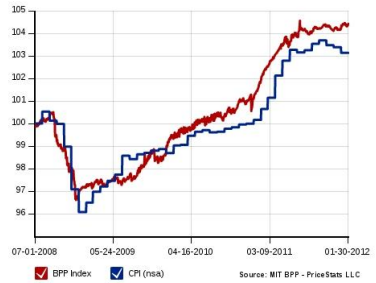


**UNITED STATES COST OF LIVING INDEX**

Living costs are up over 8% in the past year alone. These costs include average household items such as food, gasoline, child care, prescription drugs, phone and television service, as well as other household products.



WHAT IS THE BALANCE WE SEEK -

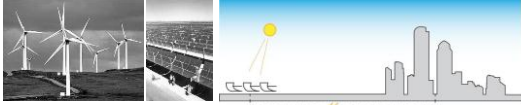
- AND CAN THEY COEXIST?



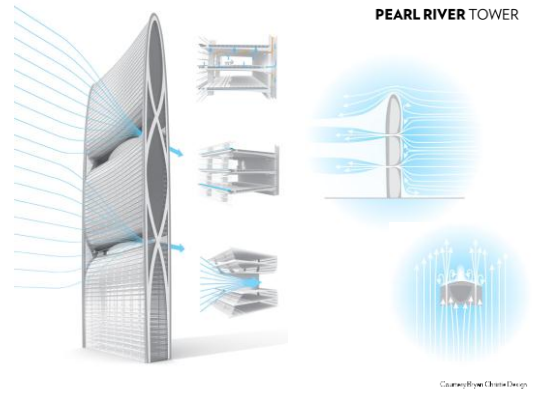
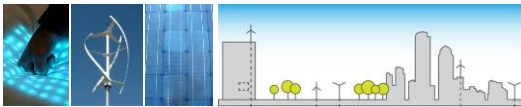
Old Technology / Old Philosophy

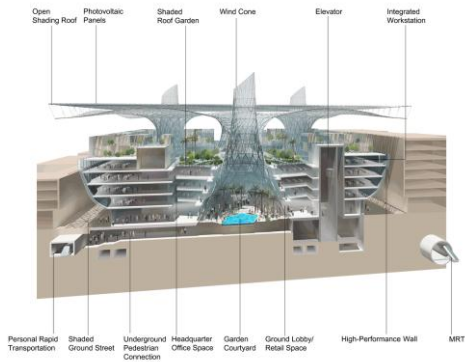
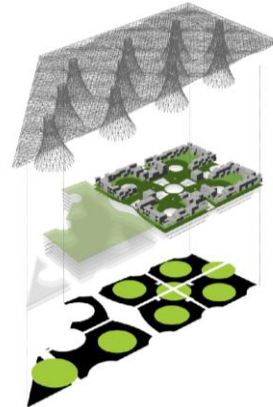


