Zero-touch scale-free and climate independent thermal energy audits.

*Improving energy **efficiency** at the **city** scale.*

Jake Sobstyl.

130+ Million homes in the US

1.2+ billion
tons CO_2

$250 Billion
spent on energy

37 Percent
energy wasted

Energy **efficiency** through retrofit is the solution.

Residential

- Home owner requests audit
- $500-$1000 in-home audit
- 1 in 5 results in a follow up request
- Retrofit cost-benefit analysis slow
- Behavioral monitoring only

next step living
home efficiency, made easy

essess

OPOWER

Commercial

- Electricity main portion of the bill
- Requires hourly/15 min interval data for reasonable accuracy
- Expensive on-site audit
- Sensors and smart meters

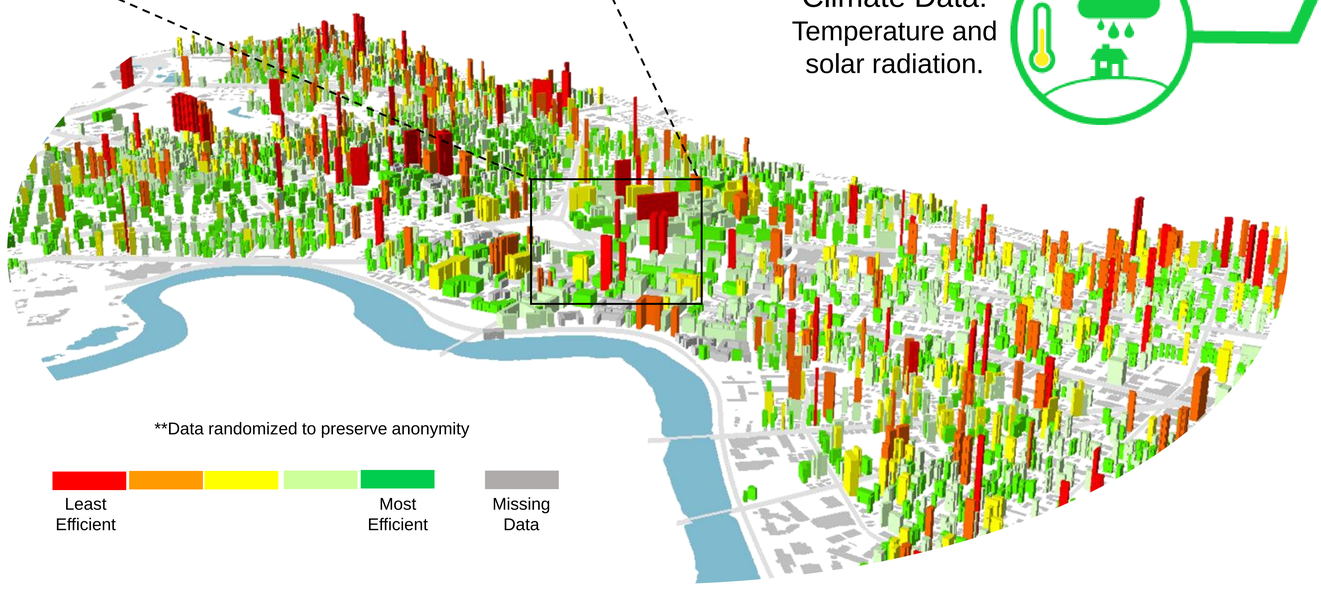
Retroficiency

FIRSTFUEL
BUILDING ENERGY ANALYTICS

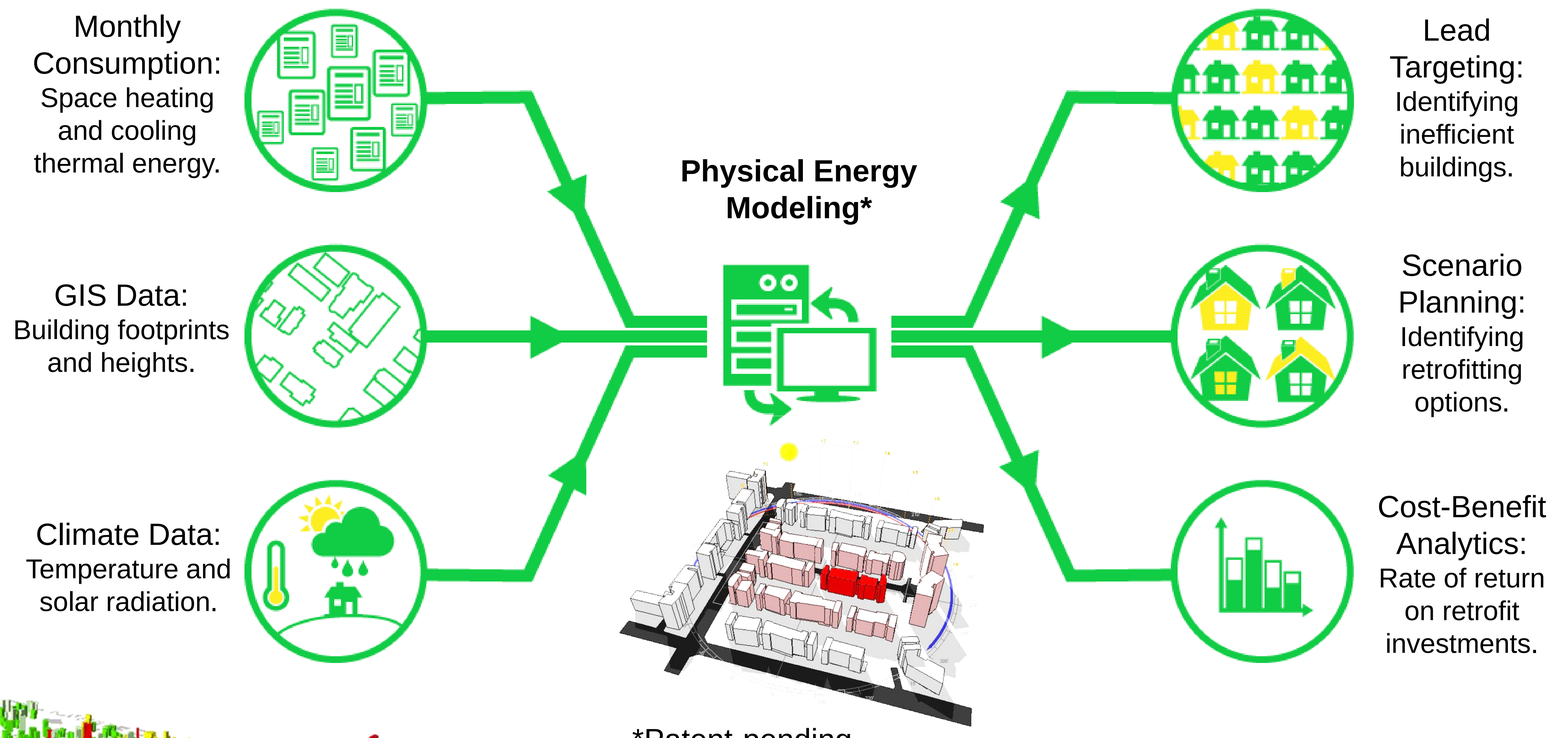
C3 Energy

Where do we start?

Harvard University



Thermal Energy **Efficiency** of Buildings** in Cambridge, MA



*Patent-pending
Analysis of heat transfer phenomena between buildings by utilizing GIS and considering their positioning, local neighbors, shadowing and size.

Pilot Case in Cambridge, MA

- 6500 Residential Buildings
- 500 Commercial Buildings
- 20 Minutes of computation time
- $5 million of potential savings identified
- Targeting plan identifies 1000 buildings that achieve 60% of savings
- On-site validation with 95% accuracy

Data.
Greener.

VE RI TAS