

# DEFINING A SMART ENERGY FUTURE

Geologist Dr. Scott Tinker is on a mission to educate the world on the critical intersection of energy, environment and economics. Can he save the world's energy future by drawing players into the radical middle?

INTERVIEW BY  
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**A**n icon of the modern oil and gas industry, geologist Dr. Scott Tinker is—perhaps unintentionally—rising up to be the global voice of reason in a world that is increasingly divided over the path of longer-term energy solutions. Through his non-profit venture Switch Energy Alliance (SEA), Tinker is disseminating educational videos that explore the benefits and challenges of all forms of energy without political slant. Always the narrator, his calm voice and measured delivery make you want to trust him.

His first documentary, “Switch,” has been viewed by 15 million people worldwide including in colleges, high schools and middle schools in 50 countries. In this film Tinker travels the world exploring the energy resources that sustain economies today, from coal, solar, hydro, biofuels, oil, gas, nuclear and more. In “Switch On,” his second documentary, he

again travels the world to countries with little to no access to energy, looking at the impact energy resources make on developing countries, even communities. Soon, a video-based, monthlong energy curriculum developed by SEA will begin being taught in high schools.

Just the latest iteration in the evolution of his career, Tinker is best known today as the director of the Bureau of Economic Geology at The University of Texas at Austin, a position he's been in for the past 20 years and ongoing. He is also the state geologist of Texas.

A long-time voice of expertise to the oil and gas sector, it's his nonpartisan, objective video resources featuring the role of energy in global societies that are now reaching the masses, particularly in schools. Tinker spoke to Investor on why he is on a mission to spread a reasoned conversation about energy to the broader public.



**University of Texas geology professor and Switch Energy Alliance founder Dr. Scott Tinker wants to change the conversation around energy. “We’re trying to help everyone to understand that there’s not good and bad energy or clean and dirty energy.”**

**Investor** After years in the industry and in education, what motivated you to start Switch Energy Alliance?

**Tinker** At the time there were some other films coming out, so-called documentaries, in which I learned quickly that “documentary” doesn’t necessarily mean all truthful. It just means whatever the filmmaker wants to have you believe. Some of those films were really quite misleading about energy. Part of the reason for “Switch” was to do an old school documentary—factual. That was the motivator.

Also, people aren’t reading as much anymore. The way to communicate has gone to film to be seen online and on different devices. So part of the “why” for the Switch Energy Alliance was to go to the communication media that people are using now. And that’s video of all sorts.

My partner in all things Switch is Harry Lynch, an independent filmmaker. We agreed over a decade ago to be fact-based, objective and nonpartisan and not to pit someone “good” against someone “bad.”

**Investor** What is its mission?

**Tinker** To inspire an energy educated future.

When I formed the Switch Energy Alliance, we decided to push into film-based energy education at lots of different levels. We’ve got a museum film we’re about to release, and we’ve got a classroom series called Switch Classroom that’s two years in the making. It’s going to go into the high schools for AP environmental sciences. Really cool. It is a balanced, objective curriculum on energy that people just don’t get any more.

Every time I have educated conversations with young people, which is often, they ask, “Why haven’t I heard this? I haven’t seen this in my school. This is upsetting to me that I haven’t been presented the full picture.”

I think we’re losing ground on critical thinking, partly because of political correctness. We aren’t teaching critical thinking in university settings as much. And there is a push to criticize rigorous dialogue, to be afraid of it, to instead tell us what we need to think. We need to have those hard but civil conversations if real progress is to be made.

That’s where my passion lies, looking at it through critical thinking. What are the pros and cons? Look at it from 360 degrees. We’re trying to help everyone, young people in particular, to understand that there’s not “good and bad” energy or “clean and dirty” energy. They all have their challenges, and they all have their positive impacts.

**Investor** Your second film, “Switch On,” focuses on energy poverty around the world. What is energy poverty, and why is it so important to you?

**Tinker** It’s a lack of access to energy that underpins a modern life. As you see in “Switch On,” some indigenous communities are still living the same way they did 500 years ago. I’m not judging that. I’m not saying that’s good or bad, but they themselves recognize now that they’re being left behind. Young people are leaving their communities, and they

don’t come back. So the impact of energy poverty is strongly tied to economic poverty. And you see it in the simple things—clothing, education, food, shelter, health—when you don’t have much energy.

Everybody thinks of energy, particularly fossil fuel energy and nuclear, as having negative environmental impacts, and solar and wind energy as positive. That’s not the case. They all have negative environmental impacts, and they all have positive ones.