New Technology / Old Philosophy



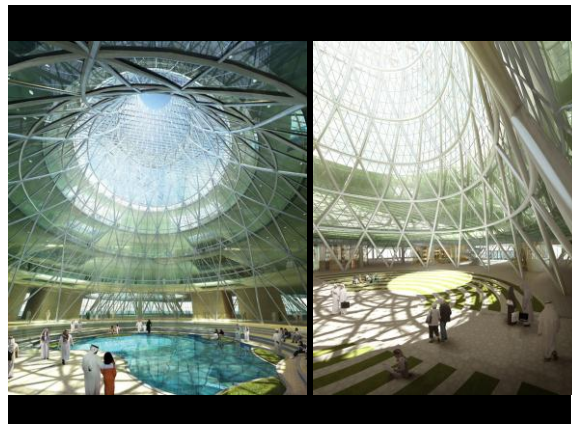
New Technology / New Philosophy



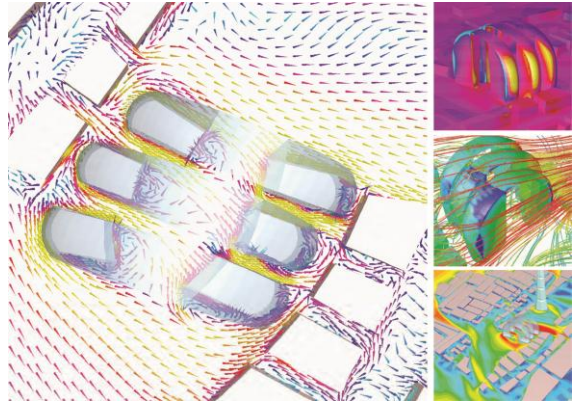
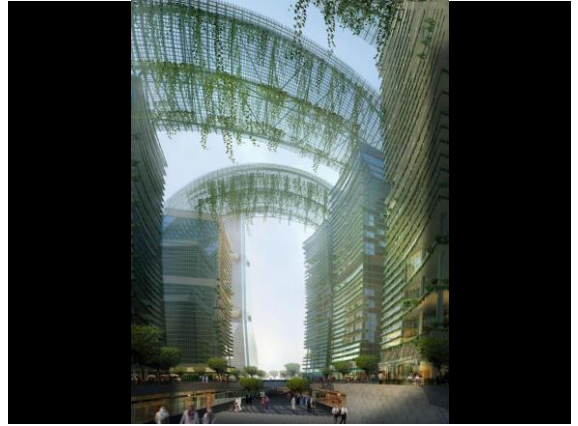
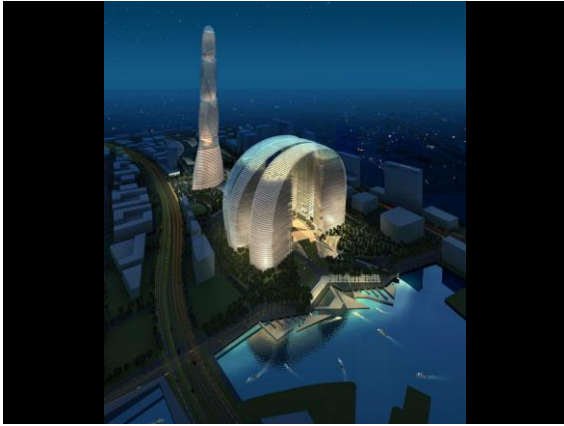


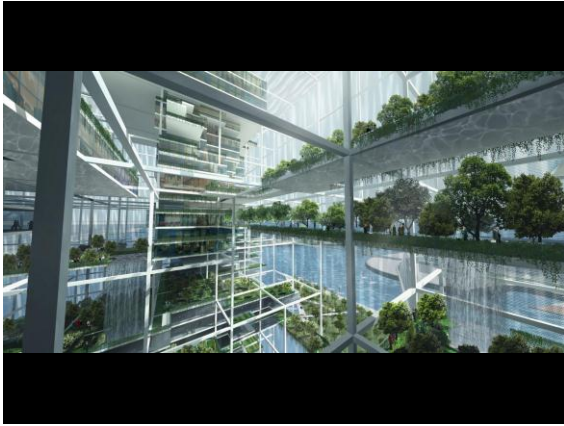
Open Shading Roof Photovoltaic Panels Shaded Roof Garden Wind Cone Elevator Integrated Workstation

Personal Rapid Transportation Shaded Ground Street Underground Pedestrian Connection Headquarter Office Space Garden Courtyard Ground Lobby/ Retail Space High-Performance Wall MRT

