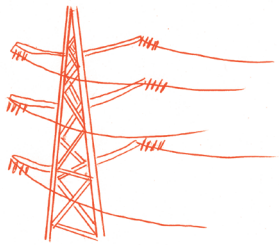
POWER TRIP

YOU & YOUR ELECTRICITY!



THE CENTER FOR URBAN PEDAGOGY

WHAT IS THIS BOOKLET ABOUT?

Where does New York City's electricity come from? In 2011, the Center for Urban Pedagogy (CUP) worked with public high school students to trace our electricity from the outlet back to its sources. We interviewed engineers, operations managers, and advocates. We visited local utility company headquarters, an upstate transmission monitoring center, and plenty of power plants—from Astoria to Co-op City. We've created this booklet to break down what we learned along the Power Trip.

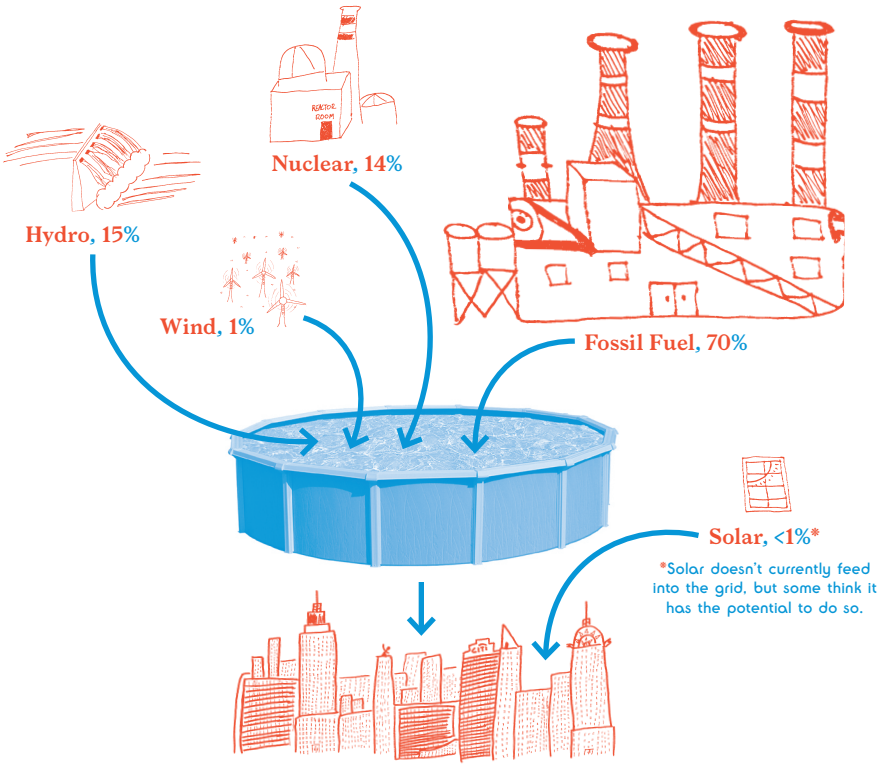
WHERE DOES YOUR ELECTRICITY COME FROM?

"ZEUS?" —Hubert

"CON ED?" —Stranger

"OUTLET?" —BinHua

WHERE IS NYC's ENERGY COMING FROM?



Fossil fuels like coal, oil, and natural gas are not renewable. That means there's a finite supply of them in the world. They also have serious impacts on the environment. Renewable sources, like wind, solar, and tides, are infinite. We can't use them up.

WHAT IF I WANT TO USE MORE RENEWABLE ENERGY?

Energy is produced at power plants. All the energy they produce gets pooled together and distributed through the grid by your local utility company through wires and pipes.

