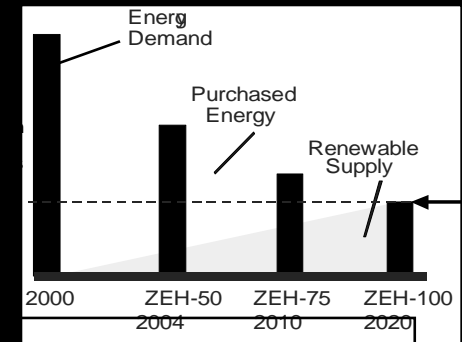


Zero Energy Homes: What, Why, and How?



Paul Norton

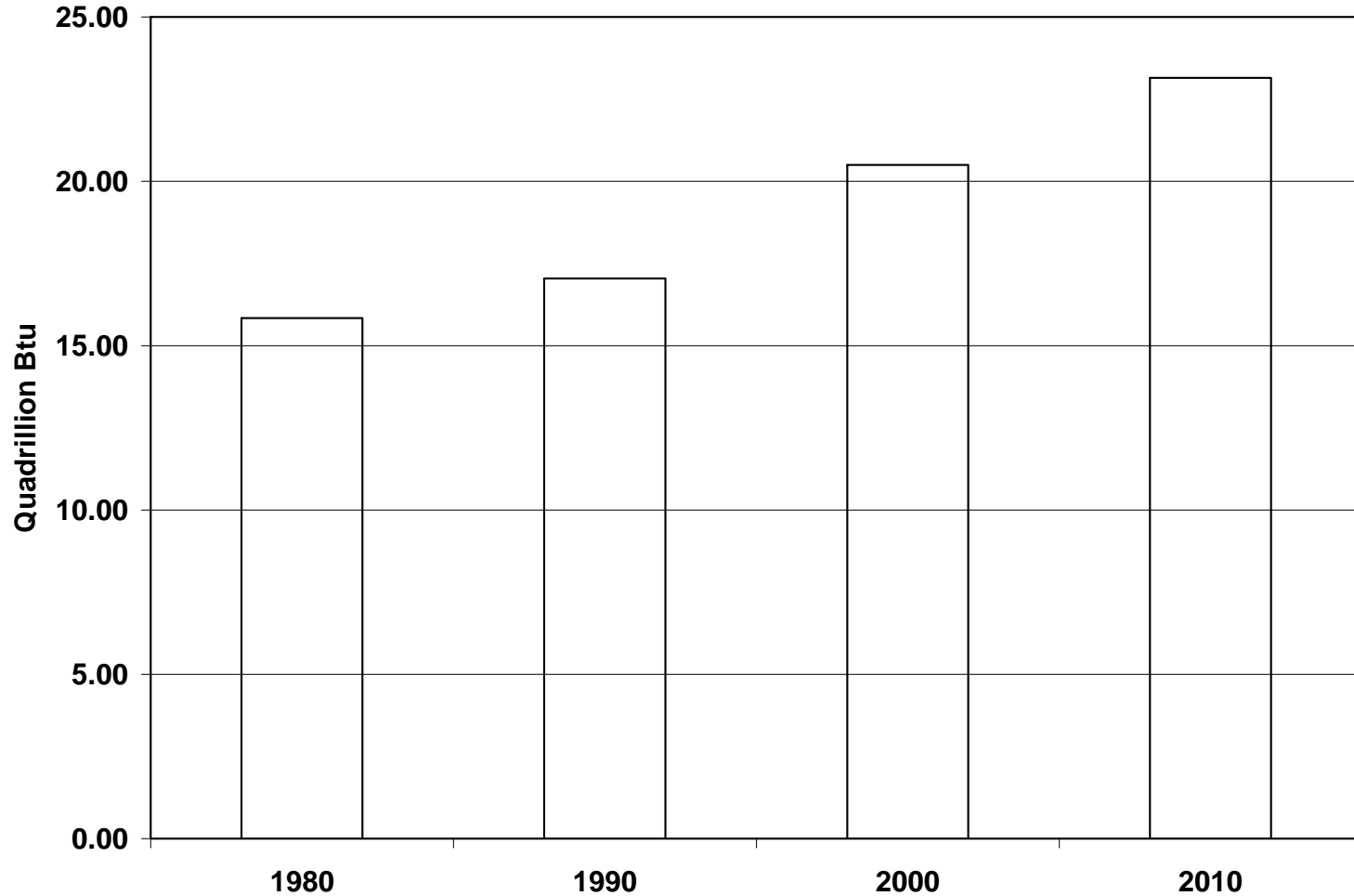
Center for Buildings and Thermal System

Why?