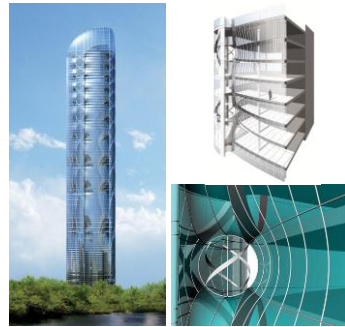




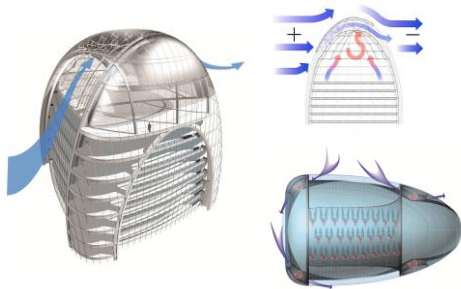




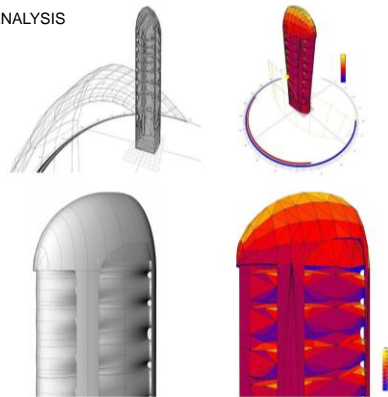
WIND MOVEMENT AT CORNER



WIND MOVEMENT AT SKYDOME



SOLAR ANALYSIS

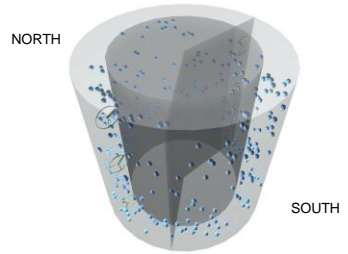




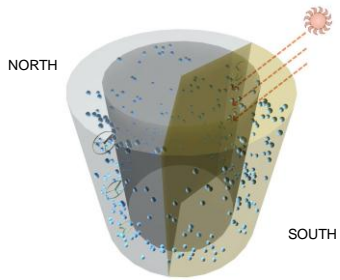
THERMOS BOTTLE CONCEPT



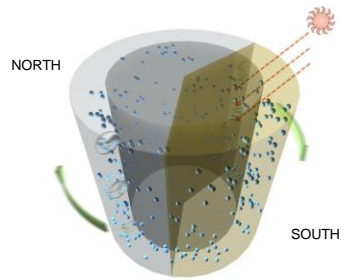
THERMOS BOTTLE CONCEPT



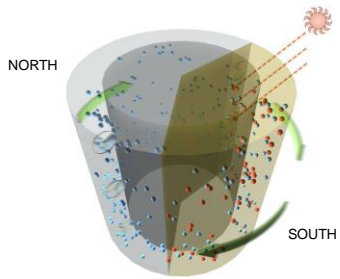
THERMOS BOTTLE CONCEPT



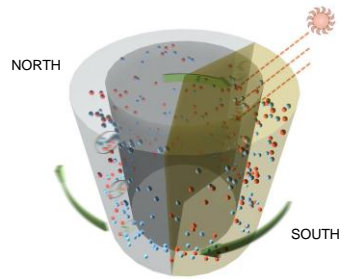
THERMOS BOTTLE CONCEPT



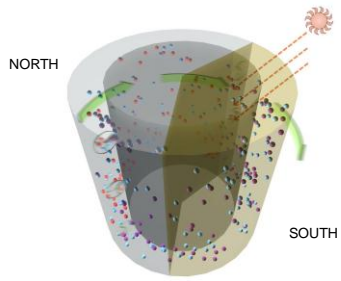
THERMOS BOTTLE CONCEPT



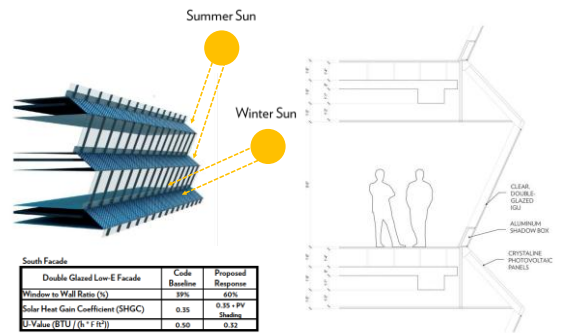
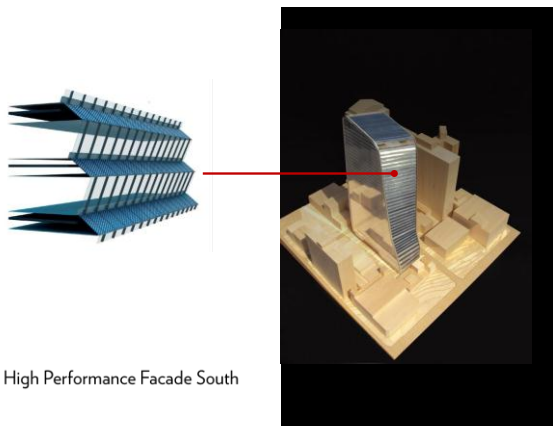
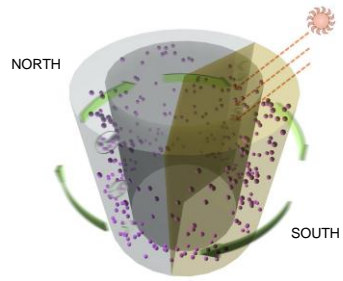
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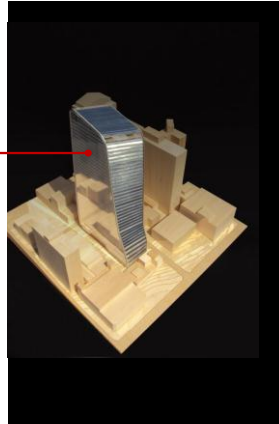
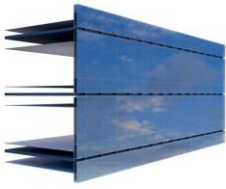
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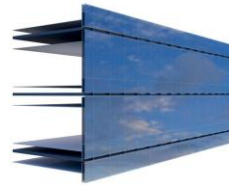
THERMOS BOTTLE CONCEPT



