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Colorado and the *Next* Economy:

The Critical Role of Energy and Resource Productivity*

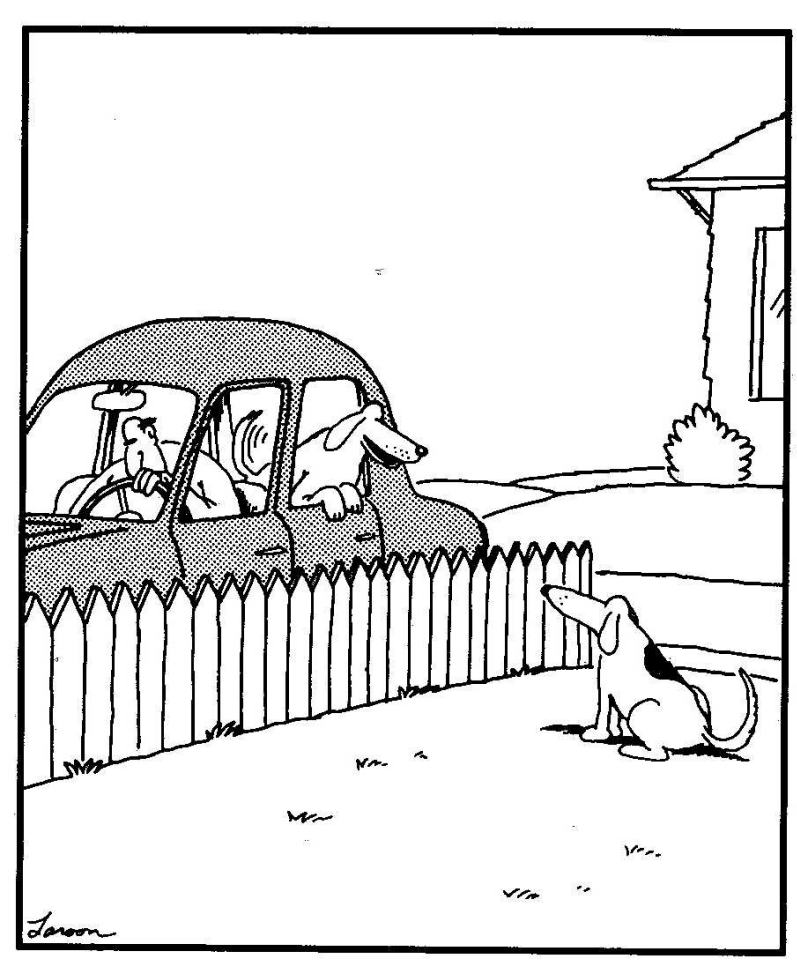
John A. "Skip" Laitner (@EconSkip)

In Conversation with
the Colorado Communities Symposium

Denver, Colorado
January 31, 2018

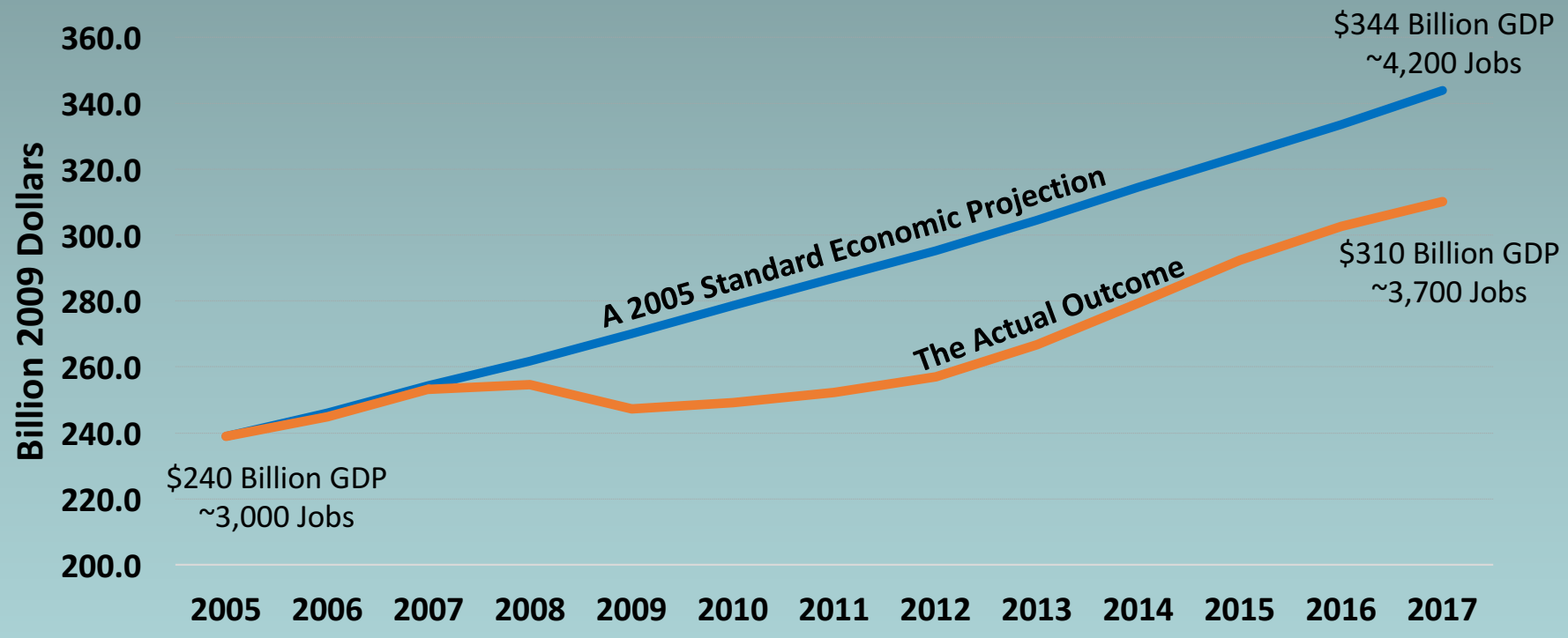
*** In the spirit and tradition of Nobel Laureate and former Caltech physicist Richard Feynman, in his 1959 visionary talk, "There's Plenty of Room at the Bottom." See, http://www.its.caltech.edu/~feynman/plenty.html.**

