



2012 American Chemical Society
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■ A Virtual Tour: Dow's InVision Zero Home

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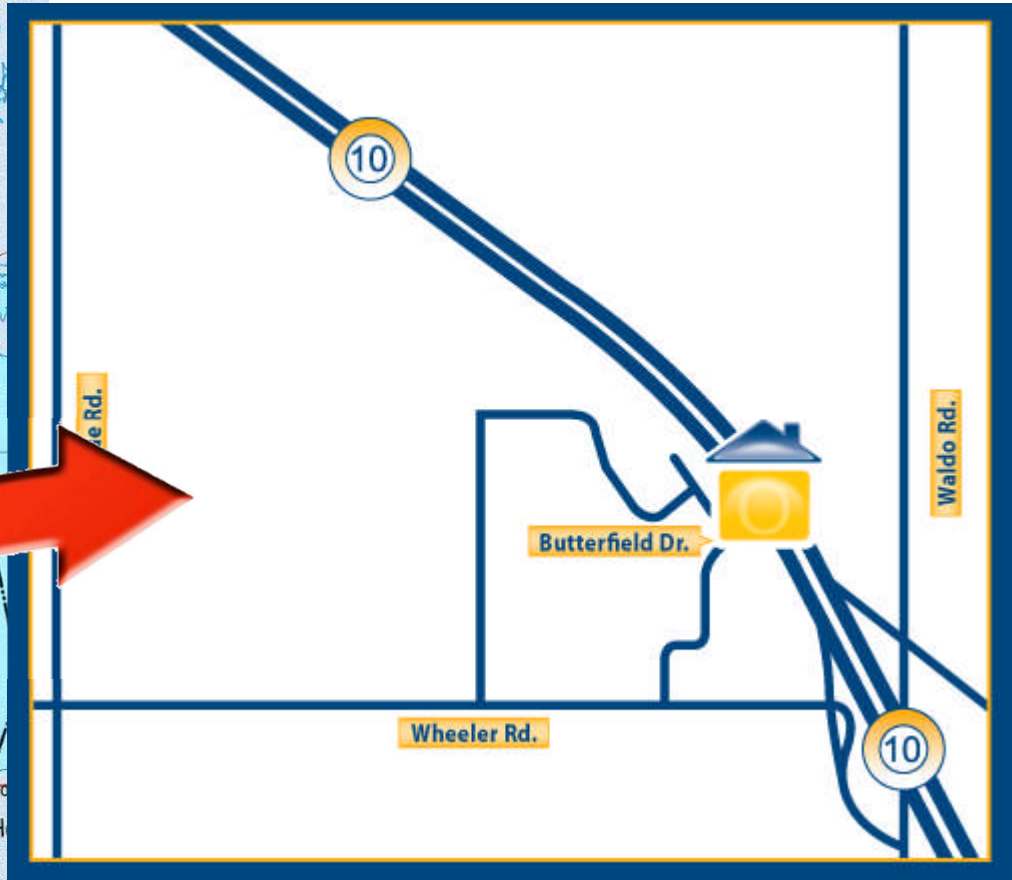
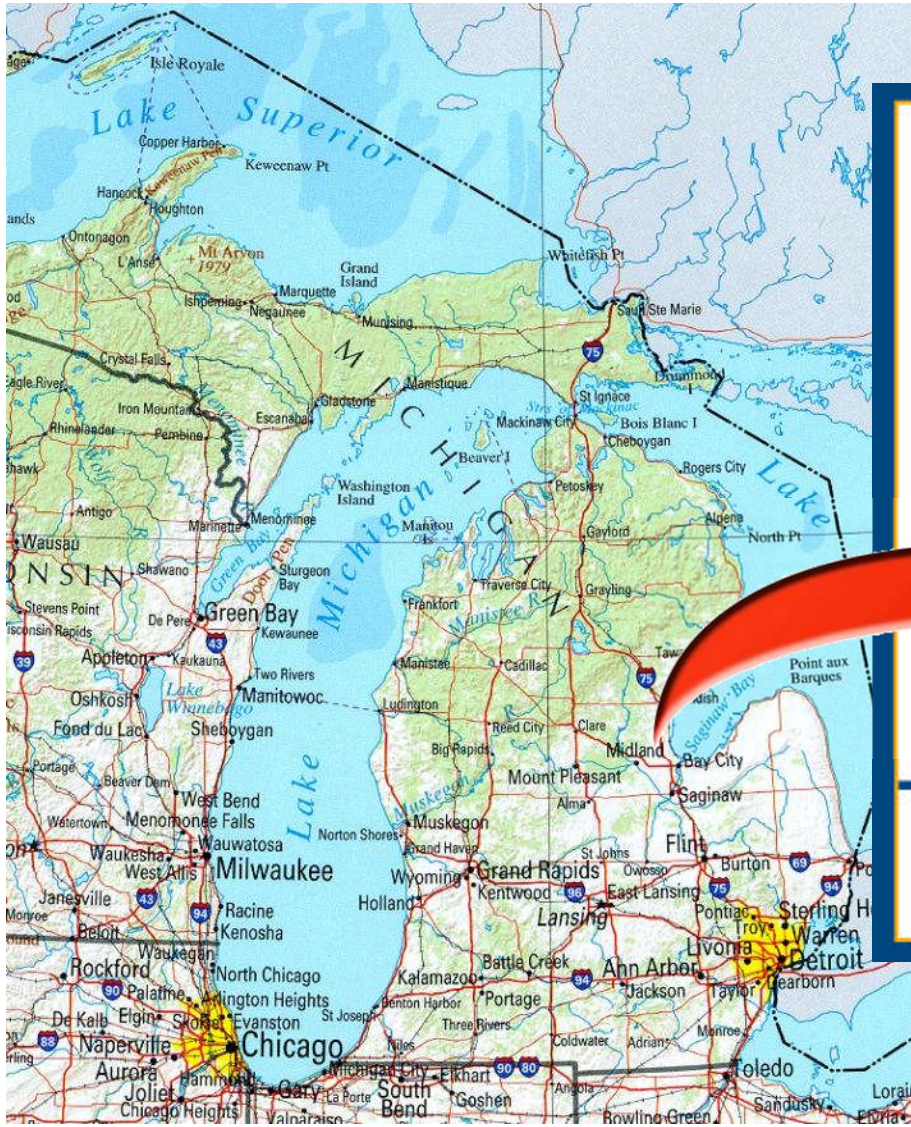
