

Special Seminar
NYU Dept. of Environmental Studies
Thursday, June 19th, 2014
12:30 – 1:30 PM
285 Mercer Street (between Waverly &
Washington Pl.)
10th Floor Conference Room

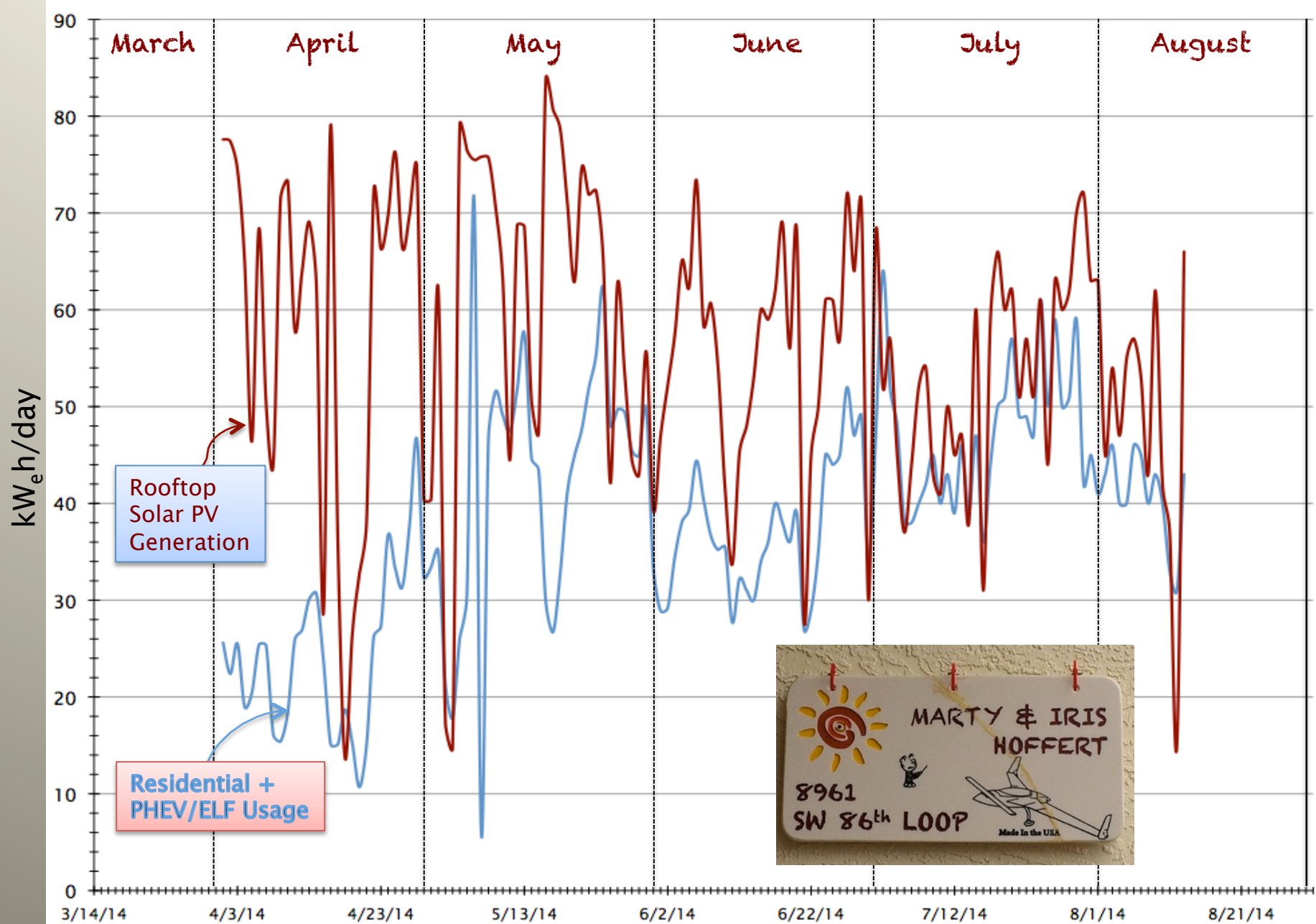
by

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**Carbon-Neutral Energy AND
High-Tech Lifestyles: Can
Those Third Rock from the
Sun Apes Build a Ramp to
Global Sustainability?**



SOLAR PRODUCTION AND USAGE IN OCALA PARADISE THUS FAR . . .



AN OFF-RAMP TO NET ZERO EMITTING ENERGY?

“Science is science,” [President Obama] said. “And there is no doubt that if we burned all the fossil fuel that’s in the ground right now that the planet’s going to get too hot and the consequences could be dire.”

So we can’t burn it all?

