

# The MENA Disruptive Energy Transition: Insights for the Global Economy\*

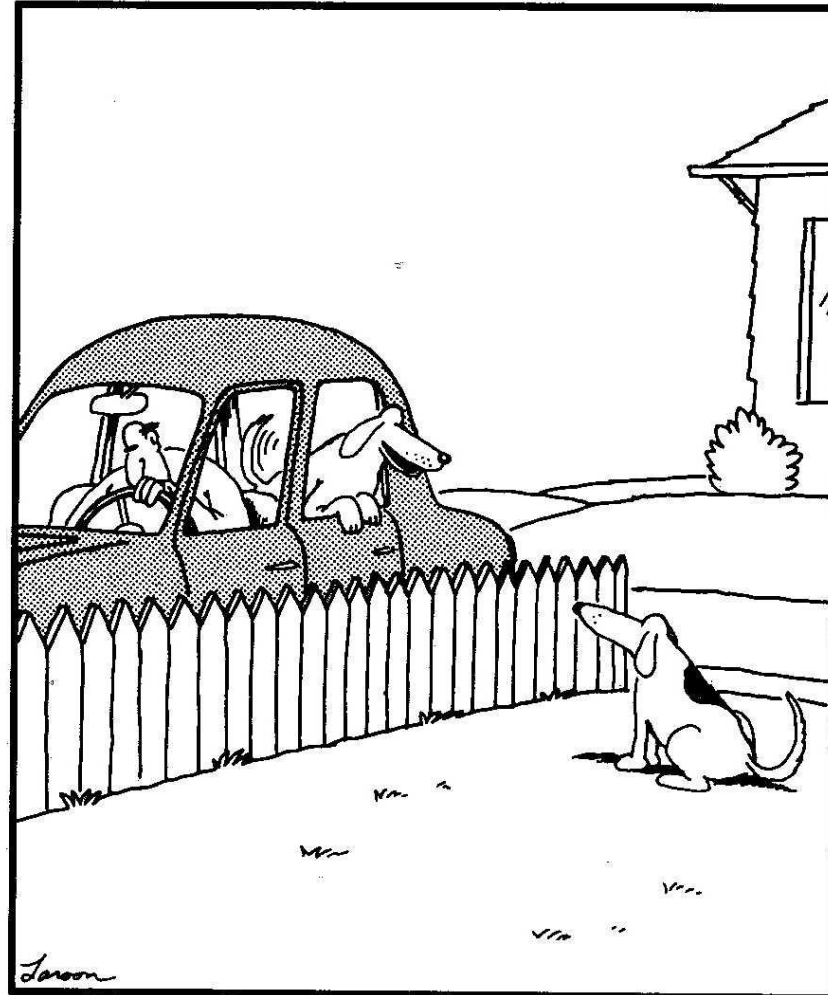
John A. “Skip” Laitner

*In Conversation with Colleagues at the American  
Council for an Energy-Efficient Economy*

Washington, DC  
July 23, 2019

\* In collaboration with World Bank projects in the Middle East and North Africa (MENA) Countries

***And as we are reminded by my favorite American philosopher, Gary Larson, small differences in assumptions can lead to very big differences 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."**

# An Acknowledgment

While I have benefited from a highly collegial and many interactive discussions with so many people over a long career, I want to acknowledge my colleagues with the International Institute for Applied Systems Analysis (IIASA) and the Research Institute for Innovative Technologies for the Earth (RITE), as well as all participants in a 3-day deep-dive workshop last September in Nara, Japan, as we then began a badly-needed collaboration and dialogue that underpins our work with the World Bank and other clients, as well as several key elements of the talk today!

# Four Big Takeaways of Rethinking Resource Demand in Nara, Japan

- Strong need for new metrics, insights, images and narratives to fully grasp our social, economic, and environmental well-being – ***emphasizing more the social return on effort and investment rather than only the impact on prices/income.***
- Also a strong social and economic imperative of moving from merely “energy efficiency” and “renewable resources” to building greater ***energy and resource productivity.***
- The social, cultural, and behavioral elements must be among the key solutions to a healthy climate and a robust and sustainable economy.
- With a smart set of, fully-funded and adequately-staffed, policies, programs, and best practices to drive necessary scale and optimal mix of efforts and investments.

# Exploring the Scale of Waste

- If we focus only on municipal solid waste, the U.S. generates about 2 kg of waste per capita each day.
- Yet, if we add to that waste, all the soil erosion, all the air pollution, all of the carbon dioxide emissions, and all the fecal matter from humans, cows and pigs, that waste grows to ~129 kg per person/day. Likely more!
- Which does not include water losses, mining tailings, logging residues and the many other forms of waste.
- So the question: “*Are we living more by waste than ingenuity?*”
- And, more broadly, can the productive use of resources drive what we now call multiple benefits? I think yes!

