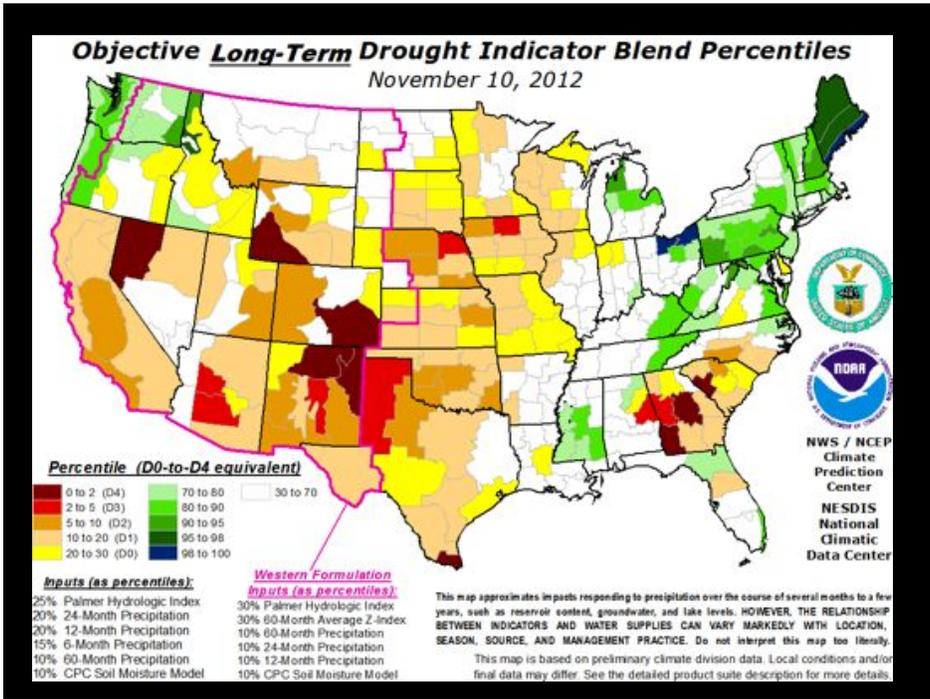


Climate Change Update: Your Life in Extraordinary Times

A presentation at
New Mexico Highlands University
November 2012

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Analogy: Asking whether climate change causes an extreme weather event is like asking if Barry Bonds' use of steroids caused him to score any particular home run...

Climate change increases the likelihood... it is a systemic cause of extreme weather events.





Climate forcing describes the radiant energy that has built up in the atmosphere due to CO₂ and other greenhouse gases. This heat trapping effect is also lessened by conditions like particulate pollutants and volcanic activity.

On balance the net climate forcing adds up to almost 2 watts per every square meter of the earth's surface. That is a lot of trapped energy—and that is the energy that drives global warming.

Warmer air can

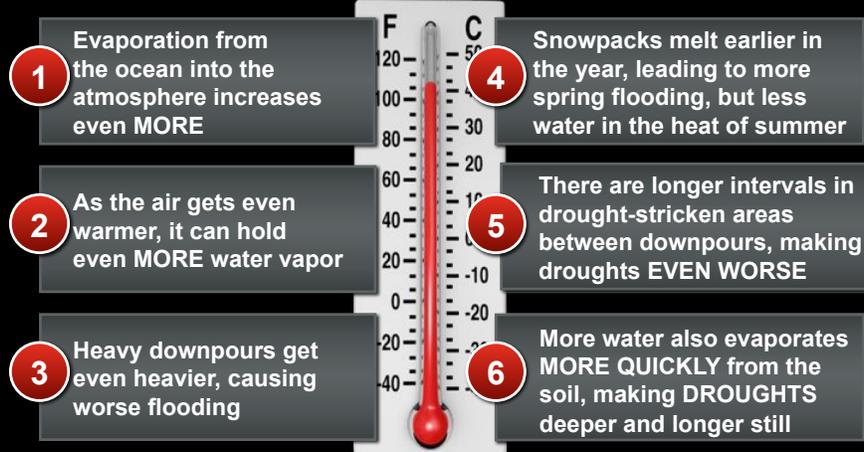
hold

a lot more water vapor

With each additional **1° (C)** of temperature, the atmosphere's capacity to hold water vapor increases by **7%**

