

The Perfect Match

ZERO ENERGY* + ARCHITECTURAL SOLAR

* ZERO ENERGY (ZE) \approx
Zero Net Energy (ZNE)
Net Zero Energy (NZE)
Zero Carbon (ZC)

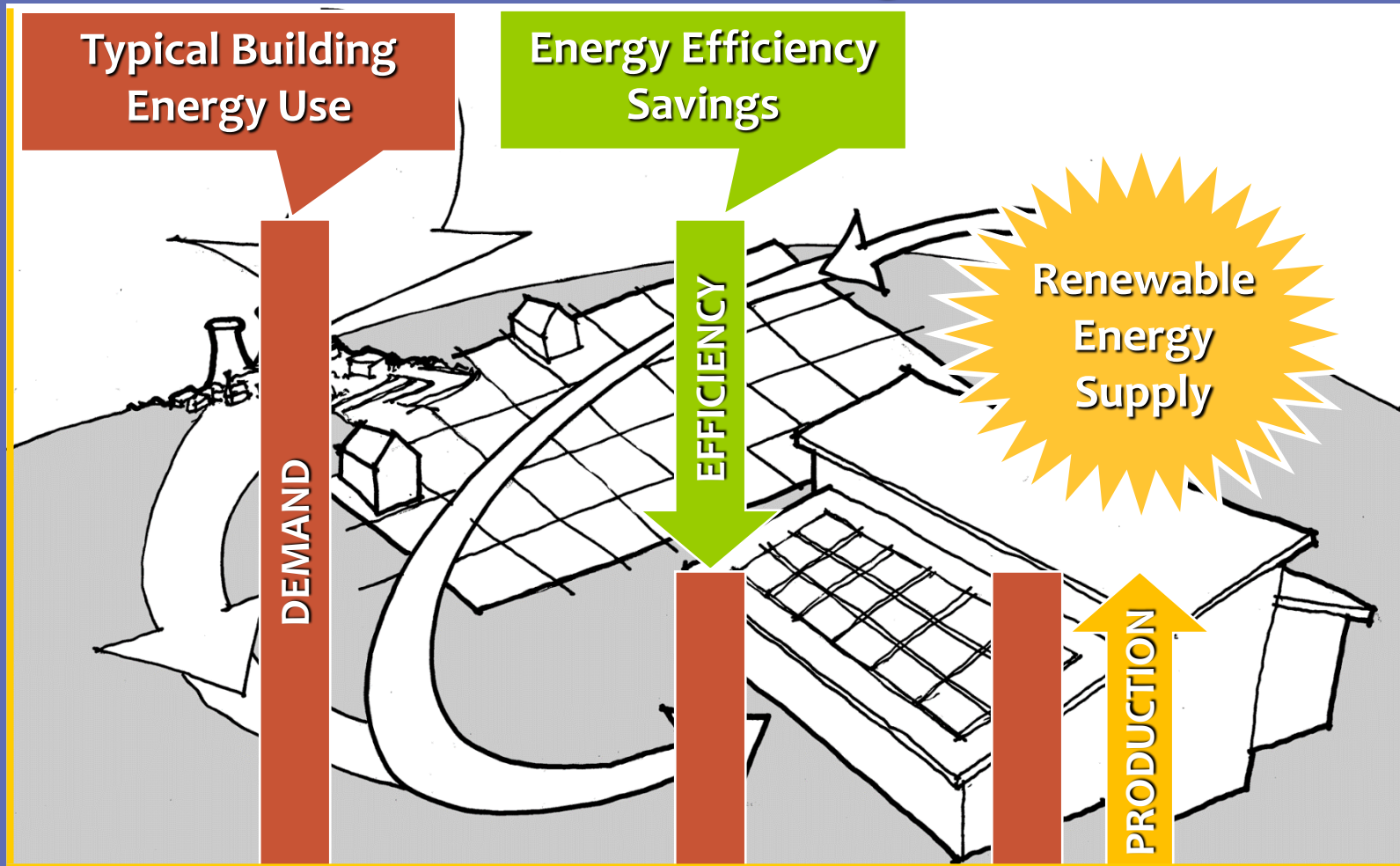
...



annedminster.com | zero energy consulting

Zero Energy:

An efficient, grid-tied building/community with renewable energy



that balances **PRODUCTION** with **DEMAND** on an annual basis

Zero Energy is global and it's happening at community scale

Japan



Netherlands



United States

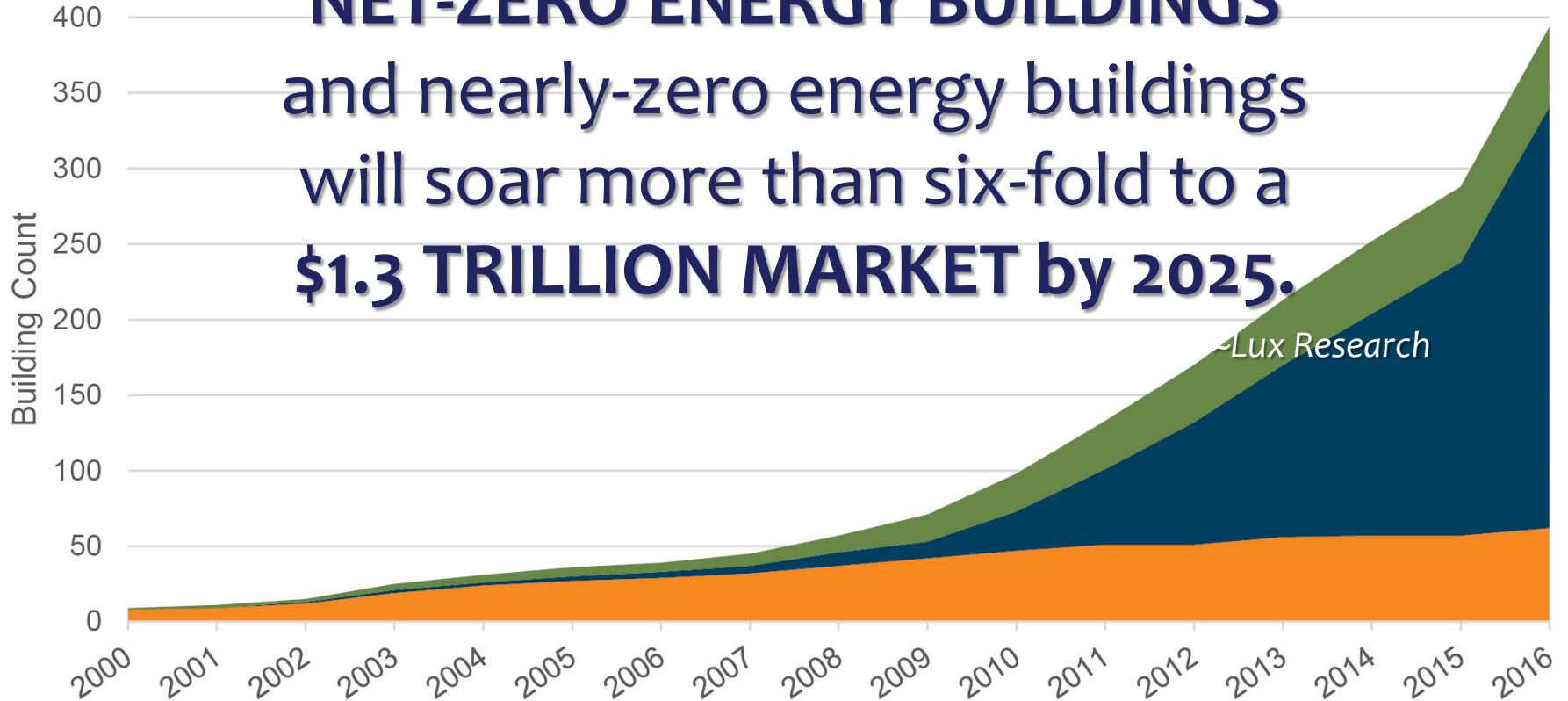


Panama

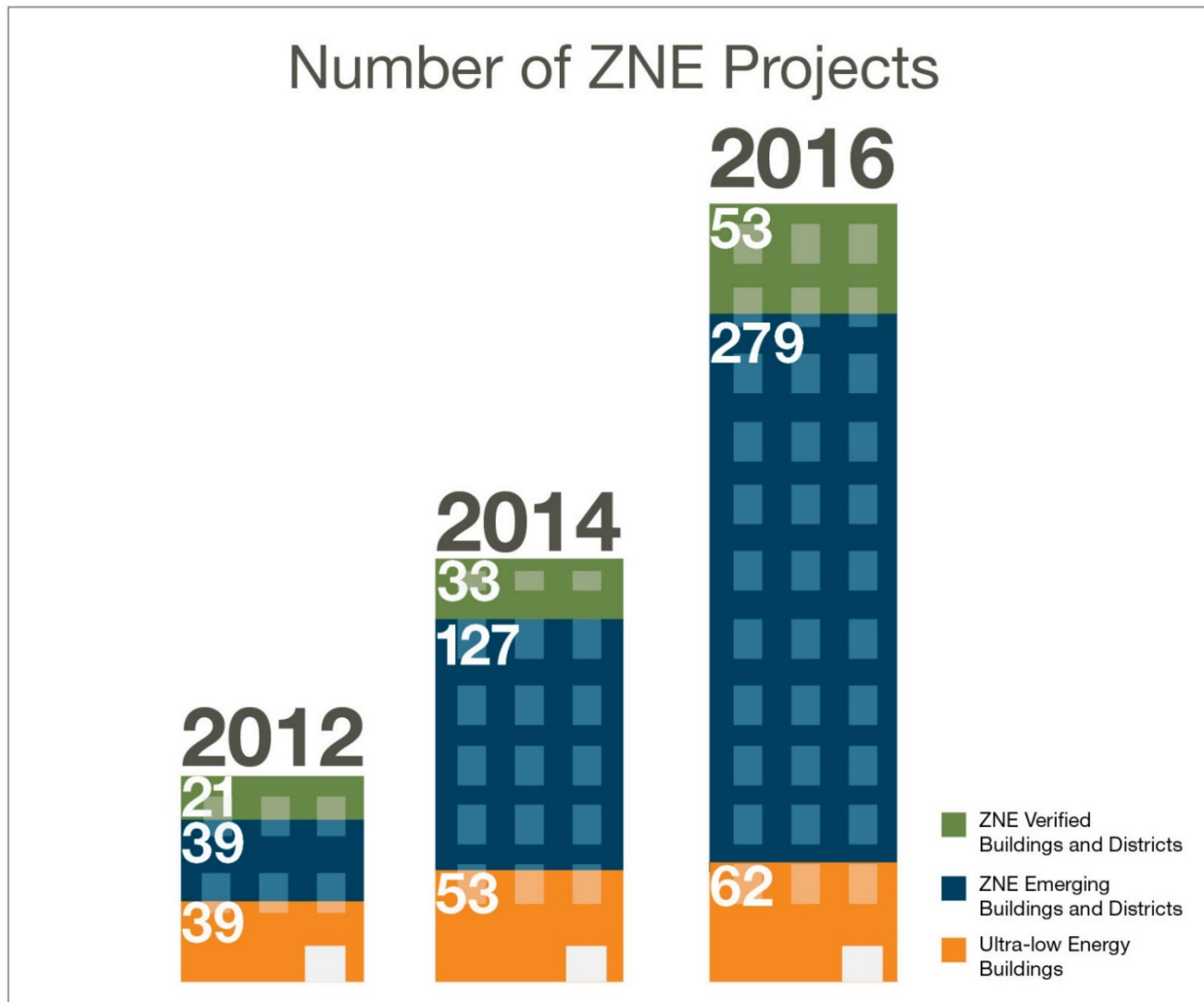


Zero Energy is growing fast

**NET-ZERO ENERGY BUILDINGS
and nearly-zero energy buildings
will soar more than six-fold to a
\$1.3 TRILLION MARKET by 2025.**



