

RAEL
Renewable & Appropriate Energy Laboratory

An energy plan the Earth can live with

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January 26, 2019

Resources:

Website: <http://rael.berkeley.edu>

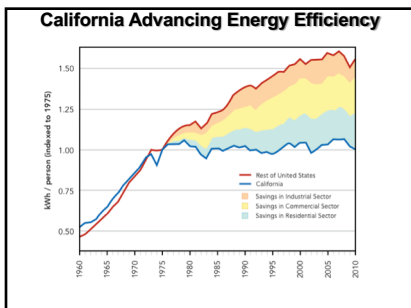
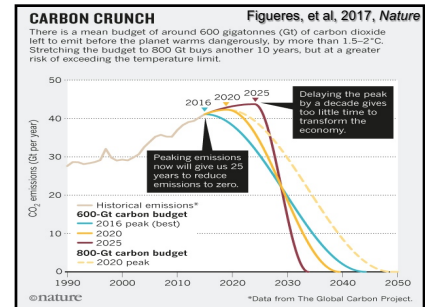
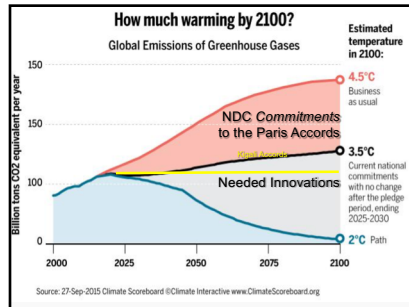
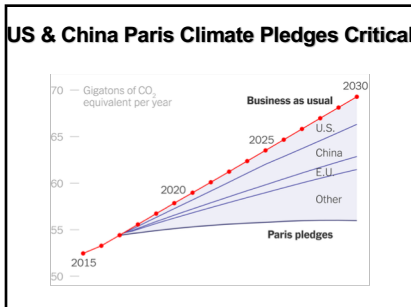
Twitter: @dan_kammen

Timeline

Recognized for contributions to the Nobel Peace Prize (1999)

Property Assessed Clean Energy Model Voted #1 World Changing Idea (2009)

RAEL's SWITCH Define Utility Storage Mandates (2016-18)



Science Envoy for the U. S. State Department

Dear Dr. Kammen:

Thank you for your letter and the support for the shared vision that you have expressed for the distribution of the energy and the environment.

Enclosed are the terms of reference and the support for the shared vision that you have expressed for the distribution of the energy and the environment.

Yours faithfully,
Rita

RAEL Berkeley <http://rael.berkeley.edu>

California Energy Efficiency Strategies Policy Drives Innovation

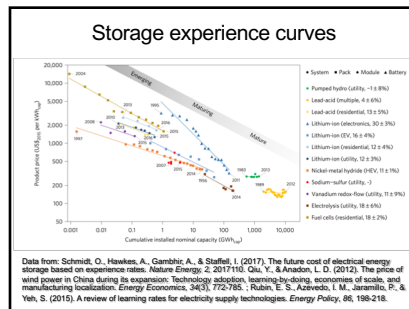
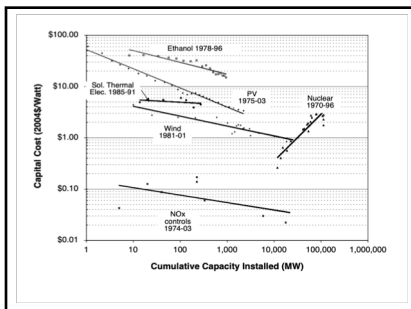
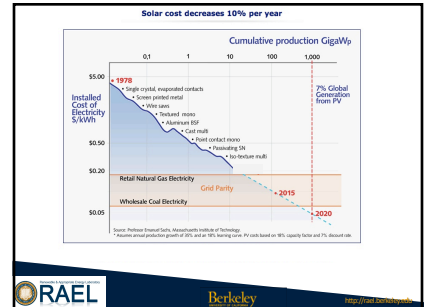
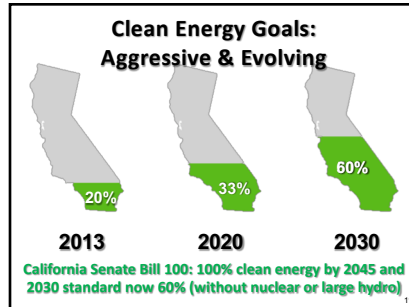
Residential New Construction

All new residential construction in California will be zero net energy by 2020.

