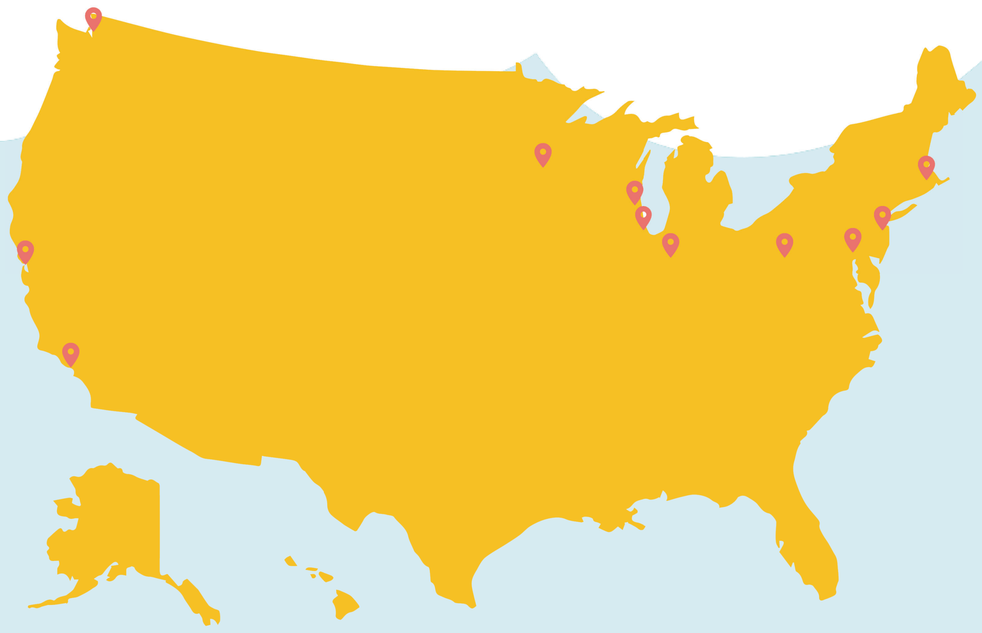
WHY IS ADAPTIVE REUSE MORE SUSTAINABLE THAN BUILDING NEW?

ABSTRACT

In this research project, we will explore why adaptive reuse is more sustainable than building new. Adaptive reuse happens when we introduce a new development within an already existing structure or area for a new purpose. The focus is to maximize the conservation of the already existing structure, while minimizing environmental impact and the envelope's transformation. De-industrialization presents many opportunities for adaptive reuse projects. This also allows for a reduction in costs for building resources and materials. New building and neighborhood developments that occur in areas can be harmful to the environment. In our research, we will follow a variety of case studies that focus on the preservation of buildings and communities through adaptive reuse. These studies help us to grasp an understanding of the cultural significance within a building with a healthy infrastructure. How can we preserve a society's history with architecture and interior design? How can we bring awareness to the harmful effects of building new? Adaptive reuse may be our answer.

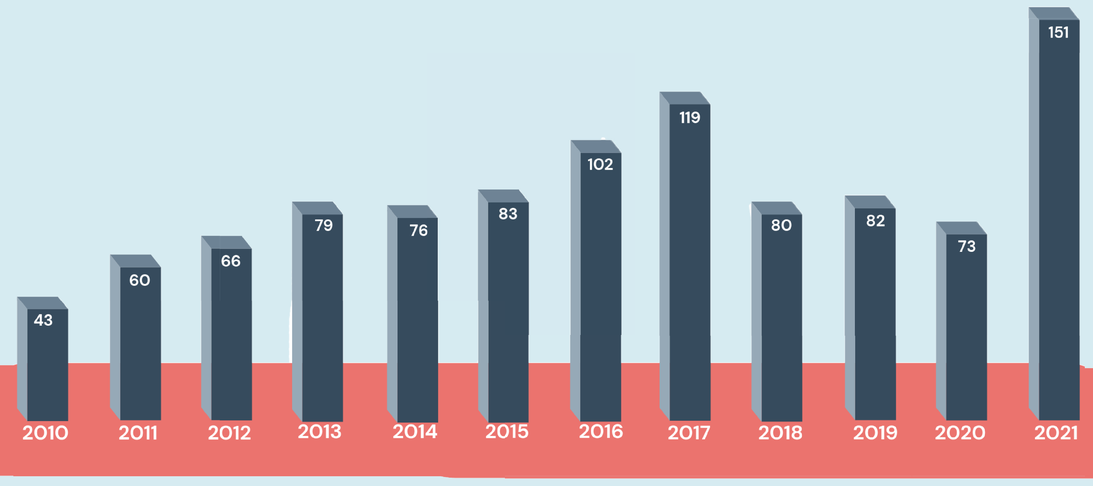
CHICAGO
leads in the most adaptive reuse apartment buildings with
91 building conversions

