

Cut on burning your dinosaurs, dude !

Intro v.0.1.0



About me

- 7+ years in IT
- 2 years with Opower
- ~1 year with ML
- 4 mo UMKA climate change course
- Mosquito assassinator 80lvl



**CALIFORNIA MAKES
TECHNOLOGY**



**TEXAS MAKES
ENERGY**



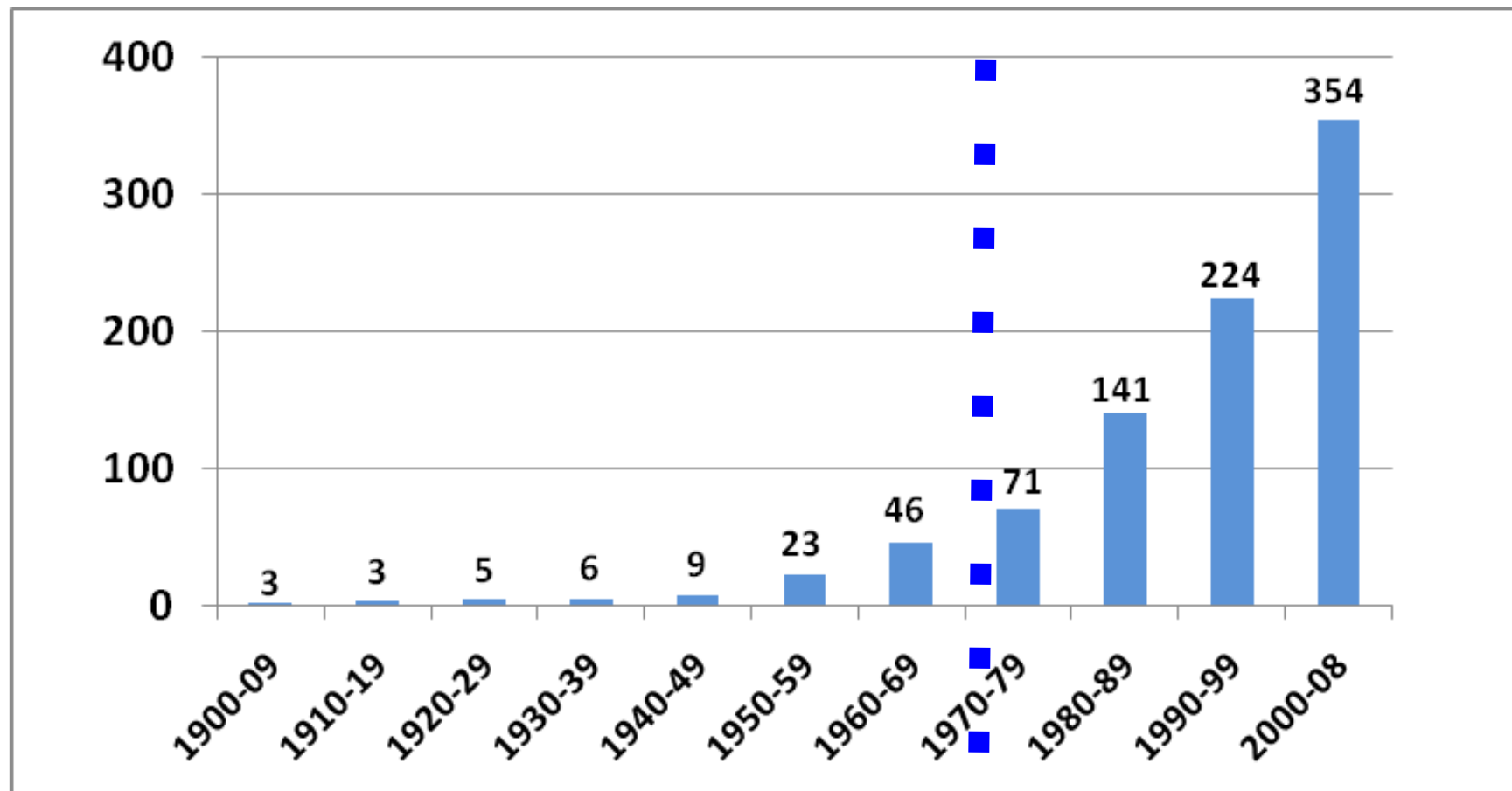
**IOWA MAKES
FOOD**