Energy is closely tied to the economy. The wealthier the economy, the more it can afford to invest in the environment, in clean up and regulatory and legal. And this isn’t just some mythical relationship. Look at where the air is the cleanest: where it’s rich. Look at where you can drink the water; where it’s rich. Look at where the soils are not polluted: where it’s rich.

And the exact opposite is true. I’ve been in 65 countries, and almost without exception the dirtiest environments in the world are poor. It’s not their fault. They don’t have money. They don’t have an economic system to clean up their environment. And that’s all about energy access.

I’m not saying it’s solely tied to that; it’s not purely correlation/causation. In fact, there’s a paradox: energy won’t end poverty, but you can’t get out of poverty without energy. And that’s a very important dilemma, but one that we have to understand. If we don’t, then we risk leaving people and regions and countries in severe poverty for a long, long time.

**Investor** According to your documentary, more than 2 billion people have no or limited access to electricity. How can you make an impact?

**Tinker** What we’re trying to do is through this media to shine a light on these issues and then make that information very accessible broadly in middle schools, high schools, universities, civic groups, museums, scout groups and churches. We’re trying to make this energy information accessible with good background and peer reviewed statistics so that everybody can become a little bit more energy educated to inspire an energy educated future. If that happens, then that begins to change the conversation.

I believe political leaders’ intentions are good. If they have an energy educated populace, then that populace will begin to require, through the vote and other means, smarter decisions to be made. Our part is getting those good, defensible, peer reviewed, fun and digestible packets of information out in a form that everybody can use to begin to lift their awareness levels around energy.

**Investor** What is a “smart energy future?”

**Tinker** It’s one that recognizes that energy is a fundamental component of any modern economy and that it requires energy to clean up the environment. So “smart” recognizes that trilogy, the energy-economy-environment waltz. I call that overlap space the radical middle. You have to have all three of those things working together intelligently.

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"Most of the world does not demonize fossil fuels; quite the opposite."

If you just try to pull out two of the three E's—for instance, tying energy directly to the economy—and forget the environment: disaster. On the other hand, if you tie energy directly to the environment, there is a name for that plan now in the U.S.—disaster—because you can't do that without the economy participating.

So the smart energy future is one that looks at data, digests information in all three areas, compromises and then develops intelligent solutions. And those can be done. They're going to vary by state, country and global region because everybody's energy resources are different and everybody's political regime and educational resources are different. There's not one size fits all, if you will, but all three of those E's remain no matter where you are in the world. And so a smarter energy future recognizes that and brings in the economic and the environmental components.

**Investor** What role do fossil fuels, and specifically oil and gas, play in your vision of a smart energy future?

**Tinker** They play a huge role. Fossil fuels all-in still represent some 85% of the world's energy mix.

Coal still plays a remarkable role in the global energy future. The United States built its modern electric economy on coal. So did Germany and England. So has China and so is Vietnam and India.

If you put a dot on Bangkok, Thailand, and draw a circle where the diameter crosses through India, parts of China down into Southeast Asia, half of the world's population lives there today, and they get their energy from coal. This is phenomenal to think about. Part of the reason for that is coal makes electricity very cheap. And that part of the world is now manufacturing everything for the world, so we get our stuff from there.

Oil still has a considerable role to play because

it's liquid and so dense. Liquids power our vehicles with dense energy. And the only byproduct is CO<sub>2</sub>. There's no solid or anything else. You fill it up in three minutes and drive off again for 300 miles. It's very hard to replace that.

We can talk about battery vehicles. We can talk about fuel cell vehicles. Those are really the two other options to transportation, and they each have a role to play, but none of those are going to dominate the vehicle market for many, many decades. And, in fact, none of them really should. Options and choices are good in transportation.

Natural gas has a huge future role to play in the world. Natural gas is very versatile. You use it directly for cooking, you can make electricity with it, you use it to make plastics and other things. Methane, propane, butane, pentane and other forms of natural gas are so critical to the future.

Natural gas is really a hydrogen fuel. Methane is one carbon and four hydrogen molecules, so it's really a hydrogen fuel, at least molecularly. We can split it and get hydrogen from it. And this transition away from carbon into hydrogen has been happening naturally for over a century.

These are all fossil fuels, but they have very different roles to play.

**Investor** There is a growing, global mantra to replace carbon energy with renewables. How would eliminating fossil fuels affect energy impoverished nations?

**Tinker** That'd be a disaster, and it's not going to happen. If you add up the populations of the United States and Western Europe, that's 600 million to 700 million, so 10% of the world's population. That's where the loud, anti-fossil fuel voices are. Most of the world does not demonize fossil fuels—quite the opposite. They are actually looking toward fossil fuels as a way to grow themselves out of poverty then into developed nations. They're building their nations on fossil fuels just like we did.