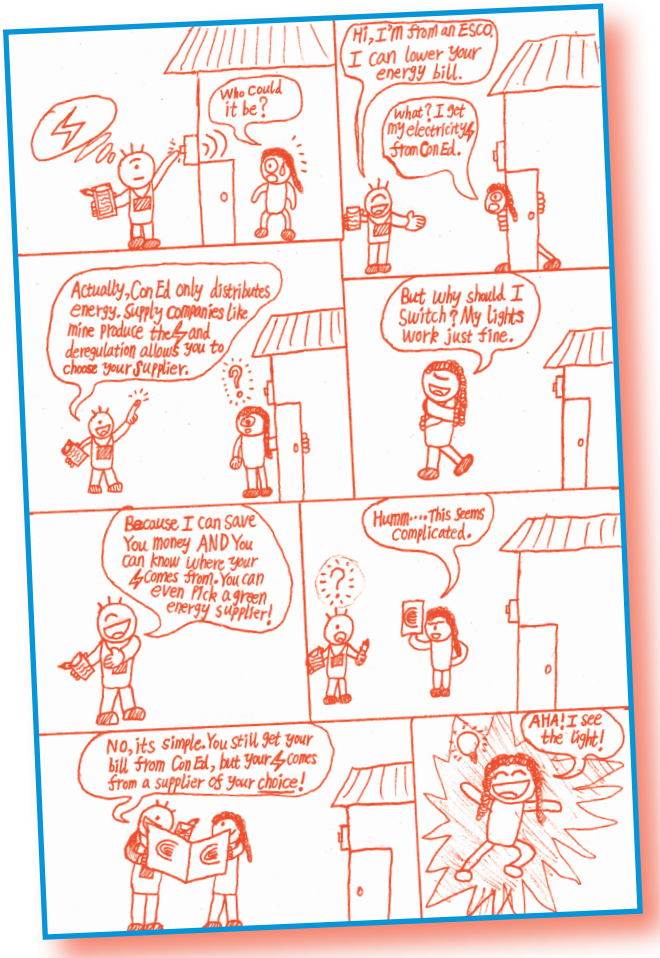
" If you picture the grid as a big swimming pool, generators are just dumping in water at this end and Con Ed is taking water out at the other end. There's no direct pour from the wind to Con Ed. "

—Ken Klapp, NYISO

There's no way for you to pick one power plant to get your energy from, but what you can do is choose a supplier that supports renewable sources, like hydropower and wind.

(Turn the page to find out more...)

DO I GET TO CHOOSE WHERE MY ⚡ COMES FROM?



An Energy Supply Company (or ESCO) buys the energy from the power plants and uses the wires and pipes owned by your local utility company to get it to you. If you decide to buy directly from an ESCO, you can choose the kinds of generators you'd like to support. You pay the ESCOs for your electricity either directly, or by paying your utility company, who then pays the ESCO.

WHY ARE THERE SO MANY SUPPLIERS TO CHOOSE FROM?

WHY ISN'T IT ALL JUST THROUGH A UTILITY COMPANY, LIKE CON EDISON ?

In 1997, New York State deregulated its electric system. Before then, there was just one public utility company generating the energy and distributing it, and government control over what they could and couldn't do. With deregulation, Con Edison got out of the generation business and became primarily a distribution company. In the new market-based system, many generators and supply companies have taken over the roles Con Edison used to have.

" Deregulation basically allowed utilities to opt out of a monopoly. With deregulation, if I feel that a power plant up in Vermont is beneficial to the environment, I can support that and buy my electricity from there. "

—Dave Stone,
Co-Op City Power
Plant

Some people hoped deregulation would drive down prices since there would be more companies competing with each other. Other people worried the government would not be able to have a say in how business was done.

" Deregulation is good and bad I think. It allows people who want to create an energy facility, like a wind farm, to produce it and then actually sell it to other people. It opens a possibility for people to participate. The negative is that people can get away with a lot more. So utility companies could increase rates and the government can't really say anything about it. "

—Anthony Giancatarino,
Center for
Social Inclusion

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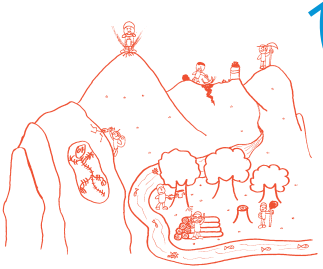
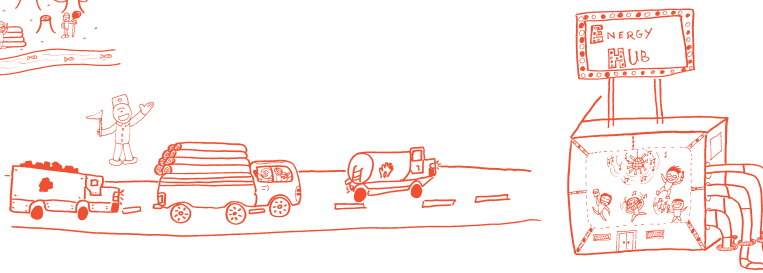
NYISO