**WASHINGTON MAKES
IT DIFFICULT**

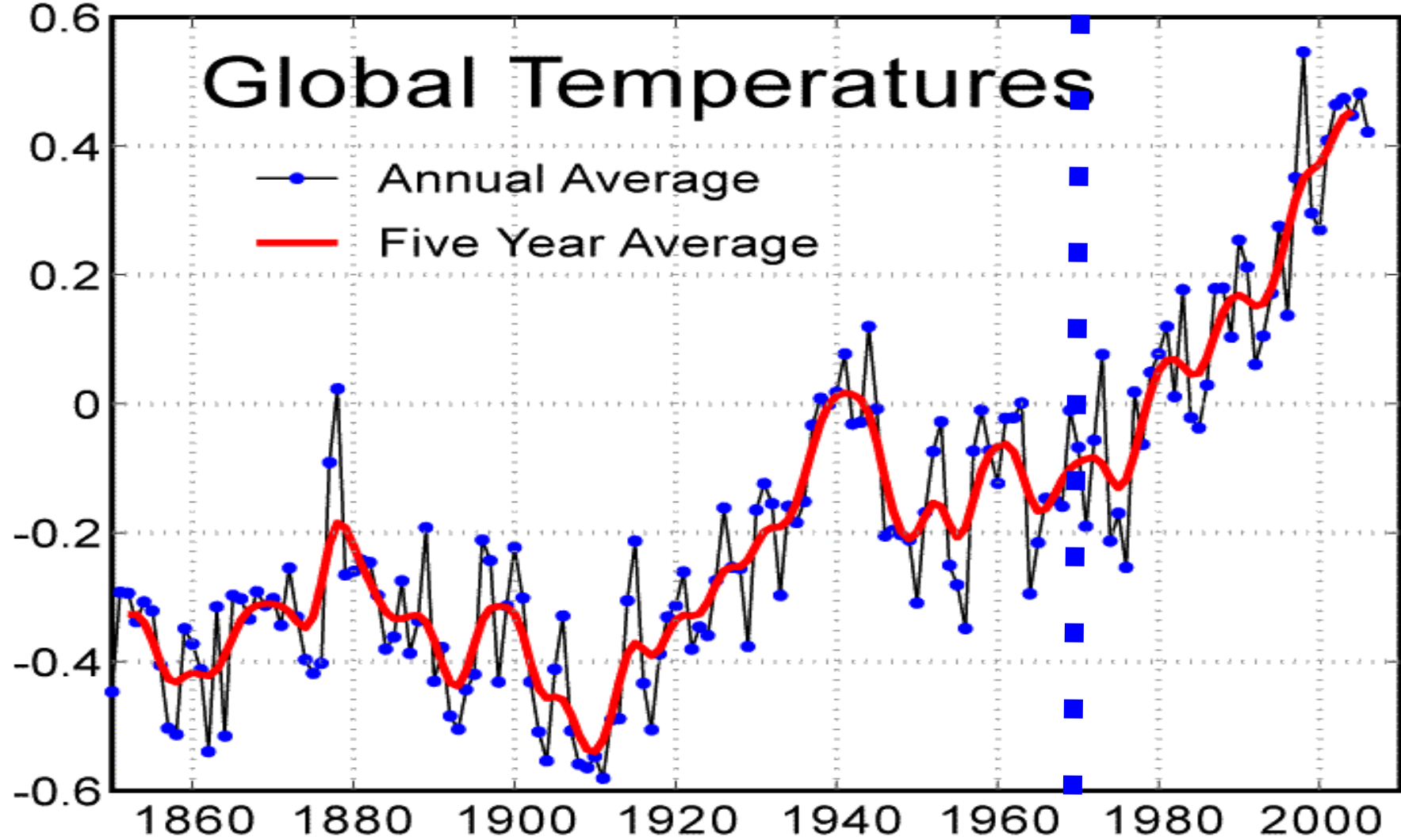


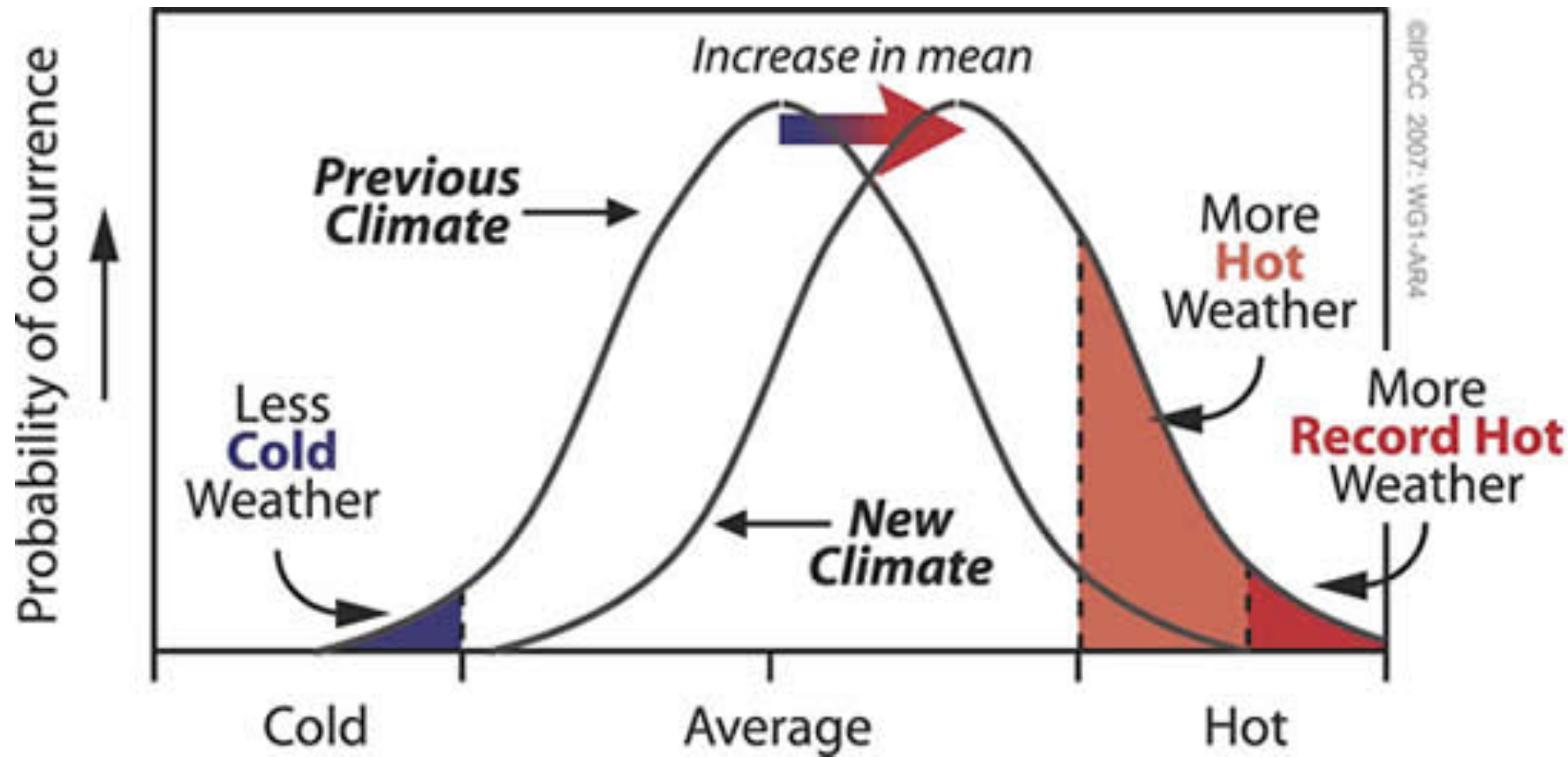





Global Temperatures

—●— Annual Average
— Five Year Average









Summer'15 in Kiev

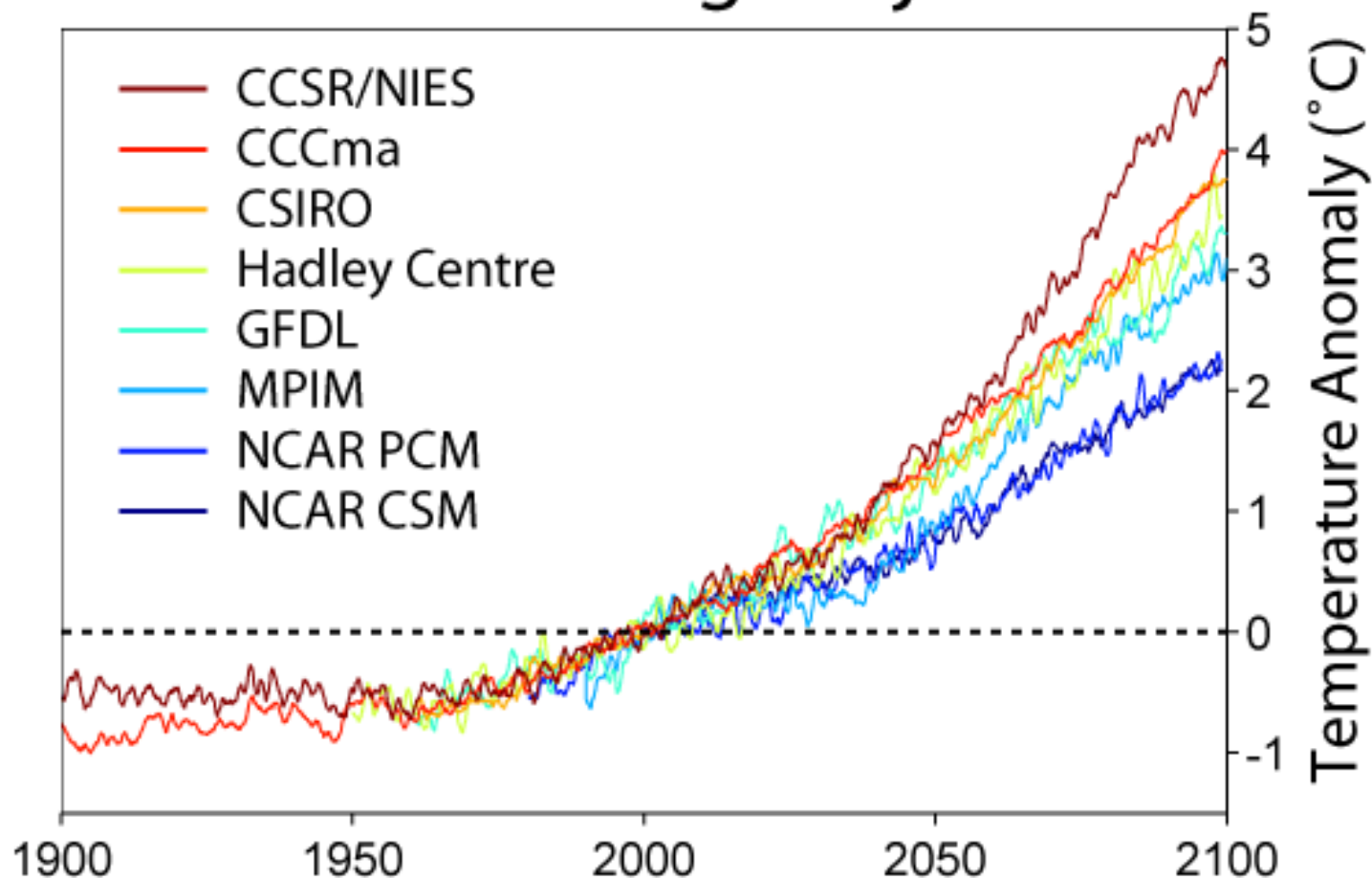
- avg. temp $+2.9^{\circ}\text{C}=21.6^{\circ}\text{C}$
- precipitation -60%



