MANWARD *letter*

VOLUME 6, DECEMBER 2022

Rockefeller Was Wrong: Putting the Profits Back in the Hands of the Many

Plus... the Small Cap Play That Could Double Your Money While Helping Solve Our Energy Problems

Dear Reader,

This land is your land.

This land is my land.

Those are the iconic opening lines of Woody Guthrie's famed folk song. They're powerful. I wish more folks would embrace them.

They hint at the beauty of our nation. They whisper of its majesty. But taken literally, they represent a mighty force. They represent the soul of liberty.

They put "live and let live" on the elevator and send it to the top floor. We're not doing what we want on somebody else's land... we're doing what we want on *our* land.

As I researched this month's issue, the ever-growing battle between centralized and decentralized forces kept putting on a show for my mind's eye. As our nation gets deeper in debt and more dependent on bailouts, handouts and monetary shenanigans – and as our cities crumble from the Beltway in – a mighty battle is playing out.

Our land – mine *and* yours – is increasingly being controlled by others.

But that's not a new story. Wars have been fought over the idea since the dawn of man.

There is another story, though. This one, too, isn't new... but few folks have heard it.

It's the centralization of power in the commercial world.

An Expensive Trap

Centralized political power is bad. But it's often transparent. We can see our enemies as they come marching from the hilltops. Centralization in the commercial world, though, is tough to spot... especially when the bad guys camouflage the whole thing in a wrapping of "free market" economics.

Oil, of course, is a great example. That's where we concentrate our efforts in this month's issue. There's no reason our nation (or the world) should be addicted to a single source of energy. Alternatives exist.

But some murky dealings over a century ago paved the way for centralization... and concentrated wealth. Just a bit of transparency – and a bit more thinking along the lines of Guthrie's tune – could have kept us out of this expensive trap.

It's not just oil, though.

It's also education... technology... religion... food... and manufacturing...

Charlie Munger recently said it was a "minor miracle" that Elon Musk was able to start a successful car company. It was a feat that hadn't been done in more than a generation. The nation should be appalled by such an idea... that centralized power has so limited our choices and the free market's power to replace the old and worn out with the new and energetic.

Regulations, labor unions, tariffs, environmental policies and "good ol' boy" business practices make it harder than ever to start from the ground up… so hard that anybody who does it successfully is considered a miracle worker – or a cheat.

But here's the thing… the BIG opportunity in all of this…

With just a bit of historical perspective, we can not only learn to spot where the system has corroded so badly… but also uncover how to use the idea to protect our wealth and add to it.

It's quite clear that this battle between the free and the centralized creates massive transfers of wealth. As power goes from the hands of one or two to the hands of many, folks willing to put some money on the line are often treated quite nicely.

This issue is a bit "old-school Manward." It's perhaps our best look.

It's equal parts know-how… moneymaking… myth busting… and eye-opening.

From Joel's on-the-ground look at where we could be to my research on where we've been and where we're headed, it's got a bit of everything.

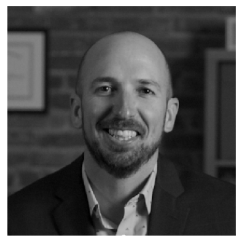
Read it all with Guthrie's words in mind.

This land is our land.

Watch what happens when we take it back.

Be well,

Andy



Andy Snyder is the founder of Manward Press, the nation's premier source of unfiltered, unorthodox views on money. An American author, investor and serial entrepreneur, Andy cut his teeth at an esteemed financial firm with nearly $100 billion in assets under management.

Known for his outspoken market commentary, Andy's been a keynote speaker and panelist at events all over the world, from four-star ballrooms to Senate hearing rooms.

Today, Andy's dissident thoughts on wealth and investing can be found exclusively in *Manward Financial Digest*, as well as in the pages of *Manward Letter*. He also helms the award-winning investment advisory services *Alpha Money Flow* and *Venture Fortunes*.

It Started With Our German Enemies and Henry Ford…

Now "Chemurgy" Is Set to Make Folks Rich Again

In 1893, John Rockefeller got a note from his main office. It was a summary of his latest business dealings and stock purchases.

He was surprised to learn he owned stakes in 16 railroads, nine mining companies, a paper firm, a timber operation, nine banks and investment companies, nine real estate outfits, six steamship lines, and two orange groves… plus a few houses and a small company that made nails.

That's a lot.

Nothing was more profitable, though, than his oil and natural gas business.

Was it because energy was so much more valuable than other resources? Was it because its margins were that much higher? Or was it because the man simply knew the business inside and out?

Those things helped... but they weren't the reasons Rockefeller became the richest man of his time (and then some). No. It was something much more sinister... and much more deceptive.

It's something we ought to pay great attention to. It's not an idea that's taught in schools or openly discussed in the history books. But what happened way back then is very similar to what's happening right now.

Some folks will get filthy rich. Others will simply get ripped off.

The Power of Power

We certainly don't have enough space in these pages to cover the full history of America's energy exploits. But I can fill you in on the key points that will make you a much smarter consumer... and, if I do my job, a much more profitable investor.

To get the job done, I need to introduce you to a term you may not have heard before: "chemurgy." It's something the Germans pioneered prior to World War I.

Henry Ford learned about it and was quite fond of it. He believed it could strengthen the nation's middle class and create long-term energy independence.

It's an idea that, although it had fallen to the wayside for nearly a century, is making a swift comeback today. Companies like Exxon and Shell are leading the research.

Chemurgy is the chemical and industrial use of agricultural raw materials. It comes in many forms – some quite simple, some much more complex. Using corn or sugar beets to create fuel is one of its oldest forms. With domestic engineering, just about anybody can create their own energy from materials grown in their backyard.

In 1925, Ford famously quipped, "The fuel of the future is going to come from fruit like that sumac out by the road, or from apples, weeds, sawdust – almost anything."

It wasn't hyperbole. The technology existed. Many farmers were already using it.

"There is fuel in every bit of vegetable matter that can be fermented," the auto genius continued.