High Performance Facade South



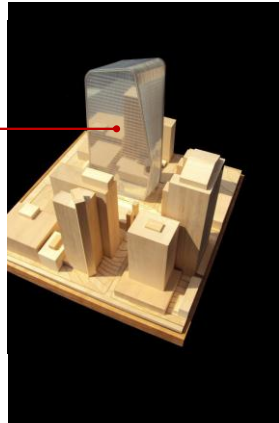
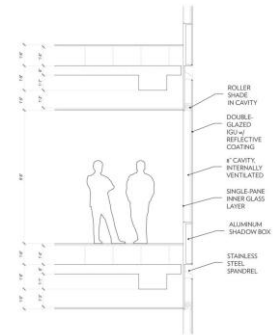
High Performance Façade West



West Façade

Double Skin Façade	Code Baseline	Proposed Response
Window to Wall Ratio (%)	39%	60%
Solar Heat Gain Coefficient (SHGC)	0.44	0.22
U-Value (BTU / (h <sup>2</sup> · F · ft <sup>2</sup> ))	0.50	0.20

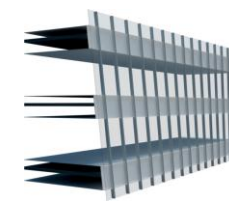
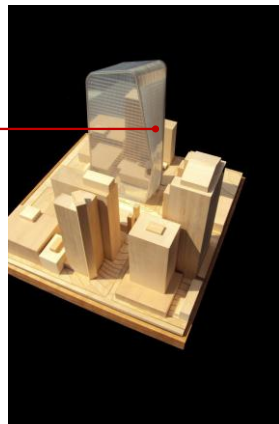
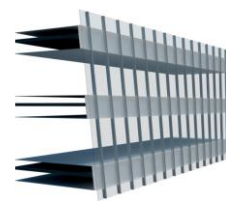
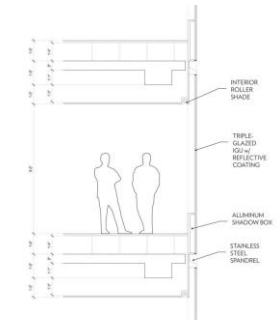
High Performance Façade West



East Façade

Triple Glazed Low-E Façade	Code Baseline	Proposed Response
Window to Wall Ratio (%)	39%	60%
Solar Heat Gain Coefficient (SHGC)	0.35	0.23
U-Value (BTU / (h <sup>2</sup> · F · ft <sup>2</sup> ))	0.50	0.22

