



Why we must use energy twice:

Remarks on acceptance of 2009 Energy Efficiency Champion Award energy

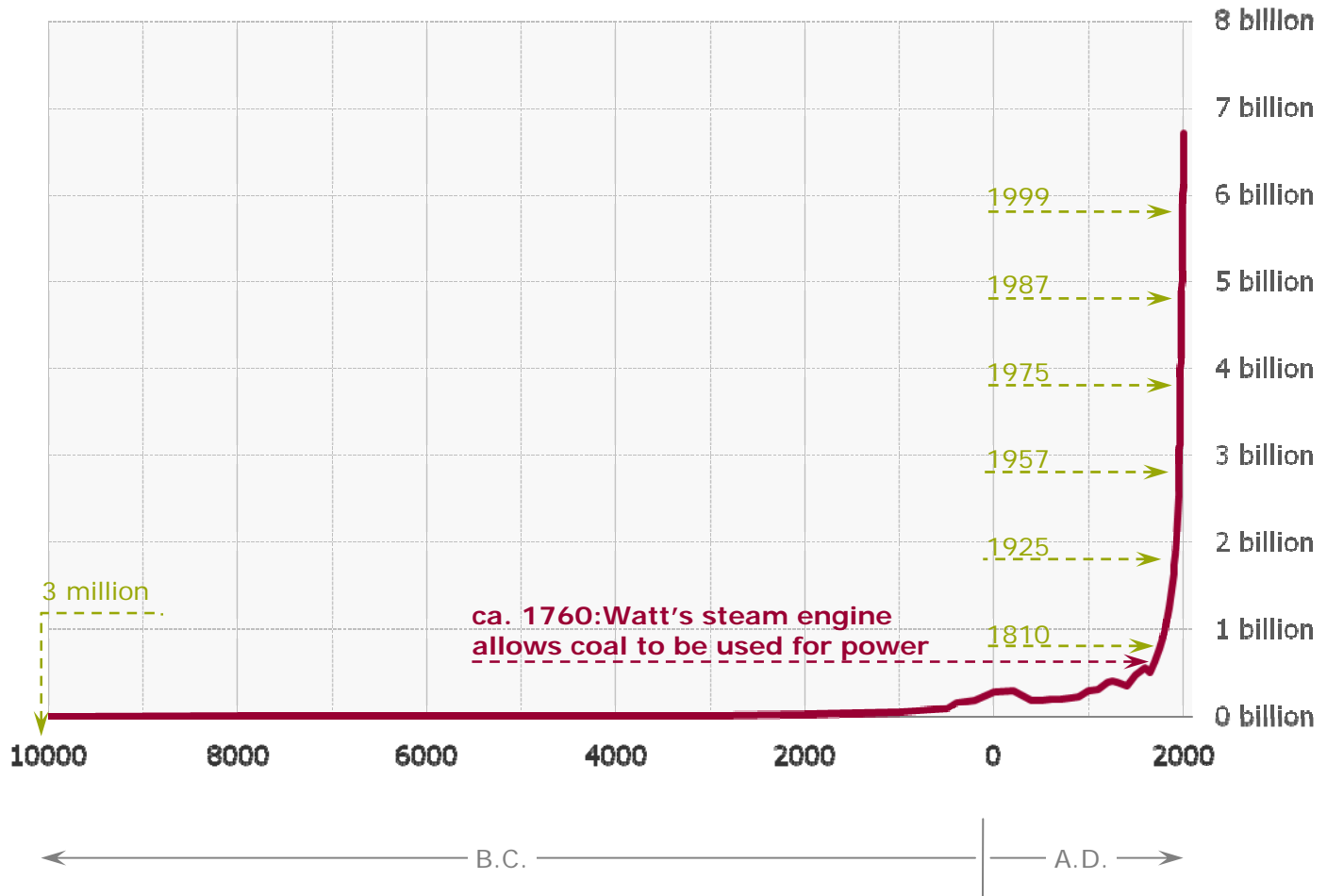
Thomas R. Casten,

Chairman

Recycled Energy Development, LLC

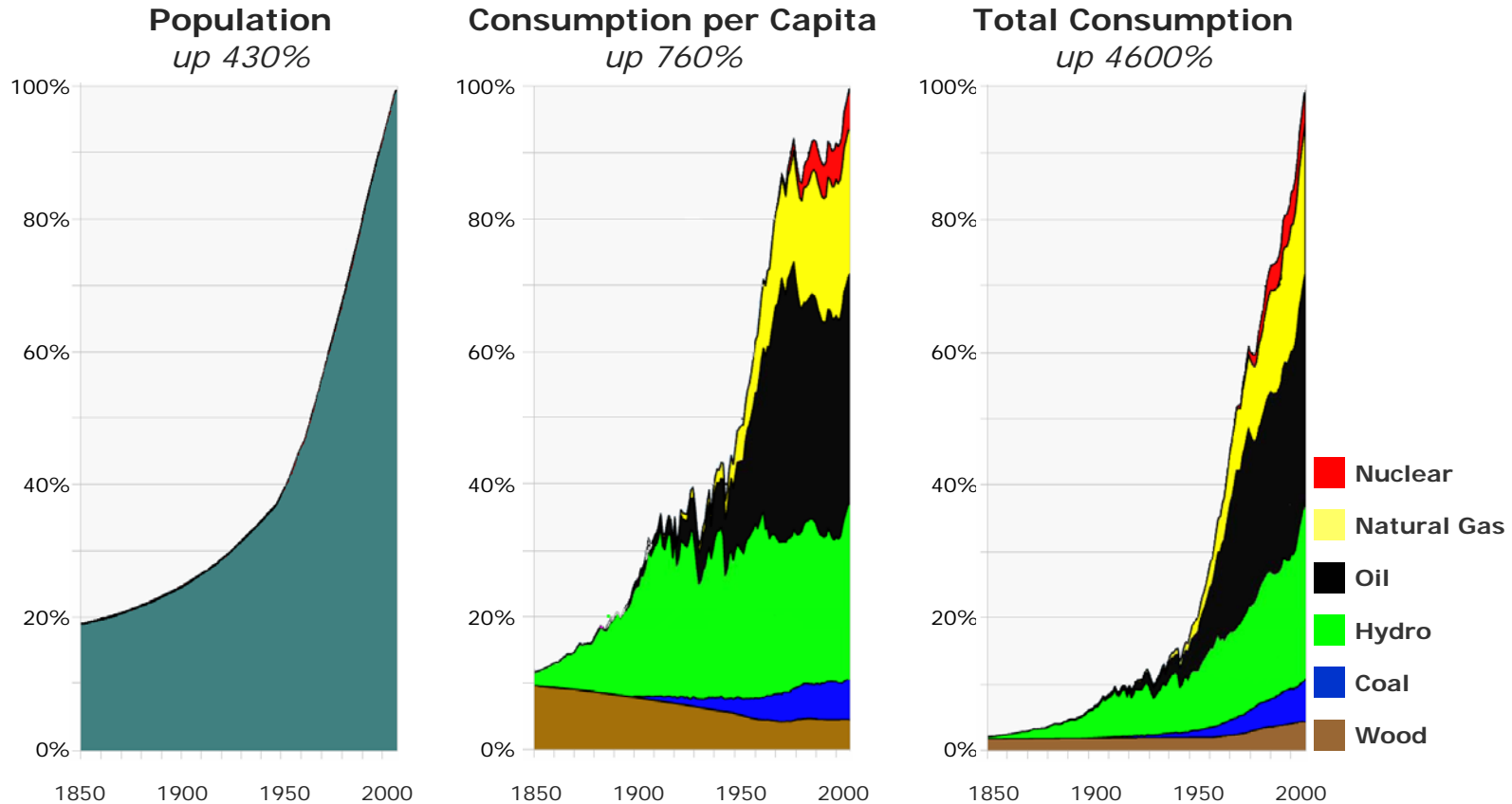
July 29, 2009

World population has grown dramatically



