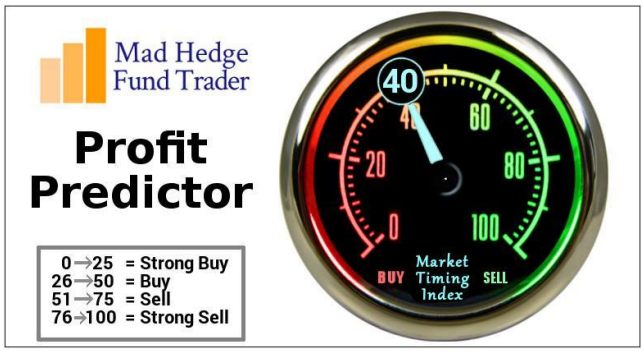
Global Market Comments
April 30, 2023
Fiat Lux

Featured Trade:
(TSLA)
(REITERATION OF MY $1,000 TARGET)



1) *Tesla Special Report: From Here to the Future*

When Elon Musk personally invited me to tour his Gigafactory in Sparks, Nevada, I thought, "How could I pass on this?" He had read my recent report on Tesla and thought the more I know about Tesla the better.

I couldn't agree more.

As I approached the remote facility 20 miles east of Reno, I spotted a herd of wild Mustangs on the red volcanic hills above. I thought it was a great metaphor for our rapidly evolving transportation system, from horse to all-electric in 100 years.

There are no signs to the Gigafactory until you approach the main gate. I had to find it with my GPS after inputting longitude and latitude. When you upset the apple cart for the global energy system you make a lot of enemies. Once in, no cameras are allowed.

What I found inside what much what I saw at the original Fremont, CA factory 15 years ago: an army of robots building machines. The factory is in effect a machine that makes machines….by the millions. Occasionally, a worker would swan past with an oil can in his hand and squirt some lubricant into an important joint, then swan away.

If you want a view of the future, this is it.

Elon does nothing small.

The present factory occupies about 2 million square feet or about 33 football fields. Some 60% of the world's lithium-ion batteries come out of this one place right now, which are devoted to Tesla Model 3's and Powerwalls, of which I own six. Japan's Panasonic, which has the contract to supply the batteries, occupies a substantial part of the factory space.

When completed, it will occupy 6 million square feet, making it the world's largest building. The planet's greatest solar array sits on top, making the entire facility energy neutral when combined with local windmills. The plant is fully automated and runs 24/7. There are still a few of those pesky humans around to perform complex tasks which robots can't do….yet.

The State of Nevada just granted Tesla a ten-year tax holiday to start the second phase, which will employ another 5,000. Whole cities are being carved out of virgin desert to accommodate them, so the entire city of Reno is rapidly marching east. Burger Kings, Taco Bells, Subways, and Chinese and Mexican restaurants are popping up in the middle of nowhere.

It's all coming into place to assure that Tesla meets its 1.8 million vehicle target for 2023, up 40% from 2022. The last time someone had a technology lead this great was in 1913 when Henry Ford launched assembly lines that mass-produced Model Ts for the first time. He offered them for $400 each and doubled his workers' pay to $5 a day to buy them. This gave Ford a 75% share of the US car market for two decades.

Elon Musk will achieve the same.

When I heard that the February 28 Tesla Investors Day in Austin, TX was boring, I was highly suspicious. I thought that might be a journalist's snap judgment with a strong background in creative writing.

Engineers and scientists might have a different take, I thought. So, I listened to the entire 3 ½ hours and copied all the important charts.

What I heard was nothing less than earth-shaking, groundbreaking, and revolutionary, and won't cost more than we would spend otherwise. All we have to do is spend more intelligently.

Elon Musk unveiled his Master Plan 3 and unleashed a cornucopia of new data which only an immense amount of research can produce. This will require all forms of transportation to be electric powered within 20 years, except for interplanetary rockets.

As anyone who has been through an advanced physics course can tell you, internal combustion engines are woefully inefficient, converting only 25% of their energy into forward motion, and 20% if you include materials energy costs. But, that was the best the 19th century could do and it worked for 151 years (Nicolaus Otto built the first gasoline-powered internal combustion engine in Germany in 1872).

Electric motors in Teslas operate closer to a 50% efficiency rating, cutting energy demand by half right there.

To move the world to an all-electric economy will cost about $10 trillion, or about 10% of world GDP. Average that out at 0.5% per year and it will take about 20 years. Adding up car and storage batteries means 24 terawatts worth of batteries will need to be manufactured. There are one trillion watts per terawatt.

By comparison, the sun produces 1 gigawatt of energy per square kilometer per day or 509,600 terawatts. That means an all-electric economy dependent on batteries equivalent to less than 0.1% of the sun's daily output. In other words, it's minuscule.

In fact, the world is already decarbonizing far faster than people realize.