Non-residential Zero Energy growth



TO ZERO AND BEYOND

Zero Energy Residential Buildings Study

2016 Inventory of residential projects on the path to zero in the U.S. and Canada

JUNE 2017

Residential Zero Energy growth 2015-2016

+82%



741

PROJECTS

+22%



4,077

BUILDINGS

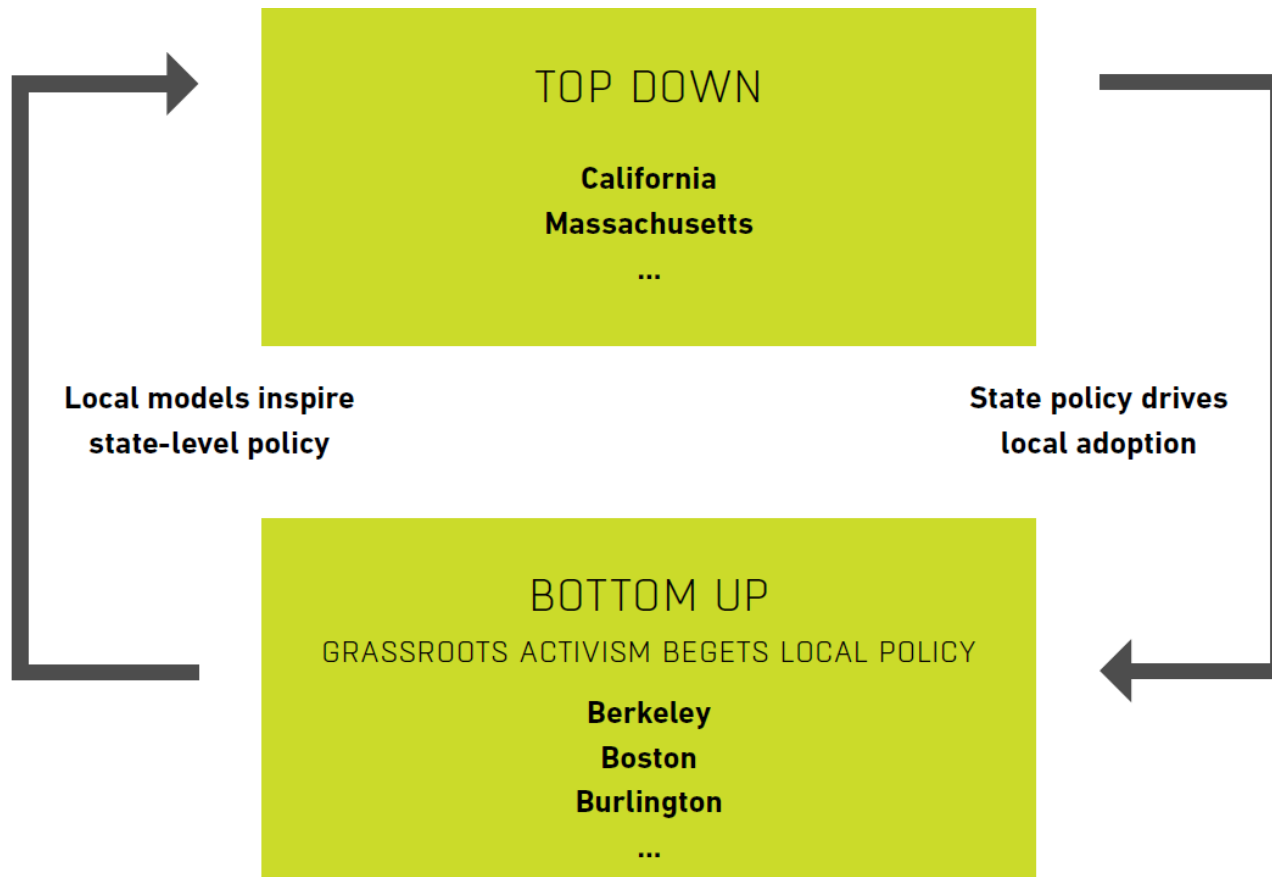
+33%



8,203

UNITS