“We’re not going to be able to burn it all. Over the course of the next several decades, we’re going to have to build a ramp from how we currently use energy to where we need to use energy. And we’re not going to suddenly turn off a switch and suddenly we’re no longer using fossil fuels, but we have to use this time wisely, so that you have a tapering off of fossil fuels replaced by clean energy sources that are not releasing carbon. ... But I very much believe in keeping that 2 [degree] Celsius target as a goal.” – Tom Friedman Interview, New York Times, 2 June 2014

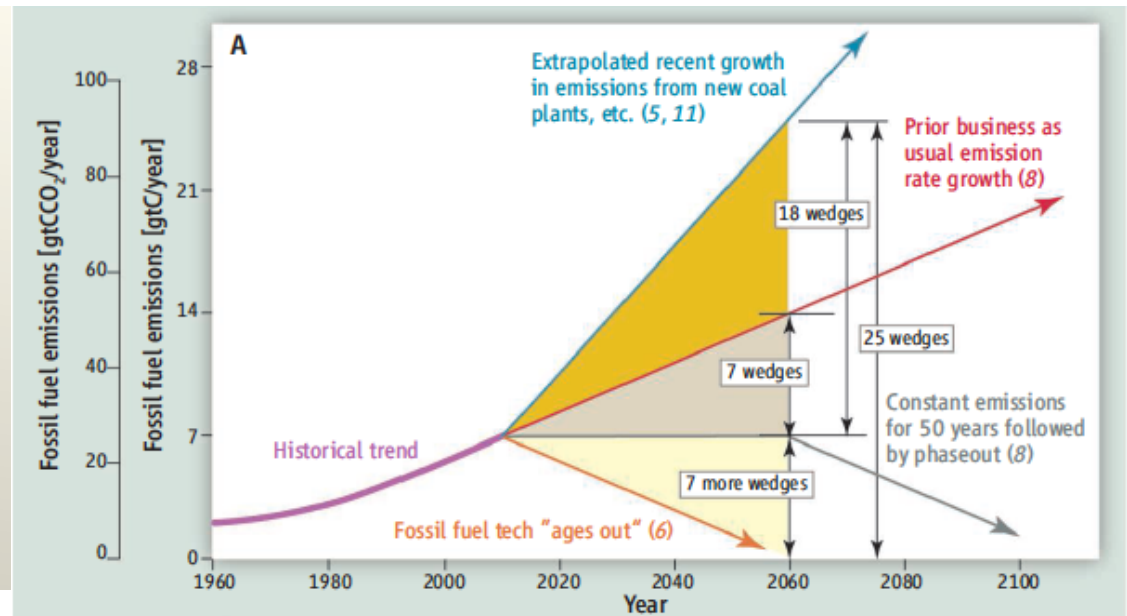


Mr President and Congress: Open your minds to a civilization powered by wind turbines in harmony with our landscape and continental shelves; solar electricity from deserts and Earth orbit powering our cities; safe, proliferation-resistant nuclear reactors; coal gasifiers driving efficient electric power plants with CO2 stored underground; along with energy-efficient homes and public buildings, smart power grids, high-speed rail, electric and biofuelled cars, even carbon-neutral fuels made from sunlight, water and CO2 in the atmosphere more efficiently than nature does by photosynthesis. . .

Say it, Barack, shout it from the rooftops, dedicate your presidency to it, and you will stand immortal in the pantheon of American leaders who changed everything. – Marty Hoffert, World View OpEd in Nature, 14 April 2011

ONLY A MASSIVE RAMP DOWN AND PHASEOUT OF FOSSIL FUELS OVER THE NEXT 50-100 YEARS CAN PREVENT > 2 DEGREE CELSIUS WARMING (FOR SCENARIOS BASED ON OBSERVED CLIMATE SENSITIVITY)

UPDATED June 2, 2014 | [RELATED ARTICLE](#)



EMISSIONS GOALS

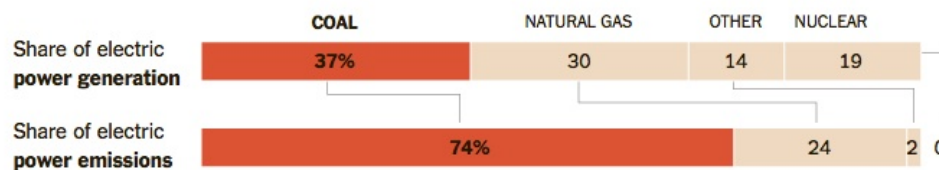
In 2009, President Obama pledged targets for lowering the nation's greenhouse gas emissions. Climate policy experts say that the new rule announced Monday will be essential to meeting the administration's goal.

Carbon emissions from energy consumption



COAL'S IMPACT

The rule will primarily affect coal-fired plants and could ultimately shutter hundreds of them. Coal generates less than half of the country's electricity but nearly three-fourths of its emissions from electric power.