How Small Differences in Assumptions Can Make a Very Real Difference in Outcomes. . .



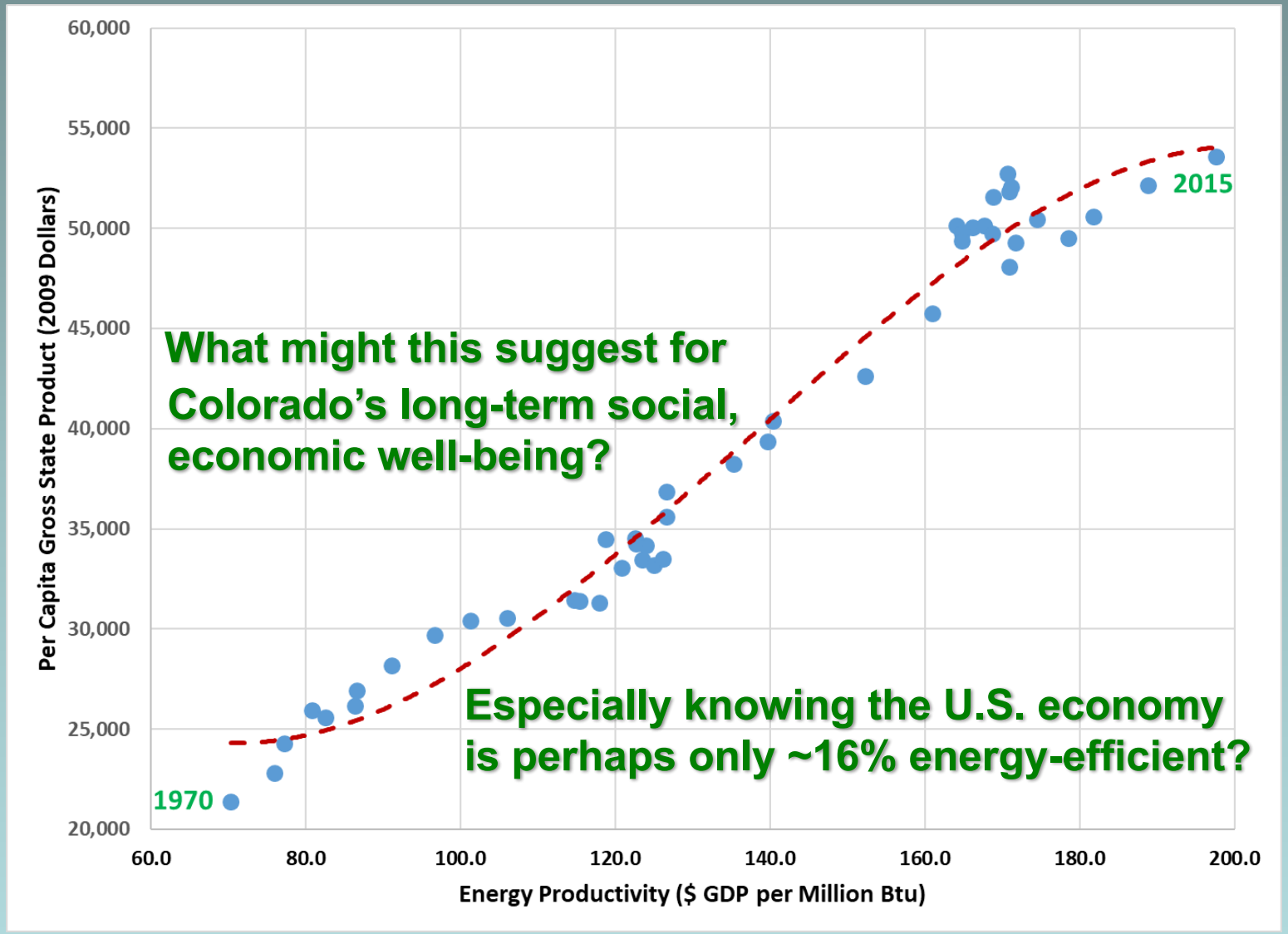
"Ha ha ha, Biff. Guess what? After we go to the drugstore and the post office, I'm going to the vet's to get tutored."

