

# The Green Investment Guide

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## **The Investment Guide To Renewable Energy**

You've heard this one before...

"This is the tech that will make oil obsolete!"

The truth is, oil is here to stay.

That tech, the one that everyone's raving about, isn't going to make fossil fuels a thing of the past.

But it could still be a great stock.

That's the trick of the new green energy economy: sorting through the news, ignoring the hype, and finding stocks worth your time and money.

A good idea needs legs. It needs backing. And it needs management that can see past the next fad.

With that in mind, we've put together the definitive guide to investing in green energy.

### **Electric Vehicles: Slow and Steady**

We all know Elon Musk thinks his electric cars are going to dominate the marketplace.

But the truth is, electric vehicles (EVs) have a long way to go.

The technology has been there for a while: rig a vehicle with lithium ion batteries, either on their own or linked to a traditional internal-combustion gasoline engine (hybrids).

But it wasn't until the early 2000s that these vehicles started rolling off assembly lines and on to American driveways. You can blame high gas prices.

[The first EVs](#) were bulky, ugly, and relatively expensive. They also had a short life-span; after a few years, the batteries would die and the entire engine would have to be replaced.

Most importantly, they had poor range: a fully-charged battery would only get you a few hundred miles, with charging stations few and far between.

But new companies, like Musk's Tesla Inc. (NASDAQ:TSLA), have changed that. They've utilized new technologies and new construction methods to make EVs that are sleek, affordable, attractive and reliable.

The main reason has been the falling cost of lithium batteries: the cost of a battery has fallen 24% from 2016 and should fall another 90% by 2020, [if certain projections hold true](#).

According to [McKinsey](#), sales of EVs topped one million units in 2017. The market was valued at \$106.5 billion in 2016 and is expected to grow by 18% year on year from 2018 to 2023.

Several European countries have declared their intentions to ban all gasoline-fueled car sales in the next few decades, and to permit only hybrid or EV sales.

But still, the scale is small. EVs make up [only 1% of all global car sales](#), and will reach only 10% by 2025. [A more optimistic Swiss estimate](#) predicts EVs will reach 16% of global sales by 2025.

[The IEA predicts](#) there will be 125 million EVs on the road by 2030, out of a total 2 billion cars.

The best way to think about EVs is to scale back expectations.

Yes, they will be appearing in larger and larger numbers.

But they won't trigger a total paradigm shift. Gas-powered cars and trucks will stick around for a while.

At the front of the pack is Tesla, Mr. Musk's company which is currently the biggest EV seller in the US.

In 2018, sales of Tesla's Model 3, Model S and Model X took the top three places in total EV sales, [according to data from CleanTechnica](#).

In fact, Tesla blew its competition out of the water: sales of the Model 3 exceeded those of the Chevy Bolt by 700%

Of course, Tesla is a high-value stock that has been in high demand for years now.

It's also one that's experienced high volatility, rising and falling by significant margins repeatedly throughout 2018. That has

some investors worried.

This innovative and attractive company has raised huge amounts of money developing desirable products. But it has burned through a lot of that money, its CEO came under considerable scrutiny in 2018, [and top executives started heading for the door](#).

The company missed its 2018 Q4 and Q1 2019 estimates. But it still has 83% of the US EV market, a form of dominance not achieved since the days of Henry Ford's Model T.

But the competition has ramped up, big time.

General Motors (NYSE:GM), Ford Motor Company (NYSE:F), Volkswagen (OTCMKTS: VWAGY and Toyota (NYSE:TM) have all seen the light and are pushing more and more money into developing EVs.

[Volkswagen wants to roll out 3 million cars a year by 2025](#), with a million on the road by 2020. These are ambitious goals, but they match Tesla's plans to have a million cars produced each year by 2020.

General Motors is [pushing a new model of its Chevy Bolt](#), with a longer battery life and a wider range, to compete with the Tesla Model 3. A long-range Cadillac EV is next on the list.

Ford is pumping \$11 billion into new electrification tech, including a new all-electric vehicle inspired by the Ford Mustang.

[According to one study](#), a whopping \$255 billion will have been spent on EV R&D by 2023, all for a market that may not grow by much for several decades.

The price tag is being driven by intense competition, all of which might get way out of hand if EV demand doesn't pick up.