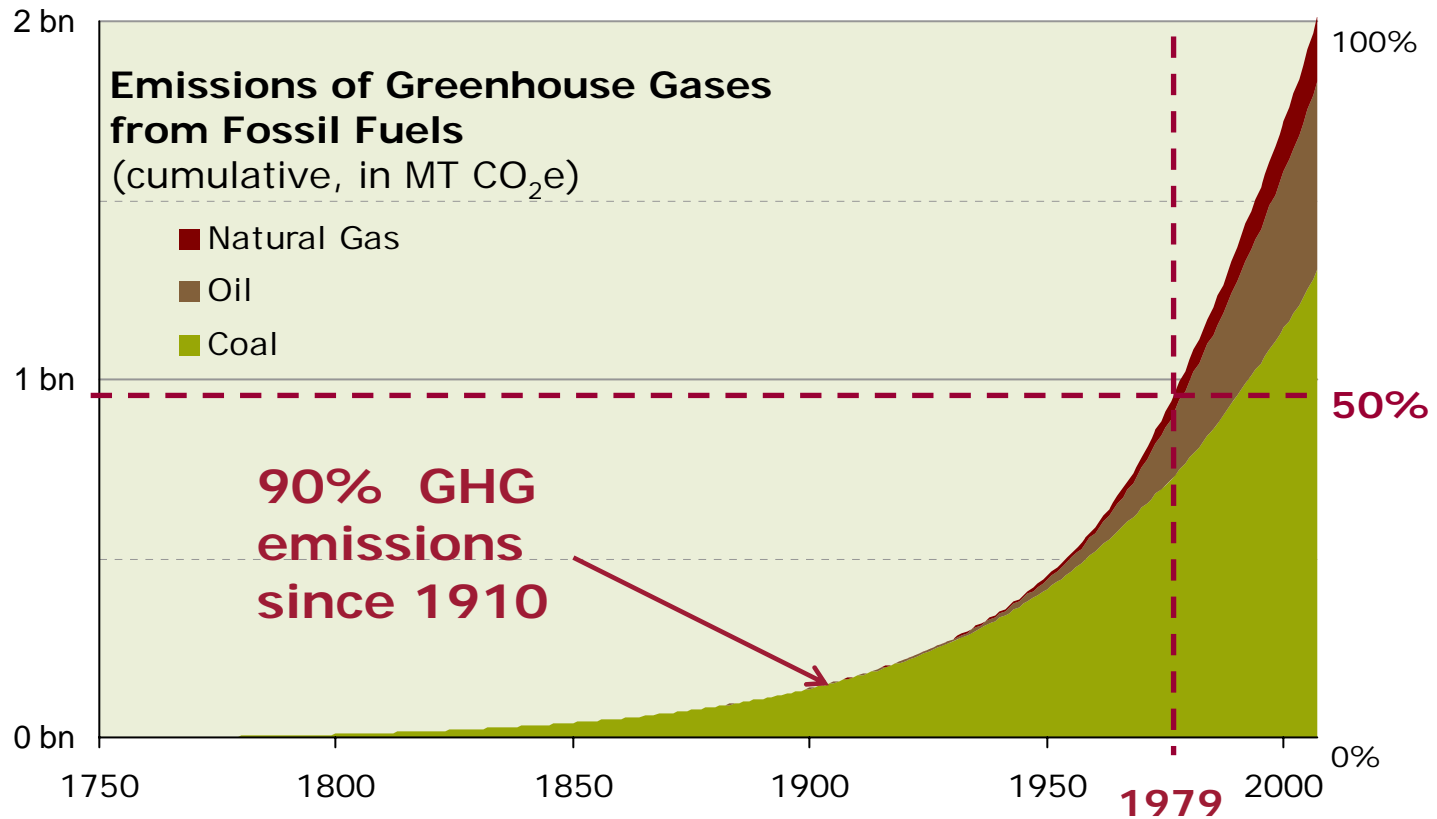
Source: various authors cited by the U.S. Bureau of Census

Increases in world population and energy consumption 1850-2007



Source: Arulf Grubler (1998), BP Statistical Review of World Energy (2008), US Bureau of Census (2008)

