

No Longer Business as Usual

Solutions for Success 2008

February 6-7, 2008

Linda Wigington, ACI

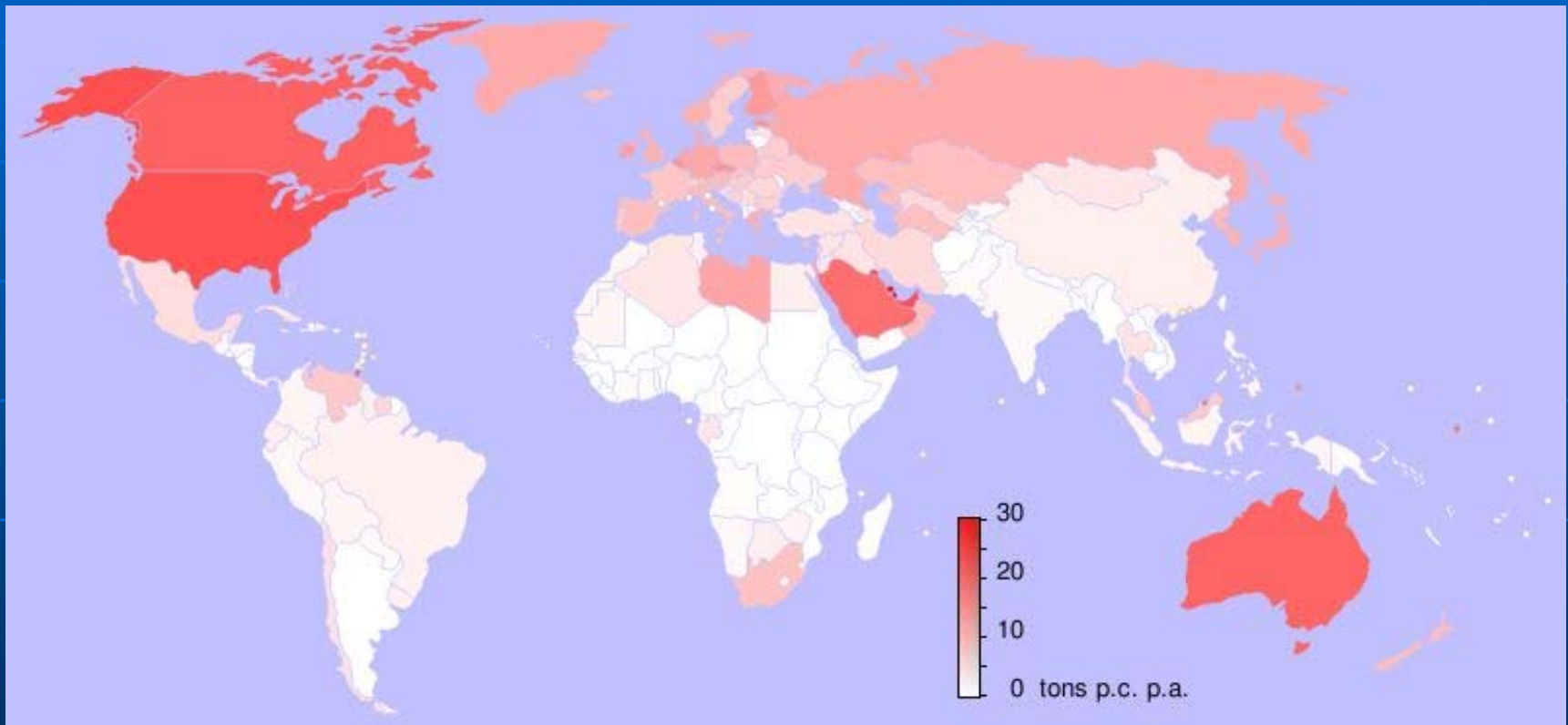
www.affordablecomfort.org

Crisis of Obsolescence for Homes

3 Flawed Assumptions – Obsolescence of Housing

1. Predictable energy & water cost / supplies
2. Predictable weather events & climate
3. Energy consumption value neutral – just a commodity – no moral consequences to consumption

Carrying capacity of our planet? 1 ton CO₂ per person / year?¹



Tons of CO₂ per person per year (2004) –
US DOE ([CDIAC](#)) for the UN Statistics Division

Crisis of Obsolescence for Existing Homes

Minor Adjustment or
Major Transformation?

