WHY LOW TECH TRUMPS
Widgets & Gadgets Every Time
Getting to Zero Carbon (& beyond)
A change in **PROCESS** is essential

“In today's business climate, it is so important to stay on the cutting edge ... you must change and grow ... you can’t stay the same and stay in business.”

~ Jerry Unruh
ABC Cooling & Heating

Insanity is doing the same thing over and over again and expecting different results.
How do other industries change?

If you were Kia and decided to produce high-performance autos to compete with BMW ... what would you do?

A product change comes about through changes to PEOPLE & PROCESS.
MINDSET is the most powerful lever for changing what PEOPLE do ...

We are willing to suffer the discomfort of change in order to achieve a better future.

~ Barbara Jordan

... what we do is PROCESS; focusing on these two factors is the key to CHANGE.
Choose your PEOPLE with care –

- Commitment
- Creativity
- Experience
- Engagement

(Code for “plays well with others”)
Then solidify **MINDSET** by setting **GOALS & PRIORITIES** early & revisiting them frequently as a team.
And then adopt an INTEGRATED PROCESS

Buildings perform best when the building components and systems are effectively integrated; Effective building integration happens only if the project team is also well integrated.
Gathering the whole team EARLY and OFTEN

What *is* an Integrated Process?
Doesn’t That COST More?

Relocating mechanical room from penthouse to core:
- Reduced energy loads and
- Reduced first cost by $40,000
Why Integrative Approaches are Cost-Effective

Credit: Patrick MacLeamy
Example: Early Interventions

\[ \downarrow \text{Cost} \uparrow \text{Performance} \uparrow \text{Durability} \]

WEST: before \uparrow after \downarrow

- Easier & less expensive to detail
- Easier to air seal & insulate

SOUTH: before \uparrow after \downarrow

- More room for photovoltaics
- Equally attractive design
How do we get to Zero on budget?

Ask the RIGHT question:
“How do we need to design differently in order to achieve ZERO without increasing costs?”

NOT
“How much extra will it cost to get to zero?”
Important early design factors: 
Building Geometry

- Simple forms
- Long axis E-W
- Overhangs

Code doesn’t address design basics so ... WE need to!
Important early design factors:

**Embedded Systems**

- structure
- air sealing
- plumbing
- electrical
- insulation

If you can’t get to ZC/PH all at once, focus on things that are hard to change later!

Framing factor 12.5% – <50% of CA avg
But DESIGN isn’t the whole DELIVERY process …

The (myth of the) Project Delivery DIVIDE

How we typically think about the process

ACTIVITY

TIME

DESIGN

CONSTRUCTION
But DESIGN isn’t the whole DELIVERY process …

The (reality of the) Project Delivery CONTINUUM

What’s really happening
And so we need Integrated Design and Delivery

ZC/PH Design + [ORDINARY] Construction ≠ ZC/PH Buildings

QUALITY IS CRITICAL

[ORDINARY] Design + ZC/PH Construction ≠ ZC/PH Buildings
How Integrated Design + Delivery produces better buildings

PLUS: reduced change orders, cost overruns, construction time, liability; and increased productivity, harmony, happiness, achievement of goals!
In Summary ... a great project is almost guaranteed when

1. Your process is well integrated and
2. The right people* are on your team –
   * committed
   * creative
   * experienced
   * engaged

The party left out is the one who will cause trouble.

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Improving Green Building Construction in North America: 

Guide to Integrated Design and Delivery

Guidance from the experts –

Bill Reed

“Integrative Process”

Howard Ashcraft

“Integrated Project Delivery”

- Workforce sector-specific guidance
- Alternative contracting forms
- Process templates
- Links to dozens of other resources

Commission for Environmental Cooperation
www.cec.org/greeneconomy
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Integration Contract Structures

AIA A195/B195/A295 Standard Form of Agreement Between Owner and Contractor/Owner and Architect for Integrated Project Delivery

AIA C195 Standard Form Single Purpose Entity Agreement for Integrated Project Delivery

ConsensusDOCS 300 Standard Form of Tri-Party Agreement for Collaborative Project Delivery
INTEGRATION

is the PATH to

ZERO

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- Zero energy consulting
- Integrated design & delivery facilitation
- Capacity building