US electricity by source at the turn of the 21st century:

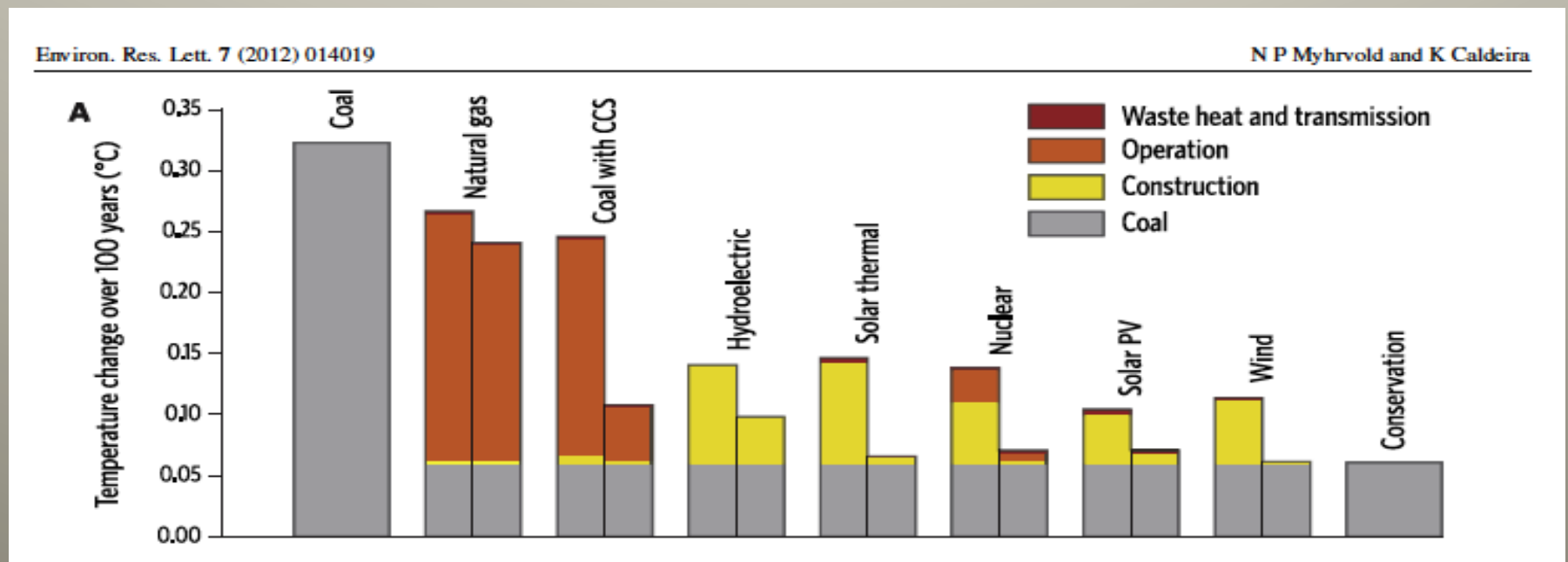
49.2 % coal
 19.9 % nat gas
 19.4 % nukes
 7.0 % hydro
 1.8 % oil
 1.6 % biomass
 0.7 % wind
 0.3 % geothermal
 0.1 % solar

NATURAL GAS DECARBONIZATION?

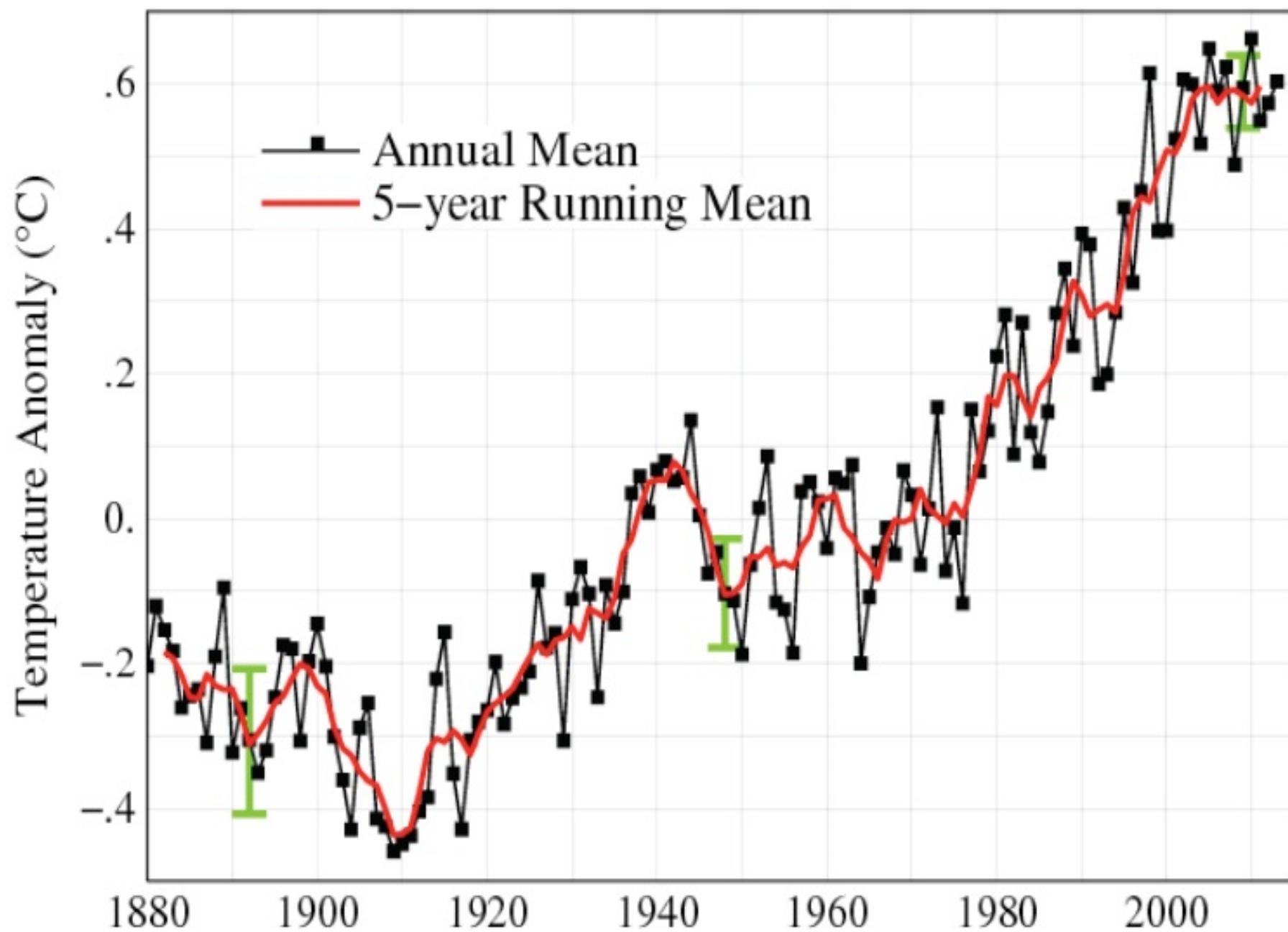
WARMING FROM DIFFERENT ELECTRIC POWER SOURCES