Comparing Past Economic Projections and Actual Outcomes: Colorado 2005 to 2017



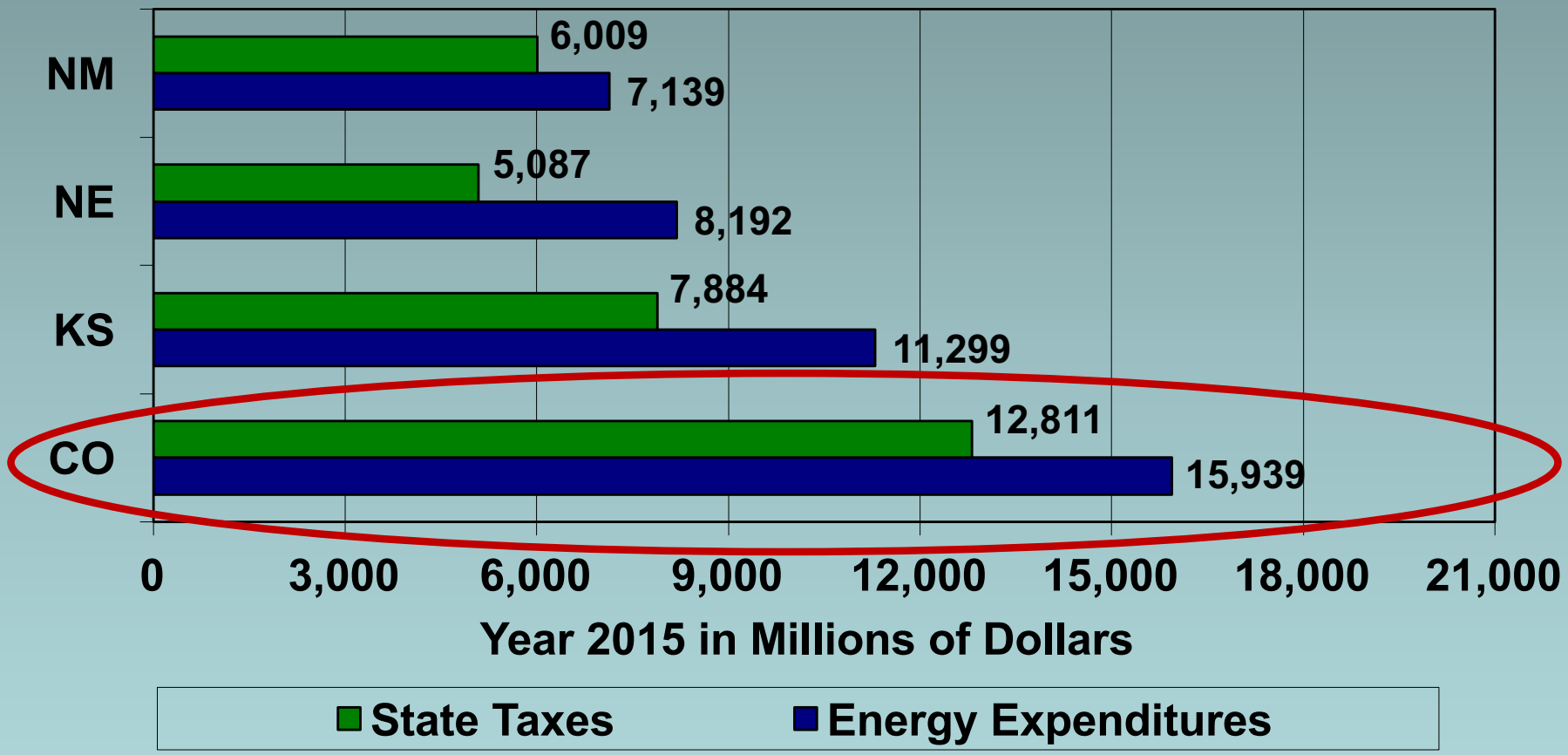
Source: Calculations by Laitner, based on projections from the U.S. EIA and Woods & Poole state-level data, January 2018.

