# FLORIDA SOLAR ENERGY CENTER

*Creating Energy Independence Since 1975*

# *Taking Charge of Our Energy Future*

## We Can Do Much Better!

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and
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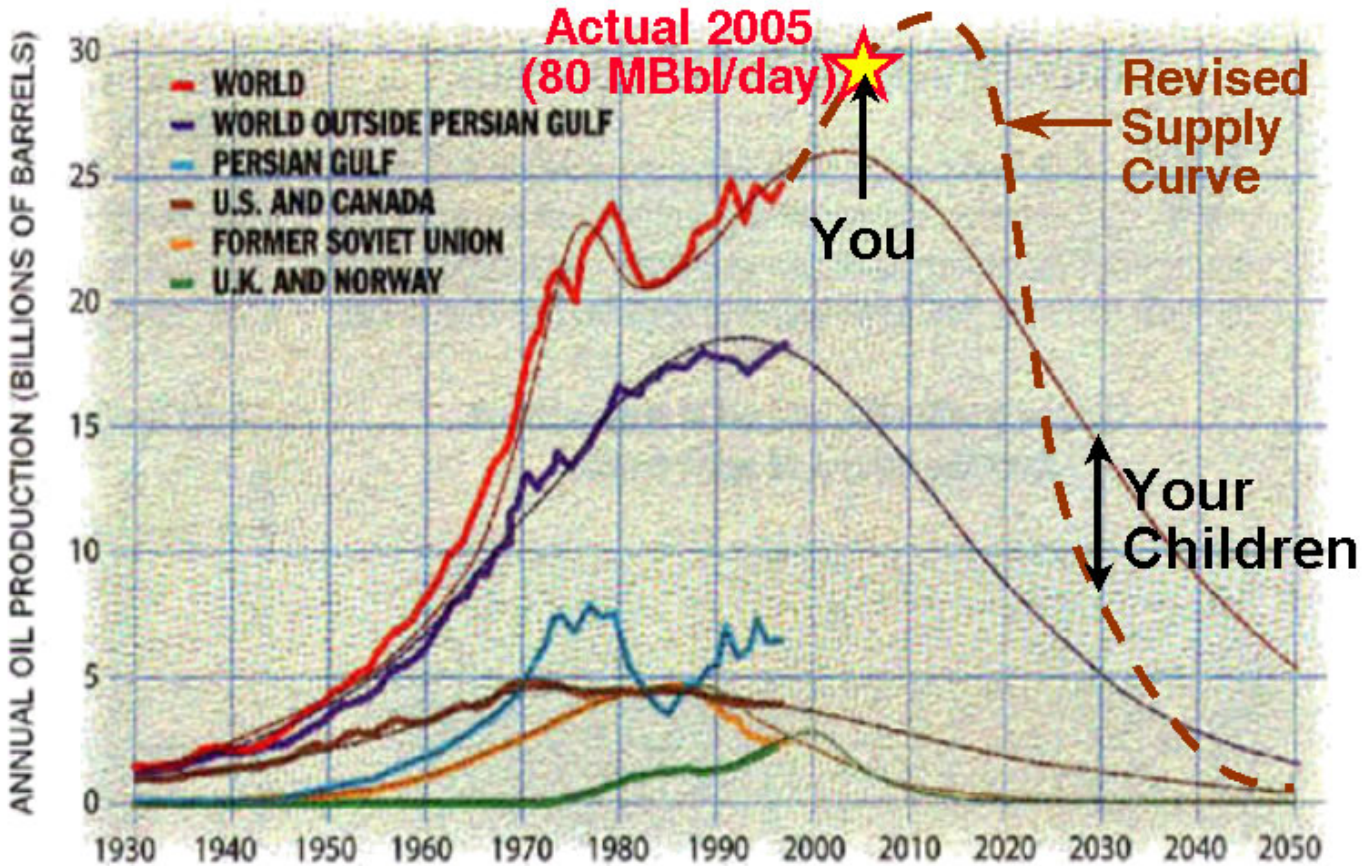
# *The first 30 years!*

- Many of you remember the US energy crisis of the 1970s, a time of rising utility costs, long gas lines and energy shortages
- The problems facing the US in 2006 are similar in some ways to those facing us since 1975, but with one big difference:

**Back then, the world had plenty of oil!**

# *The "Run on The Bank"*



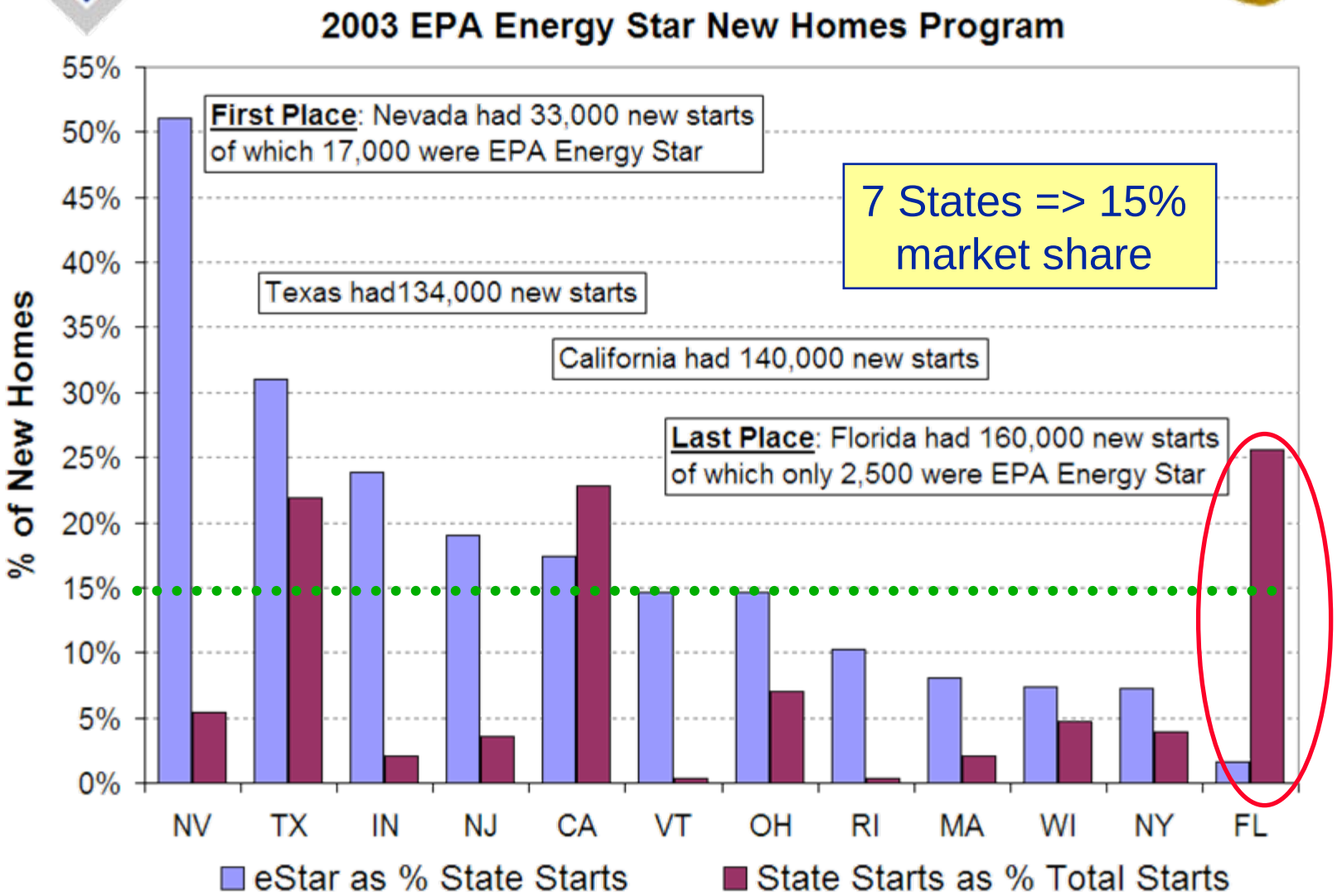

Source: Campbell, Colin J. and Jean H. Laherrere, "The End of Cheap Oil." *Scientific American*, March 1998.

# Into the Storm

# *Economic Context*

- Florida ranks 5th nationally in the amount of energy consumed per capita and 3rd in total energy consumption (This statistic does not account for tourist population.)
- The economic implications of fuel purchases in Florida are large
  - At $2.50/gal = $23 billion/year for automotive fuel. Plus another $20 billion/year for electricity yields a total of $43 billion/year
  - At least half ($20 billion per year) leaves Florida's economy as fuel payments to other states and nations.
- Keeping this money in Florida would result in $40 to $60 billion/year (2-3 times the $20 billion exported) in real economic activity and job creation.