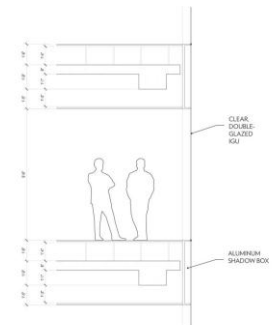
High Performance Façade East



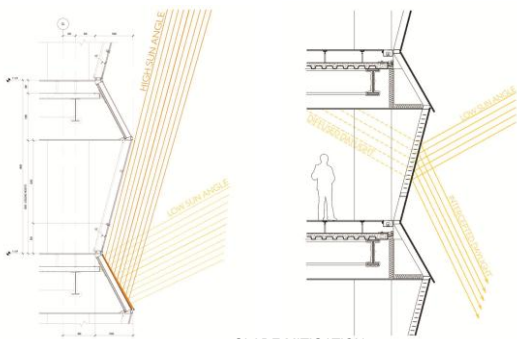
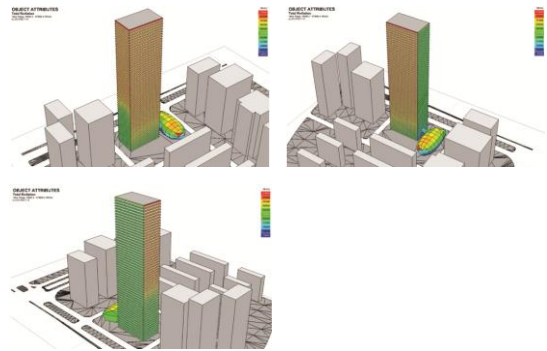
North Façade

Double Glazed Low-E Façade	Code Baseline	Proposed Response
Window to Wall Ratio (%)	42%	64%
Solar Heat Gain Coefficient (SHGC)	0.44	0.35
U-Value (BTU / (h <sup>2</sup> · F · ft <sup>2</sup> ))	0.50	0.32

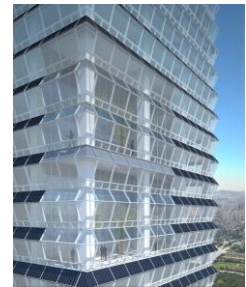
High Performance Façade North

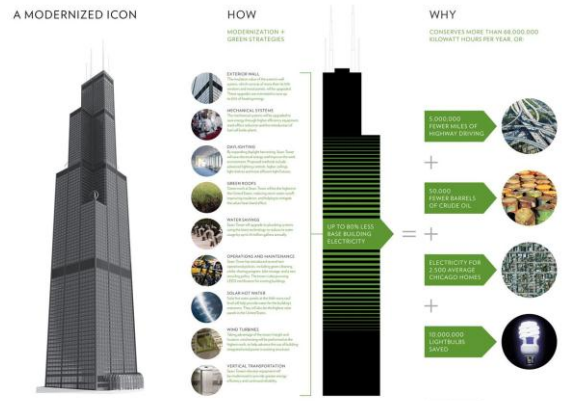
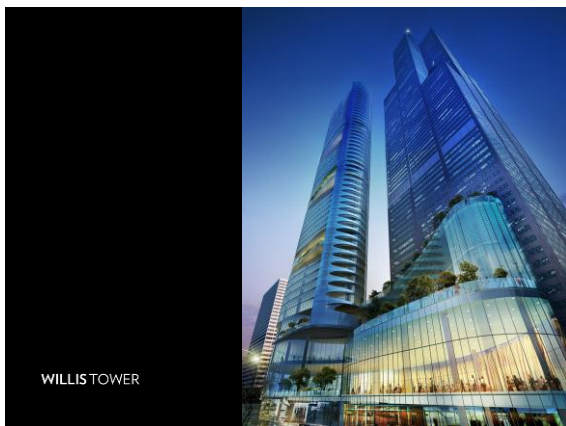
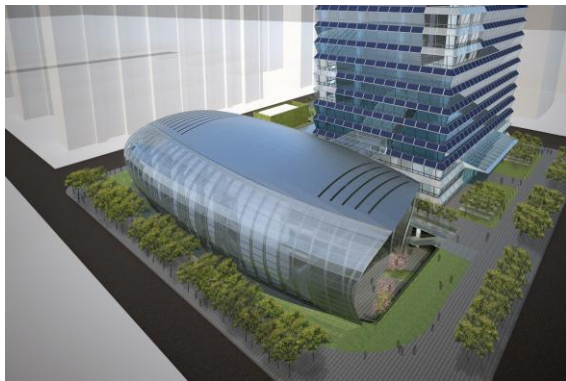
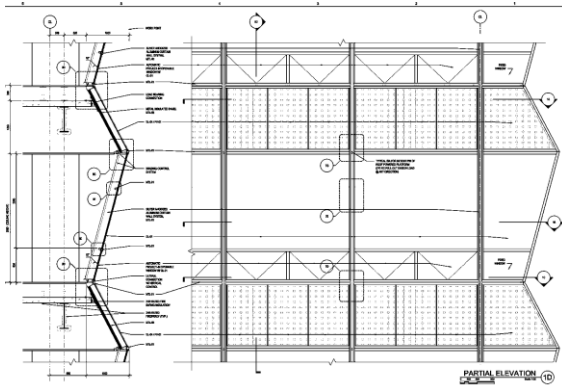