Zero Energy **growth drivers:** policy & grassroots initiatives



2016 Residential Inventory

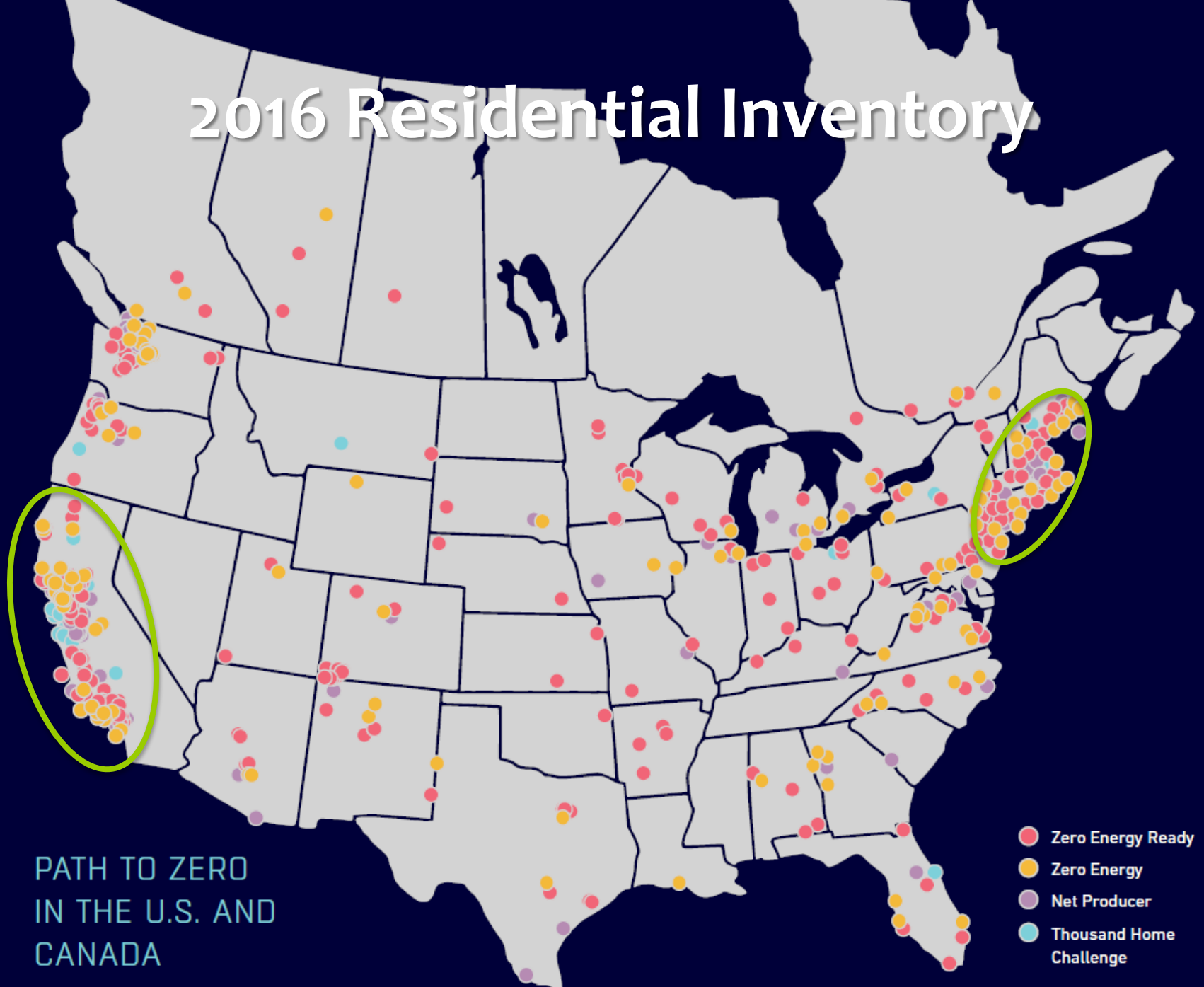
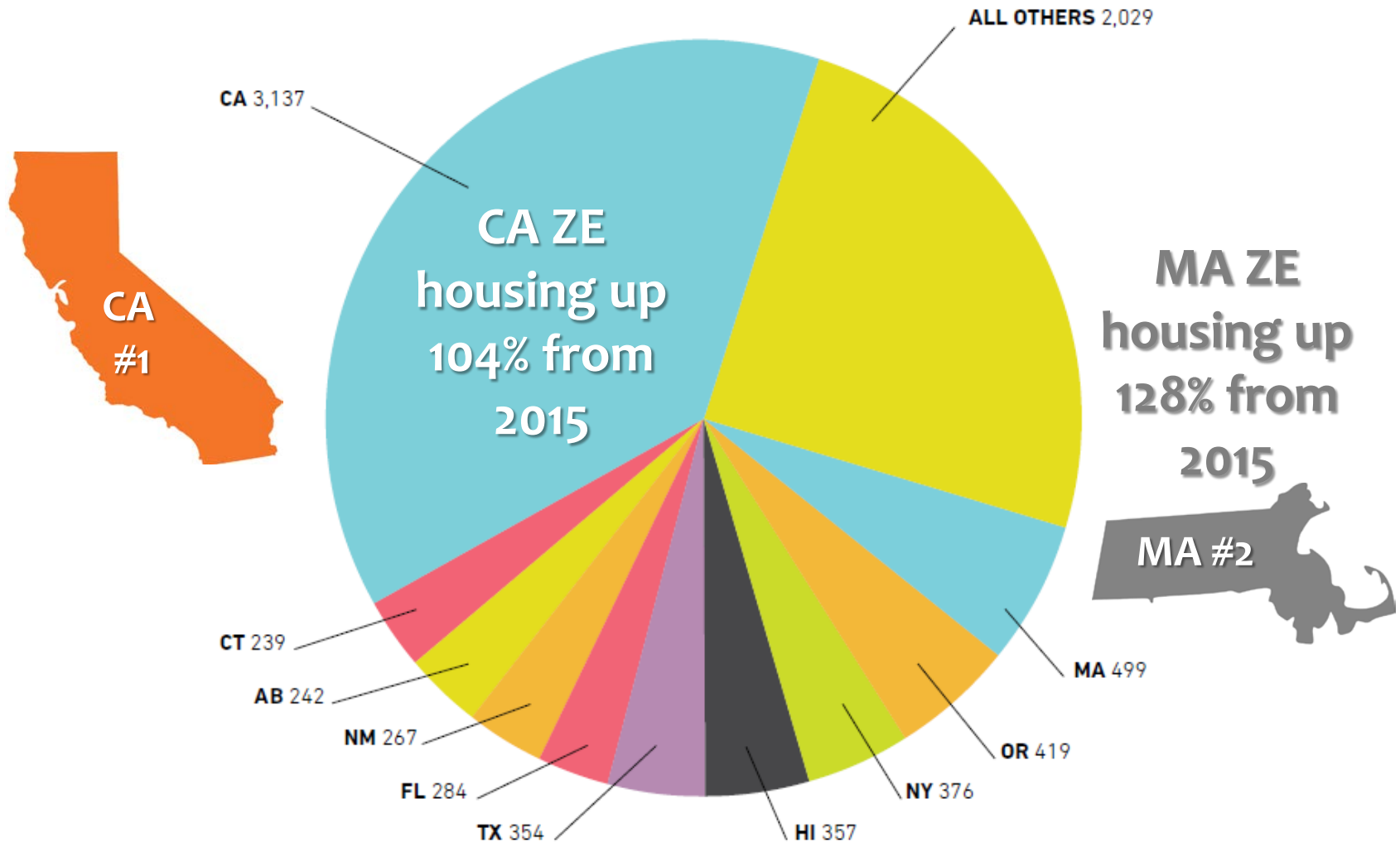