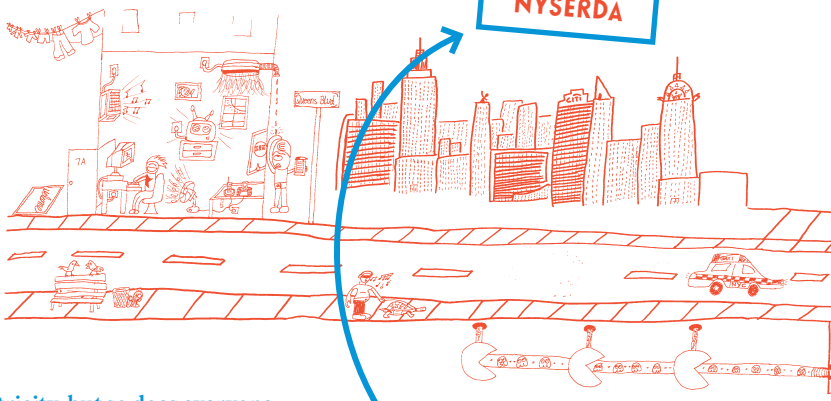


The **NEW YORK STATE INDEPENDENT SYSTEM OPERATOR (NYISO)** monitors the generation and transmission of electricity throughout New York State. They operate the grid and the wholesale energy market where power is bought and sold.



You!