**With an emerging thought  
experiment. . .**

# Resource Impact of the Global Economy Over Time

(Real GDP as a proxy for volume of resources supporting the economy)

■ The scale of the 1950 global economy

The scale of the 2018 global economy



**By 2050 the Cumulative Volume may be ~1,056 times the 1950 Global Economy**

**Example? Energy 1.6 trillion TCE ~ 80+% wasted**

**Living more by waste than ingenuity?**

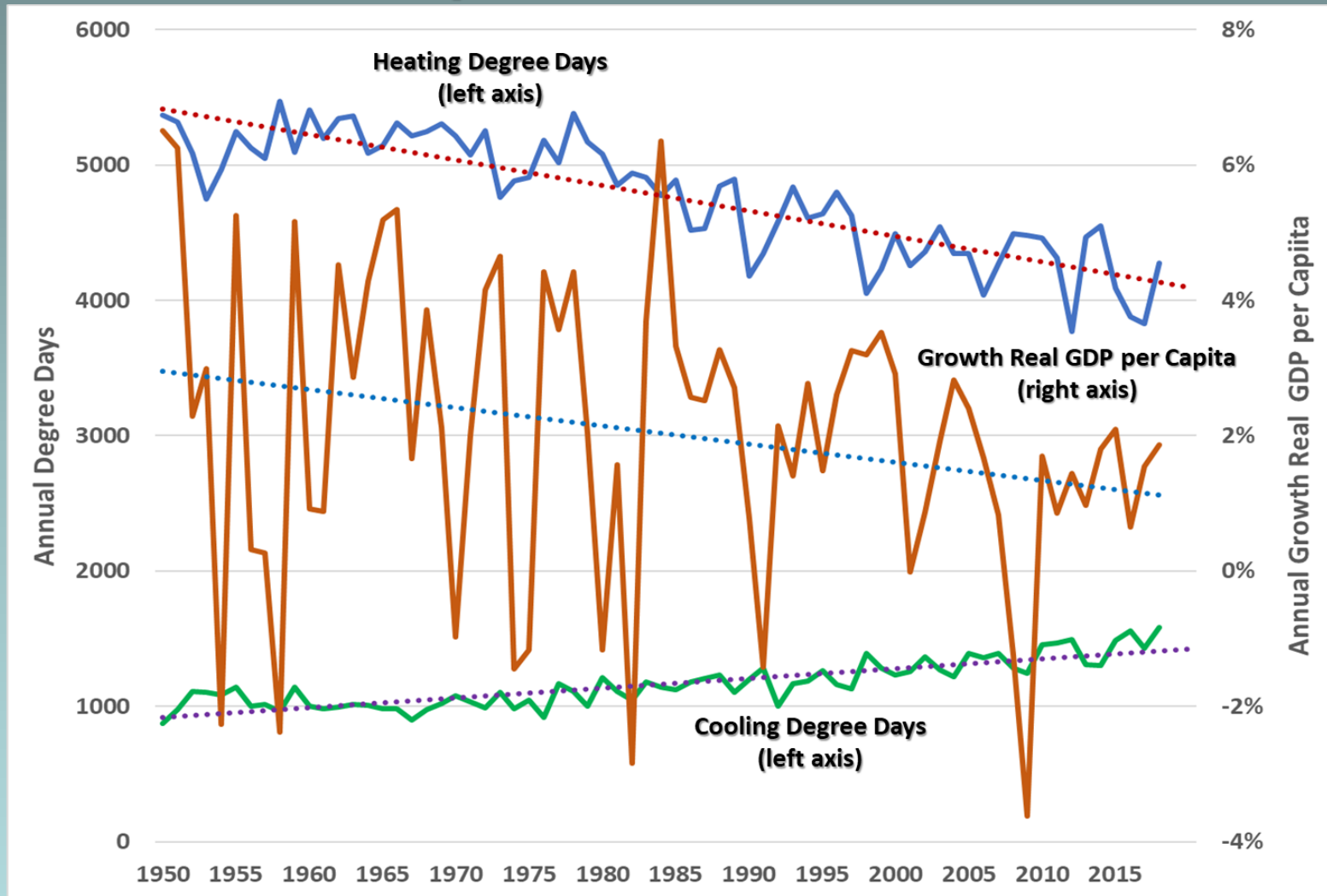
# In Effect, Reinvent the Wheel?

- In the 1970s, teenager Frank Nasworthy actually did reinvent the wheel and it revolutionized skateboarding. . .
- But that was yesterday! And today?
- Goodyear is once again trying to reinvent the wheel; and if they are successful? It may eliminate the need for axles on all our cars.
- Yes, sometimes we actually do need to reinvent the wheel — if we really want to move things ahead!