90% of human greenhouse gas emissions in last 100 years



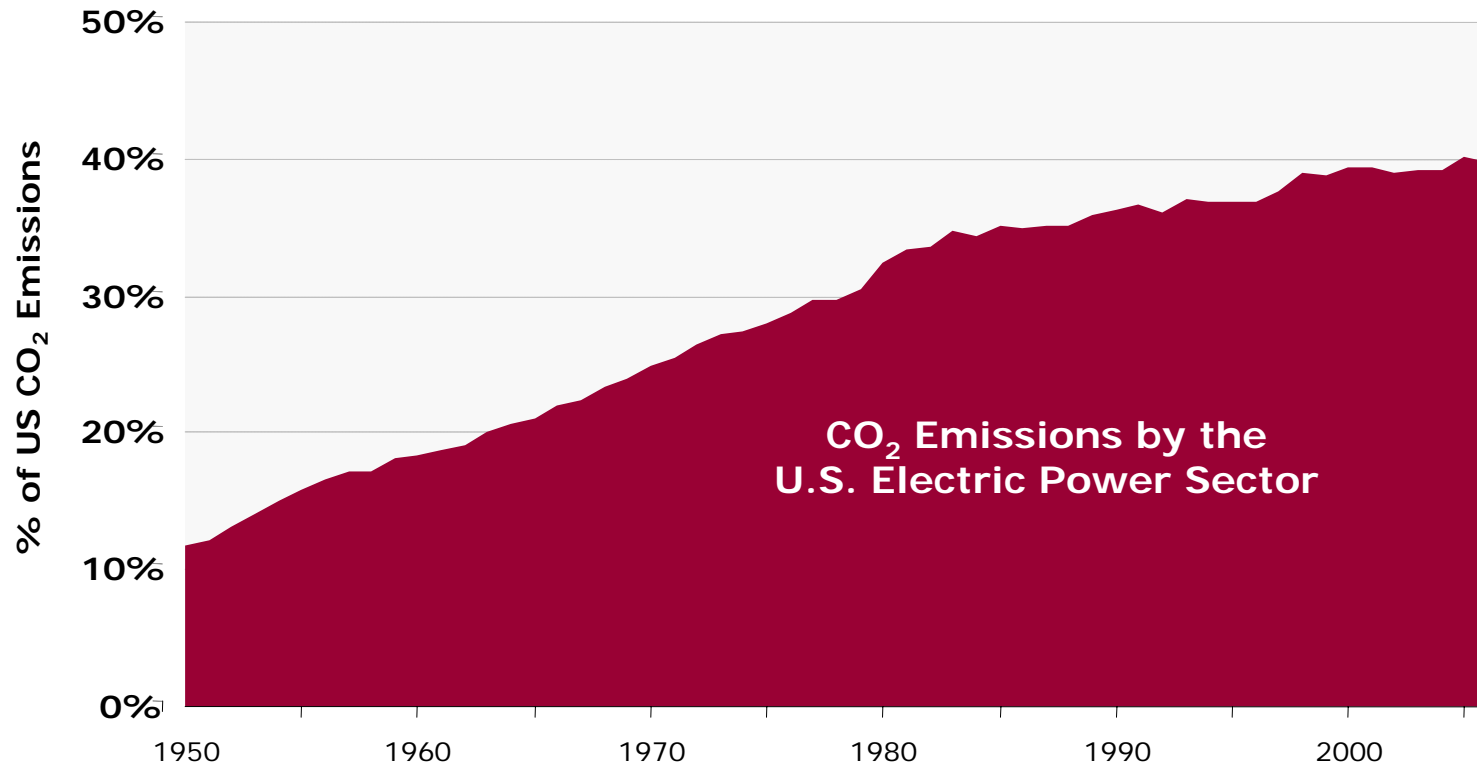
Source: RED calculations based on data from BP Statistical Review and J. David Hughes, Geological Survey of Canada (ret.)

Climate change is occurring faster than predicted

- Science has no experience with the rising concentrations of greenhouse gases:
 - Feedback effects are happening faster than predicted by any model
 - *E.g.*, melting ice caps, rising sea levels, increasing ocean acidity
- Growing species extinction, caused by human actions
 - 1,000 times the background rate



