

CARBON CITY

NYC wants to cut all greenhouse gas emissions 80% by the year 2050.

What are greenhouse gases? Why should we cut them and what will it take?

In the fall of 2017, CUP collaborated with Teaching Artist Douglas Paulson and Sara Smithback's Chemistry classes at the International High School for Health Sciences in Elmhurst, Queens to find out what greenhouse gases are, where they come from, and how they affect us.

To investigate, students participated in a scavenger hunt to examine the neighborhood's carbon footprint, surveyed community members about climate change, and interviewed Rolando Guzman from St. Nick's Alliance and Ross MacWhinney from the Mayor's Office of Sustainability.

Students collaborated on this set of postcards to teach others about greenhouse gases, how they contribute to global climate change, and what we can do about it!



The Center for Urban Pedagogy (CUP) is a nonprofit organization that uses the power of design and art to increase meaningful civic engagement, particularly among historically underrepresented communities.

City Studies are CUP's project-based, in-class and afterschool programs that use design and art as tools to research the city. To learn more about CUP, visit welcometoCUP.org

Teaching Artist: Douglas Paulson
Project Lead: Fielding Hong
Project Support: Frampton Tolbert, Jennifer Anne Williams

Thanks to our interviewees: Rolando Guzman and Ross MacWhinney

Special thanks to: Irina Vinnitskaya

The International High School for Health Sciences helps new non-English speaking immigrant students acquire English language skills and develop the determination, compassion and discipline for successful college study in medicine, nursing, health counseling, research or in the administration of health care services. To learn more, visit: ihhealthsciences.org

Principal: Anthony Finney
Classroom Teacher: Sara Smithback

Students:

| | | | |
|--------------------|------------------|--------------------|------------------|
| Allan Acosta | Michelle Cordero | Valentina Perafan | Mayra Torok |
| Nick Berestko | Xenia Dominguez | Henry Siguencia | Suany Acosta |
| Rachel Carreon | Carlos Flores | Jennifer Urgilez | Joceline Cuzco |
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| Chelsey Guzman | Sonam Khangsam | Sharmin Akter | Yairis Gil |
| Carla Marie Medina | Samia Moin | Ahlam Alzokari | Doston Khasanov |
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| Sara Mesa | Shadia Nur | Treisy Dotel | Claudia Milian |
| Lupe Morales | Ovi Sarkar | Camila Encarnacion | Lisette Rivera |
| Jesus Moreno | Rosemary Alejo | Anyhara Garcia | Diana Rocano |
| Marzea Mukarrama | Arlette Balbuena | Julieth Henao | Arleny Rodriguez |
| Bryan Paca | Parag Barua | Sanjita Laky | Anastasia |
| AnnJaelle Peters | Milena Berestko | Yuhe Lin | Sozdateleva |
| Yarileidy Santiago | Anne Bien Aime | Karla Olivo | Dawa Tsering |
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| Laura Arias | Adrian Gomez | Wailyn Perez | |
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NYC Cultural Affairs

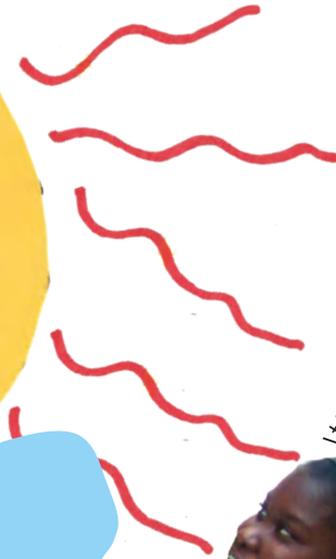


Council on the Arts

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WHAT ARE GREENHOUSE GASES?

We burn fossil fuels (coal, natural gas, and oil) to make electricity, run vehicles, and produce food. These activities also produce gas, some of which goes into our atmosphere where they hold the heat that would normally move away from the Earth. These are **greenhouse gases**.