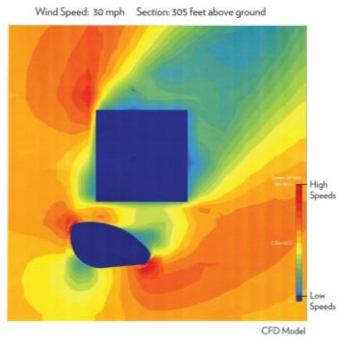
High Performance Façade North



**GLARE MITIGATION**  
 THE POSITIVE TILT OF THE VISION GLASS PANEL  
 ALLOWS FOR THE DEFLECTION OF LOW SUN  
 ANGLE GLARE







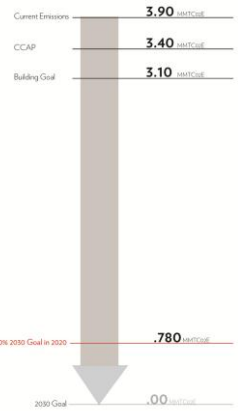
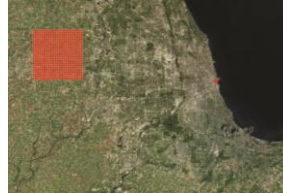
### CHICAGO DECARBONIZATION PLAN



### PV FARM



### WIND FARM



90% of the square footage of buildings in the Chicago Loop was built before 1975. Much of this square footage has equipment and systems nearing the end of their life cycle. New buildings account for less than 1% of Chicago's building stock.



### HERITAGE 1880-1945



### MID-CENTURY 1945-1975

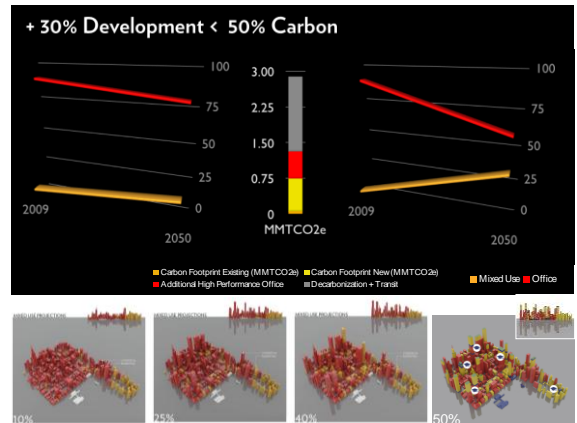
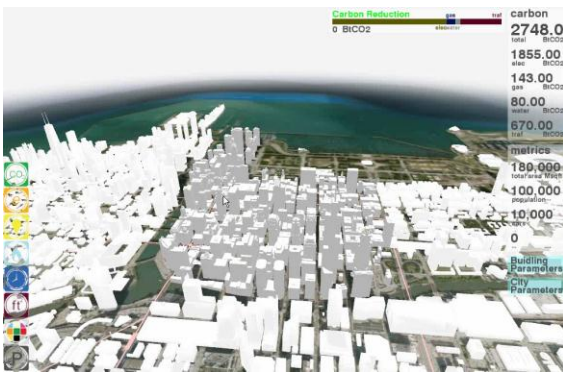
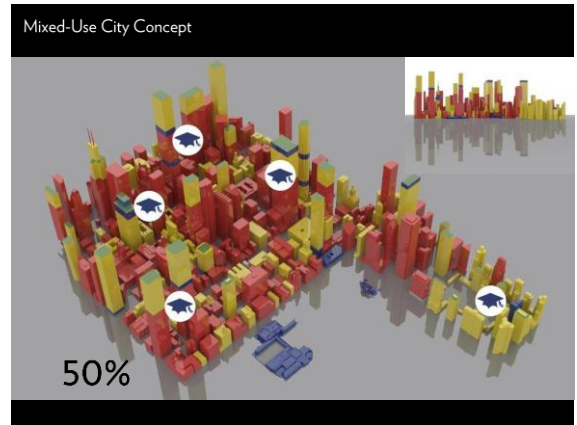
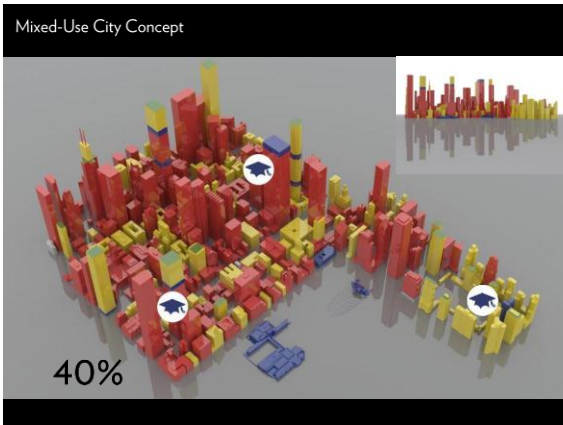
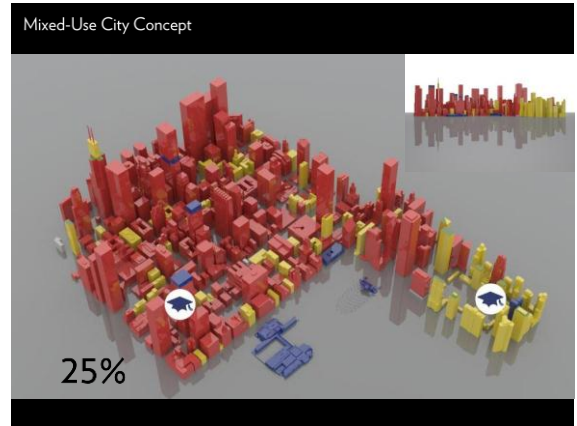
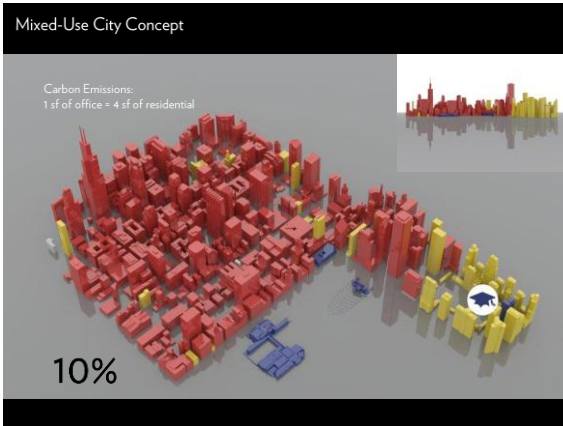


