



Successes & Obstacles in Seattle

Global Building Performance Network– Nov 2013

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37% of Americans think that global warming is a hoax

April 2013

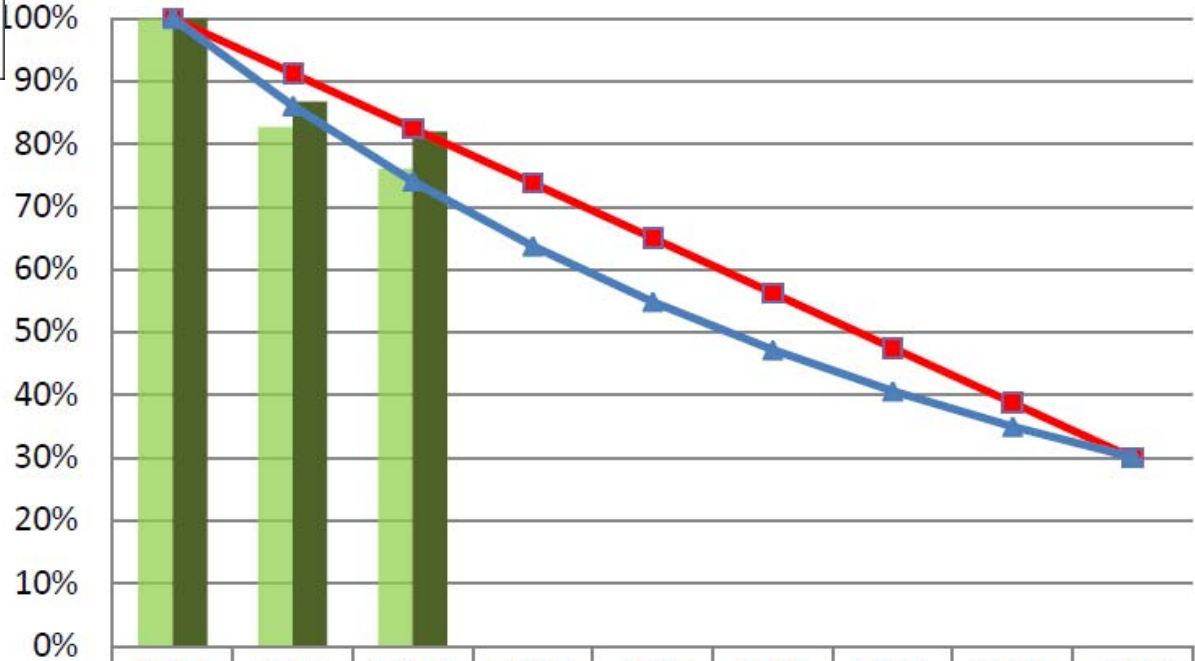


CO₂ concentration just passed 400 PPM for the first time in +/- 3 million years



Washington State Goals: The Hard Part is in the Future

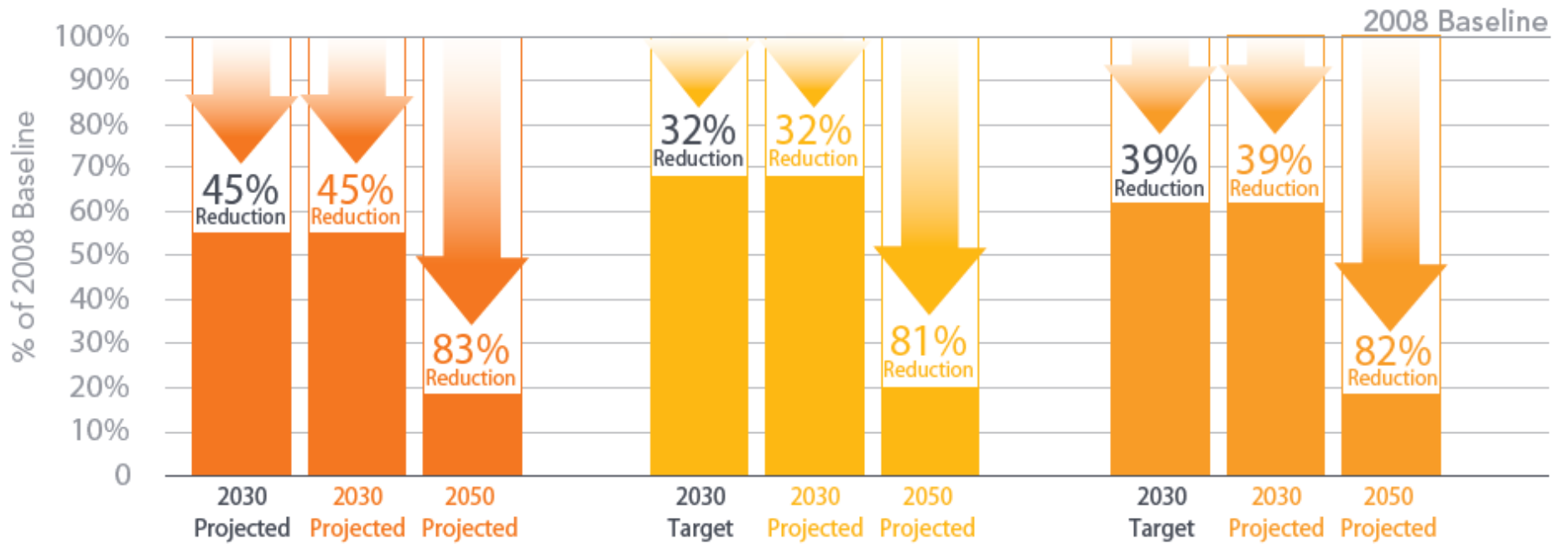
Reduction in Energy Use (2006 Baseline)



