

# Energy Storage: Towards Social Equity

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IMRE GYUK, DIRECTOR,  
ENERGY STORAGE RESEARCH, DOE-OE

# Energy Storage and Social Equity an Exploratory Webinar, March 5, 2021

Imre Gyuk. Director  
Energy Storage Research, DOE-OE

Bethel Tarekegne  
Pacific Northwest Laboratories

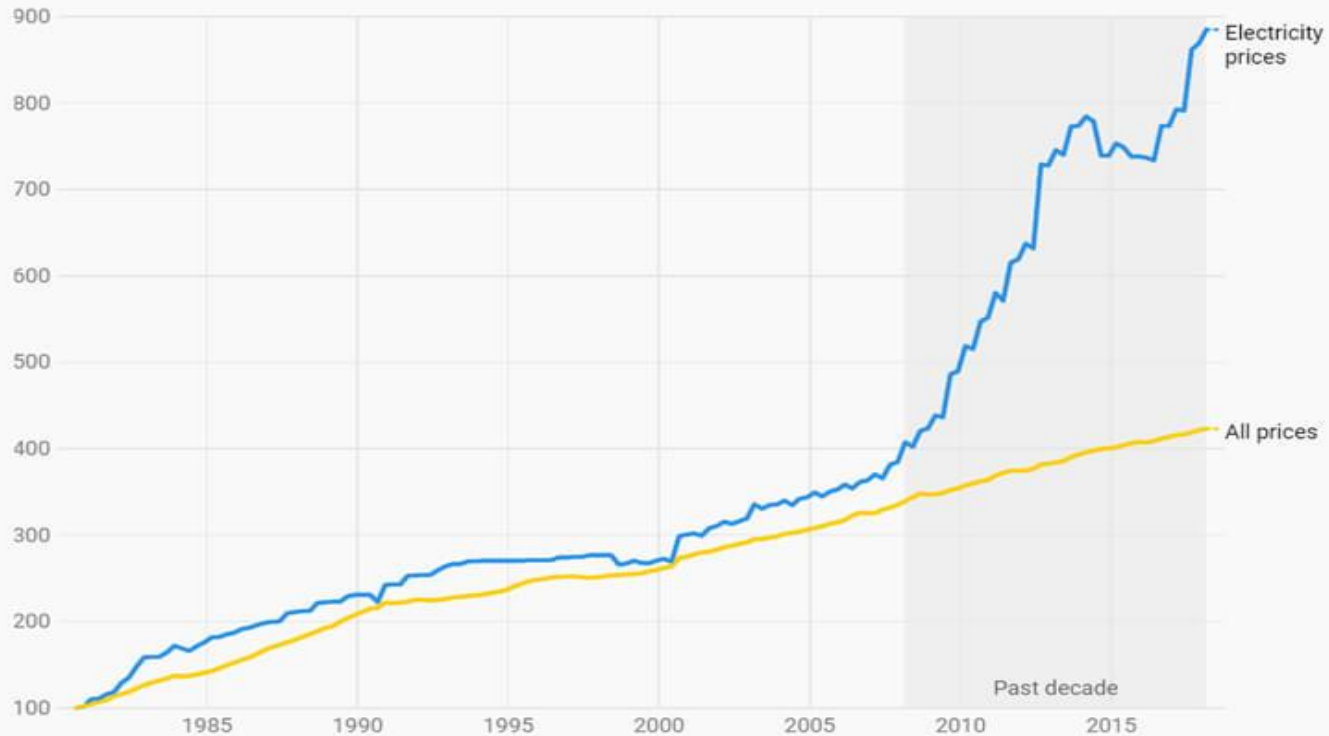
Robert Jeffers  
Sandia National Laboratory

Crystal Pruitt  
Deputy Director, Office of Clean Energy Equity  
New Jersey Board of Public Utilities

Uzma Siddiqi,  
Sr Manager, Grid Modernization  
Seattle City Light

## Electricity price trends

Quarterly change in consumer price index of electricity prices compared with all prices since September 1980.