NYSERDA

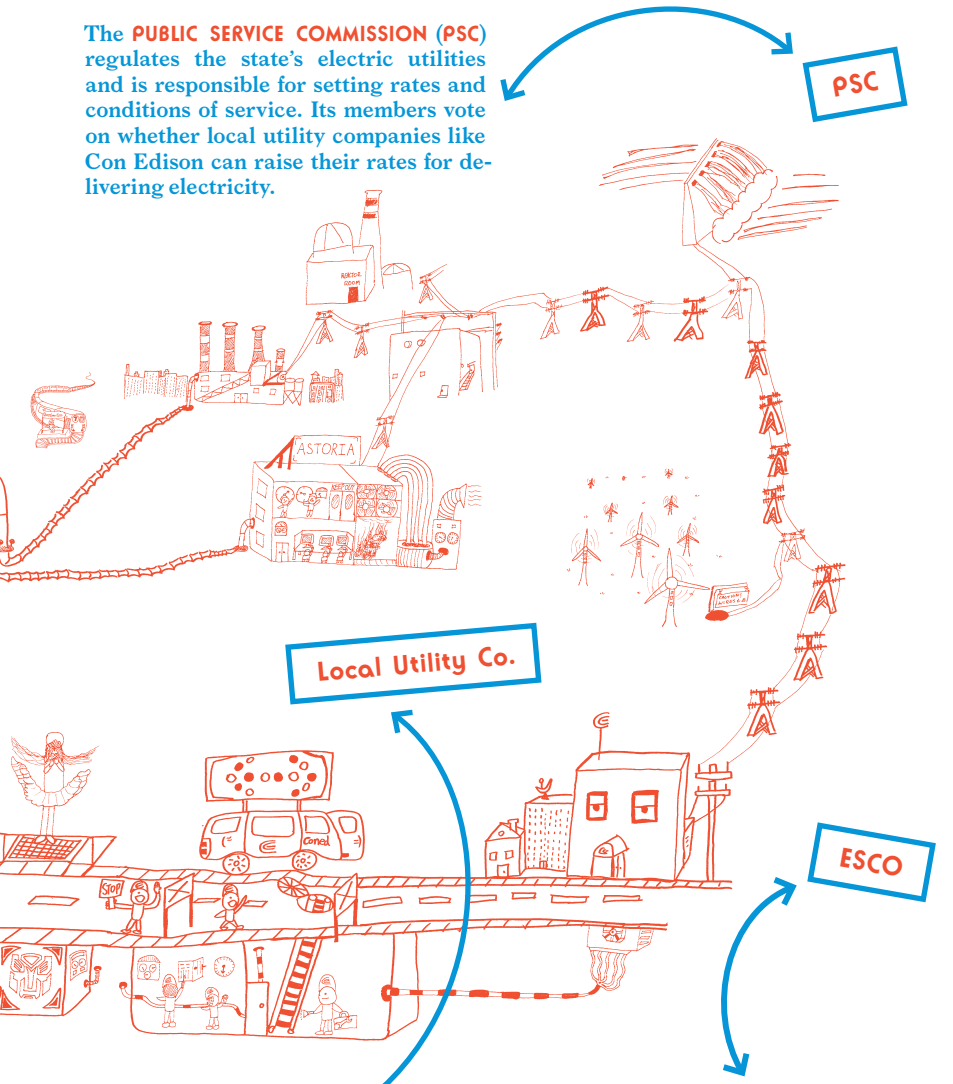


YOU use electricity, but so does everyone else in NYC! You can choose how much electricity you use, and that impacts the amount of energy that needs to be produced in the first place. You can also choose your Energy Supply Company, or you can look into solar power for your home or community.

The **NEW YORK STATE ENERGY RESEARCH & DEVELOPMENT AUTHORITY (NYSERDA)** researches and funds projects to reduce New York's energy consumption. They can help you reduce the cost of bringing solar power to your home. They are mostly funded through the Systems Benefits Charge on your electricity bill.

AYERS!

The **PUBLIC SERVICE COMMISSION (PSC)** regulates the state's electric utilities and is responsible for setting rates and conditions of service. Its members vote on whether local utility companies like Con Edison can raise their rates for delivering electricity.



LOCAL UTILITY COMPANIES own the wires and pipes that transport energy to you. They control the distribution of electricity. They're responsible for building and maintaining distribution infrastructure. You don't get to pick your local utility company; you are assigned one based on where you live.

ENERGY SUPPLY COMPANIES (ESCOs) buy the energy from the power plants and use the wires and pipes owned by your local utility company to get it to you.

WHAT DETERMINES THE P

THE PRICE OF ELECTRICITY CHANGES ALL THE TIME, AND DEPENDS ON LOTS OF FACTORS.

CONSUMPTION

If you reduce your energy use, you'll save money on energy.

TYPE OF ELECTRICITY

We get electricity from different power plants that produce energy in different ways. Some ways are more expensive than others. Nuclear energy is cheaper than gas or oil. Hydropower and wind energy are also inexpensive to produce. Fossil fuels are the most expensive to produce. But the cost of producing the energy isn't the only thing that determines how much it costs you. Transmission, infrastructure costs, and storage costs can make something like wind more expensive than fossil fuels.

" The price of electricity in NY is really contingent on the prices of oil and gas. If oil and gas prices are high, wholesale electric prices are high. If oil and gas prices drop, wholesale electric prices drop. "

—Ken Klapp, NYISO

The farther away a power source is, the more expensive it is to bring to NYC. So electricity prices are lower for people who live close to cheaper energy sources. Hydro and wind sources are far upstate and it's expensive to transport the electricity down to NYC. Because of its location, NYC gets most of its electricity from gas and oil plants in the city.

RICE OF MY ELECTRICITY?

THE ENERGY MARKET

ESCOs and utility companies buy energy on a market, which is run by The New York Independent System Operator (NYISO). Energy is purchased from power plants through a day-ahead market and a real-time market. It's cheaper to buy energy in the day-ahead market, but, on unexpectedly hot days, there's more demand. In those cases, energy needs to be bought in real time, so there's less choice of energy sources and it's pricier.

SEASON

In the summer and winter when temperatures become extreme, you consume more energy through air conditioning and heating. This increased demand drives up the price of electricity.

TIME OF THE DAY

Electricity also costs more in the peak hours during the day. Fewer people are using electricity at night, which means prices drop because demand drops. Sometimes, demand is so low that power plants actually lose money during that time!

" Everyone wants energy during 9 to 5. So that's when energy costs the most. So if you can use solar to use energy during that time you can decrease the reliance on coal power plants. "

—Anthony Giancatarino, Center for Social Inclusion

" If you run your hot water heater only at off-peak hours, it saves suppliers a lot of money, and then they can pass savings to you. But all these old meters aren't intelligent enough to know what time you use electricity. Only smart meters can tell you exactly what time you used it. "

—Brian Heinbaugh, Astoria Energy

WHAT'S GOING ON IN

1. YOUR ELECTRICITY USE

This is how many kWh* (kilowatt hours) of electricity you used for the billing period. It's based on your meter readings.