	2006	2009	2012	2015	2018	2021	2024	2027	2030
Residential	100%	82.7%	76.1%						
Commercial	100%	86.8%	82.0%						
Target: 8.75 % savings compared to the 2006 WSEC	100%	91%	83%	74%	65%	56%	48%	39%	30%
Target: 14% savings compared to each previous code	100%	86%	74%	64%	55%	47%	41%	35%	30%



CLIMATE CHANGE IS HERE... WHAT IS SEATTLE DOING?



COMMERCIAL EMISSIONS

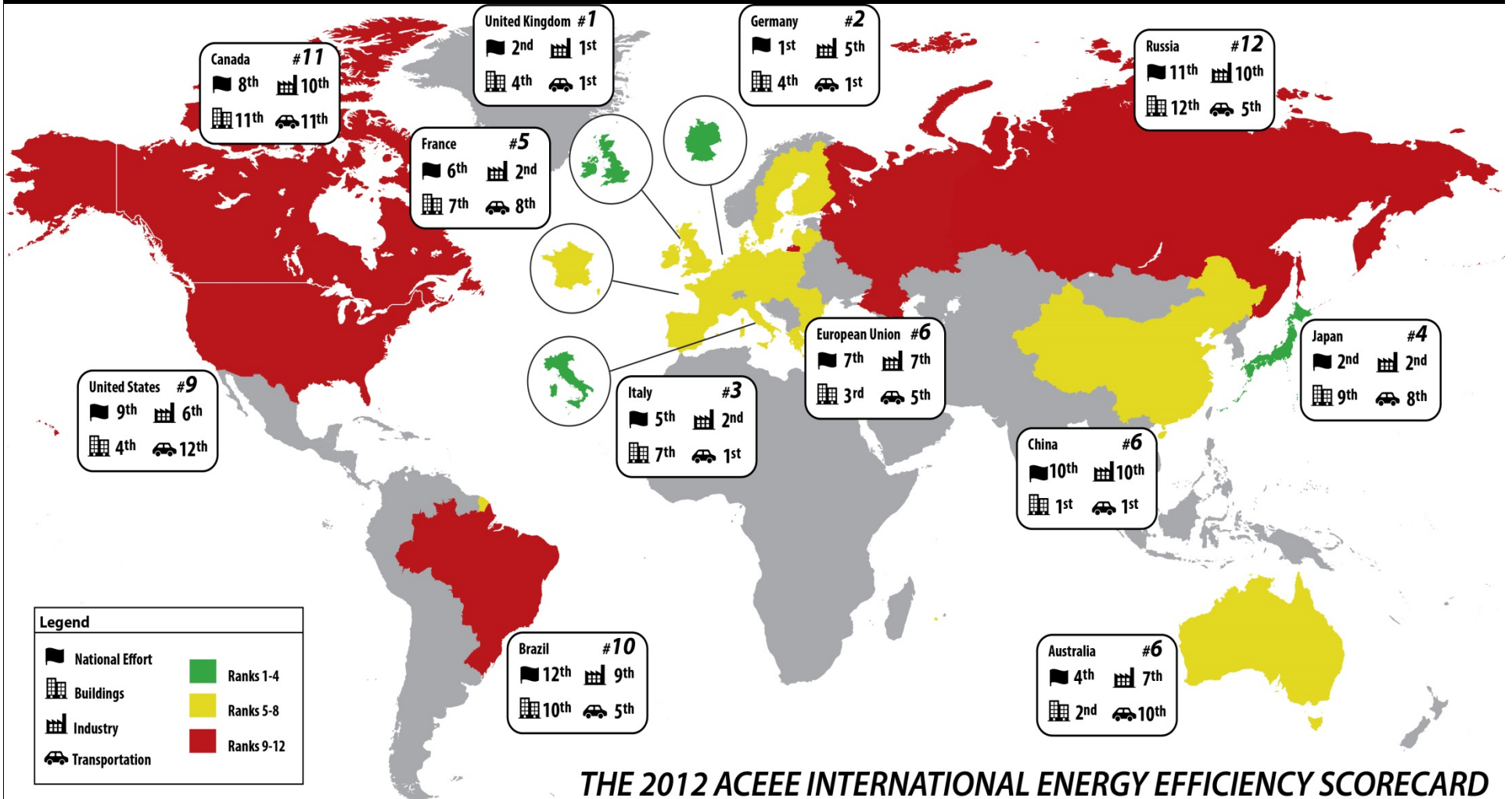


RESIDENTIAL EMISSIONS



BUILDING ENERGY EMISSIONS

But, Everything is Relative



Political Considerations = Financial Considerations

Good economy – easier to move forward

Bad economy – harder to create new rules

Global warming & climate change – far away

Cost and disruption for business – right here

Activists – concerned about climate change

Business – concerned about profit

“That which exists must be possible.”

