



NEW YORK  
STATE OF  
OPPORTUNITY.

RetrofitNY

# RetrofitNY

*DOE Building Technology Office*

*Peer Review Conference*

*Crystal City, VA*

*April 30, 2018*

## ➤ 40% Reduction

in Greenhouse Gas Emissions (from 1990 baseline)

❖ on path toward 80% reduction by 2050

## ➤ 50% of Electric Generation

from Renewable Energy Sources

❖ **Clean Energy Standard (mandate)**

## ➤ 23% Decrease

in Energy Consumption by Buildings (from 2012 baseline)

## ➤ 185 Trillion BTU reduction by 2025


- ❖ Cumulative site energy savings vs. current 2025 forecast
- ❖ ~ 40% beyond the EE target set by 2015 NYS Energy Plan
- ❖ equivalent to powering over 1.8 million New York homes annually
- ❖ will deliver nearly one-third of the GHG emissions reductions needed to meet NY's 40 by 30 climate goal

## ➤ New Efficiency: New York

- ❖ Whitepaper published by NYSERDA & NYDPS
- ❖ Proposes comprehensive EE initiative to meet new target
- ❖ <https://www.nyserda.ny.gov/-/media/Files/Publications/New-Efficiency-New-York.pdf>

Reforming the Energy Vision (REV): Governor Cuomo's comprehensive strategy to build a clean, resilient and affordable energy system for all New Yorkers.

- Reforming the Utility Regulatory System
- Evolution of NYS Clean Energy Programs
  - Clean Energy Fund
- Leading by Example with the State's Assets

- 10-year, \$5 billion State funding commitment to support REV
- Reshapes New York's clean energy programs
  - Incentive based  Market Transformation
- Reduce the market cost of deploying clean energy solutions
- Accelerate the market's rate of adoption
- Mobilize private investment in clean energy
  - New York Green Bank (\$1B clean energy investment fund)
  - NY Sun



# Create a large scale, self-sustaining market for high performance retrofit solutions

Industry-designed, cost-effective, long-lasting retrofit solutions for tenanted buildings reaching or approaching net zero energy.

Implement solutions on a large scale to drive industrialization, reduce cost, and standardize and guarantee long-term performance.

# ENERGIESPRONG

7



Netherlands



United Kingdom



Germany



France



New York

**Revolutionizing  
the way  
multifamily  
buildings are  
renovated,  
keeping  
residents in  
their homes.**



**[Nyserda.ny.gov/RetrofitNY](https://nysenrda.ny.gov/RetrofitNY)**



# We are looking for solutions that

## Are designed to

- **Be cost-effective:** planned rehab budget + savings
- **Improve the appearance of the building**
- **Improve health, comfort, quality of life for tenants**
- **Achieve or approach net-zero energy**
- **Eliminate fossil fuel use onsite**

## Are delivered with

- **Residents in place with limited disruption**
- **A long term energy performance guarantee**