Image courtesy of the Net Zero Energy Coalition | netzeroenergycoalition.com

Top US states have Zero Energy policies & programs



MORE Zero Energy on the horizon!



COMPLETED

5,593

UNITS

594

PROJECTS



UNDER CONSTRUCTION

1,478

UNITS

97

PROJECTS



IN DESIGN

1,129

UNITS

51

PROJECTS



PLANNED

29,948

UNITS

40

PROJECTS

Zero Energy homes are going **UP!**



Z Home



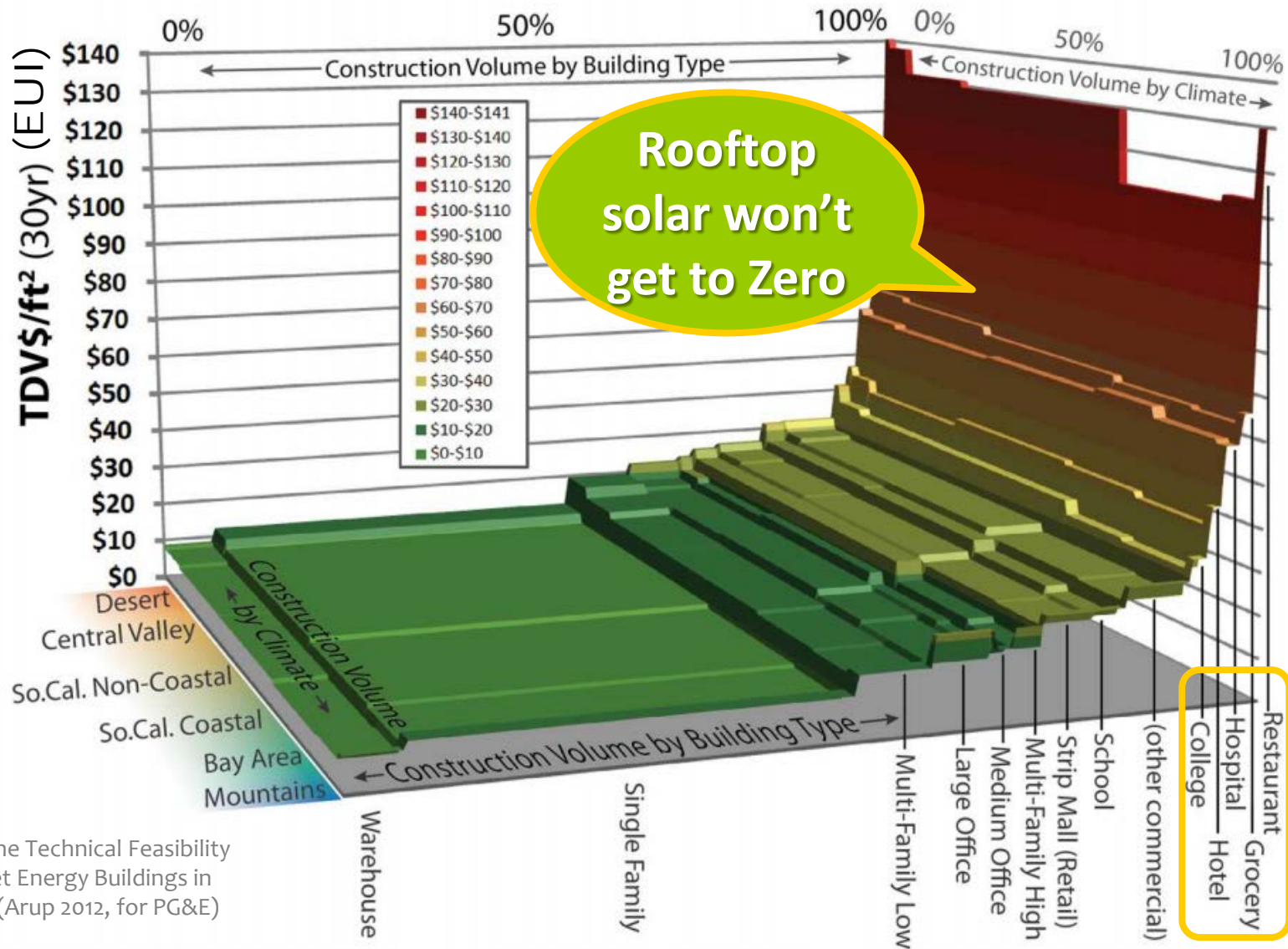
The Pacific Companies

Multifamily
50% in 2015
58% in 2016



K. Boodjeh Architects

Taller Zero Energy buildings in more severe climates → Architectural Solar

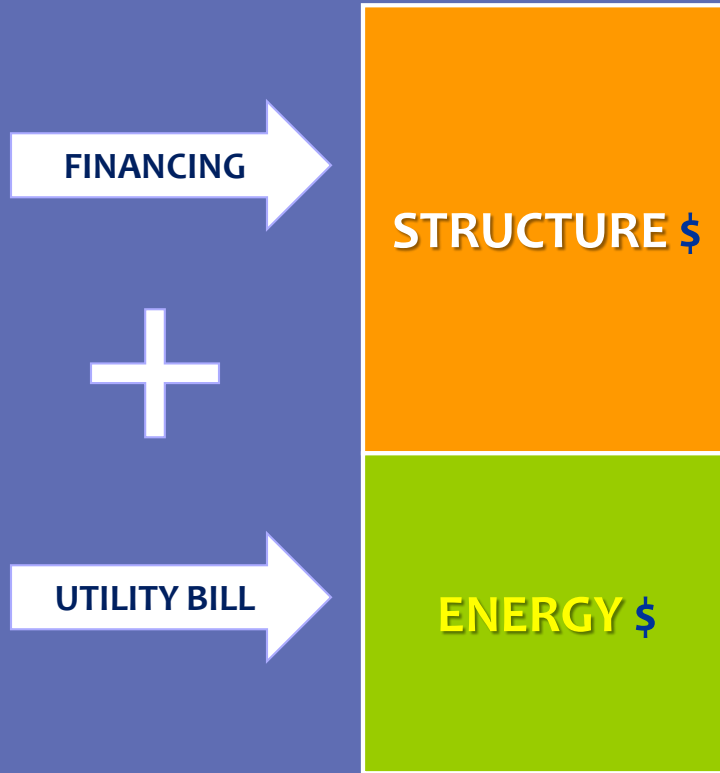


Source: The Technical Feasibility of Zero Net Energy Buildings in California (Arup 2012, for PG&E)