ASSUMES:

- ✧ Electrification of transportation key to massive emission reductions
- ✧ Compares 100 year warming @ 1 Twe for “existing” technologies
- ✧ Conventional extraction/processing; CH₄ from fracked shale & methane hydrates produces MORE warming!



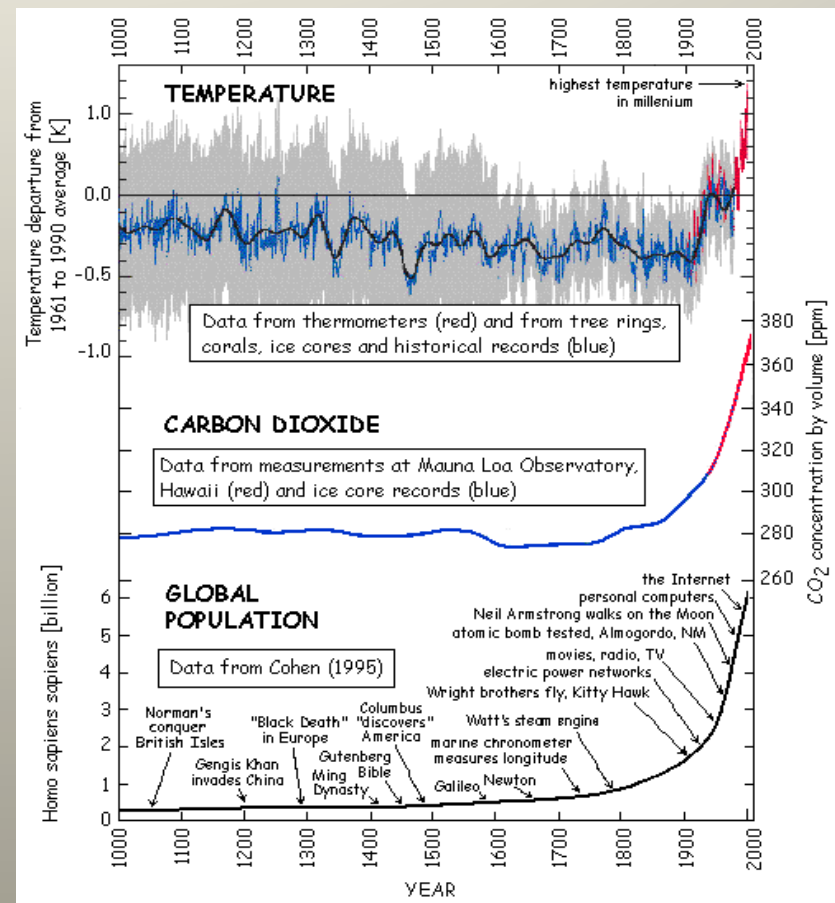
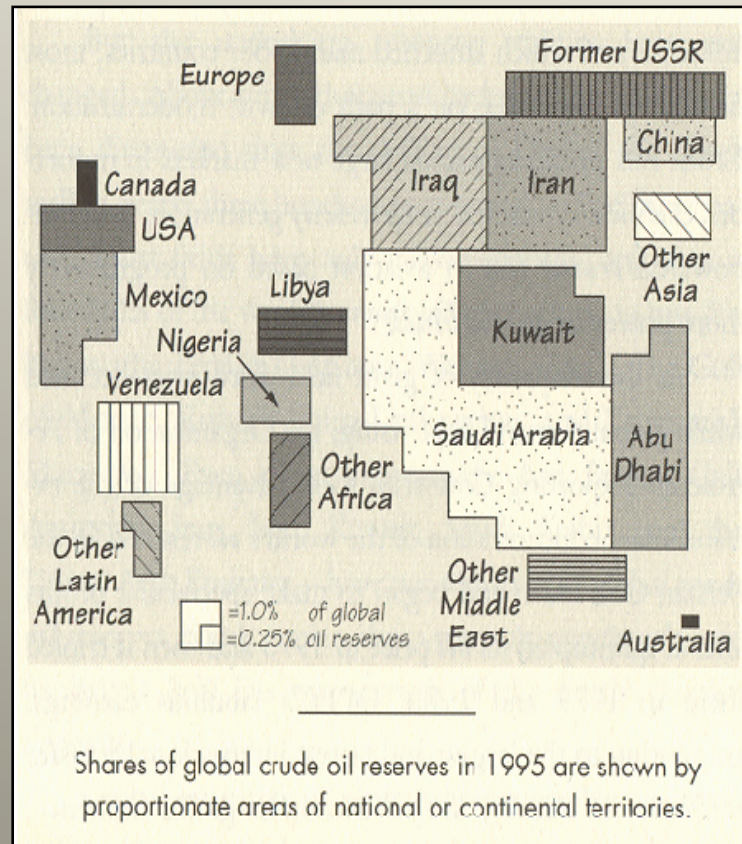
Global Land–Ocean Temperature Index