There are currently 2 billion cars and trucks in the world, 85 million a year are manufactured, and some 16 million in the US. Global EV production came to 10.6 million vehicles in 2022, an increase of 22%.

Some 60% of new electricity generation installed last year came from alternatives. That's because in terms of power output alternatives are 40% cheaper than oil, coal, or natural gas. That's being generous as it does not include the health care costs of carbon-based energy, which make several hundred thousand people per year ill in the US alone (asthma, lung cancer, etc.).

This means that a heck of a lot of lithium is going to be needed. Soft, white lithium is number three on the period table (you're talking to a chemist here), is a great oxidizer, and is anything but rare. What ***IS*** rare is the lack of environmental controls and cheap labor.

This is why the bulk of lithium is produced by China and South America where it literally sits on the surface. This is all easily scalable to meet future demand. In fact, moving to an alternative-based world uses far less mining than the existing conventional one.

The shortage is not in lithium supply but in lithium processing. The world's largest lithium consumer should know. Musk recently announced they would move into lithium processing.

Home heating is another challenge. Existing heat pumps, which I have, do a great job heating in winter and cooling in summer in southern and western states where the weather is mild. These use only one-third of the energy used to heat homes with oil and natural gas. States facing subzero temperatures are another story. This problem can be solved with a fundamental redesign of the heat pump hardware.

Here, was a big surprise for me. EVs are not going to create an exponential demand for lithium. Once you get up to a total installed base of 40 million batteries, recycling becomes the primary source of lithium as batteries age out. They can then be reprocessed into new batteries. This eventually caps lithium demand. Future cars will use far less silicon carbide, further reducing its demand by 75%, saving $1,000 a car.

Musk is dumping the traditional 12-volt lead acid battery all Teslas have now which accounts for 87% of all start failures. Instead, he is adding a second small

lithium-ion one and redesigning the electrics to take 48 volts. This means lighter-weight cables can handle more power at less cost. Musk hopes to force the entire auto industry to move to a 48-volt standard, which should have been done decades ago.

The world's 4 million Teslas now drive 123 million miles a day and represent the largest AI neural network on the planet. If a car in Florida makes a left turn, all the cars in the rest of the country learn from that experience.

Tesla now has 80,000 chargers in the US, including 40,000 superchargers, which can charge up to 450 miles per hour and give you a full charge in 40 minutes. Tesla charged cars with 7 terawatts of power in 2022 and per kilowatt costs have dropped by 40%, with charge times down 30%. Tesla is well on its way to becoming the largest electric power utility in the United States.

Tesla's current manufacturing capacity is 2 million cars a year across four factories (Fremont, CA, Austin, TX, Berlin, Germany, and Shanghai, China). While it took Tesla 12 years to make its first million vehicles, the 4th million took only seven months. As of today, it is cheaper to own a Tesla than the world's biggest-selling car, the Toyota Corolla, given their total lifetime costs. Work out the cost of charging a Tesla and you are paying the equivalent of 25 cents a gallon for gasoline unless you are at my house, in which case it is free.

The Gigafactory in Sparks, NV, which mass produces lithium-ion battery packs, is currently being doubled in size. In Texas, Tesla is buying wind power from the grid and offering Tesla owners a flat rate for charging of $30 a month because the cost is so low.

There are great hopes for the Cybertruck, for which Tesla has 1.5 million orders, myself included. The final price for the three-motor version will be about $100,000, the same as for a model X. The Cybertruck will have a brand new third-generation platform on which all future Tesla models will be based. It will also include the 48-volt electrical design.

Tesla's price cuts have been wildly successful, allowing it to gain market share at its competitors' expense. Tesla is really just passing on the recent collapse in commodity prices. So far in 2023, Lithium prices have fallen by 20% and copper by 15%. Tesla prices will continue to fall, especially when the new $25,000 Model 2 is brought to market in 2024. That will really decimate the competition.

Tesla has also taken the plunge into the insurance industry, charging drivers on their actual driving history, which they already collect. If you drive like a little old lady, it can run as little as $180 a month. If you drive like Mad Max, it's more, but not as much as a conventional car insurance company.

Rates change monthly depending on your driving record. Parked in a garage gives you a perfect score of 90 and it drops from there. It's all about reducing the total cost of a Tesla car. Not such a bad deal if you let their computer do all the driving.

What will Tesla disrupt next?