"There's enough alcohol in one year's yield of an acre of potatoes to drive the machinery necessary to cultivate the fields for a hundred years."

Sounds divine, right?

As a man who was looking to put a car in every American driveway, Ford was excited by the prospect of cheap, abundant fuel. The idea of using agricultural products especially motivated him. It would create a strong middle class... and a strong agricultural sector that not only would need his machines... but could afford them too.

Many of the folks in Washington backed Ford and his ideas. In a meeting of the Senate Finance Committee, it was made clear that alcohol was "preferable" to gasoline because it was safer and "absolutely clean and sanitary."

And in some foreshadowing of many of the world's woes over the next century, James Capen (from the Detroit Board of Commerce) warned senators that oil prices could surge because of "artificial shortages," while shortages were impossible with alcohol because of its decentralized nature.

Henry Ford's Model T was designed to be a "multifuel" vehicle.

OPEC would have hated Capen. Rockefeller probably did.

Payoffs...

For an oil baron like Rockefeller, chemurgy was a nasty notion. It was a decentralized form of energy. The profits weren't concentrated and funneled in a lone direction. They were spread across the economy. A farmer sold his crop to a neighbor, who would run it through his backyard still.

It was independence for many...

But that's not how the world works – at least not according to the rich and powerful.

Fortunately for the oil industry, it was nothing that a bit of keen marketing couldn't overcome. Doing some deep research, we've found that Rockefeller was as good a marketer as he was a businessman.

In the late 1800s, for instance, kerosene was the fuel of choice for lighting homes and factories. Coal was used for heating and cooking. Rockefeller put his marketing department to use and created a feverishly strong campaign for a different energy source... fuel oil.

It worked. Demand soared, and Standard Oil locked up more than 80% of the nation's market share.

Helping his efforts were the nation's many local newspapers. They needed money, and Rockefeller had plenty of it. In one infamous case, Rockefeller lent money to the head of a paper that had been quite critical of Standard Oil. Once the money starting flowing, however, the criticism came to a halt.

It's funny how that works.

The paper was later sold to good friends of Standard executives. Similar tales abound all across the news industry.

It proves that some things that feel new most certainly aren't.

And Bribes

But even with his deep pockets, Rockefeller couldn't finance all of the nation's papers. Back then, the news wasn't concentrated like it is today, when just a trio of checks could buy the opinions of the masses. So Rockefeller found an agency that paid publishers for good reviews.

With the sort of press he was getting, it's no surprise his products forced the competition into the gutter. Backyard stills didn't have a public relations team or an advertising department. And they didn't have a powerful lobby heating things up in Washington.

There's no doubt Rockefeller and his crude products got some big help from Washington.

In fact, it was a tax "gaffe" that almost surely sounded the death knell for Ford's chemurgy vision.

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Remember that prior to the Civil War, the government didn't need a whole lot from its citizens. The tax code was simple and slim. But the war was costly. Both sides spent far more than they had... ushering in a slew of new taxes.

Never willing to miss a chance to tax a vice, Washington implemented a $2.08-per-gallon tax on alcohol.

It was meant to reach into the pockets of the folks trying to drink away their worries. But it accidentally changed the fate of the nation and solidified Rockefeller's legacy.

Washington's new tax put a heavy burden on not just the alcohol folks drank... but also the alcohol they used to create energy.

With the high tax, alcohol couldn't compete with Standard Oil and its product lineup.

An astute reader may ask why the IRS didn't just clear up the language in this accidental tax.

We've long found it in our best financial interest not to question the IRS, but in this case the answer is as simple as it is obvious. The folks in charge didn't clean up their mess because it benefited their rich and powerful friends – the folks who financed their election campaigns and ensured the papers gave them good press.

A deep-pocketed, centralized industry has a lot more sway with lawmakers than a bunch of hillbillies with stills out in the sticks.

The destruction was clear and obvious.

Up until the passing of this tax, alcohol had quickly been establishing itself as the nation's fuel of choice. In the year prior to the tax's ratification, dozens of patents were filed related to its use. Technology was advancing quickly.

But after the accidental sanction… none were filed. Advancement stopped.

The tax didn't last forever. But it lasted long enough. In 1906, a firm enemy of the oil industry was in the White House. Under Theodore Roosevelt, the tax went away.

Rockefeller, of course, was none too happy that a cheaper alternative to oil was on the market once again. But it certainly didn't stop him.

Same Woes… Different Century

That brings us back to Ford and his chemurgy solutions. He saw the opportunity. And so did his colleagues.

In fact, it was during a chemurgy conference just outside of Ford's hometown that Francis Garvan made an astute observation and a heady prediction.

"They say we have foreign oil," he said. "It is… in Persia, and it is in Russia. Do you think that is much defense for your children?"

Surely Garvan, the head of the Chemical Foundation, remembered what had happened in Europe during World War I. After all, he was charged with protecting the German patents related to chemurgy that Washington had "won" during the war.

During the fighting, Germany's enemies cut off the country's fuel sources. They thought that would paralyze the nation and end the war. Many thought it was a sure thing.

But it wasn't. Not at all.

That's because the country hadn't imposed a half-cocked tax on alcohol. And because it hadn't, it had thousands of independent distilleries spread all across the country. They produced as much as 66 million gallons of alcohol per year.

Just about every car in the country was quickly (and easily) converted to run on the fuel. It gave Germans great strength and undoubtedly prolonged the war.

It's an idea worth pondering as we weigh the serious political situations around the globe. Russia has cut off Europe. The Saudis aren't acting so friendly. Even here at home, the energy industry has some serious foes in Washington.

If we didn't have a highly centralized energy system, the fight (and the collateral damage) would look a whole lot different.

The Trouble Ahead

Think about this: Crude refining capacity in the United States is going backward. Two years after the height of the pandemic, it's still lower than it was in 2019.

In 2017, for instance, we had 141 refineries spread across the nation. Today, that figure is down to just 130. Many have been shut down because retrofitting them to current environmental standards would be too expensive. Others, though, have been converted to biofuel refineries.