*One kWh will light a 100-watt bulb for 10 hours.

2. YOUR SUPPLY CHARGES

This is the charge for the electricity you actually use. This charge varies from month to month depending on the market price of electricity, your rate, and where you live. This money goes to the ESCO or utility company that supplied the energy.

3. MERCHANT FUNCTION CHARGE

If you don't use an ESCO, your utility company charges this fee for getting and storing electricity. The fee also covers administrative costs.

4. COMPARISON PRICE

This is a unit price to compare against prices offered by ESCOs.

5. BASIC SERVICE CHARGE

This is what the utility company charges you for reading and maintaining meters and maintaining their infrastructure.

Name: [redacted] Acc

Your electricity charges

These charges are for the electricity you used (supply) and getting that electricity to you (delivery). Rates are based on a 30 day period. When your billing period is more or less than 30 days, we prorate your bill accordingly.

Electricity you used during this 30 day billing period from Sep 12, 2011 to Oct 12, 2011
Rate: EL1 Residential or Religious **Meter#** 6482552

We measure your electricity by how many kilowatt hours (kWh) you use. One kWh will light a 100 watt bulb for 10 hours.

Oct 12, 11 actual reading	26861
Sep 12, 11 actual reading	-26711
Your electricity use	**150 kWh**

1.

▶Your supply charges 2.

Supply 150 kWh @9.3800¢/kWh $14.07
Charge for the electricity supplied to you by Con Edison.

Merchant function charge $0.95
Charge associated with procuring electricity, credit and collection related activities and uncollectible accounts.

GRT & other tax surcharges $0.36
Taxes on Con Edison gross receipts from sales of utility services and other tax surcharges.

Total supply charges **$15.38**

Your total electricity supply cost for this bill is 10.3¢ per kWh. You can compare this price with those offered by energy services companies (ESCOs). For a list of ESCOs, visit www.PowerYourWay.com or call 1-800-780-2884. 4.

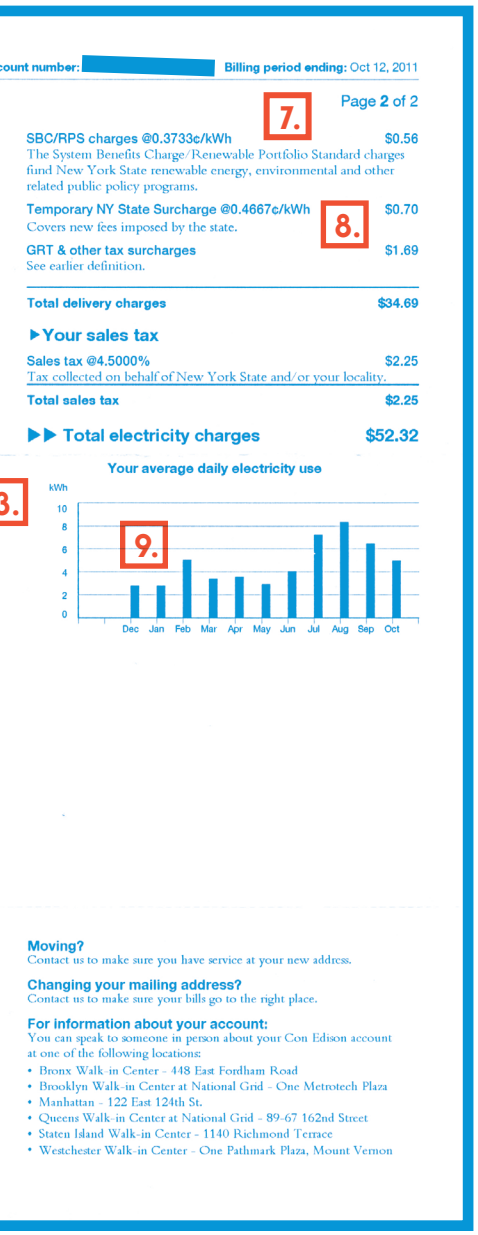
▶Your delivery charges 5.

Basic service charge $16.80
Charge for basic system infrastructure and customer-related services, including customer accounting, meter reading and meter maintenance. A billing and payment processing charge of $1.04, *which may be avoided by switching to an energy services company (ESCO)*, is also included.