All in all, it was a breathtaking presentation, which Elon delivered coolly and calmly. It is with the greatest enthusiasm that I reiterate my **$1,000 per share price target.**

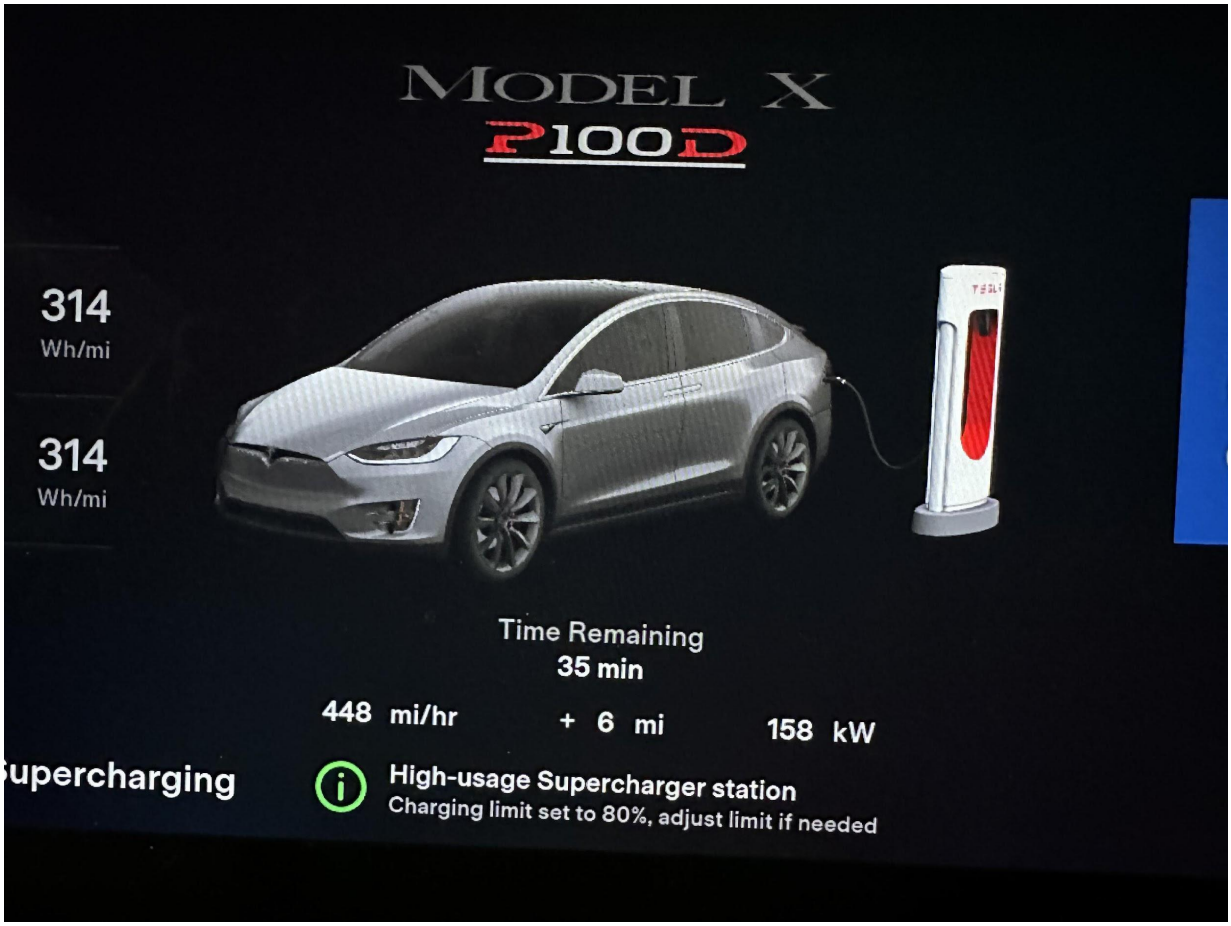
To watch the Tesla Investor Day in its entirety on YouTube please click here at https://www.youtube.com/watch?v=Hl1zEzVUV7w

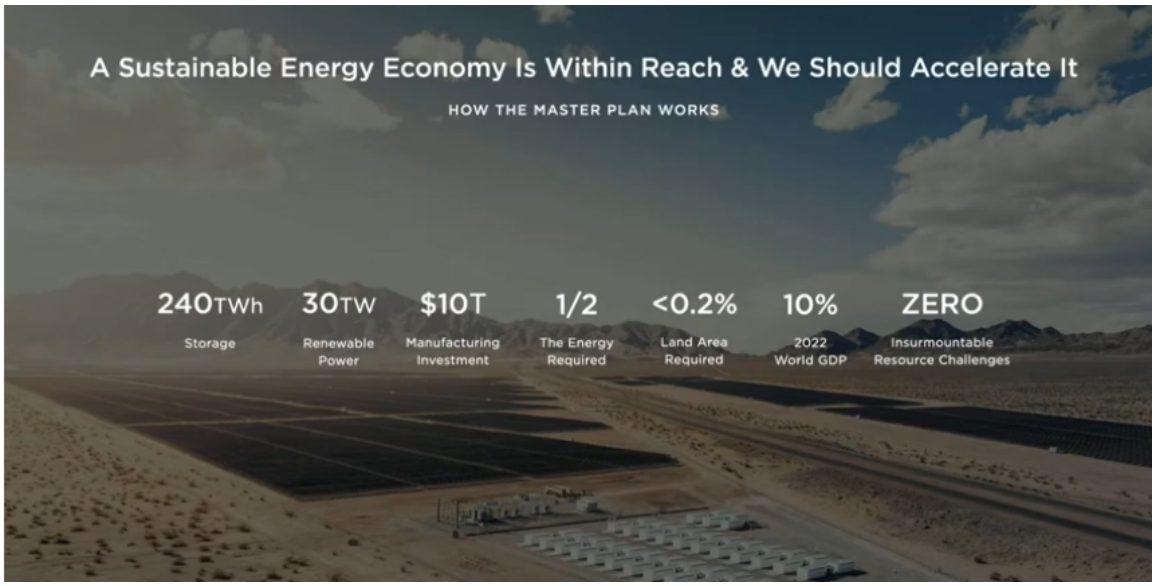
John Thomas
CEO & Publisher
The Diary of a Mad Hedge Fund Trader