# *Where Florida Stands*



# *Energy Star Answers*

## What it Takes?

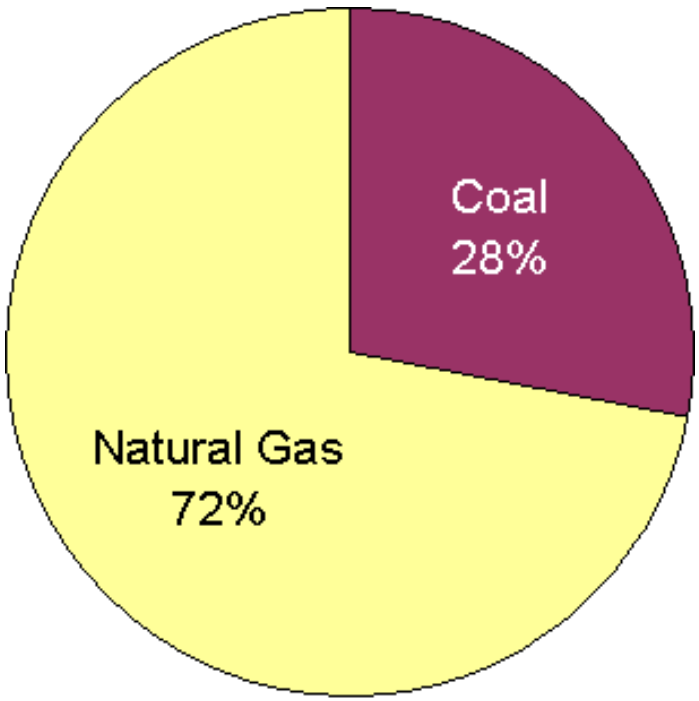
- Standard minimum code features plus. . .
  - Energy Star windows, refrigerator and dishwasher
  - Three Energy Star lighting fixtures
  - A substantially leak-free duct system
  - An Energy Star air conditioner (SEER = 14)

## Benefits and Costs?

- Total estimated annual savings = 1,995 kWh
- Total estimated added costs = $1,600
- Levelized cost of energy savings = 6¢ per kWh