Woodrow Wilson Apartments  
Amsterdam, NY  
Circa 2014





Woodrow Wilson Apartments  
Amsterdam, NY  
Circa 2016

Courtesy: Beacon Communities, LLC

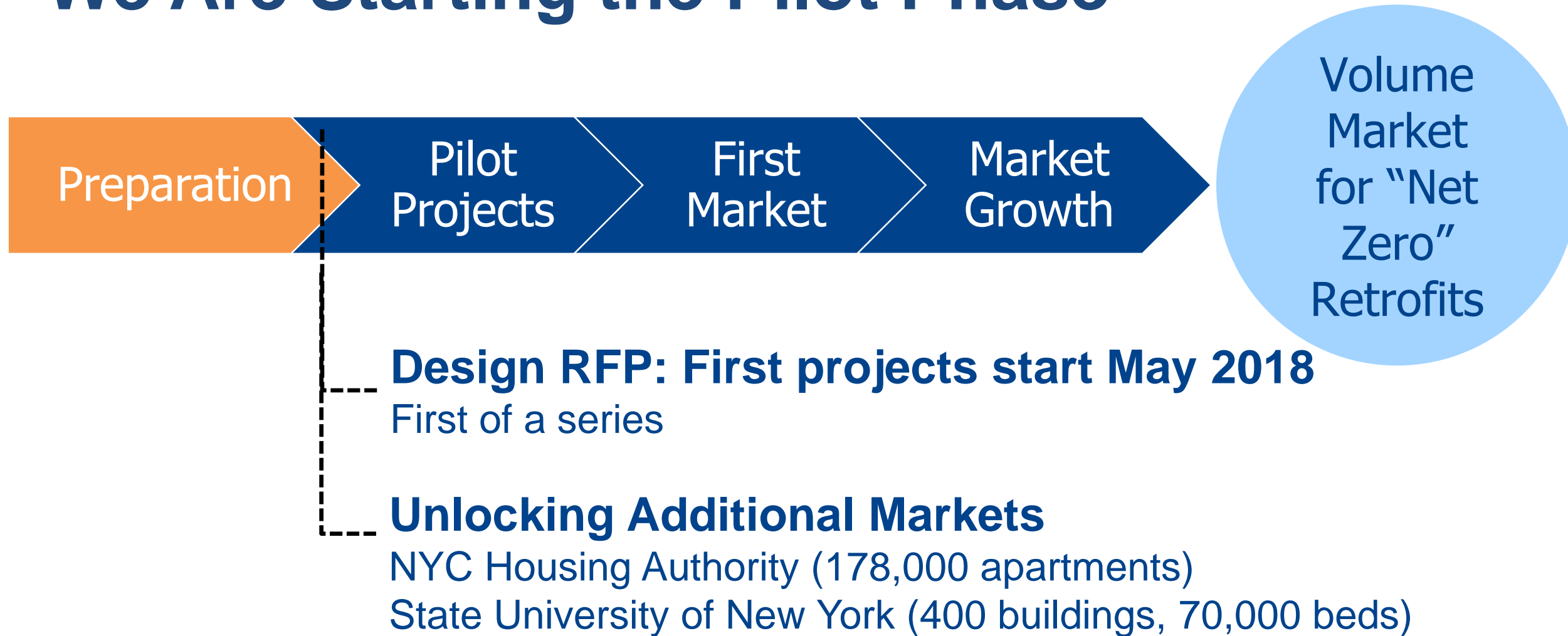


# Key Components of the Energiesprong Solution

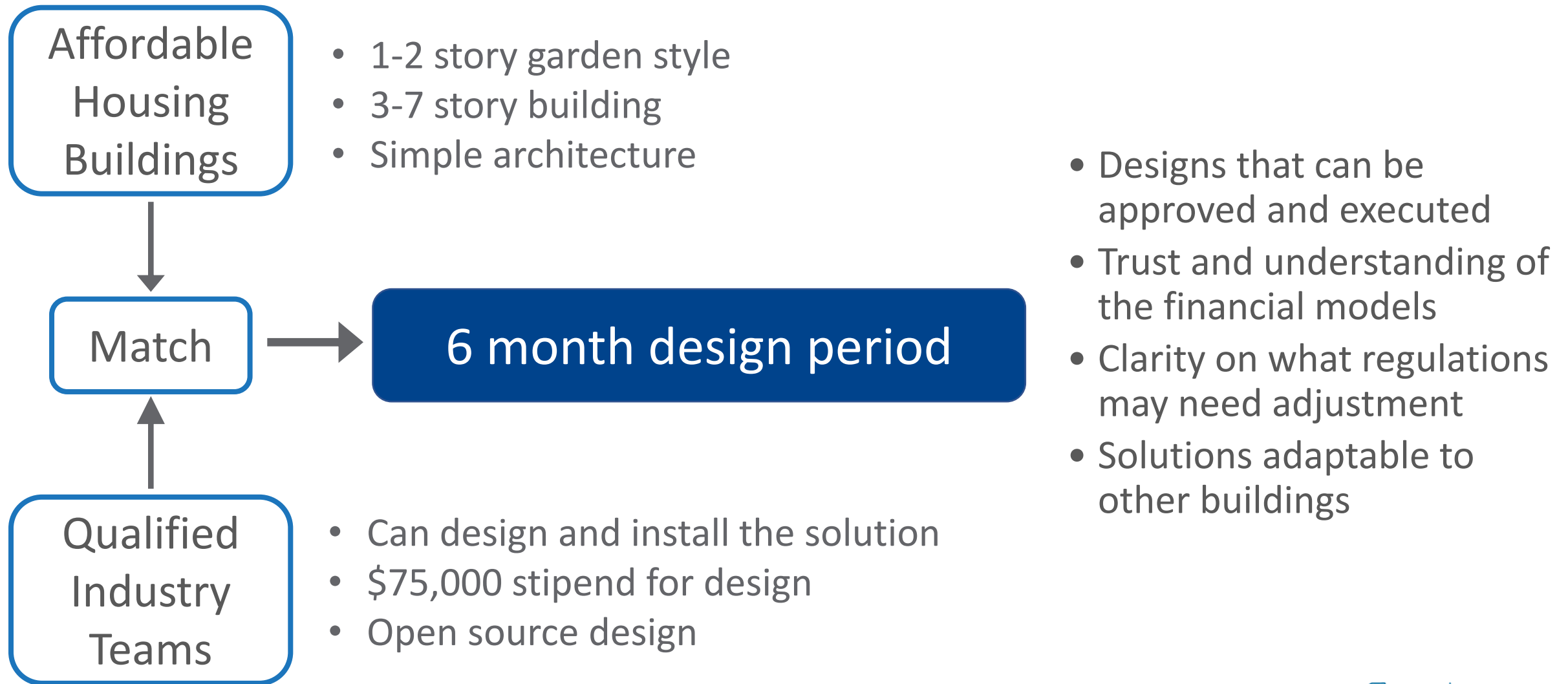
## Elements

- Highly insulated building envelope
- New mechanical works
- On-site generation

# We Are Starting the Pilot Phase







6 month design period



Deal Closing  
+  
Construction

### Supporting the Teams

- Transfer of knowledge from Energiesprong
- Coaches
- \$75,000 stipend
- IPNA for Buildings