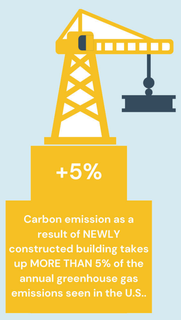
NEW YORK CITY
leads in apartment projects created by adaptive reuse with over
18,000 apartments



NEW YORK CITY	49,593,025 SQ.FT.
BOSTON	18,904,818 SQ.FT.
CHICAGO	16,268,341 SQ.FT.
MINNEAPOLIS	10,929,288 SQ.FT.
SAN FRANCISCO	10,865,413 SQ.FT.
PHILADELPHIA	10,833,552 SQ.FT.
LOS ANGELES	10,678,982 SQ.FT.
MILWAUKEE	7,799,726 SQ.FT.
PITTSBURGH	6,815,952 SQ.FT.
PORTLAND	6,654,692 SQ.FT.

EVOLUTION OF ADAPTIVE REUSE





+5%
Carbon emission as a result of NEWLY constructed building takes up MORE THAN 5% of the annual greenhouse gas emissions seen in the U.S..

10–80yrs
A newly constructed buildings can take 10–80 YEARS to COMPENSATE for the emissions generated from the construction of the building.

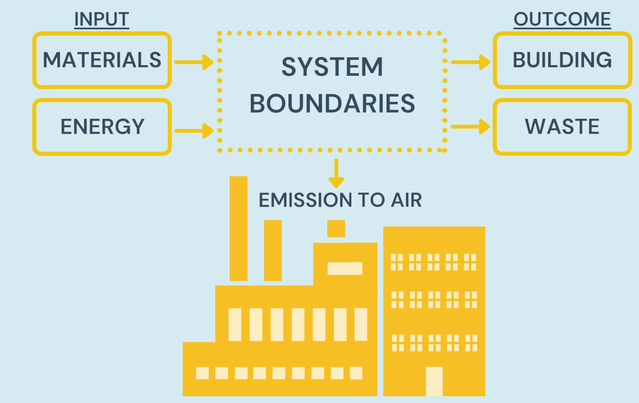
50–75%
Adaptive reuse SAVES about 50–75% of embodied carbon.