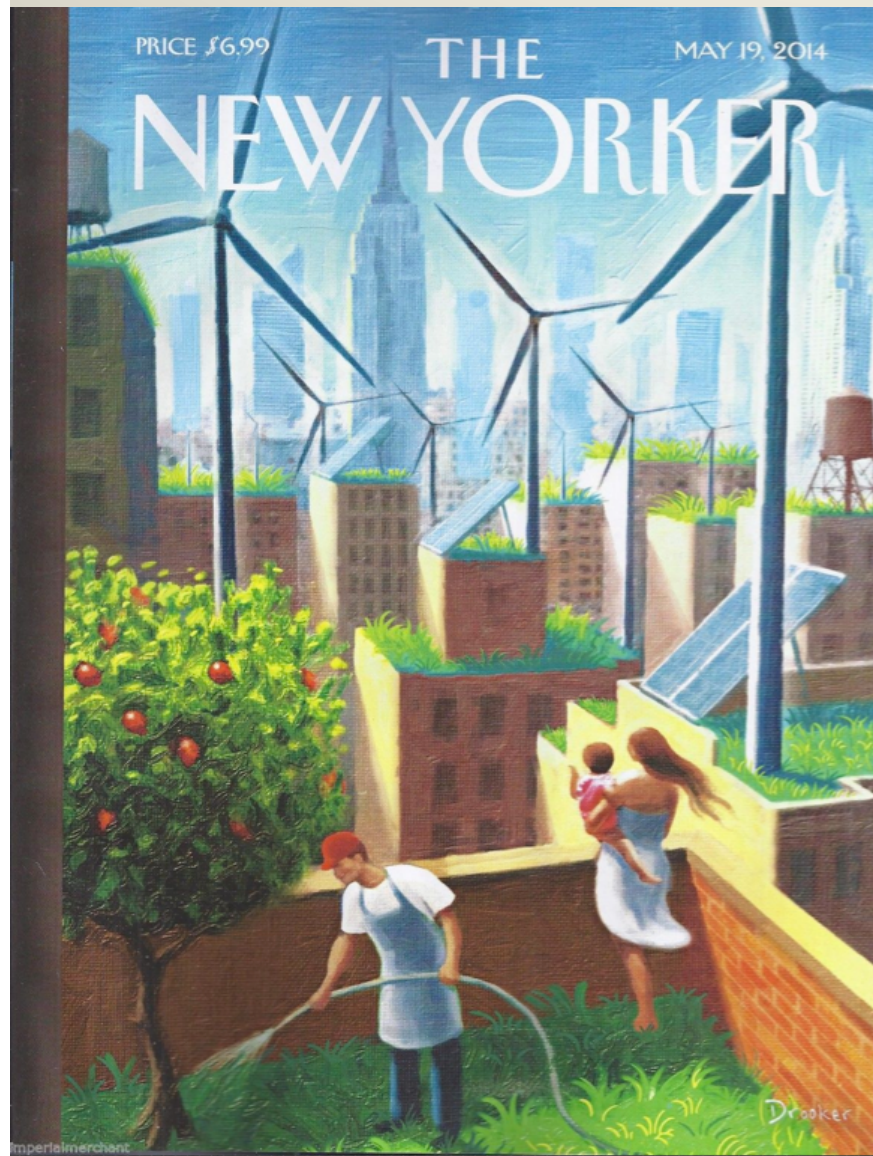
Who Needs Renewable Energy?

Hydrocarbons to Burn?

Global Warming &
The "Hockey Stick"



Twenty Five Years of NYC Rooftop Solar & Wind Fantasy – Ready for Reality?



The author interviewed by Jane Pauley on NBC "Today" in 1979 on decentralized wind power on the roof of the NYU Barney Building



Daniel Libeskind & David Child's design for the 1776 ft tall "Freedom Tower"





✧ Sandy hit 29 Oct 2012. Damage worse than Katrina ~ \$50 billion, consistent with Antropocene. As usual, most climate scientists hedged on attribution per research culture.