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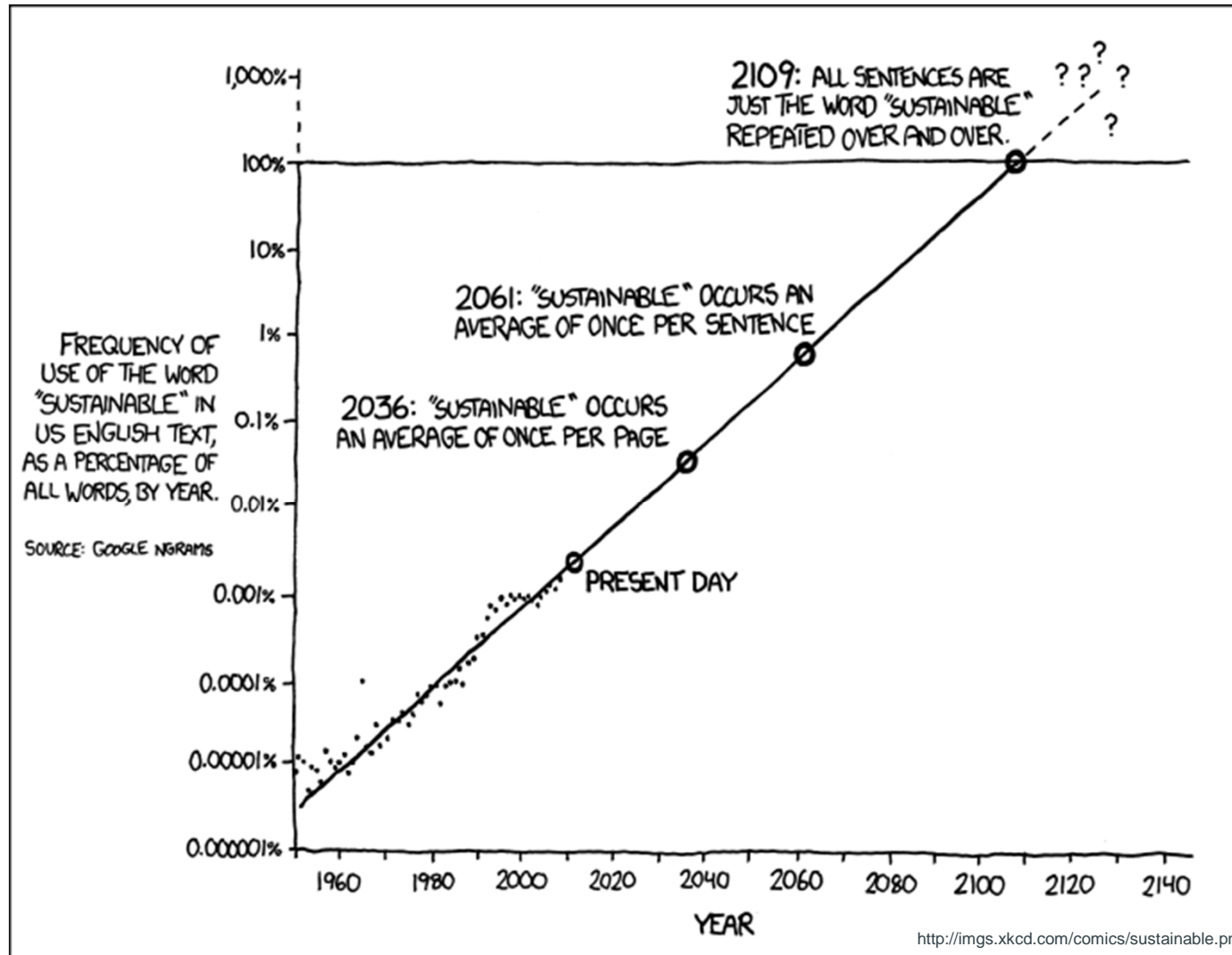
■ Not a House of the Future