# **With Perhaps 2 Different Views of the U.S. Economy**

# Trends in U.S. Heating/Cooling Degree Days and Per Capita GDP 1950 to 2018

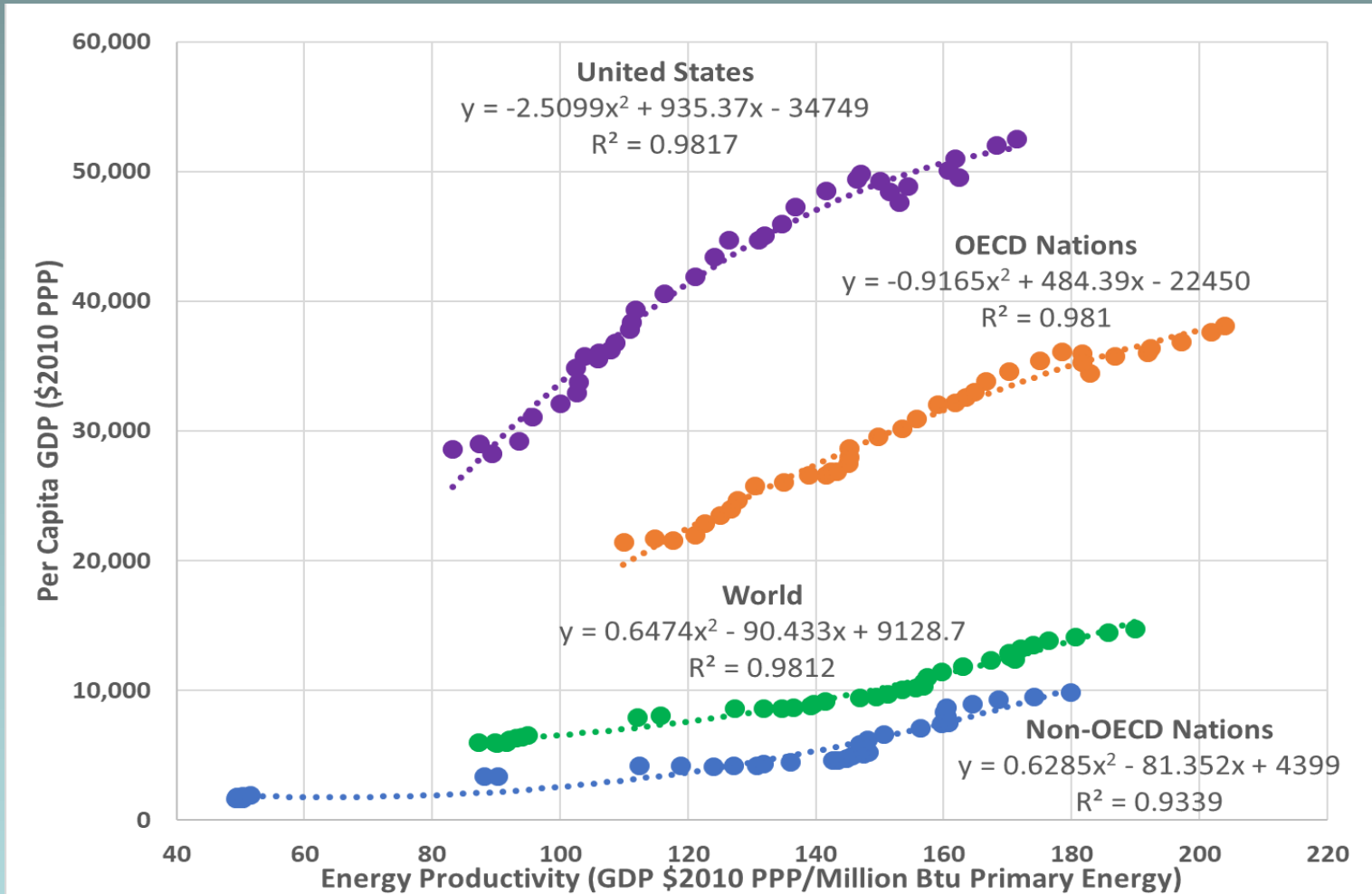


Source: John A. "Skip" Laitner using data from the U.S. Energy Information Administration, May 2019.