Homes account for **20%** of **all**
US primary energy use

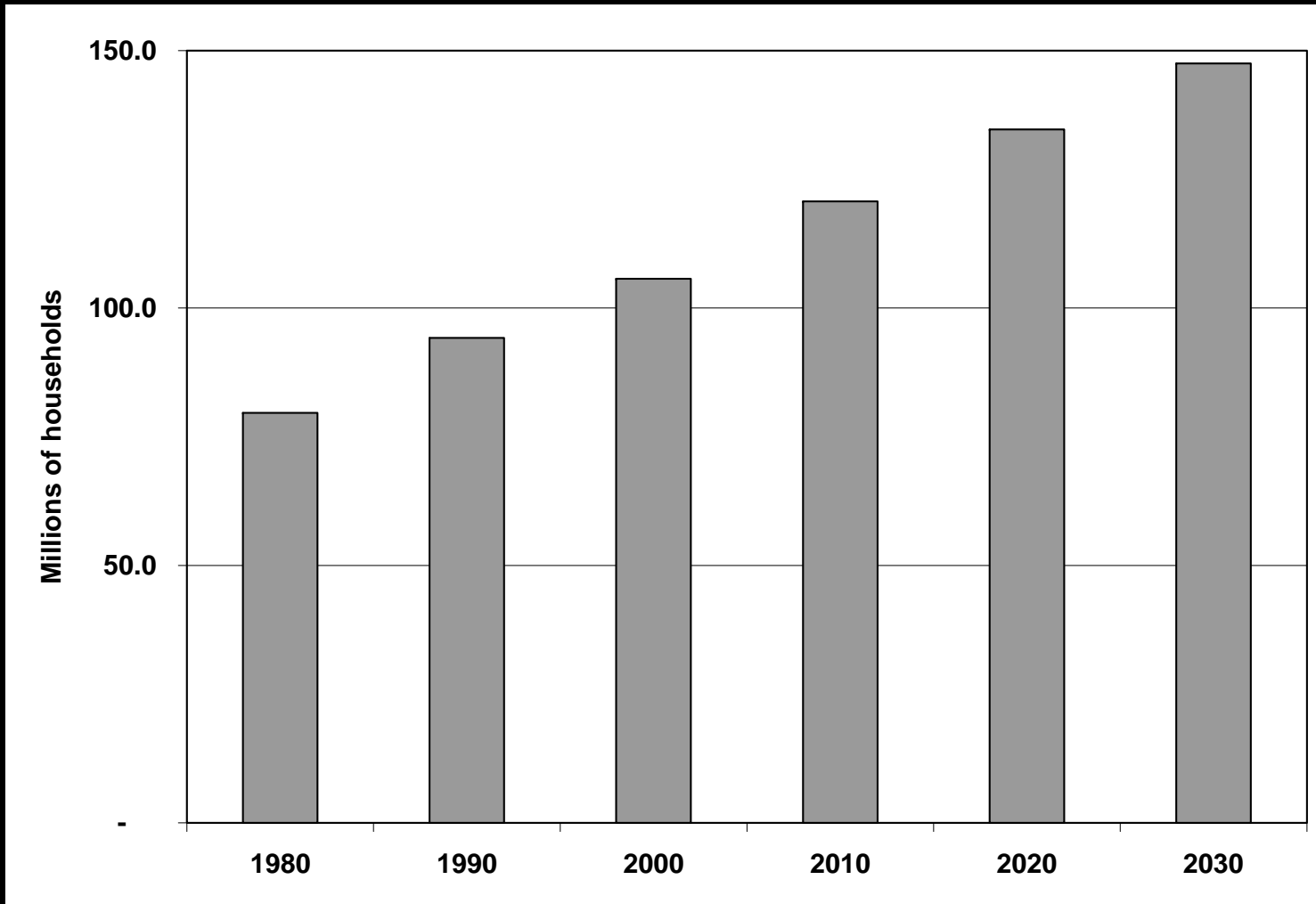
Homes account for **37%** of **all**
US electricity use