Location



Sustainability

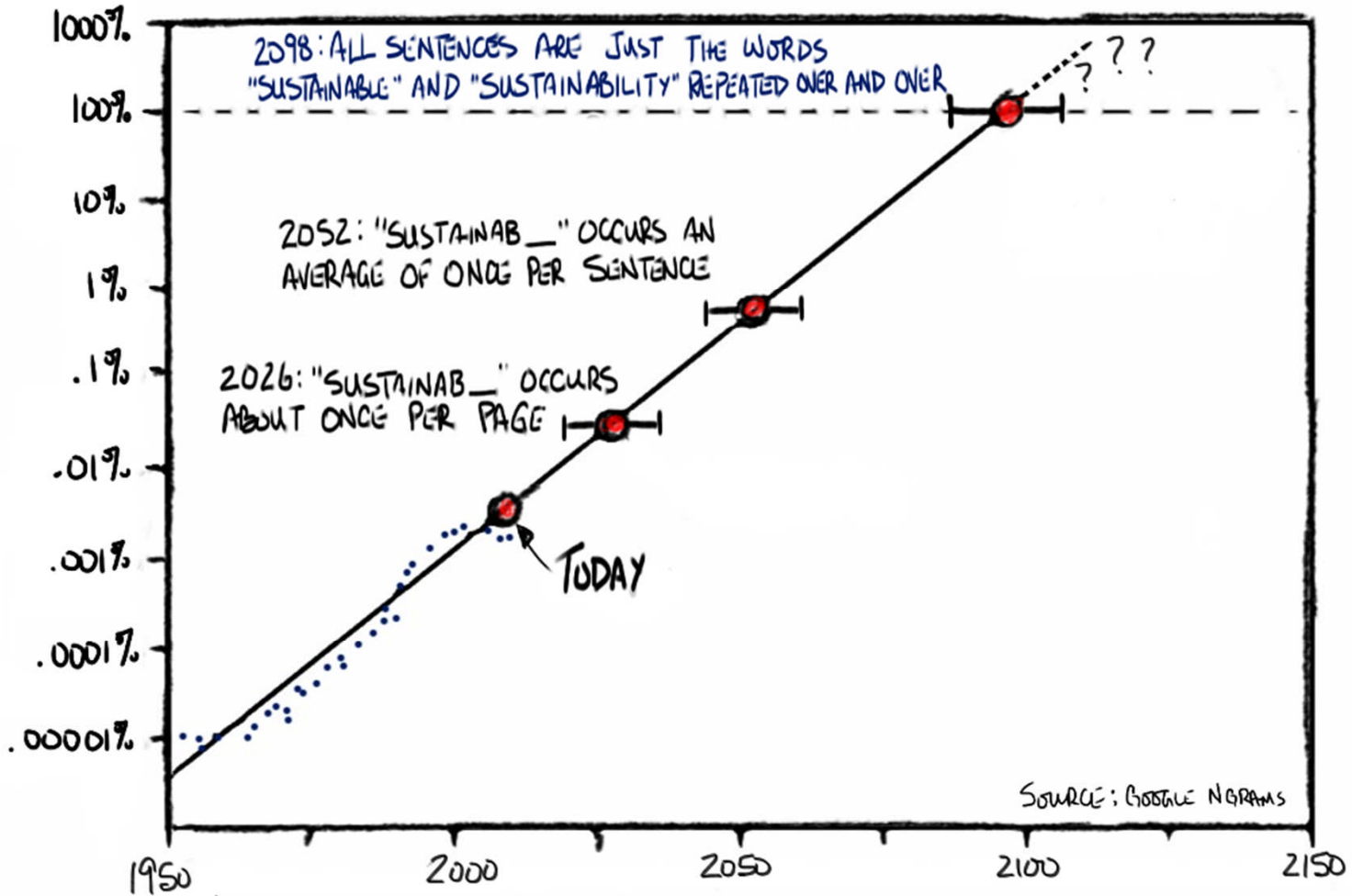


THE WORD "SUSTAINABLE" IS UNSUSTAINABLE.



Sustainability is Unsustainable?

FREQUENCY OF THE USE OF THE WORDS
"SUSTAINABLE" AND "SUSTAINABILITY"
IN U.S. ENGLISH TEXT, % OF ALL WORDS

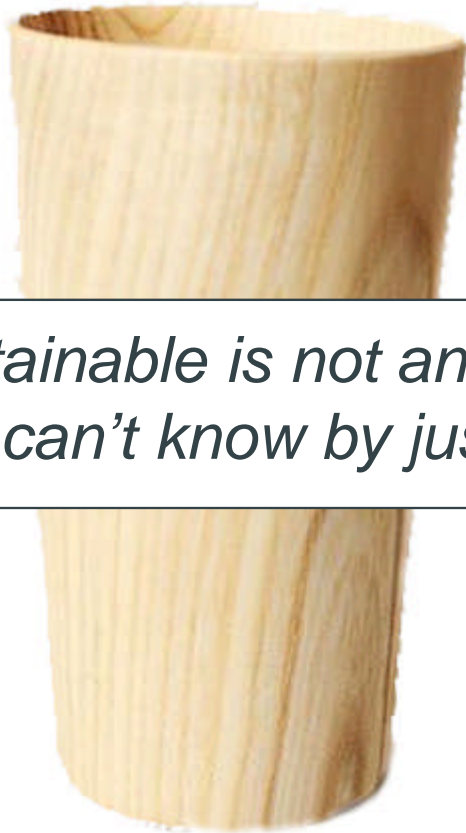


Source: Google Ngrams

<http://imgs.xkcd.com/comics/sustainable.png>



■ Is this Cup Sustainable?



