



# THE 21ST CENTURY ENERGY ERA TRANSITION

PT. 1 - WHERE WE'VE BEEN & HOW WE ARE GETTING BETTER

We are experiencing the transition to the Solar Hydrocarbon Era from the Hydrocarbon Era

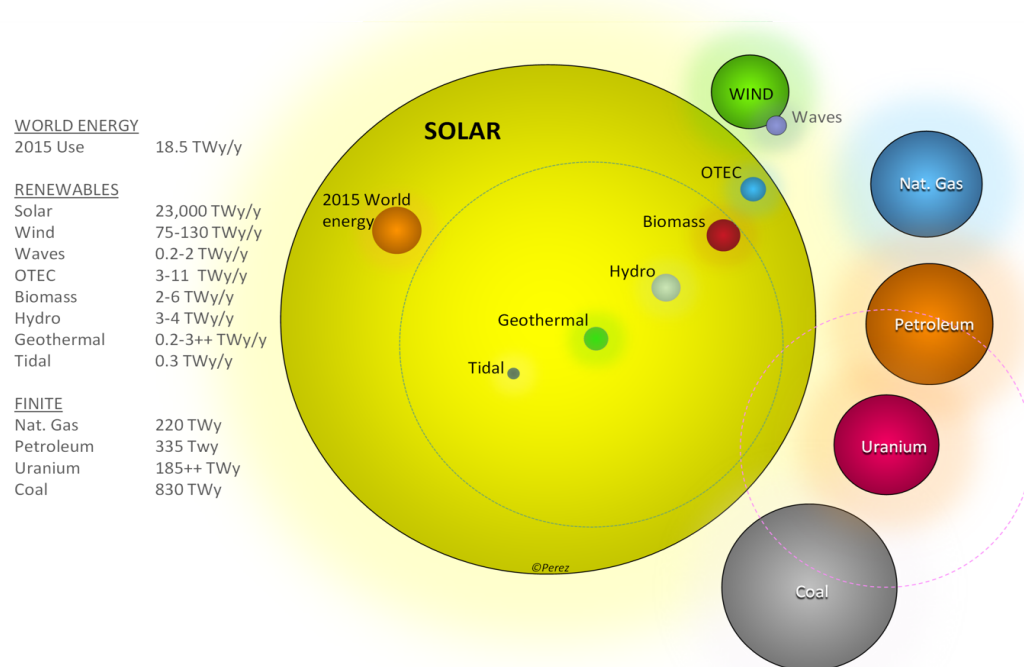
*“The history of human culture can be viewed as the progressive development of new energy sources and their associated conversion technologies. These developments have increased the comfort, longevity and affluence of humans, as well as their numbers.”*

Oil & Culture | Nature | Volume 426 | 20 November 2003

AN ‘ERA’ IS A NOUN MEANING (1) a long and distinct period of history with a particular feature or characteristic and (2) a system of chronology dating from a particularly noteworthy event.

**1) THE HYDROCARBON ERA** We mastered fire and unlocked the solar energy stored in wood. As knowledge of chemistry and earthly substances grew, we unlocked ever denser fossil fuel resources, concentrations of solar energy stored in the molecules of peat, coal, natural gas, and petroleum. Annually, hydrocarbons supply approximately 80% of the energy that generates the electricity powering our lifestyles.

**2) THE BLENDED SOLAR HYDROCARBON ERA** commenced when the process of generating electricity from sunlight was validated and proven to be scalable. Although Einstein explained the physics in 1905, it took until 1954 for Bell Labs to build a workable prototype (it still works). Now, the world’s trillion watts of Solar PV (as of 2019) are converting sunlight to usable electricity everywhere.



## SPHERES\*

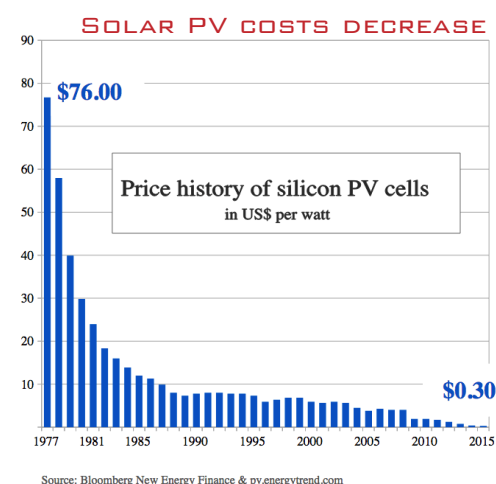
**2015 WORLD ENERGY USE** was 18.5 terawatt years per year of which hydrocarbons supply 80% or 14.8 TWy/y.

