Tortoise Capital's Webinar Replay: Energy Infrastructure is Powering the Future of AI

October 2024

Mark Marifian:

Welcome everyone, and thanks for joining today. This is our special webinar: Energy Infrastructure is Powering the Future of Artificial Intelligence. My name is Mark Marifian and I'm the head of product management here at Tortoise. And I'm thrilled to be joined today by our featured speaker, which is Rob Thummel. He's our senior portfolio manager and an investment strategist here at Tortoise.

And so, this is a webinar that frankly, we are very excited about. And why might you ask more than others. This is an extension of our June AI campaign, and that campaign was our single most successful marketing campaign of 2024. Since June, we've had over a thousand conversations on the AI topic alone. So, clearly, it's something that's grabbing investor attention, like our conversations, news flow around this topic has really continued at a rapid pace in each of the successive months. So, felt like we had to get another webinar out there to answer all the questions and news flow that has happened lately.

So, AI, we're seeing the early signs that it's pushing, can be pushing electricity demand through the roof. Frankly, energy markets are really buzzing with optimism. We're on a topic, so we're just really excited to dive in more today with you.

So, just a couple housekeeping items. First on the questions and answers. We'll take your questions at the end. You can feel free to submit questions anytime through the Q&A box that we have. And then, Gabi, if you can move forward on who is Tortoise Capital, just a quick introduction on us. If you're new to Tortoise, welcome. We have been managing investments for over 20 years since 2002. We have approximately $9 billion in assets under management.

Our seasoned team has over 100 years of combined portfolio management experience and we really know energy inside and out from wellhead to the end user. Just looking at our three main strategies. So, we have midstream MLP, that's how many folks will know us. That's our long legacy. That is about $7 billion in AUM.

Our energy and power infrastructure strategy has over $700 million. That stands from renewable and power infrastructure all the way to energy infrastructure. And then finally we have a third strategy, which is in the energy investment value chain, and that has over $600 million in assets today. So, that's a broad overview of our different investment strategies.

Before we pass it to Rob, as we've done with our webinars, we'd like to incorporate poll questions and get a feel for what the audience is thinking. So, we have three quick ones everyone can participate in, and so we can go ahead and queue those up.

Okay. Number one, which type of energy do you think will best meet the growing electricity demand driven by AI? And the four answers are natural gas, nuclear renewables, wind and solar, or battery storage. Pause a second. Give everyone a chance to answer. See the results. All right, Rob, we got a biased crowd towards natural gas and nuclear coming in strong with about 33% of the answers.

Let's go to question number two. What do you believe is the biggest challenge in meeting the growing electricity demand for AI infrastructure? This one's interesting. Is that the cost of energy and the energy sources? Is it environmental concerns? Is it technological limitations or is it regulatory hurdles? This one's a little bit more split, but interesting, Rob, regulatory hurdles seems to be the predominant challenge. So, I know you're going to be covering that a little bit today.

And then the third question. Okay. How would you consider investing in the AI theme over the next six months? A couple answers here. The Mag 7 stocks, NVIDIA itself as a standalone, energy infrastructure stocks or utility stocks. Just a second to queue. Okay. Kind of split again, but certainly tilted towards energy infrastructure, Rob.

So, I think we have a well-informed audience. I think it's your job, no pressure, Rob, to inform a little bit more. So, I know you got some great content prepared and I'll pass it your way to get us kicked off.

Rob Thummel:

Okay. Thanks, Mark. And good morning, everybody. Let's just turn to slide four. I love the audience already based on the answers to those poll questions. Okay. So, what are we going to talk about? So, hopefully when we get done today, I think there's going to be four things that I hope we get out of this.

Number one is clearly we all know about AI, but it's really transformative. It could become the start of the fourth industrial revolution. That's not me saying that that is not as tech executives, Jensen Huang, that's energy executives, that's people like Bill Gates that really feel that this is a big deal and something that's going to happen well into the future.

So, what AI does though is it triggers this age of electricity. As data centers, we'll talk a little bit more, become the heart of AI infrastructure and it really changes what's going to happen in the US electricity markets and really presents an opportunity for not just electricity, but the broader energy markets, because that rising electricity demand will lead to the age of natural gas.