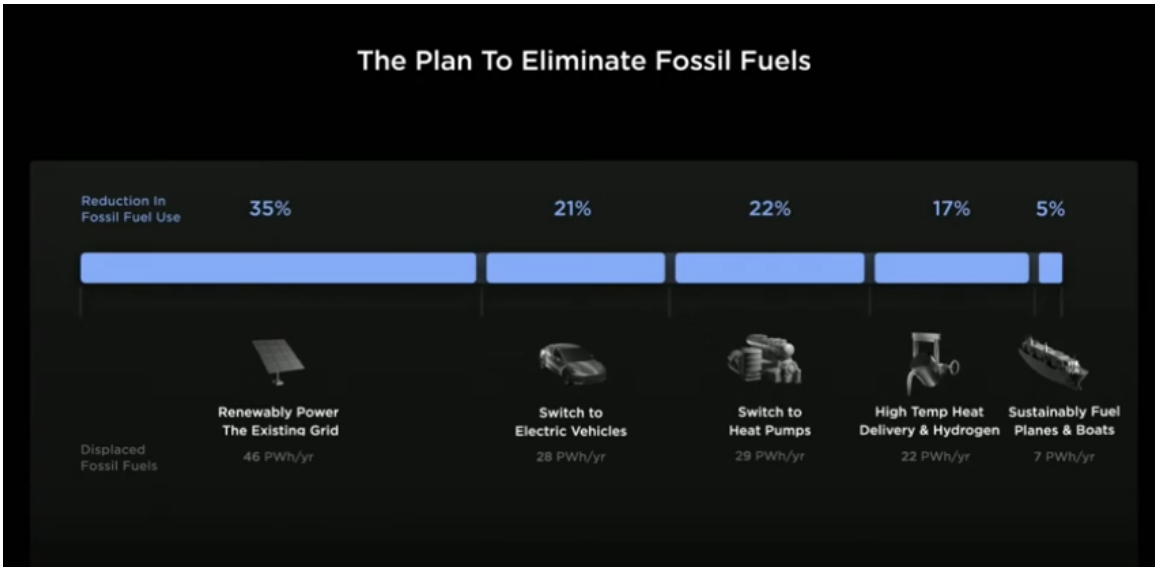
At the Gate in Sparks Nevada

Sparks Nevada Gigafactory


TSLA Tesla Inc. Nasdaq GS
©StockCharts.com
14-Apr-2023
Open 179.94 High 191.58 Low 176.11 Close 185.00 Volume 617.5M Chg -0.06 (-0.03%)
RSI(14) 47.71
TSLA (Weekly) 185.00
MA(50) 217.78
MA(200) 176.93
Volume 617,545,920
MACD(12,26,9) -6.773, -12.479, 5.706
21 F M A M J J A S O N D 22 F M A M J J A S O N D 23 F M A