But a few of these big car companies will likely profit off the boom in EVs, once the competition dies down and the market calibrates.

The important thing for investors is to keep expectations in line with reality: EVs are coming, but aren't breaking any speed limits.

## **Renewables: Seeing Green**

The world faces a big challenge.

[According to the International Energy Agency](#), energy demand is expected to rise by 25% by 2040. And the world's economies have to meet that goal, without causing further harm to the environment.

Around the world, policy is focusing on increasing green energy output. That means immense investment in renewables:

specifically wind and solar.

According to Wood Mackenzie, renewables are set to grow by 18% by 2035, compared to 14% for oil and 7% for coal over the same period.

But investment in solar power hit a speed bump in the US in 2018, with the Trump Administration imposing [tariffs on imported solar panels](#), part of the US trade war with China.

The Energy Information Administration (EIA) sees US installations of solar panels slowing in 2019, with an increase of 13% compared to the 27% rise witnessed in 2018.

Facing these kinds of headwinds, investors should be wary. Green stocks generate a lot of buzz, but they don't always do great. The Invesco Global Clean Energy ETF saw its value plummet by 20% in 2018. Chaos in the market in Q4 of 2018 hit green stocks especially hard.

That was particularly true for solar stocks. Companies like First Solar ([NASDAQ:FSLR](#)) got pummeled, [losing 45% from their 2018 peaks](#).

In that kind of volatile atmosphere, the hippest new tech sometimes falls short. Investors looking for a sure thing should focus on companies that already have a reliable cash flow: yieldcos that turn long-term power purchase agreements (PPAs) into steady streams of revenue.

One of the best out there is Pattern Energy ([NASDAQ:PEGI](#)), a yieldco that enjoyed rapid growth rates for years and [delivered rising dividends to shareholders](#). Though it took a bit of a pummeling in 2018, [losing 13.4%](#), the company has its sights set on achieving 80% dividend coverage ratio, which it hopes to achieve by shedding some of its debts.

Another power generator with a ton of reliable assets is Brookfield Renewable Partners LP ([NYSE:BEP](#)). This company has 876 power generating facilities and hopes to invest between \$600 and \$700 million in new assets, including new wind farms, solar plants and hydroelectric dams.

Brookfield has [accomplished](#) a payout ratio of 90%, distributing \$652.5 million on \$750 million in funds from operations last year.

Yieldcos not your thing? What about a manufacturer with the latest high-tech gadgets for solar panel installation: Enphase Energy (NASDAQ: ENPH).

Enphase is the world's leading supplier of solar [micro inverters](#), nifty gizmos that take the power generated by solar panel arrays and transforming it into useful currents for home appliances, home car charging stations, and other uses. The Enphase system has a high efficiency rate: 97.5% of power is converted, ensuring virtually no wastage.

The company was growing throughout 2018, building up its cash flow. In January, it announced it would [fully repay](#) its second

loan from Tennenbaum Capital Partners, LLC, a subsidiary of BlackRock, Inc. (NYSE: BLK).

The Enphase system is designed for easy installation, meant for installations on homes and small business.

The company found its footing in 2018, and it's just [signed an agreement with SunPower](#) that should generate an additional \$65 million in fresh revenue.

So, rather than go big on solar installers like First Solar, smart investors can take advantage of new green tech by finding niche markets, while hedging with the yieldcos to ensure reliable returns.

## Avoiding the Lithium Bubble

2018 was the year of the lithium bubble.

Lithium is the crucial ingredient in virtually all batteries, which run on lithium ion technology. The expected boom in EVs and renewables hyped up the possibility of higher lithium prices.

And so the boom was born: everyone was suddenly worried about a lithium shortage, and the big lithium miners like Sociedad Quimica y Minera de Chile (NYSE:SQM) and Albemarle Corp. (NYSE:ALB) stepped up production, as prices rose and rose, and then rose some more.

A few savvy spotters saw it coming. In February 2018, [Morgan Stanley predicted](#) that lithium prices would fall by 45% by 2021, fueled by over-production and slow demand growth. Along with the other lithium bears, they pointed to the numerous new lithium projects being started up in China and South America. Predictions of a massive over-supply started proliferating.

With commodity prices falling across the board in 2018, investors got spooked and the lithium bubble burst. [Prices fell 50%](#).