Harkiv

Знач./ Год	1981	2003	2004	2005	2006	2007	2008	2009	2010	Ср.знач.
Ср. макс., t °C	12,6	11,4	13,6	13,0	12,4	14,2	13,8	13,6	14,2	12,5
Средняя, t °C	8,7	7,3	9,5	8,7	8,2	9,8	9,3	9,2	9,8	8,1
Ср. мин., t °C	5,0	3,4	5,7	4,5	3,6	4,9	4,8	4,5	5,3	4,1

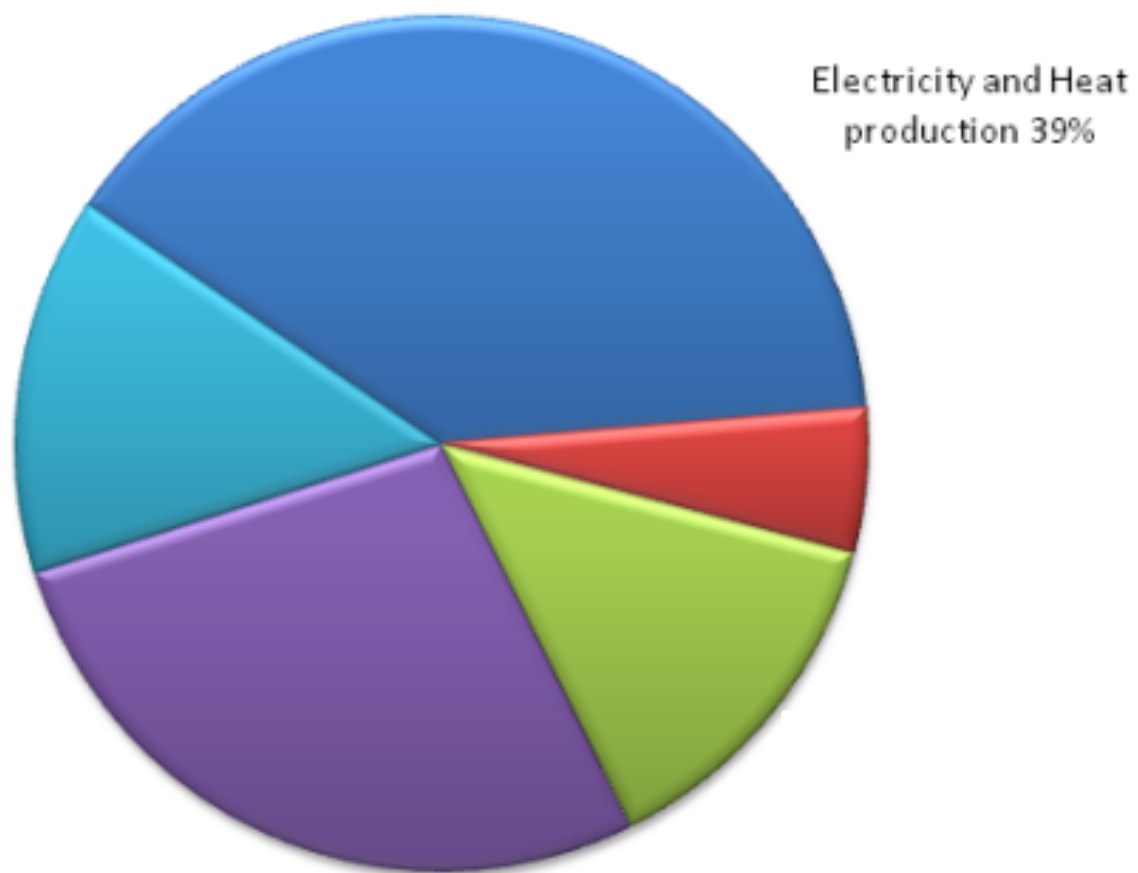
