

Climate Strategies: What Can We Do?

Catherine Wolfram



Reasons to go solar

1

Do something for the environment



2

Save money on electricity

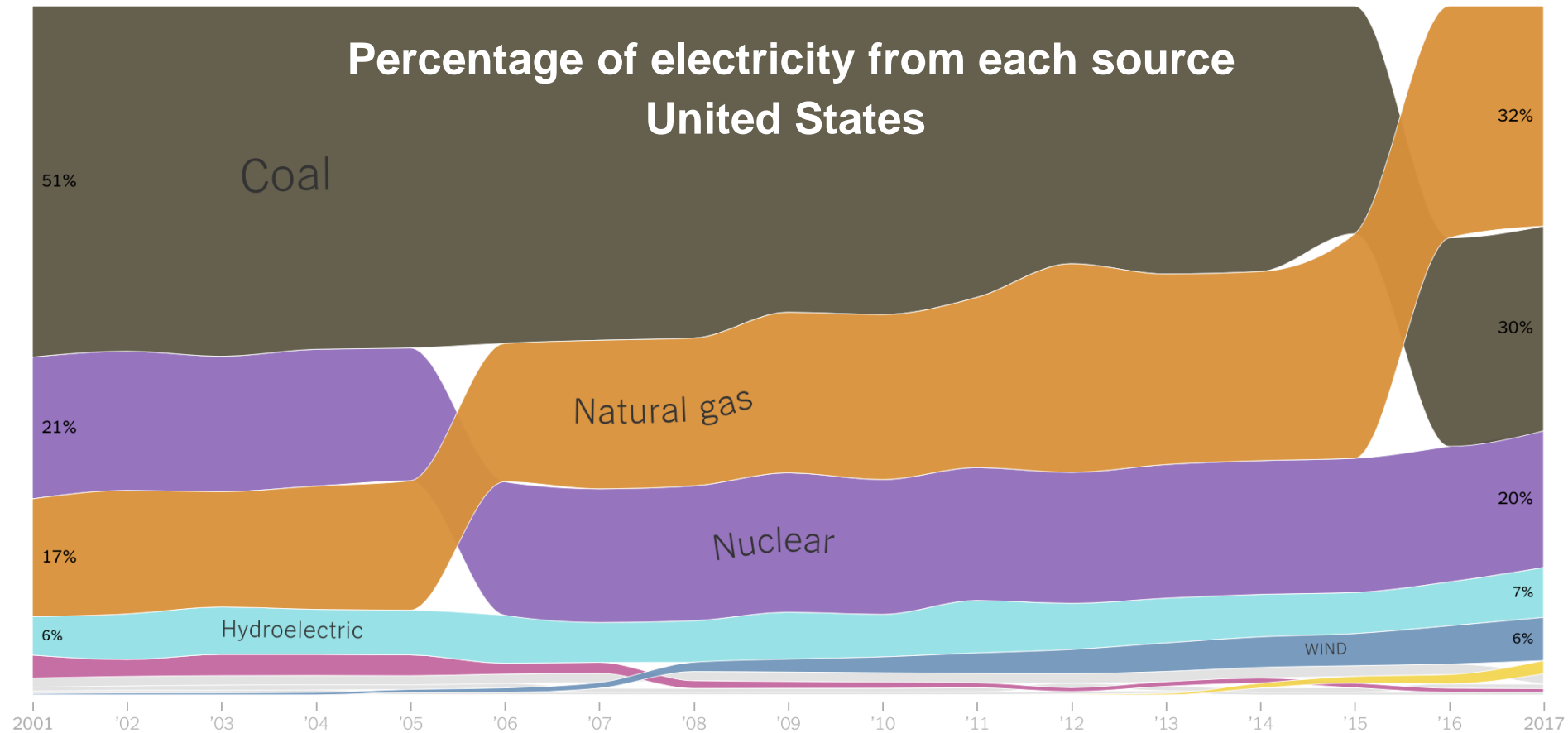


3

It's my thing!

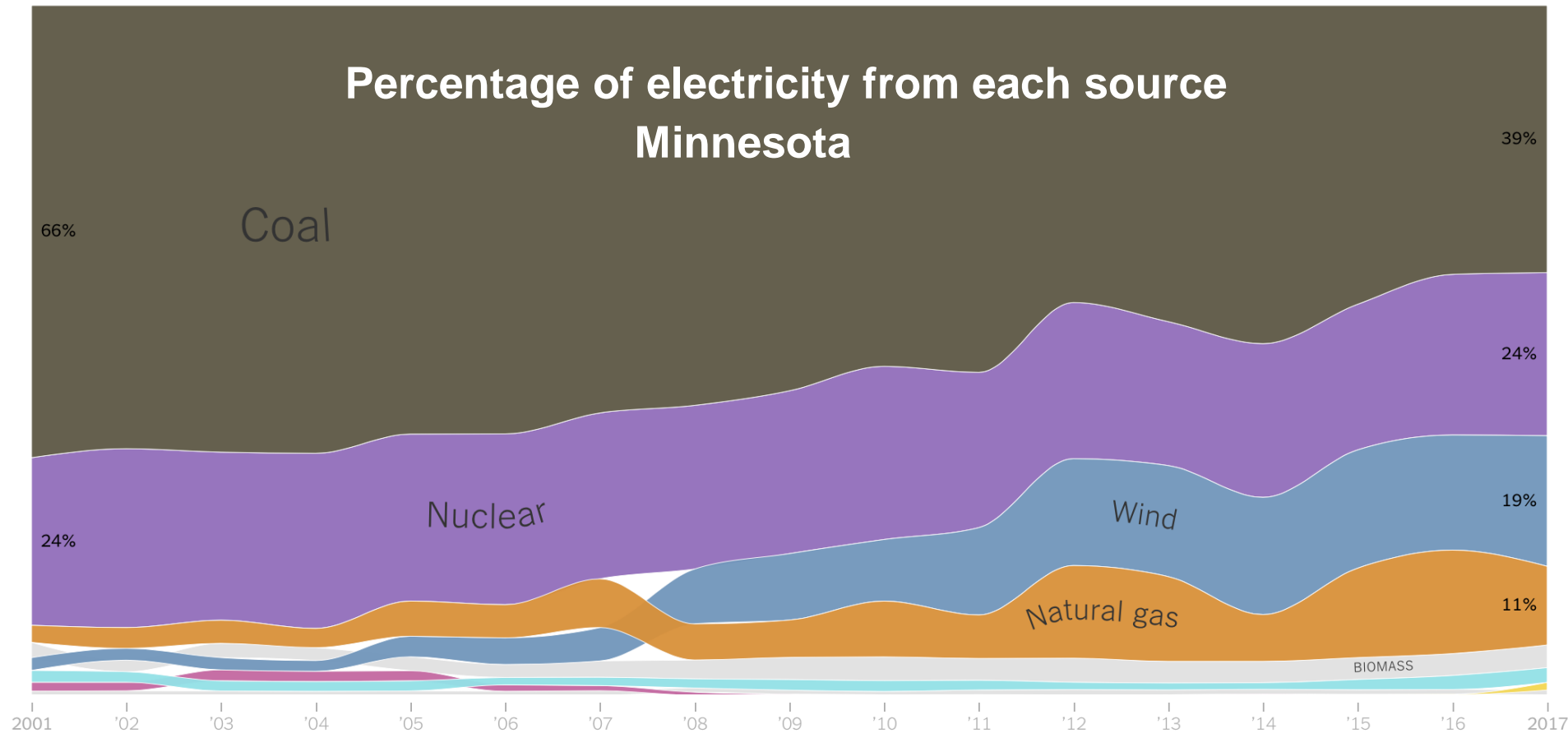


What does my solar offset?