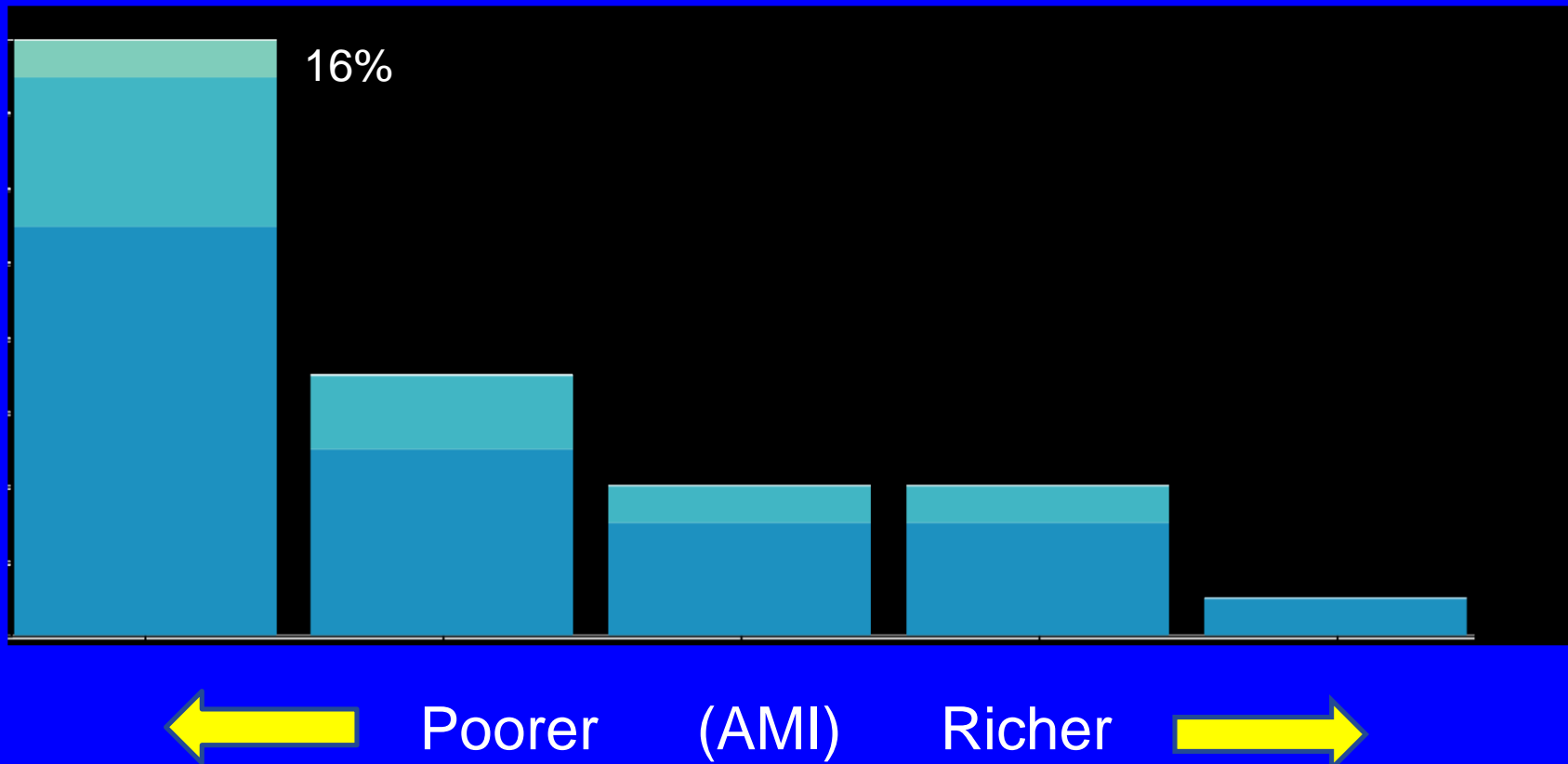


Prices at 1980 Q3 are indexed to 100. Chart shows percentage change per quarter of each price group.