It proves that what goes around comes around.

Chemurgy is back.

Across the energy sector, big-name firms are once again backing the idea. BP, TotalEnergies and Eni have all announced big plans to increase their biofuel production by twofold to fivefold over the next decade.

That's big.

We can see the immense profit opportunity in this trend if we look at what's happening in Europe. A Finnish company called Neste is the largest producer of renewable diesel and jet fuel in the world.

"BP, TotalEnergies and Eni have all announced plans to increase their biofuel production by twofold to fivefold over the next decade."

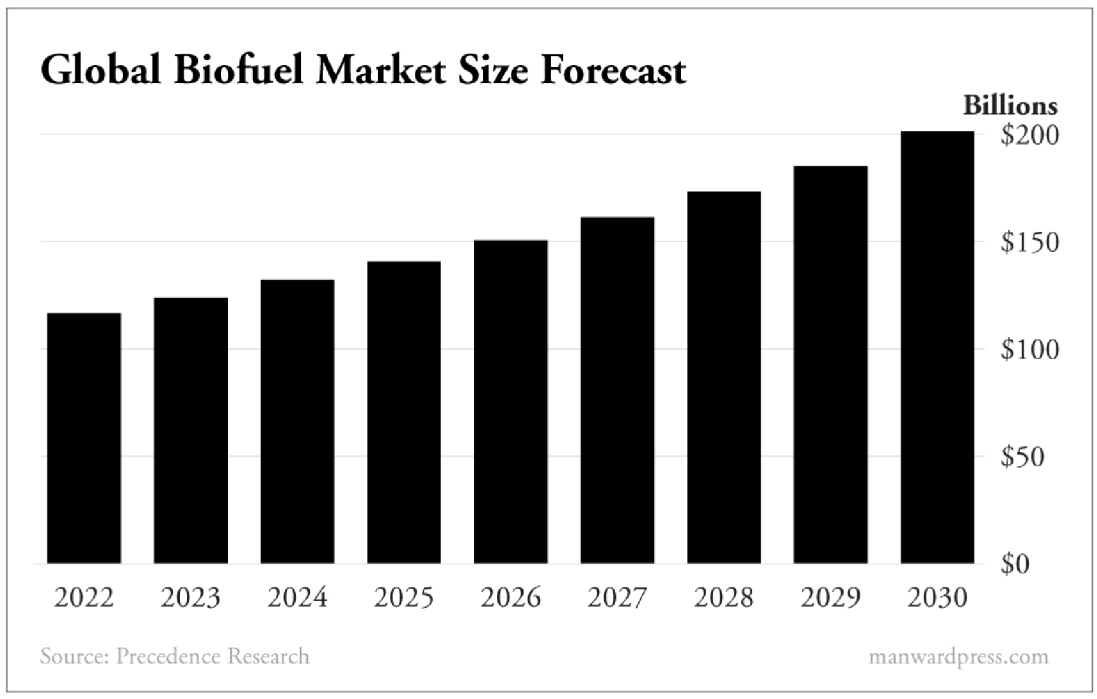
It's also one of the hottest stocks in the sector. Over the last decade, shares have risen from just $3 to more than $60

Similar opportunities abound across the market.

Biodiesel (which is most commonly made from soybean or canola oil) demand is set to flat-out soar in the United States. It's projected to jump from just 21 million gallons each year today to more than 2 billion gallons per year by 2025.

Much of the demand will come as a result of new laws enacted in California and – just look at the recent headlines – growing shortages of traditional diesel.

It's good news for many of the parties involved. Just as Ford envisioned, farmers have a huge opportunity to provide the nation with fuel and reclaim their middle-class status. Savvy refiners (including many of the names that make up Big Oil) will see higher margins and lower regulatory costs. And the consumer will benefit from a steady source of homegrown fuel.



None of this is to say that crude-based fuels are going away or should go away.

Even a chemurgy evangelist like Ford wouldn't argue that. But counter to Rockefeller's goal of centralizing power and profits, we must embrace an "all of the above" approach to America's energy infrastructure.

Biofuels, crude and other modern alternatives must all be in the mix. And a small handful of firms should not control any of it.

History shows that's when trouble erupts.

When the media is in on the lies… when insurance companies are getting bribed to say things are safer than they are… and when political pockets are being lined… that's when the problems start.

Today, we're facing many of the same issues we faced more than a century ago. The old has become new again. By understanding who got rich – and why – during the first few chapters of this story, we can see how the next few lines will read.

Fuel source diversity is key.

And the government needs to stay out of the way.

Find the companies that are getting it right… and big profits lie ahead. History proves it.

THIS MONTH'S STOCK PICK

Double Your Money in 2023 With This Modern-Day "Chemurgy" Small Cap

The world's population just hit 8 billion people. That's a lot.

Even more eye-opening, it took just 48 years for the population to double… and just over a decade to add the last billion folks.

And get this… just 108 billion people have ever lived on the planet, meaning 1 out of every 14 people to ever live is alive right now.

With figures like those, it's no wonder food and energy are such huge – and lucrative – topics.

Any business coach worth his salt will tell you that the most reliable way to get rich is to solve a problem that a lot of people have. With the population exploding and much of humanity living in large, tightly packed cities… food and energy are big problems for a LOT of people.

That spells big opportunity for certain companies and their investors.

It's no secret, after all, that most of the world's commodities are in all the wrong places.

In America, we grow our grain in the middle of the country. But the people live on the coasts.

We generate our electricity with dams built states away from end users.

And that's far from the worst of it. Much of the fuel that powers our nation was pulled from the ground overseas – often by our economic enemies.

Few of us can brag that we've eaten an all-local meal this month or at any time this year… let alone this week. The majority of the nation's fruit is imported. And the wheat you see growing in that farmer's field? There's a good chance it will be on a ship headed overseas next spring… perhaps only to return to the U.S. as a finished product.

Indeed… we've got all the right stuff in all the wrong places.