But if you only remember one thing out of all of this, just remember the last point. Number four, there will be no AI without AI or energy infrastructure. We'll talk about that a little bit more. But in the end, what we feel, and some of you obviously already do feel, is that energy infrastructure is really important and natural gas is going to be the low-cost, low-carbon solution really that's poised to meet this growing electricity demand.

So, if we move on to slide five, so it taught us as many of you already know us, Mark talked about us, our top priority is to deliver the highest risk adjust returns for our clients. But alongside this, we are deeply committed to educating investors on all things energy. So, from emerging trends to these really transformative technology.

So, one transformative technology we identified years ago was the US shale boom. It began in 2005 and it's still gone. US shale really reshaped the global energy landscape, but we believe that artificial intelligence or AI is the next game-changing technology that will positively impact the US energy sector for decades to come.

So, if you look at Pew research, over half of us in America interact with AI at least once a day. More than half of American companies are incorporating AI into their daily operations. We all know that the AI platform, ChatGPT, is now the fastest growing consumer application in history, especially amongst kids in college and high school and grade school writing papers.

And if Elon Musk's predictions come to pass, we may soon have our own personal robots that are designed to make life easier for everyone. So, AI is here to stay, and the question is no longer if, but how AI will affect our daily lives and reshape industries like healthcare, education and transportation? And list goes on and on. If you look though-

Mark Marifian:

Yeah. Rob, let's talk about AI and it's obviously a technology. Tortoise is an energy manager. Can you just draw for everyone the relationship between the two?

Rob Thummel:

Okay. So, yeah, so most people immediately when you think of AI, you think of NVIDIA. When you hear NVIDIA, you think AI. And understandably so, NVIDIA stock has had incredible growth, largely driven by AI. But at Tortoise, we look at investing a little bit differently. We focus on essential infrastructure with high barriers to entry or large economic modes, is what Warren Buffett likes to say. These companies tend to deliver stable cashflows to grow over time.

AI relies on significant core infrastructure to function. So, you can see on this slide, technology infrastructure really includes servers, networking, cables, things like that that are produced by many of the companies that are on the right

side of the slide. The most critical infrastructure, which is largely operated by companies such as Meta, Amazon, Microsoft, and Google, that's in the middle, and I'll touch on that a little bit more.

But all of this cutting-edge technology, as amazing as it is, needs energy infrastructure, specifically one essential resource to function and that's electricity. Without electricity, even the best technologies in the world are useless. Technologies that don't use electricity like the Sun Man solar-powered calculator that was invented in 1976 have been retired to vintage museums.

So, the tech behind AI can't run without a consistent power source. And it taught us, we believe that the companies and sectors responsible for delivering 24 hours a day, seven days a week energy to power the data centers are as critical as the tech infrastructure itself in enabling AI functionality.

And as AI drives or AI advances and drives what many see as this fourth industrial revolution in the US, we expect US energy companies generating the power along with the firms that are producing and transporting fuels necessary for electricity generation will play an essential role in supporting AI for the decades to come.

Mark Marifian:

Let's go to the next slide and talk about how is energy infrastructure going to fit into the future of AI?

Rob Thummel:

Sure. So, as I mentioned, if there's one takeaway from today's presentation, remember this and let it be known that there is no AI without EI or energy infrastructure. So, if you look on slide six. It might be a little bit challenging to grasp at first this slide, but think of it as an x-ray of the United States. And like an x-ray, it reveals what's beneath the surface.

And this map really shows the hidden network of millions of miles of steel pipelines buried underground. These pipelines really surface the cardiovascular system of the US economy. And just as your circulatory system moves blood to where it's needed, these pipelines transport essential energy commodities across the country. Sometimes we need to replumb or redirect these resources just as the blood flow needs to adjust in response to demand.

But like our arteries, if these energy arteries clog or stop, we face significant issues. So, every day over 13 million barrels of oil, a 100 billion cubic feet of natural gas and over 500 million gallons of gasoline and diesel flow through these pipelines, keeping the US economy running. Becomes national news if just one of these pipelines is disrupted.