Crisis of Obsolescence for Existing Homes

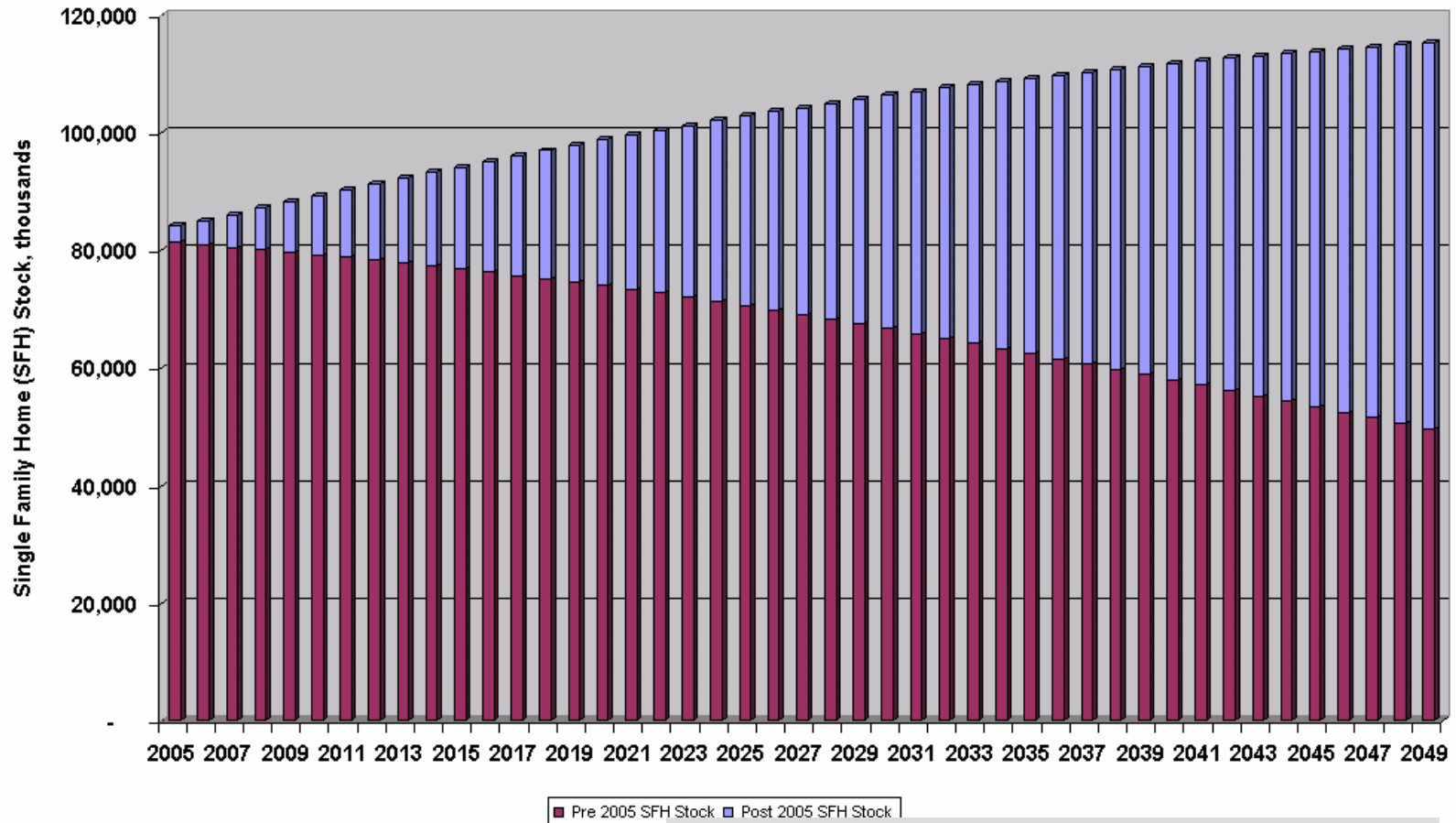
Creating the Vision of Making
Affordable Comfort a Reality