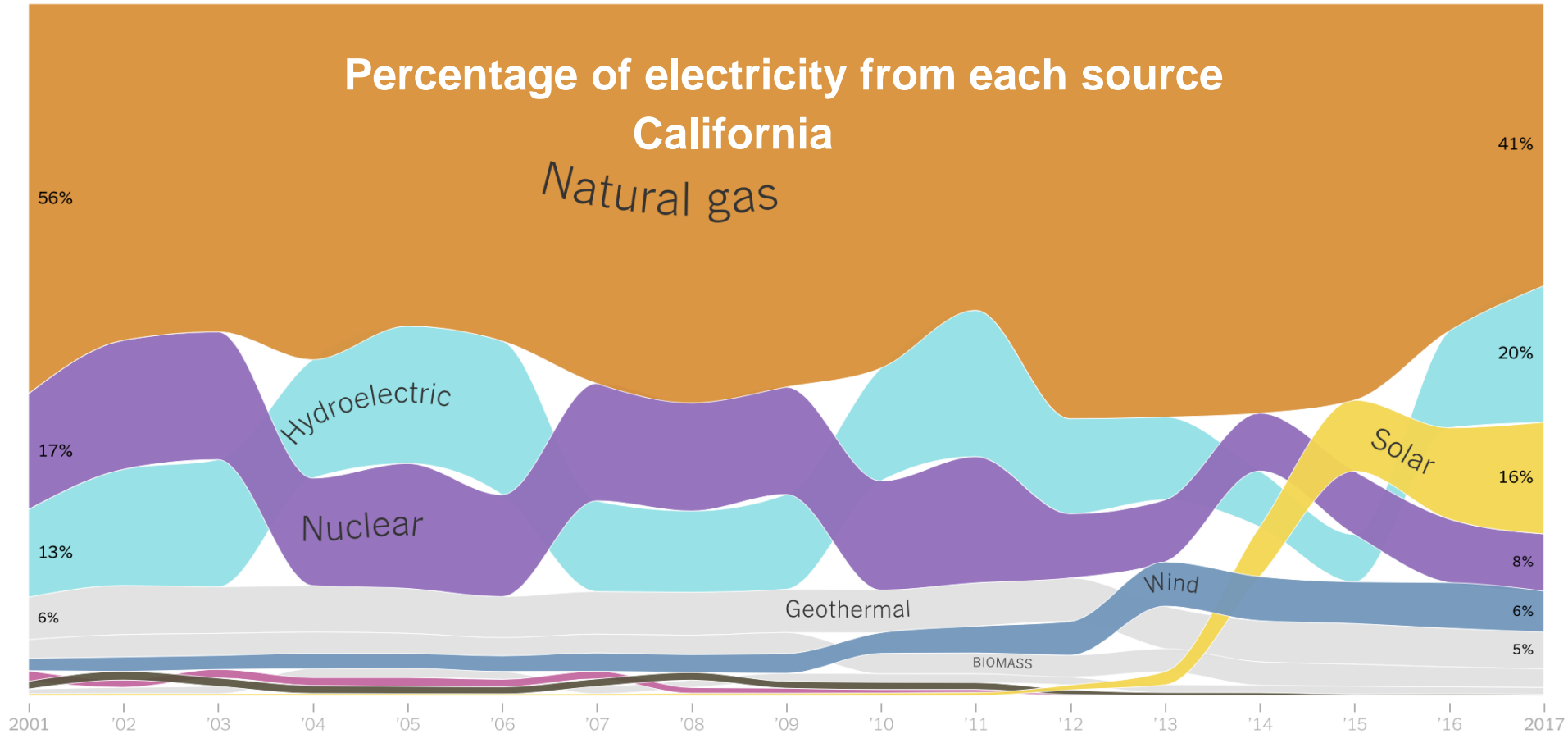
Source: New York Times, December 24, 2018, from Energy Information Administration

What does my solar offset?



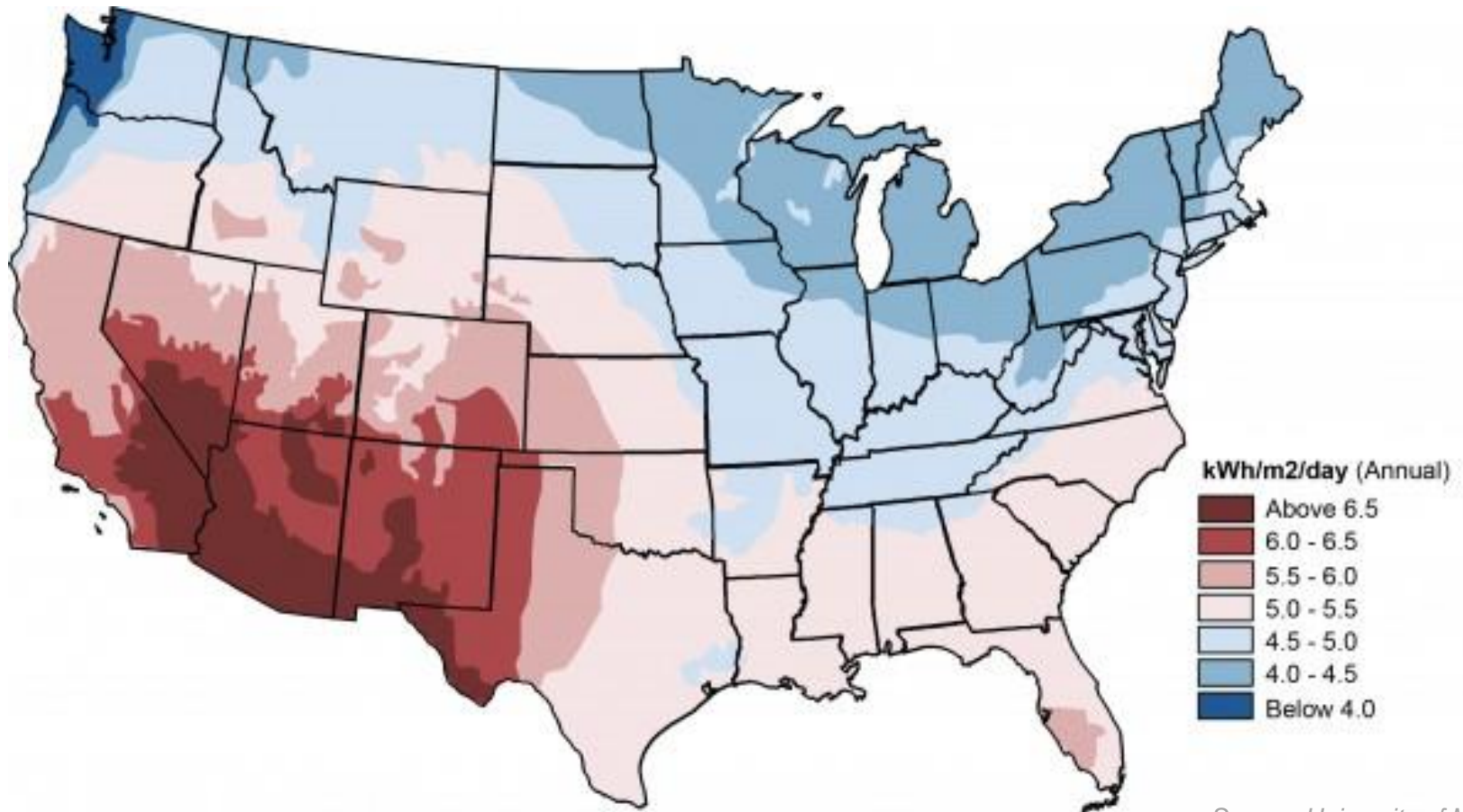
Source: New York Times, December 24, 2018, from Energy Information Administration

What does my solar offset?



Source: New York Times, December 24, 2018, from Energy Information Administration

How much will my solar produce?