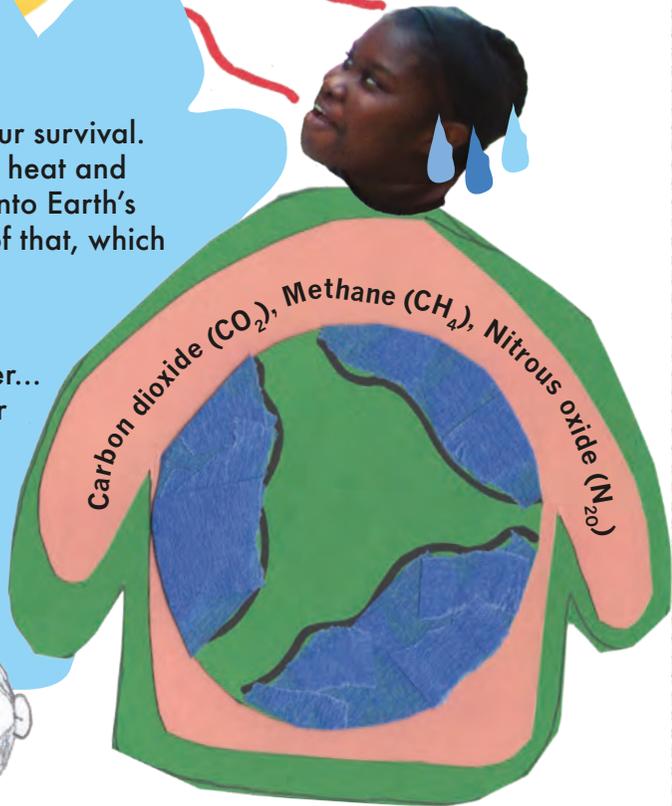


It's getting hot in here!

"The atmosphere is critical to our survival. It acts like a sweater. It allows heat and energy from the sun to come into Earth's surface and then traps some of that, which keeps us warm.

[Human-made] greenhouse gases make that effect stronger... Putting on a thicker sweater or coat on top of the sweater makes the whole planet store more energy coming from the Sun."

—Ross MacWhinney,
Senior Policy Advisor
to the Mayor's Office
of Sustainability





WHAT'S CLIMATE CHANGE?



Human-made greenhouse gases that are trapped in the atmosphere are changing Earth's climate. Over the past 50 years, the average global temperature has increased at the fastest rate in recorded history. Scientists believe this trend is accelerating!

Rising temperatures have different effects in different places. Warmer air holds more water vapor. This can lead to heavier rains, snowfalls, and hurricanes. Places near the coast, like NYC, may get more flooding and severe storms. Other places may have severe droughts. These effects can force people to move to other cities or countries.



WHAT'S A CARBON FOOTPRINT?

From electricity to hamburgers, almost everything we consume, buy, and use has a **carbon footprint**. It's a measurement of each activity's greenhouse gas emissions, telling us how much something affects climate change. We don't usually see the greenhouse gas emissions that come from making and transporting all the things we use and eat everyday.