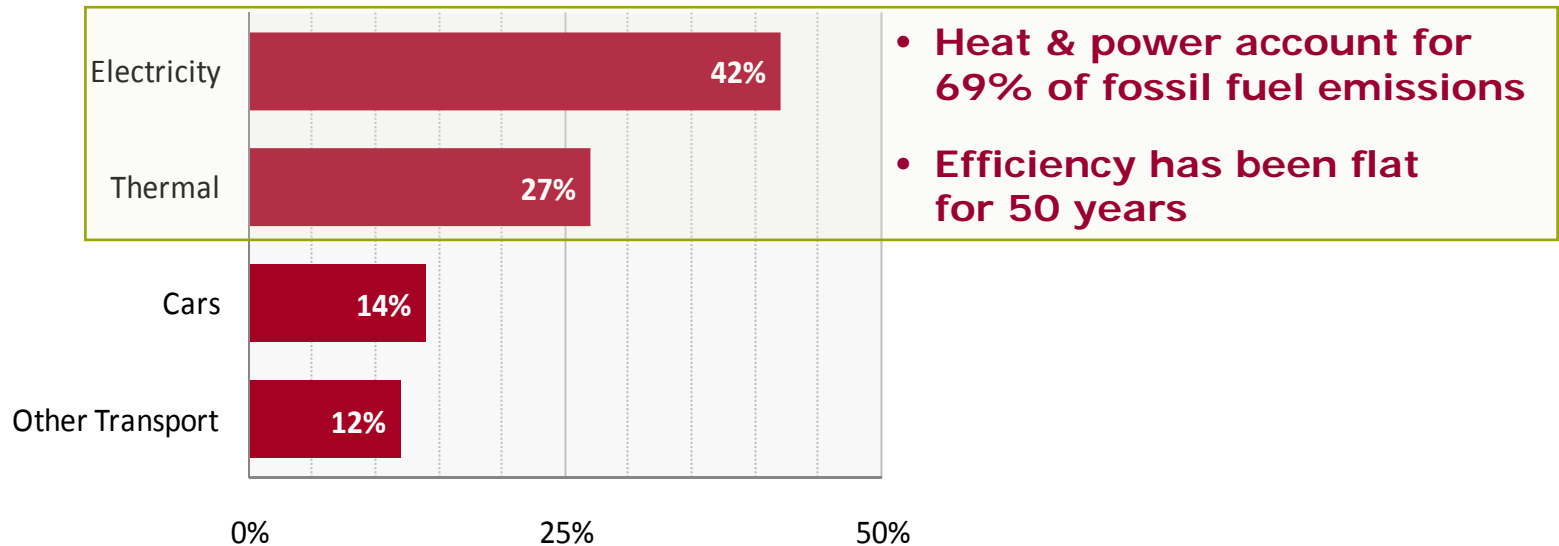
Electricity generation is the largest source of CO₂ emissions



Source: RED calculations based on data from *Emissions of Greenhouse Gases in the United States 2007*; *State Energy Data Report*; and *Annual Energy Review*.