Source: University of Michigan

**Another question: will going solar
save me money?**

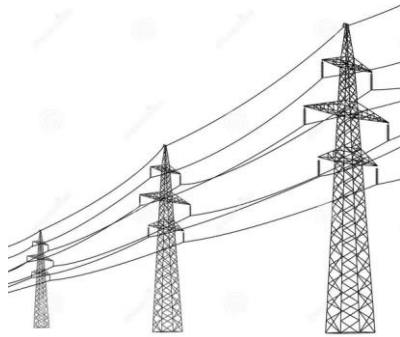
Option 1

Buy All, Sell All

Solar panel
production
sold back to
grid



House pays for all
electricity
consumed at retail



Option 2

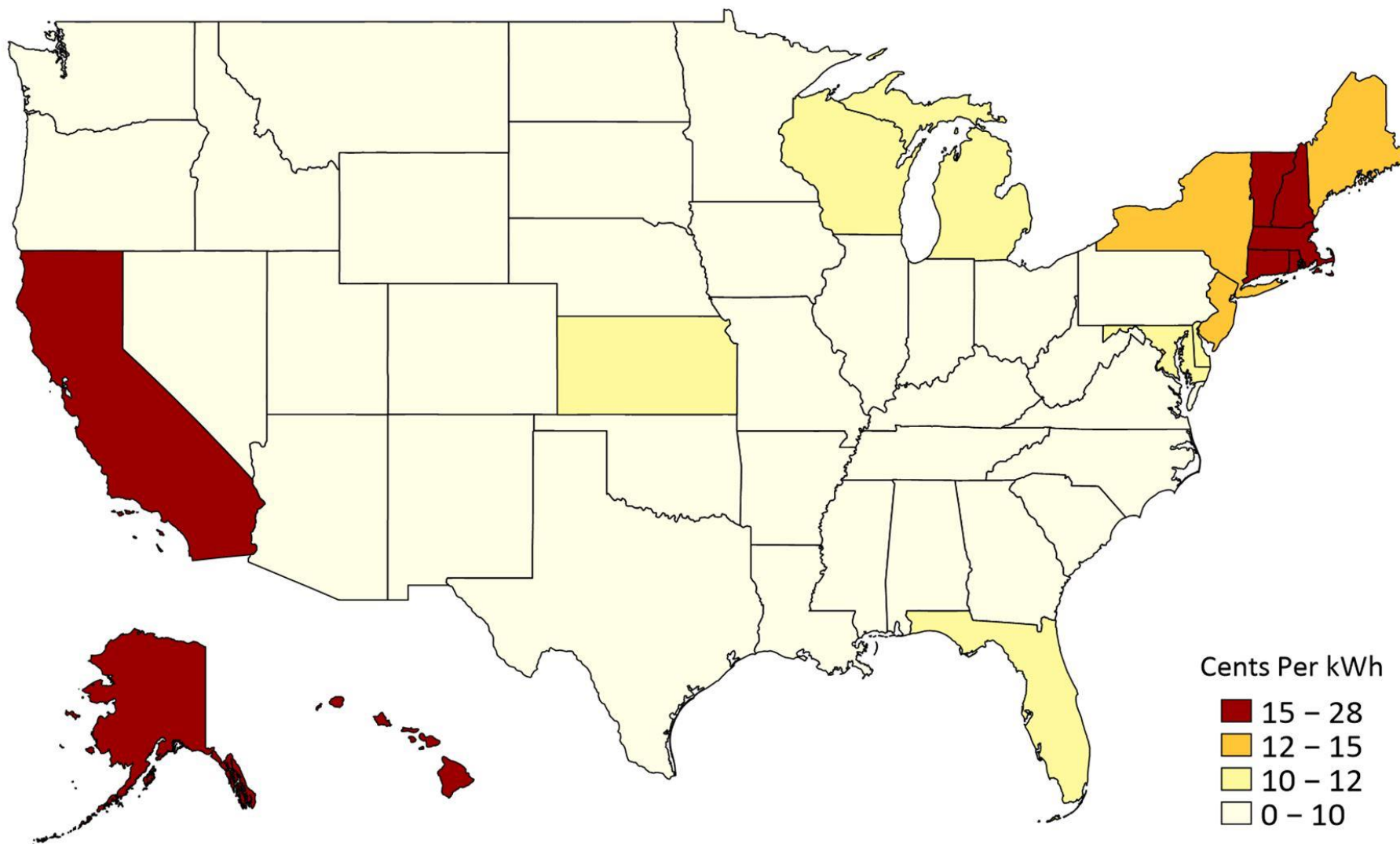
Net Metering



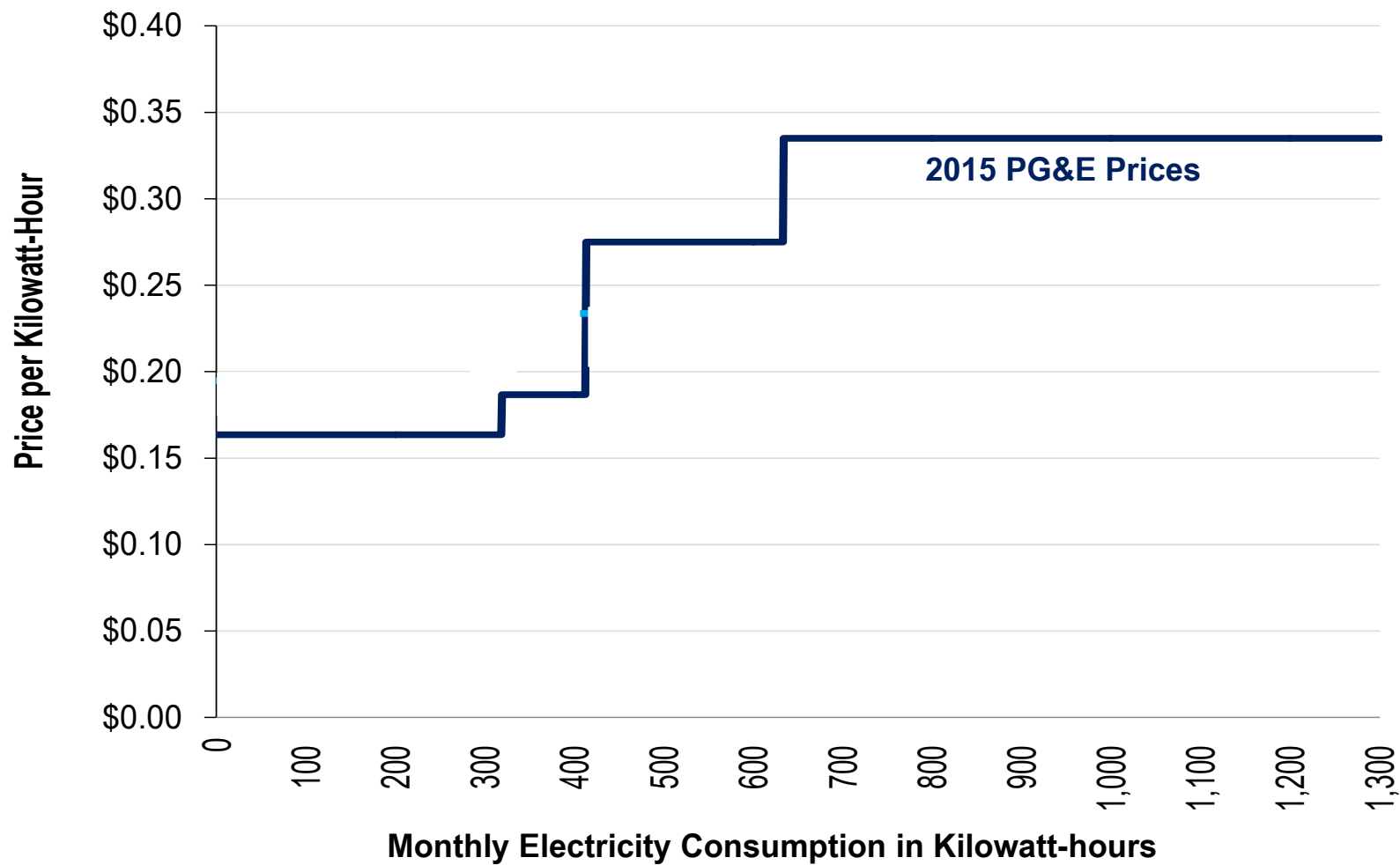
House pays for net of
consumption minus
solar production



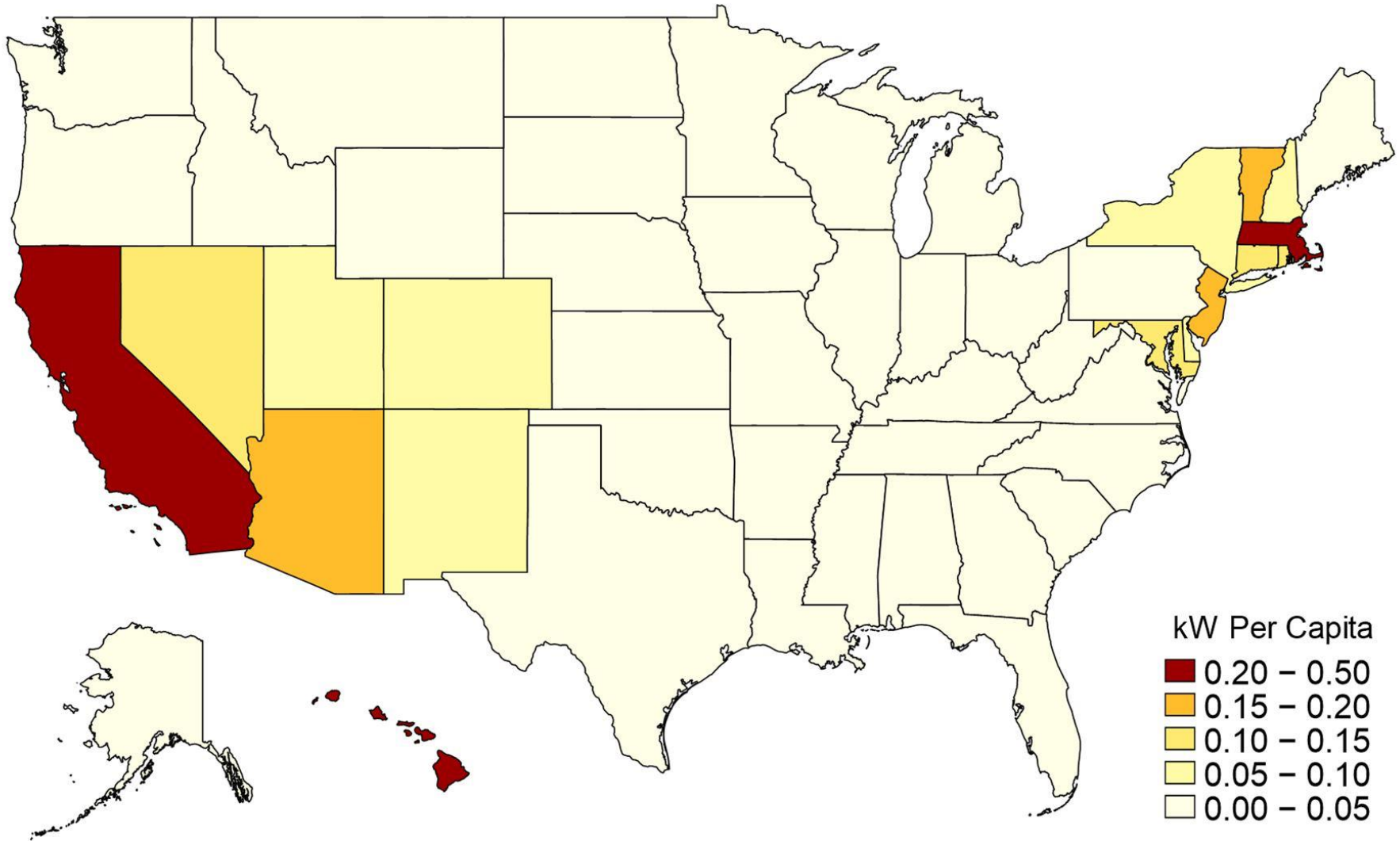
Average Retail Electricity Prices



Created by Lucas Davis at UC Berkeley using retail electricity prices by state for November 2019 from the EIA Data Browser.