Colorado Link Between Energy Productivity/Per Capita GDP



Source: John A. "Skip" Laitner, Economic and Human Dimensions Research Associates, January 2018.

Colorado Pays Much More for Energy Use Than for State-Generated Taxes



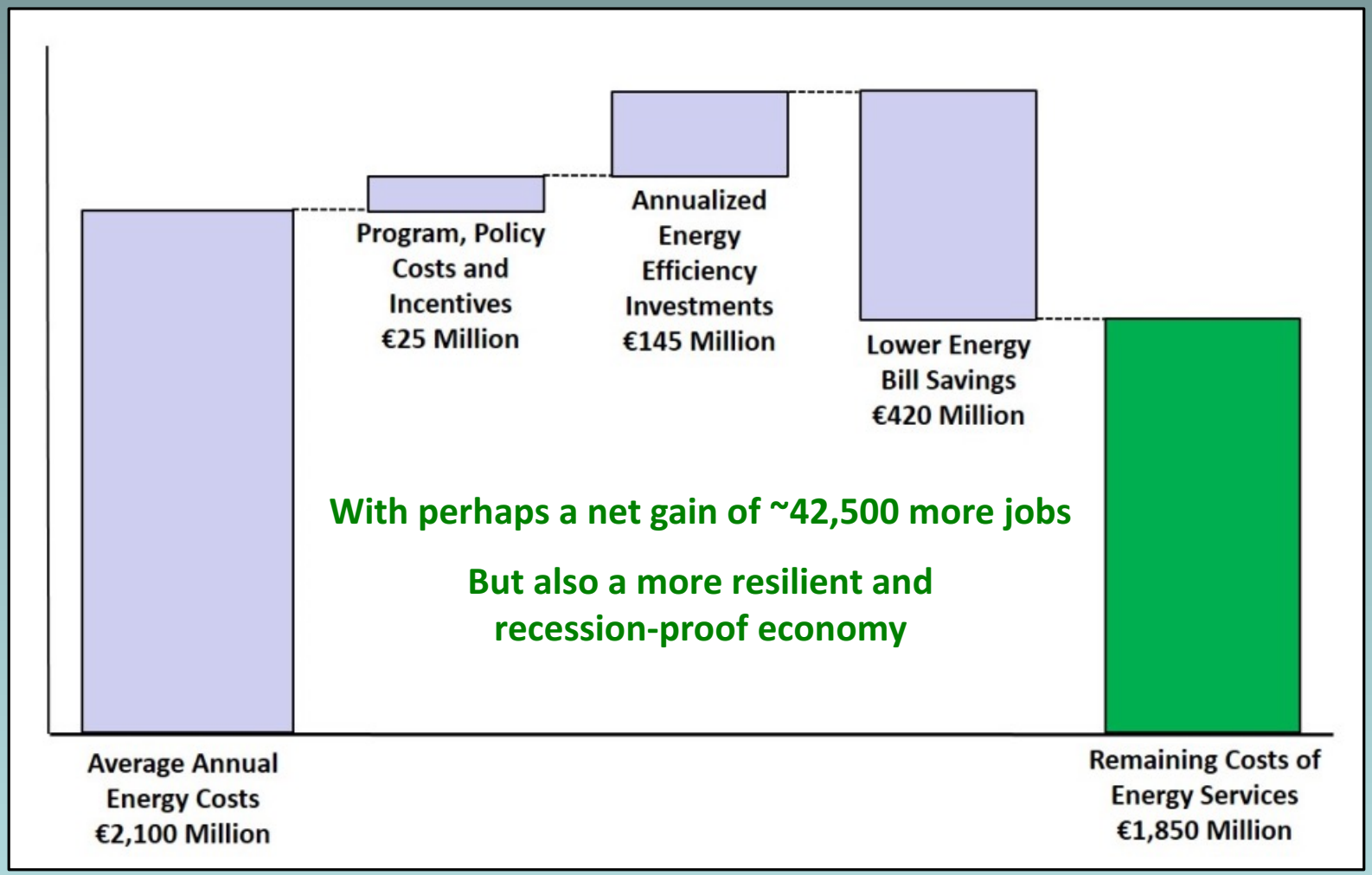
Sources: U.S. Statistical Abstract, 2015; and Energy Information Administration 2015. Information on all 50 states are available and, while varying, show a similar trend.