# What Might Constitute Greater Energy and Resource Productivity?

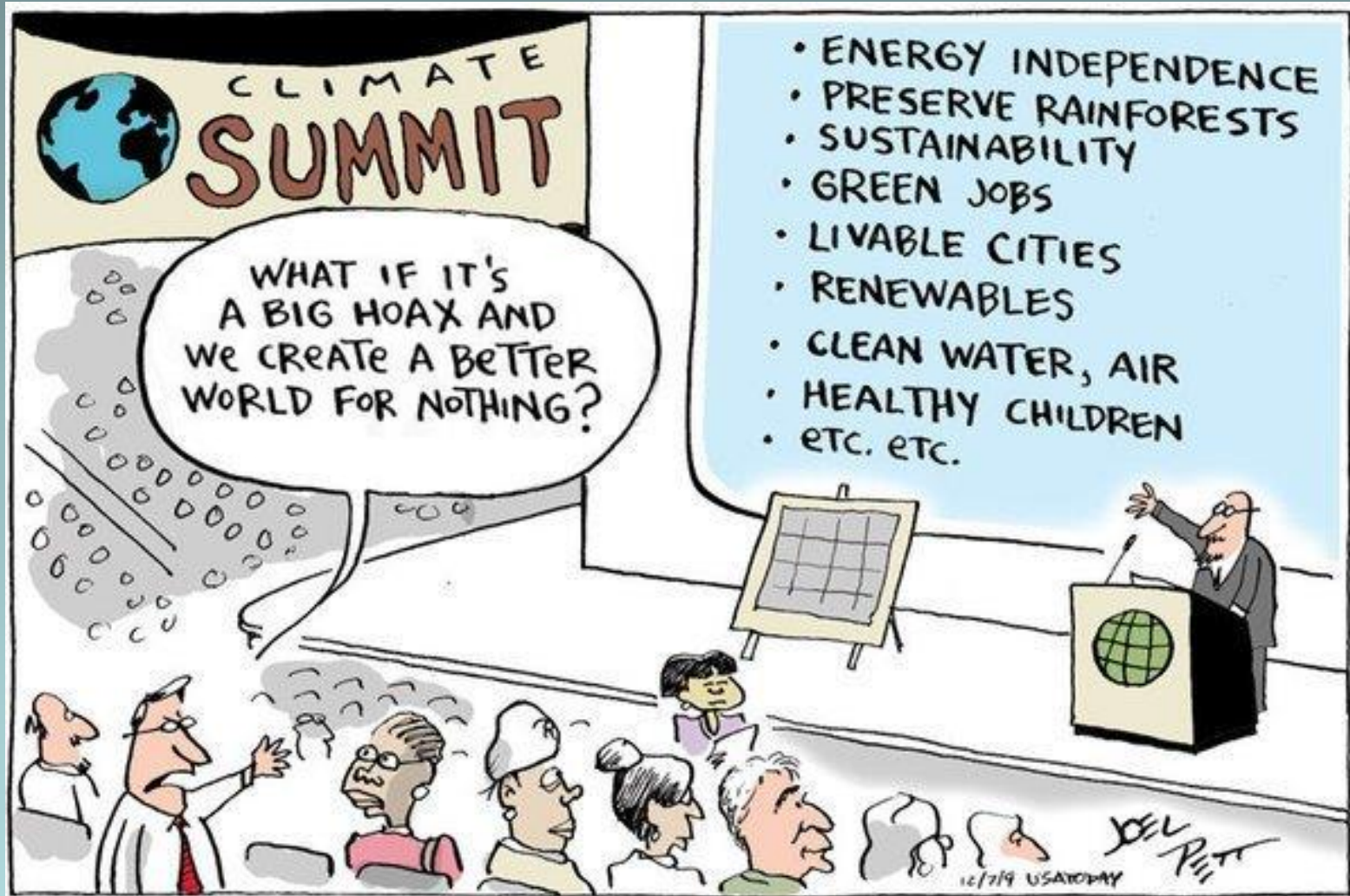
- Yes, end-use energy efficiency;
- But also the development and deployment of renewable energy technologies and systems;
- And finally, much greater levels of resource productivity – whether better use of capital, materials, water, food, but especially energy.
- With a question of how all this might impact our social/economic well-being?

# The Connection Between Global Energy Productivity and Per Capita GDP (1988-2016)



Source: Calculations by John A. "Skip" Laitner using EIA international data for major world regions July 2019.