Rooftop Solar Capacity Per Capita



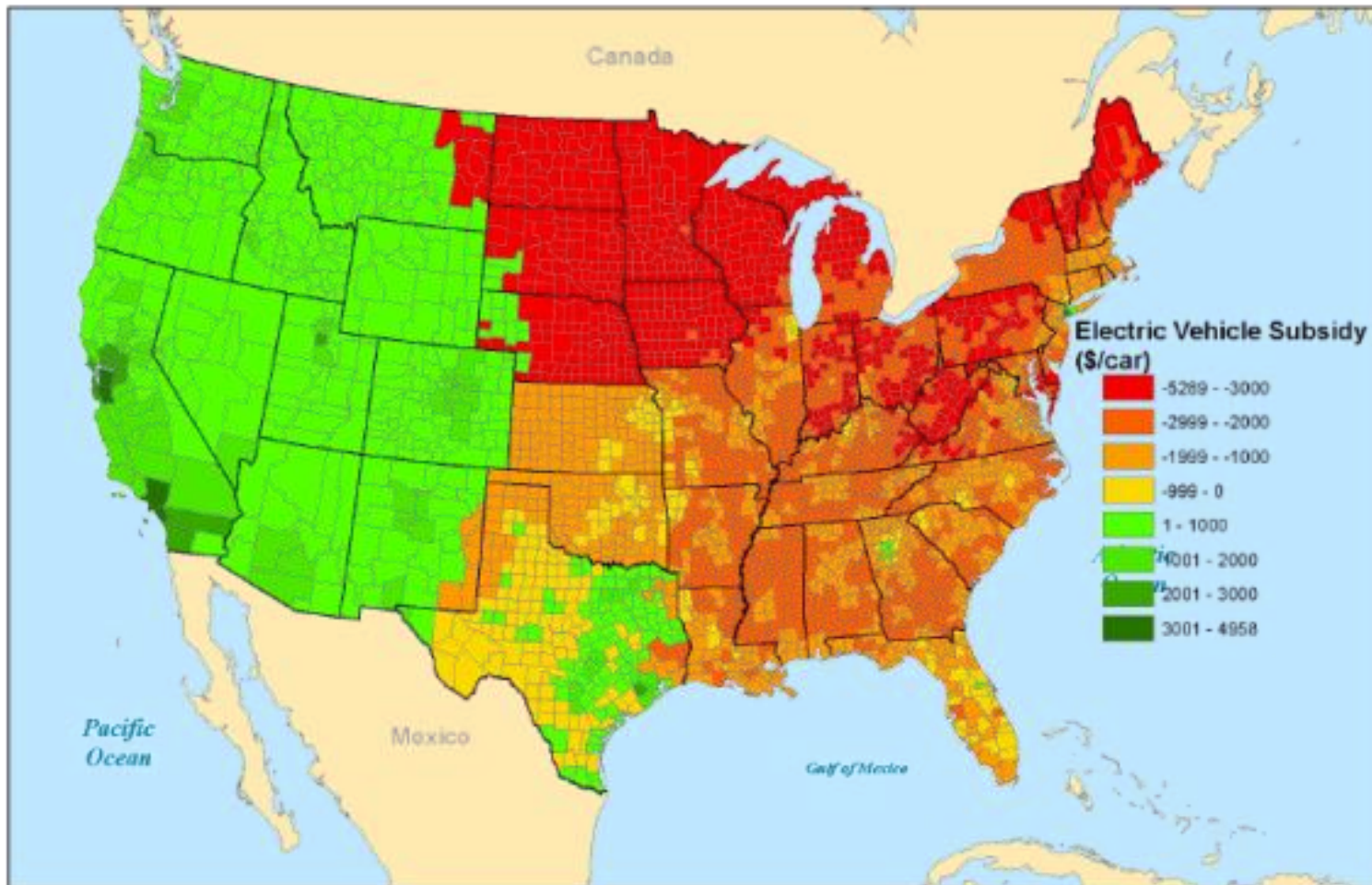
Created by Lucas Davis at UC Berkeley using data on small-scale (<1MW) solar capacity by state from EIA-860. More detailed maps with the same overall pattern appear in [Sexton et al., 2018](#) and [Borenstein and Bushnell, 2019](#).