Others Acting on These Ideas?

- Both Luxembourg (population 576,000) and MRDH (Metropolitan Region Rotterdam/Den Haag 2.3 million). . .
- Working with my colleague Jeremy Rifkin, and partners at Navigant Consulting and Fraunhofer Institute, we crafted *Roadmaps Next Economy* that propose to double the rate of energy productivity by 2050. All remaining energy needs are to be provided by renewable resources.
- With significant upgrades to public infrastructure, energy efficiency upgrades, and the deployment of renewable energy technologies, by 2050 the plans anticipate a cumulative total investment roughly equal to one year's GDP.
- The result will be a more resilient, robust and sustainable economy that also increases the net gains in jobs.

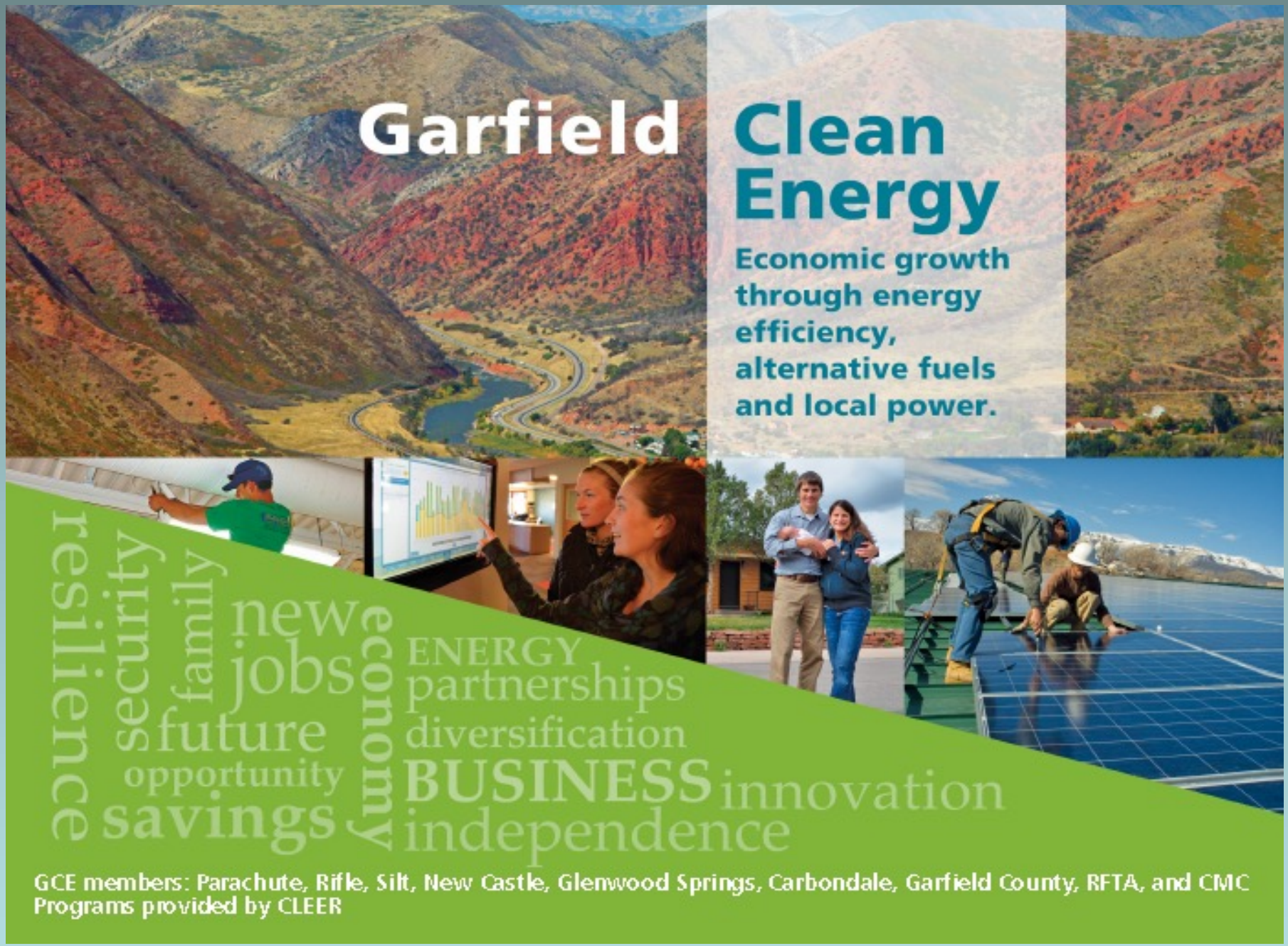
The Luxembourg Future Cost of Energy Services