Inefficient heat and power emits two-thirds of CO₂

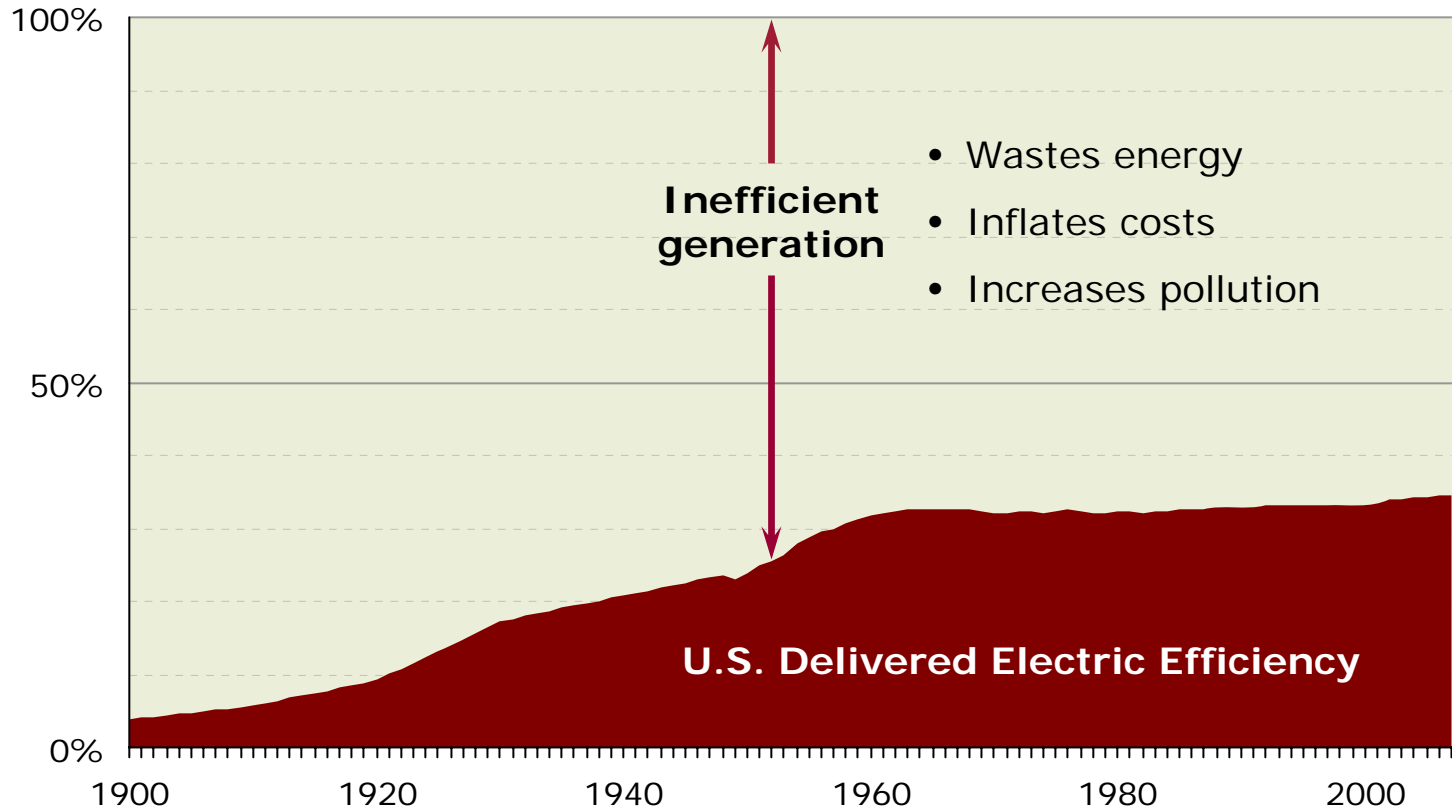
Emissions of U.S. CO₂ from Fossil Fuels



Source: RED calculations based on data from the