Global Warming Projections

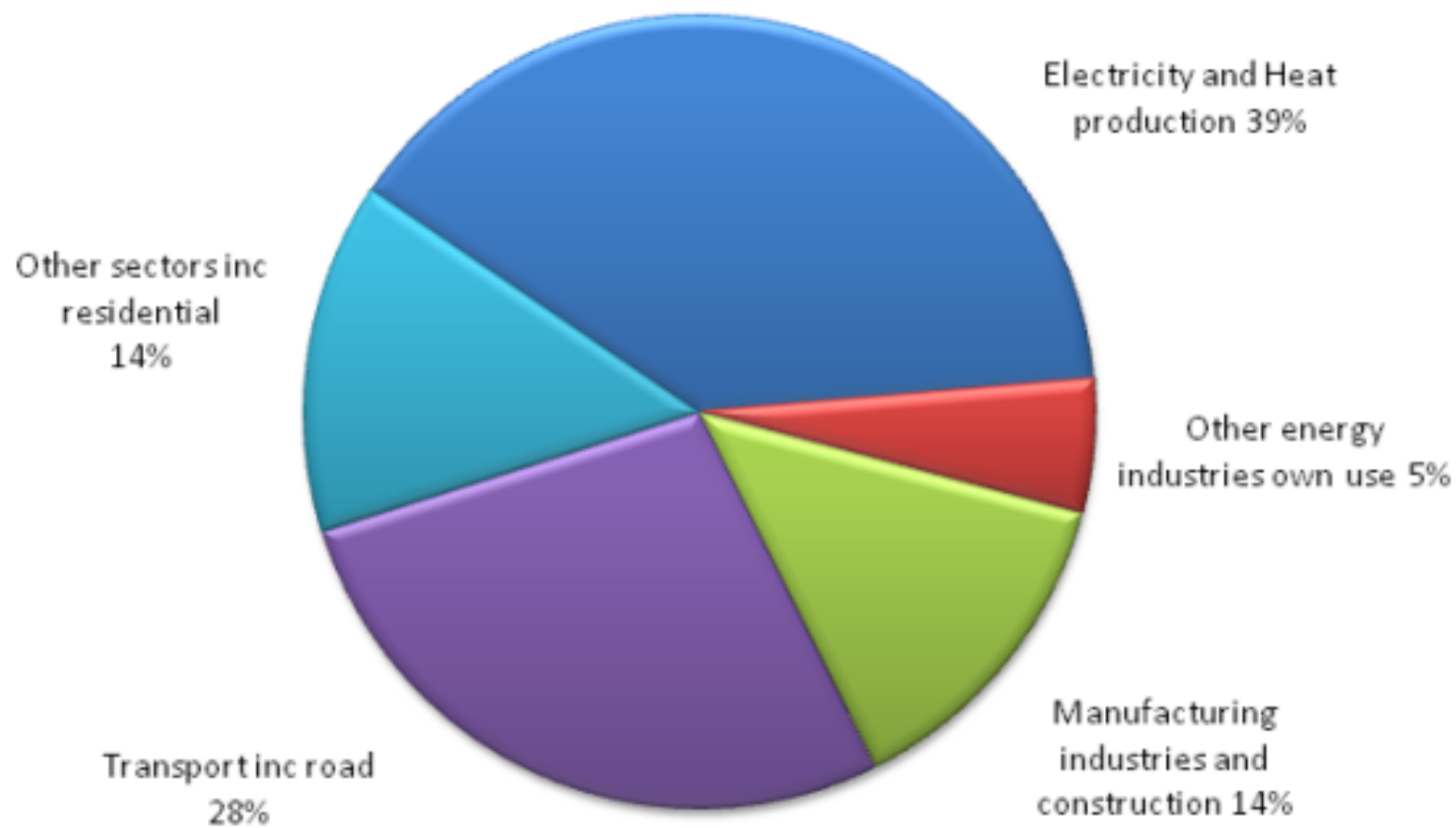




**NOW
PANIC
AND
FREAK
OUT**

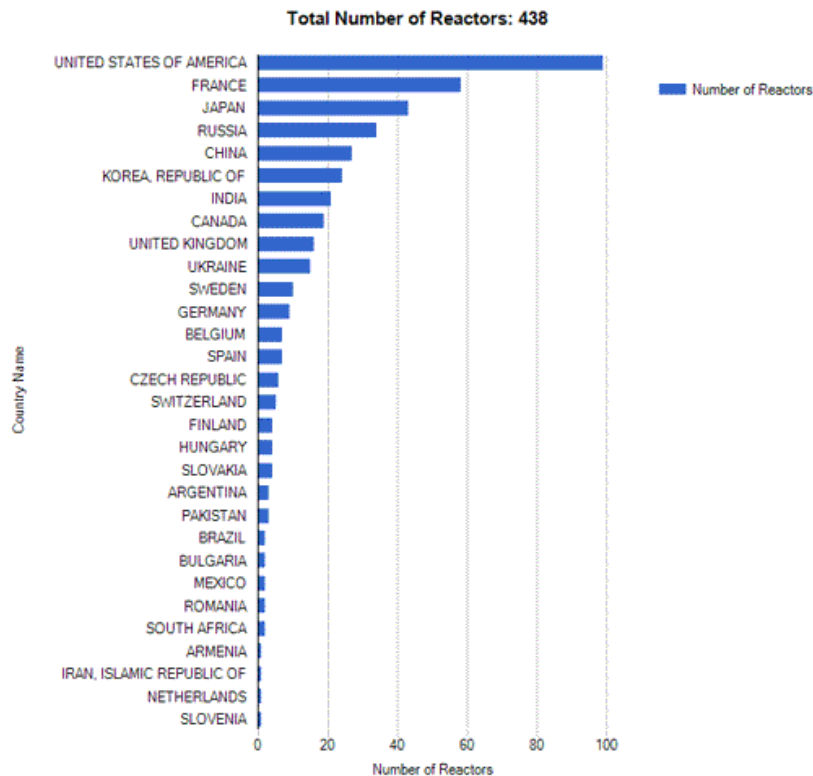




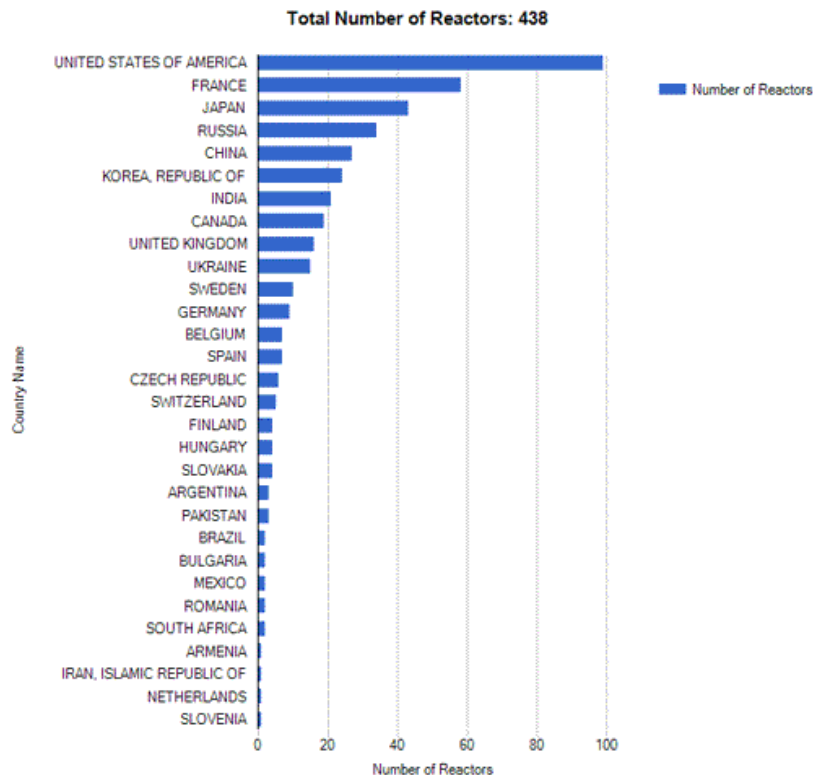




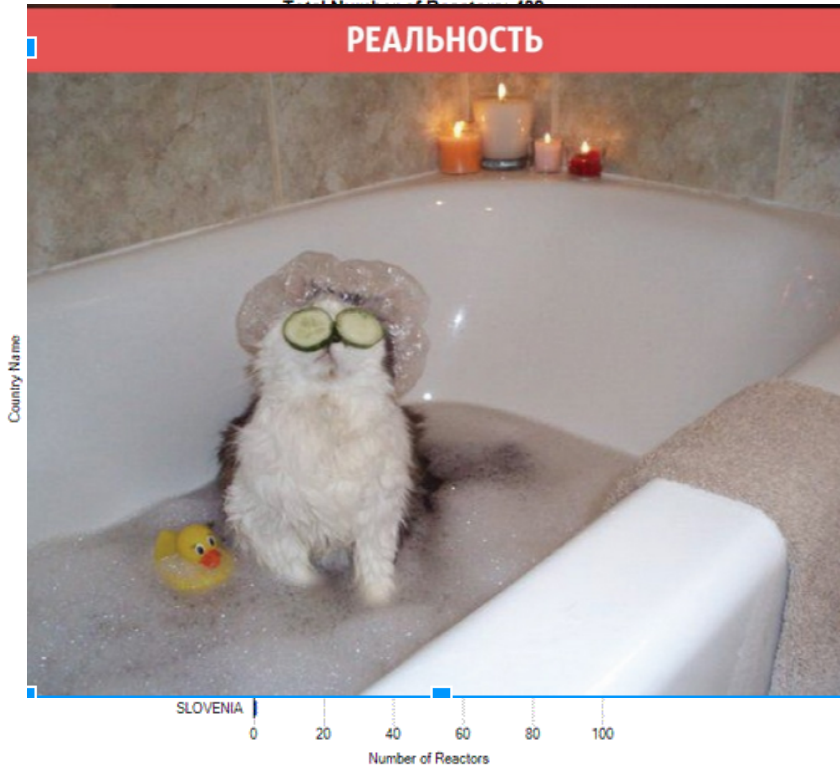
What about Nuclear?