Figure 3. The Average Annual Payments for Energy Services, 2016 through 2050



Source: John A. "Skip" Laitner (September 2016).

But with emerging examples right here in Colorado, such as. . .

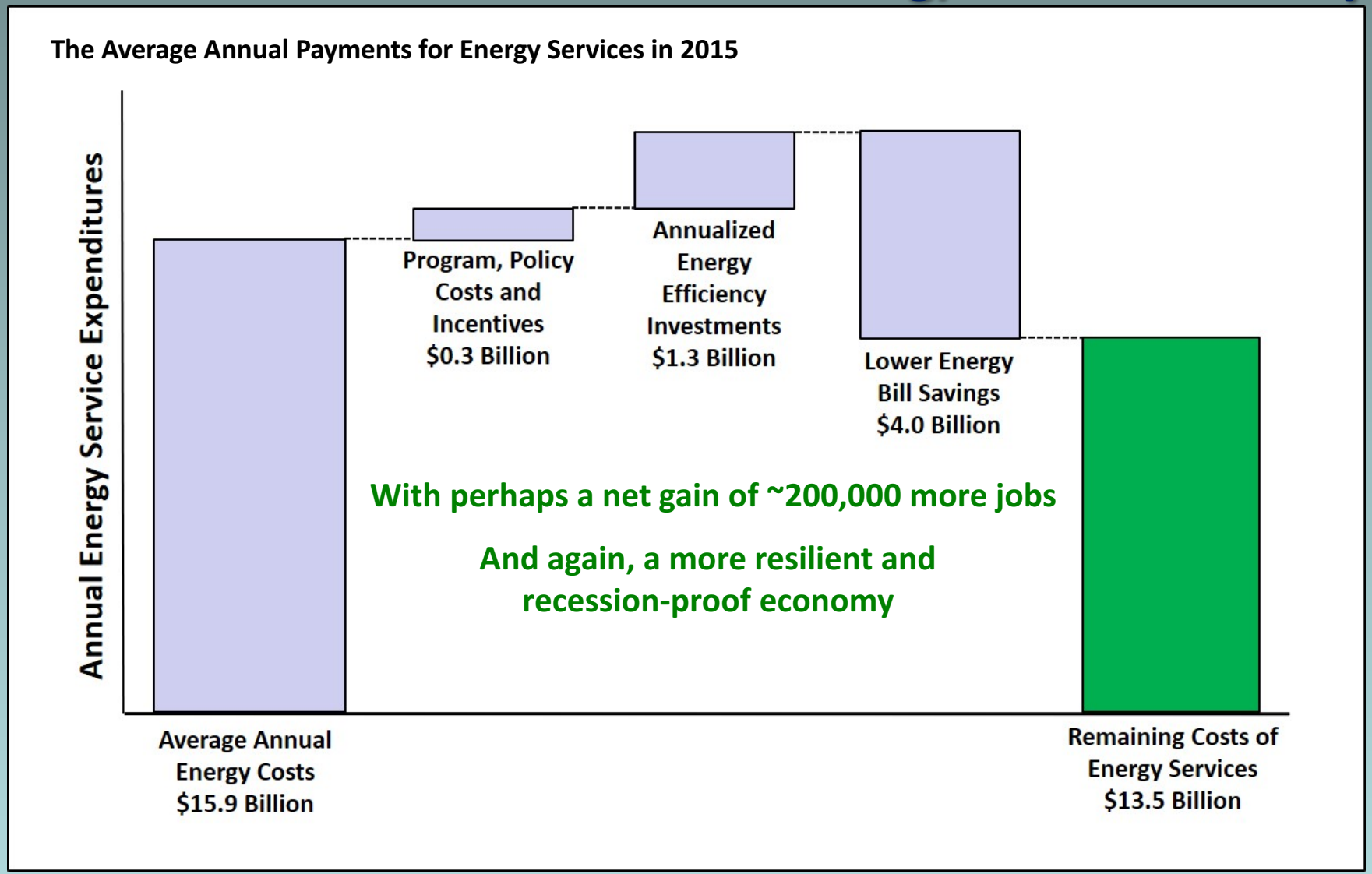

Garfield
Clean Energy
Economic growth through energy efficiency, alternative fuels and local power.
resilience
security
family
new
jobs
economy
ENERGY
partnerships
future
diversification
opportunity
BUSINESS
innovation
savings
independence
GCE members: Parachute, Rifle, Silt, New Castle, Glenwood Springs, Carbondale, Garfield County, RFTA, and CMC
Programs provided by CLEER