*Sustainable is not an intrinsic property of a material!
You can't know by just looking.*

How about this one?

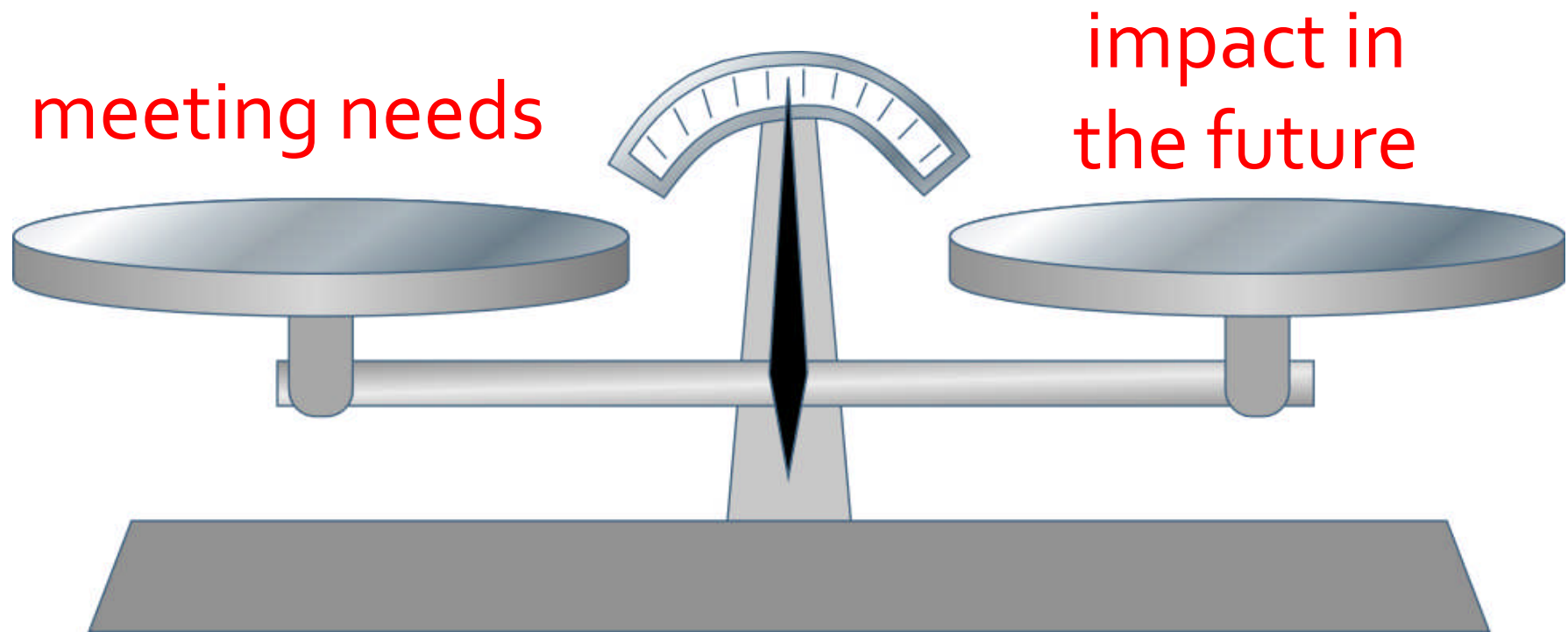
■ What is Sustainability ?

