

# Next frontiers in real estate: *technology, innovation and the built environment*



white + burke  
**VERMONT  
DEVELOPMENT**  
CONFERENCE

**Steve Weikal**

Industry Chair

*Real Estate Transformation Lab*

*MIT Center for Real Estate*

*General Partner, MET Fund II*



Our planet is undergoing a profound reordering, driven by the unprecedented impacts of climate change, breakthroughs in science and technology, and sweeping socio-geographic shifts.

The convergence of these structural changes is fundamentally reshaping the places and spaces in which we live, work, and play.

We call this emerging trend the *Built Environment Transition* (BET).



# 275T

Spending through 2050 triggered by retrofitting existing energy and land use infrastructure to net-zero.

# 1.2T

The combined potential value destruction from underinsured US homes could exceed \$1.2 trillion; nearly half of all single-family homes.

# 30%

30% of hours currently worked across the US economy could be automated by 2030, causing 12 million occupational transitions.

# 1.1T

30% of U.S. office buildings, valued at \$1.1 trillion, could become obsolete due to changing work patterns.

Sources: McKinsey, World Economic Forum, Bloomberg, Goldman Sachs





# A total rethinking of the **what, where, why, how** of real estate

## Resilience

- Climate
- Sustainability
- Financial
- Social

## Adaptation

- Obsolescence
- Emerging products
- Locational trends
- Demographics

## Innovation

- Architecture/design
- Engineering/construction
- Energy
- Operations



# Adaptation

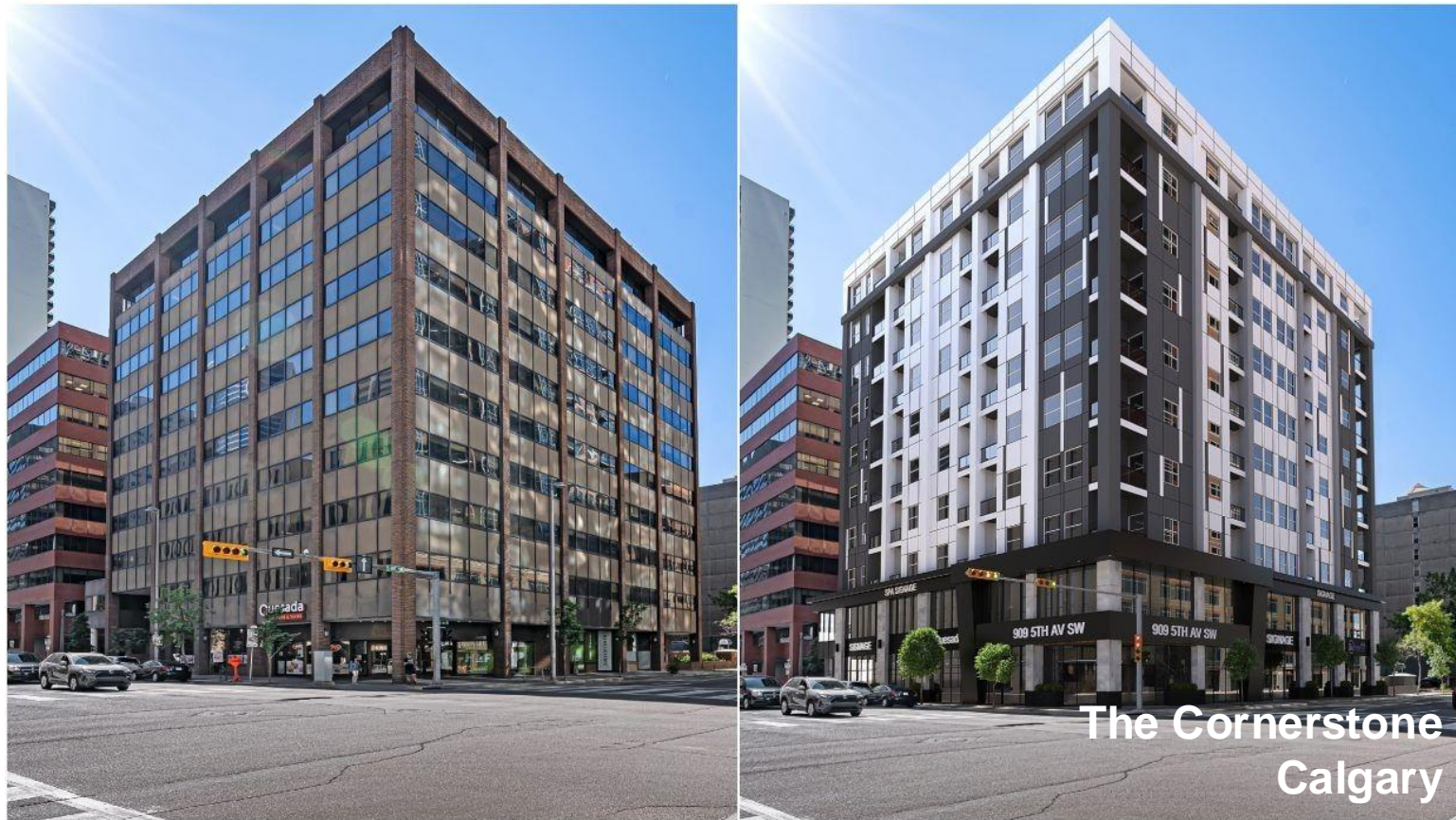
## Trends

---

- White House opens \$45 billion in federal funds to convert offices – MarketWatch
- IWG to add over 1,000 locations as firms shift to hybrid – Reuters
- More office properties becoming labs, logistics facilities, or data sites – FastCompany
- Single-use business districts reinvent themselves as mixed-use neighborhoods – ULI
- Pickleball, apartments, hotels and more are breathing new life into America's malls – Wall Street Journal
- Data center development to grow 30% by 2035 – CBRE
- Vermont needs 24,000-36,000 housing units by 2029 – VT DHCD