What about Nuclear?



We need 5x more to reduce CO2 emissions 20%



A red fire extinguisher is positioned against a light-colored brick wall. A large, bright flame is erupting from the top of the extinguisher, obscuring the handle and nozzle. To the left of the extinguisher, a vertical metal pipe is visible. In the upper left corner, there is a small shelf with some electronic components and a gold-colored object. In the upper right corner, a portion of a white speaker is visible. The text 'NOW WHAT ??' is overlaid on the right side of the image in a large, bold, black font.

**NOW
WHAT
??**

Alternative way: Cut consumption

Table 2.2 Residential Sector Energy Consumption

Trillion Btu



1,500

1,000

500

0

1975 1980 1985 1990 1995 2000 2005 2010 2015

— Coal Consumed by the Residential Sector — Natural Gas Consumed by the Residential Sector (Excluding Supplemental Gaseous Fuels)
— Petroleum Consumed by the Residential Sector — Total Renewable Energy Consumed by the Residential Sector
— Electricity Retail Sales to the Residential Sector

LED лампочки



58 штук

$58 \cdot 40W \cdot 17 \text{годин} = 39,44 \text{кВт/год}$

ОД

1 183,2 кВт/год на місяць

Тариф 1,7166 грн/кВт/год

2 031 грн./міс

Закупка ламп
3 522 грн.
Економія – 2 008
грн./міс



58 штук

$58 \cdot 4,5W \cdot 17 \text{годин} = 4,43 \text{кВт/год/міс}$

яць

13,31 кВт/год на місяць

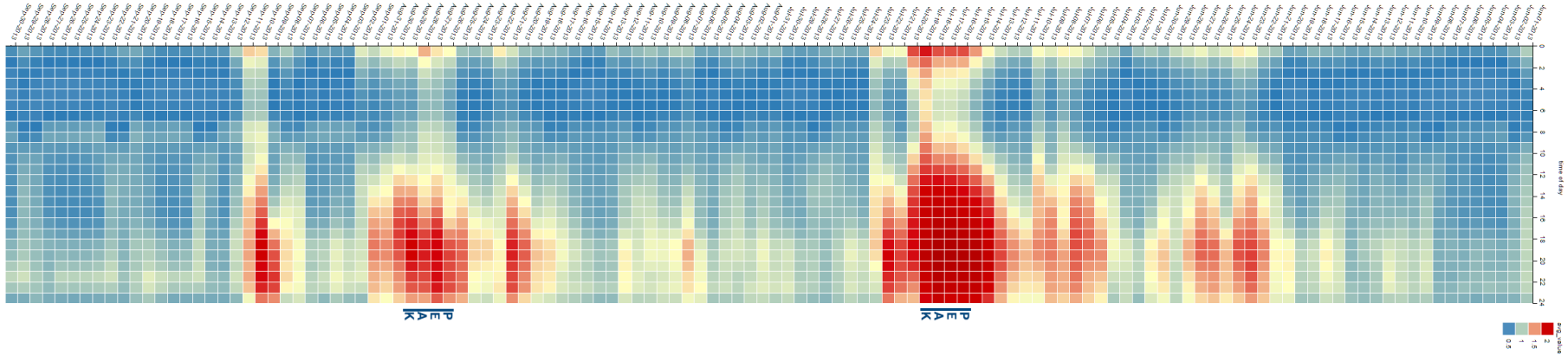
Тариф 1,7166 грн/кВт/год

22,85 грн./міс

Do you know your monthly usage?