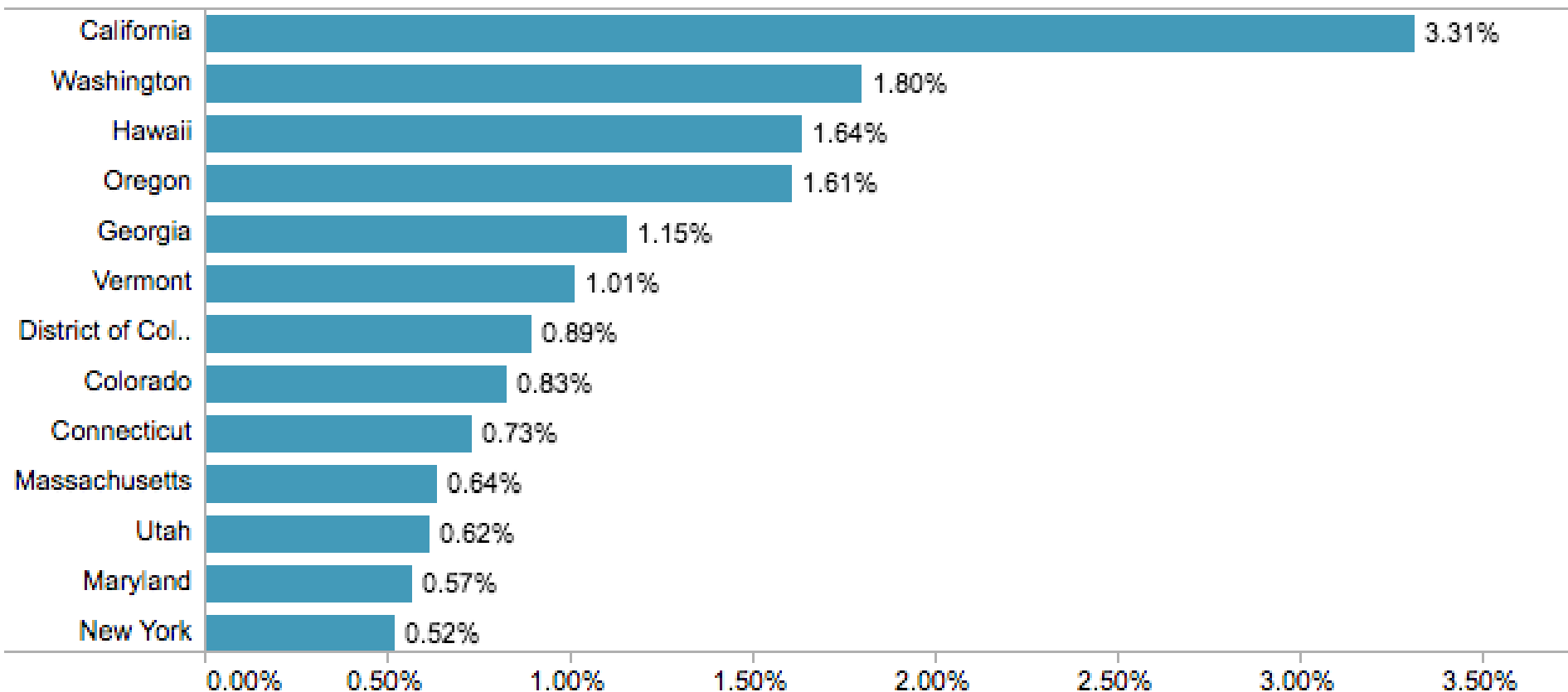
Gas prices have come down



Ford Focus: Electric versus Gas

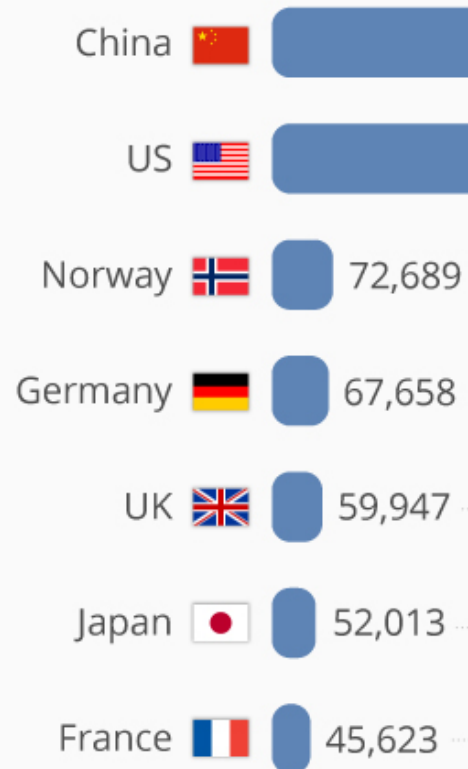


Californians buy the most EVs



Who Leads the C

Largest markets in terms



CC BY ND
@StatistaCharts

* including plug-in
Sources: ACEA, CA



Passenger sales

4.4%

2.1%

49.1%

2.0%

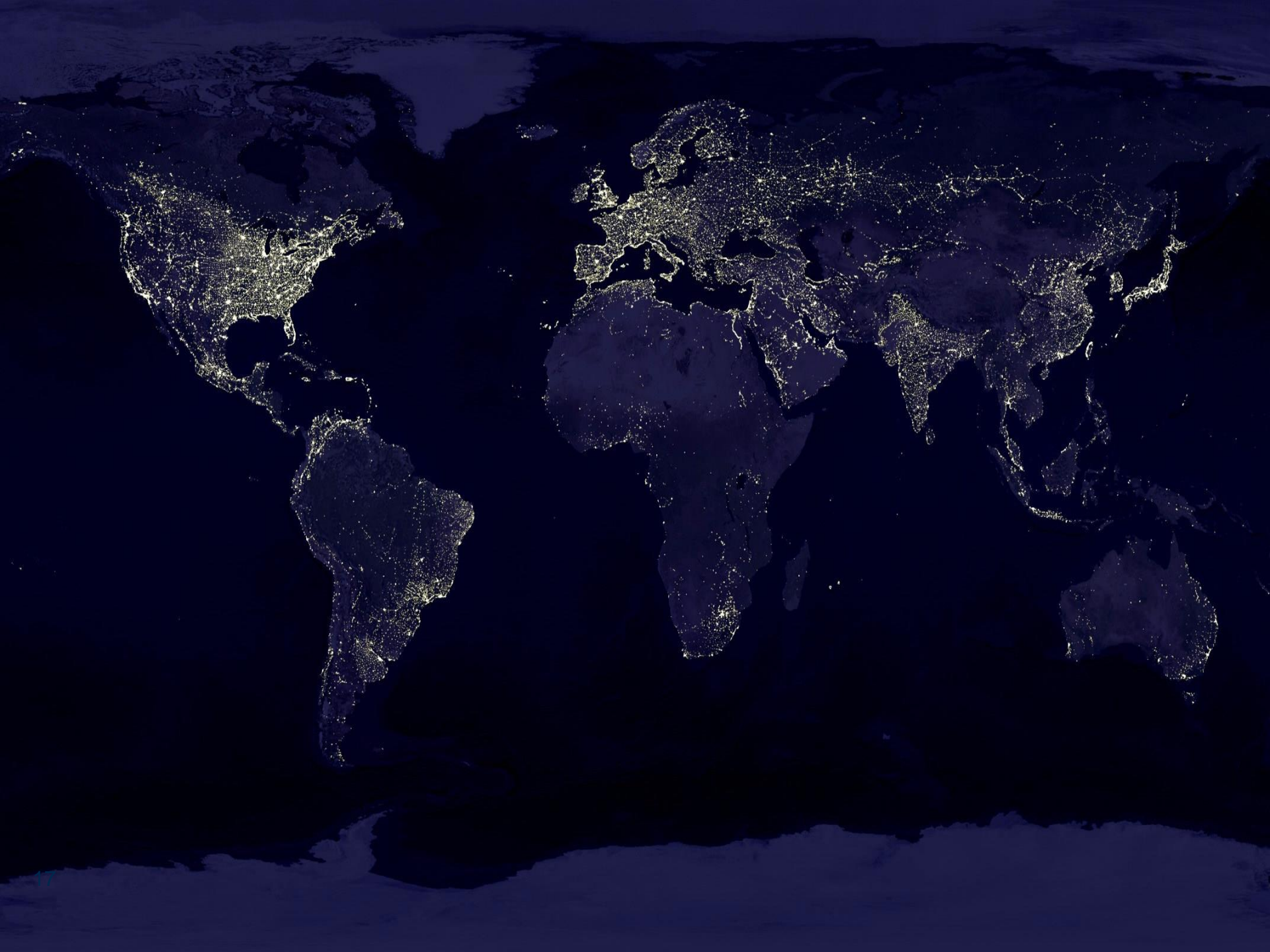
2.5%