**HYDROCARBONS:** Proven hydrocarbon reserves include Coal (830 TWy), Petroleum (335 TWy) and Natural Gas (220 TWy) for a total of 1,385 TW/y. If global consumption remains flat at 18.5 TWy/y, and hydrocarbons supply 80%, that is a 93.5 year supply.

**SOLAR:** Solar’s annual potential is 23,000 terawatt years. That is over 1,000 times global consumption each year. Solar is proven, clean, carbonless, and super-abundant.

\* First published in 2009, Spheres was updated in the International Energy Agency’s SHCP Newsletter No. 62 as “Update 2015 -- A Fundamental Look at Supply-side Energy Reserves of the Planet.” Used with permission.

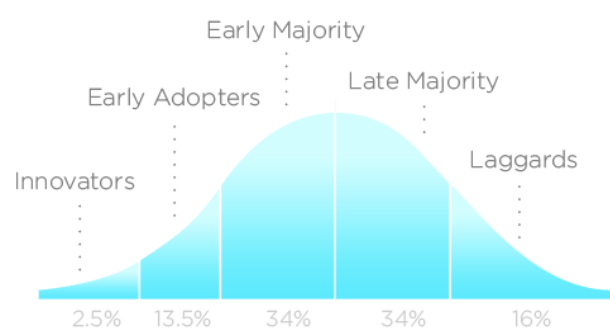
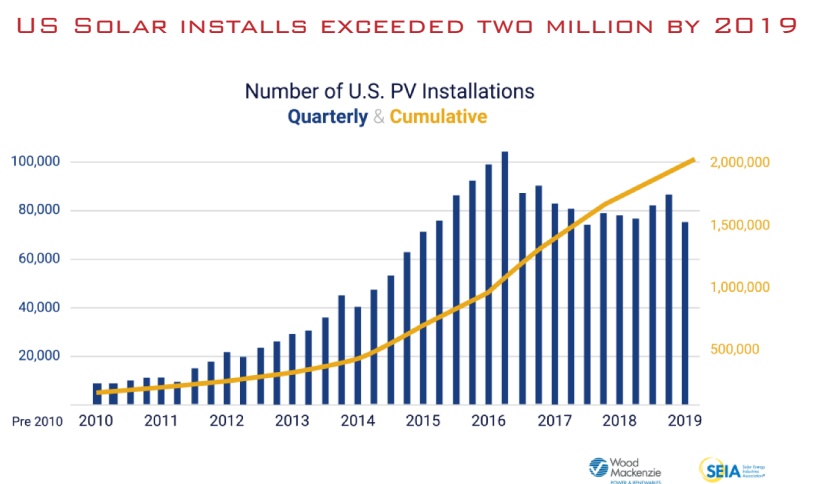
*“... the solar resource dwarfed all other renewables, fossil fuels, and nuclear by orders of magnitude.”*



To all the earth’s energy resources, we now add those of the sun.

It is The New Era.

Tell everyone!



SOLAR HAS PASSED THE INNOVATOR STAGE AND IS NOW IN THE EARLY ADOPTER PHASE. THE INNOVATOR PHASE AMOUNTED TO 1.75 MILLION BUYERS (2.5% DOE EST. 70 MIL. POSSIBLE US SOLAR INSTALLS), AT 13.5%, THE EARLY ADOPTERS = 9.54 MILLION. AT 5X WHAT HAS BEEN BEFORE ...

THERE IS ‘MUCHO’ ENERGY IN THE SUN.

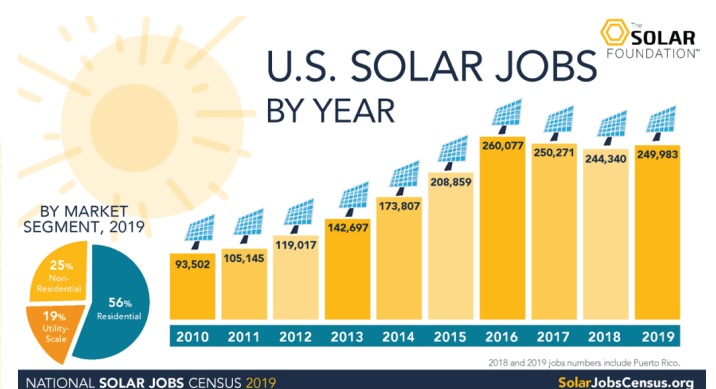
**JUST THE FACTS**

**400** Energy consumed in all forms by the human race per year (Quadrillion BTUs)

**936** Solar energy hitting the face of Earth every hour (Quadrillion BTUs)



## SOLAR CREATES JOBS.



The Best is Yet To Come!