Residential energy use is growing

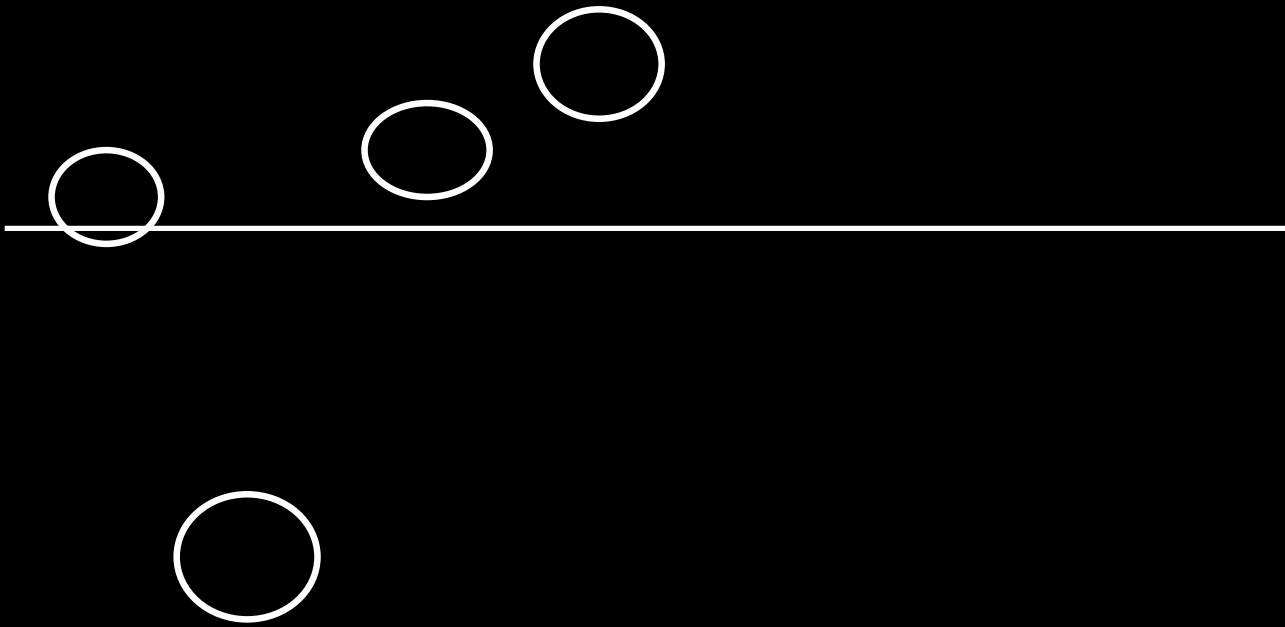


Residential
primary energy
consumption
Source: DOE 2007

Number of Households is Growing



Number of
Households
Source: DOE 2007



What is a Zero Energy Home?



**Zero Energy Homes
consume NO energy!**

What is a Zero Energy Home?

**Zero Energy Homes
produce as much energy
as they consume
on an annual basis.**

What is a Zero Energy Home?