Problem $olved

It's a big problem. Massive amounts of money change hands each year while folks work to solve it.

And with big problems come big opportunities for investors willing to finance the wheels and cogs that turn toward solutions.

And now, thanks to the nation's latest self-induced energy crisis and the huge effort to fix the problem (including a timely resurgence in the idea of chemurgy), huge sums of money are about to be spent.

An awkwardly named company called **The Andersons** (ANDE) is about to receive a lot of it.

The company has three main business focuses – trade, renewables and plant nutrients.

All of them will offer ideal profit opportunities as the world faces crucial energy and food crunches.

You've no doubt heard about the troubles with the food supply chain in recent months. If it's not Russia's fight with Ukraine gumming up the works, it's ultra-low water levels on the Mississippi River blocking shipments or a drought in the West keeping stockpiles low.

Few companies in the industry benefit from the craziness… but The Andersons does.

It trades 32 million tons of grain annually. It can store 185 million bushels of corn, wheat and other commodities in the 77 facilities it has spread across the United States, Canada, Switzerland and the U.K.

The company's diverse operations have it posting record earnings and margin figures.

Making Good From Bad

Take the situation on the Mississippi River, for instance. The Andersons doesn't send much grain down the river. Instead, it has operations in Houston and the Great Lakes region. Both areas, as you'd expect given the difficulties on the Mississippi, have seen a boom in business this year.

In the recent words of CEO Pat Bowe, "We're very well positioned, given the Mississippi River challenges."

In Europe, the company's big challenge is finding enough grain to get to its customers. It's not good news for consumers, but when supply is tight, the middleman's margins go up. We can see the effect in the company's latest figures. EBITDA for the business line was $61 million last quarter… up 40% year over year.

That's quite strong.

But it's the renewables portion of the company's operations that has me the most bullish. The Andersons is set up beautifully to profit from what's going on in the energy and commodities sectors.

"It's not good news for consumers, but when supply is tight, the middleman's margins go up."

Boom!

To be sure, this company is a chemurgy play. It produces ethanol, biodiesel and a host of other products made from the nation's farm commodities. And business is good.

Earnings during the last quarter jumped to $8 million, up from a $4 million loss in the same period last year.

Much of the surge in profits comes from rising ethanol prices. This is a bright, flashing sign of things to come.

Between the grid problems in Texas and California giving folks second thoughts about an all-EV future... the fuel shortages threatening the East Coast... and the nation's continued reliance on foreign oil (it's what supports the dollar)... it has become quite clear that we need another source of energy.

Ethanol saw a grand boom 15 years ago before falling out of Wall Street's favor... and now that boom is coming back.

Few folks are talking about it, but the recently signed Inflation Reduction Act sets aside big bucks for ethanol incentives. The law provides for a bevy of tax credits and incentives for biofuels, including...

- $500 million for infrastructure outlays
- An extension of the alternative fuel mixture credit (at $0.50 per gallon) through 2024
- A revival of the 2G biofuels credit (at $1.01 per gallon) through 2024.

With five plants across the Midwest and an annual biofuel production capacity of 525 million gallons of ethanol, these credits will add plenty to the company's bottom line.

Better yet, they will help to expand the number of fuel sources within the nation's energy portfolio. Henry Ford and his fellow chemurgy proponents would be quite happy.

Extra Credit

What's also quite interesting – and potentially very lucrative – is the company's work in the carbon credits market. (market I covered extensively in a previous *Manward Letter* issue. See the "Further Reading" section below.)

While it remains nascent, this market offers quite an upside for an ag-focused company like The Andersons. If you've been paying attention to my commentary on Tesla, you know that it is much more of a carbon credit company than a car company. The vast majority of its profits come from selling the carbon offsets it earns making electric cars.

The Andersons has a very similar opportunity on its horizon. As the market grows, this could be a large piece of the company's revenue stream. As Tesla has shown, it's essentially free money... a bonus aftereffect of simply running its core business.

So far, I've covered only two of the company's main segments. These are, by far, the largest drivers of future profit growth. But we can't overlook what The Andersons is doing in the fertilizer and feed space. It's providing the sector with high-quality, cutting-edge products that are increasingly important in a market where efficiency is critical and yields must continue to grow.