# Asset conversion



# Asset conversion



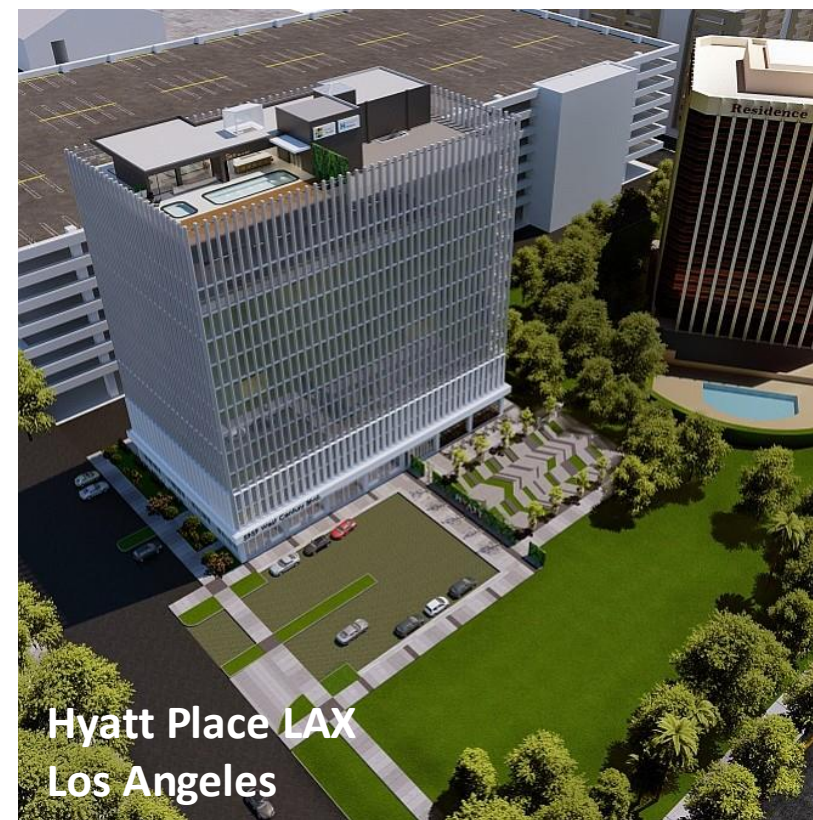




Parking to residential  
Los Angeles, CA

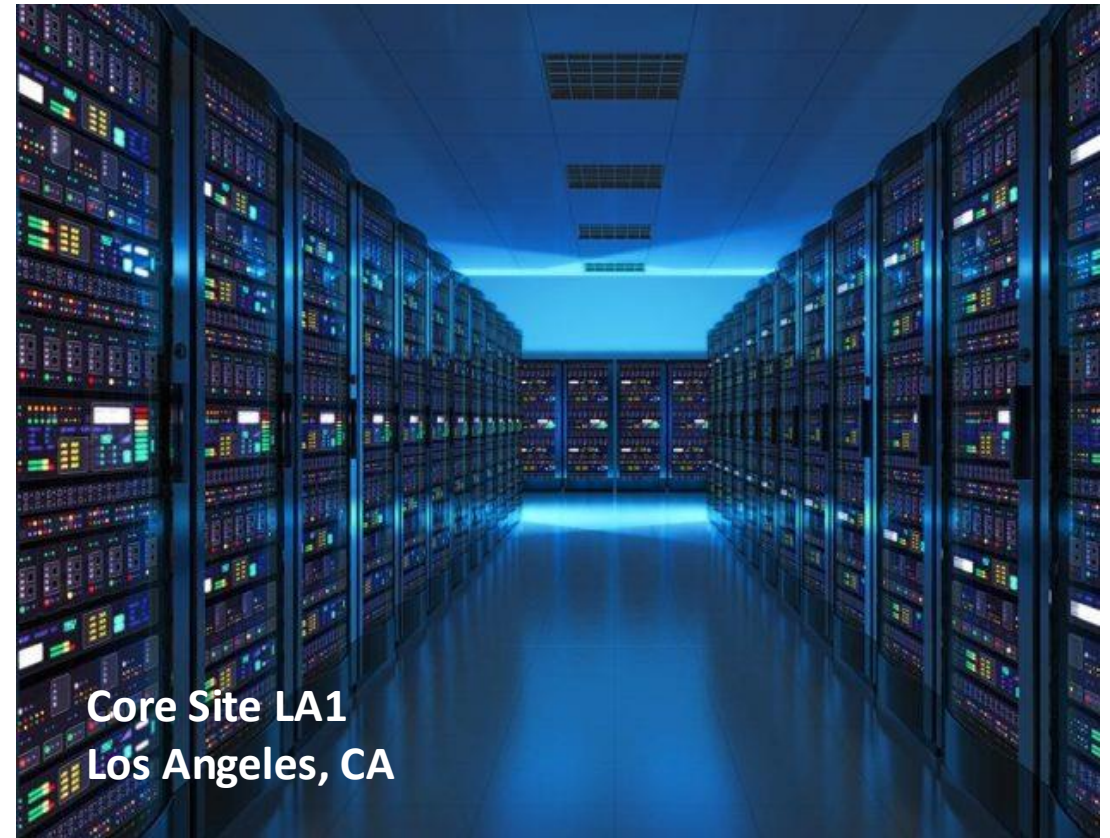


# Asset conversion





# Asset conversion



Core Site LA1  