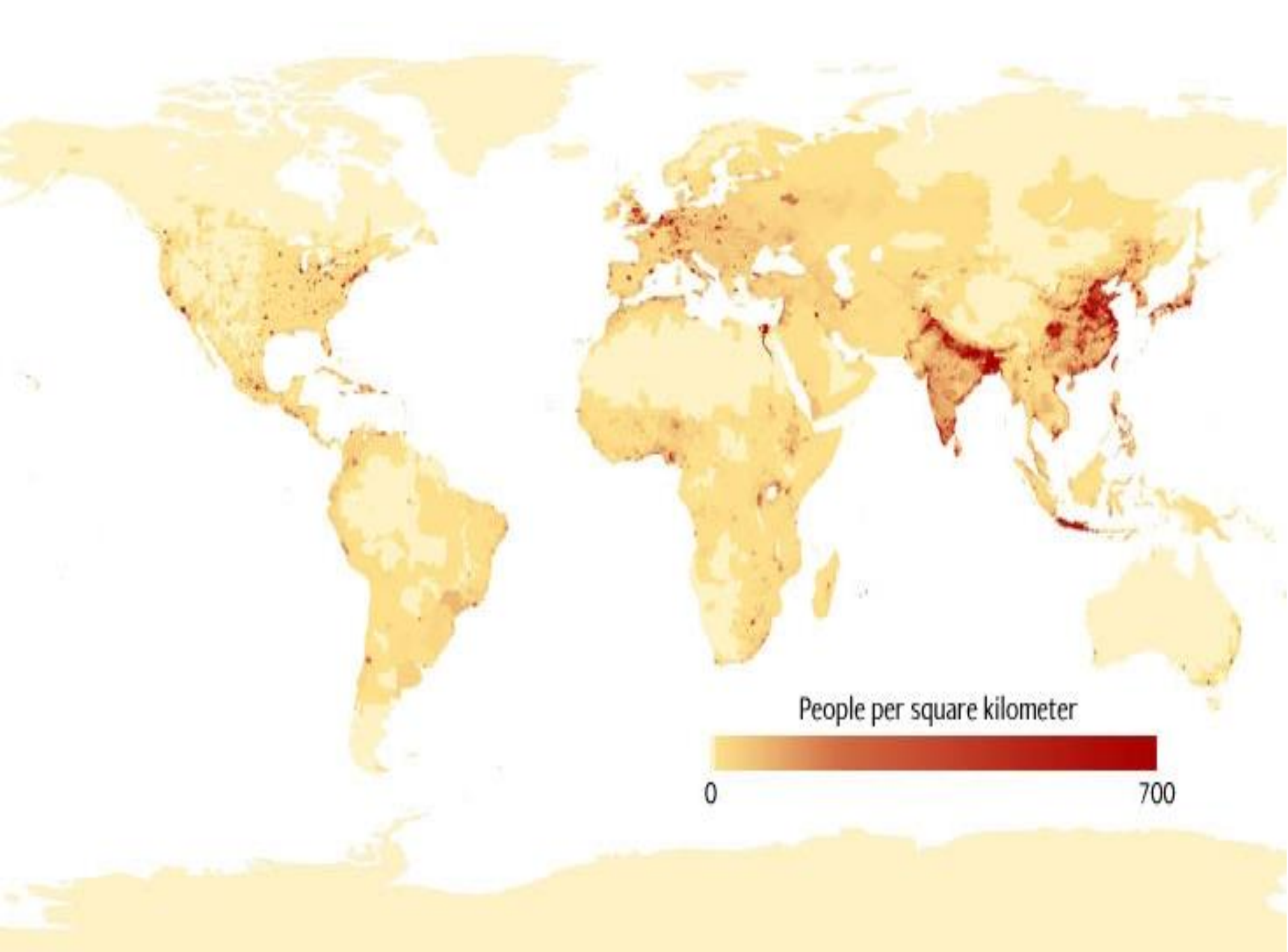
1.2%

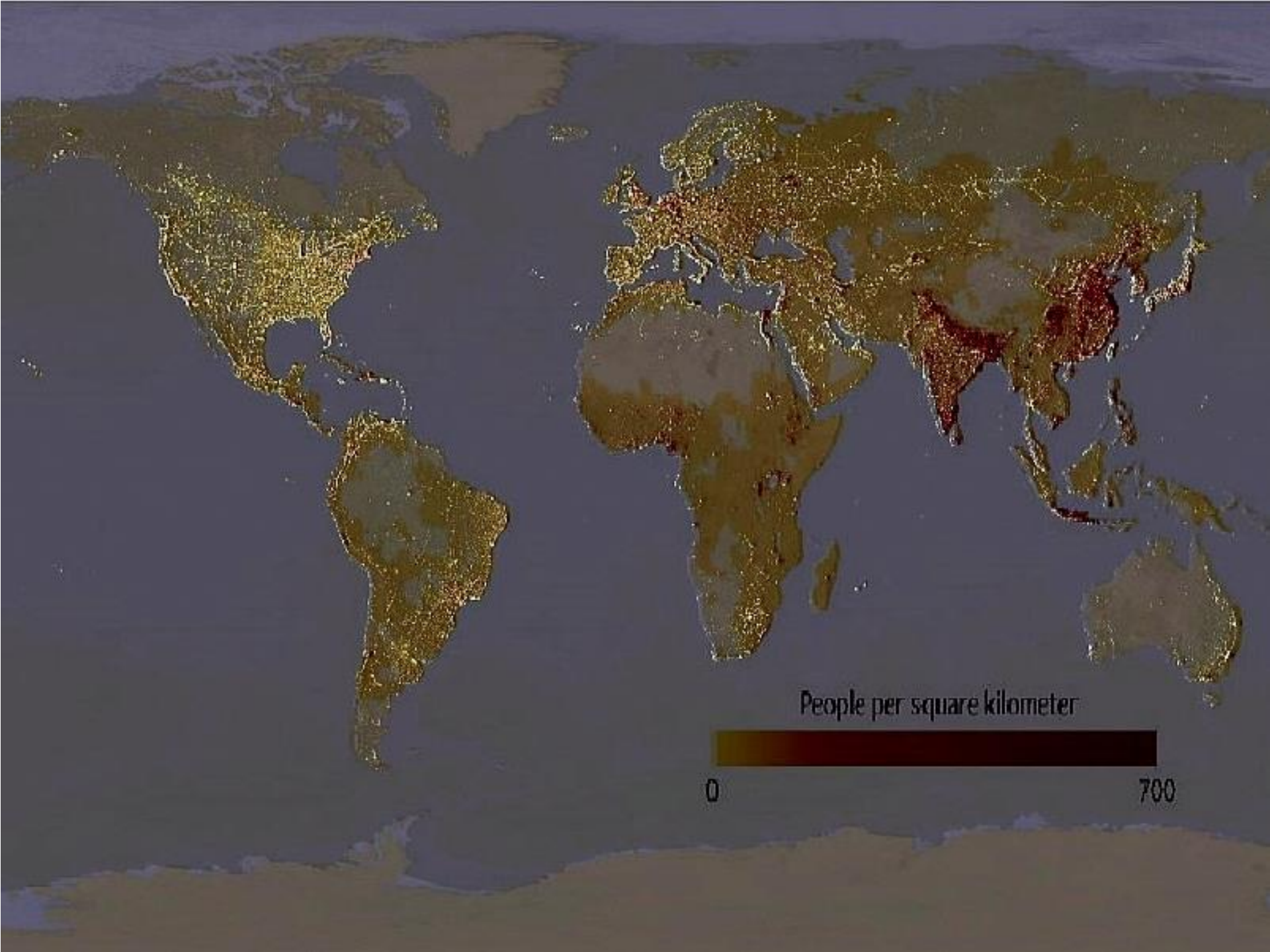
2.1%

Statista

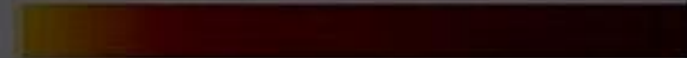
Haas







People per square kilometer

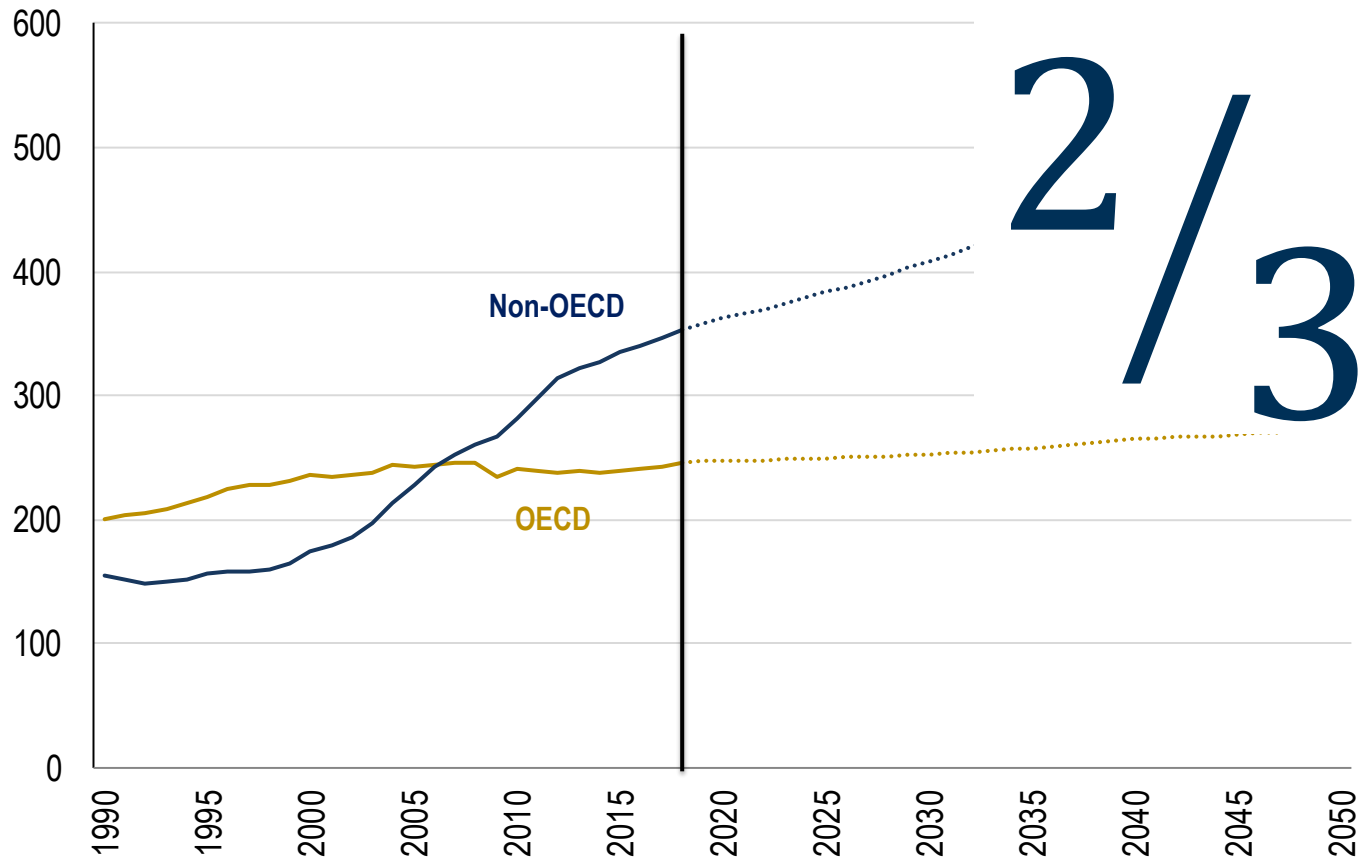


0

700

The developing world accounts for most expected growth in energy

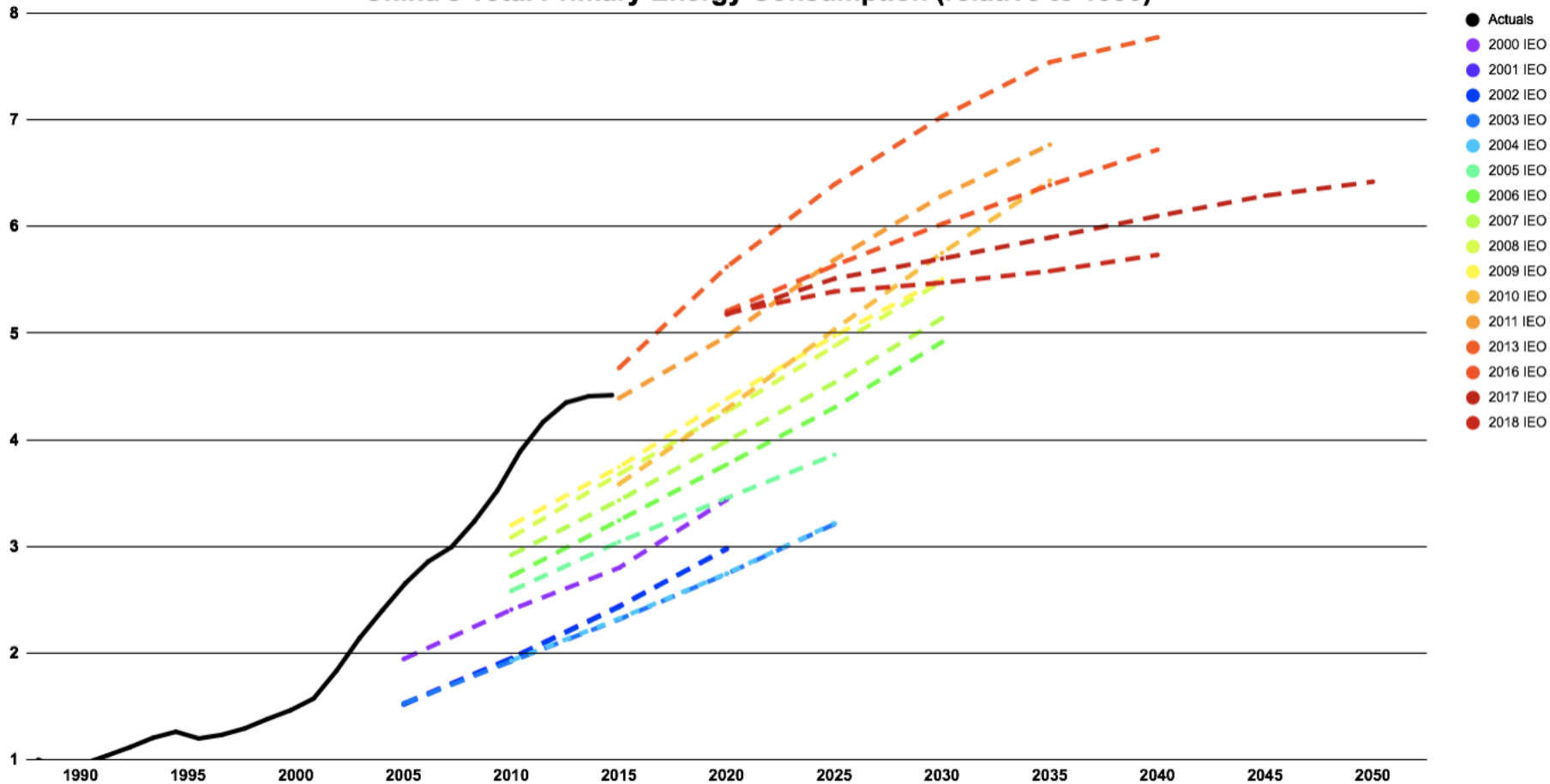
Projected World Primary Energy Consumption
Quadrillion Btu