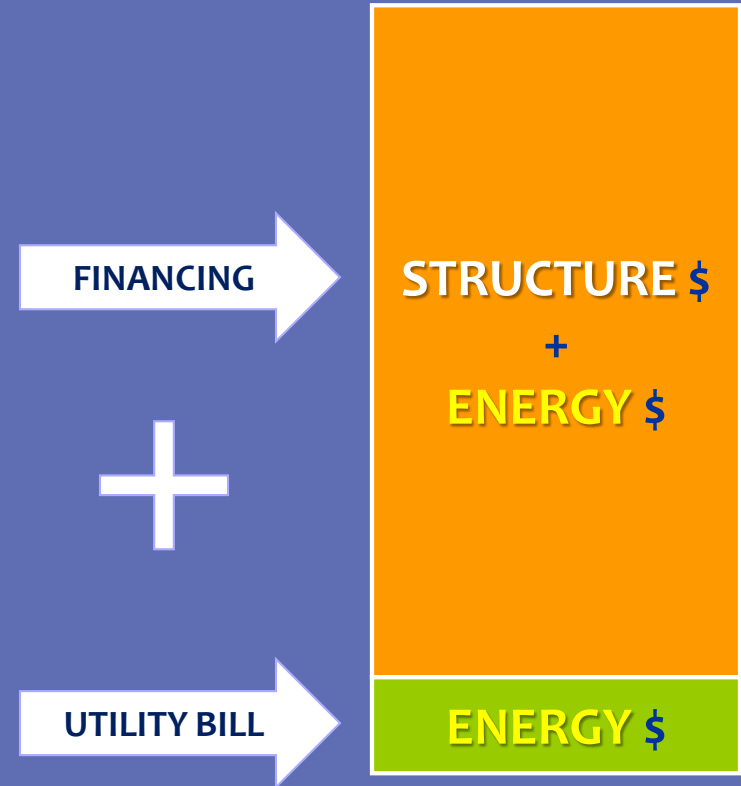
Closing thoughts
on
COST
and
VALUE

Zero Energy is not the same product!

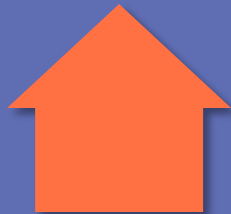
CONVENTIONAL BUILDING



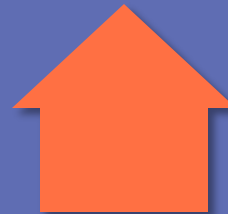
ZERO ENERGY BUILDING




COMPARE



VS.





Zero Energy is not an **ADDED COST!** It's an **ADDED VALUE.**

Rocky Hill Co-Housing Community, Northampton, MA

Making Choices Instead of Paying Premiums for Greener Buildings

By BRUCE COLDHAM

It is often presumed that “green” resourceful building involves a cost premium. This is not a universal truth. Though it is reasonable to assume that a superior product should come at a premium, good performance-enhancing design is more a matter of examining design goals and objectives with a view to redirecting investment. On this basis, a performance enhancement can be seen as favoring one option over another—a choice rather than a cost premium. Unfortunately, due to the rather extreme conservatism in the building industry,

many choices are never made explicit. They are never discussed, never offered.

In this article I will address a particular residential opportunity for improving green resourceful building performance by means of conscious choice rather than cost premium. It involves improving the thermal envelope at the expense of committing to a central heating system. Let's begin with three questions:

1. Can compact, open-planned houses with well designed, well constructed, thermally-efficient building envelopes achieve a reasonable standard of comfort by relying solely on the natural convection air circulation within the house to distri-

bute heat throughout the interior spaces?

2. Can a single space heater located in the first floor living space provide comfortable heating for the whole house?
3. Can the envelope upgrade cost be covered by savings generated by the elimination of the heating ducts/pipes and the associated fans/pumps?

The evidence of recent projects completed by our office is that we can confidently answer YES to each of these three questions.

With the savings from *not* investing in central heating, we are able to afford better windows (at least up to a U value

If a project
goal is
ZERO
ENERGY,
then getting
to zero can't
“cost extra.”

Build Zero!

*Thank
you!*



annedminster.com