Los Angeles, CA

## Asset conversion





# Asset conversion

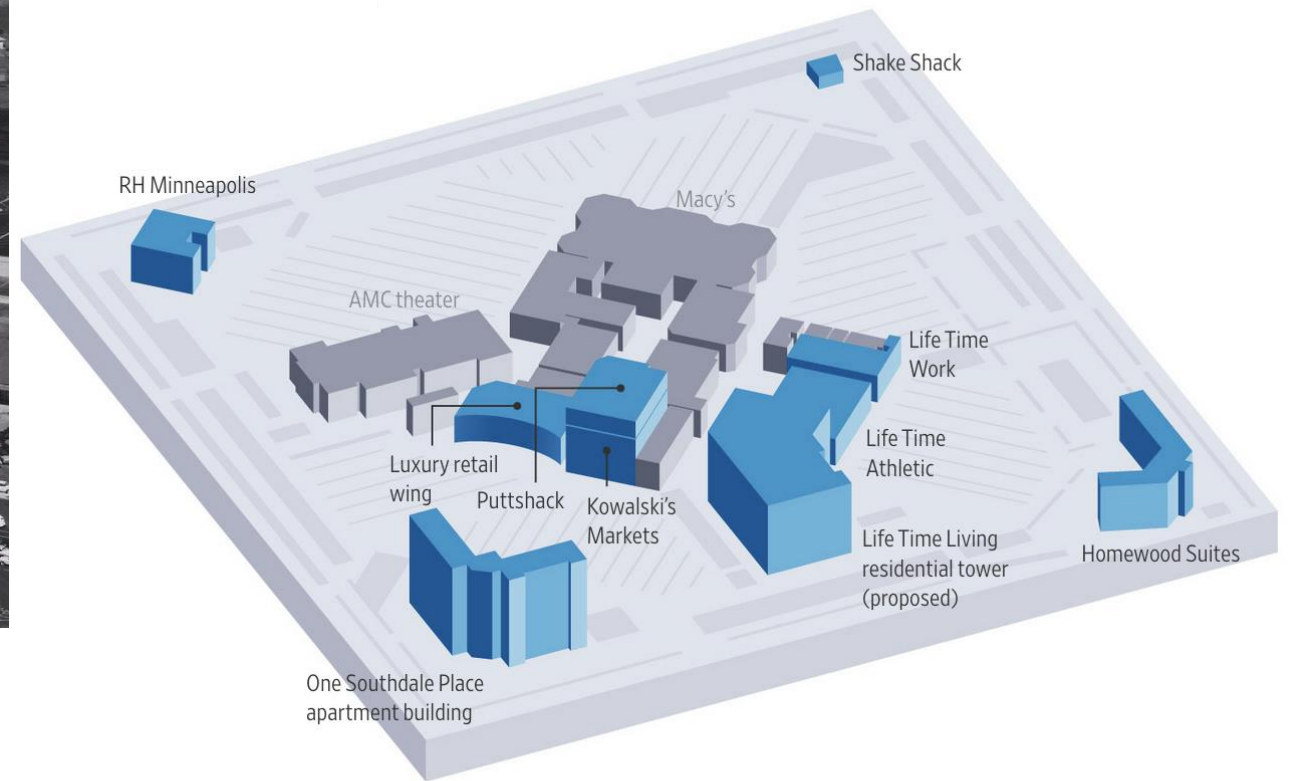


Fabric

Oh

bond

# Asset conversion



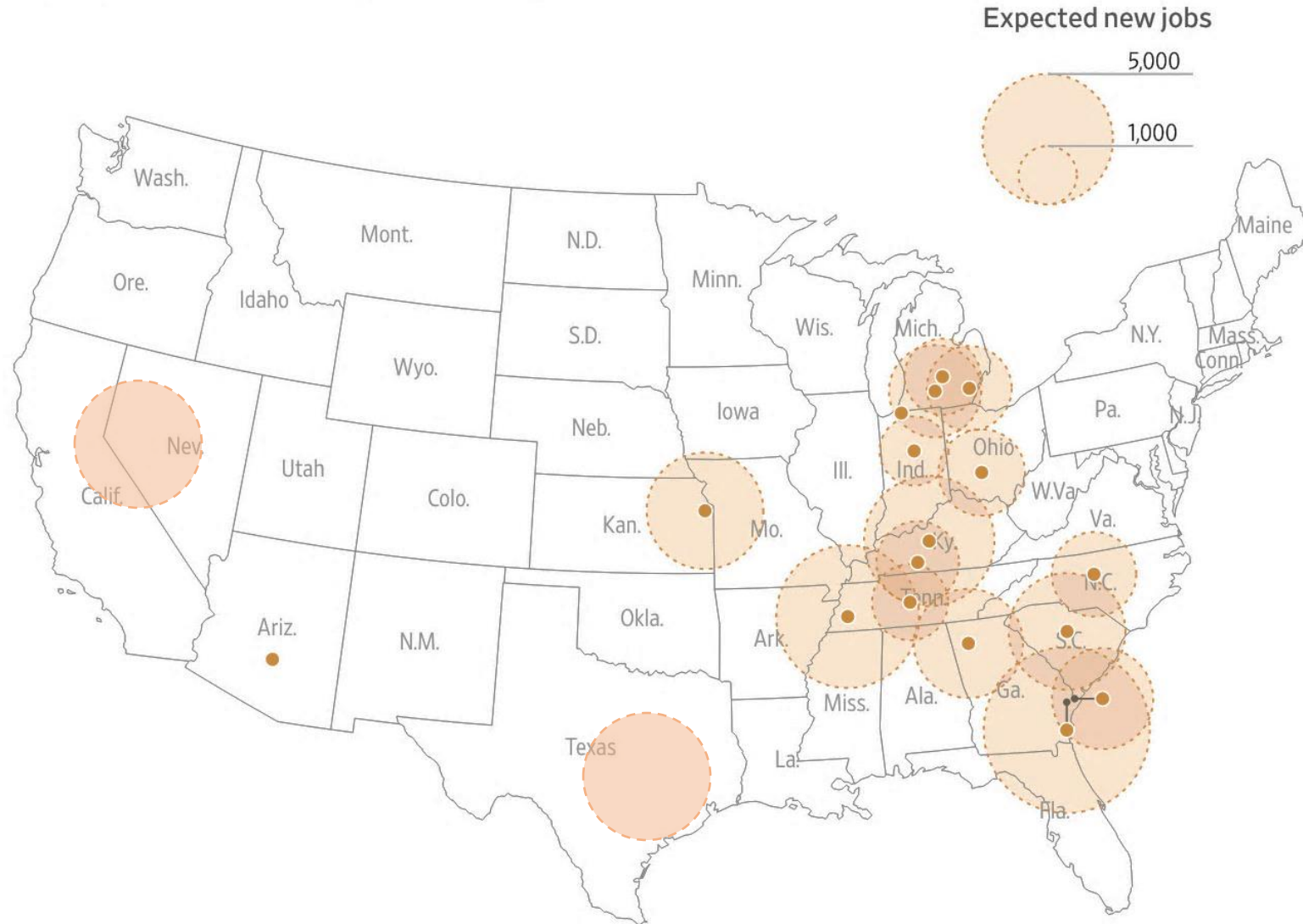


# Location

---

- Asset realignment
  - CHIPS + Science Act – \$80B place-based industrial policy
  - Titanium Economy – 4,000 industrial firms, boost GDP \$275B , 1.5M jobs
  - The Battery Belt – 91 projects, \$78B