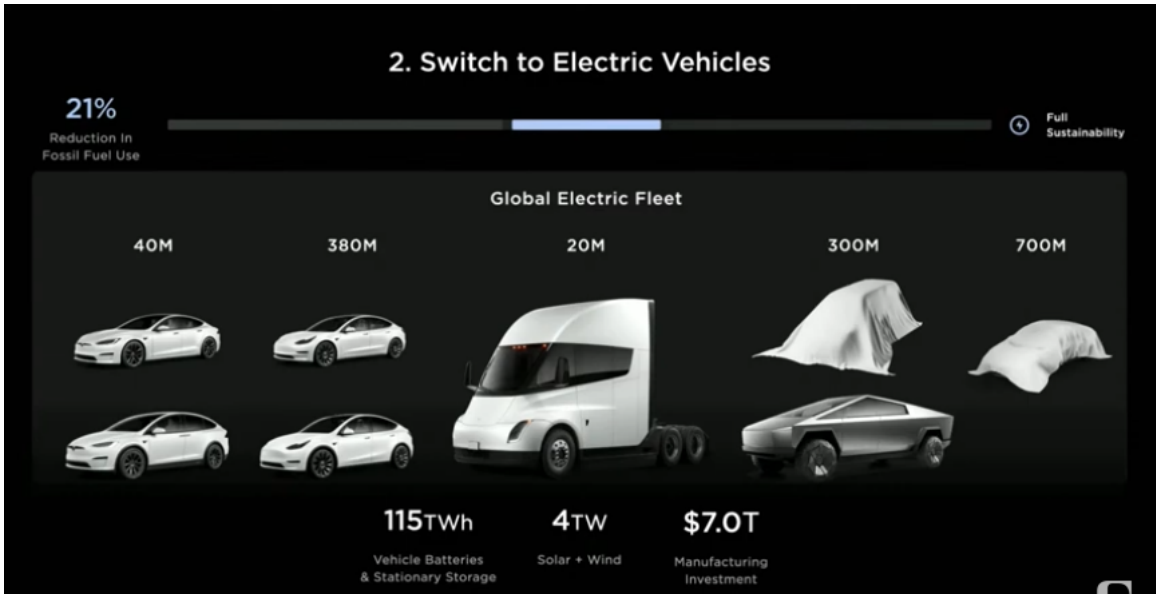

MODEL X
P100D
314
Wh/mi
314
Wh/mi
Time Remaining
35 min
448 mi/hr
+ 6 mi
158 kW
upercharging
High-usage Supercharger station
Charging limit set to 80%, adjust limit if needed

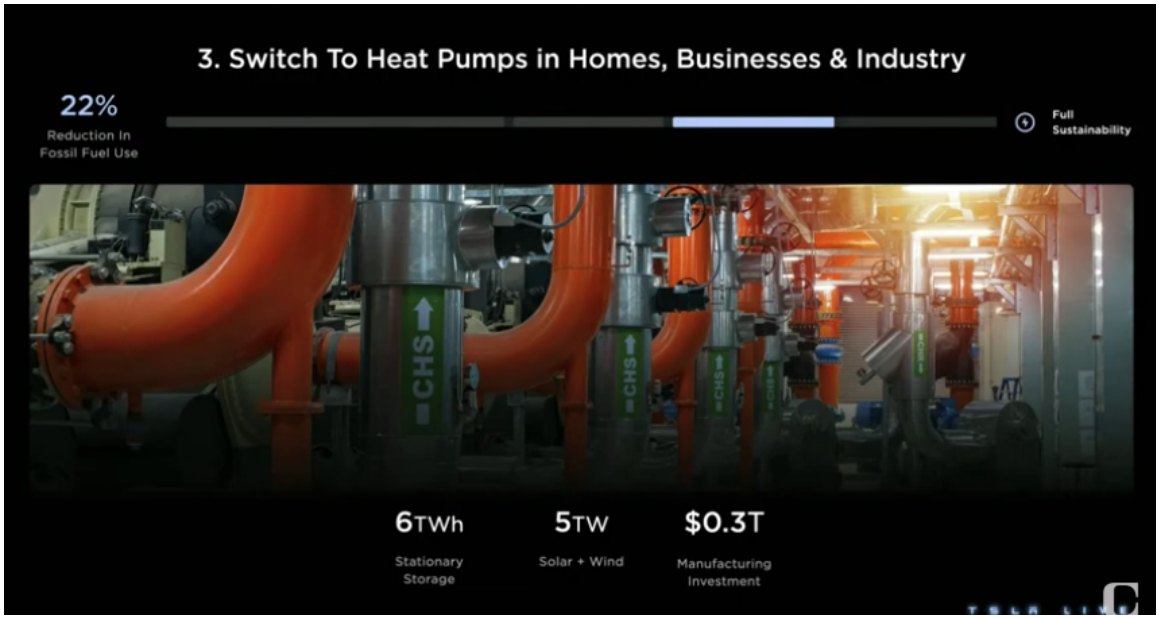

A Sustainable Energy Economy Is Within Reach & We Should Accelerate It
HOW THE MASTER PLAN WORKS
240TWh
Storage
30TW
Renewable Power
$10T
Manufacturing Investment
1/2
The Energy Required
<0.2%
Land Area Required
10%
2022 World GDP
ZERO
Insurmountable Resource Challenges