So, this vast infrastructure is essential not only for economic stability and growth, but it also will ensure that AI data centers receive continuous power 24 hours a day, seven days a week, year after year. The good news that sets the US apart from other countries is the US operates the largest energy infrastructure network in the entire world, and virtually all of it is owned and operated by publicly traded companies.

Replicating this network is nearly impossible. Many of these pipeline operators hold a significant economic load as building new pipelines is increasingly difficult. The scarcity in that really only adds the value of this existing pipeline network.

Mark Marifian:

So, we can go to the next page. Rob, you talked about the value of the existing infrastructure. Let's pivot towards data centers and their importance here.

Rob Thummel:

Sure, of course. And let's start with one more anatomy analogy and we'll stop on this slide. So, data centers are the beating heart behind the AI boom. The critical technology elements really find their home within the data centers. So, data centers are the centralized hubs where these complex computing applications are executed and vast amounts of data are stored.

If you look at projections, projections suggest that over the next five years, both consumers and businesses will generate twice the amount of data produced over the past decade combined. So, that's pretty significant.

Mark Marifian:

And the next slide will show where these data centers are located.

Rob Thummel:

Yeah. So, if you look at this slide, if AI is going to be the fourth industrial revolution, once again, the US will be the leader in innovation and AI development because most of the data centers are located in the US. In fact, there are over 5,000 of them right now operating in the US.

So, you can see the map on this slide. So, proximity to fiber networks, the cost of electricity and the reliability of the power grid really play pivotal roles in determining the location of some of these data centers. Northern Virginia, you'll note here is highlighted. It has become known as data center alley due to the high concentration of facilities in this area.

Mark Marifian:

Rob, how does that 5,000 play to the broader world in terms of data centers?

Rob Thummel:

So, on slide nine, that emphasizes really the head start that the US has relative to the rest of the world. So, if you go to the next slide, it shows the amount of data capacity in data center alley in Northern Virginia surpasses that of the next four largest data centers in the world combined. This is a huge competitive advantage for the US relative to the rest of the world.

Mark Marifian:

The US has made such strides versus the rest of the world. We go to the next slide. I think it shows this chart.

Rob Thummel:

Yeah. So, the next slide shows, yeah, exactly. You raised a good point, Mark. So, the US really has quickly emerged as the global leader in AI technology, but the US has also emerged as the leading energy provider required to power this innovation. A key factor behind this is the relatively low cost of electricity in the US compared to other countries.

So, you can look on this slide. It illustrates how competitive US electricity prices are on global scale. So, why are electricity prices so low in the US? The primary reason is really the US country and the country's abundant energy supply largely driven by the advancements in shale technology. US shale development really has positioned the US as the world's largest energy producer, allowing it to maintain energy independence without having to heavily rely on foreign sources for energy supply.

This independence contributes to stable and affordable energy pricing, really, which has been critical in supporting power-intensive industries, including AI and data centers well into the future. Our prime example of this is happening in data center alley where the energy provider Dominion really offers electricity rates that are 30% lower than a national average. That's why a lot of this northern Virginia area has become data center alley.

Natural gas has become the dominant energy source in the US providing the largest share of the fuel mix for electric generation. And it's because it's affordable and it has low emissions, so it's become an ideal energy source for powering high-tech sectors and will be an important source for AI into the future.

Now Europe, in contrast, what's happened there, and why are they so much higher? Well, Europe's pursued a more renewable-centric approach and relied heavily on external suppliers for energy like Russia to supply its core energy

needs. So, this strategy really has ultimately led for Europe to significantly higher electricity costs compared to the US, and it really highlights the impact of energy supply choices on economic competitors.

Mark Marifian:

Great. I love the chart. Rob, if we go to the next slide and I guess setting the stage. So, you've talked about data centers, US has a lead the most data centers in the world. You talk about electricity costs, the last side, the cheapest electricity. But start to talk to the audience about how this is going to transform in your mind, the energy sector.

Rob Thummel:

Yeah. So, we believe that AI begins the age of electricity and that provides another source of growth for the energy sector. So, you all have heard the ChatGPT consumes at least 10 more times electricity or energy than a standard Google search does. We're going to have a lot more ChatGPT searches for years to come.