**Select announced EV battery and assembly plants**



Source: company reports; National Renewable Energy Laboratory NAATBatt Lithium-Ion Battery Supply Chain database

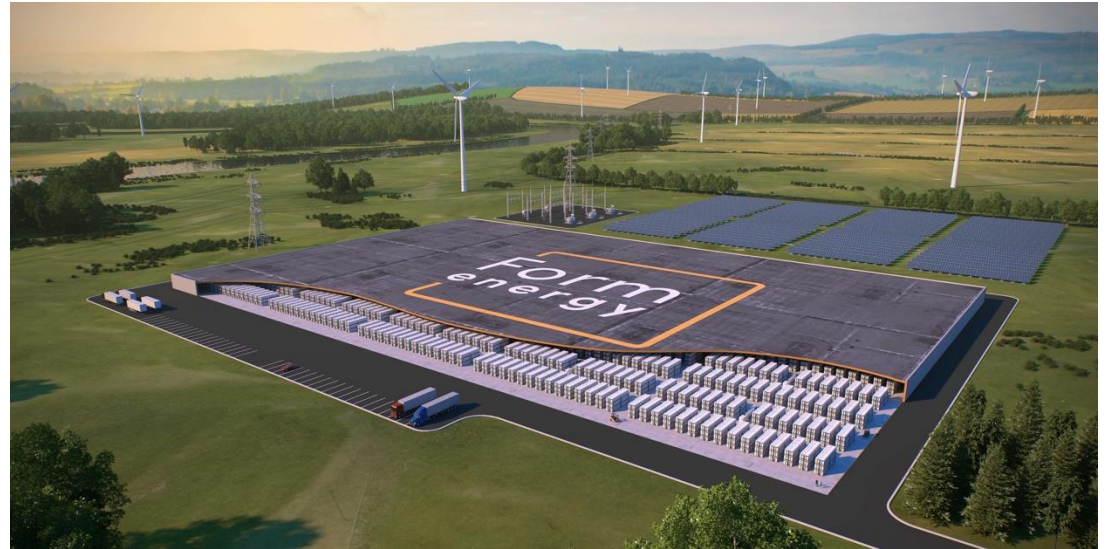


## New products

---



Schwerin Germany Battery Park



Form Energy Battery Warehouses

MN + WV

## New products

---



Flatiron Energy Battery Storage, Brighton, MA



EV Charging Lounges



# Location

---

- Asset realignment
  - CHIPS + Science Act – \$80B place based industrial policy
  - Titanium Economy – 4,000 industrial firms, 1.5M jobs
  - The Battery Belt – 91 projects, \$78B
- People realignment
  - 875,740 manufacturing jobs re-shored to US since 2021 – Reshoring Initiative
  - Urban doom loop was exaggerated, mid-size cities rise, Zoom-towns cool
  - Corporate relocations – In 2023 FL, TX, GA, TN, Carolinas had more GDP than Wash-NY-Bos
  - *Knowledge Towns* – talent magnets



# Portage Bay Crossing



Seattle, WA

University of WA

Wexford Science & Technology

69 acres

3M s.f.