Preliminary Summary of Garfield Clean Energy Project Impacts (2010 to 2017)

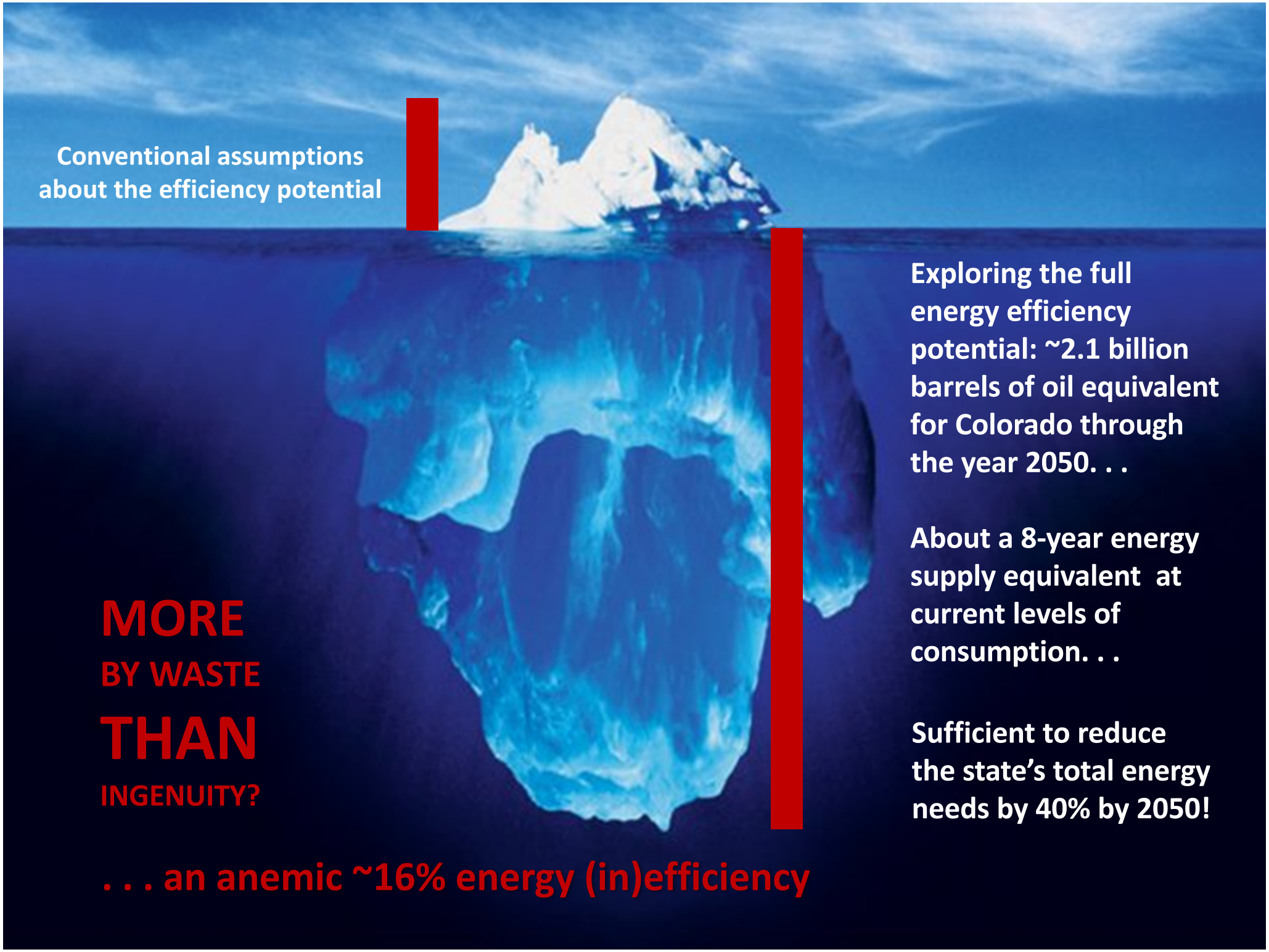
Millions of Current $	Program Years 2010-2017	Implied Residual Savings 2018-2029	Sum
Program and Deployment Costs	2.6	n/a	2.6
Upgrade Investments	14.2	n/a	14.2
Energy Bill Savings	7.5	21.1	28.6
Ratio of Energy-Related Investments Stimulated/Program $:			**5.4**
Ratio of Energy Bill Savings Stimulated /Program $:			**10.8**

Source: Data from CLEER with analysis by John A. "Skip" Laitner, January 2018.