# *Current Projection*

New Generation for 2014

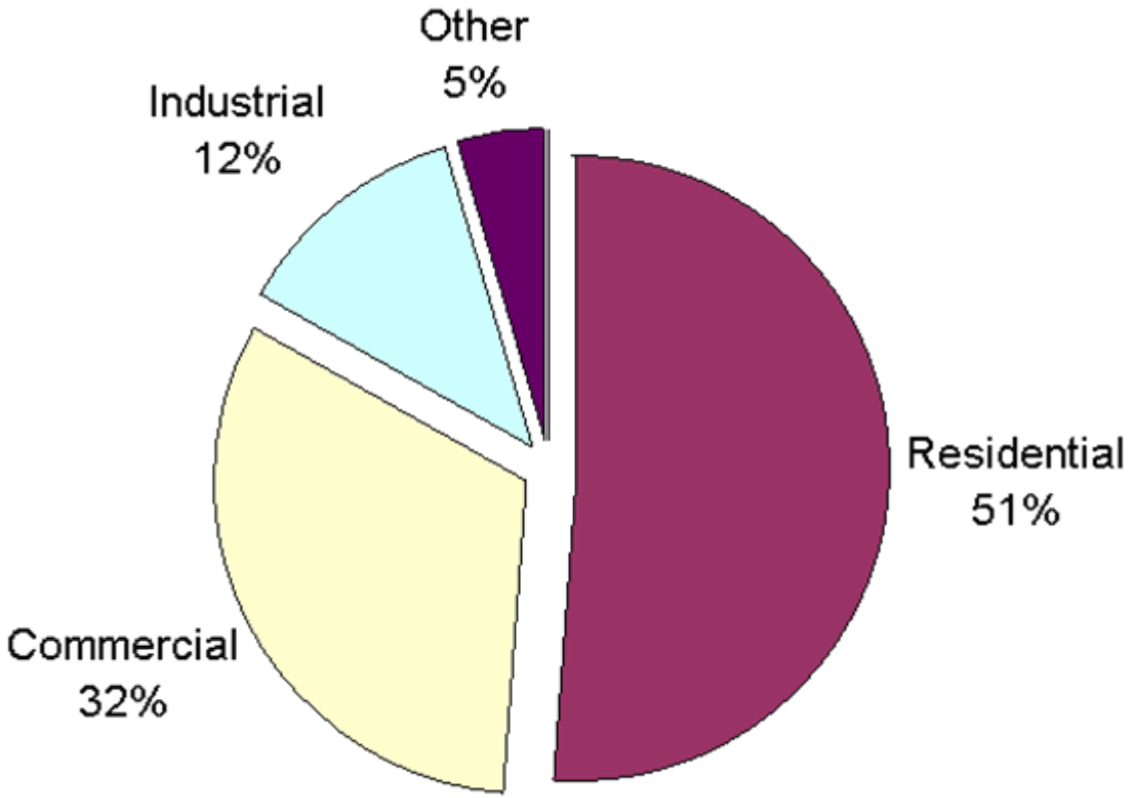



75 TWh projected

Source: http://www.fsec.ucf.edu/pubs/eere_study/

# *Residential Dominates*

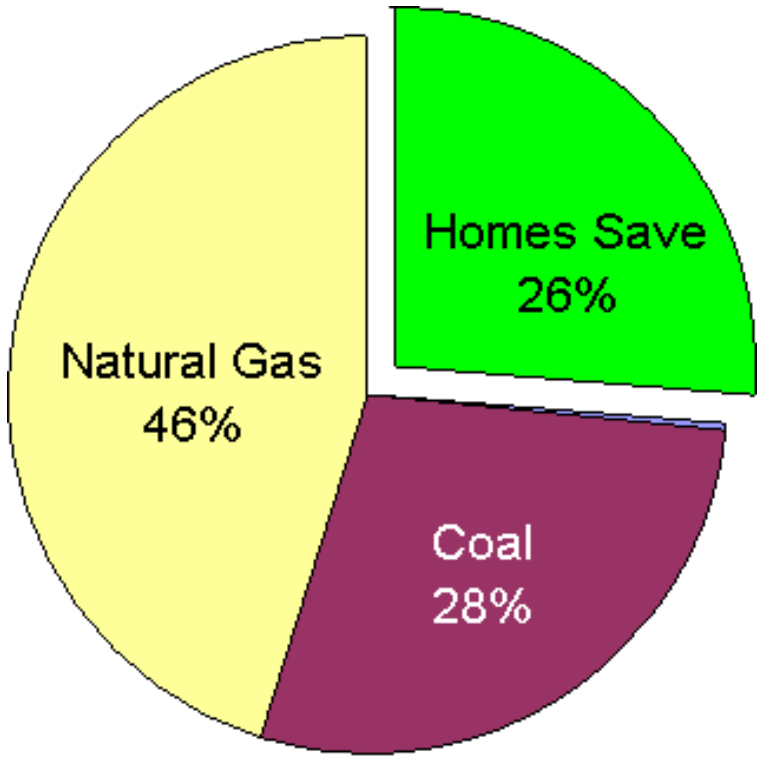
2004 Actual Energy Use by Sector (233 TWh)