Phase 1: \$325M



# The Pearl



Charlotte, NC

Wake Forest School of Medicine  
Wake Forest School of Business

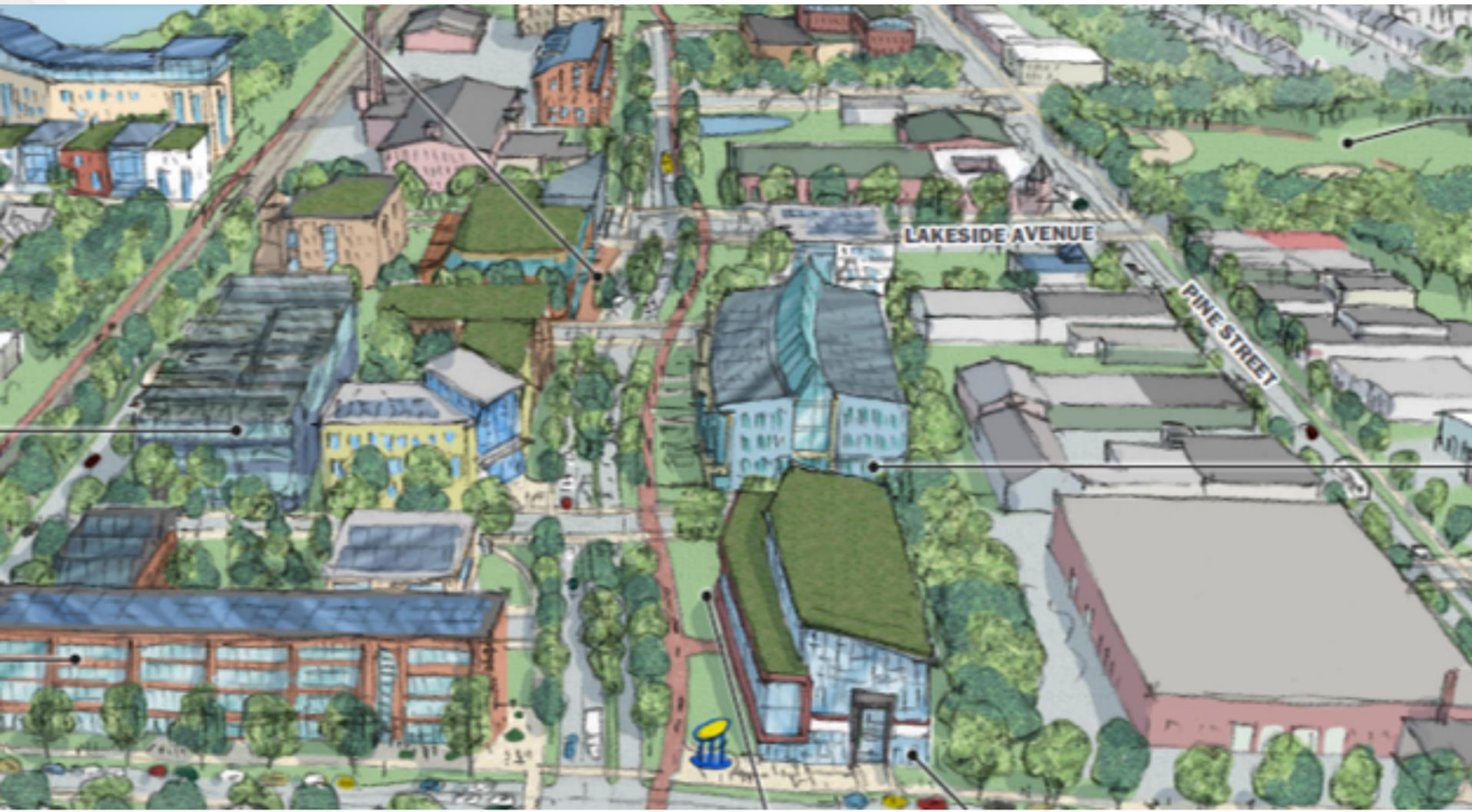
Atrium Health  
Wexford Science & Technology

Phase 1: 600K s.f.