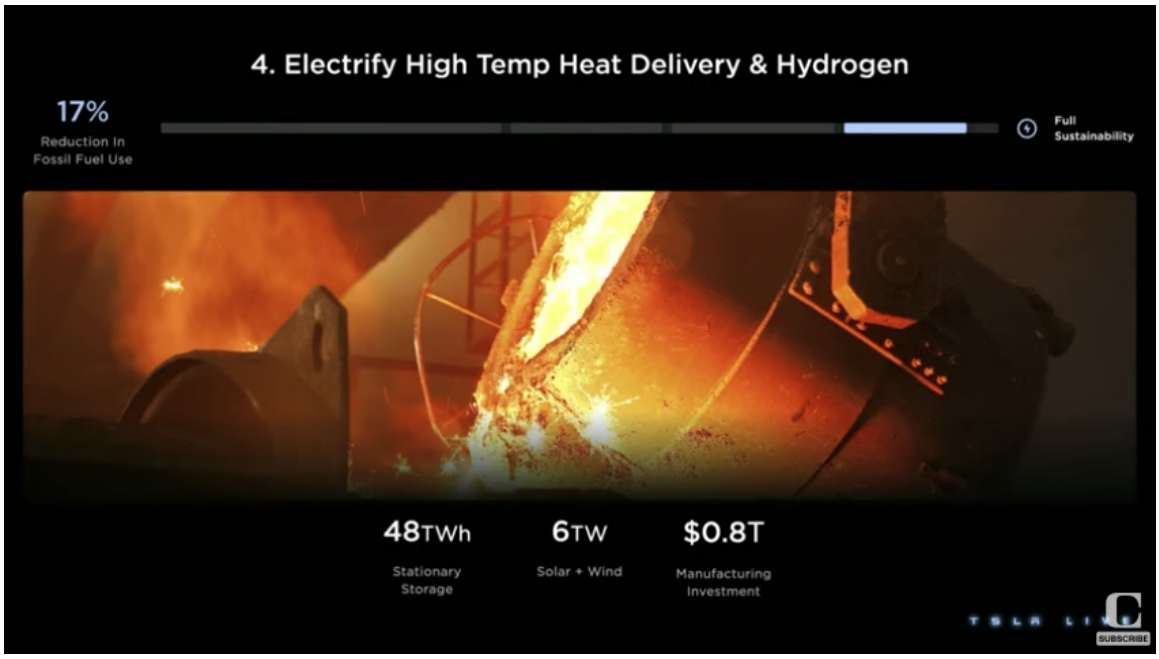

The Plan To Eliminate Fossil Fuels
Reduction in Fossil Fuel Use
35%
21%
22%
17%
5%
Renewably Power The Existing Grid
46 PWh/yr
Switch to Electric Vehicles
28 PWh/yr
Switch to Heat Pumps
29 PWh/yr
High Temp Heat Delivery & Hydrogen
22 PWh/yr
Sustainably Fuel Planes & Boats
7 PWh/yr
Displaced Fossil Fuels

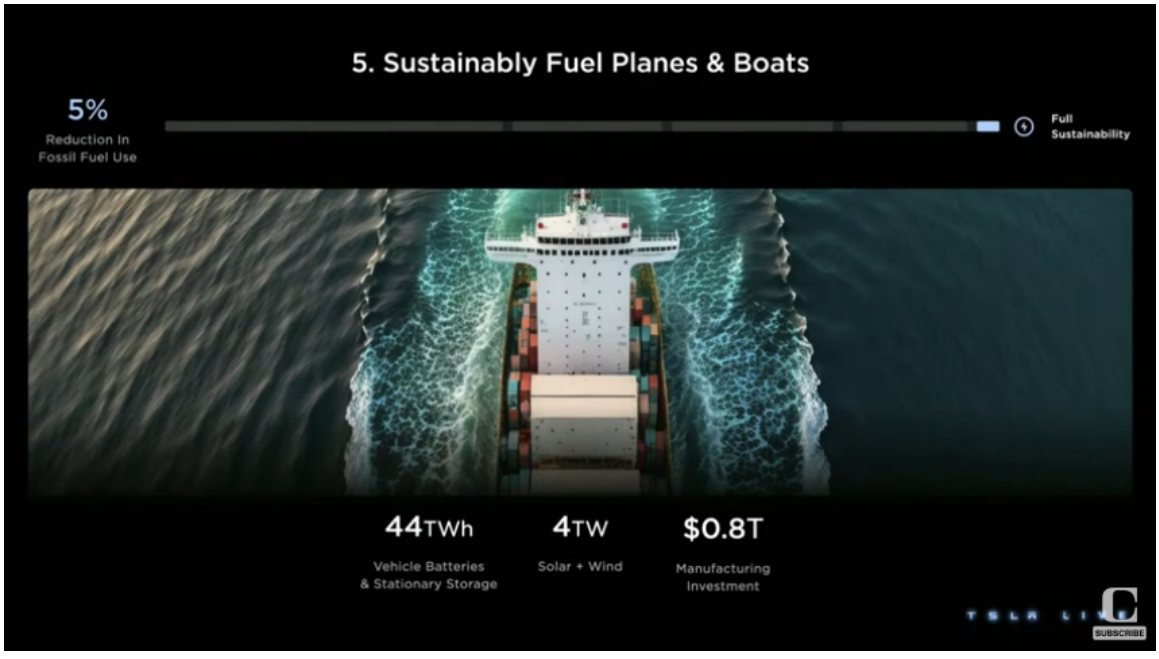

1. Repower the Existing Grid With Renewables
35%
Reduction In Fossil Fuel Use
Full Sustainability
24TWh
Stationary Storage
10TW
Solar + Wind
$0.8T
Manufacturing Investment