Sustainable development is the ability to meet present needs without compromising the needs of future generations. World Commission on Environment and Development's

Sustainable building is the practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout a building's life-cycle. epa.gov/greenbuilding/

Conserving an ecological balance by avoiding depletion of natural resources. Oxford dictionaries

■ Sustainability Is A Balance



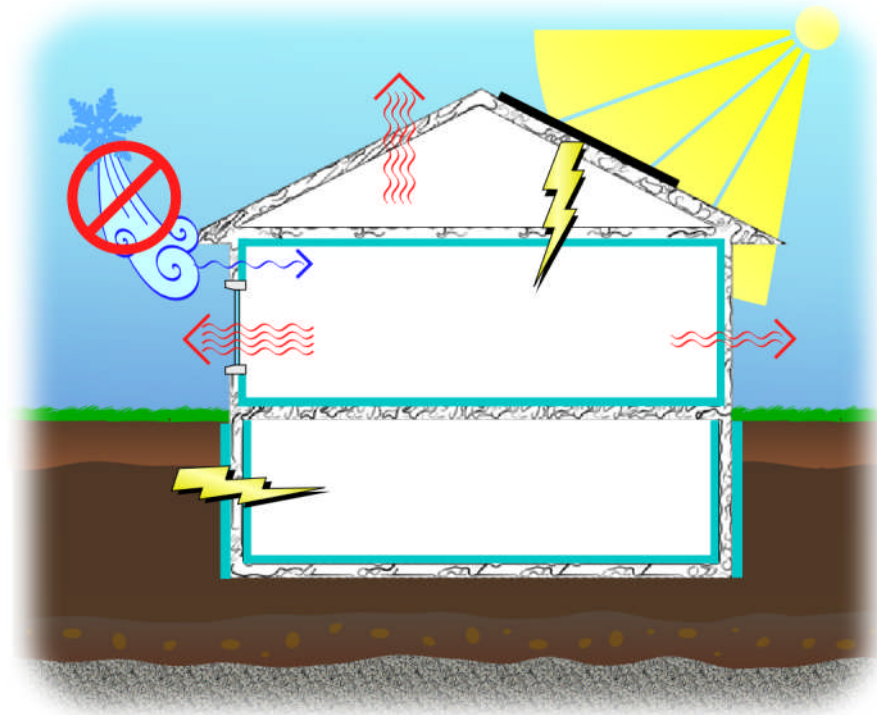
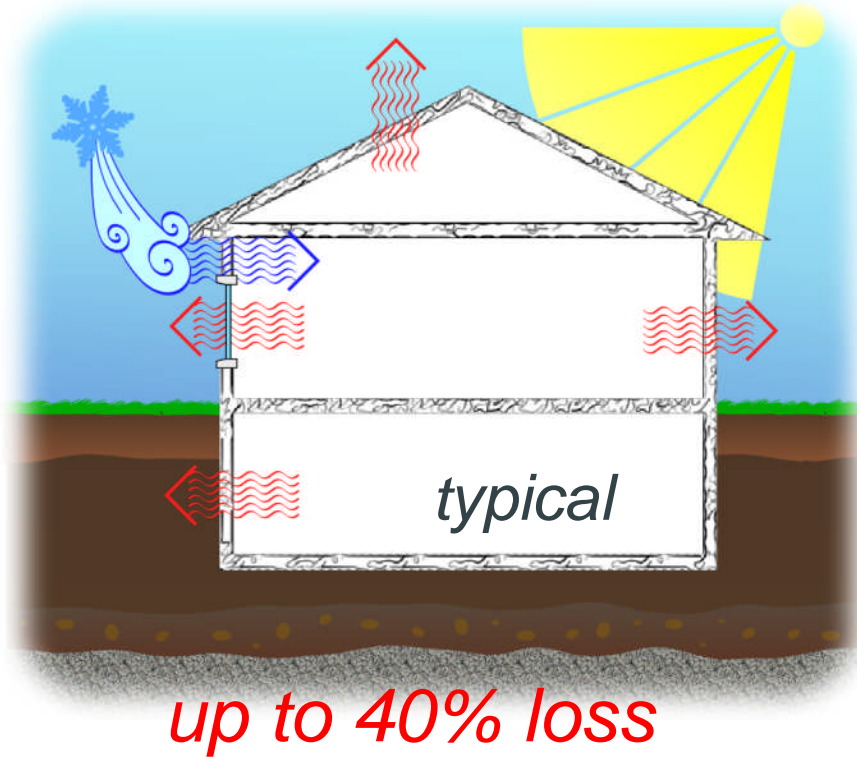
■ Housing