Source: Energy Information Administration International Energy Outlook, 2018

Previous projections underestimate energy demand in the developing world

China's Total Primary Energy Consumption (relative to 1990)

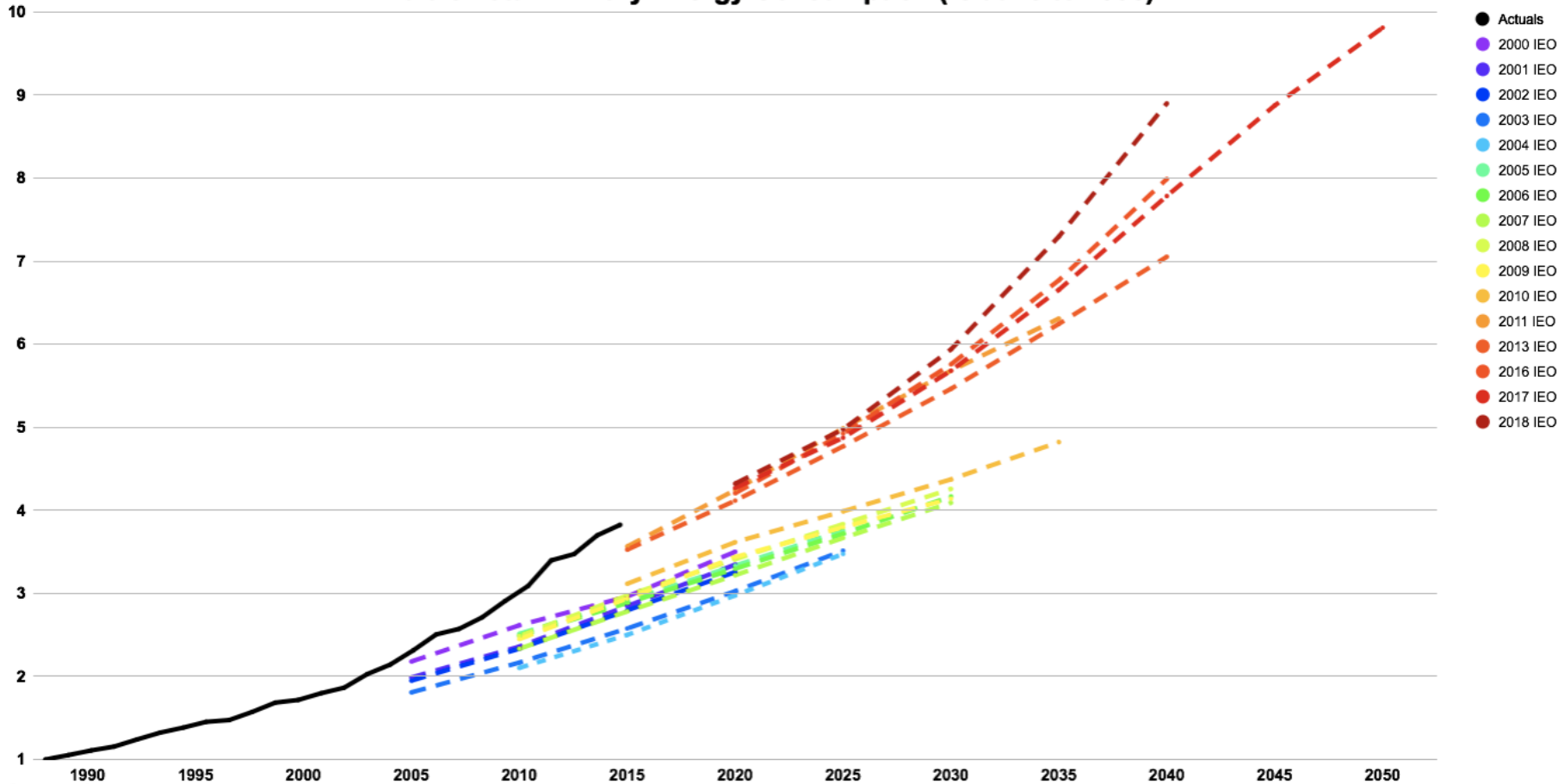


- Actuals
- 2000 IEO
- 2001 IEO
- 2002 IEO
- 2003 IEO
- 2004 IEO
- 2005 IEO
- 2006 IEO
- 2007 IEO
- 2008 IEO
- 2009 IEO
- 2010 IEO
- 2011 IEO
- 2013 IEO
- 2016 IEO
- 2017 IEO
- 2018 IEO

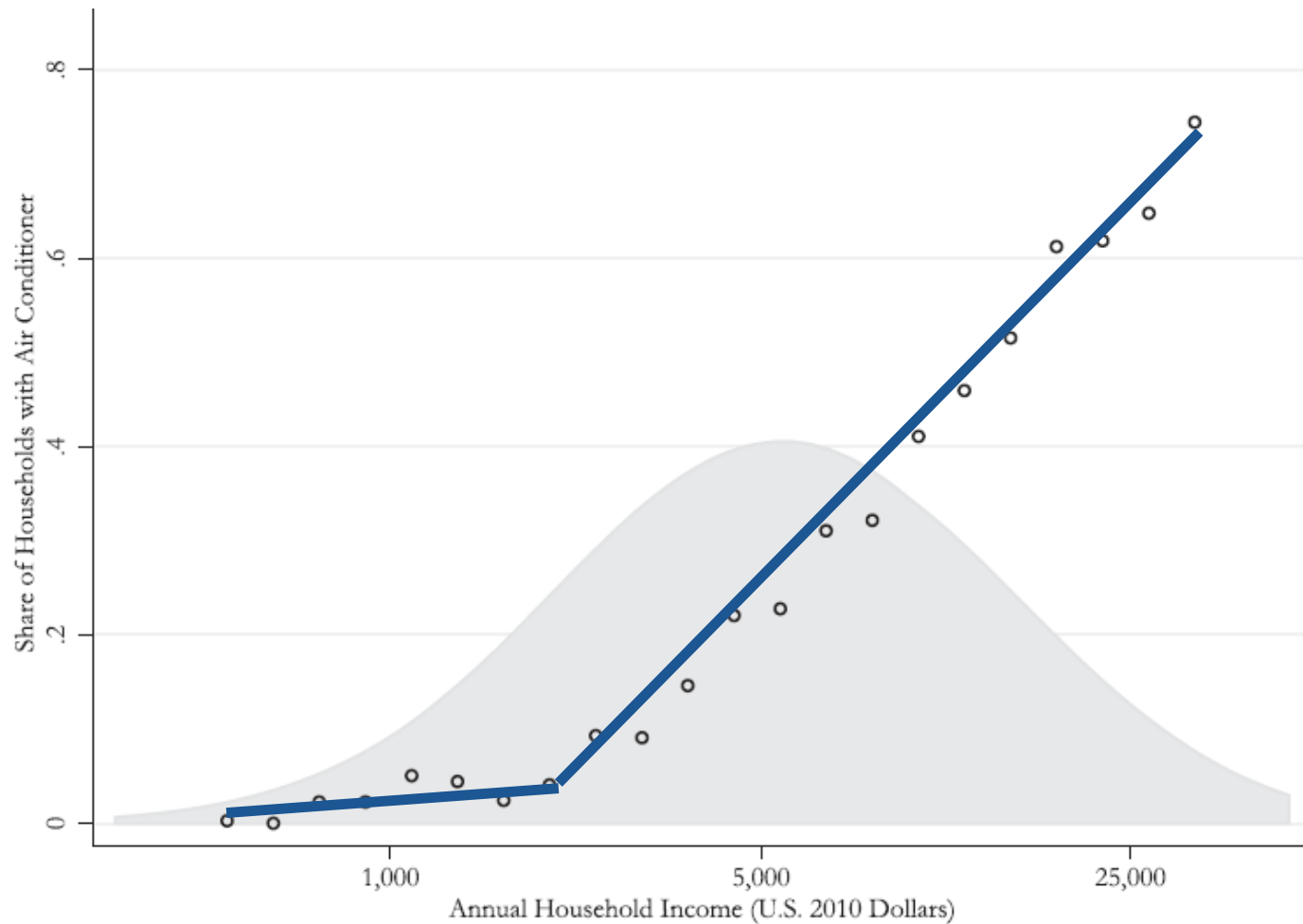
Source: U.S. Energy Information Administration