# The Presumption We Need to Overcome



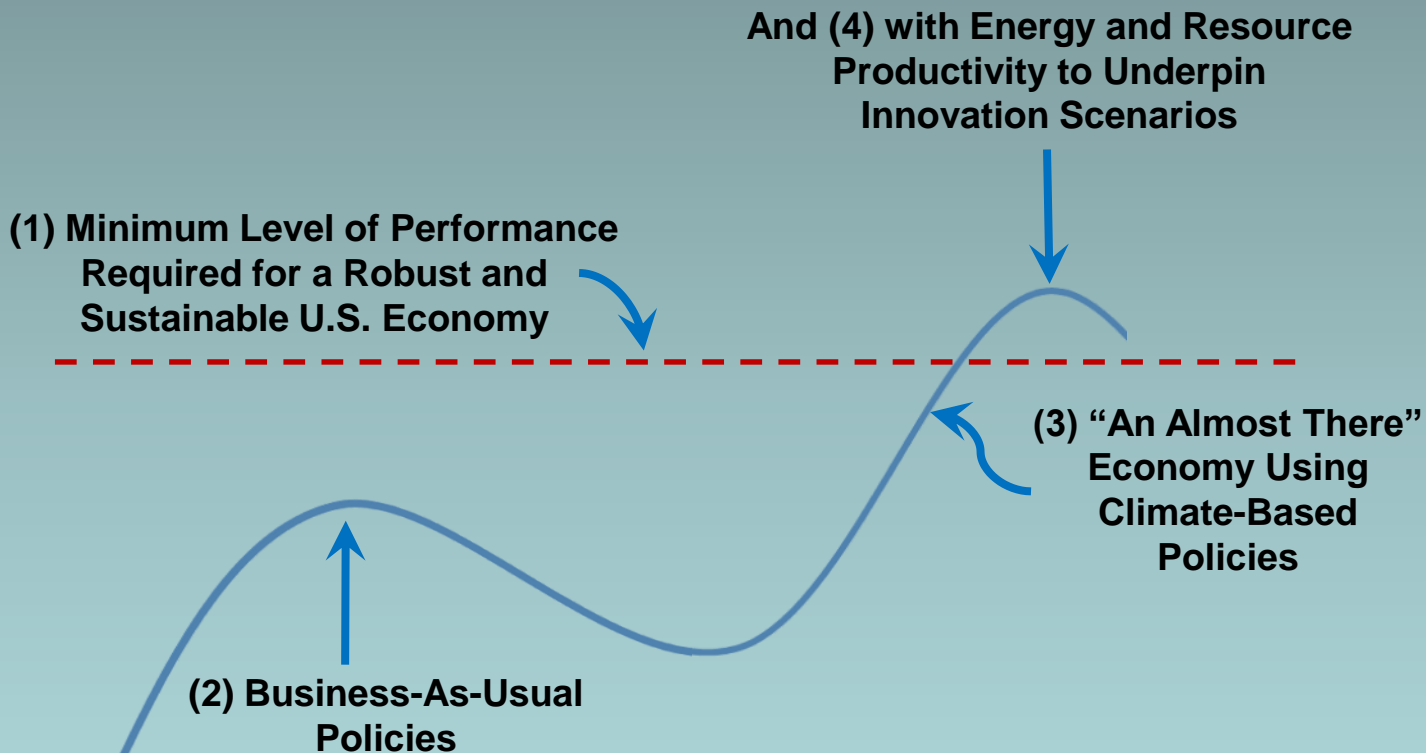
## With a Thought on the Tough Choices

“Individuals have a natural tendency to choose from an *impoverished option bag*. Cognitive research in problem solving shows that individuals usually generate only about 30 percent of the total number of potential options on simple problems, and that, on average, individuals miss about 70 percent to 80 percent of the potential high-quality alternatives (emphasis in the original).”