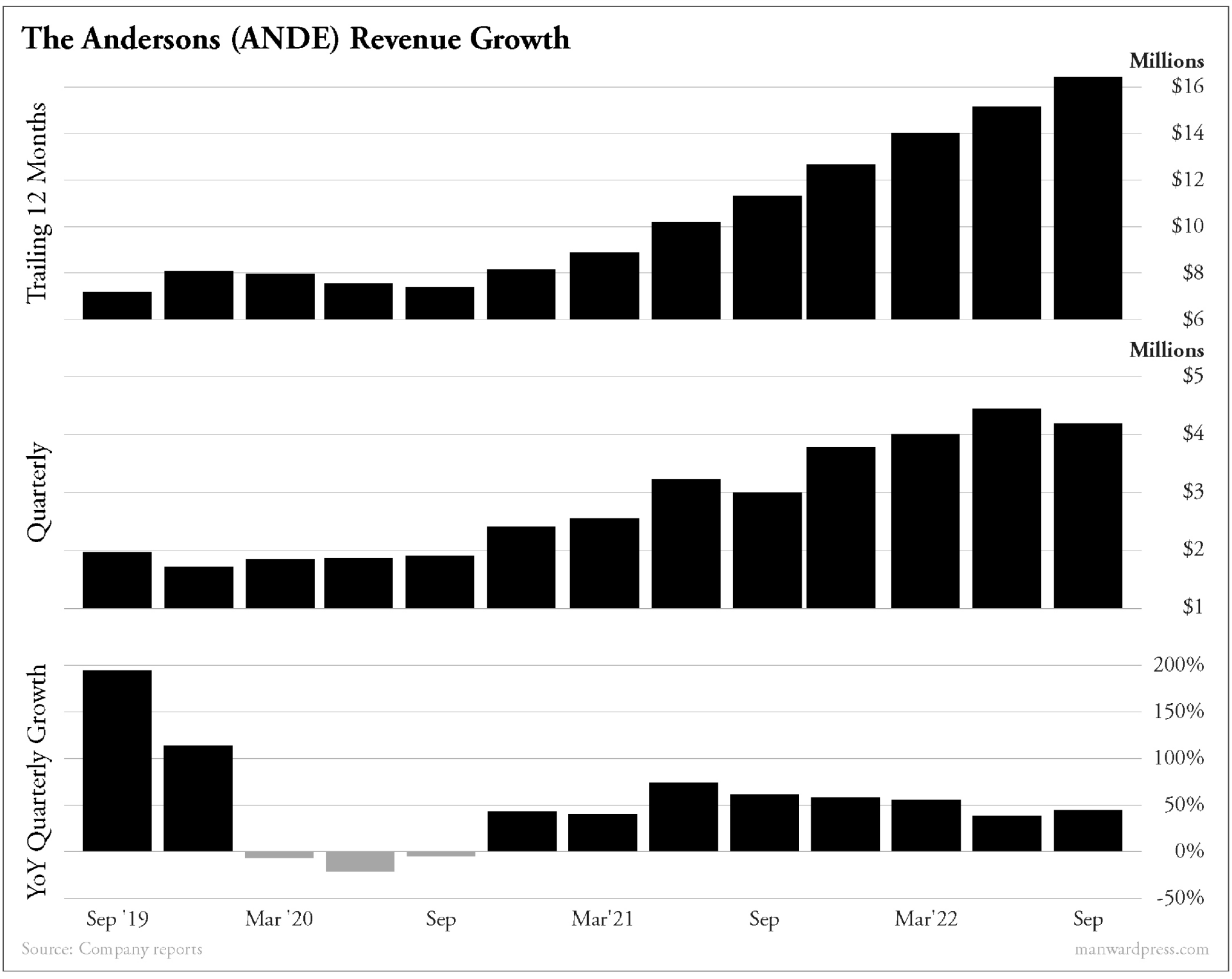
Gone are the days when farmers could simply use run-of-the-mill seeds and keep paying the mortgage. Good or bad, it now takes a powerful fertilizer program, serious hybrid seeds and a host of efficiency measures to keep margins in the black.

With its lineup of soil amendments, organic fertilizers and micronutrient products, The Andersons is at the center of it all.

Perfect Timing

This is an ideal company to own in an economic environment like this one. It is solving big problems and, as we'd expect, it's being rewarded handsomely for it.

Sales are rising – they're up nearly 50% so far this year.



Demand for its products is surging, as government incentives and geopolitical factors are making for quite a bullish market.

And the company plans to use this opportunity to grow by expanding its already robust acquisition strategy.

This is a relatively small company – its market cap is just $1.25 billion – with strong upside. With its current growth trajectory, I could see that figure doubling within 12 months.

It gives us a very real shot at doubling our money with below-average risk.

And here's the kicker... the part that makes it an ideal fit for our beloved Modern Asset Portfolio: The Andersons is in the midst of a $100 million share buyback program. It's an aggressive – and highly bullish – plan that could take 10% of outstanding shares out of the market.

This is an opportunity we shouldn't pass up.

> **Action to Take:** Buy shares of **The Andersons** (Nasdaq: ANDE) at the market's price. We will use our standard 25% trailing stop on the play. We'll add it to the Buyback Dominators portion of our Modern Asset Portfolio.

Manward contributor Joel Salatin calls himself a Christian libertarian environmentalist capitalist lunatic farmer. Others call him the most famous farmer in the world, the high priest of the pasture and the most eclectic thinker from Virginia since Thomas Jefferson. He's been featured in radio, TV and print – everything from Food, Inc. *and* The Omnivore's Dilemma *to* National Geographic *and* The Washington Post.

Real, No-BS Solutions to Solve Our Energy Crisis

Joel Salatin

I'm writing from East London, South Africa, where I'm conducting a series of seminars on good farming practices.

I'm staying on a permaculture farm whose swales, edible landscaping and alternative construction make it a paradise of discovery... and an example of working *with* rather than *against* nature.

I had to plan ahead to write this essay while the power grid was up and running.

On our way from the airport, we drove by many shanty towns, where people live in buildings I'd upgrade even if they were for chickens. But each shack has a satellite dish. Unable to pay utility bills, the squatters in these settlements, which often contain more than 100 households, ingeniously string bare wire – sometimes as crude as repurposed barbed wire – over to the utility line and pirate power to run the settlement's TVs.

Spindly, makeshift poles hold the bare wires aloft so people don't run into them. The cumulative effect of such systems, plus utility/government ineptitude, means that right now the country's electricity demands outpace production by about 40%.

Each day, the utilities publish their blackout schedule, which shows who will not have power when and for how long. I'm hoping to get this essay finished before the next outage.

From Wood to Gas

My host, who believes in self-reliance, does not have solar panels or a windmill. With such dire electrical grid issues, I was surprised to see that.

Like many, he has legitimate concerns about batteries – in terms of mining, disposal, maintenance, etc. And in a country where theft is rampant, infrastructure that can be removed easily and toted somewhere else to be sold on the black market is a liability. Most businesses have diesel or gas generators that run during outages.

My host has lots of wood and a gas generator. His backup is a self-built gasification unit that fuels his generator. He built this unit to run his gas-powered generator because it keeps him from having to deal with batteries and allows him to generate electricity whenever he wants. He's not dependent on the wind or the sun.

In the U.S. right now, we are spending some $5 billion a year fighting wildfires – and untold additional billions rebuilding or replacing infrastructure damaged by those fires. Biomass gasification affords internal combustion engines a clean power source with nothing more than an adjustment on the carburetor.

Essentially, the gasification process splits out the hydrogen. The engine runs on hydrogen, which makes no exhaust.