U.S. Energy Information Agency and the U.S. Department of Transport



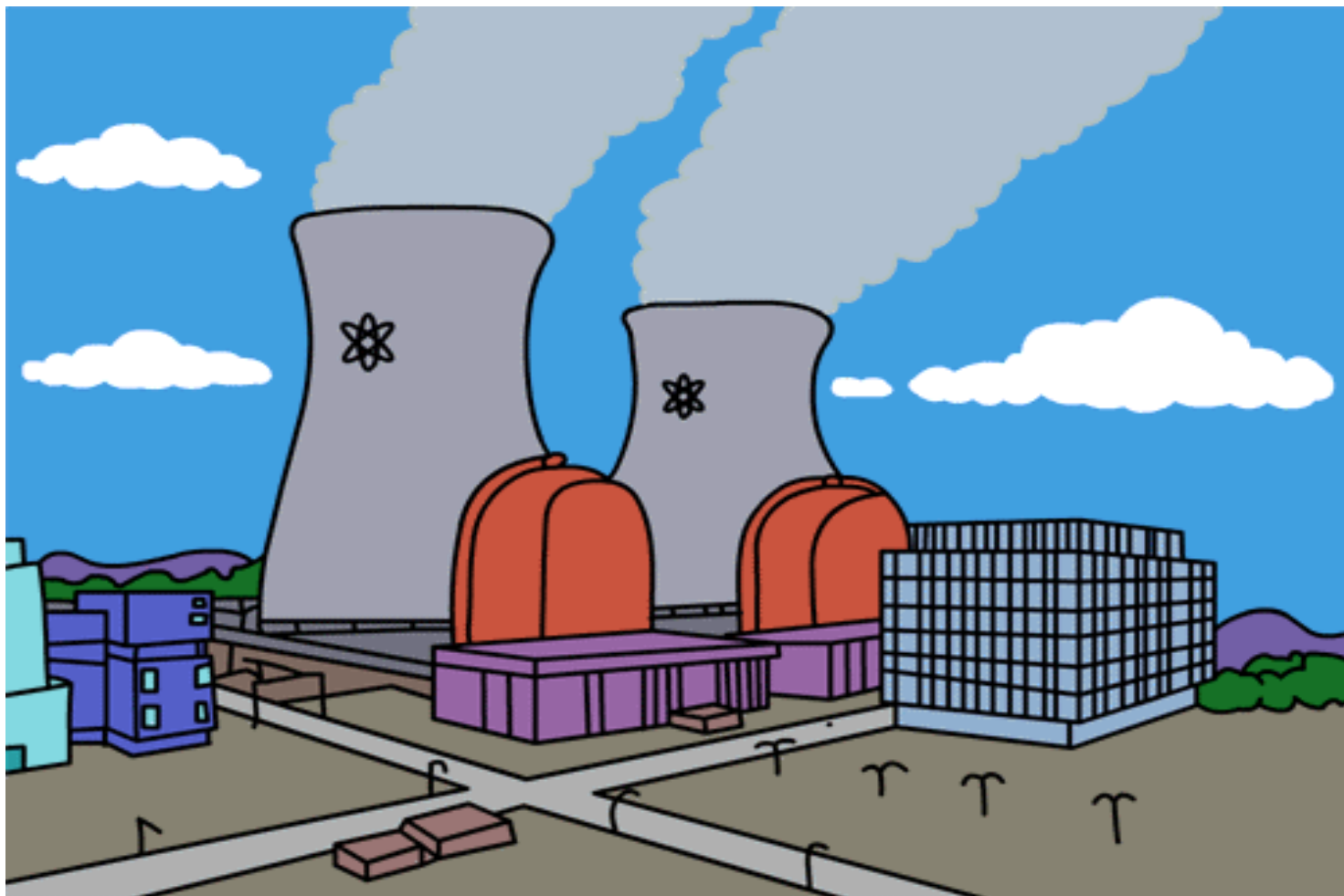
By using energy only once, US electricity generation is inefficient