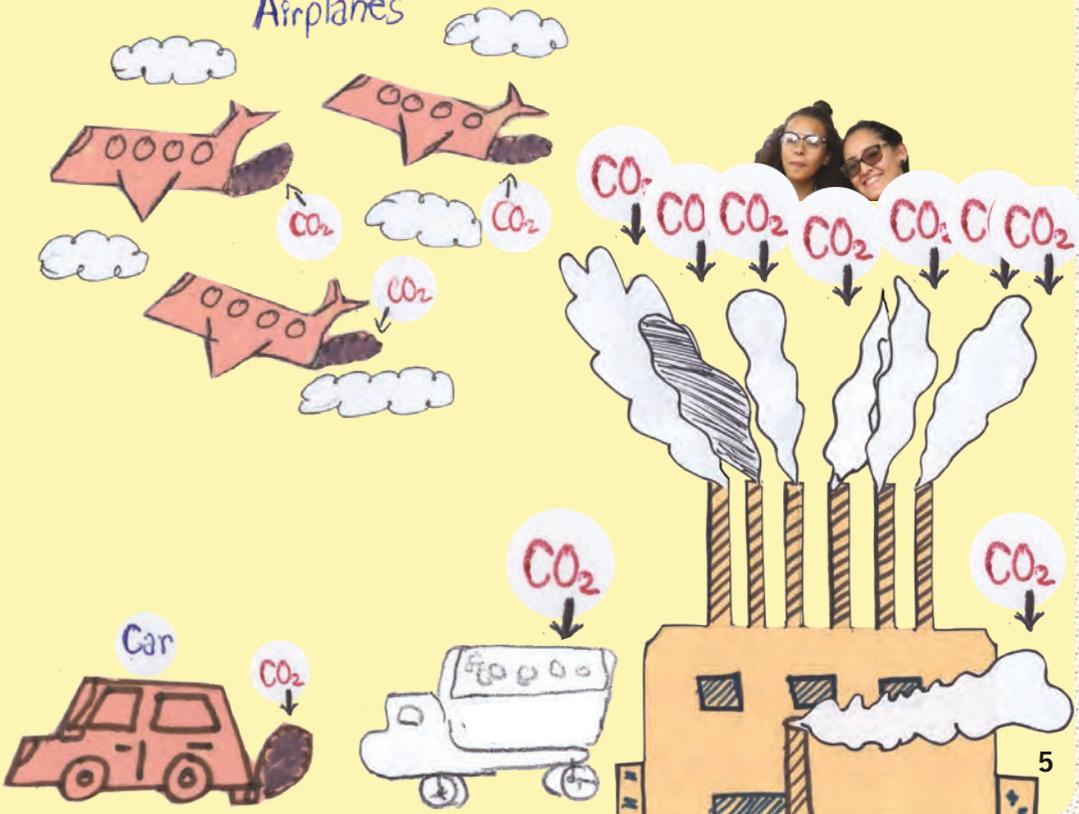
What's carbon footprint?

Carbon footprint is the amount of carbon dioxide we produce.

So, what's carbon dioxide (CO₂)?

This.

Airplanes



HOW CAN I SHRINK MY CARBON FOOTPRINT?

When we use less electricity, buy fewer factory-produced goods, and reuse things more, we decrease our carbon footprint. Buying food that is grown locally means less gas was used to bring it to you. Buying things that have less packaging means less plastic gets produced, also decreasing our carbon footprint.

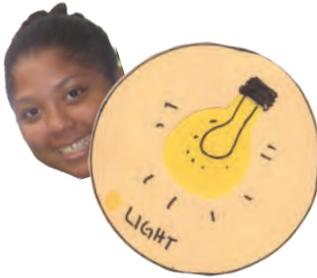
Use a Bike instead of using a car which produces CO₂

Walk instead of using car and increasing CO₂



Walk, bike, or take public transportation.

Turn off lights and electronics when not using them.



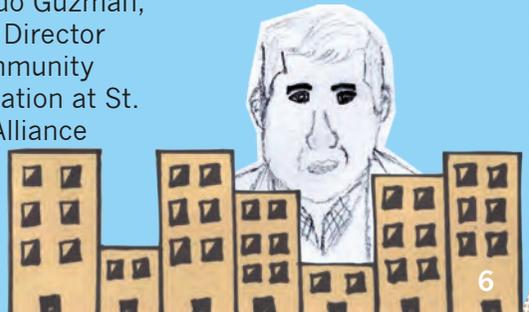
Reduce how much waste we create. Recycle or compost the waste we do create. Find ways to repurpose things we no longer need.



IS IT JUST UP TO ME?

"I think [dealing with] global warming is two pronged. One is reviewing our practices as individuals, but at the same time we need to ask for change and hold accountable the people who represent us... We have different structures of government and each structure also has to be responsible and be part of the solution. Because there is up to a point that you and I can recycle a can of soda or we can unplug our TV when we're not using it."

—Rolando Guzman,
Deputy Director
for Community
Preservation at St.
Nick's Alliance