1 More Flawed Assumption

Solution –

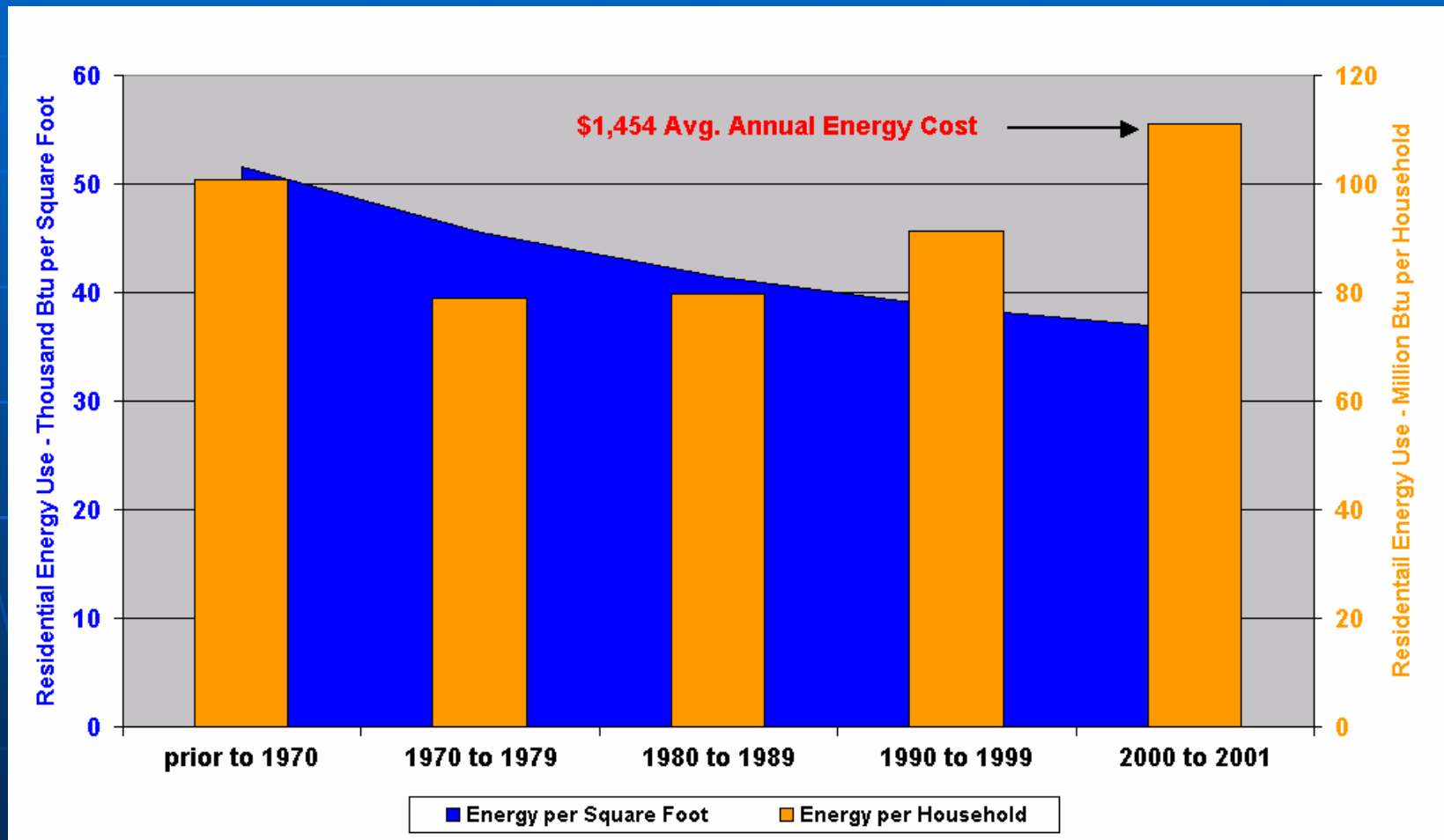
New construction will save us

New vs. Existing SF Homes Projected to 2050 (NREL)



