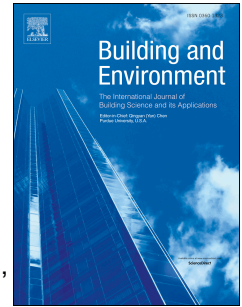


# Accepted Manuscript

Ten questions concerning future buildings beyond zero energy and carbon neutrality

Na Wang, Patrick E. Phelan, Jorge Gonzalez, Chioke Harris, Gregor Henze, Robert Hutchinson, Jared Langevin, Mary Ann Lazarus, Brent Nelson, Chris Pyke, Kurt Roth, David Rouse, Karma Sawyer, Steve Selkowitz



PII: S0360-1323(17)30157-9

DOI: [10.1016/j.buildenv.2017.04.006](https://doi.org/10.1016/j.buildenv.2017.04.006)

Reference: BAE 4880

To appear in: *Building and Environment*

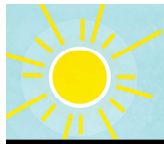
Received Date: 10 February 2017

Revised Date: 7 April 2017

Accepted Date: 8 April 2017

Please cite this article as: Wang N, Phelan PE, Gonzalez J, Harris C, Henze G, Hutchinson R, Langevin J, Lazarus MA, Nelson B, Pyke C, Roth K, Rouse D, Sawyer K, Selkowitz S, Ten questions concerning future buildings beyond zero energy and carbon neutrality, *Building and Environment* (2017), doi: 10.1016/j.buildenv.2017.04.006.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

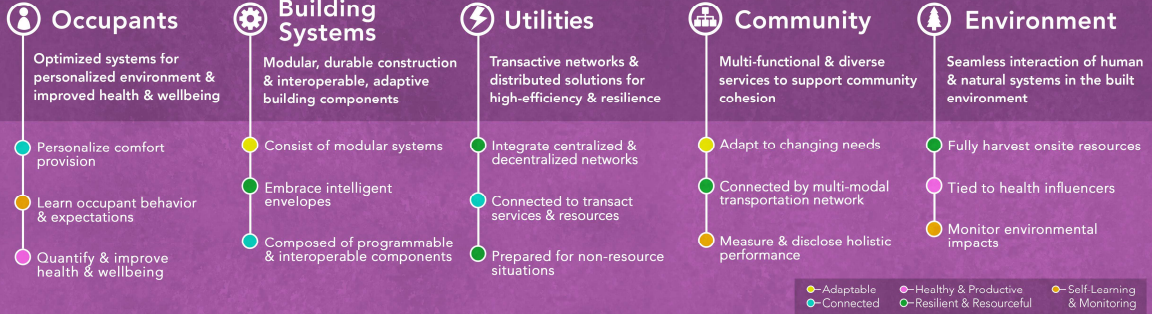


# A Vision for Future Buildings

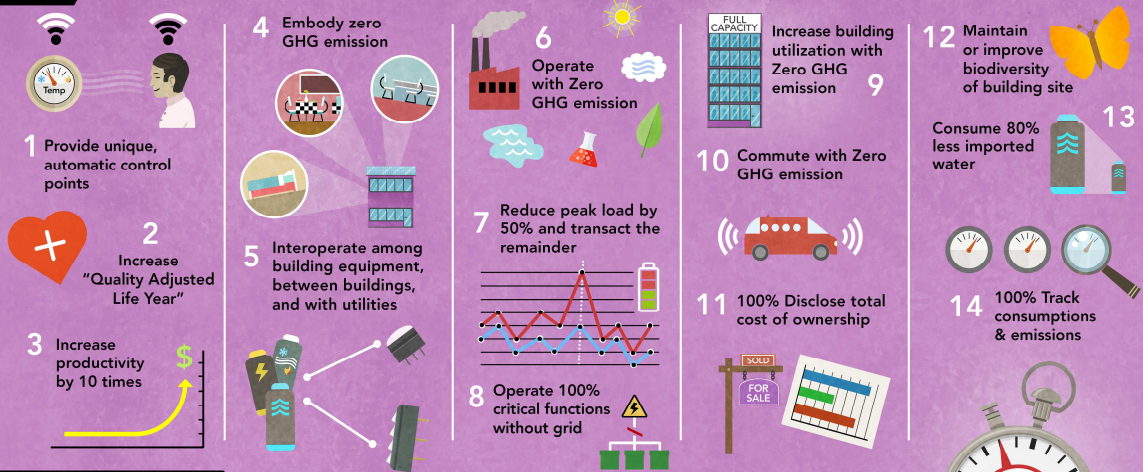
futurebuildings.pnnl.gov

What will buildings be like in 100 years? By working closely with leaders from academia and industry we have defined an integrated, coherent, and achievable vision — identifying five Characteristics for future buildings with corresponding targets to help us get there. We are beginning to conceptualize the functions and capabilities of these future buildings, today.

## Characteristics

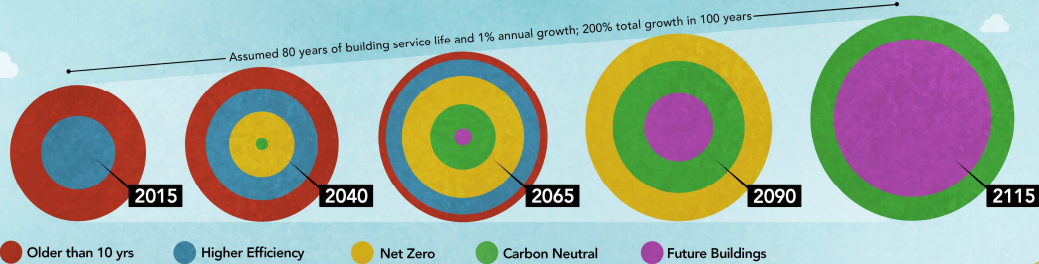


## Targets/Metrics



## Building Stock Turnover

Building evolution is a relatively slow but continuous process. Acknowledging the focus of energy efficiency today and the goals of the net zero and carbon neutral in the not-too-distant future, we need to plan now for what our future buildings will be.



U.S. DEPARTMENT OF ENERGY

Pacific Northwest NATIONAL LABORATORY

Download English Version:

<https://daneshyari.com/en/article/4917328>

Download Persian Version:

<https://daneshyari.com/article/4917328>

[Daneshyari.com](https://daneshyari.com)