### POST ENERGY CRISIS 1975-2000



### ENERGY CONSCIOUS 2000-Present



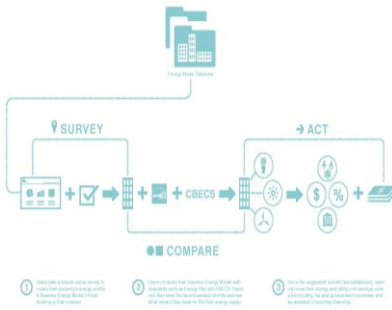




Process

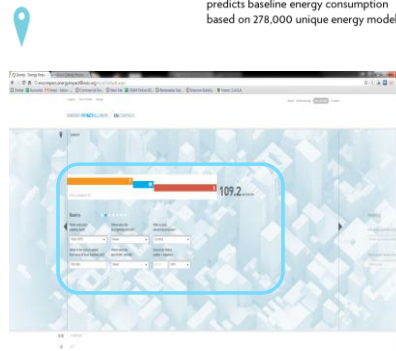


Tool Flow



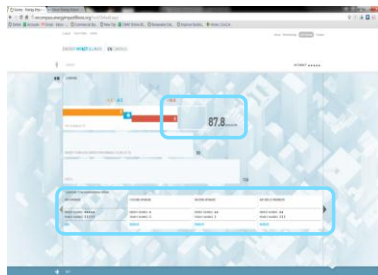
Survey

Collects information about the property; predicts baseline energy consumption based on 278,000 unique energy models.



Compare

- Ranks Retrofit opportunities based on Energy and Cost Savings Potential. Shows potential Savings.
- Compares Energy Usage against EnergyStar and CBECs.