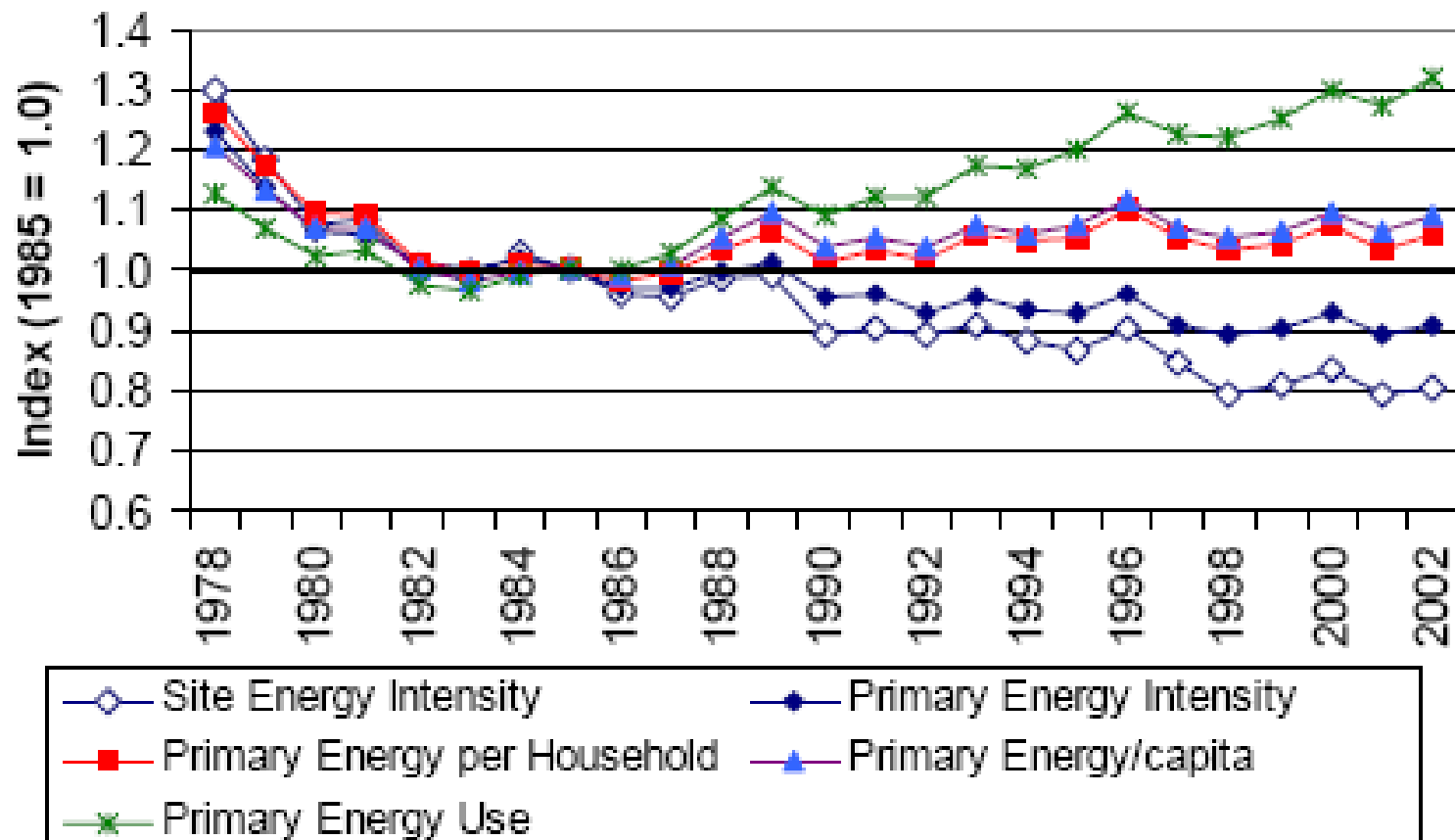
Residential Energy Use by Year of Construction (site energy)

Figure 3. NREL



How Do We Measure Progress?

Figure 5. Indices of U.S. Residential Energy



Source: PNNL 2005

“Things change when
what exists is no
longer acceptable.”

Jim Wallis,
The Great Awakening

“The issue is, therefore, not whether deep energy reductions are necessary, but rather how to define and support this vision.”

ACI white paper *Moving Existing Homes to Carbon Neutrality*, (www.affordablecomfort.org)



ACI Summit: Moving Existing Homes Toward Carbon Neutrality

Create and Clarify the Vision

**70 - 90% Total Household Reduction
(excluding renewables)**

Technical Interventions – Behavioral Choices

July 11-13, 2007

Pacific Energy Center, San Francisco, CA

ACI Summit White Paper

www.affordablecomfort.org

Lay the Foundation to Develop Comprehensive Strategies that¹:

- 1. Assume that zero net energy and carbon neutrality is achievable in existing homes***

¹Recommendations from ACI Summit White Paper

Develop Comprehensive Strategies that¹:

- 1 Assume that zero net energy and carbon neutrality is achievable in existing homes;
- 2 ***Optimize the investment in conservation, efficiency, and renewable energy sources***