Total: \$1.6B



# South End Innovation District



Burlington, VT

19 parcels, 69 acres

City of Burlington

Champlain College



## Tools

---





# Resilience

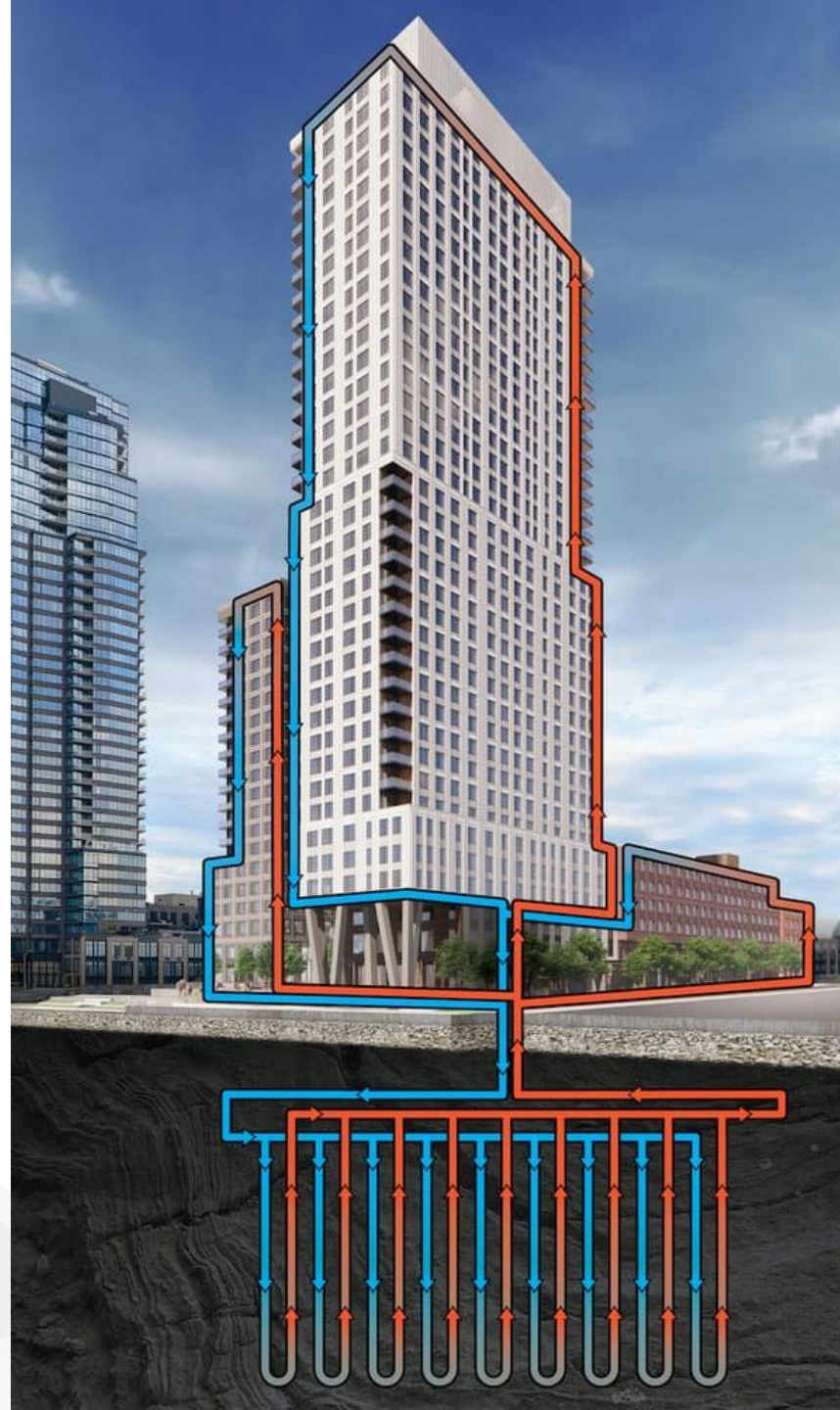


# Trends

---

- \$129B weather related damage in U.S. in 2024 - CoreLogic
- Physical vs. transition risk – shocks vs. stresses
- Pressure from investors, capital, employees; spiraling costs
- Regulation
  - Local Law 97 + 133 NYC, CA Title 24
  - Seattle, San Francisco, Boston energy codes
  - 2020 VT RBES
- Climate Tech investments \$143B 2021-23 - HolonIQ

# 1 Java Street, Brooklyn



Geothermal heat pumps

320 vertical boreholes, 499 feet

53% reduction CO2

834 rental units



# Oklahoma City Federal Building



Grid interactive building (GEB)

Onsite PV renewable energy

Battery storage

High performance HVAC

40% energy reduction





## South Winds Apartments, Fall River, MA



Upgraded insulation/ventilation

Replaced windows/sliding doors

Onsite PV renewable energy

Cold-climate heat pumps

Energy management systems

70% energy bill reduction





# Clayton eBuilt® homes



Low-e glass

Heat pump w/sealed duct systems

Added insulation

EnergyStar appliances

Energy management systems

Solar ready



## Resilience

---

- Heat pumps





## Resilience

---

- Heat pumps
- Electrical



## Resilience

---

- Heat pumps
- Electrical
- Generation/Storage





## Resilience

---

- Heat pumps
- Electrical
- Generation/Storage
- DIY





# Innovation





In the future, most buildings will be designed by Ai,  
built by robots, and be fully tech enabled.

*- Dr. Andrea Chegut, MIT*

# Ai

---

- 1955 Dartmouth University; GPT-1 was released in 2018
- Traditional Ai analyzes – algorithms, machine learning, NLP, computer vision
- Generative Ai *generates* new material – text, images. music/sound
- Power of Generative Ai comes from ability to ingest immense quantities of data, make sense of it, and repackage it
- Shift from point-and-click to describe-and-done
  - complexity moves behind the scenes and simplicity comes to the forefront
  - Those who best articulate their desired outcome will get the best results
- Ai will be in ALL areas of real estate





Midjourney



Enter:

Futuristic towers

Utopian technology

Symbiotic w/nature

Bioluminescent material





Heydar Aliyev Center | Baku, Azerbaijan

Zaha Hadid  
Architects





Key Count	239
Parking	125
Budget	\$60M
Cap Rate	9.52%





# Built by robots

---



**Construction  
Robotics**





RENOVATE





CANVAS





# Tech enabled

---



## Ownership

---

- Down payment



## Ownership

---

- Down payment
- Rent-to-own





## Ownership

---

- Down payment
- Rent-to-own
- Co-buying



## Rental

---

- Alternative screening



NOVA CREDIT





## Rental

---

- Alternative screening
- Security deposits



NOVA CREDIT



JettyRent

Rhino



LeaseLock

obligo

## Rental

---

- Alternative screening
- Security deposits
- Alternative rent



NOVA CREDIT



ReHome  
Matching housing with refugee tenants

JettyRent

Rhino

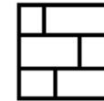


LeaseLock

obligo

flex.