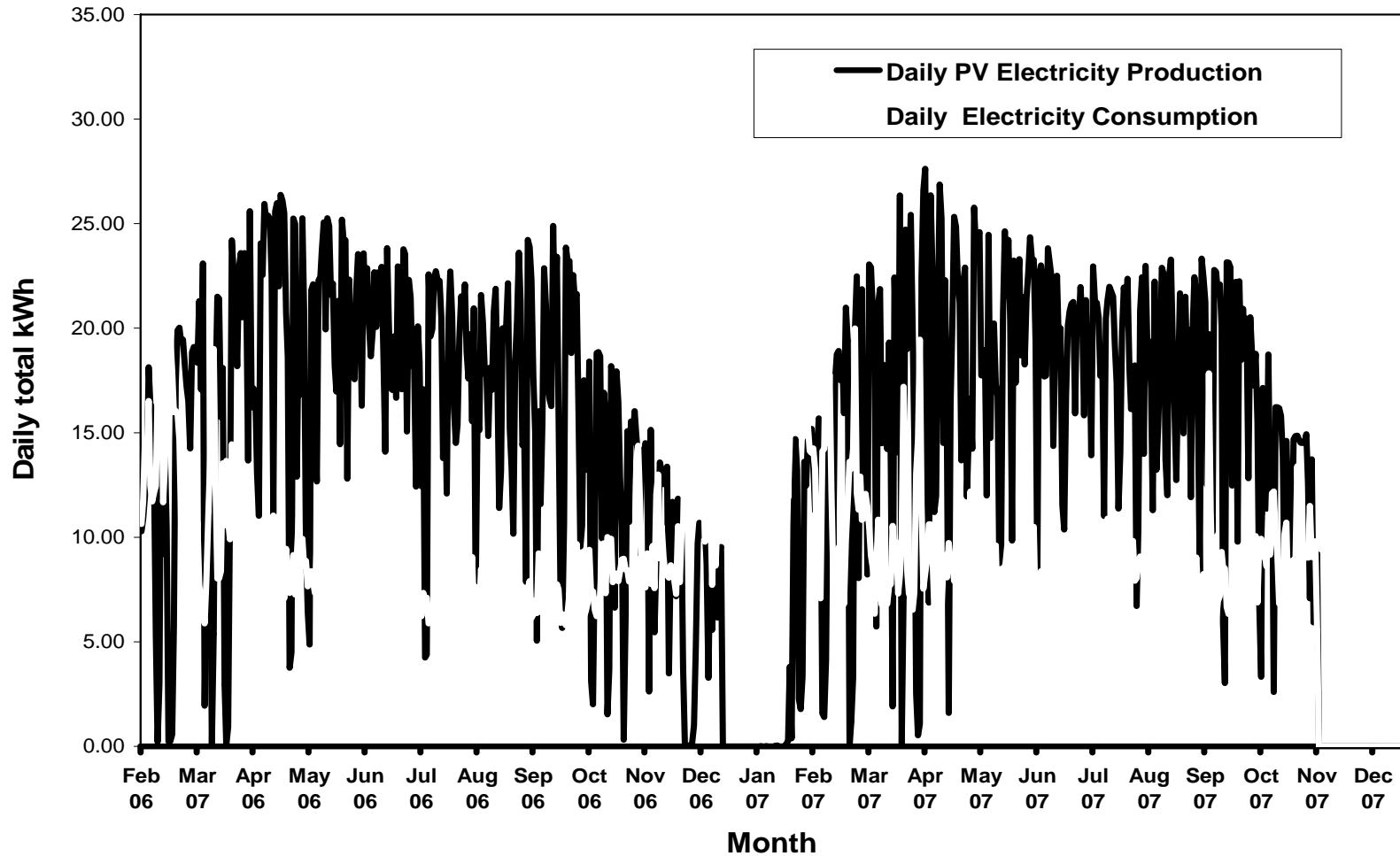
**Zero Energy Homes
produce as much energy
as they consume
on an annual basis.**

- NET zero energy
- Zero energy \neq zero utility bills
- The path to zero in new homes
- How to make a zero energy home
- Examples of zero energy homes
- What about my existing home?

NET Zero Energy: Daily Energy Flow

NET Zero Energy: Daily Energy Flow

NET Zero Energy: Seasonal Energy Flow



Zero energy \neq zero
utility bills

Net metering

Net billing

Feed-in tariffs

Feed-in Tariff

Some current feed in tariffs:

Germany

~ \$0.65/kWh

TVA

\$0.15/kWh

The path to Zero Energy