Previous projections underestimate energy demand in the developing world

India's Total Primary Energy Consumption (relative to 1990)



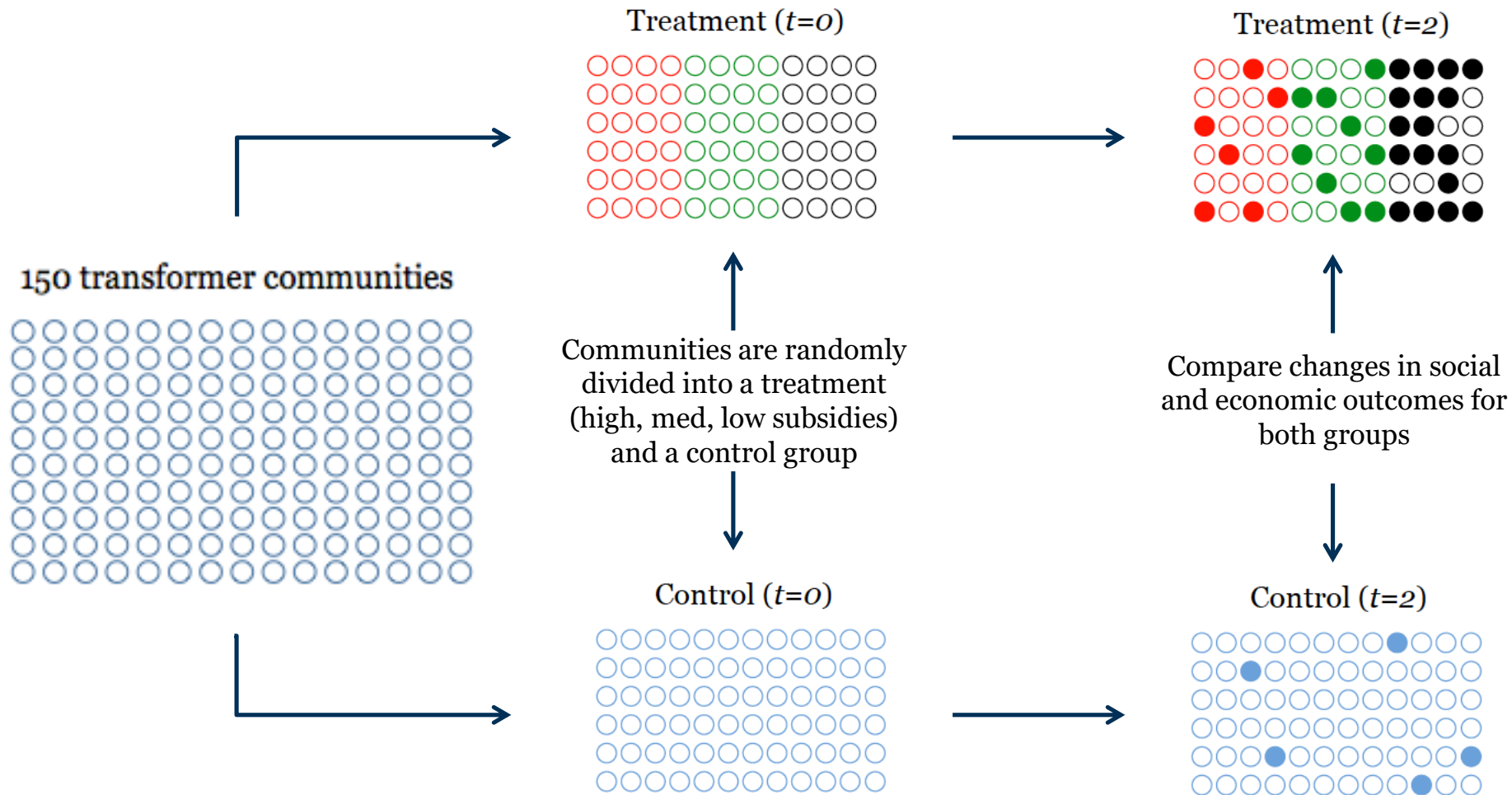
Appliance adoption nonlinear in income

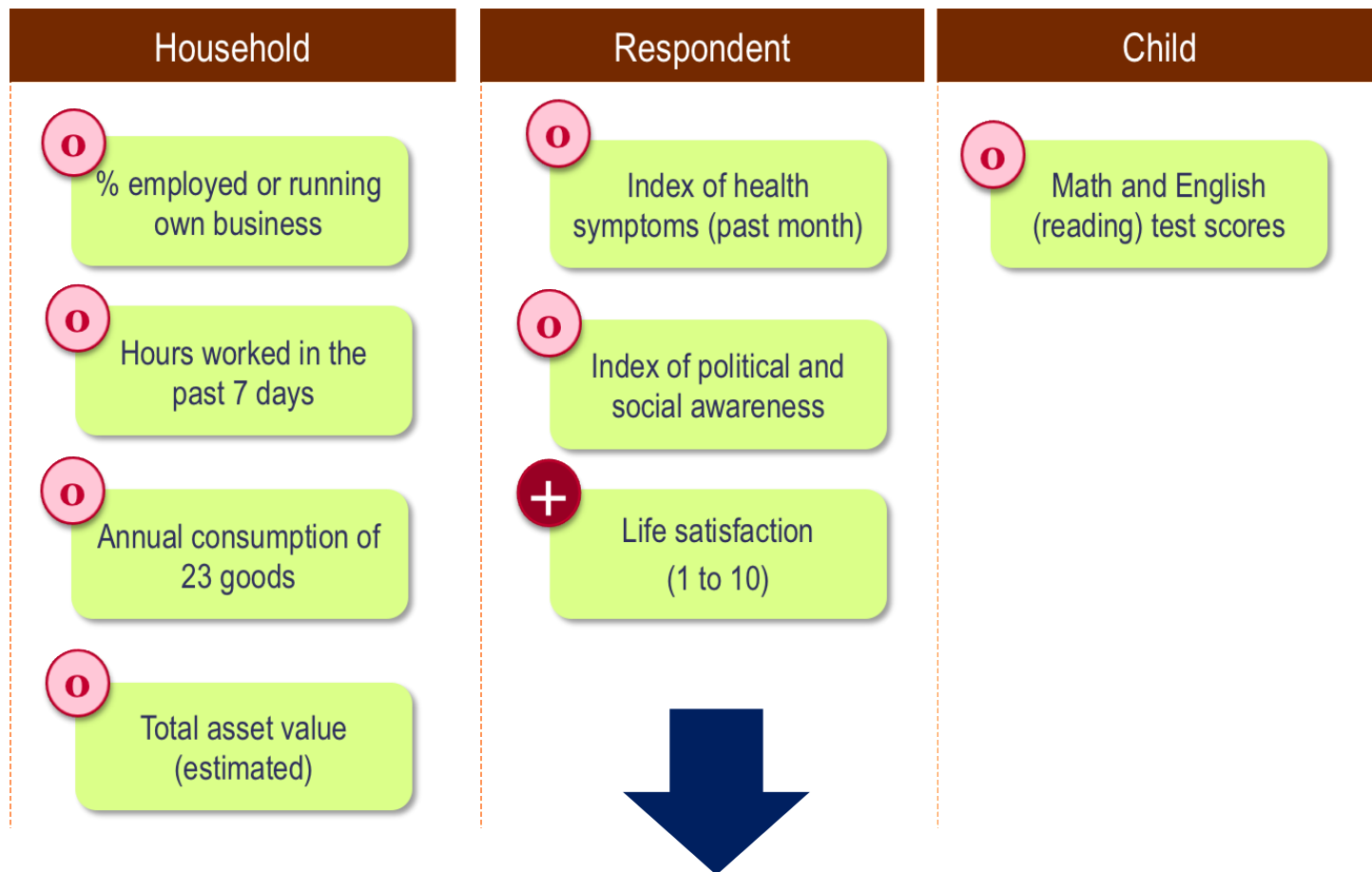


Source: Davis and Gertler, 2015

Approximately **1 billion people** live without electricity in their home.

Grid electrification in Kenya





Very small impacts of electrification



Refrigerator advertising performance during black outs

The billboard features the LG logo with the tagline "Life's Good" on the left. In the center, the "EverCool" logo is displayed with a green icon of a refrigerator and arrows indicating air circulation, accompanied by the text "Power Cut" and a trademark symbol. To the right, a large image of a refrigerator with its door open is shown, with "10 hours" written above it. Further right, a red circular graphic contains the text "Longest Cool Air Retention During Black Outs". At the bottom right, "36% ENERGY SAVINGS" is written in a stylized font.

LG
Life's Good

Power Cut
EverCool™

10 hours

Longest Cool Air Retention During Black Outs

36%
ENERGY SAVINGS

Policy makers are crucial

1

The single most important thing an individual can do to address climate change is to **advocate for policy makers** who are committed to the issue.

Senator Klobuchar's
**Plan to
Tackle the
Climate Crisis.**

AMYKLOBUCHAR.COM



Technological & policy solutions

2

We need to develop both **technological and policy solutions** that work.



Policy solutions must be global

3

Policymakers need to **gauge** climate solutions based on potential impacts in China, India, and Sub-Saharan Africa.





Thank you!

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