Source: http://www.fsec.ucf.edu/pubs/eere_study/

# *Why Not This?*

New Generation for 2014




50 TWh projected

Source: http://www.fsec.ucf.edu/pubs/eere_study/

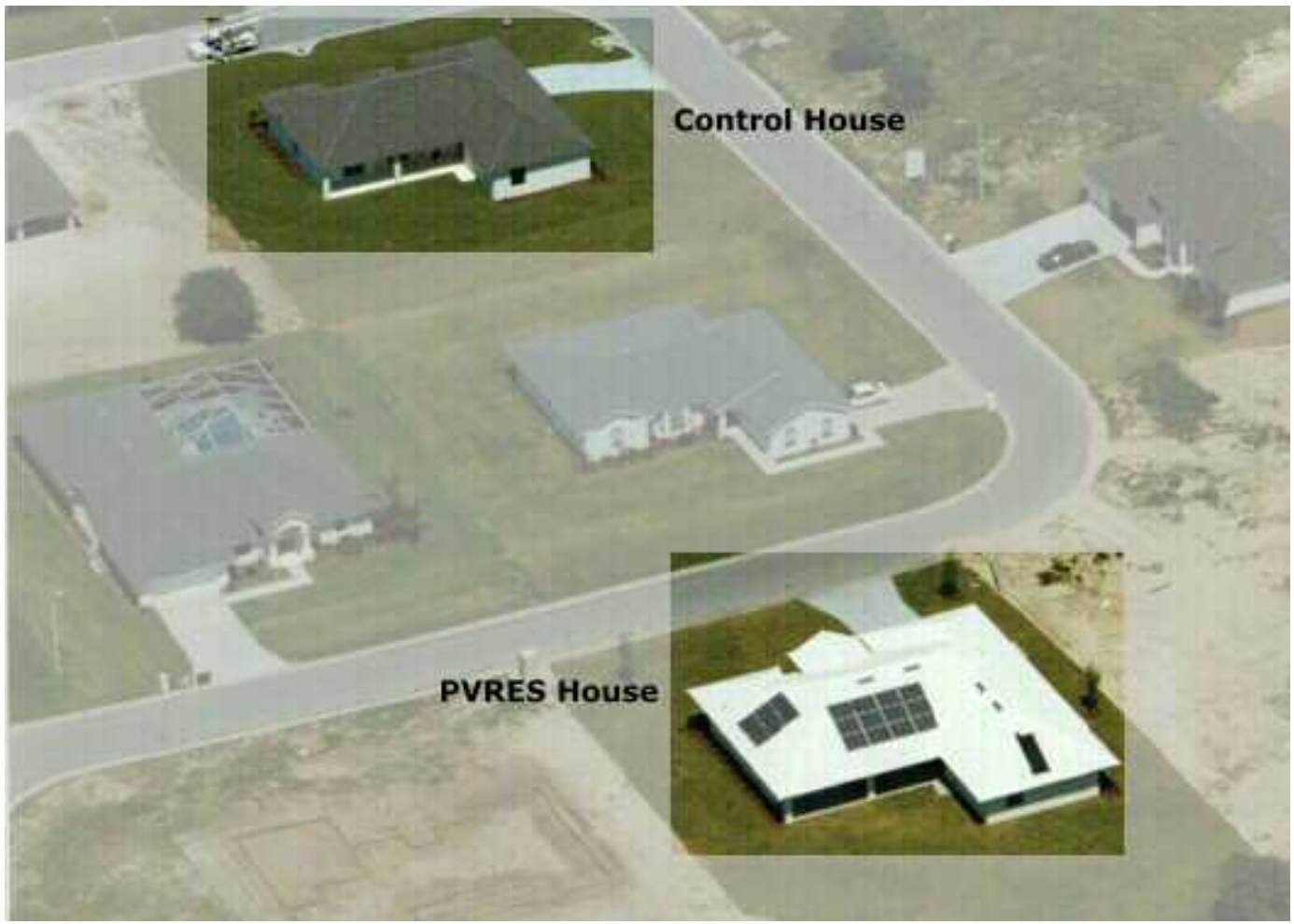
# *Low Hanging Fruit*

- ***Efficiency First*** – The least expensive kWh is the one that we do not use (or produce)
- New homes (190,000 per year) can cost effectively achieve almost 40% greater efficiency than 2007 code requirements[1]