BILT  
REWARDS



esusu



## Rental

---

- Alternative screening
- Security deposits
- Alternative rent
- Co-living



NOVA CREDIT



ReHome  
Matching housing with refugee tenants

JettyRent

Rhino



LeaseLock

obligo

flex.

BILT  
REWARDS 

esusu



PadSplit

BUNGALOW



HomeShare Online

## Development

---

- Zoning/permitting



**ReZone**  
Nationwide

**Homes for All**



**GREENLITE**

**P PermitFlow**



## Development

---

- Permitting
- Densification



**Homes for All**



## Development

---

- Permitting
- Densification
- Delivery



**Homes for All**

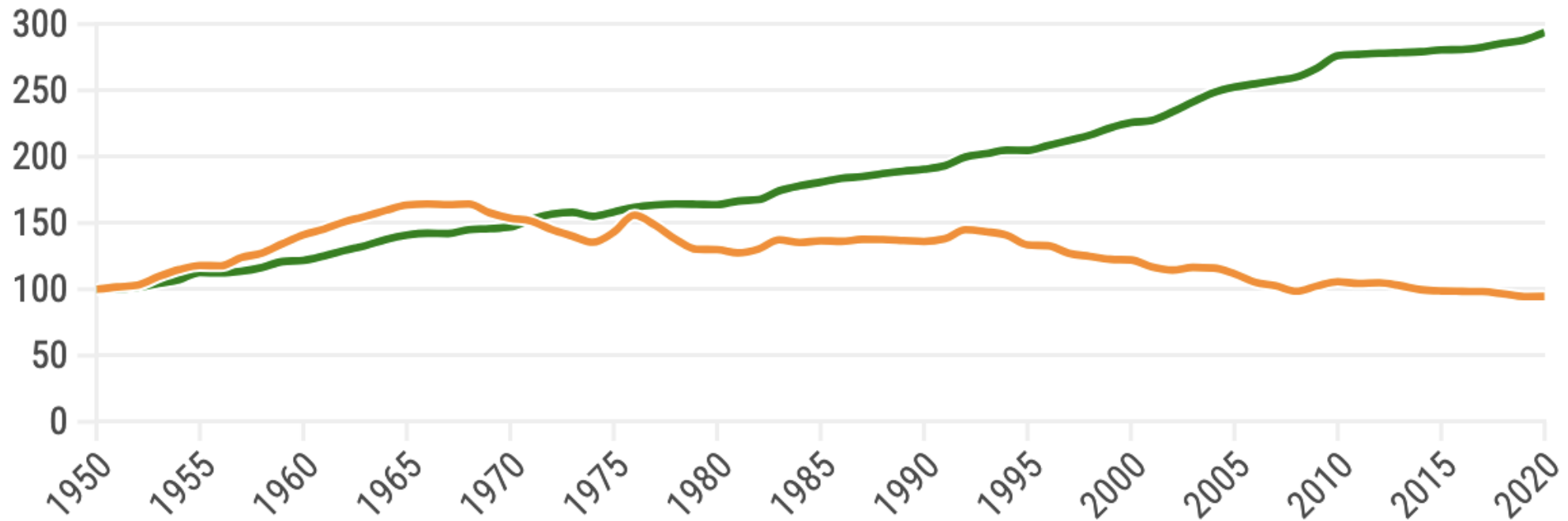


# Productivity in the US construction industry has been a disaster since the 1970s.

rke

Index (1950=100)\*

Overall labor productivity Construction sector labor productivity



\*Value added per full-time equivalent worker

Source: Goolsbee and Syverson, 2023



## Off-site

---



## Off-site - ADU

---



 **Mod.Homes**



**GEOSHIP**

## Off-site - multi

---



**Factory\_OS™**



**wohm**



**ASSEMBLY OSM**



# Key takeaways

- The *Built Environment Transition* will change **everything** we know about real estate
- We'll have to **rethink** the what where, why and how of real estate.
- Real estate will be vastly more **technology** driven.



# Thank you!



**Steve Weikal**

Industry Chair

*Real Estate Transformation Lab*

*MIT Center for Real Estate*

General Partner, *MET Fund II*

*sweikal@mit.edu*

white + burke  
**VERMONT**  
**DEVELOPMENT**  
CONFERENCE