

## Re: Future cars will be 100% electric cars

---

*Source:* <http://sci.tech-archive.net/Archive/sci.energy.hydrogen/2005-05/msg00096.html>

---

- *From:* "William Mook" <[william.mook@xxxxxxxxxxxxxxxxxxxxx](mailto:william.mook@xxxxxxxxxxxxxxxxxxxxx)>
  - *Date:* 18 May 2005 03:08:58 -0700
- 

Well, the on-line power use curve will begin to look more and more like a constant, and that constant will be lower than the peaks on the present curve.

What is a power use curve?

An industrial society has a characteristic power use curve. This 'M' shaped curve rises steeply from a very low level just before sunrise as people get up and prepare for the day. It drops around lunch time when everyone goes to lunch, but not so many travel. Then, it rises again after lunch, peaking after sunset just before people retire to bed, where it drops to a low level again.

Clearly, with large capacity energy storage available in every single vehicle – as you propose here – cars can charge automatically in their garages over night. The power grid certainly can handle the load. In fact, capital use rates will improve as equipment can now run 24/7. Actually, with large-scale investments in large capacity energy storage in every person's possession the power grid will trend toward a constant value. That constant value will have the same area under the curve as the 'M' shaped curve described here, so the average over 24 hours will be LESS than the peaks.

What will the impact be then of every car in America having a super-storage device and running on electricity? It will be a REDUCTION in the present electrical distribution capacity as America's energy use rates drops to a constant value – while cars charge at lunch and at night. In fact, large-capacity, ubiquitous, low-cost energy storage – if it were possible – would be used by the energy company themselves to reduce capital investment in generation and distribution systems accelerating this trend toward constant efficient use of existing power generation capital.

Since the cost of coal – which provides 53% of America's electricity – is less than that of oil – the average 'fuel' bill for electric autos is less than that of oil burning autos. Carbon emissions are higher though for a given energy, since there is little hydrogen in coal.

Of course, if we could produce electricity very cheaply without

## Re: Future cars will be 100% electric cars

subsidy, from nuclear or solar sources, the situation changes. A national grid replete with super-batteries would be ideally suited for conversion to some sort of solar panel system – provided the panels can be gotten cheaply enough. That way we could wire the sunny regions of the world, charge batteries in these regions with solar panels, and discharge the batteries constantly into the home based, office based, factory based batteries – to make use of this energy. This would allow us an industry that didn't pollute at all. Some fossil fueled and other plants would be retained, to provide backup in case of grid failure –at critical points.

This rube goldberg contraption would precede a more efficient system of beamed energy from space. Here, a greater number of clear regions would receive power on demand from space via phase conjugate laser beam. This reduces the amount of energy storage needed on the ground as well as the area of collectors. It also opens up the potential for laser driven aircraft coming into widespread use, and ultimately a laser powered rocket in every garage.

Here, sunlight is captured by inflatable mirrors and focused to a point where a solar pumped laser resides. The power beam generated by this laser passes through a phase conjugate mirror which without any outside laser, disperses the beam back toward the sun. But, if the phase conjugate mirror receives a low-powered pilot beam on the ground, the phase conjugate mirror is arranged so that a portion of the total power beam is directed back toward the point of origin of the low powered pilot beam. So, a person anywhere on Earth with a clear view of the satellite can draw down lots and lots of power from it with a low powered laser beam. The laser beams and the photovoltaic conversion device, all operate at the same wavelength, and thus provide very efficient conversion of laser energy to electricity. Other direct conversion process, such as conversion of laser energy to heat or light using dyes to create white light – are also very efficient. Wires thus are replaced with highpower optical fibers, and the entire system can grow more dispersed and require less capital than formerly.

Ultimately of course this phase conjugate process of controlling laser energy can be adapted to a population of dispersed lasing elements creating from a cloud of microsattellites an large effective optical area. This can be adapted to create a shell around the sun some 1 million miles in radius that in principal could intercept the entire energy output from the sun. This energy would be beamed to reforming satellites orbiting human occupied planets, which would beam the energy to user networks in human occupied space.

So, energy use can be seen to increase in the following way;

- 1) pre-auto – 1
- 2) auto based – 10
- 3) aircraft based – 100
- 4) orbital spacecraft – 1,000

Re: Future cars will be 100% electric cars

- 5) interplanetary travel (slow) 10,000
- 6) interplanetary travel (fast) 1,000,000 (constant gee)
- 7) interstellar travel (local/slow) 10,000,000

Since the US and its allies are the only population centers that have popular widespread access to autos, and this constitutes less than 10% of the world's population, ending our dependence on fossil fuels by substituting sunlight for those fuels, creates the potential of increasing energy usage some 5x to 10x from the present levels. This also suggests that income and productivity can increase 5 to 10 times as well. So, the world's \$40 trillion economy might be able to grow to \$200 trillion to \$400 trillion in a short period of time – if we provide the world with low-cost solar energy. Energy consumption might rise from the present \$800 billion to about \$8 trillion in this scenario – making the terrestrial solar energy companies the largest on Earth – and families worldwide enjoying incomes averaging \$100,000 per year.

Low cost beaming of energy from space increases power usage to 100x today's level – and just as autos and industry increase living standards while increasing energy use, so too does widespread use of automated aircraft and zero emission industry. In a world where energy is beamed from space by lasers – and everyone has a ballistic missile they can ride to any point on Earth in minutes – where SDI and nuclear missiles are an object of history – we might expect a global economy of \$4 quadrillion and an energy sector worth \$80 trillion – in today's numbers. This makes the average family income of \$1 million. This is helped along by widespread use of tele-robots to later be replaced by autonomous robots.

Beaming energy from nearer the sun's surface to planet of use – permits further rises in living standards and range of travel – along with energy use. Here, we can economically retrieve material from the asteroid belt and place it in Earth orbit, we can make remotely controlled factories that make use of this material in space, powered by laser beam – and then drop finished goods anywhere on Earth – without the need of mining or polluting the Earth in any way. Material can also be used in space to grow the orbiting industrial infrastructure. Here biomes grow massive areas of crops and forests in space in an environment untroubled by clouds weather or adverse conditions found on Earth. So, the need to cultivate the Earth for any reason disappears – as food and fiber arrive from space based assets.

Even the need for roads disappear as widespread use of air and rocket travel grows. So, people disperse over the Earth's surface – provided for from space based assets – with very little except very luxurious homes in a vast global sized nature preserve to show for it.

So, that's the consequence –and a few hundred steps after – of widespread use of highly efficient batteries – providing of course such batteries are even possible.

This would allo

Of course with batteries in every home, office and car, the situation

---

• **References:**

- ◆ **Re: Future cars will be 100% electric cars**
    - ◇ From: Baby Elian
  - ◆ **Re: Future cars will be 100% electric cars**
    - ◇ From: Dan Bloomquist
  - ◆ **Re: Future cars will be 100% electric cars**
    - ◇ From: William Mook
  - ◆ **Re: Future cars will be 100% electric cars**
    - ◇ From: M Souness
- 
- Prev by Date: **Re: About safety: hydrogen vs gasoline**
  - Next by Date: **Re: About safety: hydrogen vs gasoline**
  - Previous by thread: **Re: Future cars will be 100% electric cars**
  - Next by thread: **Re: New Fuel Cell and Hydrogen News Site**
  - Index(es):
    - ◆ **Date**
    - ◆ **Thread**