AMI: Advanced Metering Infra



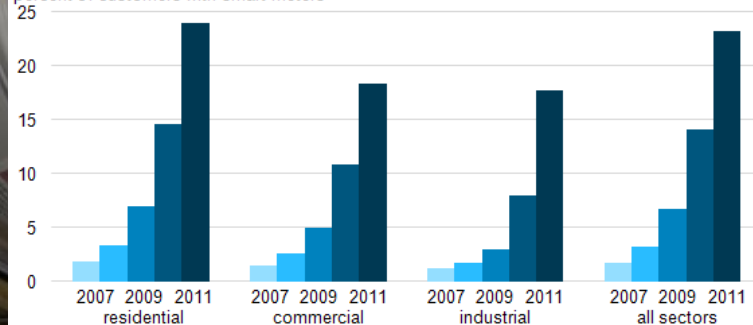
How all of that data is collected



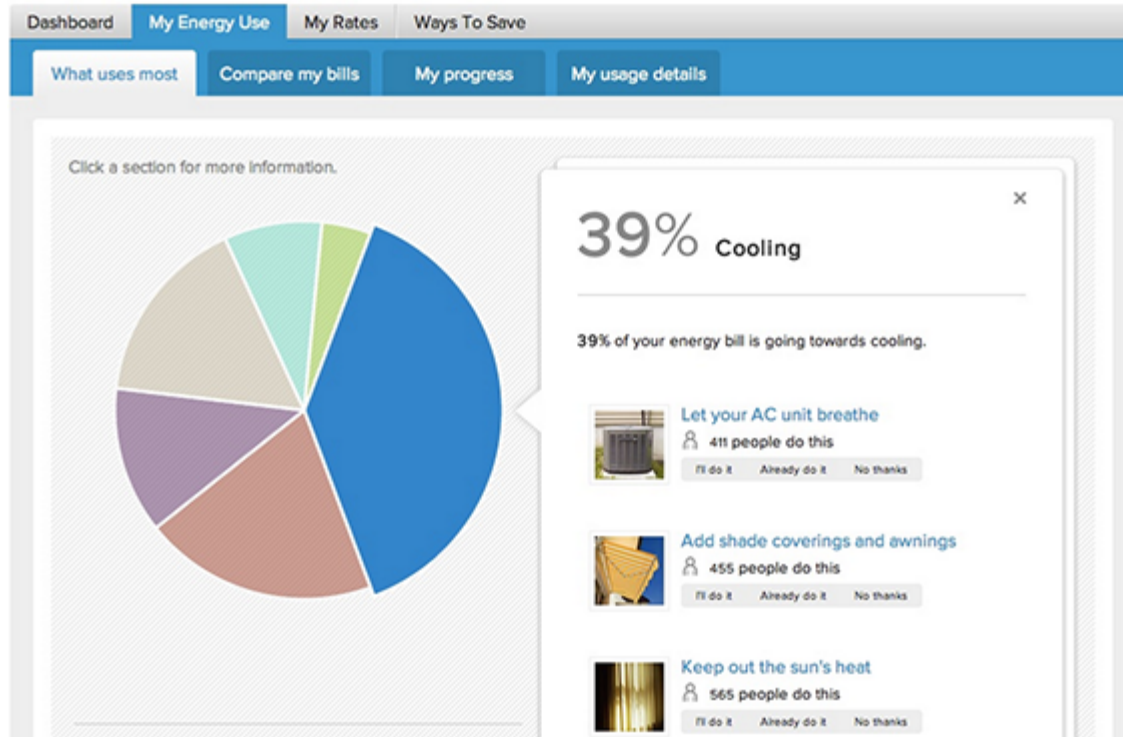
How all of that data is collected

<25% :(

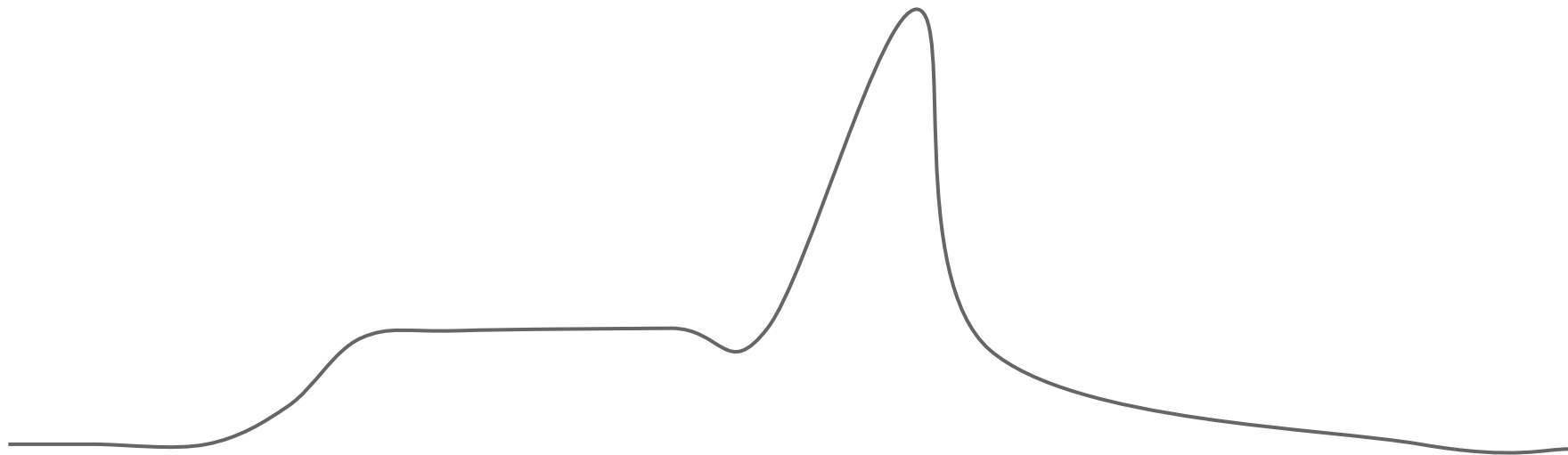
Smart meter penetration
percent of customers with smart meters