But if you look back historically, US electricity demand has essentially been flat. This is basically a straight line of electricity demand in the US for the past 20 years. AI will change all of that. First, the number of data centers is forecasted to grow, and the size of the data centers is going to expand. Hyperscale, which is basically a term used to describe large networks of data centers, it will likely be added to the Merriam-Webster Dictionary in the near future.

Also, the technology housed inside the data centers, particularly the chips. They're consuming more electricity per chip. The latest NVIDIA chips, for instance, consume four times more electricity than those two years ago. So, the convergence of large data centers and more energy intensive chips is poised to end the air of stagnant power demand beginning this new phase, the age of electricity that's characterized by significant growth in electricity consumption.

Mark Marifian:

Rob, I love the chip demand and how much more energy it's consuming. And if you go to the next slide, let's discuss this a bit more.

Rob Thummel:

Yeah. We're already starting to see that, Mark. So, remember when I was talking about data center alley in northern Virginia. What this shows you is the regulators in Virginia. They're part of managing the overall US electricity grid, i.e. keep the lights on.

So, they forecast, always are forecasting future electricity demand. They do it every single year to supply or to prepare to balance future supply and demand. So, look at what's going on with this slide, just particularly in northern Virginia in that area.

So, prior to 2022, the forecast in annual increase in electric demand was very, very minimal, expected to be almost in line what we've seen historically, almost nothing, virtually flat, but the latest forecast by Dominion, which is the actual utility that supplies the electricity to data center alley anticipates that the annual growth rate in electricity will be almost 7% per year through 2030.

So, this is all, this new growth rate, this rise in the growth rate in a very short period of time is all due to anticipated development and construction of these larger data centers, these hyperscalers that are happening in this northern Virginia in data center alley.

Another clear sign of electricity supply is not keeping up with the pace of demand is reflected in capacity auctions that really occurred in July. So, what are capacity auctions? Capacity auctions really are held for the purpose of making sure that there's a certain level of electricity that's available at all times. So, capacity payments are paid to electricity providers to provide that electricity. So, on slide 13, it shows the capacity price paid in July for the PJM region, which is basically the same location as northern Virginia. The price paid in July was 10 times higher than the same price paid last year to ensure reliability for '25 and '26.

So, what this means is that expected electricity demand is going to exceed supply in 2025 and 2026. So, higher payments are necessary to make sure that adequate and inadequate electricity supply available. So, ultimately reliability is going to be paramount in managing this complex US electricity grid ensuring uninterrupted access is available for millions of consumers and capacity auctions really help to increase this grid reliability and also promote the need for more electricity generation to handle the increasing demand as a result of development of AI.

Mark Marifian:

So, Rob, that's a great micro look at the demand increase vis-a-vis Dominion vis-a-vis this page PJM capacity auction. Let's go to the next page and discuss for everyone, I guess this is more at the macro level for the US, what does a higher electricity growth rate mean in terms of energy demand here?

Rob Thummel:

Yeah. So, really, the US energy sector's longer term growth opportunities really lie in meeting this escalating demand driven by AI development for decades. So, currently if you look at data centers, they account for about three to 4% of total electricity consumption. But by 2030, they're projected to represent nine to 11% of overall demand.

So, estimates for future electricity demand have been recently adjusted and they've been adjusted upwards. So, if you listen to this webinar a few months ago, you would've seen a similar chart and the consultant McKinsey had projected that 35 gigawatts of additional electricity would be needed to sustain data center growth by 2030.

However, as of September, McKinsey updated their estimates. They raised this forecast to 80 gigawatts, more than doubling the previous estimate. So, essentially from now until 2030, an additional 55 gigawatts of electricity will be required solely to support data center expansion. So, this increasing demand really underscores the role of the US energy sector in providing that reliable, affordable, scalable energy solutions really to support the future of AI.

Mark Marifian:

So, 55 gigawatts difference between '24 estimates and 2030 estimates. Let's bring this to real life for the audience, Rob, and go to the next page. Tell us what 55 gigawatts of electricity actually means.