Now, can we accelerate that such that they have more options like we have now? That's smart thinking. How do you accelerate into a portfolio of options rather than being limited only to coal, for example, as some countries are now? We as modern nations can help other nations to accelerate.

There's 7 billion people in the world that are not going to leave 85% of the world's energy in the ground. It's just simply not going to happen. And it shouldn't happen. That would be a disaster for the environment because you will leave people in poverty for much longer, and they would not be able to invest in the environment. It's not hard to link these things up and see, "Oh, right, where is it clean? Where it's developed." So do that without the unintended consequences of environmental destruction.

**Investor** Why do you think having a conversation about the future of our energy supply is so controversial?

**Tinker** There's a political component to energy, obviously. It underpins everything and because it does, the politics are, and always will be, real. Conversations that are fact-based





**In the film “Switch On,” Tinker turns his focus to populations that are energy deficient in search of solutions to access energy. Here, Tinker interviews the project manager of a mega dam being built in Ethiopia that will supply energy to half the country’s population and into Egypt.**

and candid and civil are powerful, but they also are worrisome to those who want to keep energy as a political tool. This concept of clean and dirty, good and bad, is very powerful. I’m not pointing my finger at the left or the right; they all use energy as a tool. It’s just used differently. So that’s a big piece of the concern over healthy civil discourse.

**Investor** How do you address climate change concerns if fossil fuels are needed indefinitely?

**Tinker** In response to the 2015 Paris Accord, the U.S. proposed the Clean Power Plan (CPP). Our goal was a power sector emissions reduction of 32% by 2030, with a base year of 2005. The CPP was not enacted, yet we actually met that goal this year, in 2020, a decade early. This happened by replacing coal with natural gas, increasing renewable energy mostly through state portfolio standards, and increased energy efficiency

And—one that is a shell game—by exporting our manufacturing to other countries. They put up our emissions, so that part doesn’t really count. Along with all that very affordable product comes atmospheric emissions on a scale that is unprecedented. We

might think we’re being green by offloading our manufacturing to some other parts of the world, but there’s only one atmosphere, so it’s not green. It doesn’t help the climate.

We’ve also begun to slowly decommission our nuclear power, which is counter to the goal. But we maintained our nuclear power output by making our plants that were already on more efficient so they produced more. Nuclear has to be a part of this.

If you’re going to meet climate targets, you’ve got to have a mix of natural gas replacing coal, nuclear power—small modular reactors as well as large reactors—renewable energy standards, efficiencies, and then geothermal has a role to play. It hasn’t played much yet, but I think we’re starting to see a lot of interest in that again, because it’s scalable and it has no emissions and the technologies are catching up.

But if you’re really going to begin to capture the emissions from combustion of fossil fuels of all kinds, including methane, then you’ve got to capture and do something with those emissions. Carbon capture, utilization and storage is still decreasing in cost, but we



haven't done it at scale yet. It adds a cost, but the cost is showing itself likely to be worth the benefit in terms of climate impact.

It's a portfolio; there are no magic bullets. It varies by region. But these are very doable and scalable in the timeframe that's needed if the climate models are correct. In 30 years a lot has to happen. It's vital.

**Investor** Do you believe politicized ideologies are leading to bad or misguided decisions regarding energy solutions?

**Tinker** Sure. They do it all the time. Without having that rigorous conversation, that critical thinking, you end up with well-intended policies with unintended consequences. There are so many examples of this.

Look at Germany, a very green-thinking populous. They were on a trend of decreasing coal, increasing nuclear, natural gas and wind. And CO<sub>2</sub> was coming down. Then the hydraulic fracturing revolution started and misinformation about fracking and health was rampant. Then Fukushima Daiichi happened in Japan, and legitimate scares about nuclear energy in that setting propagated to the whole

nuclear energy industry. So Germany said no fracking, no nuclear.

Then they grew the wind energy industry, so now there are turbines everywhere, including areas that are not so windy. And they started putting in solar. If you look at a solar intensity map of Germany, it looks about like Seattle, Washington—it's rainy and cloudy. Solar and wind are intermittent energy, so you have to back it up with what? They're importing electricity, and they began to bring back coal.

So the CO<sub>2</sub> emissions, which were on a nice decline, flattened. The unintended consequence of a somewhat politicized dialogue on hydraulic fracturing and nuclear power had the opposite effect on the very thing that they were trying to solve for.