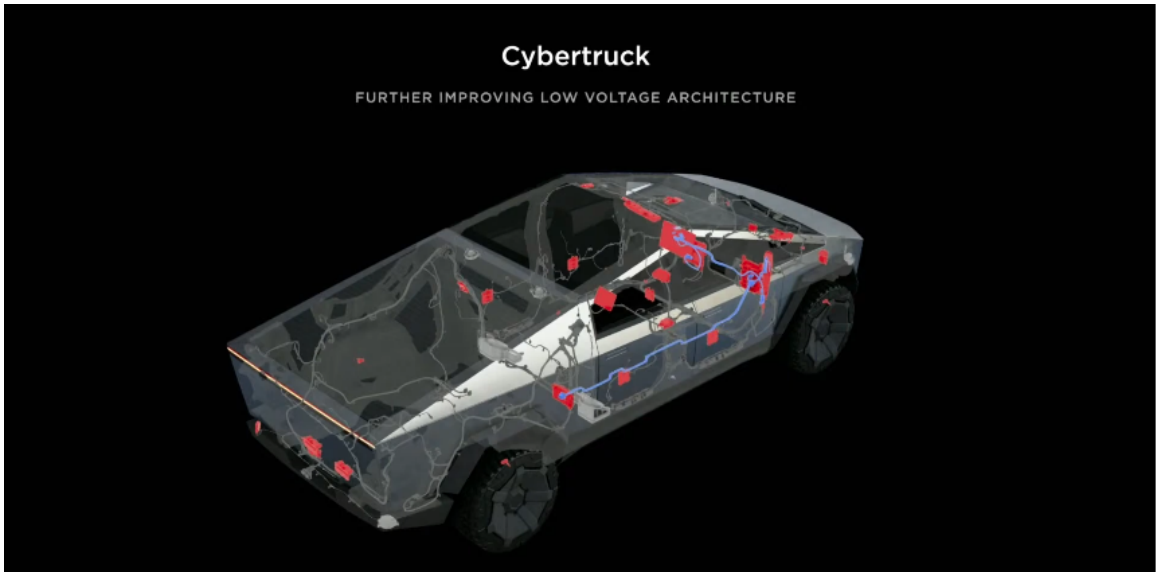

2. Switch to Electric Vehicles
21%
Reduction In Fossil Fuel Use
Full Sustainability
115TWh
Vehicle Batteries
4TW
Solar + Wind
$7.0T
Manufacturing
Play (k)
SUBSCRIBE


2. Switch to Electric Vehicles
21%
Reduction In Fossil Fuel Use
Full Sustainability
Global Electric Fleet
40M
380M
20M
300M
700M
115TWh
Vehicle Batteries & Stationary Storage
4TW
Solar + Wind
$7.0T
Manufacturing Investment