Source: U.S. Energy Information Agency

Homer Simpson's power plant

Springfield, ?



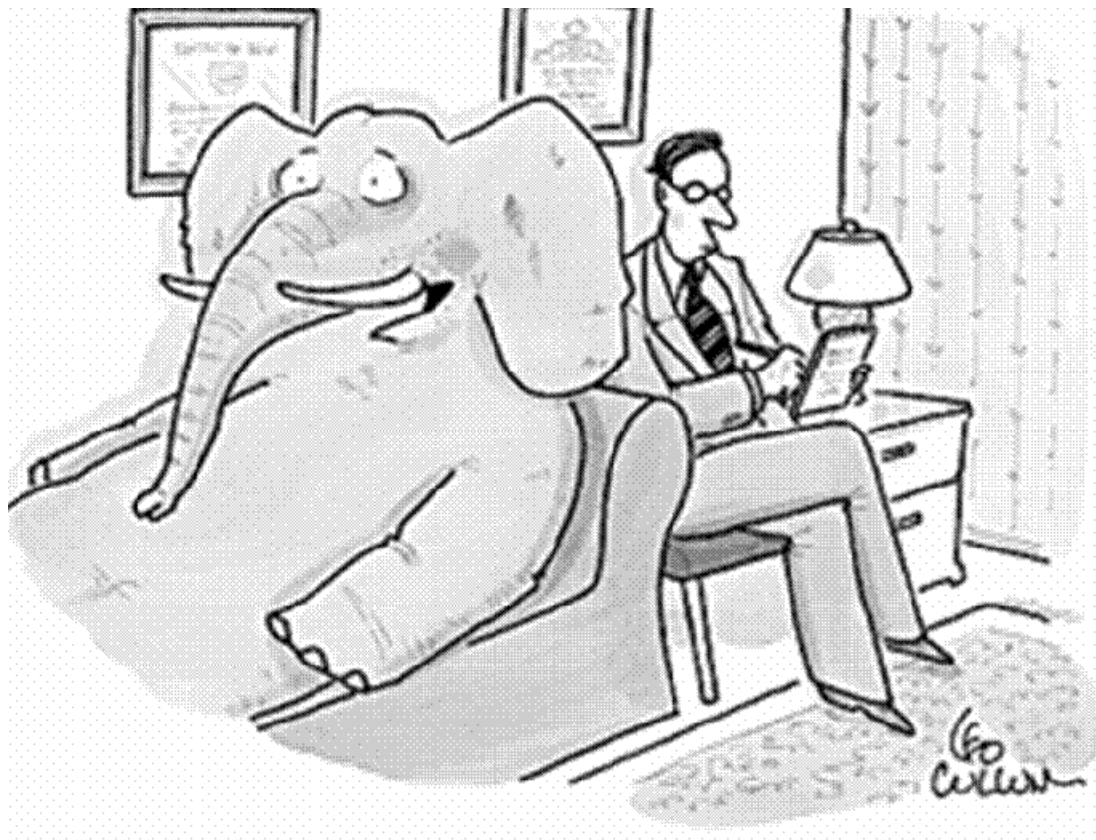
Electricity generation plant

Craig, CO

*Two-thirds of
the energy
generated
is released
into the
atmosphere*



Generation efficiency – the elephant in the room



*"I'm right there in the room
and no one even acknowledges me"*



Our response and logic

- Promote using energy twice
 - Recycle otherwise wasted industrial energy
 - Build CHP sized to host thermal loads
- Prove that the world can profitably reduce carbon emissions
- Force the world to follow suit in order to remain competitive.
- Fight the many barriers to efficiency