There is already **4%** more water vapor over the oceans than there was only 30 years ago

Causing Bigger, Harder Downpours, and Simultaneously— Causing Longer and Deeper DROUGHTS



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My View

Good Riddance to Global Warming

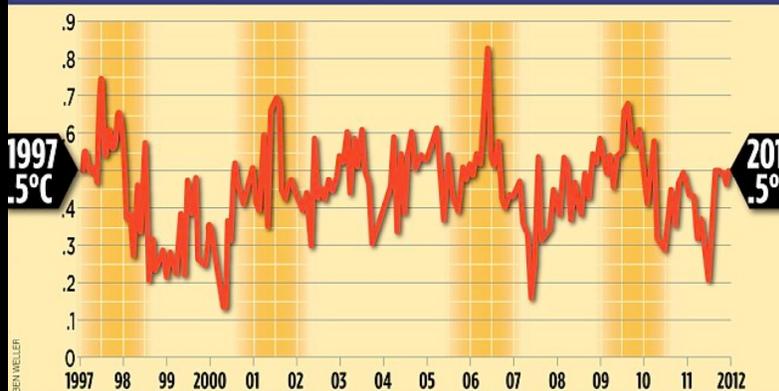
By Amy Ridenour

November 10, 2012

...A third reason that global warming was absent from the debates is that global warming isn't happening. The earth isn't getting warmer.

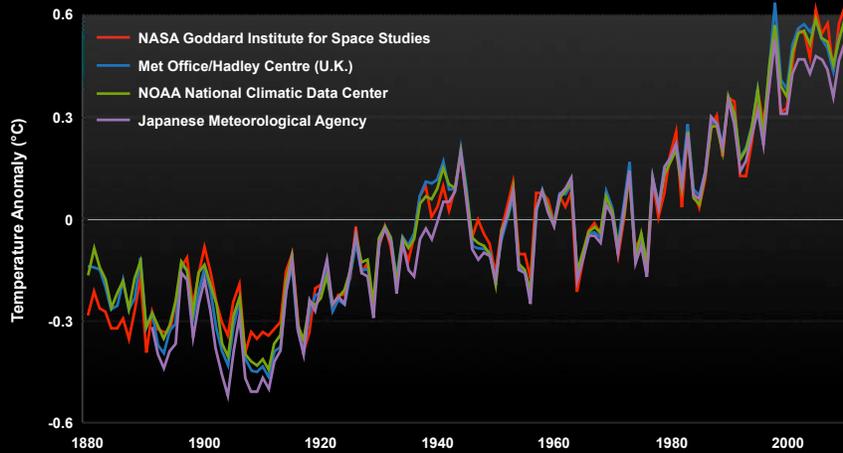
Daily  Mail

Graph showing tenths of a degree above and below 14C world average



Global Surface Temperatures

• The Four Major Independent Records



Source: Compilation—NASA Earth Observatory. Data Sources: NASA GISS, NOAA National Climatic Data Center, Met Office Hadley Centre/Climatic Research Unit, and the Japanese Meteorological Agency