My host's gasification unit weighs a couple hundred pounds. It has two cylinders about 18 inches in diameter and 4 feet tall. One is the combustion chamber, and the other is a filter filled with grass and leaves to make sure no particles enter the pipe to the gasoline engine.

My host built a little side port that allows him to burn plastic as well – imagine plastic being turned into fuel rather than choking sea turtles and overfilling landfills. How about that?

Seeing the Forest for the Trees

Wood is the ultimate energy collector. Yes, at various times throughout history, places have undergone deforestation faster than reforestation. But these instances have usually been a result of temporary exploitation or long-term inefficiency.

In the U.S., the first big deforestation came during the initial European expansion, when settlers turned forests into homes and wheat fields.

The second came during the early industrial age, when there was a rush to make iron. You can't smelt iron with wood. The fire doesn't get hot enough. You need to make charcoal out of wood and then use the charcoal to run a blast furnace.

The third and final deforestation in the U.S. came during the heyday of steam engines. Wood wasn't used to power the engines, which ran on coal, but to build trellises and to supply tie material.

Then automobiles (including trucks) and airplanes began replacing railroads. That took pressure off the forests once more.

Of course, domestic heating with wood also allows us to replace inefficient fireplaces with extremely efficient wood stoves and outdoor, wood-fired water stoves.

We've come a long way, baby.

The amount of energy created from wood today is light-years greater than it was when Ben Franklin invented the Franklin stove and brought the fire into the room instead of the chimney.

And now our no-cut policies and government lands have flipped this resource on its head. Wildfires turn millions of acres that could be strategically harnessed as an asset into a horrific liability.

How foolish can we be?

In Austria, some 80% of domestic heat is generated from pelletized wood. There, trucks supply the suburbs by bringing wood pellets to your basement furnace storage hopper... rather than propane or fuel oil tankers coming through.

"Perhaps nothing is more renewable than wood."

Nearly every farmer has a small knuckleboom loader cart for his tractor. Farmers cut poor-quality trees from their woodlots, load the pieces on their carts and take them to the village railroad receiving station. The wood gets weighed, and the farmer goes home with a check. And the village residents get solar heat via photosynthesis.

Energy is stored in wood, not lithium batteries.

And the forests are gorgeous, neatly spaced and manicured, and proactively managed.

No BS

Years ago, I read an article about a farmer who floated a windmill on his pond to run a generator to separate hydrogen out of the water via electrolysis. An air tube went from the generator to a propane tank and filled it with hydrogen. He ran all of his farm's trucks and tractors on hydrogen. The only drawback was that the tanks had limited capacity. and he had to switch them out every three hours of running time.

But for free fuel, that doesn't seem like too much to ask.

In Australia, I enjoyed a wonderful meal at a bakery run entirely on micro-hydropower. A small stream (you could step over it) ran down a high hill behind the bakery. The owner directed some of the water into a pipe to run a basketball-sized turbine. That turbine powered his entire restaurant and bakery and obviously generated power 24/7/365.

Perhaps the coolest system I've ever seen was in Perryville, Arkansas, at the headquarters of Heifer International.

The folks there built a demonstration "Guatemala House" to show what could be done in an impoverished village. The rammed earth house had no running water. The toilet was a 5-gallon bucket. Each morning, you'd get up and tote the bucket to a biogas digester.

It was ingenious.

The digester was a 3-foot-diameter culvert set at about a 15-degree angle. Both ends were enclosed.

The top end (uphill) had a pipe you could pour the excrement in; it extended below the slurry level inside. The bottom end (downhill) had a good-sized bung (or stopper) from which you could drain out nearly odorless digested liquid to dump on forage for rabbits.

This way, you carried the bucket out full of undigested material and carried it back full of nutrient-rich fertilizer – no wasted movement.

The uphill end of the culvert had an air pocket where methane collected. An air hose port transported the methane to the bottom of a nearby 50-gallon drum that was half-full of water. An inverted garbage can trapped the methane as it bubbled up into the drum.

As methane filled the inverted garbage can, it floated up like a sleeve in that 50-gallon drum. Another air hose port in the bottom of the garbage can brought the methane to the house's kitchen and supplied the gas range. A couple of appropriately sized rocks on the inverted garbage can provided pressure for the gas.

There is enough methane in the excrement each of us produces each day to cook all of our food for the day.

How about that?

Freedom to Innovate

What's my point in sharing all these stories?

Energy is just like everything else; without freedom, innovation is impossible. Democratized energy is absolutely attainable if everyone participates in a way that works for their situation, accounting for not just their resources but also their needs and interests.

"Energy is just like everything else; without freedom, innovation is impossible."

The fact that we are still building houses without solariums on their south-facing sides is almost unconscionable. *Every building* should have a solarium on the south side... not just to collect passive solar heat but also to grow cool-season produce and eliminate the need to have thousands of trucks haul lettuce out of California.

Out in Kansas and Nebraska, I've been on farms where folks have a small alcohol distillery in their garage. Why? Because they can grow corn. But a government-subsidized mega-distillery is a whole different critter. It dominates agriculture and land-use policy for miles around, whether folks need the alcohol or not.

Our energy problem won't be solved by centralized, mega-sized, subsidized infrastructure. It will be solved by allowing and encouraging ideas to proliferate in garages, backyards and neighborhoods.

When lots of people contribute ideas to a problem – free from skewed marketplace intervention, censorship prejudice and academic expert demonization – society is blessed with choice.

When we rely on the government to find a solution, we usually get the wrong one.

Let the marketplace play.

Editor's Note: *We're bringing back a "Manward Classic" this issue... one that's been a longtime reader favorite. It not only connects perfectly to the theme of this month's issue... but also captures the liberty-minded spirit at the heart of everything we do here at Manward. Enjoy.*

Infinite Electricity

Build a Solar Generator in Your Living Room in Less Than an Hour

Andy Snyder
Founder

Picture the scene. It's Friday night. The wind's ripping so fast your gutters are whistling. Rain is playing your windows like a snare drum. Just a few degrees colder and it would snow.

Then it happens.