### Making the Deal

- Regular touch base
- HPD, HCR and HUD
- Financing partners
- Permitting agencies

Gap Funding Available

**Encourage collaboration between teams and open communication with owners and agencies**



A successful model to show market potential

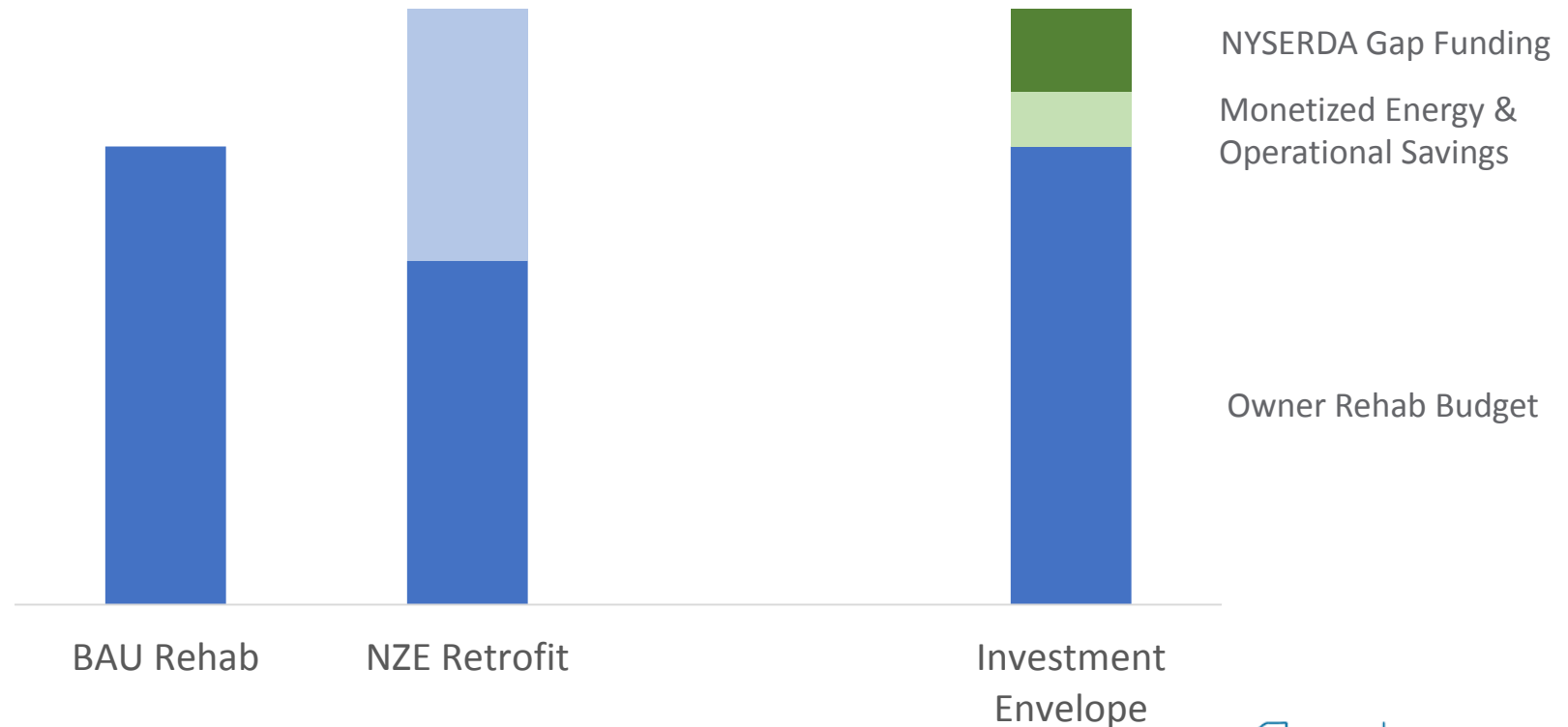
## Cost per Unit & Performance of Retrofits

By reaching scale, this solution will become the standard.

This is where the market is headed, and you can be ahead of the curve.