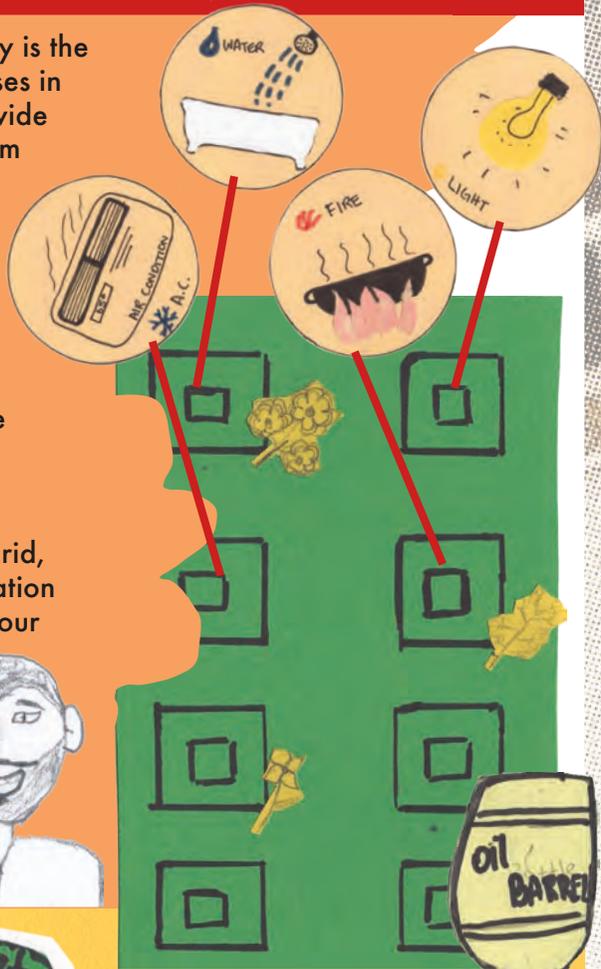
WHAT'S NYC'S CARBON FOOTPRINT?

"The building sector in New York City is the main contributor to greenhouse gases in the five boroughs. 72% of our citywide greenhouse gas emissions come from buildings. A little over 20% come from transportation. Somewhere around 5% come from the carting and disposal of waste.

There are about a million buildings in the city... Half of the greenhouse gas emissions [from buildings] come from the largest 30,000 to 40,000 of them.

Electricity comes from the electric grid, which is a network of power generation facilities. In New York City most of our power generation comes from natural gas combustion and from nuclear power."

—Ross MacWhinney



NYC GREENHOUSE GAS EMISSIONS:
5% Waste Disposal
23% Transportation
72% Buildings



HOW CAN NYC SHRINK ITS CARBON FOOTPRINT?

"Almost all the power that we would be using would come from renewable sources like solar or wind or hydro and next to none would come from fossil fuels..."



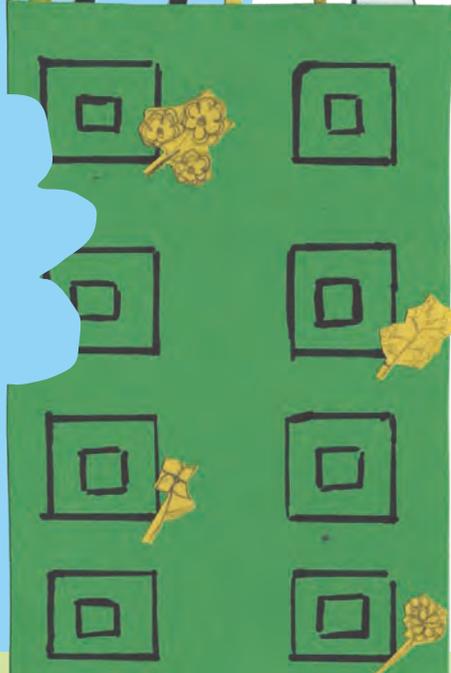
Every new building that would be built would be built to a very high standard of efficiency meaning that when you heat the building, it doesn't just seep out through the windows or through cracks in the winter, or when you cool it in the summer it doesn't let heat in. We want a very tight building, like a thermos."