Rob Thummel:

Yeah. And that's really good question, Mark. So, really to put 55 gigawatts of electricity into perspective, consider New York City. So, on average, New York City consumes about 5.5 gigawatts of electricity. Now at its peak capacity, typically that happens during the height of the summer when the temperatures are soaring, air conditioners are running, that's when you have full capacity of electricity in New York City. When that happens, New York City is consuming about 10 gigawatts.

So, 55 gigawatts is equivalent to five to 10 New York cities in terms of electricity demand. So, when you think about that between now and 2030, electricity providers will need to generate more electricity or the equivalent of electricity of five to 10 New York Cities between now and 2030 just to keep these data centers operating. So, this is a tremendous amount of electricity and a tremendous opportunity for the US energy sec.

Mark Marifian:

That's a perfect segue to the next page with the opportunity for the energy industry. Rob, here's the electricity fuel mix. What are we projecting? Where do we see that going?

Rob Thummel:

Yeah. So, at Tortoise Capital, we believe that the AI will be the age of electricity and that will benefit electric generation companies. But increased electricity demand also ushers in the age of natural gas. So, if you go back since our nation's

founding, wood had an over 100-year run as the primary energy supply, followed by 65 years of coal, and today, oil is approaching its 75th year as the dominant energy supply source in the US.

Natural gas though has been steadily gaining ground and AI could be the catalyst that allows it to overtake oil, potentially beginning a multi-decade reign really for natural gas as the largest energy source in the US.

So, on this slide, you can see natural gas already has become the largest fuel source for electric generation in the US, representing 43% of the fuel mix. It has the highest market share of any fuel source. But you know how J.D. Power does these reliability rankings on cars and you want a reliable car that you can count on no matter what conditions. Well, natural gas also scores really high on a reliability ranking scale.

So, natural gas generates electricity when it's needed the most. Let me give you an example of that. Electricity generation using natural gas set a record high this summer in July of 2024 when it was the hottest, the hottest days of the year natural gas is working. Often during those same periods, and this summer, wind will stop blowing during the hottest times of the year. So, as AI driven electricity demand continues to surge, we believe that natural gas will play an increasing role as the age of electricity also turns into the age of natural gas.

Mark Marifian:

It's a great chart, one we'd love to show. Let's go to the next page. Rob, talk about other attributes that investors should be thinking about when they think about natural gas.

Rob Thummel:

Yeah. So, the other one is as natural gas really plays a critical role in decarbonization efforts as well. So, this is often overlooked and the natural gas industry has made substantial contributions to reducing carbon emissions in the US. You've probably seen this slide, but I'm going to keep showing it because it doesn't get enough credit, at least the industry does.

So, since the development of US shale in 2005, carbon emissions shown by this line have decreased significantly by approximately 20%. The decline really closely aligns with the reduction in coal's market share of electricity generation, which has been increasingly replaced by cleaner burning natural gas. So, the shift from coal to natural gas has been a major factor in lowering the carbon footprint of the US power sector, underscoring natural gas as essential role in a lower carbon energy future as well.

Mark Marifian:

Let's go to the next page. And Rob, we've talked about it, the ages of natural gas. What does that put that in context for folks?

Rob Thummel:

And this might be one of our most important slides. So, what it means is it means meaningful growth and demand that supports all things natural gas. So, you look on this slide, it really captures the potential growth in demand for natural gas. So, even before the emergence of AI as a potential catalyst for growth, the US natural gas sector was already poised for expansion, largely driven by projected increases in LNG or liquefied natural gas exports through '23. So, we expect US LNG exports to double from current levels. So, that'll result in estimated growth of 12 to 13 billion cubic feet of natural gas production by 2030.

Now, the surge in natural gas demand to support increased electricity consumption driven in part by AI related infrastructure presents another avenue for growth. This could potentially result in a demand increase ranging between seven to 16 billion cubic feet per day of additional growth.

So, when considering both sources of growth, US natural gas production could witness a substantial uptake potentially rising by nearly 30% by 2030. This heightened demand really stresses the necessity for expanded production capabilities and the augmentation of the critical natural gas infrastructure to really accommodate the anticipated surge in volume.