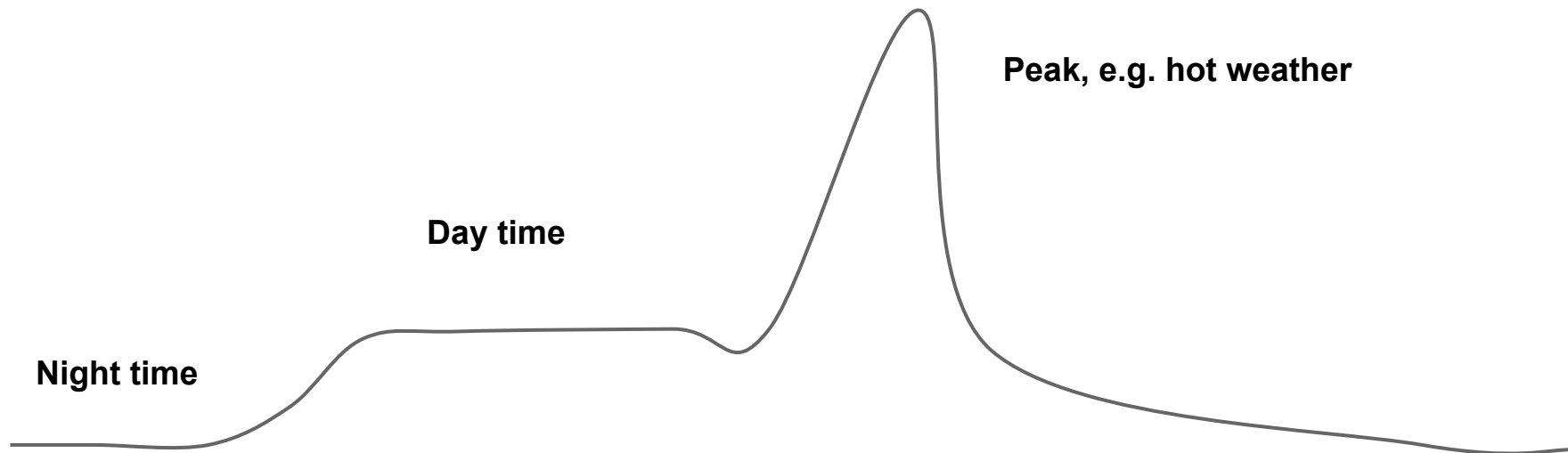
ML application: Disaggregation



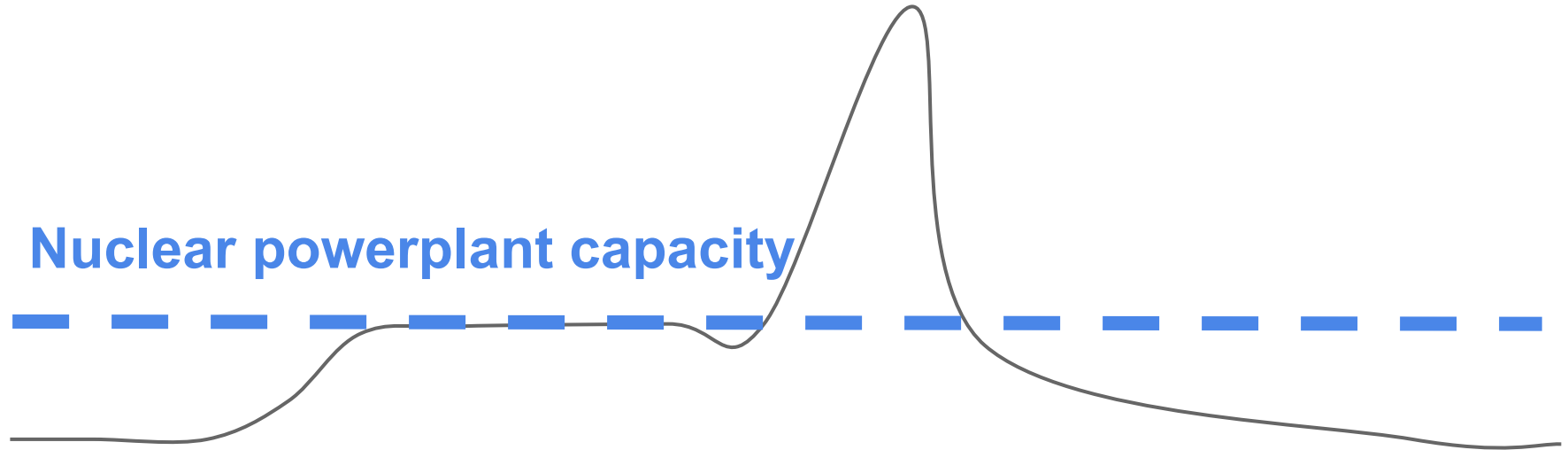
Peak time



Peak time

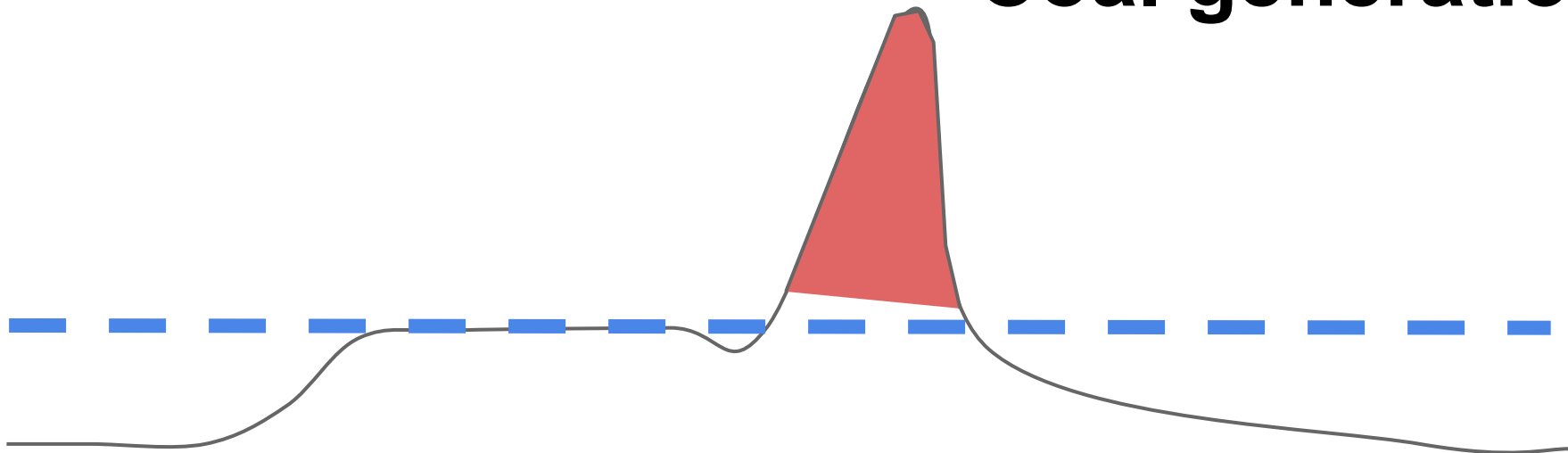


Capacity is \sim const



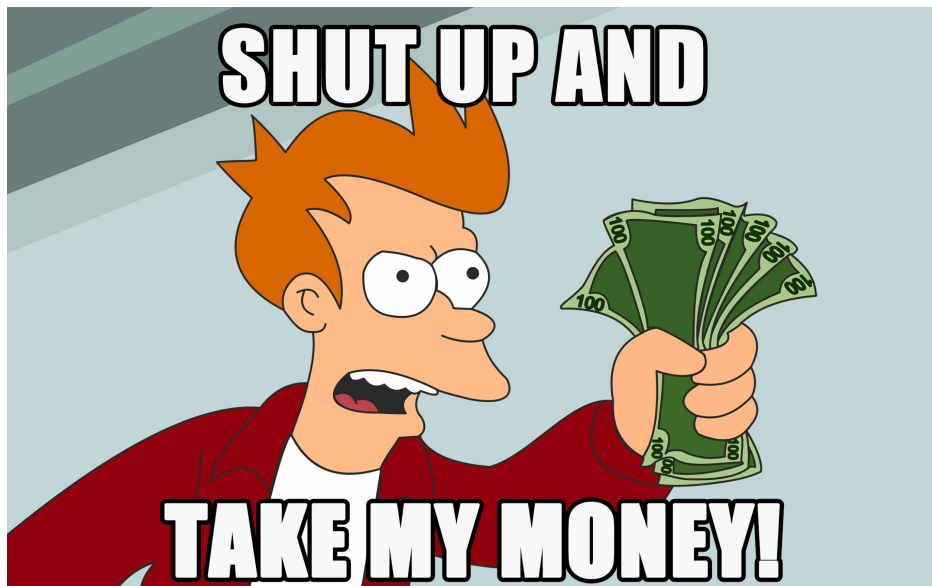
Peak time is like 10x expensive

Coal generation



BDR is our product using ML

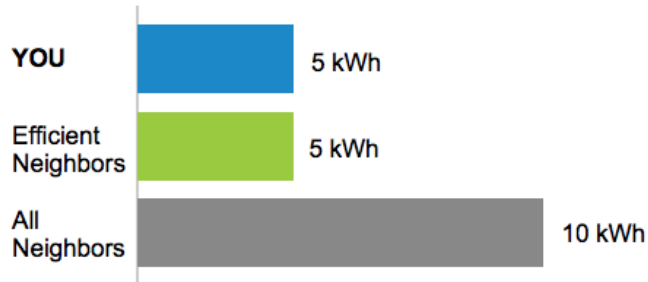
- We communicate to selected customers





★ **Great work! You used about the same as the most efficient homes on the last peak day.**

Last peak day: June 12th 2–7pm



■ All Neighbors: Approx. 100 occupied nearby homes that are similar size to yours

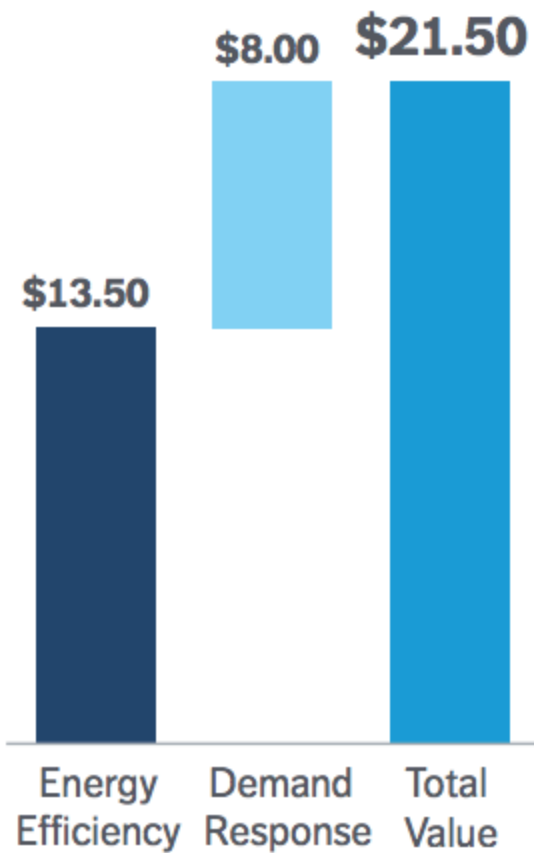
■ Efficient Neighbors: The most efficient 20 percent from the All Neighbors group

What is a peak day?