Invision Zero House



Technologies



- reduce losses
- house generates energy

Principles



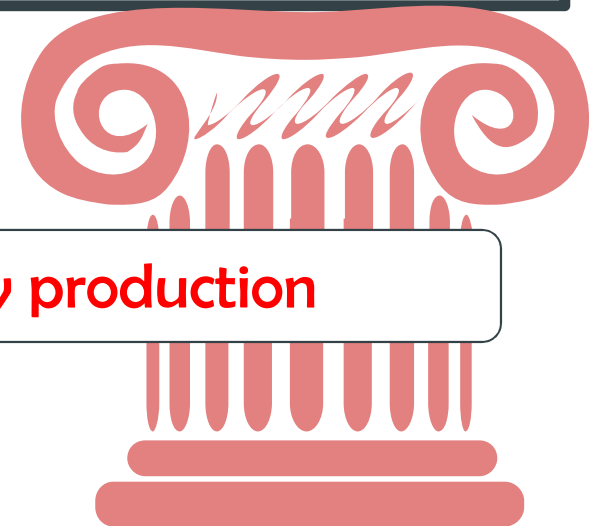
conservation

insulation



clean energy production

solar
photovoltaics



ground-source
heat pump

■ STYROFOAM™ Insulation



■ STYROFOAM™ PERIMATE™ Insulation



■ THERMAX™ Insulation



■ STYROFOAM™ Spray Foam Insulation



■ STYROFOAM™ Spray Foam Insulation



■ STYROFOAM™ Spray Foam Insulation



■ Sealing Around Windows and Doors



■ GREAT STUFF™ Foam Sealant



■ Sealing Penetrations



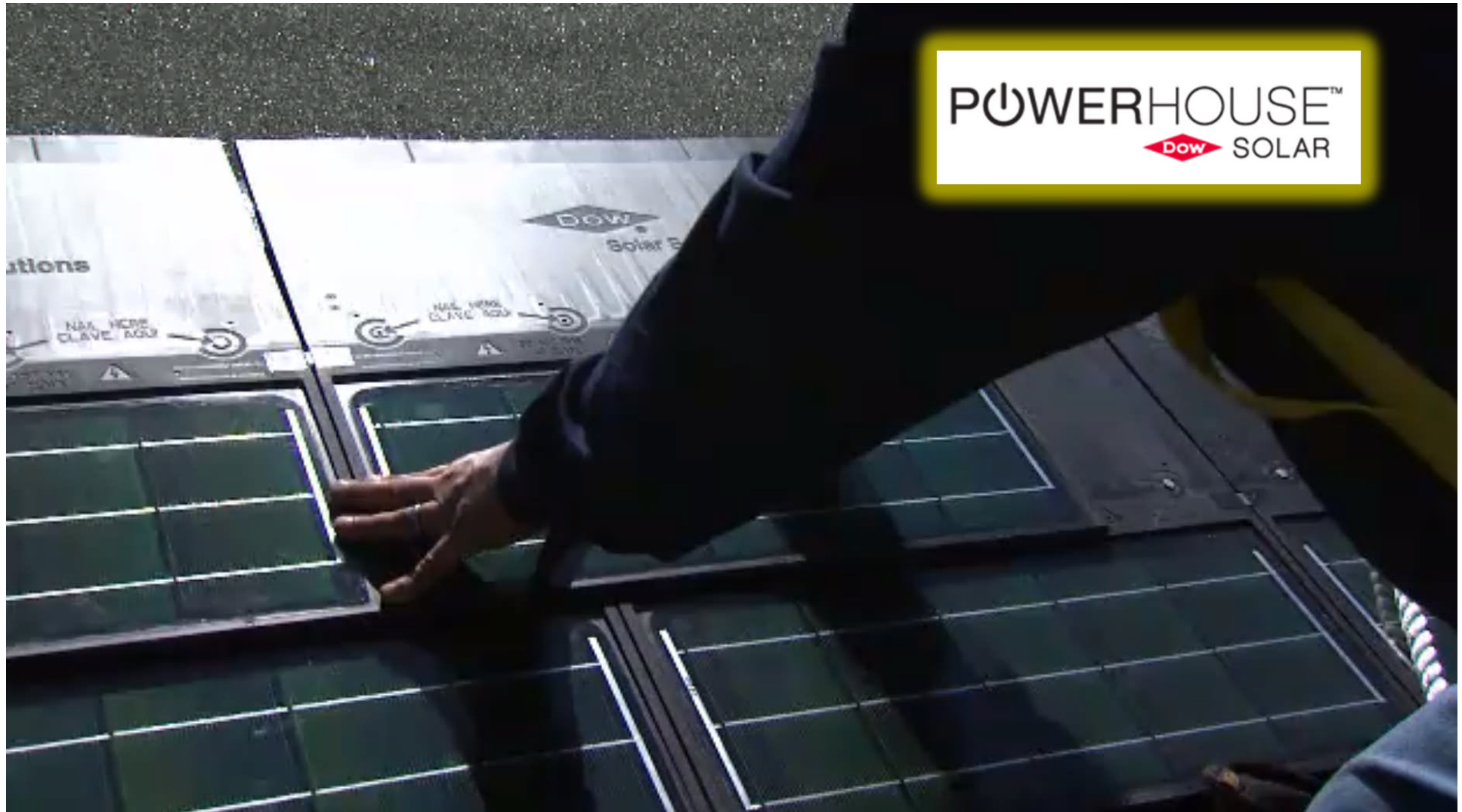
■ Ground-source Heat Pump



■ DOWFROST™ GEO 20 Heat Transfer Fluids



■ DOW POWERHOUSE™ Solar Shingles



■ Building Integrated Photovoltaic Power



■ Building Integrated Photovoltaics (BIPV)

POWERHOUSE™ Solar Shingle

- Building integrated photovoltaic (BIPV) design combines roofing protection and power generation in one product
- Reduces installation costs by more than 50% compared to conventional solar modules
- Proprietary electrical connections eliminate tedious and costly on-roof wiring

High Efficiency & Sustainability

- 1 micron of CIGS (copper indium gallium diselenide) PV semiconductor material -- 1/100 of the material of Si solar cells
- Consumes 1/3 of the energy to produce
- Delivers up to 20% conversion efficiency

Named one of TIME Magazine's
"50 Best Inventions of 2009"





Innovations for Tomorrow

*Power your home
with your home*



Solar Solutions

www.dowsolar.com

■ Conclusion

invisionzerohome.com



THANK YOU



■ Abstract

We will take a tour through Dow's InVision Zero Home and highlight the polymer and material science used in taking a systems approach to creating an affordable, sustainable home; a home which is capable of generating as much energy as it uses; a home where good insulation keeps energy in, so that the renewable opportunity is maximized. You can visit this home, in person in Midland Bay City, Michigan, or virtually, as we will do in Philly, via the web at: <http://www.invisionzerohome.com/>.