Signed into law, September 10, 2018

Growth in green energy is gold for California, U.S.

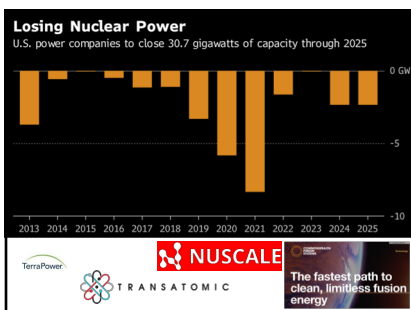
Climate activists are celebrating the passage of a landmark law that sets a goal of 100% clean energy for California by 2045. The law, signed by Governor Jerry Brown on September 10, 2018, is the most ambitious climate law in the world. It requires the state to phase out coal and gas power plants and invest in renewable energy sources like solar, wind, and geothermal. The law also sets a goal of 50% clean energy by 2030 and 25% by 2020. California is expected to lead the nation in renewable energy production and consumption.



Electric versus Petroleum Mobility (is cheaper than gasoline)

Electric 3.5 miles/kWh	\$3.50 / gal	= 14¢ / mile
Hybrid 45 mpg	\$3.50 / gal	= 7.8¢ / mile
Electric 4 miles/kWh	\$0.12 / kWh	= 0.03¢ / mile
Photovoltaics: 4 miles/kWh	\$0.05 / kWh	= 1.25¢ / mile

And just announced solar @ \$ 1.7/kWh



Disparities in rooftop photovoltaics deployment in the United States by race and ethnicity

Deborah A. Sunter, Sergio Castellanos, and Daniel M. Kammen

The rooftop solar industry in the United States has experienced dramatic growth—roughly 50% per year since 2012, along with steadily falling prices. Although the opportunities this affords for clean, reliable power are transformative, the benefits might not accrue to all individuals and communities. Combining the location of existing and potential sites for rooftop photovoltaics (PV) from Google's Project Sunroof and demographic information from the American Community Survey, the relative adoption of rooftop PV is compared across census tracts grouped by racial and ethnic majority. Black- and Hispanic-majority census tracts show an average significantly less rooftop PV installed. This disparity is often attributed to racial and ethnic differences in household income and home ownership. In this study, significant racial disparity remains even after we account for these differences. For the same median household income, black- and Hispanic-majority census tracts have installed less rooftop PV compared with no majority tracts by 69 and 30%, respectively, while white-majority census tracts have installed 21% more. When correcting for home ownership, black- and Hispanic-majority census tracts have installed less rooftop PV compared with no majority tracts by 51 and 42%, respectively, while white-majority census tracts have installed 27% more. The social dispersion effect is also considered. This Analysis reveals the racial and ethnic injustice in rooftop solar participation.

How can we communicate the benefits of a green energy economy?

ENVIRONMENTAL Science & Technology

Spacial Distribution of U.S. Household Carbon Footprints Reveals Suburbanization Undermines Greenhouse Gas Benefits of Urban Population Density

Christopher Jones and Daniel M. Kammen

http://coolclimate.berkeley.edu/maps

Urban Planning (ISSN: 2183-7635)
2016, Volume 3, Issue 2, Pages 30-43
DOI: 10.17645/up.v3i2.1218

Article
Carbon Footprint Planning: Quantifying Local and State Mitigation Opportunities for 700 California Cities
Christopher M. Jones ^{1*}, Stephen M. Wheeler ² and Daniel M. Kammen ^{1,3,4}

Figure 3. Carbon Footprint of U.S. Bay Area Households by Census Block group.

<http://coolclimate.berkeley.edu>

ORAEI Berkeley

The Oakland EcoBlock

ORAEI Berkeley

UNDER 2° REGIONS REPRESENT

1.2 BILLION PEOPLE

AND

\$28.8 TRILLION IN GDP

That's 39% of the global economy