The lights flicker. They're off for just a few seconds.

Then they do it again. But this time, they don't come back on. It's dark... and quiet. What's next?

We've all been there. It's not the storm of the century. The grid hasn't failed. Most likely, a transformer spilled its oily guts down the street.

There are no mobs headed your way. The food supply is safe. Civilization is just fine.

But still, you're out of juice... and you've got things to do.

This is the sort of situation where many folks – especially rural folks – head outside and fire up the generator, letting it roar through the quiet night.

But there's a better option. It's much cheaper – and just as effective. And, best of all, you can use this option no matter where you live.

Think of it as a portable power station... with an infinite fuel source.

It makes no noise. There's no smoke... and no engine to maintain.

It is super simple to use, and you can build it for a few hundred bucks.

Built right, this setup can run nearly anything you'd use a small, portable generator to run. In fact, it uses much the same technology as many expensive, high-quality household generators – but it costs a fraction of the price.

Power Anywhere... Anytime

You need just a few things to create a reliable, silent source of power that you can take anywhere and use anytime...

- A deep-cycle battery (the kind you'd put in your boat is perfect)
- An inverter to turn the battery's DC power into the AC voltage you need
- A small solar panel
- A solar controller
- Wires to hook it all together.

It's super simple... yet virtually nobody uses this trick. What's crazy is you could get away with even less.

You could get started with just an inverter and a battery, skipping the solar panels.

You'd have enough power to run most of your small household appliances – lights, computers, small heaters, fans, phone chargers, etc. And when the power came back, you could simply recharge the system using juice from the wall.

Ah, but by adding a solar panel or two, you'd have an *infinite* source of backup power.

Even if the power never came back on, you'd be just fine.

Storing the Juice

How long you'll be able to harness power from this solar generator depends on the size of your battery and the strength of the inverter. Essentially, the bigger you go, the longer you'll have juice.

It all starts with the battery. The type of battery you should use is a no-brainer.

If you're going to use this backup power source indoors, you should use an AGM (absorbent glass mat) battery. It's a bit more expensive than a traditional "flooded" battery, but it doesn't emit explosive gases as it charges… which means you won't get blown up (always something worth paying a bit extra for).

Plus, AGM batteries hold their charges for longer than traditional batteries when they're not in use – a nice feature for a backup power source. After all, the hope is that you won't have to use it all that often.

The size of the battery you'll want is a bit tougher to determine. It takes some math.

Don't worry… I'll do it for you.

Let's say you want enough electricity to charge your cellphone, run a trio of 100-watt lights and power your TV. That's roughly 550 watts of energy demand.

Using the simple formula amps = watts/volts (everyone should memorize that formula and know what it means), we know we need just shy of 6 amps to power everything.

How long you can sustain that load depends on the battery. That's where the math comes in. Deep-cycle batteries are measured by something known as amp-hours.

It's not complicated. A battery with a capacity of 1 amp-hour can handle a 1-amp load for – you guessed it – one hour. It has enough juice for a 2-amp load for a half-hour… and can tackle a 4-amp load for just 15 minutes.

But here's the thing… Those are best-case numbers. Out here in the real world, we should never let our deep-cycle batteries get below a 50% charge. It could permanently damage them.

So when figuring out our battery's capacity, we should cut the numbers above in half.

That's why I recommend you use at least a 100-amp-hour battery for your portable power station. It will cost less than $200.

With a battery that size, we can run a system with a 6-amp load for just over eight hours – and nearly twice that long if it's an emergency and we don't mind risking the health of our battery.

Again, the bigger the battery – and the more batteries you use – the more power you'll have.

But don't think you can get a big battery or two and run every electricity-hungry appliance in your house. There are limits – mainly your inverter.

> *"The bigger the battery – and the more batteries you use – the more power you'll have."*

The Inversion Factor

A DC-to-AC inverter is necessary to run any of your typical household appliances from a "solar generator."

This paperback-sized unit takes the 12-volt direct current stored in your battery and turns it into the same 120 volts of alternating current that are running through your electric outlets.

An inverter can handle only so much work. But the bigger the inverter, the more juice you'll have.

Inverters are most often measured in watts. Our example above of a 550-watt load isn't all that much. Even the cheapest inverters could handle it.

But don't go cheap. I recommend at least a 1,000-watt unit ($100) – but a 1,500-watt unit ($125) is better.

And just because we like math – and we know you're curious – a 100-amp battery could power our 1,500-watt inverter at full load (12.5 amps) for about four hours and still be 50% charged. That's longer than the run-of-the-mill power outage (which nationwide research shows lasts just over three hours).

Like I said, you could stop here, with just a battery and an inverter. You'd be able to use the system again and again, recharging it from an outlet whenever the battery is drained.

But there's another option... an option that provides a nearly infinite supply of power.

It's a bit more complicated and will cost a couple hundred bucks more, but if you're looking to build a truly off-the-grid system, you can add a solar panel or two to the mix.

An "Array" of Options

Again, what route is best for you depends on your wallet.

There's no need to spend a fortune on solar arrays that don't match your battery's or inverter's capacity. What good will it do if your panels produce more electricity than your battery can handle?

The only purpose of the solar panel is to recharge the battery. It won't increase your power capacity.

The size of the panel you want depends on the amount of time you can afford to give your batteries to recharge.

Let's say you have a cabin in the woods that you visit a few weekends per month. You'd like to power a few lights and maybe a small refrigerator.

That means the solar panels will have at least five days to replace the little electricity you use on each trip.

You can get away with something small, like a single 50-watt panel. If your battery were 50% depleted, it would take 14 hours of full sunlight to recharge it.

Over a week, that's plenty of time... even if the weather is foul. But if you're using your solar generator more like, well, a generator, you'll need to recharge your battery quicker.

For example, say you want to run a refrigerator in a pool house but don't want the hassle of running electrical lines to it. Or say you want to add a setup to your RV so you don't need to run a noisy gas- or diesel-fueled unit.

