HOME IS WHERE THE HEART IS

Georgia Tech Carbon Reduction Challenge presented by the **Atlanta Youth Energy Corps (AYEC)** in partnership with **Agnes Scott College (ASC).**

Gwyn Rush, Brittany Judson, Bethany Velarde, Madeleine Hardt, Susan Kidd (Coach). Special thanks to Joe Thomas, Lauren Church, Emily Smith, Ilsse Ortega, Gianni Rodriguez, David Marder, Ken England.

problem: energy inequity

"Energy Equity is the fair distribution of the burdens and benefits from energy production and consumption." (1)

Atlanta low-income households have the 3rd highest energy burden out of any U.S. city at 10.2% of their income. (2).

solution: retrofitting

Retrofitting provides a path to the city's need for increased, asccessible energy savings programs (3), it's more cost-effective (4), and it enhances local economies and communities (5).
The target homes for this project proposal are owned by Agnes Scott College (ASC) and rented out to ASC faculty and staff. They are single-family homes and apartments.

plan

1. Identify college-owned, low and middle income housing that needs retrofitting.
The site chosen for the pilot project was a college-owned, 600 sq. ft. apartment in Decatur.

2. Short-term: Simple retrofits (SR) & energy assessments.
Installing smart thermostats, window caulking, weather stripping, LED light bulbs, learning how to perform assessments.

3. Long-term: Deep retrofits. (DR)
Replacing HVAC systems, water heating systems, & attic insulation, etc. as the budget allows.

atlanta youth energy corps

financial calculations

total cost: $133.98

Weatherstripping/Caulking	$55.98
LED Lighting	$3.00
Smart Thermostat	$75 ($169-$94 rebate)

total savings per year: $82.46

Weatherstripping/Caulking	saves $37.06/year
LED Lighting	saves $30.83/year
Smart Thermostat	saves $14.57/year

1.6 years payback period

Over the Next Ten Years:
Return on Investment: 515.46%
Net Present Value: $690.62

$691 net savings after 10 years

Natural gas: $0.05/therm (6)
Electricity: $0.066/kWh (7)

carbon calculations

Georgia Usage Avg		Our Retrofit	
Space Heating	30%	HVAC System	27% electric, 73% gas
Water Heating	19%	BTU per sq. ft.	50,000
Appliances/Lighting	40%	Apartment Size	600 sq ft
Air Conditioning	11%	Est. Consumption	30 mil BTU

Weatherstripping/Caulking	10% saved on energy bill (8)
LED Lighting	.255 kWh saved daily/bulb
Smart Thermostat	10% saved heating, 15% cooling (9)

10 years
19,393 lbs CO2

1939.3 lbs. of CO2 annual savings

10.6 acres of forest

co-benefits

1. Improves general health, including:
- reducing asthma symptoms & upper respiratory risks
- reducing cases of hypertension
- reducing chronic illness due to indoor air quality (5).

2. Community.
Residential retrofitting democratizes sustainability by engaging communities in sustainability work that directly affects lives through utility costs, health, & job opportunities. (10)

3. Learning opportunities.
This project has fostered greater accessibility for women and people of color to engage in energy efficiency work. It has provided youth the opportunity to gain technical skills, build their networks in sustainability, and to develop as leaders.

lessons learned

1. Efficiency.
Processes for purchasing retrofit supplies and coordinating access to ASC-owned homes need streamlining.

2. Training.
Training new youth retrofitters will need to include base knowledge about assessments and lessons on using various tools

3. Safety.
Forms regarding photo release, safety, risk, and accountability will need to be created for future retrofits and assessments.

scalability

1. Institutional & organizational buy-in.
This project has helped us identify & strengthen partnerships for future work with ASC, Southface Energy Institute, City of Decatur, & Dekalb County.

2. A strong foundation for long-term work.
The AYEC is an organization dedicated to energy equity in the Metro Atlanta Area. We aim to complete at least two more retrofits by summer 2020.

3. Community buy-in and a just transition.
Our goals should not progress without community members at the table. Our community canvassing phase will gauge community interest in this program.

SUMMER 2019
Apt #1 simple retrofit.
1939 lbs CO2 saved.
10-yr savings: $691.
Present at CRC.

FALL 2019
Apt #2 simple retrofit.
1939 lbs CO2 saved
10-yr savings: $691

SPRING 2020
House #1 simple retrofit
3878 lbs CO2 saved.
10-yr savings: $3,878

total annual savings **7,756** lbs. of CO2

10 year **$5,260** savings

FOOTNOTES: 1. FACAA 2. ACEEE 2016 3. Fisher, Sheehan & Colton 2019 4. WBDG 2016 5. DOE 2016 6. Energy Shop 7. Georgia Power 8. DOE 9. Nest Thermostat 10. The Greenlining Institute 2009