✧ But: Why aren't warming seas, higher sea levels, melting Greenland, sea ice, tundra & mountain glaciers; droughts, floods and storms, all predicted decades ago, perceived as a wake up call to transform global energy away from fossil fuels?

✧ Jim Hansen (and others) say 450 is ppm too much: "Game Over." Is Homo sap. too maladapted by evolution to address high tech sustainability? What's wrong with us?



The polarizing impact of science literacy and numeracy on perceived climate change risks

Dan M. Kahan¹★, Ellen Peters², Maggie Wittlin³, Paul Slovic⁴, Lisa Larrimore Ouellette³, Donald Braman⁵ and Gregory Mandel⁶

Seeming public apathy over climate change is often attributed to a deficit in comprehension. **The public knows too little science, it is claimed, to understand the evidence or avoid being misled.** Widespread limits on technical reasoning aggravate the problem by forcing citizens to use unreliable cognitive heuristics to assess risk. **We conducted a study to test this account and found no support for it.** Members of the public with the highest degrees of science literacy and technical reasoning capacity were not the most concerned about climate change. Rather, they were the ones among whom cultural polarization was greatest. This result suggests that public divisions over climate change stem not from the public's incomprehension of science but from a distinctive conflict of interest: between the personal interest individuals have in forming beliefs in line with those held by others with whom they share close ties and the collective one they all share in making use of the best available science to promote common welfare.



SOLAR PANELS
GOING UP
ON SOUTH-FACING
ROOF
OF MARTY & IRIS
HOFFERT'S NEW
FLORIDA HOME:

December 17, 2013

ON TOP OF THE
WORLD COMMUNITY

CANDLER HILLS WEST

8961 SW 86TH LOOP
OCALA FL 34481

352-484-1283

marty.hoffert@nyu.edu
eviliris1@yahoo.com





250 / 6 PL US AC PHOTOVOLTAIC MODULE

AC ELECTRICAL CHARACTERISTICS

AC Output Rating	208 V	240 V
AC Output Voltage (Min/Nom/Max)	183 V / 208 V / 229 V	211 V / 240 V / 264 V
Oper Freq Hz (Min/Nom/Max)	59.3 / 60.0 / 60.5	
Output Power Factor	0.99 min	
AC Max Cont Output Current	1.14 A	0.992 A
AC Max Cont Output Power	238W	
Max Units Per Branch Circuit	24(3 Pole) or 14(2 Pole)	16
Max Overcurrent Protection	20 A	
Total Harmonic Distortion	< 5%	

DC ELECTRICAL CHARACTERISTICS*

Maximum Power Rating	P _{mp} (W)	250
Tolerance of P _{mp}	(W)	-0/+5

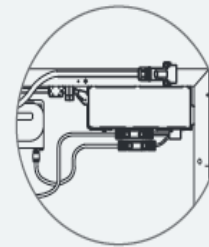
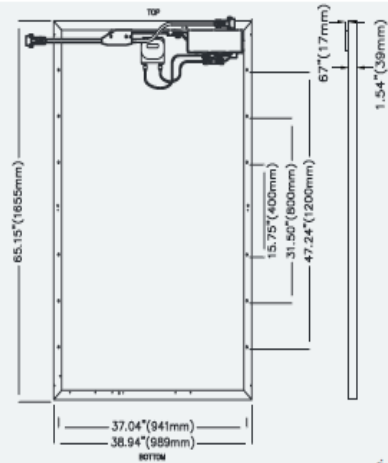
* STC @ 25° C, 1000 W/m², AM 1.5

TECHNICAL FACTS

Number of Cells (Matrx)	60 (6x 10)
Solar Cell Type	polycrystalline
Solar Cell Size (mm)	156 x 156
Solar Cell Size (in)	6 x 6
Dimensions (LxWxH mm)	1655 x 989 x 39
Dimensions (LxWxH in)	65.15 x 38.94 x 1.54
Weight (kg)	21.3
Weight (lbs)	47.0
Module Efficiency (%)	15.3

DC THERMAL CHARACTERISTICS

NOCT	(°C)	+46 ±2
Temperature Coefficient	I _{sc} (%/°C)	+0.05
Temperature Coefficient	V _{oc} (%/°C)	-0.32
Temperature Coefficient	P _{mp} (%/°C)	-0.43



MAGE POWERTEC PLUS AC module with attached micro-inverter



Up to 25% more energy than traditional systems



Easy to install around shaded areas & on complex rooftops



Unmatched 30 Yr. Performance Guarantee



Easy to install reducing costs



24/7 monitoring



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UL1703
UL1741



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Ocala Solar Paradise

LAST UPDATE ON SATURDAY 2014.06.14 AT 1:53 PM

DETAILS



OUTPUT



MOST RECENT

10,087

WATTS

ENERGY GENERATED

TODAY



26.9

KWH

COMPARE WITH:

YESTERDAY



47.6

KWH

WEATHER

F° C°



Partly Cloudy

89.8°F

TEMPERATURE

6:29AM

SUNRISE

8:29PM

SUNSET

EQUIVALENT TO ...