Mark Marifian:

So, we hear about wind, solar, we can go to the next page, other emerging technologies. Talk to the audience about why our conviction in natural gas is so strong.

Rob Thummel:

Sure. So, at Tortoise, we evaluate all emerging energy technologies. We invested in shale starting in the mid-2000s, and later we identified liquefied natural gas and liquefied natural gas exports as a promising new technology. And we started investing in that beginning in 2014.

So, for technologies really to succeed, it either needs to have a cool factor that justifies the premium price paid for the technology, or it must be a more efficient lower cost option. So, for Apple, obviously the iPhones were groundbreaking and they were groundbreaking phone, the consumers found cool and they were willing to pay more for the added functionality.

On the other hand, I remember buying a 43-inch Pioneer plasma TV, and at the time I thought it was great plasma technology, but plasma technology really quickly became obsolete as cheaper alternatives. LCD and LED, really those technologies overtook plasma. But energy, it's a basic necessity. It doesn't need a cool factor because it's essential.

Consumers though want low energy costs to maximize their monthly discretionary income. So, natural gas on this slide really shows that natural gas makes it really tough for other energy technologies to compete because natural gas is low cost and low carbon. So, right now, there's really no alternative energy technology that can match the cost competitiveness of natural gas, and we don't anticipate that changing anytime soon. But we'll keep evaluating all emerging options.

Mark Marifian:

Yeah. And that's a good segue. Some of the emerging options that we have evaluated are wind and solar, and they can also provide electricity to power AI development. But Rob, just how do we think about that? Obviously, they're intermittent, so walk us through that.

Rob Thummel:

Yeah. So, when we think about renewables such as wind and solar, we think about them just like all other energy technologies. So, the challenge for wind and solar as you highlight, Mark, is reliability. So, wind and solar are intermittent sources of energy supply and they just simply don't provide the reliability that AI factories need 24 hours a day, seven days a week.

So, if you look on this slide 20, it illustrates why wind and solar can't compete from a cost perspective. And this slide was actually created by one of the largest independent power producers, Vistra Corporation. So, to reliably power 200,000 homes, the electricity grid requires either a 1,000-megawatt natural gas plant or 9,000-megawatts worth of renewable energy in a larger facility that would include wind, solar, and battery storage.

The capacity needed for renewable energy is nine times larger than that needed for natural gas due to the intermittent nature of renewables, which necessitates overbuilding of the renewables to ensure reliability. So, in this example, the capital investment required for renewable energy to power the same number of homes is 10 times higher for renewables than that for natural gas. So, providing electricity at 200,000 homes requires a billion dollars investment for natural gas compared to a $10.3 billion investment for renewables.

Mark Marifian:

Great stats. It's one my favorite charts from a company that's been produced recently. We talked about wind and solar. I think we also need to talk about nuclear, and obviously in the news lately, the small nuclear reactors and the news there with some recent corporate announcements. Can you touch on that?

Rob Thummel:

Yeah. So, all of these hyperscalers, there's that word again, Microsoft, Google, Amazon. They're turning nuclear power right now to meet their growing electricity needs. So, they've announced agreements to purchase nuclear power, whether it's by restarting existing facilities like Three Mile Island or exploring new technologies such as small nuclear reactors or SNRs.

So, large-scale nuclear projects are notoriously expensive. For example, Southern Company recently completed a nuclear project, costed $36 billion, doubled the original cost estimate and was 15 years behind schedule. So, if you look at this slide, it highlights SNRs, small nuclear reactor, shows you an artist's rendition. Why is it a rendition? Because there are no small modular nuclear reactors operating in the US. There's only one that has received approval from the Nuclear Regulatory Commission and received the license.

Now you've heard of the companies that are building these or looking at building these are companies like NuScale Power, Kairos Power, TerraPower, Oklo. They're all actively developing SNRs, but they have the target of generating electricity beyond 2030. AI data centers need power immediately and will continue to require increasing amounts of power of electricity in years to come.