Source: ABC News

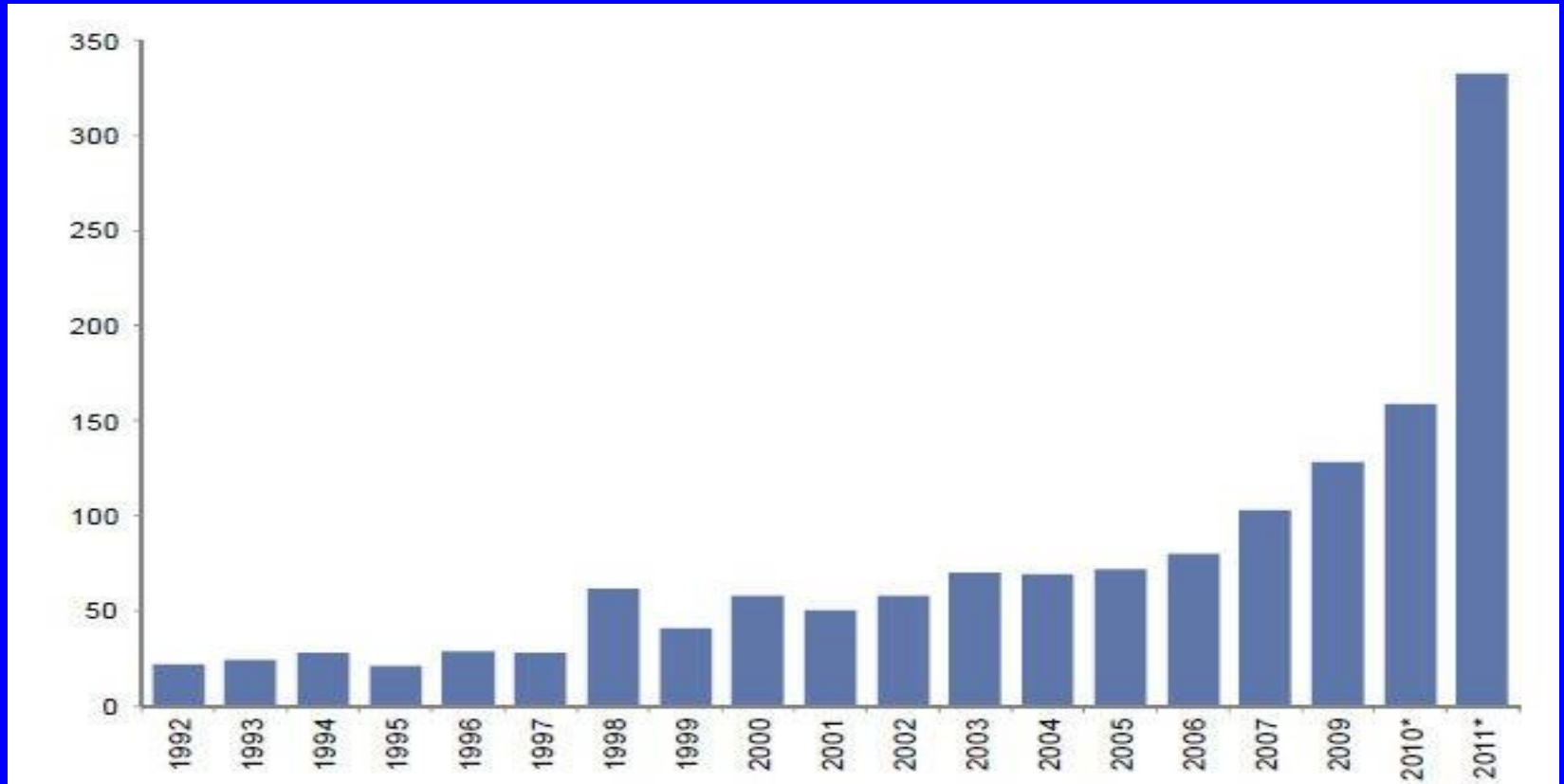
For the past decade electricity prices have been rising substantially