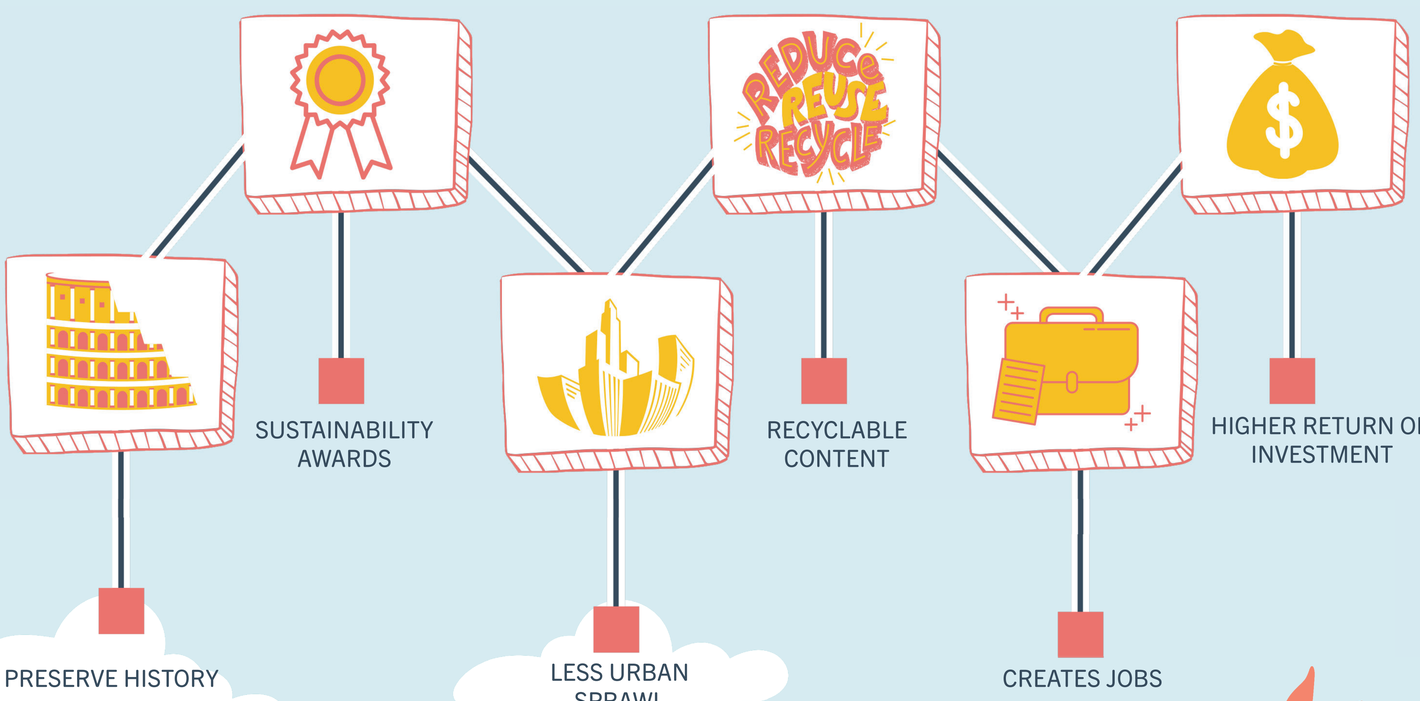
WHAT IS ADAPTIVE REUSE?

-Adaptive reuse occurs when new content is introduced to an existing building, structure, or place
-The focus is to maximize conservation, and minimize transformation
-It reminds us of our local culture and history
-Less of a need for new and costly resources
-Elements such as volume, texture, lighting, and colors are often preserved in an adaptive reuse project

SUSTANIABILITY

The carbon emission created from a newly constructed building takes up more than 5% of the annual greenhouse gas emissions seen in the U.S.. This embodied carbon can then continue in the atmosphere from twenty to hundreds of years. This has a lasting impact on the environment and it is something that cannot go unnoticed, especially by architects and designers. Retrofitting or other similar forms such as adaptive reuse, which is the focus of this research saves about 50-75% of embodied carbon. A report found that newly constructed buildings can take 10-80 years to compensate for the emissions generated from the construction of the building.





CONCLUSION

The outcome of this research project projected that adaptive reuse is indeed more sustainable than building new. As seen in the research, building new not only affects neighborhoods and cities but the environment as well. Adaptive reuse counters these negative environmental impacts by preserving these neighborhoods and helping the surrounding environment. Adaptive reuse has been successful in select cities across the United States and through much research, all adaptive reuse projects seen in these areas have had positive outcomes. The use of "re-using" these buildings lessens the amount of carbon emission, which adds to the sustainability of adaptive reuse. If more projects are done through adaptive reuse rather than demolition, just imagine how much greener this country could be.

FENG CHEN, GRACE ROBERTO, SCHAE MITCHELL, MARGUERITE EPPLING