Taking Charge of Our Energy Future

We Can Do Much Better!

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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.”
Into the Storm
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

2003 EPA Energy Star New Homes Program

- **First Place**: Nevada had 33,000 new starts of which 17,000 were EPA Energy Star
- **Texas**: had 134,000 new starts
- **California**: had 140,000 new starts
- **Last Place**: Florida had 160,000 new starts of which only 2,500 were EPA Energy Star

- 7 States => 15% market share
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

- Natural Gas: 72%
- Coal: 28%

75 TWh projected

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

2004 Actual Energy Use by Sector (233 TWh)

- Residential: 51%
- Commercial: 32%
- Industrial: 12%
- Other: 5%

Source: http://www.fsec.ucf.edu/pubs/eere_study/
Why Not This?

New Generation for 2014

- Natural Gas: 46%
- Homes Save: 26%
- Coal: 28%

50 TWh projected

Source: http://www.fsec.ucf.edu/pubs/eere_study/
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.\(^1\)

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The Art of the Possible

The First “Zero Energy Home”
Efficiency First

Annual Energy Use (kWh)

- Standard Home
  - 30,000 kWh
- PVRES Home
  - 70% efficiency
  - 21,000 kWh
  - 92% efficiency
  - 22,000 kWh

Costs:
- $2,400 at $0.12/kWh
- $1,800 at $0.12/kWh
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.
California’s Example

$600 per capita at $0.12/kWh
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

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.
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 100 kW

- 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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