# Average Energy Burden (% of Income)



From S. Baker/Yale

# Major Power Outages in North America



NERC

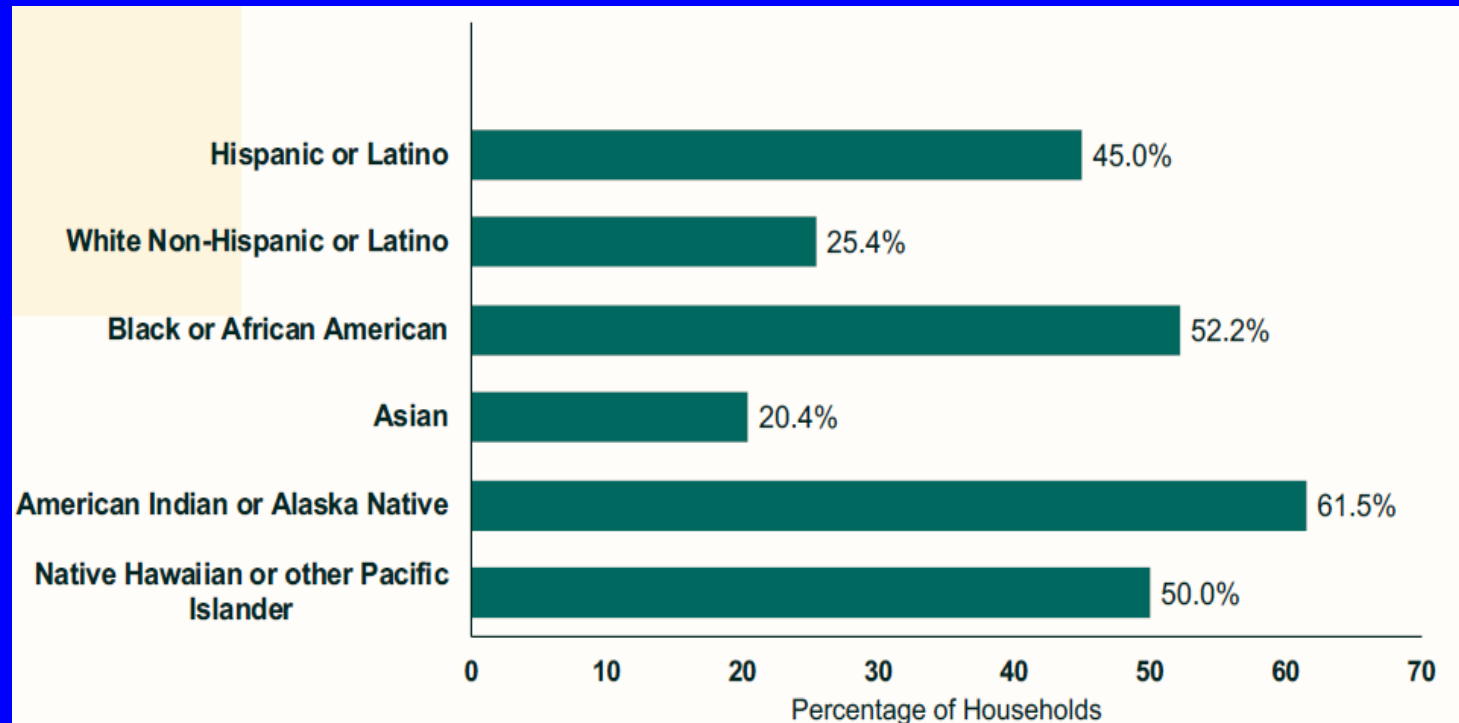
Power outages are increasing, partially due to Global Warming

If the refrigerator stops functioning  
the loss of food supply will be  
disastrous to a lower income family!

Particularly if that food supply  
has been attained with food stamps!

Outages and electricity prices  
affect the poor disproportionately!

# Households Experiencing Energy Insecurity (2015)



From: S. Baker/Yale

Lower income households are disproportionately non-white

Outages tend to be more frequent in poor areas and take longer to mitigate

Electricity Assets are often located in the least affluent neighborhoods leading to health issues.

Resiliency Measures like rooftop solar and behind the meter storage tend to be installed by the more affluent

Electrification (e.g. EV) benefits the more affluent, but infrastructure costs are borne by all



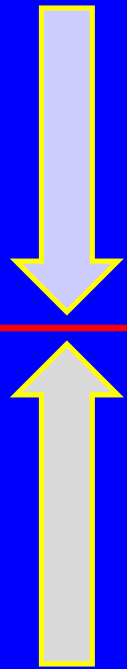
Energy Storage offers itself  
as a tool to alleviate  
many of these problems

e.g. Storage to replace  
Fossil Fuel Peakers

Microgrids with Storage  
for outage mitigation

Solar + Storage for  
Tribal communities .....

# Designing a Business Case:



The **Cost** of a Storage System depends on the Storage Device, the Power Electronics, and the Balance of Plant

The **Value** of a Storage System depends on Multiple Benefit Streams, both monetized and unmonetized

Metrics will depend crucially on Regulatory Structure and Locality!

Power Electronics  
20-25%

Energy Storage Device  
25-50%

Facility 20-25%

Arbitrage

Frequ. Reg.

Dem. Charges  
month, year

Resiliency

We need to develop new metrics  
and new models that allow inclusion  
of Social Equity  
in the operation of Utilities and in  
Statewide Integrated Resource Planning

We need to take care  
of the Environment  
but we must also take care  
of each other!