Dr. Jeffrey S. Luke

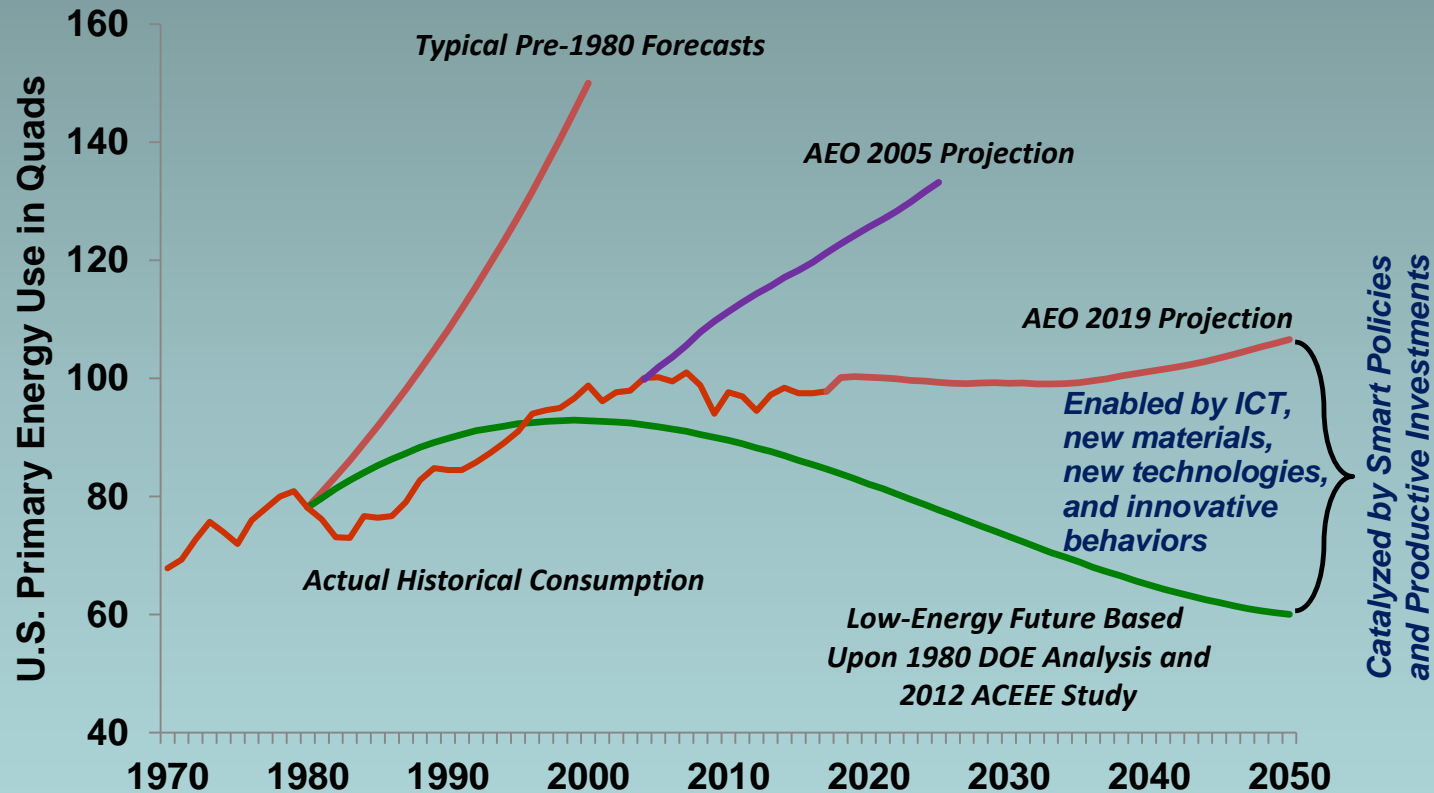
*Catalytic Leadership: Strategies  
for an Interconnected World, 1998*

# Exploring the Opportunity, Scale and Speed of the Necessary Effort



**With a need to act "at Scale," and  
decidedly in "Climate Time."**

# Key Insight: The Energy Efficiency Resource Is Larger than Generally Believed or Understood



Sources: Laitner 2019 based on DOE 1980 Policy Analysis, ACEEE 2012, AEO 2005, AEO 2019.



**With a final thought experiment . . .**

# What is. . .

# 4,193,647,488,011

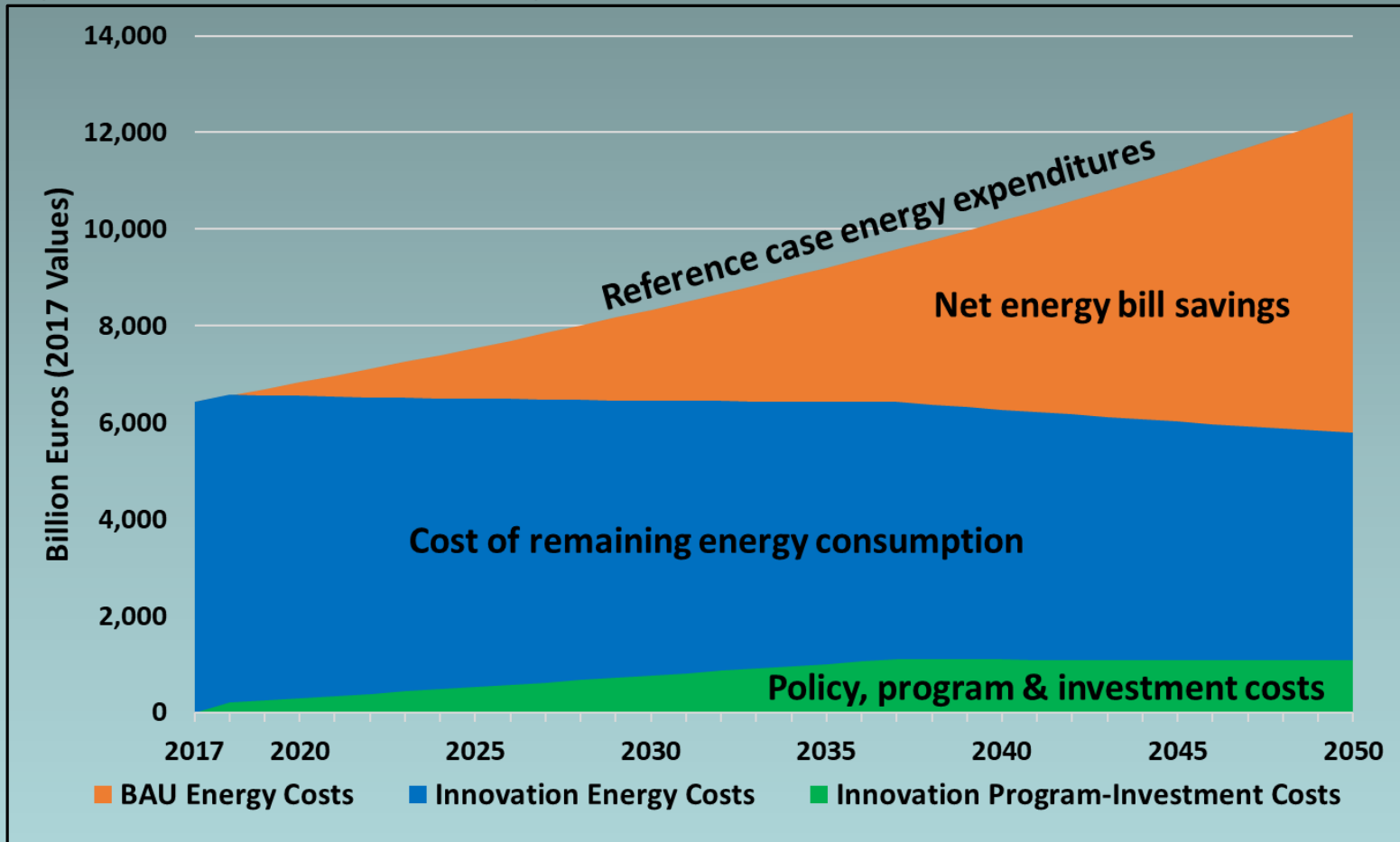
*A working estimate of the cumulative lost energy bill savings in the United States economy since the 1992 Rio Earth Summit by not adopting smart energy policies averaging 3% energy productivity gains per year!*