- Existing homes (7.3 million) can be cost effectively improved by more than 30%[1]
- Achieving this cost-effective efficiency would result in 53 billion kWh savings at a levelized cost of about $0.05 per kWh.[1]

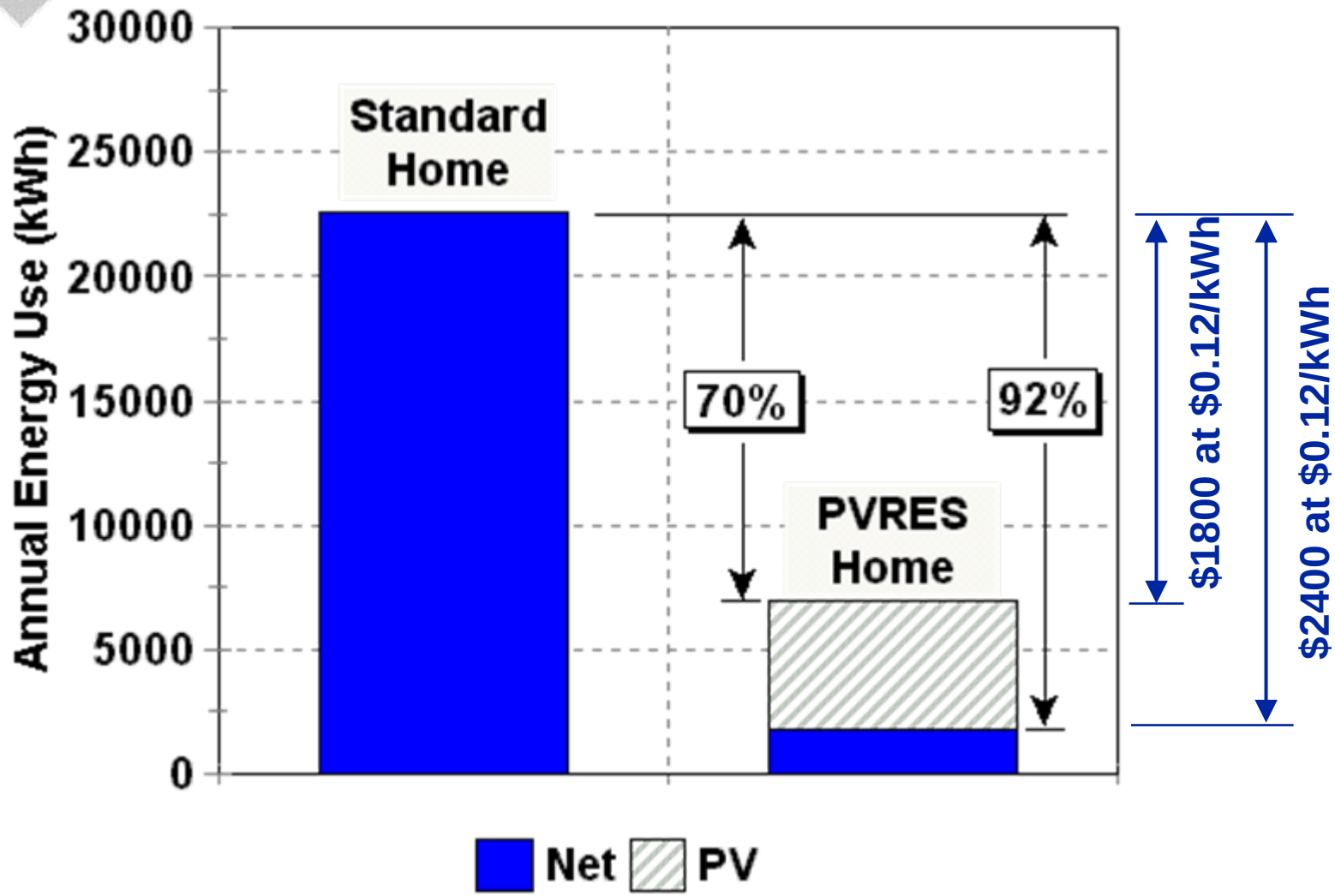
[1] ACEEE, 2007. *Potential for Energy Efficiency and Renewable Energy to Meet Florida's Growing Energy Demands*