In those cases, you may need as many as four 100-watt panels. They'd charge a 100-amp battery in less than two hours.

When I was in Belize a few years ago studying an entirely off-the-grid community, I noticed that many of the homes ran on a very similar system – powering multiple refrigerators, air conditioners, dishwashers and even pool pumps, all from a series of panels and a bank of six or so batteries.

Holding the Charge

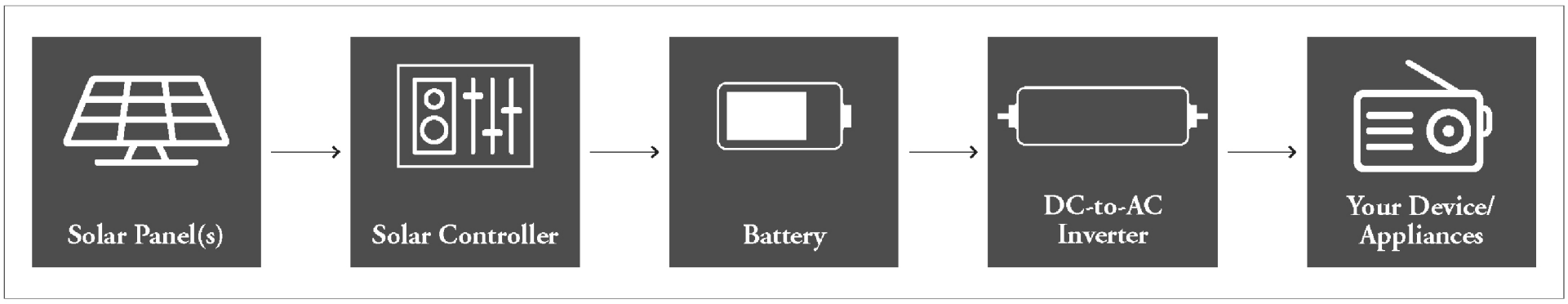
Finally, perhaps the most critical element of our solar generator is a component that "talks" to our solar panels and our battery. We need something that opens the circuit when our battery gets full.

That's the job of the solar controller. Also called a charge regulator, this simple device acts as the brain of the unit. It regulates the voltage coming from the solar panels.

You see, solar panels don't always produce electricity at exactly the same voltage. If it's bright and sunny, they may send 20 volts of juice through the line. If the sky clouds up, the voltage produced may drop to 14 or even 12 volts. The controller ensures the voltage from the panel stays within the right limits.

And, just as important, it talks to the battery as well. If the battery is low on charge, the controller opens the gates and lets the ions flow.

But if the battery is full, the controller stops the charging, ensuring the battery is not harmed.



Again, this solar setup is not expensive or complicated. Home Depot sells a 50-watt panel and controller for around $120.

Simple Prepping

Of course, all of this comes with a caveat. What we've presented here is a mere primer on the subject. We used rough math and rough ciphering.

We didn't mention cloudy weather, wiring or the great care that must be taken to do all of this safely. Electricity not only shocks... but can burn your house down. So do your homework and be careful.

But know that, when done right, it's not all that hard to create your own backup power system.

When the grid fails, you must have an alternative. This one is simple.

Too many folks overcomplicate their readiness plans. All it takes to remain safe and comfortable during a routine power outage is a simple off-the-shelf battery and a low-priced inverter.

You can impress your neighbors and keep the lights on for just a few hundred bucks. Or you can spend a bit more, harness the power of the sun and create a solar generator.

It's not hard.

A portable power plant should be in every home in America. Anybody can make one.

They're easy to build and even easier to use. ■

Portfolio

Note: Prices are updated daily.

COMPANY	BUY DATE	BUY PRICE	CURRENT PRICE	RATING	STOP
Modern Asset Portfolio*					
KBR (KBR)	04/07/2020	$21.45	$49.51	Buy	$42.39
Monero (XMR)	09/29/2020	$95.52	$161.51	Buy	
Ares Capital (ARCC)	03/01/2022	$21.47	$18.79	Buy	$15.60
Decentraland (MANA)	04/05/2022	$2.61	$0.40	Buy	
Quanta Services (PWR)	08/02/2022	$137.89	$139.51	Buy	$114.80
Prudential Financial (PRU)	09/06/2022	$93.73	$99.35	Buy	$81.73
Extra Space Storage (EXR)	11/01/2022	$177.64	$146.48	Buy	$132.16
The Andersons (ANDE)	12/06/2022	$35.00	$34.26	Buy	$27.34
Sun Life Financial (SLF)	01/03/2023	$46.36	$46.89	Buy	$35.65

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Further Reading

"Henry Ford, Charles Kettering and the Fuel of the Future," Environmental History: https://environmentalhistory.org/people/henry-ford-charles-kettering-and-the-fuel-of-the-future

"Ethanol's Lost Decades: Could We Have Had a Biofuel World?" MasterResource: https://www.masterresource.org/biofuels/ethanols-lost-decades

"Facing Wave of Closures, Oil Refiners Turn to Biofuels," Reuters: https://www.reuters.com/article/uk-europe-refining-idUKKBN2741B3

"Animal, Vegetable or Mineral (Oil)? Exploring the Potential Impacts of New Renewable Diesel Capacity on Oil and Fat Markets in the United States," The International Council on Clean Transportation: https://theicct.org/wp-content/uploads/2022/01/impact-renewable-diesel-us-jan22.pdf

"You're One in 8 Billion," *The Washington Post*: washingtonpost.com/world/interactive/2022/world-population-8-billion

"The Andersons, Inc. Reports Continued Strong Quarterly Results," The Andersons: https://investors.andersonsinc.com/2022-11-01-the-andersons,-inc-reports-continued-strong-quarterly-results

"If You Think Tesla Is a Car Company… Look at This," *Manward Financial Digest*: https://manwardfinancial.com/tesla-earnings-report-company-sham

"The Most Lucrative (NEW) Asset Class of the 21st Century," *Manward Letter*: https://manwardpress.com/manward-letter/letter-issues/may-2021