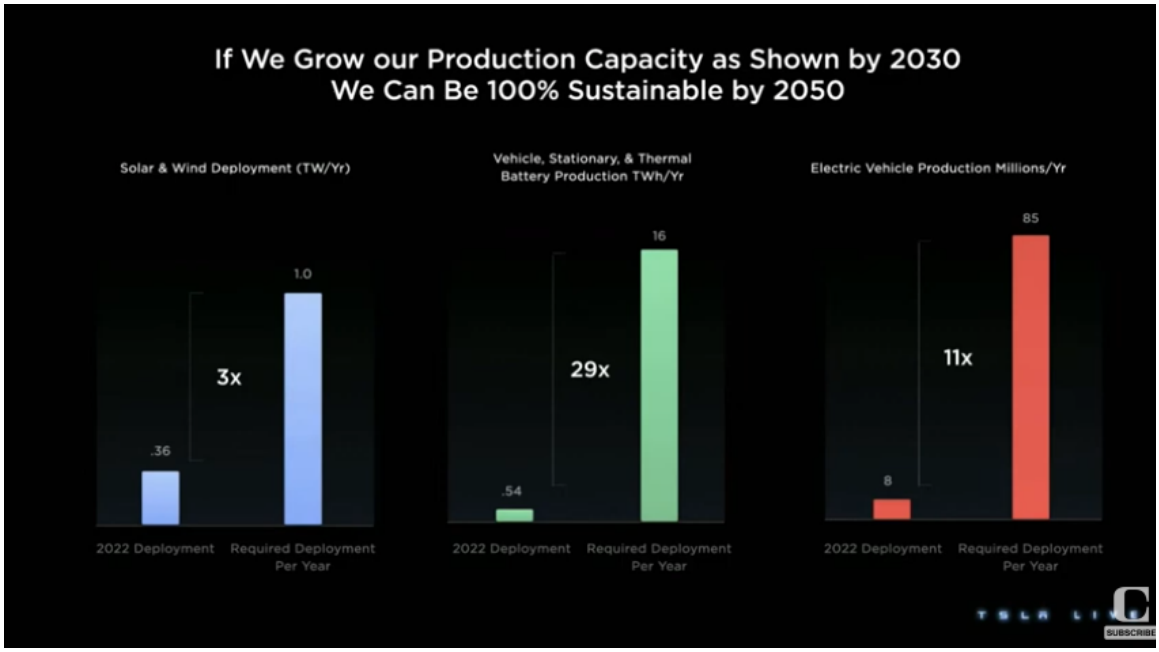

3. Switch To Heat Pumps in Homes, Businesses & Industry
22%
Reduction In Fossil Fuel Use
Full Sustainability
CHS
6TWh
Stationary Storage
5TW
Solar + Wind
$0.3T
Manufacturing Investment


4. Electrify High Temp Heat Delivery & Hydrogen
17%
Reduction In Fossil Fuel Use
Full Sustainability
48TWh
Stationary Storage
6TW
Solar + Wind
$0.8T
Manufacturing Investment
SUBSCRIBE

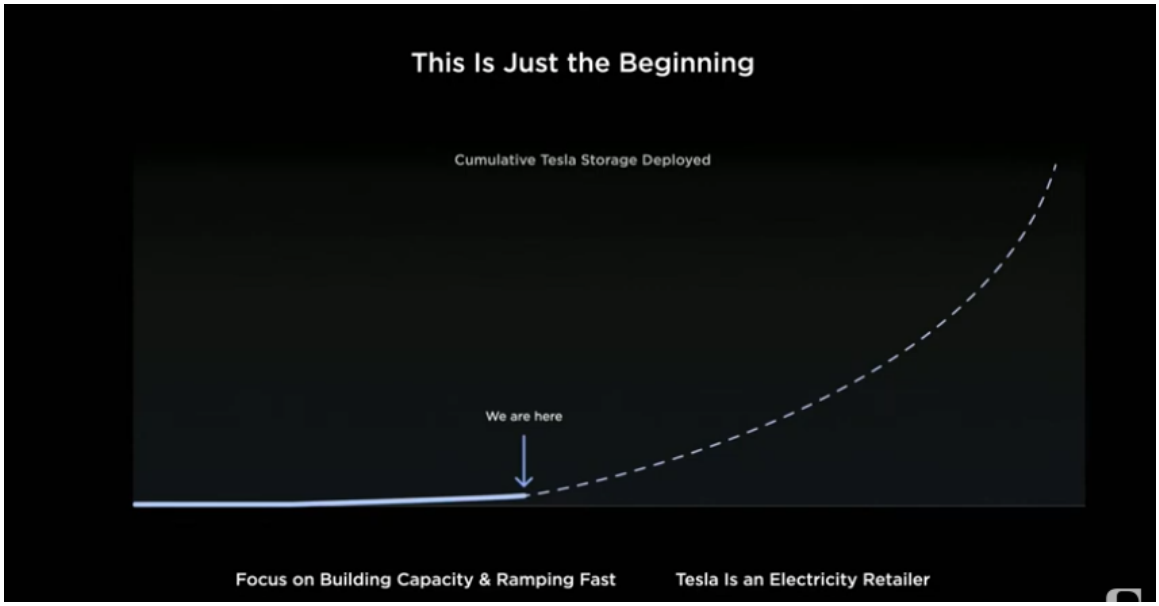

5. Sustainably Fuel Planes & Boats
5%
Reduction In Fossil Fuel Use
Full Sustainability
44TWh
Vehicle Batteries & Stationary Storage
4TW
Solar + Wind
$0.8T
Manufacturing Investment
SUBSCRIBE


Cybertruck
FURTHER IMPROVING LOW VOLTAGE ARCHITECTURE


If We Grow our Production Capacity as Shown by 2030
We Can Be 100% Sustainable by 2050
Solar & Wind Deployment (TW/Yr)
Vehicle, Stationary, & Thermal Battery Production TWh/Yr
Electric Vehicle Production Millions/Yr
3x
29x
11x
2022 Deployment
Required Deployment Per Year


If We Grow our Production Capacity as Shown by 2030
We Can Be 100% Sustainable by 2050
Solar & Wind Deployment (TW/Yr)
.36
1.0
3x
2022 Deployment
Required Deployment Per Year
Vehicle, Stationary, & Thermal Battery Production TWh/Yr
.54
16
29x
2022 Deployment
Required Deployment Per Year
Electric Vehicle Production Millions/Yr
8
85
11x
2022 Deployment
Required Deployment Per Year
SUBSCRIBE


If We Grow our Production Capacity as Shown by 2030
We Can Be 100% Sustainable by 2050



Quote of the Day

“Battles are won with tactics. Wars are won with logistics. The logistics challenges at Tesla are enormous,” said Tesla founder Elon Musk.

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