During hot days when demand is high, energy can seem expensive. By using less energy during peak days you can help keep costs down for everyone.

Regulators ask for efficiency



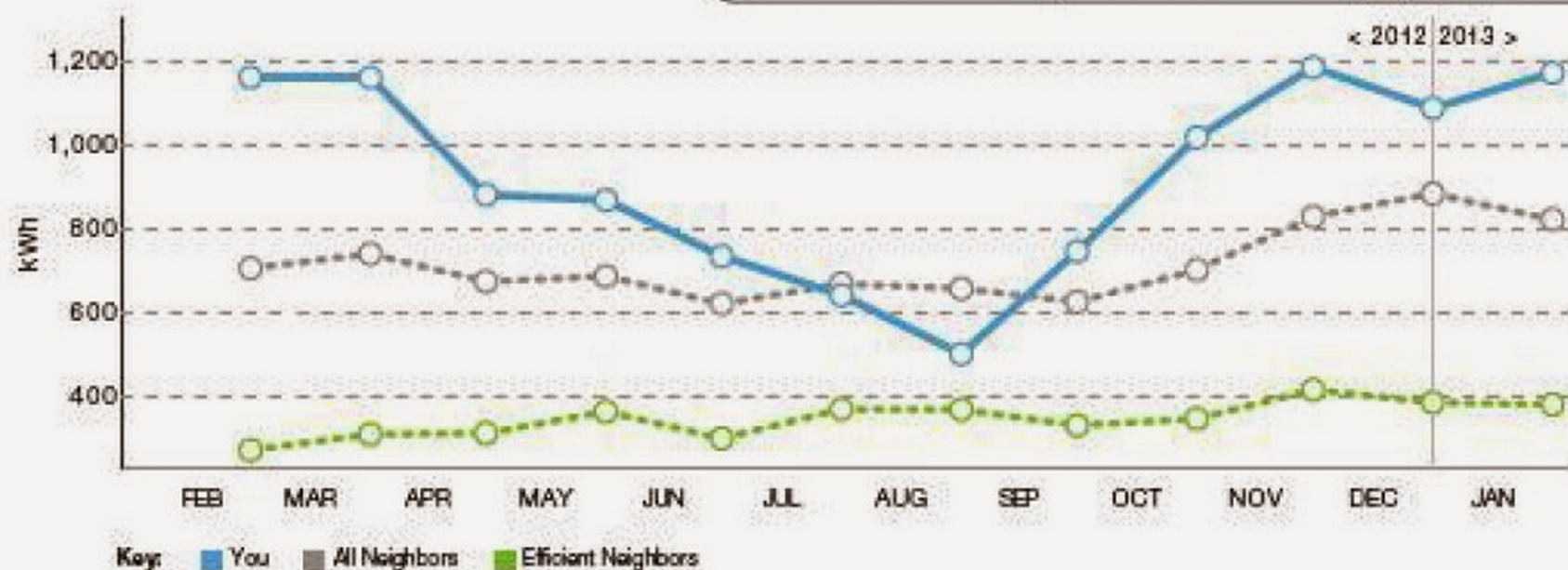


EE is our product using ML

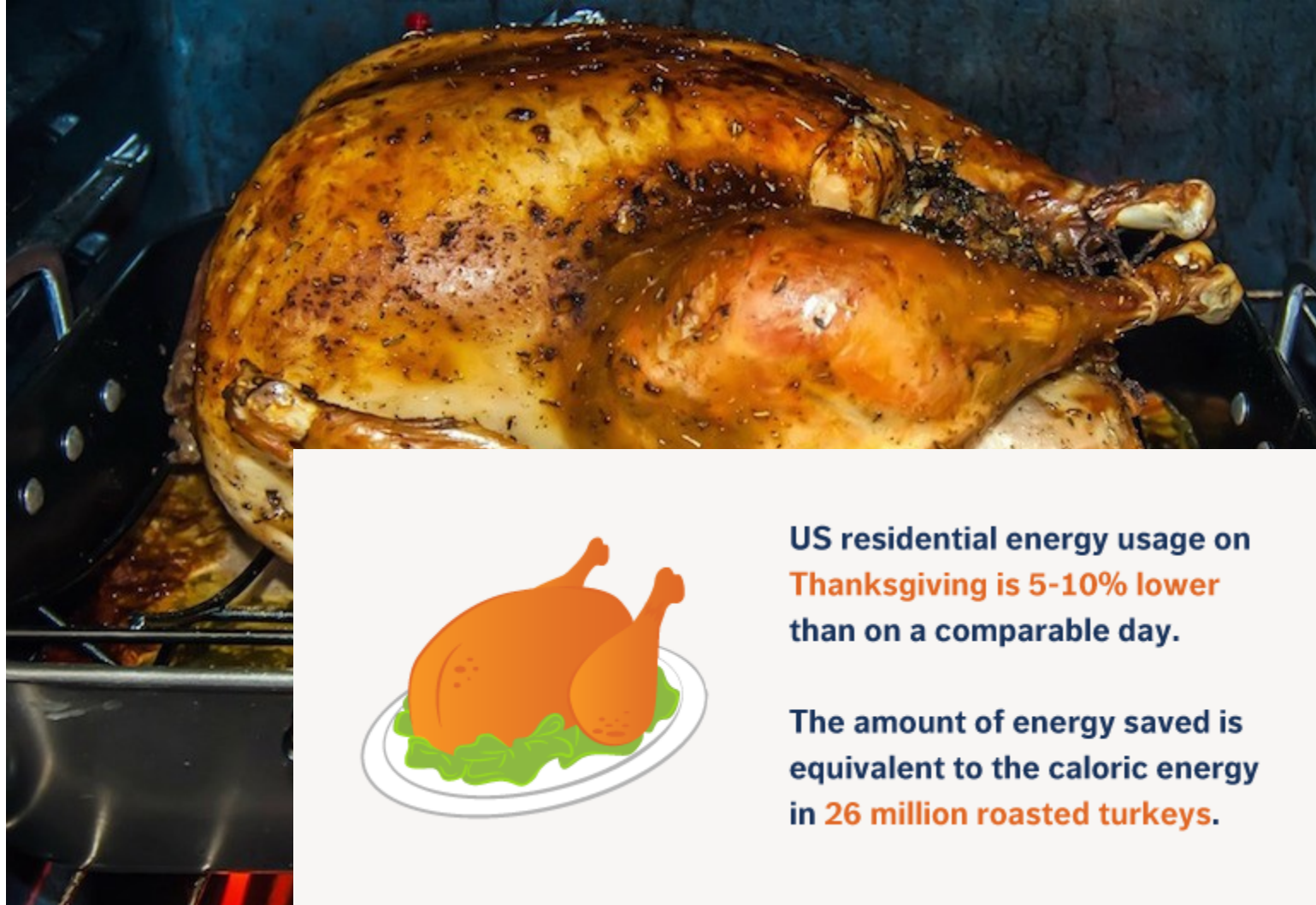


Last 12 Months Neighbor Comparison

You used **30% more** electricity than your neighbors.
This costs you about **\$246 extra** per year.







US residential energy usage on Thanksgiving is 5-10% lower than on a comparable day.

The amount of energy saved is equivalent to the caloric energy in 26 million roasted turkeys.

Results







x40 Years

Ivan Sobolev

- <https://facebook.com/soboleiv>
- <https://swiftbricks.com>

BA DUM TSSS