*As of about 12:00 PM EDT Today. . .*

**Did I say a final thought experiment?  
I lied. . . With one more to go. . .**

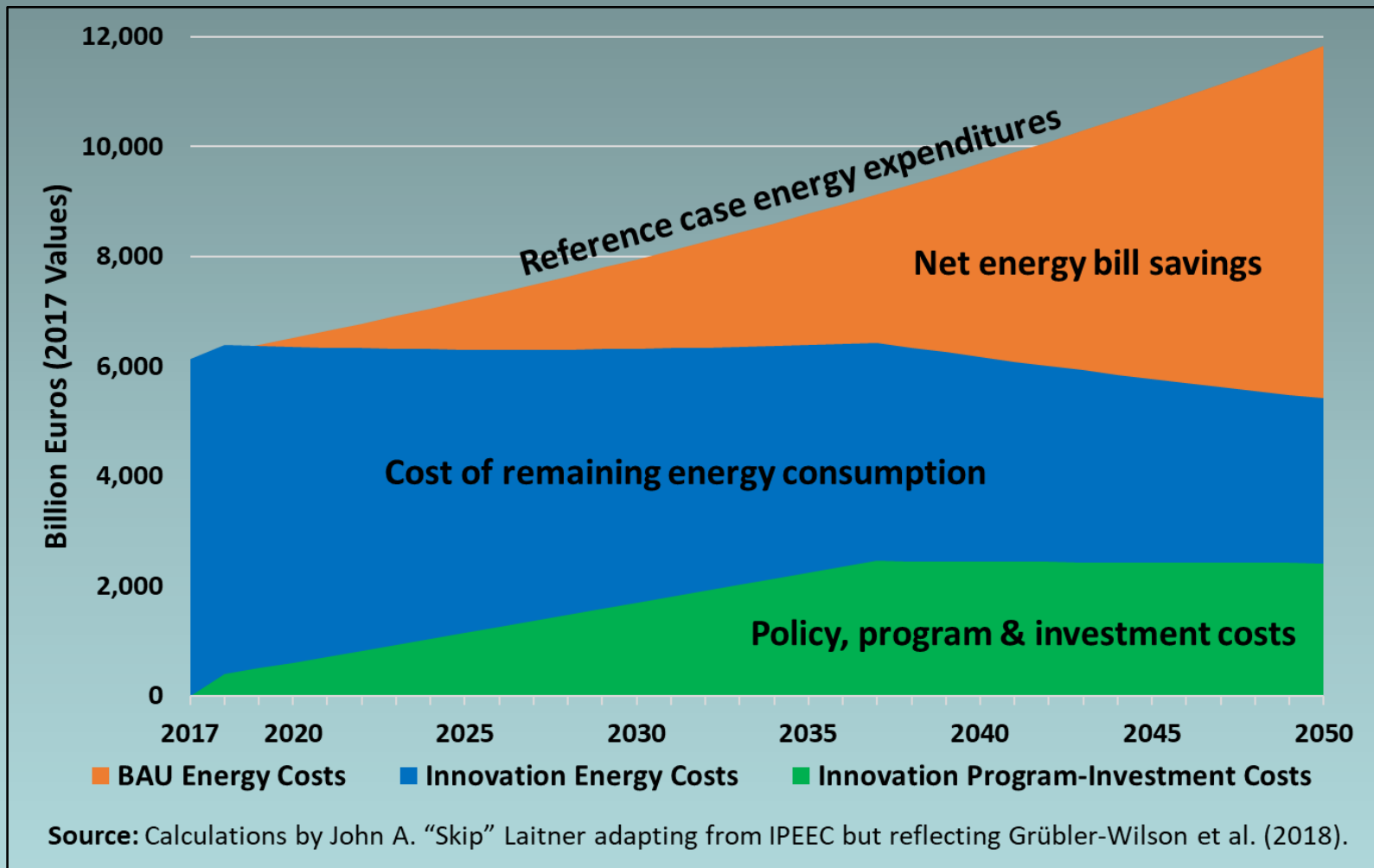
# How Smart Programs and Policies Might Drive Global Savings