0.02

Tons of CO2

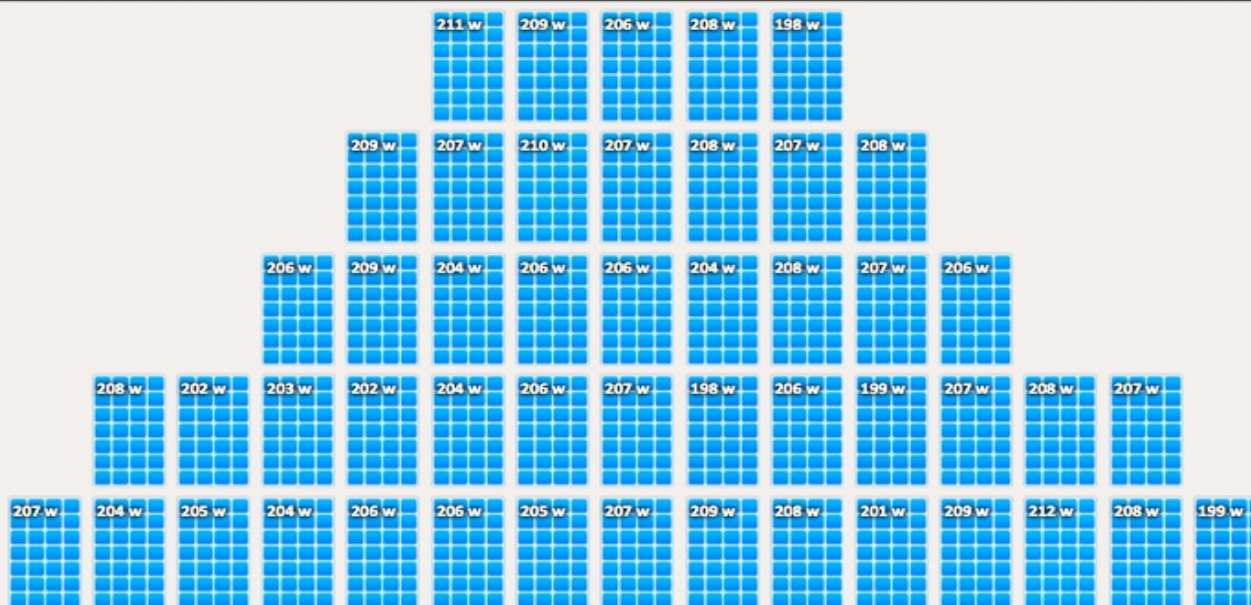


89.8°F Logout Help My Account

Ocala Solar Paradise

LAST UPDATE ON SATURDAY 2014.06.14 AT 1:53 PM

SUMMARY



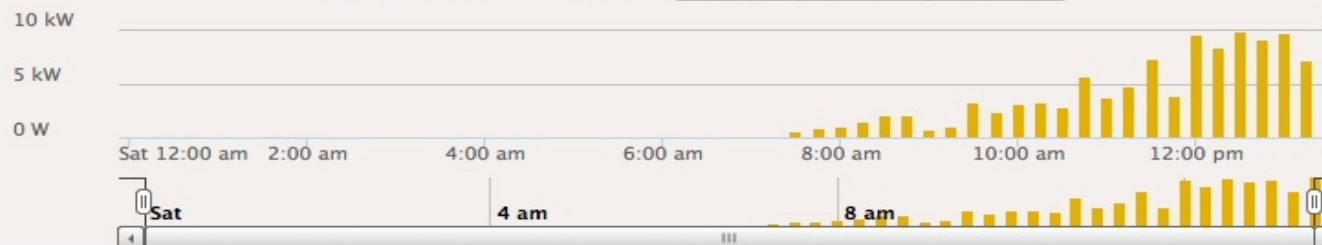
2014.06.14 01:30 PM

POWER OUTPUT

TODAY

7 DAYS

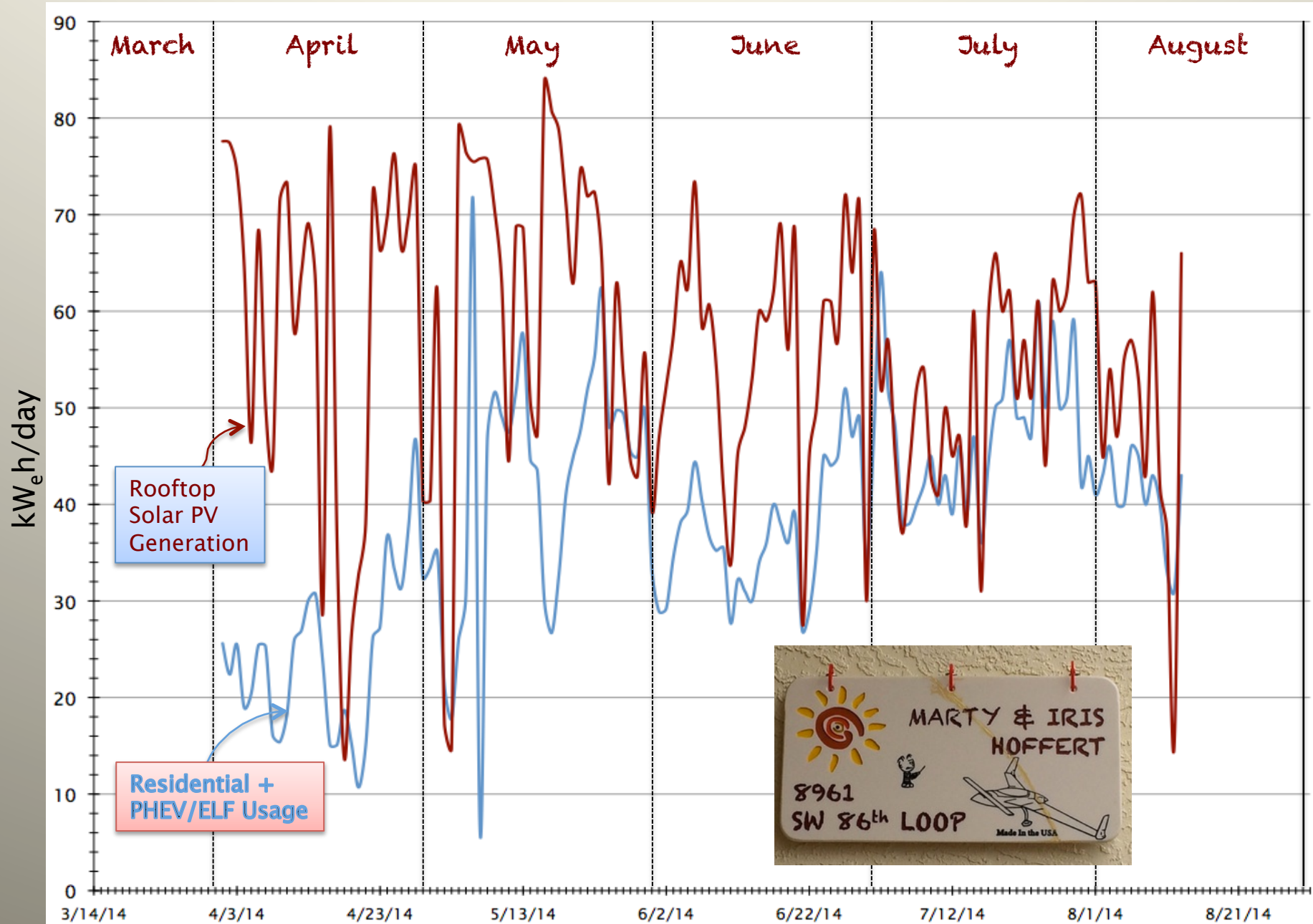
30 DAYS



Site Details

Modules Installed	49
Power	10.1 kW
Energy	
Today	26.9 kWh
Past 7 Days	341.3 kWh
This Month	698.9 kWh
Lifetime	8.13 MWh

SOLAR PRODUCTION AND USAGE IN OCALA PARADISE THUS FAR . . .





WHAT IS THAT?

Your New Buddy, The ELF!

It's called The ELF and it may soon be coming to your own community neighborhood. Two of the solar/pedal hybrid vehicles are already in On Top of The World. OTOW residents Ned Goetz (at right) and Marty Hoffert recently showed off their trikes for *Ocala's Good Life*.

"I didn't want to do the road bike thing anymore," says Ned. "And I didn't like the golf cart because you don't get any exercise."

He says the tadpole-shaped polycarbonate-shelled vehicle provides him with the best of both worlds. When you tire of peddling, you can switch to the ELF's battery-powered motor. In a matter of seconds, you're zipping along at speeds up to 20mph. (With pedaling, we hear you can go as fast as 30mph.) The battery-only travel range is 14-plus miles, probably enough for getting around a typical residential community. Some ELF owners have added extra batteries to increase the range.