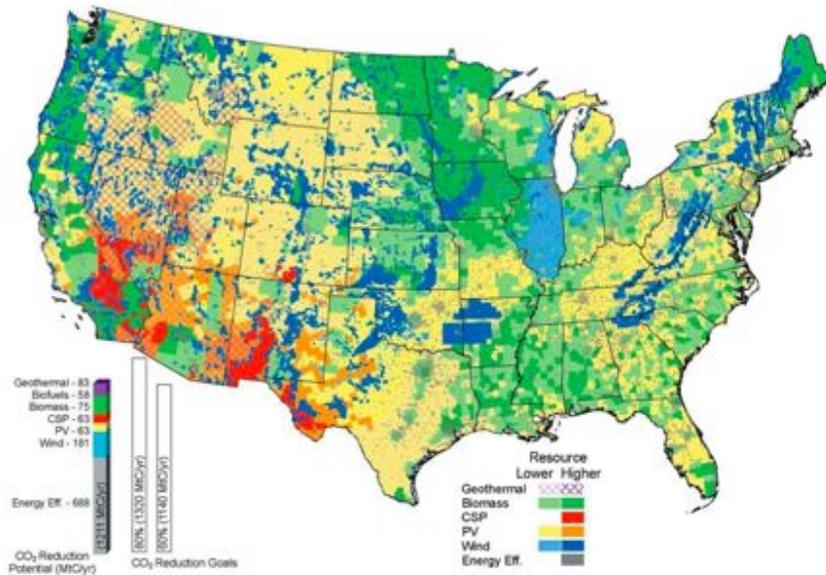
The Ten Hottest Years on Record



Source: NASA/GISS

Nov. 13 2012: U.S. coal -fired generation looking at 33% reduction. According to the Union of Concerned Scientists, as much as 59GW of coal-fired production faces retirement in the next few years. That's in addition to an estimated 41GW off coal generation scheduled to shut or be converted to another fuel. The combined closure of 99GW of coal capacity would represent nearly one third of U.S. coal generation output.

This is good news for climate.
Yet Americans will still want all the things that run on electricity.
There are enough clean energy technologies to meet American needs while reducing greenhouse gas pollution. The challenges: balancing many kinds of variable renewable resources and upgrading the utility system to deliver new clean energy services.



Green Resources Available for Greenhouse Gas Reductions by 2030

**The cheapest,
cleanest energy
is the energy
you didn't use.**



Green Energy Progress

How Do Projections Compare With Reality?