So, while we believe that natural gas is the best solution for both the short and long term in terms of providing electricity needs, nuclear power, and maybe SNRs, will likely have a role longer term also in this multidecade age of electricity.

Let me just wrap that up. I think that pretty much handles our slides. I'll wrap it up and I'd be interested in anybody's questions. Let me just wrap it up on the next slide with some of our few key points.

So, AI is poised to make history sparking the fourth industrial revolution, kind of akin to the transformative impact that other technologies like the mobile phone and the internet have had. Bill Gates has likened AI's potential really to these game-changing innovations like the mobile phone and the internet.

The growth of AI though will usher in a new age of electricity demand, which means significant growth in electricity for decades ahead. And this surge in demand really presents opportunities across the energy sector and especially the energy infrastructure sector because remember, there is no AI without EI. So, energy infrastructure is integral to develop AI and deploy AI as well.

So, without this reliable electricity and pipelines generating and providing the fuel to generate this reliable electricity, AI systems just simply cannot function effectively. So, maintaining a robust energy infrastructure network for decades is really crucial for supporting the AI advancement and for continued economic growth.

And as far as we believe that natural gas will emerge as the prominent player in delivering low cost, low carbon energy to meet the increasing demand, so the abundance of natural gas and the relatively low and the positive environmental impact of natural gas is really a vital component to natural gas increasing its role in the global energy mix.

So, the growth of AI and increased demand for data centers will indeed benefit many of the companies in the technology sector. However, the impact of AI will not just be limited to technology companies alone. The energy sector stands to benefit significantly from the rise of AI as well.

So, let me turn it back to Mark for any closing remarks and also any questions that you might have. And thank you for listening.

Mark Marifian:

Yeah. Rob, really appreciate all the comments. We've been having questions come in as you've been speaking. So, with limited time, let's start to address some of those questions as they're coming. And I guess first one, we talked about obviously increased demand for natural gas. Does the US have enough natural gas that we're going to be able to pull from within our reserves to meet that long-term demand?

Rob Thummel:

Yeah. I'll be fast and easy on that one. Yes. There's a hundred years of supply of US natural gas. The US has got plenty of supply. There's a whole bunch of new areas around the country that supply natural gas that you haven't even heard of. You're going to hear about more areas in south Texas. You're going to hear about more areas at the Alpine High in west Texas. There's a whole bunch of natural gas in the US. There's plenty of supply of natural gas for years to come.

Mark Marifian:

A couple that come in on similar topic. From a portfolio standpoint and monetizing this theme, I guess, what's the timeframe that you'd be looking to monetize your trade here and how would pipeline stocks specifically benefit as you see more demand from AI?

Rob Thummel:

A very good question. I think how we benefit from this and energy infrastructure, I think in two ways. First, you're just going to see volumes through the pipelines, through the longer-haul pipelines. So, you got to be selective. I think that's important. You got to make sure you understand where the pipelines are going and do they serve the data center. So, location like in real estate is really important.

But if you get the right pipelines, then you're going to benefit from higher volumes tied to increased demand for AI and electricity generation. But the other place that you're going to see the value reflected is in multiples, EV/EBITDA multiples.

Right now, once again, the energy infrastructure sectors, one of the few sectors that's trading at a discount to its historical norms. So, not a lot of other sectors can say that. Infrastructure can't. But those multiples not only return at a discount to the historical norms, but those historical norms potentially could be raised even higher because of the increased demand and really the significance and the importance that these pipelines will have in developing AI technology, not just per a year or two, but for decades.

Mark Marifian:

Great. Rob, this is on capital spending. Do we expect to see a significant increase based on all the themes that we've talked about today for natural gas?

Rob Thummel:

Yeah, yeah. From an infrastructure perspective, not a lot. We'll need to be a little bit more spending. Of course, there probably will be a little bit in certain areas of the US, but generally speaking, the existing pipeline network is in place, it's set. It's the largest pipeline network in the world, massive economic boats. It's hard to build new pipelines.

So, all of that will increase the value of existing pipelines, but you're not going to see a lot of major significant pipelines being constructed. You might see some smaller pipelines built off the existing pipelines. You might see some other activities to improve volumes going through the existing pipelines as well. But no, I don't think we're going to see massive spending tied to this AI build-up. That's the benefit. A lot of the cashflow that is delivered to these companies because of the increase in demand due AI likely falls right back into the hands of the investors.