As long as you keep the ELF in direct sunlight, a row of solar panels mounted on the roof of the vehicle keeps the battery charged or you can plug it into a standard electrical outlet for a few hours. The vehicle has cargo space for groceries and has many of the safety features you'd find on a regular car, including parking brakes, headlights, taillights, signals, and sideview mirrors.

The base model starts at \$5,000, with tricked-out versions going for up to \$7,000. Ned is a friend of Rob Cotter, the owner of Organic Transit in Durham, N.C., the company that manufactures the ELF. Through this connection he's become sort of an unofficial ambassador for the vehicle, promoting it locally whenever the opportunity arises.

"What I like best about the ELF," says fairly new owner Marty Hoffert, "is that it's really cool!"

WANT TO KNOW MORE?

Visit organictransit.com or call (919) 908-1599.

TAKE AWAY MESSAGES

- ✧ Downramp to near zero emissions 50–100 years hence might still keep global warming < 2 deg C & mitigate scariest irreversible climatic impacts
- ✧ Coal must go; fracked shale gas maybe in transition; sustainable futures are solar, wind, maybe nukes
- ✧ Solar & wind are most ready, as are PHEVs and ELF-like vehicles; Deep storage isn't. So prioritize innovative storage, key to solar/wind base load, as net metering by utility grids saturates
- ✧ Think Globally, Act Locally. Science literacy, logic and imagination all count; But policy must account for naked ape evolutionary psych in collective energy/climate problem-solving.

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