Figure 5. Impact of a Global Energy Efficiency Innovation Scenario



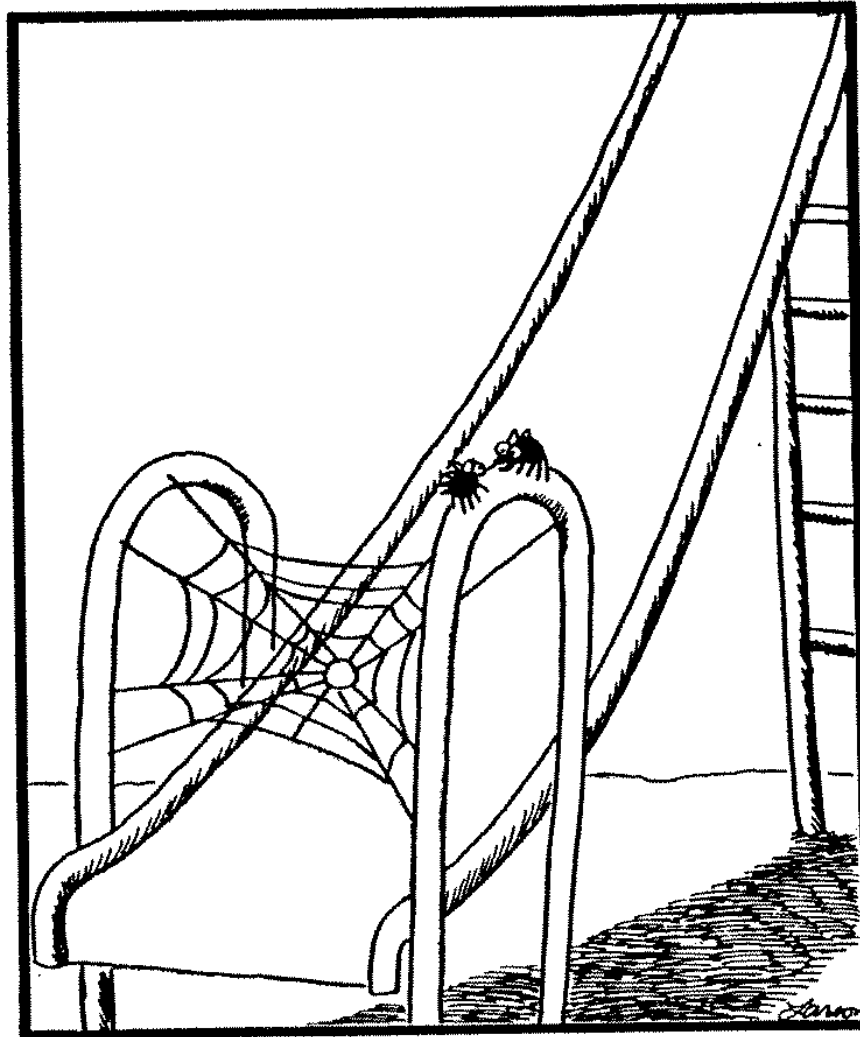
Source: Laitner et al. (2018) for IPEEC: *Smart Policies and Programs as Critical Drivers*. <https://tinyurl.com/yb64apo7>

# How a Grübler-Wilson et al. Scenario Might Drive Savings



# Perhaps the Ultimate Efficiency Resource To Encourage Among Our Colleagues?

- Recalling the comment of early Twentieth Century UK essayist, Lionel Strachey, who remarked: *“[Too many people] 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.”*



**"If we pull this off, we'll eat like kings."**

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

***John Maynard Keynes***



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