Mark Marifian:

Great. A few more coming in. Could you talk about collocating natural gas fire power plants, and is that going to be a popular solution to provide reliable power for these data centers?

Rob Thummel:

I think you're going to need a lot of solutions, and that's absolutely one of them. Somebody must have been listening to Toby Rice because that's his plan, the CEO of EQT, who we obviously have really enjoy talking to all the time here at Tortoise. So, yeah, that's a possibility. Absolutely. There's possibility to collocate some natural gas power plants or power plants right next to natural gas facilities. That will definitely be a possibility. And something we haven't seen yet, but absolutely a possibility.

Once again, going to need lots of different solutions to handle the immediate need for electricity to generate electricity today, not in 2030, but today to meet the demand for the rising demand for all of this AI that needs a lot of electricity and it needs it now.

Mark Marifian:

Good. This is on a holding specifically, and the astute comment is Targa has done extremely well, I think it's in the top 10 best performing stocks here today in the S&P. Can you just talk about our thesis for owning Targa specifically, Rob?

Rob Thummel:

Sure, sure. Yeah. And in fact, I think it might even be in the top five, Mark. So, of the S&P 500 returns along with the Vistra and Constellation Energy that are also in the top five. So, yeah, why do we own Targa? Well, Targa, the management team has done a phenomenal job over the years of developing one of the best infrastructure networks in the Permian Basin covering the Permian Basin in west Texas.

And as many of you know, Permian Basin is predominantly an oil basin, but it has become increasingly one of the emerging natural gas supply basins because as you drill for oil, you get natural gas. Oil is obviously a liquid, gas is a gas, so you got to separate all of that out. And there's a lot of infrastructure that's necessary and a lot of work that's required to ultimately convert this stream of hydrocarbons into their end use, whether it's oil or natural gas or something in between ethane propane.

Well, that's what Targa does. And so, that's why we've invested in Targa for years. We've recognized the Permian Basin as one of the most essential really oil and gas basins in the world. We've recognized it's going to grow. Targa recognized this a long time ago and has built a massive infrastructure network where it will continue to benefit and continue to grow from rising production out of the Permian Basin. So, that's why we own Targa.

Mark Marifian:

Right. One last one to wrap up. I know we're at time. Just quickly on the US election, how might that impact LNG, natural gas and then AI development?

Rob Thummel:

Yeah. Just to be clear, well, big picture, the macro answer to that is we don't expect the US election to really have a huge impact on the US energy sector. We think economics, not politics will really drive the energy sector going forward and the energy policies basically that need to be in place are maybe informal, but the US has become the largest oil and gas producer in the world. US has become the largest exporter of energy in the world that has had significant advantages to US politicians. And so, none of those roles will change in the US.

Specific to liquefied natural gas, if you're following it very closely, there was a pause on LNG, new LNG facility. I just want to make this clear. It doesn't matter what happens to that pause. It might get extended, it might not. It probably won't.

But even if it would, it has no impact on our estimate for doubling US LNG export capacity between now and 2030. The LNG pause does not impact any of those projects. Those are already in process or will be in process and have already gained the necessary approvals to head down the path of doubling the LNG export capacity that we have here in the US.

Mark Marifian:

Right. Well, let's wrap it there. I know a couple folks have written in, can they get a copy of the slides? I've notated that or we can see that, so we'll be sure to follow up with those folks. Rob, I just want to thank you again for your insights and really the audience for joining us as an extended period of time. We appreciate your guys thinking about us as a leader in this industry and certainly, we're excited about not only energy, but what AI is going to do for future energy demand.

In the coming days. We will have replay of the call, so if you do have any questions, please follow up. Here's our map with our sales coverage. And so, we'll be looking forward to hearing you. You can also check out our website if you need more information there. So, Rob, thank you again. Our audience, thank you again. Hope everyone has a good rest of the day. Talk to you soon.

Rob Thummel:

Thanks everybody. Thanks for listening.