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Develop Comprehensive Strategies that¹:

- Assume that zero net energy and carbon neutrality is achievable in existing homes;
- Optimize the investment in conservation, efficiency, and renewable energy sources;
- ***Accurately value the energy and non-energy benefits of deep energy reductions***

¹Recommendations from ACI Summit White Paper

Develop Comprehensive Strategies that¹:

- Assume that zero net energy and carbon neutrality is achievable in existing homes;
- Optimize the investment in conservation, efficiency, and renewable energy sources;
- Accurately value the energy and non-energy benefits;
- ***Reduce the costs of a deep energy reduction package.***

¹Recommendations from ACI Summit White Paper

Transformation

From a caterpillar –
voracious consumer



*(The Great Turning -
David Korten)*

The Great Turning – David Korten

Butterfly –

- Living lightly
- Regeneration



Photo by Carrie Dorean

Transformation Vs.

Caterpillar upgrade

BAU - Limited potential

Four Paradigms

- Technical Fix – widget deployment
- Whole House – systems approach
- Sustainable – global perspective

- Emerging Deep Energy Reduction

Four Paradigms

- Technical Fix – widget deployment
- Whole House – systems approach
- Sustainable – global perspective

- Emerging Deep Energy Reduction –
combine strength of each

Implications of Deep Energy Paradigm

- Current actions – transition or road blocks?
- Tunnel through Cost & Performance Barriers (Amory Lovins)
- Systems Integration – redesign vs. incrementalism
- Occupants / Communities – vital resource
- Champions are Needed

Maps are Outdated (Land of Caterpillars)

- New Destination
- New Paths
- New Road Signs



“Can we afford to invest
in measures that could
be obsolete in one, five,
or ten years?”

Creating Lost Opportunities

- Insulating attics without air sealing
- Inadequately finishing below grade living spaces
- Adding central air conditioning prior to tapping all load reductions
- Re-siding without addressing thermal bridging
- Installing ducts in unconditioned attics
- “Good Enough” instead of “Best Available” windows, insulation, appliances, etc.

Site Assessment Process - Nine Steps to Deep Reductions

1. Assess Needs, Site, Goals, and Use of Space
2. Optimize Enclosure to Reduce Loads
3. Minimize Internal Loads
4. Provide Fresh Air
5. Control Humidity
6. Determine Cooling Needs
7. Determine Heating Needs
8. Integrate Hot Water with Other Loads
9. Incorporate Verification, Feedback, Evaluation

Maps Need to Include

- Paths to Deep Energy Reductions
- Occupants / Communities as a resource
- Broad stakeholder representation
- Indicators of performance
- Broader view of cost-effectiveness
- Verified house performance – whole house
- Feedback / continual improvement
- Acceleration of technical innovation

Major Challenge / Barrier

Indoor Air Quality & Infiltration

- Many homes are under ventilated
- Low cost ventilation increases energy use
- House tightness a key to deep reductions
- Combustion air / Make-up air
- Moisture / Durability

Widget-ize Home Performance?

Widget-ize Home Performance??

Packages of measures that
collectively leap over,
rather than confront, complexities
(IAQ, pressure, combustion safety, durability)

Build on / Learn from Other Initiatives

- Passiv Haus Institut (www.passivhaus.de)
- Riot to Austerity (www.riot4austerity.org)
- ASE Green Schools
(www.ase.org/section/program/greenschl/)
- One House Now (nowhouseproject.com)
- 2030 Challenge (www.architecture2030.org)
- Regreen (www.regreenprogram.org)

For More Information

- Home Energy Magazine –

Climate Solutions

ACI White Paper Deep Energy

Reductions www.affordablecomfort.org

ACI Home Performance Conference

April 7-11, 2008 Pittsburgh

Starting From Home Challenge

IN CONCLUSION

- Re-evaluate Assumptions – Cost / Benefits / Everything
- Accelerate Field Research
- Build New Alliances
- Create New Packages / Strategies
- Mobilize Occupants & Communities
- Reduce Vulnerability

Redraw the Housing / Energy Map



Death of an Expected Future

Redefine our Lives,

as

- ❑ Individuals
- ❑ Families
- ❑ Communities
- ❑ Organizations
- ❑ Institutions

You are the Champions

You are the Champions

Redraw the Maps
Blaze the Paths
Re-create our Future

“Things change when
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Redraw the Housing / Energy Map