- RFM offices in Bremerton operating at 61 kWh/M²
- Federal Center South in Seattle at 71 kWh/M²
- Bullitt Foundation in Seattle at Net Zero Energy
- 32,700 M² National Renewable Energy Laboratory in Colorado at Net Zero Energy
- Public schools in Kentucky at 60 – 70 kWh/M² (and now one at Net Zero Energy)



Long-term planning & Near-term disruption

- Don't tell me how to run my business!
- Long-term savings are great, but up-front costs and risks are very unpopular
- Long-term goals don't inform the first steps
- The bandage question: What hurts more?
 - Pull it off a little bit at a time
 - Rip it all off at once



Difficult to create high performance standards for new buildings

- ...but even more difficult to impose strict standards for old buildings

One idea:

- Set existing building performance requirements for 2030 (or whenever)
- Offer good incentives to do it now...
- ...but reduce the incentive every year



Energy Code defines the “Worst Allowable Building”

- Now need hundreds of “Best Possible Buildings”
- Defines next “worst allowable building” standard
- Could “worst” buildings subsidize “best” buildings?



Market Support for Change?

- All regulations are bad
- All taxes are bad
- All construction costs are bad
 - Even if long-term costs lower

However, some business leaders support change – make sure they are heard!



Encouraging market support

- Make new energy codes financially sound
- Be ready to explain that clearly
- Convince bankers and appraisers
- Publicly label building performance



How much does efficiency cost?

- Anything “new” costs more
- Cost lowers as “new” becomes “normal”
- Need visible high-performers in town
- Expensive energy = cheap efficiency
- Costs lower if you do everything in the building right simultaneously



Target Performance Path

- Design team can toss out the energy code
- Predict performance with energy modeling
- Prove performance with 12 months' operation
- Back up with financial security

Commissioning

- Designed operation = actual operation
- Extends past construction into occupancy
- Separate permit required to complete tests and correct deficiencies



Substantial Alterations

- Once in a generation opportunity
- Most economical moment for upgrade
- Almost full code compliance required





Solar power:
today leads to
tomorrow

- A little solar power required now
- Half of roof reserved for solar in the future



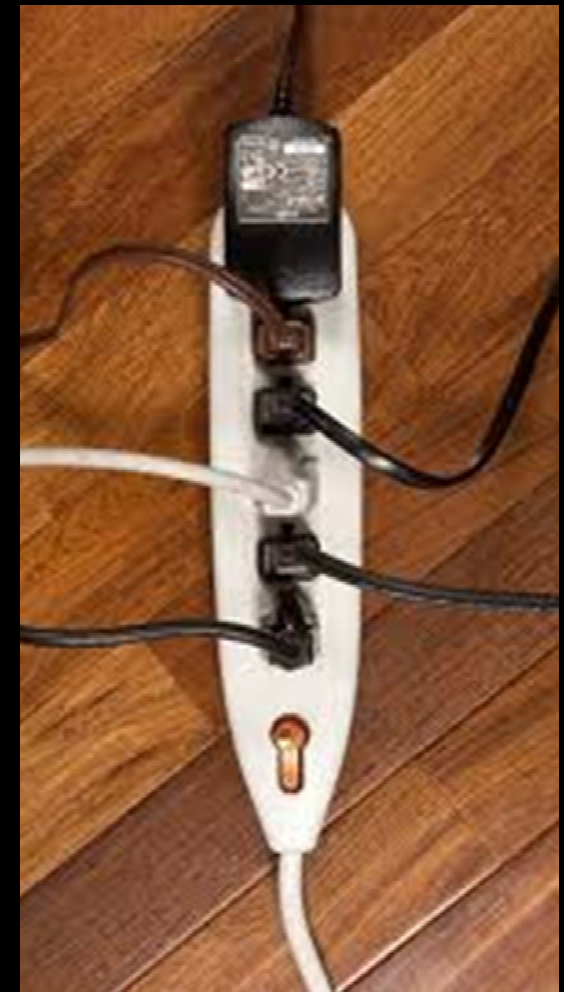
Large Tenant Sub-metering

- Large tenant gets electrical use “dashboard”
- Tenant can monitor (and manage) energy use
- Give control to the people who can act on it



Plug Load Controls

- In offices & classrooms, half of electrical outlets controlled by time clock or occupancy sensor.
- Plug loads represent ~~20%~~ 30 - 40% of commercial building energy use



The best path to our goal? Floor vs. Ceiling

- Raise the “ceiling” with high performing buildings
 - Re-define what’s normal
- Raise the “floor” steadily with the energy code
 - The “ankle breaker”
- Learn from adversaries
- Focus on measured results