Delivery 150 kWh @9.9600¢/kWh $14.94
Charge for maintaining the system through which Con Edison delivers electricity to you. 6.

Ways to pay your Con Edison bill:
If you have a checking or savings account, the easiest way to pay your Con Edison bill is with the Direct Payment Plan (DPP). It's free, and there are no checks to write or stamps to buy. Once you set it up, it's automatic every month. Con Edison also offers Pay-by-Phone and Pay-by-Internet services. Call Payment Express at 1-888-925-5016 for DPP enrollment or to make a payment by phone, or go to **www.conEd.com** to make a payment. You can also pay your bill by mail in the enclosed envelope. The address to mail all payments is Con Edison, JAF Station, PO Box 1702, New York, NY 10116-1702. Con Edison has a network of Authorized Payment Agents throughout the five boroughs and Westchester County. This option is also free. Go to **www.conEd.com** to find a location closest to you.

MY ELECTRICITY BILL?



6. DELIVERY

This is the cost of delivering the electricity through the local utility company's wires and pipes. You are charged a delivery fee based on the amount of electricity you used for that billing period. This charge also covers infrastructure maintenance.

These next charges are additional taxes and fees from NY State. If you decide to get your electricity through an ESCO, you might not have to pay these fees if the company is based outside of NY State.

7. SYSTEM BENEFITS CHARGE

The PSC introduced this to fund research projects that probably wouldn't happen with the new market-based system. This pays for efficiency incentive programs, and some programs helping low-income people.

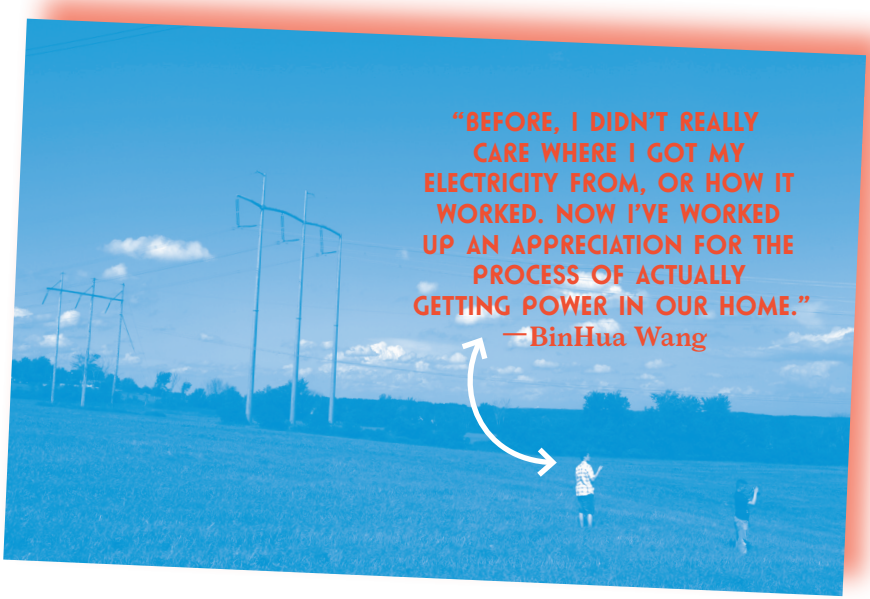
8. TEMPORARY NEW YORK STATE SURCHARGE

This shows the rate and amount of state and local sales tax.

9. AVERAGE DAILY USE

This graph shows how much electricity you use a day, on average, throughout the year.

ison bill, Oct. 2011



THE CENTER FOR URBAN PEDAGOGY (CUP) is a nonprofit organization that uses the power of design and art to improve civic engagement.

URBAN INVESTIGATIONS are CUP's project-based afterschool programs in which high school students explore fundamental questions about how the city works. Students collaborate with CUP and teaching artists to create multimedia teaching tools that reach audiences in the arts and social justice.

TEACHING ARTIST—Samantha Contis
TEACHING ARTIST ASSISTANT—Fatima Abdul-Nabi
PROJECT LEAD—Valeria Mogilevich
PROJECT SUPPORT—Christine Gaspar, Sam Holleran, Clara Amenyo
STUDENTS—Hubert Goncarz, BinHua Wang, David Park, with help from Awa Baldeh
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TO LEARN MORE ABOUT CUP, VISIT—welcometocup.org