# *The Art of the Possible*

## *The First "Zero Energy Home"*



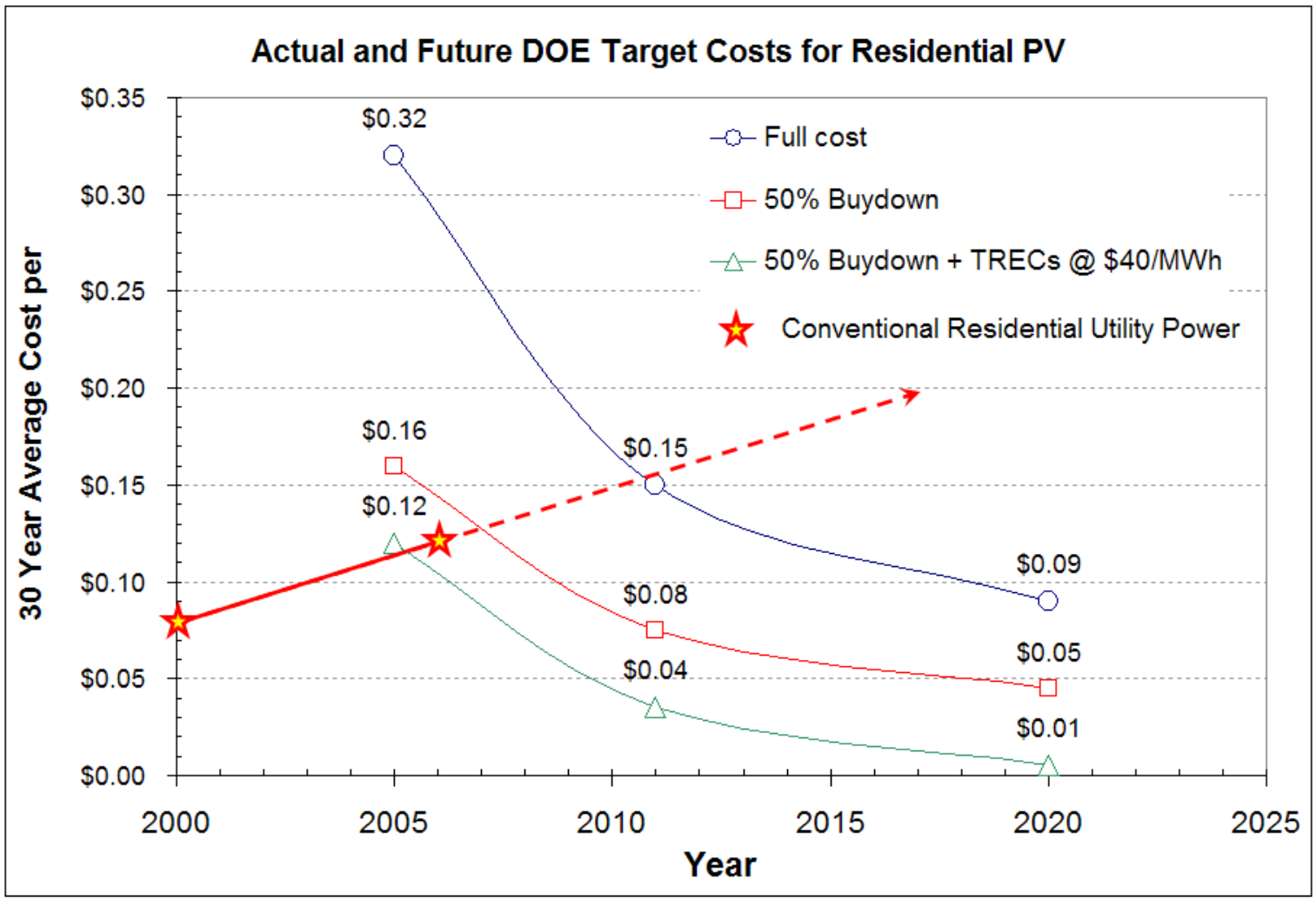
# *Efficiency First*



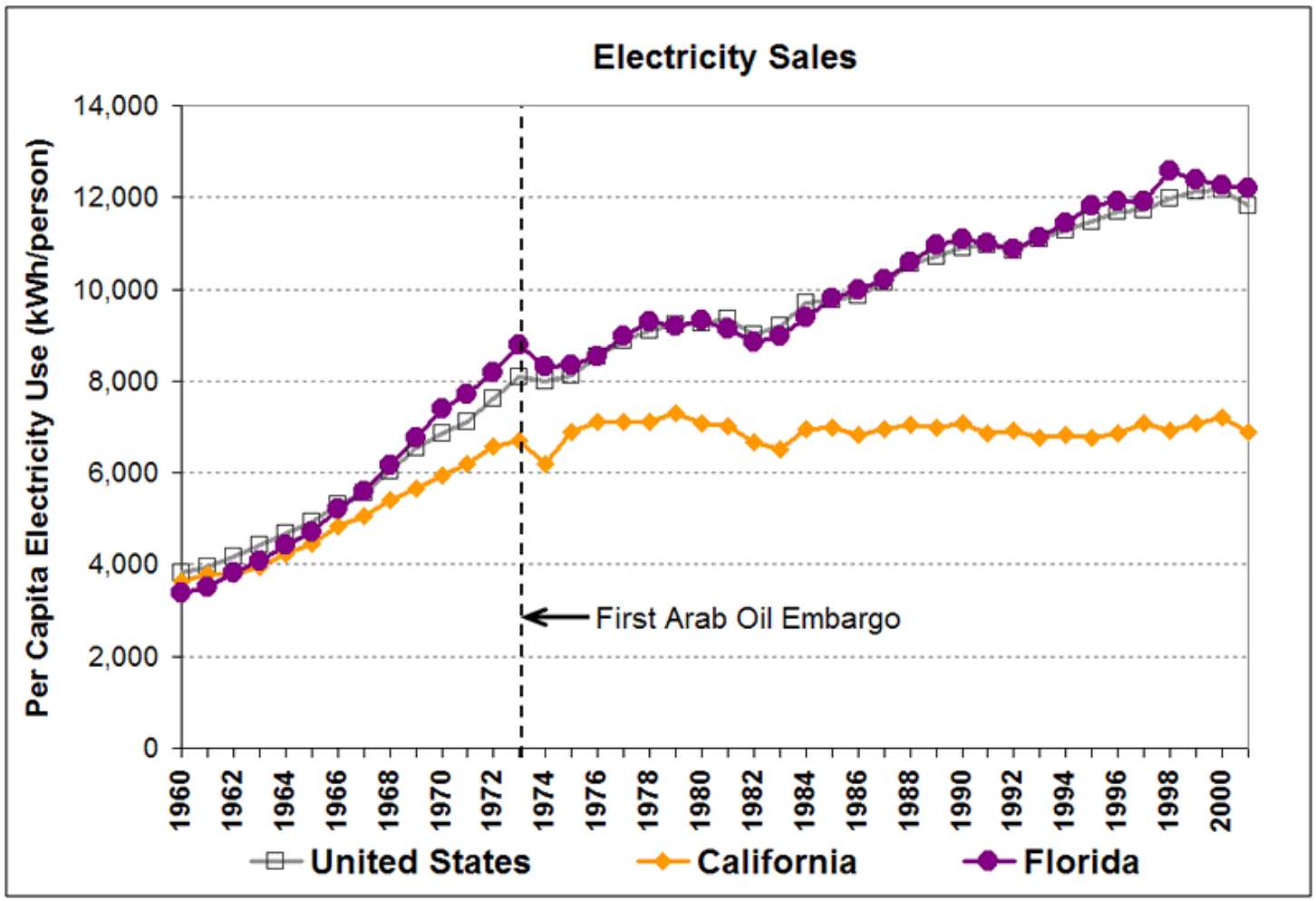
# *From Patent to Purchase*

FSEC's Gossamer Wind® ceiling fan is the University of Central Florida's most productive patent, with sales exceeding 1,000,000 units, saving consumers more than $20 million in energy costs annually.

