went from \$250+ during the summer to around \$100 a month currently and about the same with our gas bill during the winter. Money well spent and completely recouped by now!

– Greg Coleson

SOLARIZE DECATUR-DEKALB REBOOTS

Improved technologies, new products, lower costs

Solarize Decatur-DeKalb is back to give the residents of Decatur and DeKalb County another chance to leverage the power of group purchasing to save on the cost of solar energy and other clean energy technologies.

This new program features exciting new solar technologies and clean energy products at lower costs than before, including modern, high-efficiency solar panels, battery storage systems such as the Tesla Powerwall, and EV charging stations for homes and businesses for decarbonizing your commute.

The more homes and businesses that sign up for solar, the less the solar costs. You can sign up for the community solar discount and still claim the federal tax credit for the solar installation. For more details and a free solar assessment go to solarcrowdsource.com/campaign/decatur-dekalb-2-0.



Join with the community to get low-cost solar for your home

ENERGY EFFICIENCY UPGRADES ON DECATUR HOME INCLUDE **SOLAR PANELS**



My family bought our home in 2012. Even though it was built in 2008, the main level's wood floor had to be replaced. Rather than ripping it out and throwing it away, we deconstructed it and donated it to an event space where the wood had a new life as a dance floor. In its place, we installed salvaged wood from a decommissioned bourbon distillery.

We switched all of the incandescent light bulbs to CFL and we saw immediate electric bill savings. When LED prices fell, we switched again. We then performed energy efficiency upgrades such as caulking leaks and installing more attic insulation. To our surprise, our efficiency improvements resulted in a rebate from Georgia Power.

From 2010 to 2018, I worked at Southface Institute, an Atlanta-based non-profit that promotes sustainable homes,

workplaces, and communities. I was therefore aware of Solarize campaigns. When Solarize Decatur-DeKalb launched in 2016, I jumped at the opportunity to serve on the organizing committee.

The Solarize Decatur-DeKalb campaign was a rewarding experience for committee members. Those who purchased solar systems held open houses. This neighbor-talking-to-neighbor approach allowed for people to get answers from owners instead of salespersons.

When folks asked me about the payback, my response was simple: it was immediate. We wanted solar panels for environmental considerations not monetary savings. We paid for the solar system by delaying a new car purchase. Four years later, I am still driving my 2008 Prius. That was the trade-off we made and we do not regret it for a moment.

I now have the honor of serving as the director for the Kendeda Building for Innovative Sustainable Design at Georgia Tech (livingbuilding.gatech.edu). The Kendeda Building is pursuing the Living Building Challenge – the world's most ambitious building performance standard. The building is on track to generate more solar electricity each year than it consumes.

The project's goal is to transform the built environment in the Southeast by advancing regenerative building and innovation. But it takes more than just one amazing building to change attitudes and misconceptions. We need more building owners across this region to incorporate salvaged materials, conserve water and energy, and install onsite renewable energy.

— Shan Arora

ABOUT THE ENVIRONMENTAL SUSTAINABILITY BOARD

The City of Decatur Environmental Sustainability Board was established to provide recommendations to the City Commission regarding the city's environmental regulations, plans, and initiatives as well as assisting with implementation of city projects that impact the natural environment to protect and improve the quality of life for citizens and property owners in the City of Decatur. This board assumed the duties of the Waste Management Advisory Board and the Greenspace Commission as well as fulfills the requirements for a Stormwater Management Advisory Board.

Please contact David Nifong at david.nifong@decaturga.com for more information regarding appointments to the Environmental Sustainability Board or participation on ESB-related committees.

BOARD RESPONSIBILITIES

- Assist city staff with development and implementation of an environmental sustainability plan
- Provide recommendations regarding implementation of the City's urban tree management plan and plan for tree bank funds
- Provide recommendations in all subject areas of environmental sustainability
- Assist city staff with implementation of environmental program objectives and activities
- Assist city staff with environmental public education and outreach
- Provide recommendations for internal program evaluation and reporting, and assist city staff in reporting to the City Commission



decaturga.com/bc-esb