What If Colorado Acted as Luxembourg/Garfield County?*

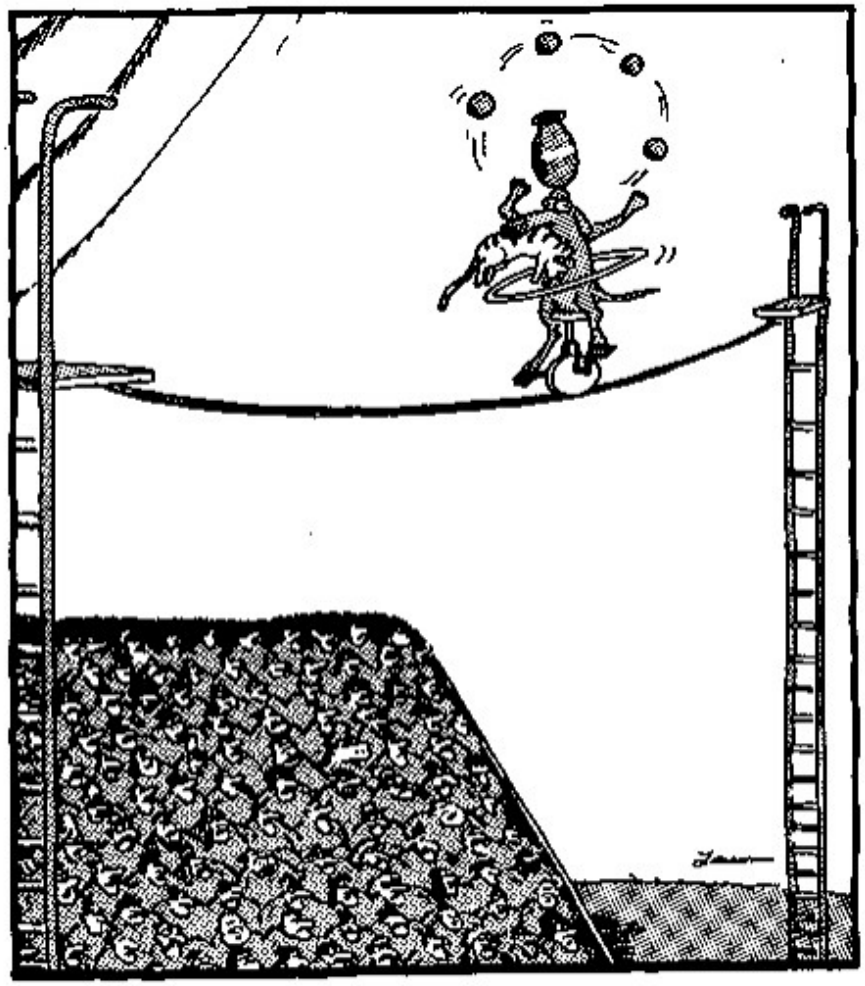


Disclaimer: A thought experiment is presented its insights rather than for specific projection or outcomes.


Conventional assumptions about the efficiency potential
Exploring the full energy efficiency potential: ~2.1 billion barrels of oil equivalent for Colorado through the year 2050. . .
About a 8-year energy supply equivalent at current levels of consumption. . .
Sufficient to reduce the state's total energy needs by 40% by 2050!
MORE
BY WASTE
THAN
INGENUITY?
. . . an anemic ~16% energy (in)efficiency

Perhaps Our Ultimate Economic and Energy Efficiency Resource?

- Recalling the comment of early Twentieth Century UK essayist, Lionel Strachey, who remarked: *"Americans guess because they are in too great a hurry to think."*
- Jerry Hirschberg, founder and former CEO of Nissan Design, who noted that: *"Creativity is not an escape from disciplined thinking. It is an escape with disciplined thinking."*
- And Henry Ford once said, *"Thinking is the hardest work there is which is the probable reason why so few engage in it."*



High above the hushed crowd, Rex tried to remain focused. Still, he couldn't shake one nagging thought: He was an old dog and this was a new trick.

The difficulty lies not with the new ideas, but in escaping the old ones. . .

John Maynard Keynes

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