Recycling industrial waste energy

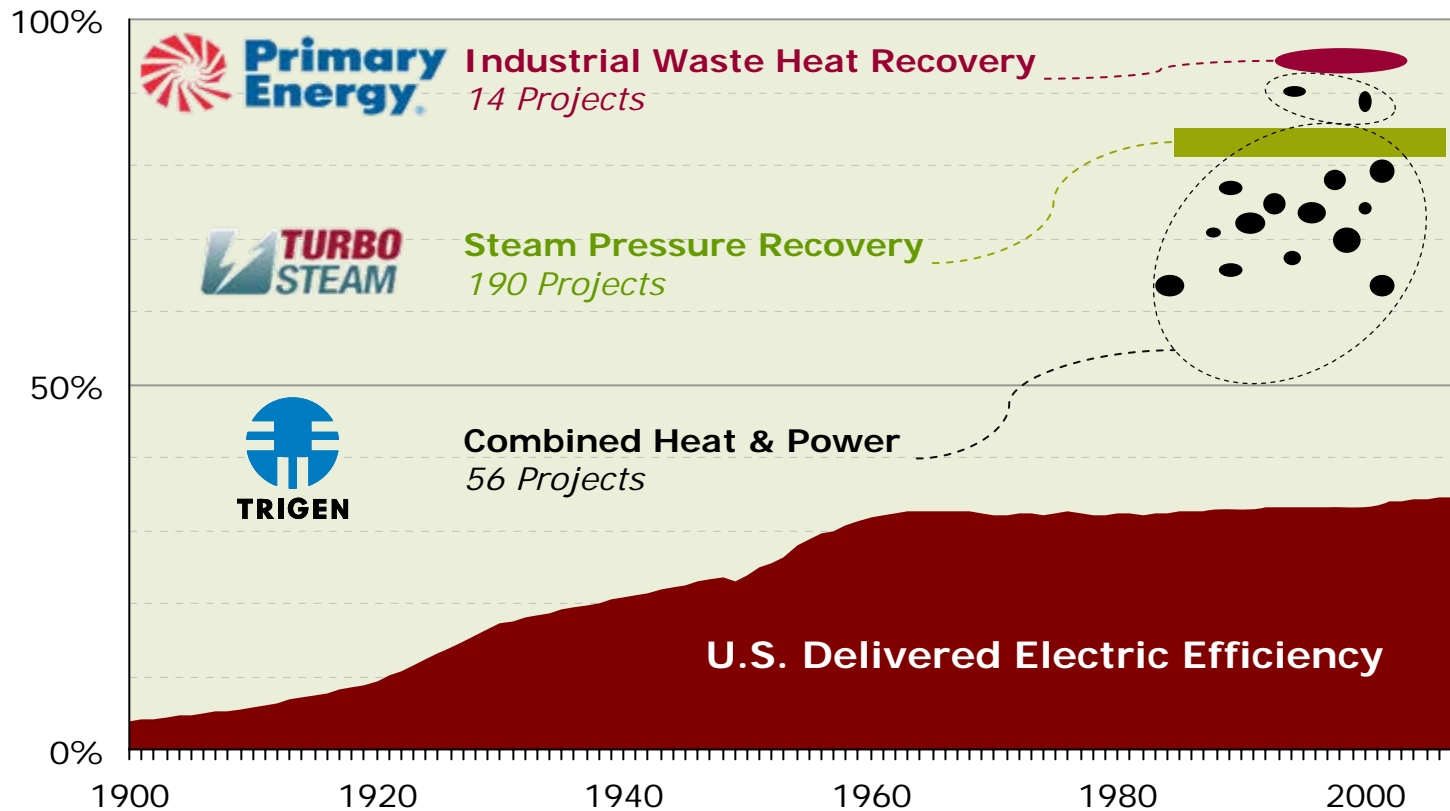
Cokenergy Mittal Steel, Northern Indiana

Produces as much clean energy each year as all grid-connected photo-voltaic solar generation produced in 2004





We have proven this thesis with 200 projects (\$2.0 billion) with double conventional efficiency





**Thank you for naming me a
2009 Champion of Energy
Efficiency**