2002 Projection

The solar energy market will grow 1 GW per year by 2010

Reality

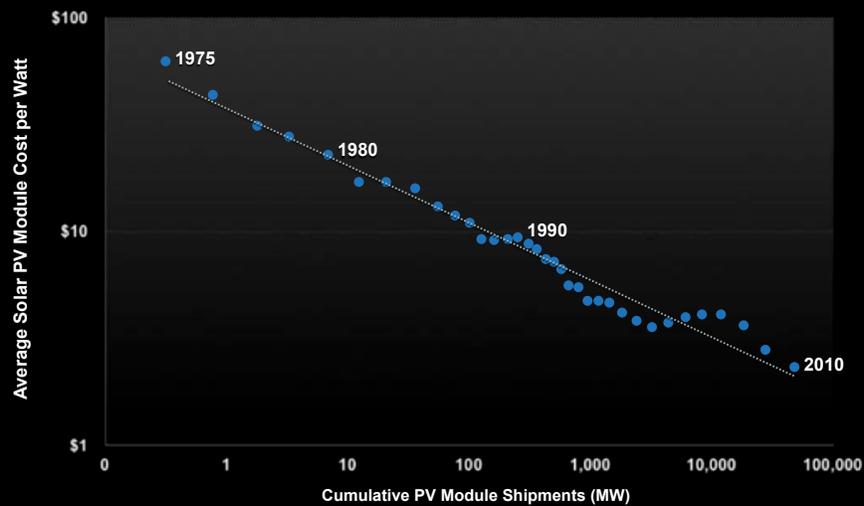
The market is now growing

17x
faster

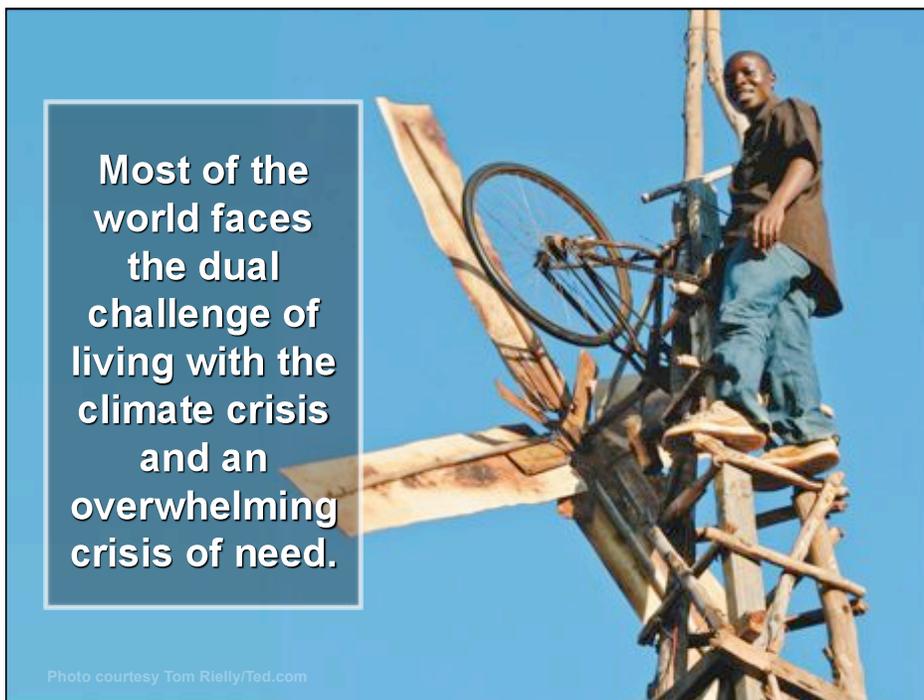
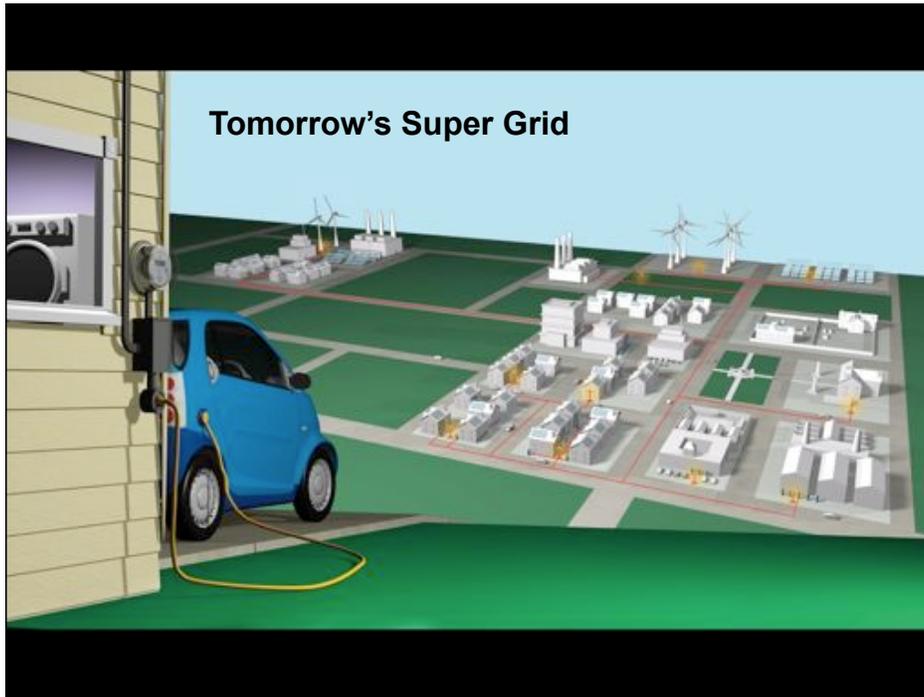
Source: Fresh Energy

Solar Photovoltaics Cost

Cost Declines as Production Increases



Source: U.S. Department of Energy, Sun Shot Vision Study, February 2012



What Can
YOU Do?

1. Speak Up

- Find the facts
- Don't let denial go unchallenged
- Use social and traditional media to get the word out
 - Demand more of media and politicians
 - Talk about adaptation *and* prevention
 - Do it your way

2. Deepen Your Commitment

- Make choices that reduce energy use
- Consider the environmental impact of the things you buy and the things you do
- Promote change; be change

3. Don't Give Up

- **Changing laws is even more important than changing light bulbs**
- **Climate Lobby for policies – perhaps a carbon tax?**
- **350.org: Do the Math!**