Act

- Connects building owners with Approved Engineers.
- Suggests financial incentives for selected retrofits.
- Notifies





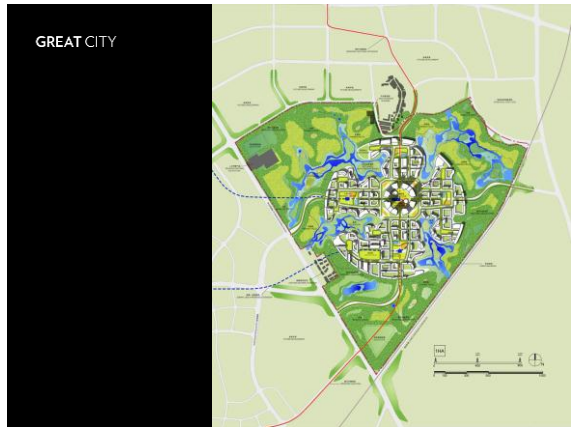
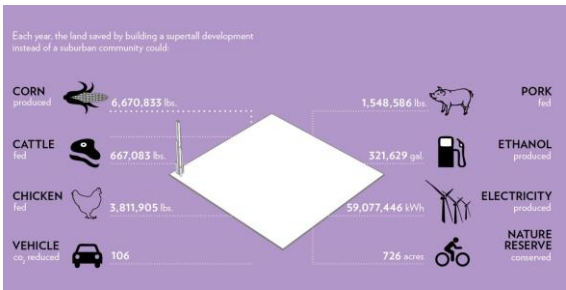


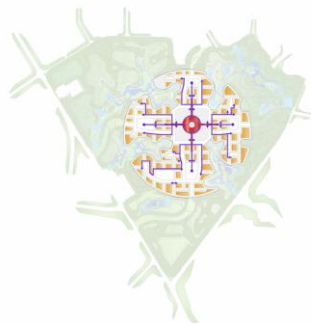


LAND AREA DIRECTS - 10



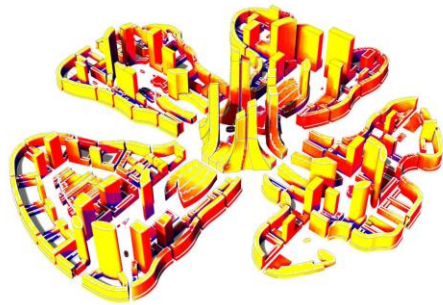
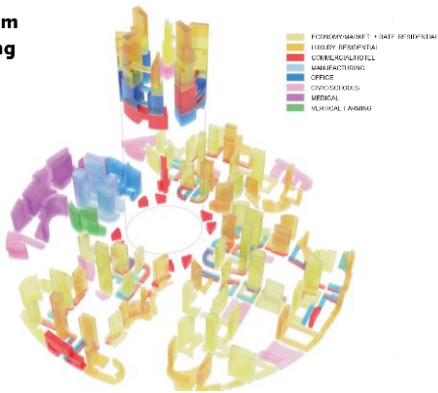
LAND AREA DIRECTS - 11

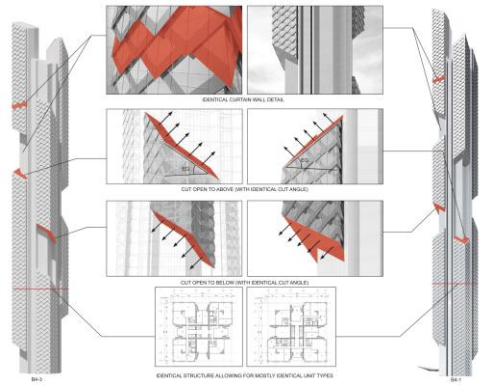
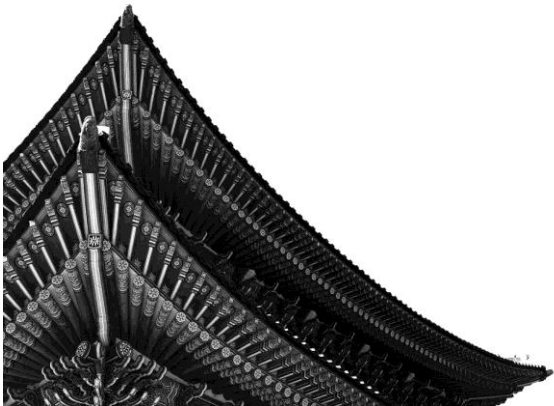






**Program  
Massing  
Model**









WUHAN CENTER

