A-13: Retrofit Decision Analysis Framework and Toolset

Tool Development   **Deep Retrofits**   **Machine Learning**   **Generative Design**

Summary

At the very early stages of a project, where informed decision-making is notably absent, is a gap where decisions have the largest impact. A toolset that supports designers that fits seamlessly in their workflows will have the greatest impact on improving the final outcomes of projects without additional overhead burden.

Partners

Stantec is a large multi-disciplinary engineering and design firm committed to sustainable practices, with an in-house digital practice team dedicated to improve engineering workflows.

Researchers

Under development.

METHODS AND DATA USED

Tools will build upon existing software where possible, and will incorporate operational analysis (Ladybug/Honeybee), life cycle analysis (Tortuga) and climate resilience. Methods will include generative design methods and decision-tree and statistical inference analysis.

Final Outcomes

At the core will be a generative design tool that iteratively explores the complex decision space. This will explore both generative design methods that suggest alternatives which have largely been applied to geometric problems, and machine-learning based recommendation systems that examine past decision to infer likely future choices. The majority of the tool will be made available to ReBuild partners and to the public as open-source.