So this is California and New York. You can see case after case where a lack of rigorous and honest dialogue causes a public to believe something. They therefore vote in AOC [Rep. Alexandria Ocasio-Cortez, D-NY] and bring you the Green New Deal, which isn't green or new or a deal. But she's very popular in a state that is passionately misinformed. It causes Gov. [Andrew] Cuomo to not approve a \$1 billion natural gas pipeline and instead put in a \$3



*Developing countries still look to fossil fuels—in this case coal—to build their economies. In the documentary “Switch,” Tinker visits a Vietnamese coal mining corporation.*



billion power line from Canada. These are the unintended consequences of a well-intentioned, but misinformed, energy understanding.

**Investor** Do you believe we've finally reached peak oil demand?

**Tinker** It's hard to know. As the economy is turned back on, we truly are learning what we can do remotely now. And it's real. There are things that can be done remotely, and that saves driving to work a couple days a week. We can do meetings online. It saves on a lot of the things we used to spend energy on.

We're going to see that dampen demand, and I think that's going to be a little bit lasting. That's not a bad thing to me as a citizen, as a caretaker of the environment, of someone who wants to preserve and protect our energy resources. That's not a bad thing. The thing that industry has to adjust to is in adjusting business models around that.

But it's not lower demand because of renewables. I don't think that oil and gas are going to be supplanted by other options anytime in the near future.

So you could see if we truly don't move ourselves around as much as we have in the past that will be a demand dampener. And we could have a plateau in oil demand. But, personally, I don't think that's going to happen. I think that developing nations, like we did, are going to want cars. It's a rite of passage for independence. And so you're going to see gasoline vehicles.

China is growing its vehicle manufacturing and sales remarkably; it blew by the U.S. India is just getting started, and they have that many people. If that happens, we have not reached peak oil demand because oil is going to go in those cars. They can't ramp up their electric vehicle fleet fast enough nor will they want to.

We've not seen the peak in natural gas, nothing close [to peak demand.]

We haven't yet seen the impact of solar and wind on the environment at scale. We're starting to see it in a few places. When these wind turbines get buried, the landscape is forever changed. And consider the mining to produce the batteries to back it all up.

Disposal of those batteries is nontrivial. These are giant numbers. At 1.3 billion vehicles in the world, if you electrify half of them by 2040 that's 650 million vehicles. You have to put 3,000- to 7,000 lithium ion batteries in each vehicle, or 3,000- to 7,000 cell phones per car in equivalent batteries. Where's that going to come from? How many mines do we have to open? How many battery manufacturing plants are we going to build? And where are all those toxic batteries going to be disposed?

So this is the environmental impact that we the people haven't processed yet. We're not ready for this. We haven't thought through all this. That's that radical middle.

**Investor** What might a Biden presidency mean for the oil and gas industry?

**Tinker** It depends on who he picks for his advisors in the White House and energy secretary. I know what he's signaling now, but part of that is just election politics. That all changes.

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A robust portfolio. What that allows is lifting the world out of energy poverty."

He's not been a particularly remarkable person in the sense of doing anything that would cause drama. He's managed to maintain his career over many, many decades. His roots are somewhere more moderate than others that were running in the party. One might hope that he would come back to those moderate positions as the president. So it might not be all good or bad. There could be some good components of it.

But if he went down the road of what he's promising—zero emissions by 2030 or 2035—I think he will quickly discover, like states and nations and other countries making those promises, that it's unachievable for many reasons.

But we'll see.

**Investor** What's going to be the subject of your next documentary?

**Tinker** Our third documentary film we're making now is called "Making The Switch." It's about the energy transition, the combination of economic health and environmental health, minimizing the impacts of energy on the environment and increasing the global economy. It's about the energy transition, but not in a way that is about fossil fuels or renewables. The successful transition is when nobody is living in energy poverty and the impact on the environment is minimized. That's my vision.

**Investor** Does the energy transition imply eliminating fossil fuels?

**Tinker** We're not transitioning away from one form of energy to something else. Even if that happens, that's a century-long process, and it's toward ever more dense energy. In the next 50- to 100 years, the transition includes oil, it includes a lot more natural gas, and it includes more renewables, more nuclear and more geothermal. A robust portfolio. What that allows is lifting the world out of energy poverty. And what your readers need to do to make that happen is to minimize the impact of their form of energy, which is oil and gas. □

#### Special Viewing

Courtesy of the Switch Energy Alliance, Oil and Gas Investor readers are invited to a unique, on-demand online viewing of both "Switch" and "Switch On."

#### Be a part of the conversation!

**Switch:** <https://switchon.org/watch/topic/switch>

**Switch On:** <https://switchon.org/films/screening/5upGT5wzGK/>