# Opportunity In Scope Overlap + Our Commitment to Getting Projects Built

- Marginal cost of NZE retrofit vs. BAU Rehab = \$25-30k/unit
- Monetized operational savings + NYSERDA funding to bridge the gap
- NZE Retrofits will be more cost-effective in coming years via cost compression, innovation, standardization, and scale



10



1,000





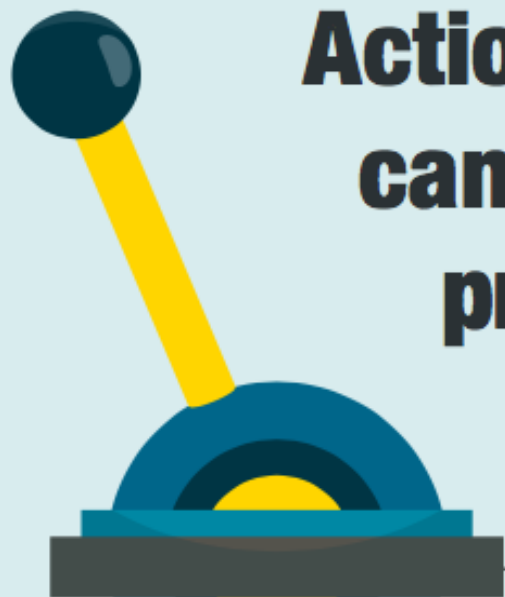
Report

McKinsey Global Institute

February 2017

# Reinventing construction through a productivity revolution

A construction worker wearing a yellow hard hat and a high-visibility safety vest is shown from the side, looking down at a tablet computer. The background is a bright, warm yellow, suggesting a construction site at sunrise or sunset.




**Action in seven areas  
can boost sector  
productivity by  
50–60%**

- Reshape regulation
- Rewire contracts
- Rethink design
- Improve procurement and supply chain
- Improve onsite execution
- Infuse technology and innovation
- Reskill workers

**5–10x productivity boost**

possible for some parts of the industry by moving  
to a manufacturing-style production system

























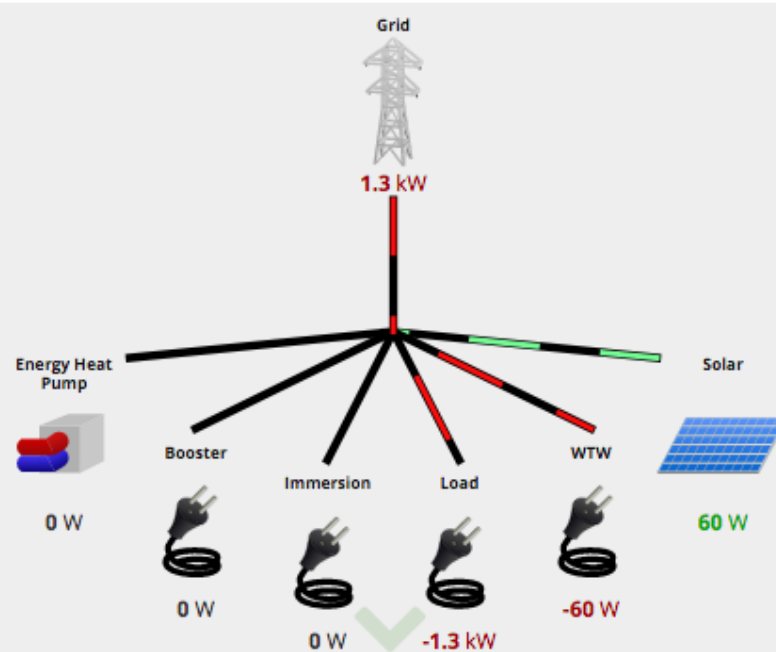


20<sup>th</sup> century solutions  
scale essential to transform









CO2  
795.56 ppm



TEMPERATURE  
17 °C



HUMIDITY  
55.03 %



VOC  
23.47 ppm



REDUCED CO2 FOOTPRINT BY

389,32 kg

BY PRODUCING

707,86 kWh

TREES SAVED PER YEAR 🌲

HEATPUMP

CONSUMING  
0,00 W

STATE



ACTIVE ALARMS

- |                     |                              |
|---------------------|------------------------------|
| ⚠️ Load             | No data received for 2 hours |
| ⚠️ Water vessel     | No data received for 2 hours |
| ⚠️ Thermostat       | No data received for 2 hours |
| ⚠️ Grid             | No data received for 2 hours |
| ⚠️ Energy Heat Pump | No data received for 2 hours |
| ⚠️ CO2 Sensor       | No data received for 2 hours |
| ⚠️ Booster          | No data received for 2 hours |

ADMIN MAINTENANCE



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**Thank you**  
RetrofitNY@nyserda.ny.gov