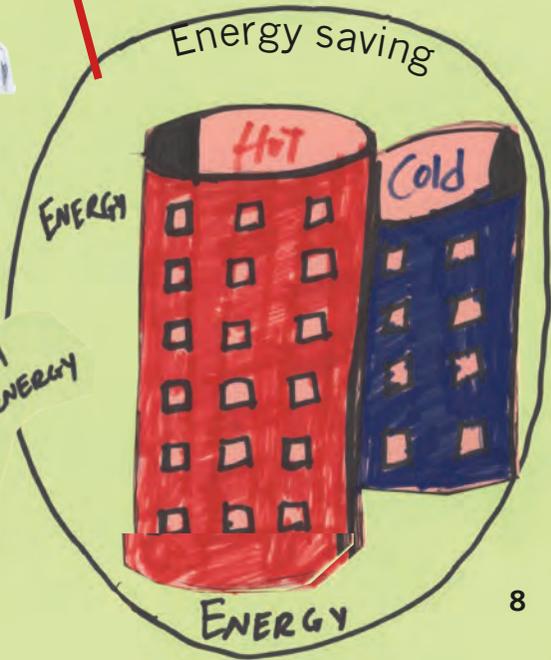
—Ross MacWhinney

"Green roofs are a great way to keep buildings insulated, to save energy, and to have more greenery in our communities."

—Rolando Guzman



Energy saving



Energy escaping



WHAT AFFECTS A NEIGHBORHOOD'S CARBON FOOTPRINT?

GREEN SPACE

Trees and other plants convert carbon dioxide into oxygen and clean the air. They also provide shade and keep things cooler in the summer reducing how much electricity we use for air conditioners.



TRAFFIC

Cars and trucks burn fossil fuels, producing greenhouse gas emissions. High traffic and congested areas have big carbon footprints.

PUBLIC TRANSPORTATION

Making it easier for people to take public transportation, bike, and walk places means fewer cars, reducing the neighborhood's carbon footprint.



CONCRETE AND ASPHALT

A lot of buildings are made with concrete and city streets are paved with asphalt. Five percent of global CO₂ emissions come from producing concrete and asphalt. They also absorb heat, making the city hotter. This causes people to use electricity for air conditioning, especially in older buildings that have inefficient windows and insulation.

WHAT ARE THE CHALLENGES TO CHANGE?

IT'S A BIG JOB!

"About 90% of the buildings that are here now will still be standing in 2050... We have to go to the building owners and have a way to convince or compel them to take on all this work and the work is not cheap.



IT'S EXPENSIVE!

We already live in a city that is expensive to live in. Rent is high and we can't allow our goals of cutting emissions 80% by 2050 become in opposition with the goal of maintaining affordable housing.

HOWEVER...

You do need money upfront to put [environmentally efficient] technology into place, but over time it means that you'll be using less electricity so you'll be saving money."

—Ross MacWhinney



EVERYBODY SHOULD HAVE A SAY!

"One of the biggest things that should be taken into consideration [when making] regulations or laws is what is right [and] just for the majority of the people rather than the interests of maybe one company or one group of people."

—Rolando Guzman



HOW CAN WE CHANGE THINGS?

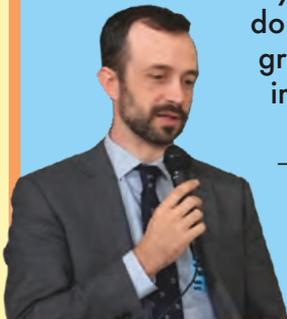
"[We need to educate] our community members about our role in [climate change], how to be aware of energy consumption, how to save water, how to recycle more...But at the same time, we are not the ones who are making decisions. Sometimes there are other people or companies who are making decisions about things that affect us...That is when we bring people from the community [together] to discuss what is happening and then we start to figure out who has the power to change that? Who is the person, entity, or government official that can change something and that's when we educate ourselves and our community members and we try to make change."

—Rolando Guzman



"Making the sort of cuts in greenhouse gas emissions that need to be made won't just come from individual actions [alone]. It has to come from having governments and other entities that control the power grid, the transportation infrastructure, the way we handle waste carting and others to do things in a systematic way that will reduce greenhouse gas emissions. Individual action is important, but it can't be the only thing."

—Ross MacWhinney



COMMUNITY POWERED CHANGE!

There are many ways to make change in your community! If you want to see more green space, public transportation improvements, and energy efficient buildings in your neighborhood, you can:

- Connect with community organizations to spread awareness about climate change and its impact on your neighborhood. Check out St. Nick's Alliance: stnicksalliance.org
- Contact elected officials, like your City Council Member. Ask how your community can shrink its carbon footprint. Find out who represents your neighborhood: council.nyc.gov
- Join a climate justice club at school or start your own!

"The ability of a society to thrive and then for an economy to thrive, all of those depend on an environment that can thrive."
—Ross MacWhinney