# Photovoltaic Costs



# California's Example

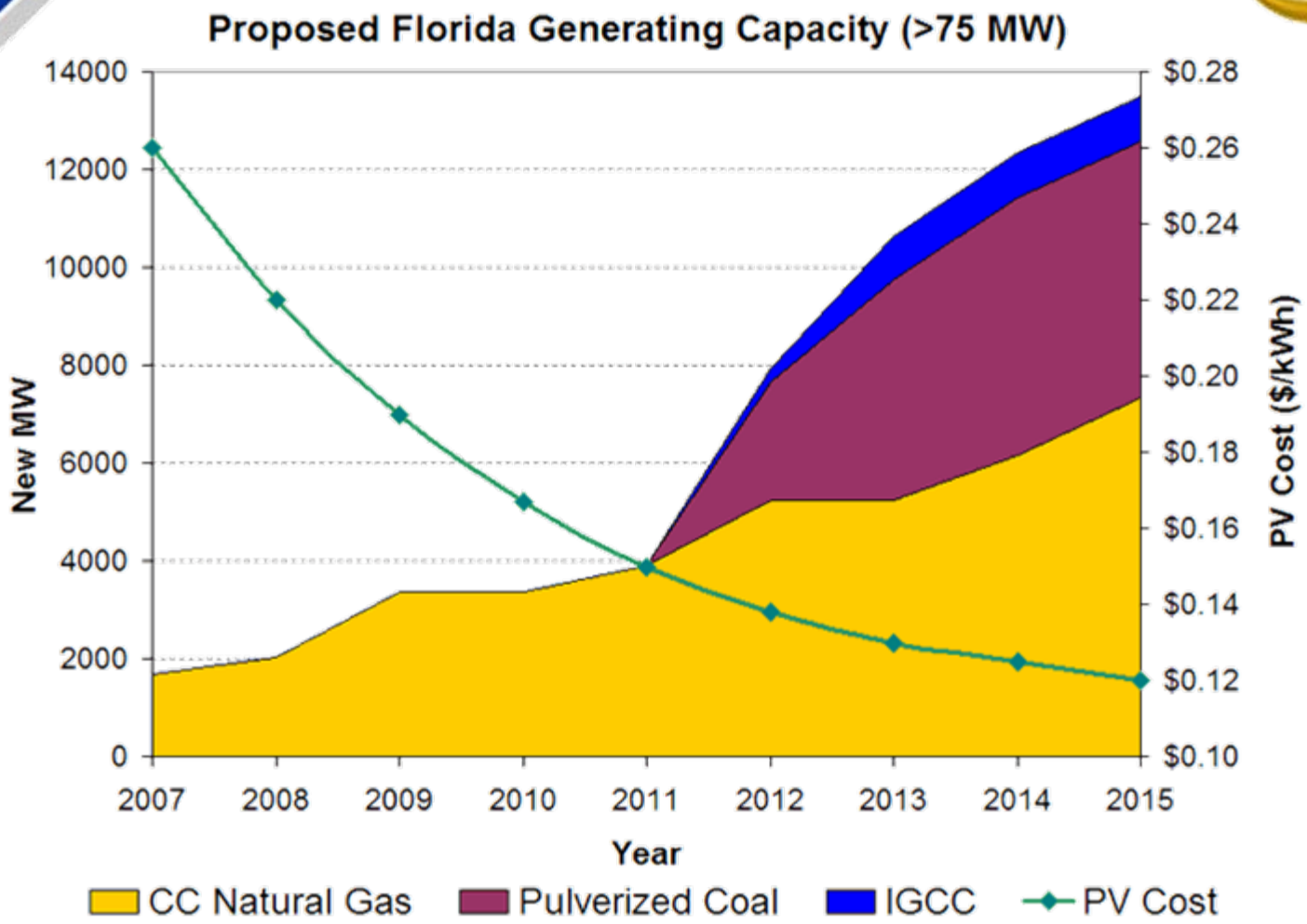



**$600 per capita at $0.12/kWh**

# *Level The Playing Field*

- California (PUC & CEC) provides $550 million per year in renewable energy incentives
- California has twice the population of Florida
- Thus, Florida would need to provide $275 million per year to produce a **level playing field**
- The surcharge to achieve this fund in Florida would be $0.0012 per kWh
- For the typical Florida household, this would equal $1.50 per month.

# Business As Usual




Source: Florida Public Service Commission, *"Review of 2006 10-year Site Plans for Florida's Electric Utilities"*

# Florida Solar Energy Center

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# *Florida Solar Energy Center*

- Created in 1975 by the Florida Legislature
- **The** energy research institute of the state of Florida
- Mission is research, testing and education
- $8 - 10 million annually in external contracts and grants
- The experience (staff >140) and capabilities to help solve our energy problems and help meet our energy needs
- Began as a “solar energy” center, but grew into many new research and development areas
- Housed in one of the world’s most energy-efficient buildings.

# *FSEC Expertise (30 years)*

- **High-Performance Buildings** (energy efficiency)
- **Solar Thermal Systems** (today's cost-effective solution)
- **Photovoltaics** (tomorrow's source of electricity)
- **Testing & Certification** (protecting Florida's citizens)
- **Hydrogen, Alternative Fuels and Fuel Cells** (the future's fuels and engines)
- **Education and Training** (Florida's workforce for today and the future)
- **Demonstrations** (moving the market)

# *Taking Charge*

- Home Energy Efficiency Policy
  - New and Existing Homes
- Renewable Energy Policy
  - Renewable Energy Portfolio Standard (5% by 2023)
  - 10% Solar Hot Water, 3% on-site PV by 2023
  - Mandatory Net Metering
  - Interconnection PV standard increased from 10 kW to 100kW
- Level the Playing Field so that the "Sunshine State" beats the "Golden State"
  - Renewable Energy Incentives $275 million per year ($1.50 per month typical household)
- Measure, Verify and Manage

# *For Further Information*

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www.fsec.ucf.edu

"Taking Charge of Our Energy Future"
www.fsec.ucf.edu/energynews/2006/2006-02-energyuse2014.htm