By the end of the year, however, it was looking like the lithium sell-off went a bit too far. Stocks of lithium are actually sitting far below the expected glut: [a surplus of 22,000 tons against 227,000 of demand](#), according to one analysis.

Some now think that lithium prices will recover in 2019.

But as any investor knows, playing commodities comes with its own major risks.

Rather than play the big names, it might be best to avoid lithium stocks altogether.

There's a few reasons. First, the volatility in the lithium market means that gains today could be a loss tomorrow.

Second, [technological change could leave lithium behind](#). There are potentially dozens of new battery techs out there that could replace the aging lithium ion model. When that happens, lithium miners could end up in the scrap heap.

[Lithium ion batteries have some serious defects](#). Reliability and a short lifespan, are the two most cited. Finally, there are

doubts that the world has enough lithium to meet total global demand, or fuel the kind of renewable energy push that will reverse climate change.

Want to avoid the lithium bubble? See how the bottom in lithium prices is forming in 2019, and act with caution.

## Betting on Batteries

So if lithium-ion can't cut it, what possibly can?

That's the biggest question facing the green energy sector right now. And as many green investors know, new battery technology could vastly improve the quality and efficiency of renewable energy and EVs.

In short: new batteries could make Mr. Musk's dreams become reality.

The battery market is coming into its own. The total size of the market [should increase](#) from \$1.98 billion in 2018 to \$8.54 billion by 2023, with [investment rising](#) from \$440 million in 2017 to \$3.1 billion in 2022.

One such tech is magnesium batteries, which could replace lithium ion as the preferred choice in energy storage.

Magnesium batteries work a lot like lithium ion, but are different in one crucial way: they rely on magnesium, not lithium, for energy storage.

Magnesium, unlike lithium, is abundant in mineral deposits throughout the world. It has a higher melting point, which makes it resistant to over-heating (or catching fire!). And crucially, magnesium allows for two electrons per ion, rather than lithium's one—doubling the storage capacity.

Right now, magnesium battery tech is in its infancy. Research is being carried out at centers like the [Department of Energy's Renewable Energy Laboratory \(NREL\)](#). A potential barrier to effective magnesium battery tech is the recharge problem: the magnesium has a hard time reacquiring charge once it's used itself up.

[Hype around magnesium batteries started several years back](#), but so far, very few of the batteries have seen deployment in a commercial setting.

Other new battery tech also stalled out of the gate. Lithium-metal batteries, for example, can hold a lot more power by replacing the graphite anodes in traditional batteries with anodes made of pure lithium (usually, the lithium only makes up 1 out of every 7 atoms).

Energy giant ExxonMobil (NYSE: XOM) started experimenting with this tech in the 1970s, but it never went anywhere. More recently, [companies were able to experiment](#) with lithium metal batteries but the products never made it to market.

Energy storage is in its infancy, but it's becoming a tightly competitive market. The companies with the most innovative tech,

and the savviest management, will be the ones that come out on top.

One new battery tech that *is* making a splash commercially is vanadium.

Vanadium batteries are a bit different than lithium ion batteries. They can be scaled up very quickly, enjoy long life-spans and increased efficiency. [The world's largest battery](#) utilizes vanadium technology. Vanadium, a material used to strengthen steel alloys, is already in high demand. As lithium prices crashed, [vanadium prices rose](#). It's becoming more and more important, so much so that the United States officially put it on the list of strategic resources in 2018.

Vanadium batteries (especially vanadium redox flow batteries, or VRFBs) could emerge in the next several years as the new alternatives to lithium.

The question is, how can investors safely profit from this shift?

A few miners, including Largo Resources (TSX:LGO) and Ivanhoe Mines (TSX: IVN) are poised to profit from increasing vanadium demand.

Largo, the only “pure vanadium play” [according to Equities.com](#), just retired \$59 million in debt after a banner year. The company's Maracs Menchen mine in Brazil sits atop a high grade vanadium deposit, with some of the lowest costs of any mine around.

And with a low, low selling price, the upside for Largo could be very high indeed, so long as vanadium prices increase.

[Analysts started looking this way in late 2018](#), as lithium sank and the commodities markets in general began looking bearish.

But there's no reason to think that vanadium won't continue to prosper in 2019.

